

790 – 6000 MHz

Catalogue 2010

Base Station Antennas, Filters, Combiners and Amplifiers for Mobile Communications

PRESENT ALL OVER THE WORLD ...



KATHREIN

Antennen · Electronic

Photo on title page: A global player – KATHREIN-Werke KG

Catalogue Issue 01/2010

All data published in previous catalog issues hereby becomes invalid.

We reserve the right to make alterations in accordance with the requirements of our customers, therefore for binding datas please check valid datasheets!

Please note:

As a result of more stringent legal regulations and judgements regarding product liability, we are obliged to point out certain risks that may arise when products are used under extraordinary operating conditions.

The mechanical design is based on the environmental conditions as stipulated in ETS 300 019-1-4 and thereby respects the static mechanical load imposed on an antenna by wind at maximum velocity.

Extraordinary operating conditions, such as heavy icing or exceptional dynamic stress (e.g. strain caused by oscillating support structures), may result in the breakage of an antenna or even cause it to fall to the ground.

These facts must be considered during the site planning process.

The details given in our data sheets have to be followed carefully when installing the antennas and accessories.

In addition, please use our information brochure about mounting configurations.

The installation team must be properly qualified and also be familiar with the relevant national safety regulations.



“Quality leads the way”

As the world's oldest and largest antenna manufacturer, we live up to claim “Quality leads the way” on a daily basis. One of the fundamental principles is to always be on the lookout for the best solution for our customers.

Our quality assurance system and our environmental management system apply to the entire company and are certified by TÜV according to EN ISO 9001 and EN ISO 14001.

The catalogue is splitted into two parts.

Part 1: Antennas

Part 2: Filters, Combiners and Amplifiers.

Pages

Antennas

7 – 204

Filters, Combiners, Amplifiers

205 – 321

A current list of Kathrein's International Representatives
can be found on our homepage

www.kathrein.de

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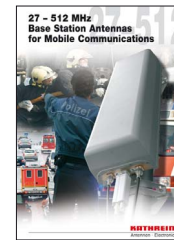
E-Mail: antennas.mobilcom@kathrein.de

List of available Catalogues for Mobile Communication Antennas and Accessories

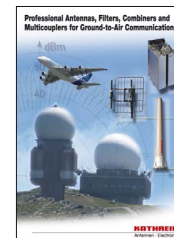
790 – 6000 MHz Base Station Antennas, Filters, Combiners and Amplifiers for Mobile Communications



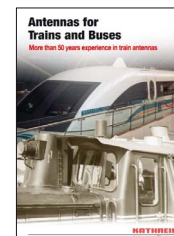
27 – 512 MHz Base Station Antennas for Mobile Communications



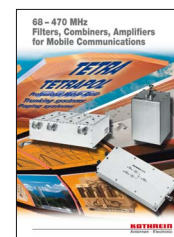
Professional Antennas, Filters, Combiners and Multicouplers for Ground-to-Air Communications



Antennas for Trains and Buses



68 – 470 MHz Filters, Combiners, Amplifiers for Mobile Communications



The listed catalogues are also available on CD-ROM



Part 1:

Antennas for Mobile Communications

806 ... 960 MHz

XPol

XXPol

VPol

1710 ... 2200 MHz

XPol

XXPol 2-Multi-band

VPol

**806 ... 960 MHz
1710 ... 2200 MHz**

XXPol Dual-band

XXXPol Triple-band

2300 ... 3800 MHz

XPol, XXPol, VPol

Omni

VPol

Indoor

VPol

RET

Remote Electrical Tilt-System

Electrical Accessories

**Splitters, Tappers and
Measurement Tools**

Mechanical Accessories

Clamps, Downtilt Kits, ...

Summary of Antenna Types

The articles are listed by type number in numerical order. **New or changed product.**

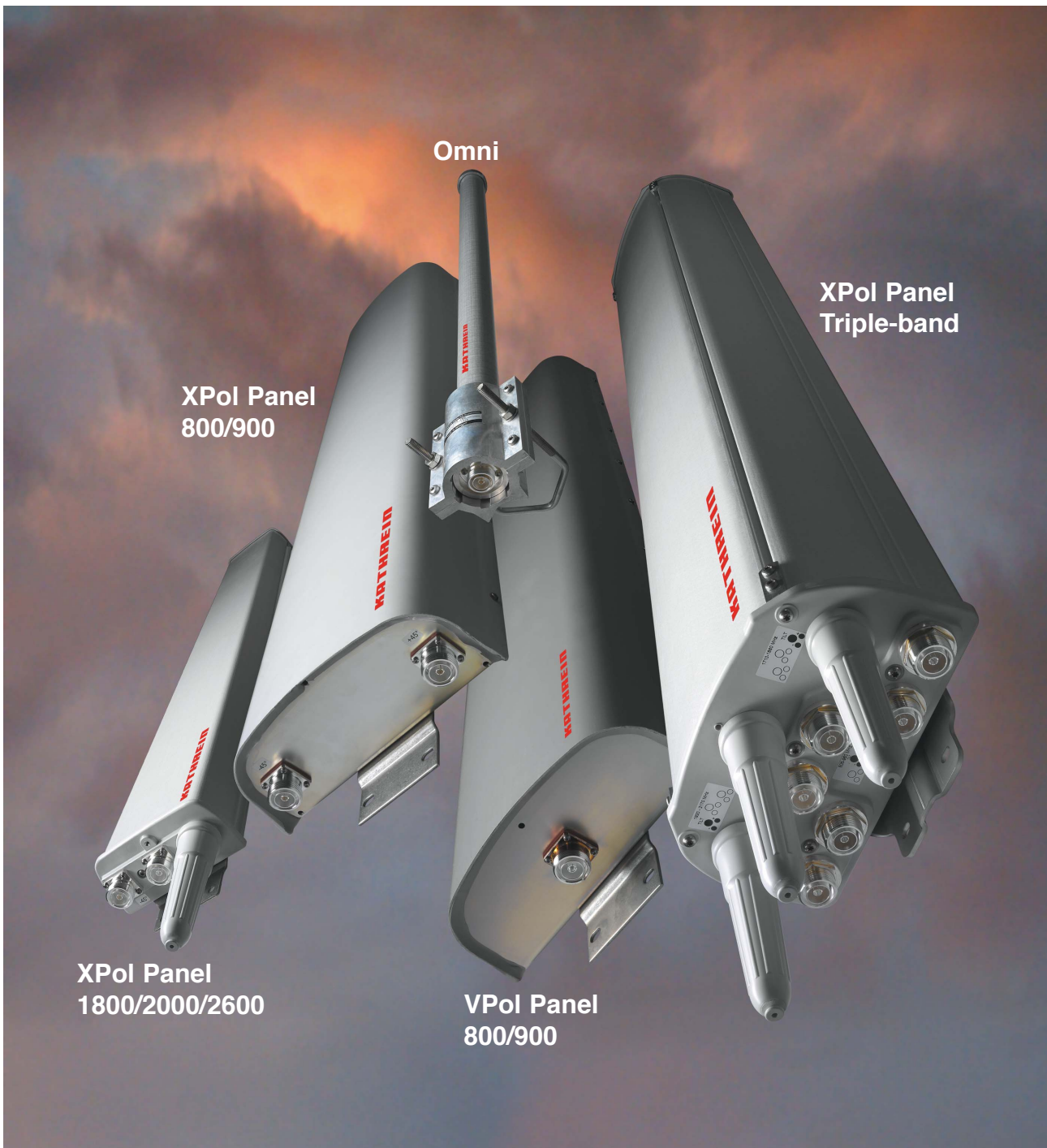
Type No.	Page	Type No.	Page	Type No.	Page	Type No.	Page
730 ...		735 ...		739 ...		742 233	74
730 368	40	735 727	38	739 489	51	742 235	76
730 376	42			739 619	20	742 236	74
730 378	44	736 ...		739 620	20	742 263	190
730 382	45	736 347	131	739 710	62	742 264	89
730 677	40	736 349	132			742 265	92
730 691	41	736 350	129	741 ...		742 266	96
		736 801	169 ...	741 322	91	742 270	104
731 ...		736 802	169 ...	741 327	91	742 271	107
731 651	189	736 803	169 ...	741 336	95	742 272	110
		736 804	169 ...	741 573	146	742 290	84
732 ...		736 805	169 ...	741 623	49	742 351	48
732 317	198	736 854	44	741 790	136	742 352	78
732 318	198			741 984	61		
732 319	198	737 ...		741 988	61	800 100..	
732 321	198	737 398	201	741 989	62	800 10046	84
732 322	198	737 547	42	741 990	63		
732 327	198	737 971	196			800 101..	
732 689	43	737 972	195	742 ...		800 10111	134
732 691	41	737 973	195	742 033	191	800 10121	99
		737 974	195	742 034	191	800 10122	100
733 ...		737 975	195	742 047	95	800 10123	101
733 677	189 ...	737 976	196	742 113	192	800 10137	143
733 678	189 ...	737 977	195	742 186	59	800 10141	18
733 679	189 ...	737 978	192 ...	742 192	83	800 10147	150
733 680	189 ...			742 196	52	800 10173	144
733 695	198	738 ...		742 210	51		
733 736	189	738 187	135	742 213	57	800 102..	
		738 192	130	742 215	55	800 10202	21
734 ...		738 440	203	742 218	50	800 10203	22
734 360	189	738 445	82	742 219	50	800 10204	24
734 361	189	738 446	82	742 222	88	800 10207	21
734 362	189	738 449	148	742 223	90	800 10208	25
734 363	189	738 450	126	742 224	94	800 10214	26
734 364	189	738 546	189 ...	742 225	98	800 10215	25
734 365	189	738 908	200	742 226	87	800 10217	29

Summary of Antenna Types

The articles are listed by type number in numerical order. **New or changed product.**

Type No.	Page	Type No.	Page	Type No.	Page	Type No.	Page
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800 10249	145	800 10439	60	800 10672	111	860 10101	169
800 10251	48	800 10442	137	800 10677	142	860 10102	169
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				850 10006	193	860 10137	171
800 103..		800 105..		850 10007	197	860 10138	171
800 10300	30	800 10504	56	850 10010	72	860 10140	156
800 10302	18	800 10505	58	850 10014	199	860 10141	156
800 10303	22	800 10510	75	850 10015	199		
800 10305	24	800 10511	77	850 10016	199	K 61 ...	
800 10306	26	800 10516	32	850 10017	199	K 61 14 02	38
800 10307	27	800 10517	33			K 61 14 03	38 ...
800 10308	28	800 10518	35	860 ...		K 61 14 04	38 ...
800 10309	28	800 10519	67	860 10002	163	K 61 14 05	38 ...
800 10310	30	800 10528	138	860 10006	155	K 61 33 5	202
800 10314	65	800 10541	117	860 10007	161	K 61 33 6	202
800 10360	69	800 10543	121	860 10017	168		
800 10368	80	800 10544	122	860 10018	168	K 63 ...	
800 10375	68			860 10019	168	K 63 23 60 01	173
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800 10390	124	800 10606	64	860 10025	154	K 63 23 61 07	172
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800 104..		800 10618	65	860 10030	164		
800 10414	66	800 10621	119	860 10031	165	K 73 ...	
800 10424	52	800 10622	123	860 10046	160	K 73 22 67	39
800 10425	53	800 10634	23	860 10068	157		
800 10426	54	800 10636	59	860 10078	162	K 75 ...	
800 10428	54	800 10647	34	860 10079	162	K 75 11 61	127
800 10430	147	800 10658	81	860 10084	162	K 75 15 64 1	128

Antenna Designs:
Antenna Families
Harmony of Design and Technology



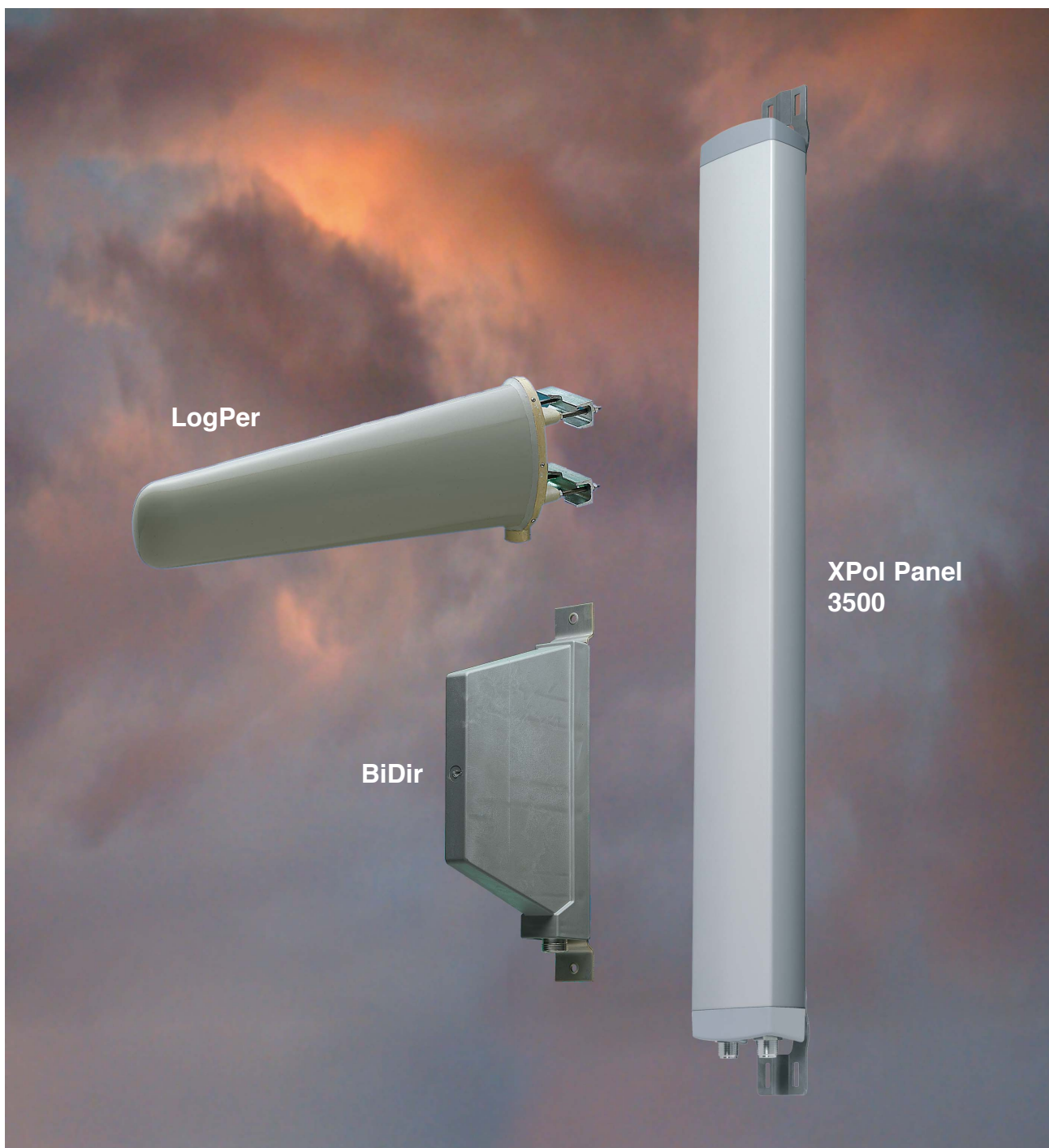
Directional Antenna Designs: Special Directional Antennas For Particular Applications

Antennas for

- tunnel use
- railway use
- micro cells (street use)
- high gain link for repeaters

The distinguishing features of these special versions, e.g. parabolic panels or log. periodic antennas, are:

- very small half-power beam width (high gain)
- high sidelobe suppression
- also Dual-band and Multi-band versions
- bidirectional horizontal pattern.



Antenna Designs: Antenna Families / RET-system Distinguishing features

Design	Compact size and elegant design are the distinguishing features of Kathrein's antenna families.
Radome	The radomes cover the internal antenna components. The fiberglass material guarantees optimum performance with regards to stability, strength, UV resistance, painting and weather protection.
Environmental influences	Kathrein antenna designs are based on fundamental engineering knowledge and also on our decades of practical experience, during which the various constructions and materials used have proved their outstanding reliability.
Environmental conditions	Kathrein cellular antennas are designed to operate under the environmental conditions as described in ETS 300 019-1-4 class 4.1 E. The antennas exceed this standard with regards to the following items: – Low temperature: –55 °C – High temperature (dry): +60 °C
Impedance	Standard Impedance for all products is 50 Ω unless otherwise stated.
Great variety of half-power beam width, gain values, electrical downtilt	According to the antenna type selected, customer can choose from different half-power beam widths. Gain values up to 22.5 dBi and electrical downtilts up to 15° for panel antennas are available. Downtilts are either fixed or adjustable or even controlled by remote electrical tilt system (RET).
Low intermodulation products (typically –150 dBc)	After many years of experience in the construction of antennas and after intensive research into the effects of intermodulation, we have been able to optimize the material and technology used for antennas (the given value refers to 3rd order products measured with 2 carriers of 20 W each).
Excellent tracking	Tracking states the symmetry between the +45° and –45° polarized horizontal pattern. Bad tracking values lead to interferences in the network and reduced diversity performance. Kathreins special Tracking compensation reduces the average value measured at ±60° to < 2 dB.
Superior squint	Squint, also often referred to as “Pattern Symmetry”, gives the symmetry of the pattern over the whole frequency range measured at the 3 dB points. Interferences and nulls in the network may be the result of bad values. In contrast to the vertical squint which is usually good, excellent squint values of the horizontal pattern are hard to reach. Kathreins superior values of ± 5 % of the half-power beam width are in line with the requirements from system suppliers.
Multi-band design	Depending on antenna family broad-band, multi-band, dual-band and triple-band versions can be offered. Therefore the variety of antennas used can be kept to a minimum.
Excellent grounding	The antennas are DC grounded according EN 50083-1.
Multi-functional installation hardware	Depending on the type, the antennas are equipped with up to 3 attachment points. Panels can be wall-mounted without any additional hardware. For mast-mounting, stainless steel brackets and mechanical downtilt kits are available. To assist the installation technicians in aligning the panels, an azimuth adjustment tool can be supplied (see Mechanical Accessories).
MTBF Statement	Traditionally passive components like antennas cannot be well calculated due to the lack of a sufficient number of components in the MTBF library. Unfortunately this constraint results in a very inaccurate calculation. Thus such results are technically questionable and unrealistic. In essence, antennas are made out of mechanical parts that do not show any failure rates. Only available failure rates can be calculated into an MTBF value. Consequently such components cannot be listed in any MTBF library.
Remote Electrical Tilt System AISG Compliancy	Kathrein hereby states that RET devices, as far as the functionality and features are described within the AISG / 3 GPP standard, are compliant with the standard.

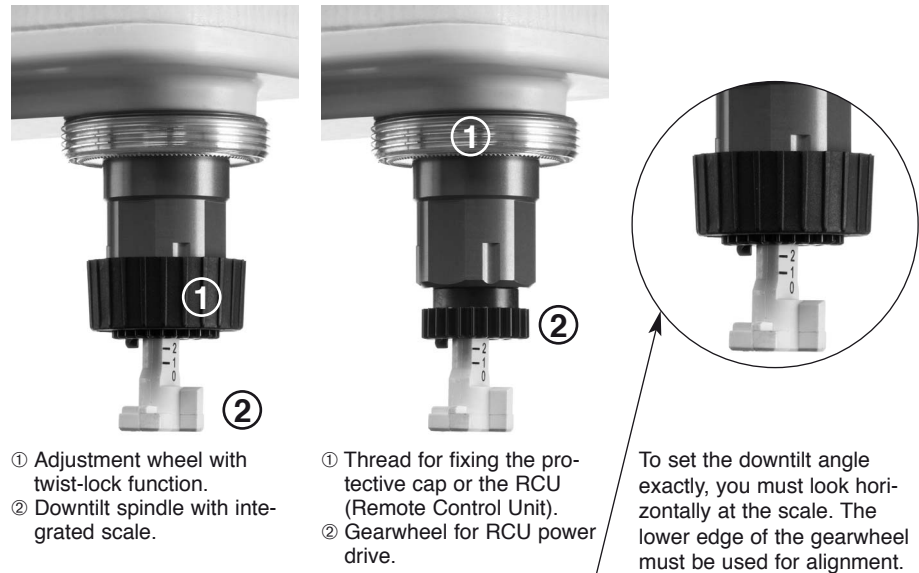
Downtilting of Antennas: Downtilt Possibilities

Mechanical downtilt

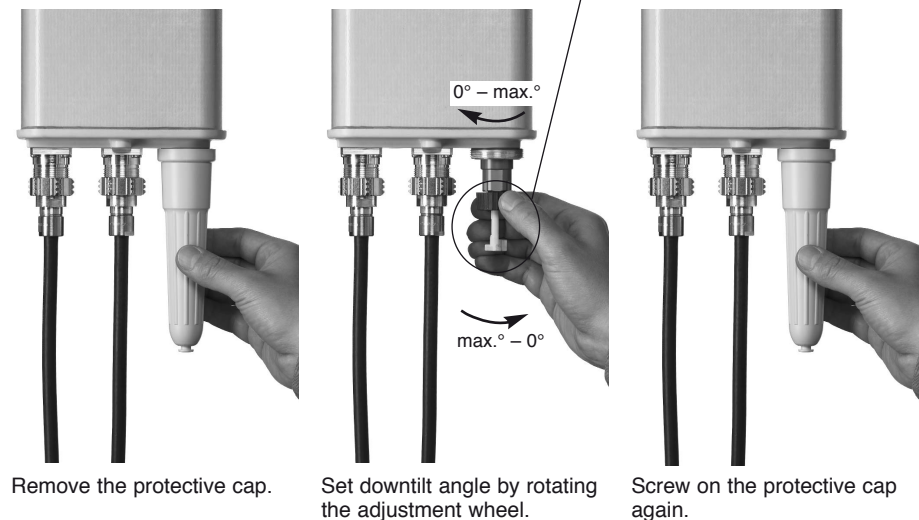
For further technical information please see “Mechanical Accessories”, pages 194 – 198.

Electrical downtilt

Description of the adjustment mechanism (protective cap removed):



Manual adjustment procedure:



Remote Electrical Tilt (RET)

For further technical information please see “RET”, pages 152 and 153.

XXPol Panel 870–960/1710–1880 C 65°/60° 17/18dBi 2°–8°T/2°T

Polarization(s):
(X) Dual +45°/–45°
(V) Vertical

Antenna Family

Frequency Range(s)

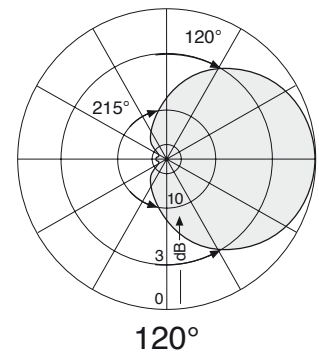
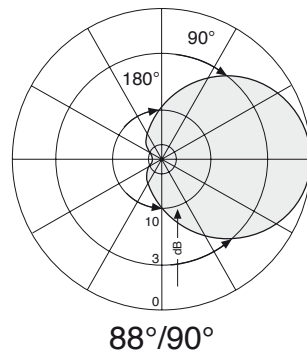
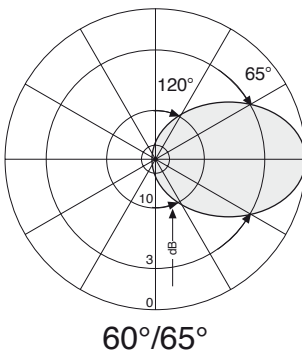
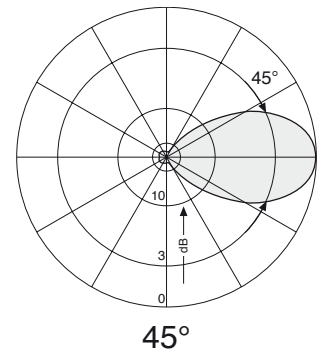
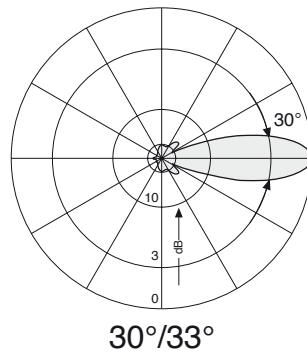
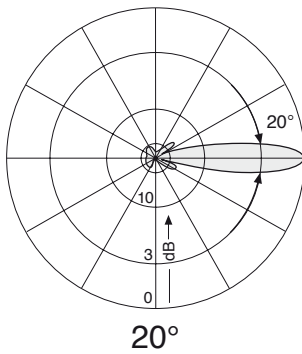
Integrated Combiner

Horizontal
Half-power Beam Width(s)

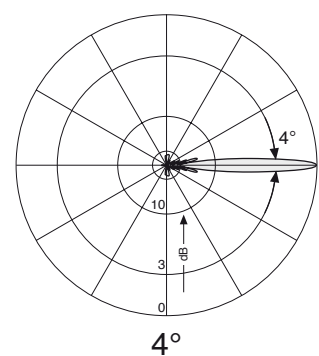
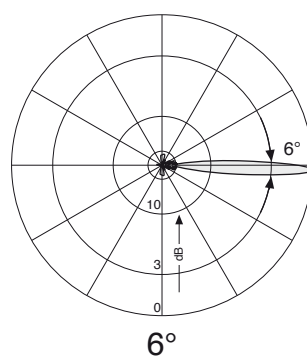
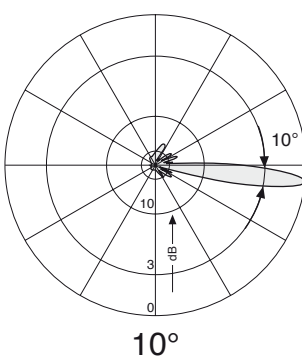
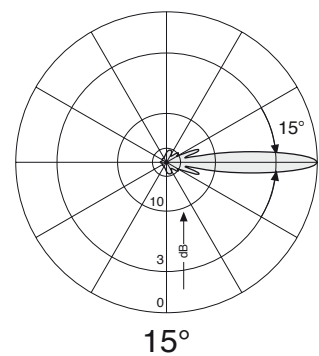
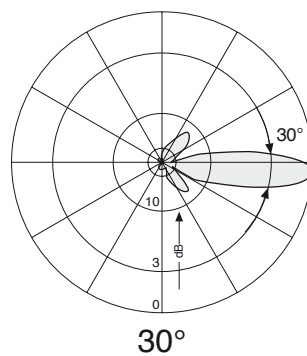
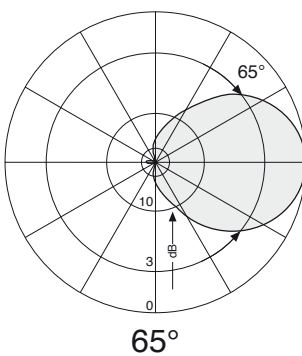
Gain Value(s)

Variable / Fixed Electrical Tilt(s)

Horizontal Patterns:



Vertical Patterns:



Summary – Directional Antennas

Dual Polarization +45°/–45°

800/900

Dual Polarization +45°/–45°

Type	Type No.	Height [mm]	Connector position	Page
XPol Panel	806–960 30° 18.5dBi 0°T	800 10141 1296	bottom	18
XPol Panel	806–960 33° 21dBi 0°T	800 10302 2254	rearside	18
XPol Panel	806–960 30° 20.5dBi 0°–10°T	800 10456 2254	rearside	19
XPol Panel	806–960 65° 9dBi 0°T	739 619 256	bottom or top	20
XPol Panel	806–960 65° 12.5dBi 0°T	739 620 656	bottom or top	20
XPol Panel	790–960 65° 15.5dBi 0°T	800 10202 1294	bottom	21
XPol Panel	806–960 65° 15dBi 6°T	800 10207 1294	bottom	21
XPol Panel	806–960 65° 15dBi 0°–14°T	800 10303 1294	bottom	22
XPol Panel	790–960 65° 17dBi 0°T	800 10203 1934	rearside	22
XPol Panel	806–960 65° 17dBi 6°T	800 10294 1934	rearside	23
XPol Panel	790–960 65° 16.7dBi 0°–10°T	800 10634 1934	rearside	23
XPol Panel	806–960 65° 18dBi 0°T	800 10204 2254	rearside	24
XPol Panel	790–960 65° 17.5dBi 0°–8°T	800 10305 2254	rearside	24
XPol Panel	790–960 65° 18dBi 0°T	800 10215 2574	rearside	25
XPol Panel	790–960 65° 18dBi 6°T	800 10208 2574	rearside	25
XPol Panel	790–960 65° 18dBi 9°T	800 10214 2574	rearside	26
XPol Panel	790–960 65° 17.5dBi 0°–10°T	800 10306 2574	bottom	26
XPol Panel	790–960 65° 18dBi 0°–10°T	800 10307 2574	rearside	27
XPol Panel	790–960 85° 13.5dBi 0°–14°T	800 10308 1294	bottom	28
XPol Panel	790–960 85° 15dBi 0°–10°T	800 10309 1934	bottom	28
XPol Panel	790–960 85° 17dBi 0°T	800 10217 2574	rearside	29
XPol Panel	790–960 85° 17dBi 6°T	800 10218 2574	rearside	29
XPol Panel	790–960 85° 16dBi 0°–10°T	800 10310 2574	bottom	30
XPol Panel	790–960 85° 16.5dBi 0°–10°T	800 10300 2574	rearside	30

New or changed product

Panel Dual Polarization Half-power Beam Width

806–960

X

30° / 33°

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XPol Panel 806–960 30° 18.5dBi

Type No.	800 10141	
Frequency range	806–960	
	806 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°
Gain	2 x 18 dBi	2 x 18.5 dBi
Half-power beam width Copolar +45°/–45°	Horizontal: 31° Vertical: 15°	Horizontal: 29° Vertical: 14°
Front-to-back ratio, copolar	> 25 dB	> 29 dB
Isolation	> 30 dB	> 30 dB
VSWR	< 1.5	< 1.5
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)	
Max. power per input	500 W (at 50 °C ambient temperature)	
Input	2 x 7-16 female	
Connector position	Bottom	
Weight	22 kg	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 680 / 130 / 970 N	
Height/width/depth	1296 / 560 / 116 mm	



XPol Panel 806–960 33° 21dBi 0°T

Type No.	800 10302		
Frequency range	806–960		
	806 – 866 MHz	824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 20.2 dBi	2 x 20.4 dBi	2 x 20.8 dBi
Half-power beam width Copolar +45°/–45°	Horizontal: 34° Vertical: 8.5°	Horizontal: 33° Vertical: 8.2°	Horizontal: 30° Vertical: 7.5°
Sidelobe suppression for: first sidelobe above horizon sector 0°–30° above horizon	> 15 dB > 15 dB	> 15 dB > 15 dB	> 15 dB > 15 dB
Front-to-back ratio, copolar	> 24 dB	> 24 dB	> 24 dB
Isolation	> 30 dB	> 30 dB	> 30 dB
Crosspolar ratio Maindirection 0°	> 25 dB	> 25 dB	> 25 dB
VSWR	< 1.5	< 1.5	< 1.5
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Rearside, pointing downwards		
Weight	30 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 1275 / 260 / 1750 N		
Height/width/depth	2254 / 527 / 99 mm		



Panel
Dual Polarization
Half-power Beam Width

806–960

X

30°

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800/900
 XPol

XPol Panel 806–960 30° 20.5dBi 0°–10°T

Type No.	800 10456		
Frequency range	806 – 866 MHz	806–960 824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain at 0° T	2 x 20.0 dBi	2 x 20.2 dBi	2 x 20.5 dBi
Horizontal Pattern:			
Half-power beam width	33°	32°	30°
Front-to-back ratio, copolar	> 28 dB	> 29 dB	> 30 dB
Cross polar ratio Maindirection 0°	Typically: 25 dB	Typically: 23 dB	Typically: 20 dB
Vertical Pattern:			
Half-power beam width	9.1°	8.8°	8.5°
Electrical tilt	0.5°–10°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 5° ... 10° T > 16 ... 13 ... 13 dB	0° ... 5° ... 10° T > 18 ... 18 ... 17 dB	0° ... 5° ... 10° T > 18 ... 16 ... 15 dB
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	2x 7-16 female		
Connector position	Rearside, pointing downwards		
Adjustment mechanism	1x, Position bottom, continuously adjustable		
Weight	22 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 1800 / 220 / 2000 N		
Height/width/depth	2254 / 576 / 99 mm		



Panel Dual Polarization Half-power Beam Width

806–960

X

65°

KATHREIN
Antennen · Electronic

XPoI Panel 806–960 65° 9dBi

Type No.	739 619	
Frequency range	806–960	
	806 – 880 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°
Gain	2 x 8.5 dBi	2 x 9 dBi
Half-power beam width Copolar +45°/–45°	Horizontal: 70° Vertical: 70°	Horizontal: 65° Vertical: 68°
Front-to-back ratio, copolar	> 27 dB	> 27 dB
Cross polar ratio Maindirection 0° Sector ±60°	Typically: 25 dB > 10 dB	Typically: 25 dB > 10 dB
Isolation	> 30 dB	
VSWR	< 1.5	
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)	
Max. power per input	350 W (at 50 °C ambient temperature)	
Input	2 x 7-16 female	
Connector position	Bottom or top	
Weight	3 kg	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 40 / 25 / 90 N	
Height/width/depth	256 / 262 / 116 mm	



XPoI Panel 806–960 65° 12.5dBi

Type No.	739 620	
Frequency range	806–960	
	806 – 880 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°
Gain	2 x 12 dBi	2 x 12.5 dBi
Half-power beam width Copolar +45°/–45°	Horizontal: 68° Vertical: 29°	Horizontal: 65° Vertical: 27°
Front-to-back ratio, copolar	> 30 dB	
Isolation	> 30 dB	
VSWR	< 1.5	
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)	
Max. power per input	500 W (at 50 °C ambient temperature)	
Input	2 x 7-16 female	
Connector position	Bottom or top	
Weight	6 kg	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 110 / 60 / 240 N	
Height/width/depth	656 / 262 / 116 mm	



Panel Dual Polarization Half-power Beam Width

790–960

X

65°

KATHREIN
Antennen · Electronic

800/900
XPol

XPol Panel 790–960 65° 15dBi 0°T

Type No.	800 10202		
Frequency range	790–960		
	790 – 862 MHz	824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 14.5 dBi	2 x 14.7 dBi	2 x 15 dBi
Horizontal Pattern:			
Half-power beam width	69°	68°	65°
Front-to-back ratio (180°±30°)	> 23 dB	> 24 dB	> 25 dB
Cross polar ratio Maindirection 0° Sector ±60°	> 20 dB > 11 dB	> 20 dB > 11 dB	> 20 dB > 11 dB
Vertical Pattern:			
Half-power beam width	14.7°	14.3°	13.2°
Sidelobe suppression for first sidelobe above horizon	> 14 dB	> 15 dB	> 14 dB
Impedance	50 Ω		
Isolation	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom		
Weight	6.5 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 220 / 140 / 490 N		
Height/width/depth	1294 / 259 / 99 mm		



XPol Panel 806–960 65° 15dBi 6°T

Type No.	800 10207		
Frequency range	806–960		
	806 – 866 MHz	824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 14.5 dBi	2 x 14.7 dBi	2 x 15 dBi
Half-power beam width Copolar +45°/–45°	Horizontal: 66° Vertical: 16°	Horizontal: 65° Vertical: 15.7°	Horizontal: 63° Vertical: 14.6°
Electrical tilt	6°, fixed	6°, fixed	6°, fixed
Sidelobe suppression for: first sidelobe above horizon sector 0°–30° above horizon	> 13 dB > 13 dB	> 14 dB > 14 dB	> 16 dB > 14 dB
Front-to-back ratio, copolar	> 30 dB	> 30 dB	> 30 dB
Isolation	> 30 dB	> 30 dB	> 30 dB
Cross polar ratio Maindirection 0° Sector ±60°	Typically: > 20 dB Typically: > 10 dB	Typically: > 20 dB Typically: > 10 dB	Typically: > 20 dB Typically: > 10 dB
VSWR	< 1.3	< 1.3	< 1.3
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom		
weight	7.5 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 220 / 140 / 490 N		
Height/width/depth	1294 / 259 / 99 mm		



Panel

Dual Polarization

Half-power Beam Width

790–960

X

65°

KATHREIN

Antennen · Electronic

XPol Panel 806–960 65° 15dBi 0°–14°T

Type No.	800 10303		
Frequency range	806 – 866 MHz	806–960 824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Average gain (dBi)	14.5 ... 14.5 ... 14.2	14.7 ... 14.7 ... 14.5	15 ... 15.1 ... 14.8
Tilt	0° ... 7° ... 14°	0° ... 7° ... 14°	0° ... 7° ... 14°
Horizontal Pattern:			
Half-power beam width	69°	67°	65°
Front-to-back ratio, copolar	> 25 dB	> 25 dB	> 25 dB
Cross polar ratio			
Maindirection 0°	Typically: 25 dB	Typically: 25 dB	Typically: 25 dB
Sector ±60°	> 10 dB	> 10 dB	> 10 dB
Vertical Pattern:			
Half-power beam width	16°	15.5°	15°
Electrical tilt	0°–14°, continuously adjustable		
Sidelobe suppression for first sidelobe above horizon	0° ... 7° ... 14° T 14 ... 14 ... 13 dB	0° ... 7° ... 14° T 15 ... 15 ... 14 dB	0° ... 7° ... 14° T 15 ... 15 ... 15 dB
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	400 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom		
Adjustment mechanism	1x, Position bottom, continuously adjustable		
Weight	10 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 220 / 140 / 490 N		
Height/width/depth	1294 / 259 / 99 mm		



XPol Panel 790–960 65° 17dBi 0°T

Type No.	800 10203		
Frequency range	790 – 862 MHz	790–960 824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 16.4 dBi	2 x 16.6 dBi	2 x 16.9 dBi
Horizontal Pattern:			
Half-power beam width	69°	67°	65°
Front-to-back ratio (180°±30°)	> 25 dB	> 25 dB	> 25 dB
Cross polar ratio			
Maindirection 0°	> 22 dB	> 22 dB	> 22 dB
Sector ±30°	> 18 dB	> 18 dB	> 18 dB
Sector ±60°	> 14 dB	> 14 dB	> 14 dB
Vertical Pattern:			
Half-power beam width	9.9°	9.5°	8.9°
Sidelobe suppression for first sidelobe above horizon	> 13 dB	> 15 dB	> 15 dB
VSWR	< 1.5	< 1.5	< 1.4
Isolation	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Rearside		
Weight	9.2 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 340 / 220 / 750 N		
Height/width/depth	1934 / 259 / 99 mm		



Panel Dual Polarization Half-power Beam Width

790–960

X

65°

KATHREIN
Antennen · Electronic

800/900
XPol

XPol Panel 806–960 65° 17dBi 6°T

Type No.	800 10294		
Frequency range	806–960		
	806 – 866 MHz	824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 16.5 dBi	2 x 16.7 dBi	2 x 17 dBi
Half-power beam width Copolar +45°/–45°	Horizontal: 68° Vertical: 10.2°	Horizontal: 66° Vertical: 10°	Horizontal: 64° Vertical: 9.3°
Electrical tilt	6°, fixed	6°, fixed	6°, fixed
Sidelobe suppression for: first sidelobe above horizon sector 0°–30° above horizon	> 14 dB > 14 dB	> 15 dB > 14 dB	> 15 dB > 14 dB
Front-to-back ratio, copolar	> 30 dB	> 30 dB	> 30 dB
Isolation	> 30 dB	> 30 dB	> 30 dB
Cross polar ratio Maindirection 0° Sector ±60°	Typ. > 20 dB Typ. > 10 dB	Typ. > 20 dB Typ. > 10 dB	Typ. > 20 dB Typ. > 10 dB
Impedance	50 Ω	50 Ω	50 Ω
VSWR	< 1.4	< 1.3	< 1.3
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Rearside		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 340 / 220 / 750 N		
Height/width/depth	1934 / 259 / 99 mm		



XPol Panel 790–960 65° 16.5dBi 0°–10°T

Type No.	800 10634		
Frequency range	790–960		
	790 – 862 MHz	824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain (dBi)	16.2 ... 16.4 ... 16.2	16.3 ... 16.6 ... 16.3	16.6 ... 16.8 ... 16.6
Tilt	0° ... 5° ... 10°	0° ... 5° ... 10°	0° ... 5° ... 10°
Horizontal Pattern:			
Half-power beam width	69°	68°	65°
Front-to-back ratio (180°±30°)	> 24 dB	> 25 dB	> 25 dB
Cross polar ratio Maindirection 0° Sector ±60°	Typically: 20 dB > 10 dB	Typically: 20 dB > 10 dB	Typically: 20 dB > 10 dB
Vertical Pattern:			
Half-power beam width	9.9°	9.8°	9.5°
Electrical tilt	0°–10°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam:	0° ... 5° ... 10° T 18 ... 17 ... 17 dB	0° ... 5° ... 10° T 18 ... 18 ... 17 dB	0° ... 5° ... 10° T 18 ... 18 ... 17 dB
Isolation, between ports	> 30 dB		
VSWR	< 1.5		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	400 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Rearside		
Adjustment mechanism	1x, Position bottom continuously adjustable		
Weight	10.5 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 340 / 220 / 750 N		
Height/width/depth	1934 / 259 / 99 mm		



Panel

Dual Polarization

Half-power Beam Width

790–960

X

65°

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XPol Panel 806–960 65° 18dBi 0°T

Type No.	800 10204		
Frequency range	806 – 866 MHz	824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 17.4 dBi	2 x 17.6 dBi	2 x 17.8 dBi
Horizontal Pattern:			
Half-power beam width	68°	66°	64°
Front-to-back ratio (180°±30°)	> 25 dB	> 25 dB	> 25 dB
Cross polar ratio			
Maindirection 0°	> 18 dB	> 19 dB	> 20 dB
Sector ±30°	> 16 dB	> 16 dB	> 17 dB
Sector ±60°	> 10 dB	> 10 dB	> 11 dB
Vertical Pattern:			
Half-power beam width	8.5°	8.3°	7.8°
Sidelobe suppression for: first sidelobe above horizon sector 0°–30° above horizon	> 15 dB > 15 dB	> 15 dB > 15 dB	> 15 dB > 14 dB
VSWR	< 1.5	< 1.4	< 1.4
Isolation	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Rearside		
Weight	10.9 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 400 / 260 / 890 N		
Height/width/depth	2254 / 259 / 99 mm		



XPol Panel 790–960 65° 17.5dBi 0°–8°T

Type No.	800 10305		
Frequency range	790 – 862 MHz	824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Average gain (dBi)	16.8 ... 17 ... 16.7	16.9 ... 17.1 ... 16.9	17.2 ... 17.4 ... 17.1
Tilt	0° ... 4° ... 8°	0° ... 4° ... 8°	0° ... 4° ... 8°
Horizontal Pattern:			
Half-power beam width	69°	67°	65°
Front-to-back ratio, copolar	> 25 dB	> 25 dB	> 25 dB
Cross polar ratio			
Maindirection 0°	Typically: 25 dB	Typically: 25 dB	Typically: 25 dB
Sector ±60°	Typically: > 10 dB	Typically: > 10 dB	Typically: > 10 dB
Vertical Pattern:			
Half-power beam width	9.1°	8.8°	8.5°
Electrical tilt	0°–8°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 2° ... 4° ... 8° T 18 ... 18 ... 18 ... 16 dB	0° ... 2° ... 4° ... 8° T 18 ... 18 ... 18 ... 16 dB	0° ... 2° ... 4° ... 8° T 20 ... 18 ... 17 ... 15 dB
Impedance	50 Ω		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Rearside, pointing downwards		
Adjustment mechanism	1x, Position bottom, continuously adjustable		
Weight	12,6 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 400 / 260 / 890 N		
Height/width/depth	2254 / 259 / 99 mm		



Panel Dual Polarization Half-power Beam Width

790–960

X

65°

KATHREIN
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XPol

XPol Panel 790–960 65° 18dBi 0°T

Type No.	800 10215		
Frequency range	790 – 866 MHz	790–960 824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 17.7 dBi	2 x 17.9 dBi	2 x 18 dBi
Horizontal Pattern:			
Half-power beam width	69°	67°	65°
Front-to-back ratio (180°±30°)	> 25 dB	> 25 dB	> 25 dB
Cross polar ratio	0° > 25 dB	> 25 dB	> 25 dB
Sector	±60° > 12 dB	> 12 dB	> 12 dB
Vertical Pattern:			
Half-power beam width	7.4°	7.2°	6.8°
Sidelobe suppression for first sidelobe above main beam	≥ 14 dB	≥ 15 dB	≥ 15 dB
Null-fill	Typically: –25 dB		
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Rearside		
Weight	12 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 460 / 300 / 1020 N		
Height/width/depth	2574 / 259 / 99 mm		

XPol Panel 790–960 65° 18dBi 6°T

Type No.	800 10208		
Frequency range	790 – 866 MHz	790–960 824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 17.7 dBi	2 x 17.9 dBi	2 x 18 dBi
Horizontal Pattern:			
Half-power beam width	69°	67°	65°
Front-to-back ratio (180°±30°)	> 25 dB	> 25 dB	> 25 dB
Cross polar ratio	0° > 25 dB	> 25 dB	> 25 dB
Sector	±60° > 10 dB	> 10 dB	> 10 dB
Vertical Pattern:			
Half-power beam width	7.4°	7.2°	6.8°
Electrical tilt	6°, fixed		
Sidelobe suppression for first sidelobe above main beam	≥ 16 dB	≥ 17 dB	≥ 17 dB
Null-fill	Typically: –25 dB		
VSWR	< 1.4		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Rearside		
Weight	12 kg		
Wind load (at 150 km/h)	Frontal / lateral rearside: 460 / 300 / 1020 N		
Height/width/depth	2574 / 259 / 99 mm		

Panel

Dual Polarization

Half-power Beam Width

790–960

X

65°

KATHREIN

Antennen · Electronic

XPol Panel 790–960 65° 18dBi 9°T

Type No.	800 10214		
Frequency range	790 – 862 MHz	790–960 824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 17.6 dBi	2 x 17.8 dBi	2 x 18 dBi
Horizontal Pattern:			
Half-power beam width	69°	67°	65°
Front-to-back ratio (180°±30°)	> 25 dB	> 25 dB	> 25 dB
Cross polar ratio Sector 0° ±60°	> 25 dB > 10 dB	> 25 dB > 10 dB	> 25 dB > 10 dB
Vertical Pattern:			
Half-power beam width	7.4°	7.2°	6.8°
Electrical tilt	9°, fixed		
Sidelobe suppression for first sidelobe above main beam	≥ 13 dB	≥ 15 dB	≥ 16 dB
Null-fill	Typically: –25 dB		
VSWR	< 1.4		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Rearside		
Weight	12 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 460 / 300 / 1020 N		
Height/width/depth	2574 / 259 / 99 mm		

XPol Panel 790–960 65° 17.5dBi 0°–10°T

Type No.	800 10306		
Frequency range	790 – 862 MHz	790–960 824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Average gain (dBi)	17.0 ... 17.1 ... 17.0	17.1 ... 17.2 ... 17.1	17.3 ... 17.4 ... 17.3
Tilt	0.5° ... 5° ... 9.5°	0.5° ... 5° ... 9.5°	0.5° ... 5° ... 9.5°
Horizontal Pattern:			
Half-power beam width	68°	66°	65°
Front-to-back ratio (180°±30°)	> 24 dB	> 25 dB	> 25 dB
Cross polar ratio Sector 0° ±60°	Typically: 23 dB Typically: > 10 dB	Typically: 23 dB Typically: > 10 dB	Typically: 25 dB Typically: > 10 dB
Vertical Pattern:			
Half-power beam width	7.7°	7.5°	7.3°
Electrical tilt	0.5°–9.5°, continuously adjustable		
Sidelobe suppression – for first sidelobe above main beam	0.5° ... 5° ... 9.5° T ≥ 17 ... 14 ... 14 dB	0.5° ... 5° ... 9.5° T ≥ 18 ... 15 ... 15 dB	0.5° ... 5° ... 9.5° T ≥ 20 ... 18 ... 18 dB
Null-fill at 0° tilt	Typically: –25 dB		
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –153 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom		
Adjustment mechanism	1x, Position bottom continuously adjustable		
Weight	14 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 460 / 300 / 1020 N		
Height/width/depth	2574 / 259 / 99 mm		

**Panel
Dual Polarization
Half-power Beam Width**

790–960

X

65°

KATHREIN
Antennen · Electronic

800/900
XPol

XPol Panel 790–960 65° 18dBi 0°–10°T

Type No.	800 10307		
Frequency range	790 – 862 MHz	790–960 824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Average gain (dBi)	17.4 ... 17.5 ... 17.4	17.5 ... 17.6 ... 17.5	17.7 ... 17.9 ... 17.7
Tilt	0.5° ... 5° ... 9.5°	0.5° ... 5° ... 9.5°	0.5° ... 5° ... 9.5°
Horizontal Pattern:			
Half-power beam width	68°	67°	65°
Front-to-back ratio (180°±30°)	> 24 dB	> 25 dB	> 25 dB
Cross polar ratio Sector	0° Typically: 22 dB ±60° Typically: > 10 dB	Typically: 23 dB Typically: > 10 dB	Typically: 25 dB Typically: > 10 dB
Vertical Pattern:			
Half-power beam width	7.7°	7.5°	7.3°
Electrical tilt	0.5°–9.5°, continuously adjustable		
Sidelobe suppression – for first sidelobe above main beam	0.5° ... 5° ... 9.5° T ≥ 18 ... 15 ... 15 dB	0.5° ... 5° ... 9.5° T ≥ 18 ... 15 ... 15 dB	0.5° ... 5° ... 9.5° T ≥ 18 ... 16 ... 15 dB
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Rearside		
Adjustment mechanism	1x, Position bottom continuously adjustable		
Weight	13 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 460 / 300 / 1020 N		
Height/width/depth	2574 / 259 / 99 mm		



Panel

Dual Polarization

Half-power Beam Width

790–960

X

85°

KATHREIN

Antennen · Electronic

XPol Panel 790–960 85° 13.5dBi 0°–14°T

Type No.	800 10308		
Frequency range	790–960		
	790 – 862 MHz	824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Average gain (dBi)	13.2 ... 13.3 ... 13.2 dBi	13.3 ... 13.4 ... 13.3 dBi	13.4 ... 13.5 ... 13.4 dBi°
Tilt	0° ... 7° ... 14°	0° ... 7° ... 14°	0° ... 7° ... 14°
Horizontal Pattern:			
Half-power beam width	86°	85°	83°
Front-to-back ratio (180° ±0°)	> 24 dB	> 24 dB	> 26 dB
Front-to-back ratio (180° ±30°)	> 20 dB	> 22 dB	> 24 dB
Cross polar ratio Sector 0° ±60°	Typically: 20 dB > 10 dB	Typically: 20 dB > 10 dB	Typically: 20 dB > 10 dB
Vertical Pattern:			
Half-power beam width	16°	15.5°	15°
Electrical tilt	0°–14°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 7° ... 14° T ≥ 17 ... 16 ... 15 dB	0° ... 7° ... 14° T ≥ 17 ... 17 ... 16 dB	0° ... 7° ... 14° T ≥ 17 ... 16 ... 16 dB
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom		
Adjustment mechanism	1x, Position bottom continuously adjustable		
Weight	9 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 220 / 140 / 490 N		
Height/width/depth	1294 / 259 / 99 mm		



XPol Panel 790–960 85° 15dBi 0°–10°T

Type No.	800 10309		
Frequency range	790–960		
	790 – 862 MHz	824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Average gain	14.8 ... 15.0 ... 14.8 dBi	14.9 ... 15.1 ... 14.9 dBi	15.0 ... 15.2 ... 15.0 dBi°
Tilt	0° ... 5° ... 10°	0° ... 5° ... 10°	0° ... 5° ... 10°
Horizontal Pattern:			
Half-power beam width	85°	85°	83°
Front-to-back ratio (180° ±0°)	> 24 dB	> 25 dB	> 26 dB
Front-to-back ratio (180° ±30°)	> 21 dB	> 23 dB	> 24 dB
Cross polar ratio Sector 0° ±60°	Typically: 20 dB > 10 dB	Typically: 20 dB > 10 dB	Typically: 20 dB > 10 dB
Vertical Pattern:			
Half-power beam width	10.5°	10.2°	10°
Electrical tilt	0°–10°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 5° ... 10° T ≥ 18 ... 15 ... 14 dB	0° ... 5° ... 10° T ≥ 18 ... 17 ... 16 dB	0° ... 5° ... 10° T ≥ 18 ... 16 ... 15 dB
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Rearside		
Adjustment mechanism	1x, Position bottom continuously adjustable		
Weight	10.5 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 340 / 220 / 750 N		
Height/width/depth	1934 / 259 / 99 mm		



Panel Dual Polarization Half-power Beam Width

790–960

X

85°

KATHREIN

Antennen · Electronic

XPol Panel 790–960 85° 17dBi 0°T

Type No.	800 10217		
Frequency range	790 – 862 MHz	790–960 824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	16.2 dBi	16.5 dBi	16.8 dBi
Horizontal Pattern:			
Half-power beam width	86°	85°	83°
Front-to-back ratio (180° ±0°)	> 25 dB	> 25 dB	> 25 dB
Front-to-back ratio (180° ±30°)	> 23 dB	> 24 dB	> 24 dB
Cross polar ratio Sector 0°	> 20 dB	> 20 dB	> 20 dB
±60°	> 15 dB	> 15 dB	> 13 dB
Vertical Pattern:			
Half-power beam width	7.5°	7.3°	7.0°
Sidelobe suppression for first sidelobe above main beam	16 dB	17 dB	16 dB
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Rearside		
Weight	12 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 460 / 300 / 1020 N		
Height/width/depth	2574 / 259 / 99 mm		

XPol Panel 790–960 85° 17dBi 6°T

Type No.	800 10218		
Frequency range	790 – 862 MHz	790–960 824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	16.3 dBi	16.5 dBi	16.9 dBi
Horizontal Pattern:			
Half-power beam width	86°	85°	83°
Front-to-back ratio (180° ±0°)	> 24 dB	> 25 dB	> 27 dB
Front-to-back ratio (180° ±30°)	> 22 dB	> 23 dB	> 25 dB
Cross polar ratio Sector 0°	Typically: 20 dB	Typically: 20 dB	Typically: 20 dB
±60°	> 14 dB	> 14 dB	> 12 dB
Vertical Pattern:			
Half-power beam width	7.6°	7.3°	7.0°
Electrical tilt	6°, fixed		
Sidelobe suppression for first sidelobe above main beam	17 dB	16 dB	16 dB
VSWR	< 1.4		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Rearside		
Weight	12 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 460 / 300 / 1020 N		
Height/width/depth	2574 / 259 / 99 mm		

Panel Dual Polarization Half-power Beam Width

790–960

X

85°

KATHREIN
Antennen · Electronic

XPol Panel 790–960 85° 16dBi 0°–10°T

Type No.	800 10310		
Frequency range	790–960		
	790 – 862 MHz	824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Average gain (dBi)	15.8 ... 15.6 ... 15.4 dBi	16.0 ... 15.9 ... 15.8 dBi	16.2 ... 16.2 ... 16.2 dBi°
Tilt	0.5° ... 5° ... 9.5°	0.5° ... 5° ... 9.5°	0.5° ... 5° ... 9.5°
Horizontal Pattern:			
Half-power beam width	86°	85°	83°
Front-to-back ratio (180° ±0°)	> 24 dB	> 24 dB	> 26 dB
Front-to-back ratio (180° ±30°)	> 20 dB	> 22 dB	> 24 dB
Cross polar ratio Sector	Typically: 20 dB 0° ±60° > 10 dB	Typically: 20 dB > 10 dB	Typically: 20 dB > 10 dB
Vertical Pattern:			
Half-power beam width	8.1°	7.9°	7.6°
Electrical tilt	0.5°–9.5°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0.5° ... 5° ... 9.5° T ≥ 18 ... 14 ... 14 dB	0.5° ... 5° ... 9.5° T ≥ 18 ... 17 ... 16 dB	0.5° ... 5° ... 9.5° T ≥ 17 ... 16 ... 16 dB
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –153 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom		
Adjustment mechanism	1x, Position bottom continuously adjustable		
Weight	14 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 460 / 300 / 1020 N		
Height/width/depth	2574 / 259 / 99 mm		

XPol Panel 790–960 85° 16.5dBi 0°–10°T

Type No.	800 10300		
Frequency range	790–960		
	790 – 862 MHz	824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Average gain (dBi)	16.2 ... 16.2 ... 15.8 dBi	16.3 ... 16.3 ... 16.1 dBi	16.5 ... 16.6 ... 16.5 dBi°
Tilt	0.5° ... 5° ... 9.5°	0.5° ... 5° ... 9.5°	0.5° ... 5° ... 9.5°
Horizontal Pattern:			
Half-power beam width	85°	85°	83°
Front-to-back ratio (180° ±0°)	> 24 dB	> 25 dB	> 26 dB
Front-to-back ratio (180° ±30°)	> 21 dB	> 23 dB	> 24 dB
Cross polar ratio Sector	Typically: 20 dB 0° ±60° > 10 dB	Typically: 20 dB > 10 dB	Typically: 20 dB > 10 dB
Vertical Pattern:			
Half-power beam width	8°	7.8°	7.6°
Electrical tilt	0.5°–9.5°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0.5° ... 5° ... 9.5° T ≥ 18 ... 15 ... 14 dB	0.5° ... 5° ... 9.5° T ≥ 18 ... 17 ... 16 dB	0.5° ... 5° ... 9.5° T ≥ 18 ... 16 ... 15 dB
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Rearside		
Adjustment mechanism	1x, Position bottom continuously adjustable		
Weight	14 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 460 / 300 / 1020 N		
Height/width/depth	2574 / 259 / 99 mm		

Summary – Directional Antennas 2-Broad-band 800/900

Dual Polarization +45°/-45°

Type					Type No.	Height [mm]	Connector position	Page
XXPol Panel	824-960	60°	16dBi	0°-10°T	800 10516	2024	rearside	32
	824-960	60°	16dBi	0°-10°T				
XXPol Panel	824-960	65°	17dBi	0°-8°T	800 10517	2631	rearside	33
	824-960	65°	17dBi	0°-8°T				
XXPol Panel	790-960	65°	17.5dBi	0°-8°T	800 10647	2254	rearside	34
	790-960	65°	17.5dBi	0°-8°T				
XXPol Panel	824-960	88°	17dBi	0°-8°T	800 10518	2631	rearside	35
	824-960	88°	17dBi	0°-8°T				

New or changed product

*When deploying
2-Broad-band Antennas,
please also consider using
special Hybrid Combiners
(see page 260)*

2-Multi-band Panel

Dual Polarization

Half-power Beam Width

824-960

824-960

X

X

60°

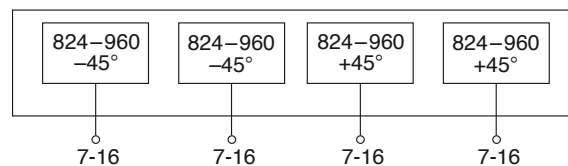
60°

KATHREIN

Antennen · Electronic

XXPol Panel 824-960/824-960 60°/60° 16/16dBi 0°-10°/0°-10°T

Type No.	800 10516	
Frequency range	824-960	
	824 - 894 MHz	880 - 960 MHz
Polarization	+45°, -45°; +45°, -45°	+45°, -45°; +45°, -45°
Gain at 0° Tilt	4 x 15.5 dBi	4 x 15.7 dBi
Horizontal Pattern:		
Half-power beam width	60°	58°
Front-to-back ratio	> 25 dB	> 25 dB
Cross polar ratio Sector	Typically: 15 dB > 10 dB	Typically: 16 dB > 10 dB
Vertical Pattern:		
Half-power beam width	9.8°	9.3°
Electrical tilt	0°-10°, continuously adjustable	
Sidelobe suppression for first sidelobe above main beam	0° ... 5° ... 10° T ≥ 14 ... 15 ... 15 dB	0° ... 5° ... 10° T ≥ 14 ... 15 ... 15 dB
VSWR	< 1.5	
Isolation, between ports	Typically: > 25 dB	Typically: > 28 dB
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)	
Max. power per input	500 W (at 50 °C ambient temperature)	
Input	4 x 7-16 female	
Connector position	Rearside, pointing downwards	
Adjustment mechanism	2x, Position bottom continuously adjustable	
Weight	23 kg	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 900 / 410 / 1050 N	
Height/width/depth	2024 / 374 / 169 mm	



2-Multi-band Panel

Dual Polarization

Half-power Beam Width

824-960

824-960

X

X

65°

65°

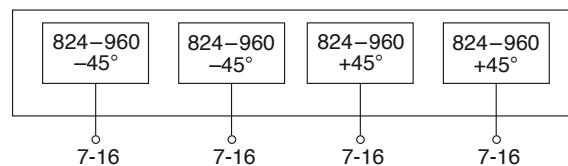
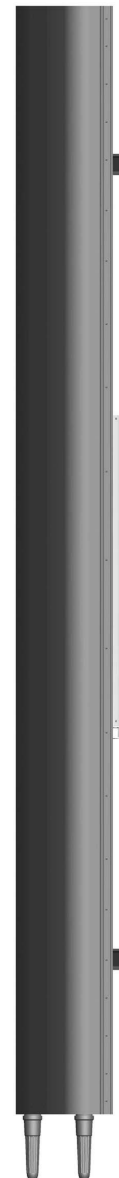
KATHREIN

Antennen · Electronic

800/900
XXPol

XXPol Panel 824-960/824-960 65°/65° 17/17dBi 0°-8°/0°-8°T

Type No.	800 10517	
Frequency range	824-960	
	824 - 894 MHz	880 - 960 MHz
Polarization	+45°, -45°; +45°, -45°	+45°, -45°; +45°, -45°
Gain at 0° Tilt	4 x 16.5 dBi	4 x 16.7 dBi
Horizontal Pattern:		
Half-power beam width	66°	61°
Front-to-back ratio	> 25 dB	> 25 dB
Cross polar ratio Sector	0° Typically: 16 dB ±60° > 8 dB	Typically: 17 dB > 10 dB
Vertical Pattern:		
Half-power beam width	7.2°	6.8°
Electrical tilt	0°-8°, continuously adjustable	
Sidelobe suppression for first sidelobe above main beam	0° ... 4° ... 8° T ≥ 15 ... 15 ... 15 dB	0° ... 4° ... 8° T ≥ 15 ... 16 ... 15 dB
VSWR	< 1.5	
Isolation, between ports	Typically: > 25 dB	> 28 dB
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)	
Max. power per input	500 W (at 50 °C ambient temperature)	
Input	4 x 7-16 female	
Connector position	Rearside, pointing downwards	
Adjustment mechanism	2x, Position bottom continuously adjustable	
Weight	28 kg	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 1150 / 500 / 1300 N	
Height/width/depth	2631 / 374 / 169 mm	



2-Multi-band Panel

Dual Polarization

Half-power Beam Width

790–960

790–960

X

X

65°

65°

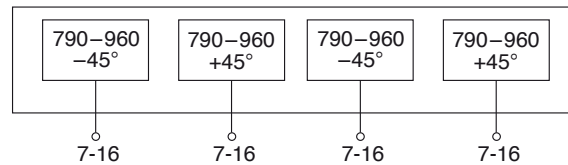
KATHREIN

Antennen · Electronic

800/900
XXPol

XXPol Panel 790–960/790–960 65°/65° 17.5/17.5dBi 0°–8°/0°–8°T

Type No.	800 10647		
Frequency range	790–960		
	790 – 862 MHz	824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Average gain (dBi)	16.9 ... 17.1 ... 17.0	17.0 ... 17.2 ... 17.1	17.3 ... 17.4 ... 17.1
Tilt	0° ... 4° ... 8°	0° ... 4° ... 8°	0° ... 4° ... 8°
Horizontal Pattern:			
Half-power beam width	66°	65°	64°
Front-to-back ratio, copolar	> 25 dB	> 25 dB	> 25 dB
Cross polar ratio			
Maindirection	Typically: 25 dB	Typically: 25 dB	Typically: 25 dB
Sector	Typically: > 10 dB	Typically: > 10 dB	Typically: > 10 dB
Vertical Pattern:			
Half-power beam width	9.1°	9.0°	8.5°
Electrical tilt	0°–8°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 3° ... 6° ... 8° T 18 ... 18 ... 16 ... 15 dB	0° ... 3° ... 6° ... 8° T 18 ... 18 ... 16 ... 15 dB	0° ... 3° ... 6° ... 8° T 18 ... 18 ... 16 ... 15 dB
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	400 W (at 50 °C ambient temperature)		
Input	4 x 7-16 female		
Connector position	Rearside		
Adjustment mechanism	2x, Position bottom continuously adjustable		
Weight	24 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 1800 / 220 / 2000 N		
Height/width/depth	2254 / 576 / 99 mm		



2-Multi-band Panel Dual Polarization Half-power Beam Width

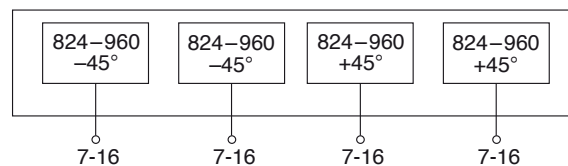
824-960	824-960
X	X
88°	88°

KATHREIN
Antennen · Electronic

800900
XXPol

XXPol Panel 824-960/824-960 88°/88° 17/17dBi 0°-8°/0°-8°T

Type No.	800 10518	
Frequency range	824-960 824 - 894 MHz 880 - 960 MHz	
Polarization	+45°, -45°; +45°, -45°	+45°, -45°; +45°, -45°
Gain at 0° Tilt	4 x 16.5 dBi	4 x 17 dBi
Horizontal Pattern:		
Half-power beam width	88°	85°
Front-to-back ratio	> 25 dB	> 25 dB
Cross polar ratio Sector	0° Typically: 15 dB ±60° > 10 dB	Typically: 15 dB > 10 dB
Vertical Pattern:		
Half-power beam width	7.2°	6.8°
Electrical tilt	0°-8°, continuously adjustable	
Sidelobe suppression for first sidelobe above main beam	0° ... 4° ... 8° T ≥ 15 ... 15 ... 15 dB	0° ... 4° ... 8° T ≥ 16 ... 16 ... 15 dB
VSWR	< 1.5	
Isolation, between ports	Typically: > 25 dB	> 28 dB
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)	
Max. power per input	500 W (at 50 °C ambient temperature)	
Input	4 x 7-16 female	
Connector position	Rearside, pointing downwards	
Adjustment mechanism	2x, Position bottom continuously adjustable	
Weight	28 kg	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 1150 / 500 / 1300 N	
Height/width/depth	2631 / 374 / 169 mm	



Summary – Directional Antennas Vertical Polarization 800/900

Vertical Polarization – 800/900

Type	Type No.	Height [mm]	Connector position	Page				
VPol Panel	870–960	20°	16.5dBi	0°T	735 727	492	bottom	38
Dual Yagi	870–960 1710–2170	C 30° 23°	16.5dBi 19.5dBi	0°T 0°T	800 10658	1100	rearside	81
VPol LogPer	790–960	51°	12dBi	0°T	K 73 22 67	300	bottom	39
VPol Panel	860–960	65°	9dBi	0°T	730 677	264	bottom or top	40
VPol Panel	806–960	65°	15.5dBi	0°T	730 368	1294	bottom	40
VPol Panel	806–960	65°	15.5dBi	6°T	732 691	1294	bottom	41
VPol Panel	806–960	65°	17dBi	0°T	730 691	1934	rearside	41
VPol Panel	870–960	65°	17dBi	9°T	737 547	1934	rearside	42
VPol Panel	806–960	65°	18.5dBi	0°T	730 376	2574	rearside	42
VPol Panel	870–960	65°	18.5dBi	6°T	732 689	2574	rearside	43
VPol Panel	872–960	90°	7.5dBi	0°T	736 854	262	bottom or top	44
VPol Panel	806–960	90°	17dBi	0°T	730 378	2574	rearside	44
VPol Panel	870–960	120°	16dBi	0°T	730 382	2574	rearside	45

Additional versions on request

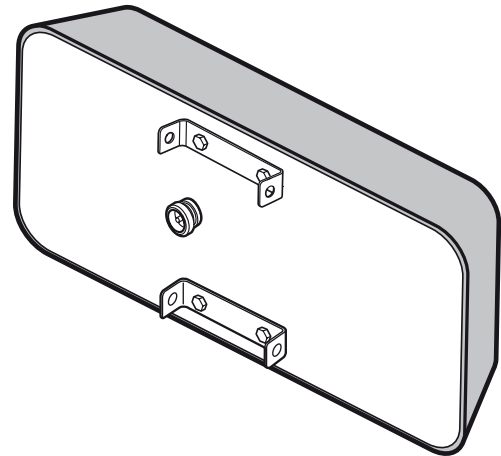
New or changed product

Panel
Vertical Polarization
Half-power Beam Width

870–960
V
20°

VPoI Panel 870–960 20° 16.5dBi

Type No.	735 727
Input	7-16 female
Frequency range	870 – 960 MHz
VSWR	< 1.3
Gain	16.5 dBi
Polarization	Vertical
Front-to-back ratio	> 24 dB
Half-power Beam Width	H-plane: 20°/ E-plane: 33°
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)
Max. power	500 W (at 50 °C ambient temperature)
Weight	10 kg
Wind load	Frontal: 500 N (at 150 km/h) Lateral: 110 N (at 150 km/h) Rearside: 715 N (at 150 km/h)
Height/width/depth	492 / 992 / 190 mm



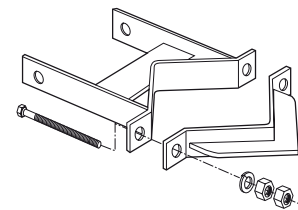
Material: Radiator: Aluminum.
 Reflector screen: Weather-proof aluminum.
 Radome: Fiberglass, colour: White.
 All screws and nuts: Stainless steel.

Ice protection: Due to the very sturdy antenna construction and the protection of the radiating system by the radome, the antenna remains operational even under icy conditions.

Grounding: All metal parts of the antenna as well as the inner conductor are DC grounded.

Accessories (order separately)

Type No.	Description	Remarks
K 61 14 02	2 clamps	Mast: 60 – 115 mm diameter
K 61 14 03	2 clamps	Mast: 115 – 210 mm diameter
K 61 14 04	2 clamps	Mast: 210 – 380 mm diameter
K 61 14 05	2 clamps	Mast: 380 – 521 mm diameter



K 61 14 03

**Logarithmic periodic
Vertical Polarization
Half-power Beam Width**

790–960

V

51°

VPol LogPer 790–960 51° 12dBi

Type No.	K 73 22 67
Input	7-16 female
Frequency range	790 – 960 MHz
VSWR	< 1.4
Gain	12 dBi
Polarization	Vertical
Side-lobe suppression	> 25 dB
Front-to-back ratio	> 30 dB
Half-power Beam Width	Horizontal: 51°/ Vertical: 45°
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)
Max. power	500 W (at 50 °C ambient temperature)
Weight	6.3 kg
Wind load	Frontal: 20 N (at 150 km/h) Lateral: 260 N (at 150 km/h) Rearside: 30 N (at 150 km/h)
Height/width/depth	300 / 155 / 785 mm



800/900
VPol

- Material:** Radiator: Weather-proof aluminum.
Reflector screen: Weather-proof aluminum.
Radome: Fiberglass, colour: Grey.
All screws and nuts: Stainless steel.
- Mounting:** The antenna can be mounted on tubular mast with a diameter of 30 – 70 mm with supplied clamps.
- Ice protection:** Due to the very sturdy antenna construction and the protection of the radiating system by the radome, the antenna remains operational even under icy conditions.
- Grounding:** All metal parts of the antenna as well as the inner conductor are DC grounded.

Panel
Vertical Polarization
Half-power Beam Width

806–960

V

65°

KATHREIN
 Antennen · Electronic

VPol Panel 860–960 65° 9dBi

Type No.	730 677
Frequency range	860 – 960 MHz
Polarization	Vertical
Gain	9 dBi
Half-power beam width	H-plane: 65° E-plane: 70°
Front-to-back ratio	> 25 dB (890 – 960 MHz) > 20 dB (860 – 890 MHz)
VSWR	< 1.3
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)
Max. power	350 W (at 50 °C ambient temperature)
Input	N female
Connector position	Bottom or top
Weight	1.2 kg
Wind load (at 150 km/h)	Frontal / lateral / rearside: 40 / 25 / 90 N
Height/width/depth	264 / 258 / 103 mm



VPol Panel 806–960 65° 15.5dBi

Type No.	730 368		
Frequency range	806 – 866 MHz	806–960 824 – 894 MHz	880 – 960 MHz
Polarization	Vertical		
Gain	15.0 dBi	15.2 dBi	15.5 dBi
Horizontal Pattern:			
Half-power beam width	68°	67°	65°
Front-to-back ratio (180°±30°)	> 25 dB	> 25 dB	> 25 dB
Vertical Pattern:			
Half-power beam width	14°	13.5°	13°
VSWR	< 1.5		
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	7-16 female		
Connector position	Bottom		
Weight	6 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 220 / 140 / 490 N		
Height/width/depth	1294 / 259 / 99 mm		



Panel
Vertical Polarization
Half-power Beam Width

806–960

V

65°

KATHREIN
 Antennen · Electronic

VPol Panel 806–960 65° 15.5dBi 6°T

Type No.	732 691
Frequency range	806 – 960 MHz
Polarization	Vertical
Gain	15.5 dBi
Half-power beam width	H-plane: 65° E-plane: 13°
Electrical downtilt	6°, fixed
Front-to-back ratio	> 25 dB
VSWR	< 1.3
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)
Max. power	500 W (at 50 °C ambient temperature)
Input	7-16 female
Connector position	Bottom
Weight	6 kg
Wind load (at 150 km/h)	Frontal / lateral / rearside: 220 / 140 / 490 N
Height/width/depth	1294 / 258 / 103 mm



806/960
VPol

VPol Panel 806–960 65° 17dBi

Type No.	730 691		
Frequency range	806 – 866 MHz	806–960 824 – 894 MHz	880 – 960 MHz
Polarization	Vertical		
Gain	16.4 dBi	16.7 dBi	17.0 dBi
Horizontal Pattern:			
Half-power beam width	68°	67°	65°
Front-to-back ratio (180°±30°)	> 25 dB	> 25 dB	> 25 dB
Vertical Pattern:			
Half-power beam width	9.5°	9.3°	8.5°
VSWR	< 1.5		
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	7-16 female		
Connector position	Rearside		
Weight	9 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 340 / 220 / 750 N		
Height/width/depth	1934 / 259 / 99 mm		



Panel
Vertical Polarization
Half-power Beam Width

806–960

V

65°

KATHREIN
 Antennen · Electronic

VPol Panel 870–960 65° 17dBi 9°T

Type No.	737 547
Frequency range	870 – 960 MHz
Polarization	Vertical
Gain	17 dBi
Half-power beam width	H-plane: 65° E-plane: 8.5°
Electrical downtilt	9°, fixed
Front-to-back ratio	> 25 dB
VSWR	< 1.3
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)
Max. power	500 W (at 50 °C ambient temperature)
Input	7-16 female
Connector position	Rearside
Weight	9 kg
Wind load (at 150 km/h)	Frontal / lateral / rearside: 340 / 220 / 750 N
Height/width/depth	1934 / 258 / 103 mm



VPol Panel 806–960 65° 18.5dBi

Type No.	730 376		
Frequency range	806 – 866 MHz	824 – 894 MHz	880 – 960 MHz
Polarization	Vertical		
Gain	17.9 dBi	18.1 dBi	18.5 dBi
Horizontal Pattern:			
Half-power beam width	68°	67°	65°
Front-to-back ratio (180°±30°)	> 25 dB	> 25 dB	> 25 dB
Vertical Pattern:			
Half-power beam width	7.4°	7.2°	6.8°
Sidelobe suppression for first sidelobe above horizon	> 17 dB	> 17 dB	> 18 dB
VSWR	< 1.5		
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W (at 50 °C ambient temperature)		
Input	7-16 female		
Connector position	Rearside		
Weight	12 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 460 / 300 / 1020 N		
Height/width/depth	2574 / 259 / 99 mm		



Panel
Vertical Polarization
Half-power Beam Width

870–960

V

65°

KATHREIN
 Antennen · Electronic

VPol Panel 870–960 65° 18.5dBi 6°T

Type No.	732 689
Frequency range	870 – 960 MHz
Polarization	Vertical
Gain	18.5 dBi
Half-power beam width	H-plane: 65° E-plane: 6.5°
Electrical downtilt	6°, fixed
Front-to-back ratio	> 25 dB
VSWR	< 1.3
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)
Max. power	500 W (at 50 °C ambient temperature)
Input	7-16 female
Connector position	Rearside
Weight	12 kg
Wind load (at 150 km/h)	Frontal / lateral / rearside: 460 / 300 / 1020 N
Height/width/depth	2574 / 258 / 103 mm



800/900
VPol

Panel
Vertical Polarization
Half-power Beam Width

870–960

V

90°

KATHREIN
 Antennen · Electronic

VPol Panel 872–960 90° 7.5dBi

Type No.	736 854
Frequency range	872 – 960 MHz
Polarization	Vertical
Gain	7.5 dBi
Half-power beam width	H-plane: 90° E-plane: 70°
Front-to-back ratio	> 20 dB
VSWR	< 1.5
Intermodulation IM3	< -140 dBc (2 x 43 dBm carrier)
Max. power	350 W (at 50 °C ambient temperature)
Input	N female
Connector position	Bottom or top
Weight	1.5 kg
Wind load (at 150 km/h)	Frontal / lateral / rearside: 45 / 20 / 60 N
Height/width/depth	262 / 155 / 49 mm



VPol Panel 806–960 90° 17dBi

Type No.	730 378
Frequency range	806 – 960 MHz
Polarization	Vertical
Gain	17 dBi
Half-power beam width	H-plane: 90° E-plane: 6.8°
Front-to-back ratio	> 22 dB
VSWR	< 1.5
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)
Max. power	500 W (at 50 °C ambient temperature)
Input	7-16 female
Connector position	Rearside
Weight	10.6 kg
Wind load (at 150 km/h)	Frontal / lateral / rearside: 460 / 300 / 1020 N
Height/width/depth	2574 / 259 / 99 mm



800/900
VPol

Panel
Vertical Polarization
Half-power Beam Width

870–960

V

90°

KATHREIN
 Antennen · Electronic

VPol Panel 870–960 120° 16dBi

Type No.	730 382
Frequency range	870 – 960 MHz
Polarization	Vertical
Gain	16 dBi
Half-power beam width	H-plane: 120° E-plane: 6.5°
Front-to-back ratio	> 20 dB
VSWR	< 1.3
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)
Max. power	500 W (at 50 °C ambient temperature)
Input	7-16 female
Connector position	Rearside
Weight	12 kg
Wind load (at 150 km/h)	Frontal / lateral / rearside: 460 / 300 / 1020 N
Height/width/depth	2574 / 258 / 103 mm



800/900
VPol

Summary – Directional Antennas

Dual Polarization +45°/–45°

1800/1900/2000/2500

Dual Polarization +45°/–45°

Type	Type No.	Height [mm]	Connector position	Page
XPol Panel 1710–2170 33° 20dBi 0°–12°T	800 10251	1032	bottom	48
XPol Panel 1710–2170 33° 21dBi 0°–8°T	742 351	1304	bottom	48
XPol Panel 1710–1880 33° 22dBi 2°T	741 623	1942	bottom	49
XPol Panel 1710–2170 45° 19.5dBi 0°–8°T	742 218	1306	bottom	50
XPol Panel 1710–2180 45° 21.5dBi 0°–6°T	742 219	1946	bottom	50
XPol Panel 1710–2170 65° 9dBi 0°T	742 210	155	bottom or top	51
XPol Panel 1710–2170 65° 12dBi 2°T	739 489	342	bottom	51
XPol Panel 1710–2170 65° 16dBi 0°T	742 196	735	bottom or top	52
XPol Panel 1710–2200 65° 15.5dBi 6°T	800 10424	735	bottom	52
XPol Panel 1710–2200 65° 15.5dBi 0°–12°T	800 10247	735	bottom	53
XPol Panel 1710–2690 65° 15.5dBi 0°–10°T	800 10681	724	bottom	116
XPol Panel 1710–2200 65° 18.3dBi 0°T	800 10425	1302	bottom	53
XPol Panel 1710–2200 65° 18.3dBi 2°T	800 10426	1302	bottom	54
XPol Panel 1710–2200 65° 18dBi 6°T	800 10428	1302	bottom	54
XPol Panel 1710–2200 65° 18dBi 0°–10°T	742 215	1314	bottom	55
XPol Panel 1710–2200 65° 18dBi 2°–10°T ESLS	800 10614	1314	bottom	55
XPol Panel 1710–2200 65° 18dBi 0°–15°T ESLS	800 10504	1374	bottom	56
XPol Panel 1710–2690 65° 17.5dBi 2°T	800 10471	1302	bottom	118
XPol Panel 1710–2690 65° 18dBi 0°–12°T ESLS	800 10621	1398	bottom	119
XPol Panel 1710–2170 65° 19.5dBi 0°–6°T	742 213	1942	bottom	57
XPol Panel 1710–2200 65° 19dBi 0°–10°T ESLS	800 10505	1984	bottom	58
XPol Panel 1710–2200 62° 19dBi 0°–8°T HE	800 10636	1404	bottom	59
XPol Panel 1710–2170 65° 20.5dBi 0°T	742 186	2160	bottom	59
XPol Panel 1710–2200 65° 21dBi 0°T HE	800 10439	2172	bottom or top	60
XPol Panel 1710–2200 62° 21.2dBi 0°–6°T HE	800 10378	2520	bottom	60
XPol Panel 1710–2170 88° 11.5dBi 0°T	741 984	342	bottom or top	61
XPol Panel 1710–2170 88° 14dBi 0°–10°T	741 988	662	bottom	61
XPol Panel 1710–2200 88° 17dBi 0°–8°T	741 989	1302	bottom	62
XPol Panel 1710–1880 90° 17.5dBi 2°T	739 710	1902	bottom	62
XPol Panel 1710–2170 88° 18dBi 0°–6°T	741 990	1942	bottom	63

New or changed product

Abbreviations:

ESLS: Enhanced Side Lobe Suppression (above or below horizon)

HE: High Efficiency (Antennas with high gain compared to length)

Summary – Directional Antennas

Dual Polarization +45°/–45°

1800/1900/2000/2500

Antennas with Dual-Beam

Type	Type No.	Height [mm]	Connector position	Page
XXPol Panel 1710–2200 45° (–30°) 19.5dBi 0°–10°T	800 10606	1314	bottom	64
1710–2200 45° (+30°) 19.5dBi 0°–10°T				

Antennas with integrated RET

XPol Panel IRT 1710–2200 65° 18dBi 0°–10°T	800 10314	1302	bottom	65
XPol Panel IRT 1710–2200 65° 18dBi 0°–10°T	800 10618	1302	bottom	65
XPol Panel IRT+ISB 1710–2200 65° 18dBi 0°–10°T	800 10414	1358	bottom	66
XPol Panel IRT+ISB IA 12dB 1920–2170 65° 17.5dBi 0°–15°T	800 10519	1336	bottom	67

Tri-Sector Pipe Antenna

XPol Tri-Sector Pipe 1710–2170 65° 15.5dBi 0°–12°T	800 10375	1241	bottom	68
XPol Tri-Sector Pipe 1710–2170 65° 18dBi 0°–10°T	800 10360	1823	bottom	69
XPol Tri-Sector Pipe 1710–2170 65° 18dBi 0°–10°T	800 10270	2296	bottom	70
XPol Tri-Sector Pipe 1710–2170 65° 19.5dBi 0°–6°T	800 10271	2460	bottom	71
Flexible Sealing Frame	850 10010			72

New or changed product

Abbreviations:

IRT: Integrated Remote Tilt Unit

ISB: Integrated Smart Bias-T

IA: Integrated Amplifier

Multi-band Panel Dual Polarization Half-power Beam Width

1710–2170

X

33°

KATHREIN
Antennen · Electronic

XPol Panel 1710–2170 33° 20dBi 0°–12°T

Type No.	800 10251		
Frequency range	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 19.2 dBi	2 x 19.5 dBi	2 x 19.8 dBi
Horizontal Pattern:			
Half-power beam width	36°	35°	33°
Front-to-back ratio, copolar (180° ± 30°)	> 30 dB	> 30 dB	> 30 dB
Cross polar ratio Maindirection 0° Sector ±30°	Typically: 25 dB > 10 dB	Typically: 25 dB > 10 dB	Typically: 25 dB > 10 dB
Sidelobe suppression	> 18 dB	> 17 dB	> 15 dB
Vertical Pattern:			
Half-power beam width	9.2°	9°	8.5°
Electrical tilt	0°–12°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 6° ... 12° T 15 ... 17 ... 17 dB	0° ... 6° ... 12° T 15 ... 17 ... 17 dB	0° ... 6° ... 12° T 15 ... 17 ... 17 dB
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	300 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom		
Adjustment mechanism	1x, Position bottom, continuously adjustable		
Weight	11.5 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 460 / 90 / 460 N		
Height/width/depth	1032 / 299 / 69 mm		



XPol Panel 1710–2170 33° 21dBi 0°–8°T

Type No.	742 351		
Frequency range	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 20.2 dBi	2 x 20.5 dBi	2 x 20.7 dBi
Horizontal Pattern:			
Half-power beam width	36°	35°	33°
Front-to-back ratio, copolar	> 30 dB	> 30 dB	> 30 dB
Cross polar ratio Maindirection 0° Sector ±30°	Typically: 20 dB > 10 dB	Typically: 20 dB > 10 dB	Typically: 20 dB > 10 dB
Sidelobe suppression	> 14 dB	> 14 dB	> 14 dB
Vertical Pattern:			
Half-power beam width	7.4°	7.0°	6.7°
Electrical tilt	0°–8°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 4° ... 8° T 18 ... 17 ... 16 dB	0° ... 4° ... 8° T 18 ... 18 ... 17 dB	0° ... 4° ... 8° T 18 ... 17 ... 16 dB
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	300 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom		
Adjustment mechanism	1x, Position bottom, continuously adjustable		
Weight	13.5 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 570 / 110 / 570 N		
Height/width/depth	1304 / 299 / 69 mm		



Panel
Dual Polarization
Half-power Beam Width

1710–1880

X

33°

KATHREIN
 Antennen · Electronic

XPol Panel 1710–1880 33° 22dBi 2°T

Type No.	741 623	
Frequency range	1710 – 1880 MHz	
Polarization	+45°, -45°	
Gain	2 x 22 dBi	
Half-power beam width Copolar	+45° Horizontal: 33° Vertical: 5°	-45° Horizontal: 33° Vertical: 5°
Electrical tilt	2°, fixed	
Sidelobe suppression	above horizon for first sidelobe better or equal 14 dB below maximum gain	
Front-to-back ratio, copolar	> 30 dB	
Isolation	> 30 dB	
VSWR	< 1.5	
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)	
Max. power per input	200 W (at 50 °C ambient temperature)	
Input	2 x 7-16 female	
Connector position	Bottom	
Weight	11 kg	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 540 / 210 / 770 N	
Height/width/depth	1942 / 262 / 59 mm	



1800/1900/2000/2500
 XPol

Multi-band Panel Dual Polarization Half-power Beam Width

1710–2180

X

45°

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XPol Panel 1710–2170 45° 19.5dBi 0°–8°T

Type No.	742 218		
Frequency range	1710–2170		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 19 dBi	2 x 19.5 dBi	2 x 19.6 dBi
Horizontal Pattern:			
Half-power beam width	47°	45°	44°
Front-to-back ratio (180° ± 30°)	Copolar: > 27 dB Total power: > 25 dB	Copolar: > 30 dB Total power: > 25 dB	Copolar: > 27 dB Total power: > 25 dB
Cross polar ratio Maindirection 0° Sector ±30°	Typically: 18 dB > 13 dB	Typically: 18 dB > 13 dB	Typically: 18 dB > 13 dB
Sidelobe suppression	> 18 dB	> 18 dB	> 18 dB
Vertical Pattern:			
Half-power beam width	7.3°	7°	6.7°
Electrical tilt	0°–8°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 2° ... 5° ... 8° T 17 ... 17 ... 15 ... 15 dB	0° ... 2° ... 5° ... 8° T 18 ... 18 ... 17 ... 17 dB	0° ... 2° ... 5° ... 8° T 18 ... 18 ... 15 ... 15 dB
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	300 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom		
Adjustment mechanism	1x, Position bottom, continuously adjustable		
Weight	10.2 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 250 / 110 / 390 N		
Height/width/depth	1306 / 199 / 69 mm		



XPol Panel 1710–2180 45° 21.5dBi 0°–6°T

Type No.	742 219		
Frequency range	1710–2180		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2180 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Average gain (dBi)	20.5 ... 20.6 ... 20.3	20.9 ... 21.1 ... 20.9	21 ... 21.4 ... 21
Tilt	0° ... 3° ... 6°	0° ... 3° ... 6°	0° ... 3° ... 6°
Horizontal Pattern:			
Half-power beam width	48°	45°	44°
Front-to-back ratio (180°±30°)	Copolar: > 28 dB Total power: > 25 dB	Copolar: > 27 dB Total power: > 25 dB	Copolar: > 25 dB Total power: > 25 dB
Cross polar ratio Maindirection 0° Sector ±30°	Typically: 19 dB > 13 dB	Typically: 18 dB > 13 dB	Typically: 17 dB > 13 dB
Sidelobe suppression	> 18 dB	> 18 dB	> 18 dB
Vertical Pattern:			
Half-power beam width	4.7°	4.5°	4.4°
Electrical tilt	0°–6°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 2° ... 4° ... 6° T 18 ... 18 ... 16 ... 16 dB	0° ... 2° ... 4° ... 6° T 18 ... 18 ... 17 ... 16 dB	0° ... 2° ... 4° ... 6° T 18 ... 18 ... 17 ... 16 dB
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	300 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom		
Adjustment mechanism	1x, Position bottom, continuously adjustable		
Weight	14 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 390 / 180 / 590 N		
Height/width/depth	1946 / 199 / 69 mm		



Multi-band Panel Dual Polarization Half-power Beam Width

1710–2170

X

65°

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Antennen · Electronic

XPoI Panel 1710–2170 65° 9dBi 0°T

Type No.	742 210		
Frequency range	1710–2170		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 8.5 dBi	2 x 8.6 dBi	2 x 8.7 dBi
Horizontal Pattern:			
Half-power beam width	70°	68°	65°
Front-to-back ratio, copolar	> 25 dB	> 30 dB	> 30 dB
Cross polar ratio			
Maindirection	Typically: 25 dB	Typically: 25 dB	Typically: 25 dB
Sector	0° ±60° > 10 dB	> 10 dB	> 10 dB
Vertical Pattern:			
Half-power beam width	65°	65°	63°
Electrical tilt	0°, fixed	0°, fixed	0°, fixed
VSWR	< 1.4		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	150 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom or top		
Weight	1.5 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 47 / 12 / 55 N		
Height/width/depth	155 / 155 / 69 mm		



1800/1900/2000/2500
XPoI

XPoI Panel 1710–2170 65° 12dBi 2°T

Type No.	739 489		
Frequency range	1710–2170		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 11.5 dBi	2 x 12 dBi	2 x 12 dBi
Horizontal Pattern:			
Half-power beam width	67°	65°	63°
Front-to-back ratio, copolar	> 30 dB	> 30 dB	> 27 dB
Cross polar ratio			
Maindirection	Typically: 25 dB	Typically: 25 dB	Typically: 25 dB
Sector	0° ±60° > 10 dB	> 10 dB	> 10 dB
Vertical Pattern:			
Half-power beam width	32°	30°	28°
Electrical tilt	3°, fixed	2°, fixed	0°, fixed
VSWR	< 1.4		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	150 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom		
Weight	2 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 95 / 24 / 110 N		
Height/width/depth	342 / 155 / 69 mm		



Multi-band Panel Dual Polarization Half-power Beam Width

1710–2200

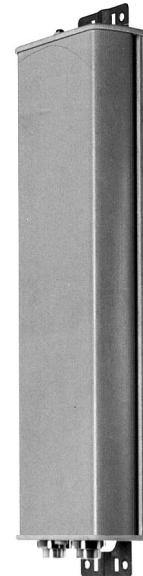
X

65°

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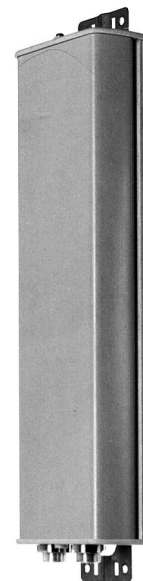
XPol Panel 1710–2170 65° 16dBi 0°T

Type No.	742 196		
Frequency range	1710–2170		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 15.3 dBi	2 x 15.6 dBi	2 x 15.8 dBi
Horizontal Pattern:			
Half-power beam width	67°	66°	64°
Front-to-back ratio (180° ± 30°)	Copolar: > 30 dB Total power: > 25 dB	Copolar: > 30 dB Total power: > 25 dB	Copolar: > 30 dB Total power: > 25 dB
Cross polar ratio Maindirection Sector	0° ±60° Typically: 25 dB > 10 dB	Typically: 25 dB > 10 dB	Typically: 25 dB > 10 dB
Vertical Pattern:			
Half-power beam width	12.6°	11.8°	11°
Sidelobe suppression for first sidelobe above horizon	> 14 dB	> 16 dB	> 14 dB
VSWR	< 1.4		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	300 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom or top		
Weight	4.5 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 190 / 55 / 220 N		
Height/width/depth	735 / 155 / 69 mm		



XPol Panel 1710–2200 65° 15.5dBi 6°T

Type No.	800 10424		
Frequency range	1710–2200		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2200 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 15.2 dBi	2 x 15.5 dBi	2 x 15.7 dBi
Horizontal Pattern:			
Half-power beam width	66°	66°	64°
Front-to-back ratio, copolar	> 30 dB	> 30 dB	> 30 dB
Cross polar ratio Sector	0° ±60° Typically: 19 dB > 10 dB	Typically: 18 dB > 10 dB	Typically: 18 dB > 10 dB
Vertical Pattern:			
Half-power beam width	13.1°	12.2°	11.1°
Electrical tilt	6°, fixed	6°, fixed	6°, fixed
Sidelobe suppression for first sidelobe above main beam	> 15 dB	> 18 dB	> 18 dB
First null-fill below main beam	Typically: 25 dB	Typically: 25 dB	Typically: 25 dB
VSWR	< 1.3		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	250 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom		
Weight	3.7 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 190 / 55 / 220 N		
Height/width/depth	735 / 155 / 69 mm		



Multi-band Panel Dual Polarization Half-power Beam Width

1710–2200

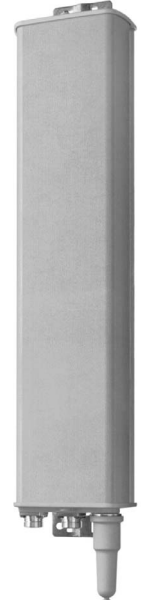
X

65°

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XPol Panel 1710–2200 65° 15.5dBi 0°–12°T

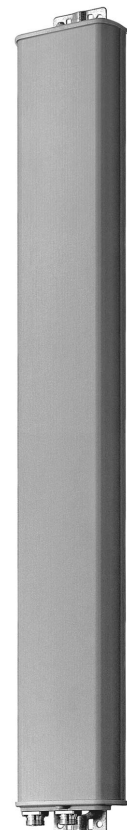
Type No.	800 10247		
Frequency range	1710–2200		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2200 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain per input	0° ... 4° ... 8° ... 12° T 15.5 ... 15.4 ... 15.3 ... 15.1 dBi	0° ... 4° ... 8° ... 12° T 15.6 ... 15.5 ... 15.4 ... 15 dBi	0° ... 4° ... 8° ... 12° T 15.8 ... 15.7 ... 15.5 ... 14.9 dBi
Horizontal Pattern:			
Half-power beam width	67°	66°	64°
Front-to-back ratio	Copolar: > 27 dB	Copolar: > 27 dB	Copolar: > 27 dB
Cross polar ratio			
Maindirection	Typically: 20 dB	Typically: 20 dB	Typically: 20 dB
Sector	> 10 dB	> 10 dB	> 10 dB
Vertical Pattern:			
Half-power beam width	12.9°	12.3°	11.5°
Electrical tilt	0°–12°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 4° ... 8° ... 12° T > 14 ... 14 ... 14 ... 14 dB	0° ... 4° ... 8° ... 12° T > 14 ... 14 ... 14 ... 14 dB	0° ... 4° ... 8° ... 12° T > 14 ... 14 ... 14 ... 14 dB
Isolation, between ports	> 30 dB		
VSWR	< 1.4		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	300 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom		
Adjustment mechanism	1x, Position bottom, continuously adjustable		
Weight	4.5 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 200 / 65 / 240 N		
Height/width/depth	735 / 155 / 69 mm		



1800/1900/2000/2500
XPol

XPol Panel 1710–2200 65° 18.3dBi 0°T

Type No.	800 10425		
Frequency range	1710–2200		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2200 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 17.9 dBi	2 x 18.1 dBi	2 x 18.3 dBi
Horizontal Pattern:			
Half-power beam width	67°	66°	64°
Front-to-back ratio, copolar	> 30 dB	> 30 dB	> 30 dB
Cross polar ratio			
Maindirection	Typically: 20 dB	Typically: 20 dB	Typically: 20 dB
Sector	> 10 dB	> 10 dB	> 10 dB
Vertical Pattern:			
Half-power beam width	6.6°	6.2°	5.8°
Electrical tilt	0°, fixed	0°, fixed	0°, fixed
Sidelobe suppression for first sidelobe above main beam	> 14 dB	> 15 dB	> 16 dB
First null-fill below main beam	Typically: 25 dB	Typically: 25 dB	Typically: 25 dB
VSWR	< 1.4		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	300 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom		
Weight	6.6 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 350 / 100 / 410 N		
Height/width/depth	1302 / 155 / 69 mm		



Multi-band Panel Dual Polarization Half-power Beam Width

1710–2200

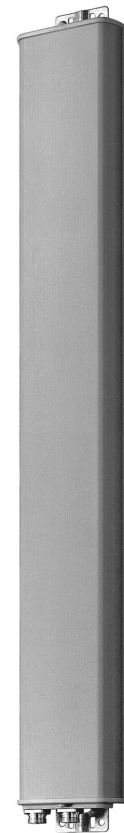
X

65°

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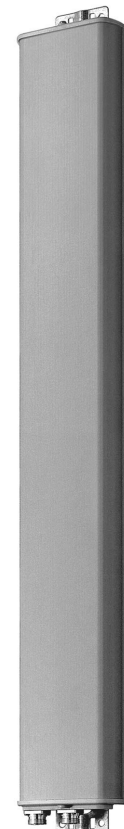
XPoL Panel 1710–2200 65° 18.3dBi 2°T

Type No.	800 10426		
Frequency range	1710–2200		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2200 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 17.9 dBi	2 x 18.1 dBi	2 x 18.3 dBi
Horizontal Pattern:			
Half-power beam width	66°	65°	63°
Front-to-back ratio, copolar	> 28 dB	> 30 dB	> 33 dB
Cross polar ratio Sector 0° ±60°	Typically: 20 dB > 10 dB	Typically: 20 dB > 10 dB	Typically: 20 dB > 10 dB
Vertical Pattern:			
Half-power beam width	6.6°	6.2°	5.8°
Electrical tilt	2°, fixed	2°, fixed	2°, fixed
Sidelobe suppression for first sidelobe above main beam	> 14 dB	> 15 dB	> 15 dB
First null-fill below main beam	Typically: 25 dB	Typically: 25 dB	Typically: 25 dB
VSWR	< 1.4		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	300 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom		
Weight	6.6 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 350 / 100 / 410 N		
Height/width/depth	1302 / 155 / 69 mm		



XPoL Panel 1710–2200 65° 18dBi 6°T

Type No.	800 10428		
Frequency range	1710–2200		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2200 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 17.7 dBi	2 x 17.9 dBi	2 x 18.1 dBi
Horizontal Pattern:			
Half-power beam width	67°	65°	63°
Front-to-back ratio, copolar	> 27 dB	> 33 dB	> 33 dB
Cross polar ratio Sector 0° ±60°	Typically: 25 dB > 10 dB	Typically: 25 dB > 10 dB	Typically: 25 dB > 10 dB
Vertical Pattern:			
Half-power beam width	6.7°	6.3°	5.8°
Electrical tilt	6°, fixed	6°, fixed	6°, fixed
Sidelobe suppression for first sidelobe above main beam	> 14 dB	> 14 dB	> 15 dB
First null-fill below main beam	Typically: 25 dB	Typically: 25 dB	Typically: 25 dB
VSWR	< 1.3		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	300 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom		
Weight	6.6 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 350 / 100 / 410 N		
Height/width/depth	1302 / 155 / 69 mm		



Multi-band Panel Dual Polarization Half-power Beam Width

1710–2200

X

65°

KATHREIN
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XPol Panel 1710–2200 65° 18dBi 0°–10°T

Type No.	742 215		
Frequency range	1710–2200		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2200 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 17.7 dBi	2 x 17.9 dBi	2 x 18 dBi
Horizontal Pattern:			
Half-power beam width	67°	66°	65°
Front-to-back ratio (180° ± 30°)	Copolar: > 30 dB Total power: > 25 dB	Copolar: > 30 dB Total power: > 25 dB	Copolar: > 30 dB Total power: > 25 dB
Cross polar ratio Maindirection 0° Sector ±60°	Typically: 25 dB > 10 dB	Typically: 25 dB > 10 dB	Typically: 25 dB > 10 dB
Vertical Pattern:			
Half-power beam width	7.1°	6.8°	6.4°
Electrical tilt	0°–10°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 4° ... 8° ... 10° T 18 ... 18 ... 17 ... 17 dB	0° ... 4° ... 8° ... 10° T 18 ... 18 ... 17 ... 17 dB	0° ... 4° ... 8° ... 10° T 18 ... 18 ... 17 ... 17 dB
Isolation, between ports	> 30 dB		
VSWR	< 1.5		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	300 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom		
Adjustment mechanism	1x, Position bottom, continuously adjustable		
Weight	6.2 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 350 / 90 / 350 N		
Height/width/depth	1314 / 155 / 70 mm		



1800/1900/2000/2500
XPol

XPol Panel 1710–2200 65° 18dBi 2°–10°T ESLS

Type No.	800 10614		
Frequency range	1710–2200		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2200 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain at 0° tilt	2 x 17.3 dBi	2 x 17.7 dBi	2 x 18 dBi
Horizontal Pattern:			
Half-power beam width	66°	64°	62°
Front-to-back ratio (180° ± 30°)	≥ 25 dB	≥ 25 dB	≥ 25 dB
Cross polar ratio Sector 0° ±60°	25 dB ≥ 10 dB	25 dB ≥ 10 dB	25 dB ≥ 10 dB
Vertical Pattern:			
Half-power beam width	7.9°	7.5°	7.2°
Electrical tilt	2°–10°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	> 15 dB	> 17 dB	> 18 dB
Sidelobe suppression in the sector 40°–180° below horizon for Tx-Frequencies	> 23 dB	> 24 dB	> 25 dB
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	300 W (at 50 °C ambient temperature)		
Input	2x 7-16 female		
Connector position	Bottom		
Adjustment mechanism	1x, Position bottom continuously adjustable		
Weight	6.9 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 350 / 90 / 350 N		
Height/width/depth	1314 / 155 / 70 mm		



Multi-band Panel Dual Polarization Half-power Beam Width

1710–2200

X

65°

KATHREIN

Antennen · Electronic

XPol Panel 1710–2200 65° 18dBi 0°–15°T ESLS

Type No.	800 10504			
Frequency range	1710–2200			
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz	2000 – 2200 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Gain at 0° tilt	2 x 17.5 dBi	2 x 17.6 dBi	2 x 17.7 dBi	2 x 17.8 dBi
Horizontal Pattern:				
Half-power beam width	68°	66°	64°	62°
Front-to-back ratio (180° ±30°)	≥ 28 dB	≥ 28 dB	≥ 28 dB	≥ 28 dB
Cross polar ratio	22 dB	22 dB	24 dB	26 dB
Sector	0°	±60°	≥ 10 dB	≥ 10 dB
Vertical Pattern:				
Half-power beam width	7.9°	7.5°	7.2°	7.0°
Electrical tilt	0°–15°, continuously adjustable			
Sidelobe suppression	0° ... 5° ... 10° ... 15° T	0° ... 5° ... 10° ... 15° T	0° ... 5° ... 10° ... 15° T	0° ... 5° ... 10° ... 15° T
– for first sidelobe above main beam	≥ 17 ... 20 ... 18 ... 17 dB	≥ 16 ... 20 ... 18 ... 17 dB	≥ 16 ... 20 ... 18 ... 17 dB	≥ 15 ... 20 ... 18 ... 15 dB
– within 0°–20° sector above horizon	≥ 16 ... 18 ... 18 ... 16 dB	≥ 16 ... 18 ... 17 ... 16 dB	≥ 15 ... 18 ... 17 ... 16 dB	≥ 15 ... 16 ... 16 ... 15 dB
Null-fill at 0° tilt	21 dB	20 dB	19 dB	18 dB
VSWR	< 1.5			
Isolation, between ports	> 30 dB			
Intermodulation IM3	< –153 dBc (2 x 43 dBm carrier)			
Max. power per input	300 W (at 50 °C ambient temperature)			
Input	2 x 7-16 female			
Connector position	Bottom			
Adjustment mechanism	1 x, Position bottom, continuously adjustable			
Weight	9 kg			
Wind load (at 150 km/h)	Frontal / lateral / rearside: 370 / 110 / 440 N			
Height/width/depth	1374 / 155 / 69 mm			



Panel
Dual Polarization
Half-power Beam Width

1710–2200

X

65°

KATHREIN
 Antennen · Electronic

XPol Panel 1710–2200 65° 19.5dBi 0°–6°T

Type No.	742 213		
Frequency range	1710–2200		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2200 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 19 dBi	2 x 19.2 dBi	2 x 19.5 dBi
Horizontal Pattern:			
Half-power beam width	67°	65°	63°
Front-to-back ratio (180° ± 30°)	Copolar: > 30 dB Total power: > 25 dB	Copolar: > 30 dB Total power: > 25 dB	Copolar: > 30 dB Total power: > 25 dB
Cross polar ratio			
Main direction	Typically: 25 dB	Typically: 25 dB	Typically: 25 dB
Sector	0° ±60° > 10 dB	> 10 dB	> 10 dB
Vertical Pattern:			
Half-power beam width	4.7°	4.5°	4.3°
Electrical tilt	0°–6°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 2° ... 4° ... 6° T 18 ... 18 ... 16 ... 15 dB	0° ... 2° ... 4° ... 6° T 18 ... 18 ... 17 ... 16 dB	0° ... 2° ... 4° ... 6° T 18 ... 18 ... 18 ... 18 dB
Isolation, between ports	> 30 dB		
VSWR	< 1.5		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	300 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom		
Adjustment mechanism	1x, Position bottom continuously adjustable		
Weight	8.7 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 520 / 140 / 520 N		
Height/width/depth	1954 / 155 / 70 mm		



1800/1900/2000/2500
 XPol

Multi-band Panel Dual Polarization Half-power Beam Width

1710–2200

X

65°

KATHREIN

Antennen · Electronic

XPol Panel 1710–2200 65° 19dBi 0°–10°T ESLS

Type No.	800 10505			
Frequency range	1710–2200			
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz	2000 – 2200 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Average Gain (dBi)	18.5 ... 18.7 ... 18.5 dB	18.7 ... 19.0 ... 18.5 dB	18.7 ... 19.0 ... 18.4 dB	18.7 ... 18.9 ... 18.3 dB
Tilt	0° ... 5° ... 10° T	0° ... 5° ... 10° T	0° ... 5° ... 10° T	0° ... 5° ... 10° T
Horizontal Pattern:				
Half-power beam width	67°	65°	64°	63°
Front-to-back ratio (180° ±30°)	≥ 30 dB	≥ 30 dB	≥ 27 dB	≥ 26 dB
Cross polar ratio Sector 0° ±60°	Typically: 25 dB ≥ 11 dB	Typically: 22 dB ≥ 11 dB	Typically: 22 dB ≥ 11 dB	Typically: 22 dB ≥ 10 dB
Vertical Pattern:				
Half-power beam width	5.0°	4.8°	4.6°	4.4°
Electrical tilt	0°–10°, continuously adjustable			
Sidelobe suppression – for first sidelobe above main beam – within 0°–20° sector above horizon	0° ... 4° ... 8° ... 10° T ≥ 20 ... 20 ... 18 ... 18 dB ≥ 18 ... 18 ... 17 ... 17 dB	0° ... 4° ... 8° ... 10° T ≥ 20 ... 20 ... 18 ... 18 dB ≥ 17 ... 18 ... 17 ... 15 dB	0° ... 4° ... 8° ... 10° T ≥ 19 ... 20 ... 18 ... 18 dB ≥ 17 ... 17 ... 17 ... 15 dB	0° ... 4° ... 8° ... 10° T ≥ 18 ... 20 ... 18 ... 18 dB ≥ 17 ... 17 ... 14 ... 12 dB
VSWR	< 1.5			
Isolation, between ports	> 30 dB			
Intermodulation IM3	< –153 dBc (2 x 43 dBm carrier)			
Max. power per input	300 W (at 50 °C ambient temperature)			
Input	2x 7-16 female			
Connector position	Bottom			
Adjustment mechanism	1x, Position bottom, continuously adjustable			
Weight	11 kg			
Wind load (at 150 km/h)	Frontal / lateral / rearside: 570 / 180 / 660 N			
Height/width/depth	1984 / 155 / 69 mm			



Multi-band Panel Dual Polarization Half-power Beam Width

1710–2200

X

65°

KATHREIN
Antennen · Electronic

XPol Panel 1710–2200 62° 19dBi 0°–8°T

Type No.	800 10636		
Frequency range	1710–2200		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2200 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 18.3 dBi	2 x 18.7 dBi	2 x 19 dBi
Horizontal Pattern:			
Half-power beam width	65°	62°	59°
Front-to-back ratio (180° ± 30°)	> 30 dB	> 30 dB	> 28 dB
Cross polar ratio			
Maindirection	Typically: 25 dB	Typically: 25 dB	Typically: 25 dB
Sector	> 10 dB	> 10 dB	> 10 dB
Vertical Pattern:			
Half-power beam width	6.6°	6.2°	5.9°
Electrical tilt	0°–8°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 4° ... 8° T 18 ... 14 ... 14 dB	0° ... 4° ... 8° T 18 ... 15 ... 15 dB	0° ... 4° ... 8° T 18 ... 15 ... 15 dB
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	300 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom		
Adjustment mechanism	1x, Position bottom continuously adjustable		
Weight	Approx. 7 kg		
Wind load (approx.)	Frontal / lateral / rearside: 350 / 140 / 360 N (at 150 km/h)		
Height/width/depth	1404 / 155 / 70 mm		



1800/1900/2000/2500
XPol

XPol Panel 1710–2170 65° 20.5dBi 0°T

Type No.	742 186		
Frequency range	1710–2170		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	20 dBi	20.2 dBi	20.5 dBi
Horizontal Pattern:			
Half-power beam width	67°	65°	61°
Front-to-back ratio (180° ± 30°)	Copolar: > 30 dB Total power: > 28 dB	Copolar: > 30 dB Total power: > 28 dB	Copolar: > 30 dB Total power: > 27 dB
Cross polar ratio			
Maindirection	Typically: 25 dB	Typically: 25 dB	Typically: 25 dB
Sector	> 14 dB	> 14 dB	> 14 dB
Vertical Pattern:			
Half-power beam width	4°	3.8°	3.5°
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	300 W (at 50 °C ambient temperature)		
Input	7-16 female		
Connector position	Bottom		
Weight	9.5 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 600 / 180 / 710 N		
Height/width/depth	2160 / 155 / 69 mm		



Multi-band Panel Dual Polarization Half-power Beam Width

1710–2200

X

65°

KATHREIN
Antennen · Electronic

XPol Panel 1710–2200 65° 21dBi 0°T

Type No.	800 10439			
Frequency range	1710–2200			
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz	2000 – 2200 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 20.5 dBi	2 x 20.8 dBi	2 x 21.1 dBi	2 x 21.2 dBi
Horizontal Pattern:				
Half-power beam width	66°	63°	60°	58°
Front-to-back ratio (180°±30°)	> 30 dB	> 30 dB	> 30 dB	> 30 dB
Cross polar ratio	0°	23 dB	23 dB	23 dB
Sector	±60°	> 12 dB	> 10 dB	> 10 dB
Vertical Pattern:				
Half-power beam width	4.2°	4°	3.7°	3.5°
Electrical tilt	0°, fixed			
Sidelobe suppression	> 15 dB			
– for first sidelobe above main beam	> 15 dB			
– within 0°–30° sector above horizon	> 15 dB			
First null-fill below main beam	< 20 dB			
VSWR	< 1.5			
Isolation, between ports	> 30 dB			
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)			
Max. power per input	300 W (at 50 °C ambient temperature)			
Input	2 x 7-16 female			
Connector position	Bottom or top			
Weight	11.5 kg			
Wind load (at 150 km/h)	Frontal / lateral / rearside: 230 / 220 / 550 N			
Height/width/depth	2172 / 155 / 89 mm			



XPol Panel 1710–2200 62° 21.2dBi 0°–6°T

Type No.	800 10378		
Frequency range	1710–2200		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2200 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 20.6 dBi	2 x 21.1 dBi	2 x 21.2 dBi
Horizontal Pattern:			
Half-power beam width	65°	62°	60°
Front-to-back ratio (180°± 30°)	> 30 dB	> 28 dB	> 28 dB
Cross polar ratio	0°	23 dB	23 dB
Sector	±60°	> 10 dB	> 10 dB
Vertical Pattern:			
Half-power beam width	3.7°	3.5°	3.3°
Electrical tilt	0°–6°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 4° ... 6° T 18 ... 18 ... 16 dB	0° ... 4° ... 6° T 18 ... 18 ... 17 dB	0° ... 4° ... 6° T 18 ... 18 ... 17 dB
Null-fill at 0° tilt	20 dB	20 dB	20 dB
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	300 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom		
Adjustment mechanism	1x, Position bottom continuously adjustable		
Weight	14 kg		
Wind load (approx.)	Frontal / lateral / rearside: 630 / 250 / 650 N (at 150 km/h)		
Height/width/depth	Approx. 2520 / 155 / 89 mm		



Multi-band Panel Dual Polarization Half-power Beam Width

1710–2170

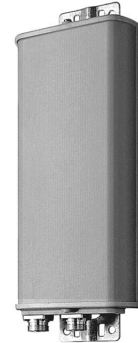
X

88°

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XPol Panel 1710–2170 88° 11.5dBi

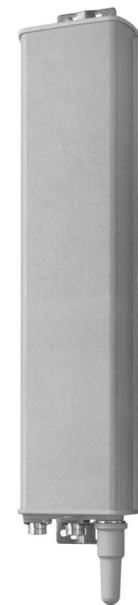
Type No.	741 984		
Frequency range	1710–2170		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 11.3 dBi	2 x 11.5 dBi	2 x 11.6 dBi
Horizontal Pattern:			
Half-power beam width	86°	87°	88°
Front-to-back ratio (180° ± 30°)	Copolar: > 23 dB Total power: > 23 dB	Copolar: > 23 dB Total power: > 23 dB	Copolar: > 23 dB Total power: > 23 dB
Cross polar ratio Maindirection Sector	0° ±60° Typically: 20 dB > 18 dB	Typically: 25 dB > 18 dB	Typically: 20 dB > 15 dB
Vertical Pattern:			
Half-power beam width	28°	26°	26°
Sidelobe suppression vertical sector ±45°	> 20 dB	> 20 dB	> 20 dB
VSWR	< 1.4		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	150 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom or top		
Weight	2 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 95 / 24 / 110 N		
Height/width/depth	342 / 155 / 69 mm		



1800/1900/2000/2500
XPol

XPol Panel 1710–2170 88° 14dBi 0°–10°T

Type No.	741 988		
Frequency range	1710–2170		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 13.7 dBi	2 x 14 dBi	2 x 14.1 dBi
Horizontal Pattern:			
Half-power beam width	88°	88°	88°
Front-to-back ratio, copolar total power	> 25 dB > 25 dB	> 25 dB > 25 dB	> 25 dB > 25 dB
Cross polar ratio Maindirection Sector	0° ±60° Typically: 20 dB > 10 dB	Typically: 20 dB > 10 dB	Typically: 20 dB > 10 dB
Vertical Pattern:			
Half-power beam width	14.7°	14°	13°
Electrical tilt	0°–10°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 4° ... 8° ... 10° T 18 ... 18 ... 18 ... 18 dB	0° ... 4° ... 8° ... 10° T 18 ... 18 ... 18 ... 18 dB	0° ... 4° ... 8° ... 10° T 18 ... 18 ... 18 ... 18 dB
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	300 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom		
Adjustment mechanism	1x, Position bottom, continuously adjustable		
Weight	4.2 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 180 / 55 / 210 N		
Height/width/depth	662 / 155 / 69 mm		



Multi-band Panel Dual Polarization Half-power Beam Width

1710–2200

X

88°

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XPol Panel 1710–2200 88° 17dBi 0°–8°T

Type No.	741 989		
Frequency range	1710–2200		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2200 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 16.5 dBi	2 x 16.8 dBi	2 x 16.7 dBi
Horizontal Pattern:			
Half-power beam width	88°	88°	88°
Front-to-back ratio (180° ± 30°)	Copolar: > 25 dB Total power: > 25 dB	Copolar: > 25 dB Total power: > 25 dB	Copolar: > 24 dB Total power: > 24 dB
Cross polar ratio			
Maindirection	Typically: 20 dB	Typically: 20 dB	Typically: 20 dB
Sector	0° ±60° > 10 dB	> 10 dB	> 10 dB
Vertical Pattern:			
Half-power beam width	7°	6.7°	6.5°
Electrical tilt	0°–8°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 2° ... 5° ... 8° T 18 ... 18 ... 16 ... 14 dB	0° ... 2° ... 5° ... 8° T 20 ... 20 ... 18 ... 17 dB	0° ... 2° ... 5° ... 8° T 18 ... 18 ... 18 ... 17 dB
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	300 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom		
Adjustment mechanism	1x, Position bottom, continuously adjustable		
Weight	7.5 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 360 / 110 / 420 N		
Height/width/depth	1302 / 155 / 69 mm		



XPol Panel 1710–1880 90° 17.5dBi 2°T

Type No.	739 710
Frequency range	1710 – 1880 MHz
Polarization	+45°, –45°
Gain	2 x 17.5 dBi
Half-power beam width	Horizontal: 90°
Copolar +45°/–45°	Vertical: 5°
Electrical tilt	2°, fixed
Sidelobe suppression for first sidelobe above horizon	≥ 14 dB
Front-to-back ratio, copolar	> 25 dB
Isolation, between ports	> 30 dB
VSWR	< 1.4
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)
Max. power per input	200 W (at 50 °C ambient temperature)
Input	2 x 7-16 female
Connector position	Bottom
Weight	9 kg
Wind load (at 150 km/h)	Frontal / lateral / rearside: 530 / 150 / 610 N
Height/width/depth	1902 / 155 / 69 mm



Multi-band Panel Dual Polarization Half-power Beam Width

1710–2170

X

88°

KATHREIN
Antennen · Electronic

XPol Panel 1710–2170 88° 18dBi 0°–6°T

Type No.	741 990		
Frequency range	1710–2170		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 17.7 dBi	2 x 18 dBi	2 x 18.2 dBi
Horizontal Pattern:			
Half-power beam width	88°	88°	88°
Front-to-back ratio, copolar total power	> 25 dB > 25 dB	> 25 dB > 25 dB	> 25 dB > 25 dB
Cross polar ratio			
Main direction	Typically: 20 dB	Typically: 20 dB	Typically: 20 dB
Sector	±60° > 10 dB	> 10 dB	> 10 dB
Vertical Pattern:			
Half-power beam width	4.9°	4.7°	4.5°
Electrical tilt	0°–6°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 2° ... 4° ... 6° T 17 ... 17 ... 17 ... 17 dB	0° ... 2° ... 4° ... 6° T 18 ... 18 ... 18 ... 18 dB	0° ... 2° ... 4° ... 6° T 18 ... 18 ... 18 ... 18 dB
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	300 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom		
Adjustment mechanism	1x, Position bottom, continuously adjustable		
Weight	10.8 kg		
Wind load	Frontal / lateral / rearside: 550 / 160 / 630 N		
Height/width/depth	1942 / 155 / 69 mm		



1800/1900/2000/2500
XPol

Dual-Beam Panel Dual Polarization Half-power Beam Width

1710–2200	1710–2200
X	X
45°	45°

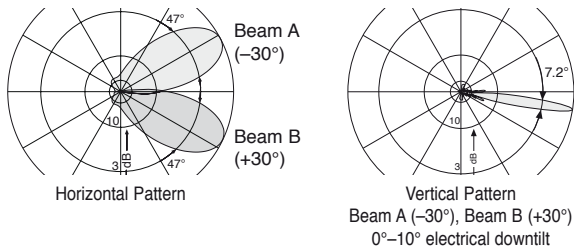
KATHREIN
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XXPol Panel 1710–2200/1710–2200 45°(–30°)/45°(+30°) 19.5/19.5dBi 0°–10°/0°–10°T

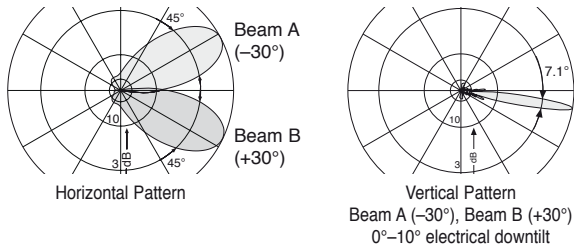
Type No.	800 10606		
Frequency range	1710 – 1880 MHz 1850 – 1990 MHz 1920 – 2200 MHz		
Azimuth direction	Beam A (–30°), Beam B (+30°)		
Polarization	+45°, –45°, +45°, –45°	+45°, –45°, +45°, –45°	+45°, –45°, +45°, –45°
Gain	4 x 19 dBi	4 x 19.3 dBi	4 x 19.5 dBi
Horizontal Pattern:			
Half-power beam width (offset beams ±30°)	47°	45°	43°
Front-to-back ratio	Copolar: > 30 dB Total power: > 25 dB		
Cross polar ratio			
Maindirection –30°; +30° Sector –60°; 0°; 0°; +60°	Typically: 18 dB > 13 dB	Typically: 17 dB > 13 dB	Typically: 16 dB > 13 dB
Sidelobe suppression for sidelobes beside main beam	> 18 dB		
Vertical Pattern:			
Half-power beam width	7.2°	7.1°	6.8°
Electrical tilt	0°–10°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	> 18 dB		
VSWR	< 1.5		
Isolation, between inputs	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	200 W (at 50 °C ambient temperature)		
Input	4 x 7-16 female		
Connector position	Bottom		
Weight	18.5 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 720 / 190 / 830 N		
Height/width/depth	1314 / 380 / 150 mm		



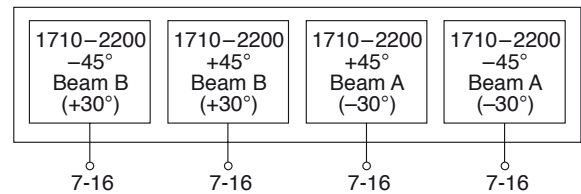
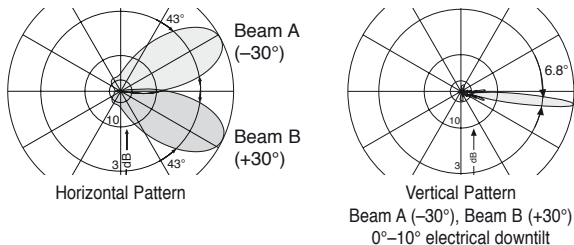
Dual Beam Antenna Patterns: 1710 – 1880 MHz



1850 – 1990 MHz



1920 – 2200 MHz



Multi-band Panel Dual Polarization Half-power Beam Width

1710–2200

X

65°

KATHREIN
Antennen · Electronic

XPol Panel IRT 1710–2200 65° 18dBi 0°–10°T

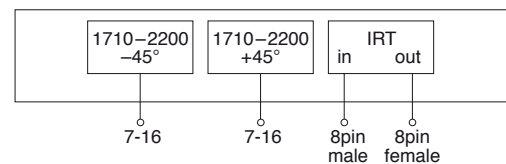


Type No.	800 10314 / 800 10618		
A) Antenna specifications			
Frequency range	1710–2200		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2200 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 17.7 dBi	2 x 17.9 dBi	2 x 18 dBi
Horizontal Pattern:			
Half-power beam width	67°	66°	65°
Front-to-back ratio	Copolar: > 30 dB Total power: > 25 dB	Copolar: > 30 dB Total power: > 25 dB	Copolar: > 30 dB Total power: > 25 dB
Cross polar ratio			
Maindirection	0°		
Sector	±60°	Typically: 25 dB > 10 dB	Typically: 25 dB > 10 dB
Vertical Pattern:			
Half-power beam width	7.1°	6.8°	6.6°
Electrical tilt	0°–10°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 4° ... 8° ... 10° T 16 ... 16 ... 16 ... 16 dB	0° ... 4° ... 8° ... 10° T 17 ... 17 ... 17 ... 17 dB	0° ... 4° ... 8° ... 10° T 17 ... 17 ... 17 ... 17 dB
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	120 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female IRT in: 1 x 8pin male IRT out: 1 x 8pin female		
Connector position	Bottom		
Weight	7.5 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 350 / 100 / 410 N		
Height/width/depth	1302 / 155 / 69 mm		



1800/1900/2000/2500
XPol

B) IRT specifications	800 10314	800 10618
Logical interface ex factory ¹⁾	AISG 1.1	3GPP/AISG 2.0
Protocols	Compliant to AISG 1.1 and 3GPP/AISG 2.0	
Hardware interface ²⁾	2 x 8pin connector acc. IEC 60130-9; according to AISG: – IRT in (male): Control / Daisy chain in – IRT out (female): Daisy chain out	
Power supply	10 ... 30 V	
Power consumption	< 1 W (stand by) < 8.5 W (motor activated)	
Adjustment time (full range)	40 sec.	
Adjustment cycles	> 50,000	



¹⁾ The protocol of the logical interface can be switched from AISG 1.1 to 3GPP/AISG 2.0 and vice versa with a vendor specific command. Start-up operation of the 800 10314 is only possible with a primary station supporting AISG 1.1 and start-up operation of the 800 10618 is only possible with a primary station supporting 3GPP/AISG 2.0!

Please note: The used Primary-SW has to be able to handle also integrated remote tilt units, like Kathrein CCU with firmware 1.29 or higher and the Kathrein PCA with SW 2.0 or higher. If the Primary of the system doesn't support the standard of the 'logical interface ex factory', the IRT must be switched to the appropriate standard of the Primary before installation. Please contact Kathrein for further information.

²⁾ The tightening torque for fixing the connector must be 0.5 – 1.0 Nm ('hand-tightened'). The connector should be tightened by hand only!

Multi-band Panel Dual Polarization Half-power Beam Width

1710–2200

X

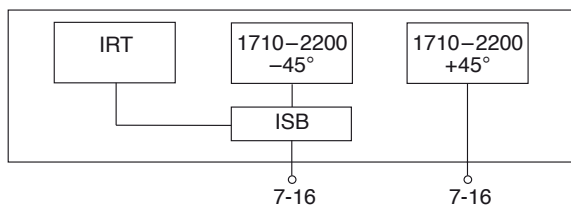
65°

KATHREIN
Antennen · Electronic

XPol Panel IRT+ISB 1710–2200 65° 18dBi 0°–10°T



Type No.	800 10414		
A) Antenna specifications			
Frequency range	1710–2200		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2200 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 17.7 dBi	2 x 17.9 dBi	2 x 18 dBi
Horizontal Pattern:			
Half-power beam width	67°	66°	65°
Front-to-back ratio	Copolar: > 30 dB Total power: > 25 dB	Copolar: > 30 dB Total power: > 25 dB	Copolar: > 30 dB Total power: > 25 dB
Cross polar ratio Maindirection Sector	0° ±60° Typically: 25 dB > 10 dB	Typically: 25 dB > 10 dB	Typically: 25 dB > 10 dB
Vertical Pattern:			
Half-power beam width	6.8°	6.5°	6.2°
Electrical tilt	0°–10°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 4° ... 8° ... 10° T 17 ... 17 ... 17 ... 17 dB	0° ... 4° ... 8° ... 10° T 17 ... 17 ... 17 ... 17 dB	0° ... 4° ... 8° ... 10° T 18 ... 18 ... 17 ... 17 dB
VSWR	< 1.5		
Isolation, between ports	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	100 W (at 45 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Bottom		
Weight	8.5 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 360 / 90 / 360 N		
Height/width/depth	1358 / 155 / 70 mm		



B) IRT + ISB specifications

Power supply	10 ... 30 V
Power consumption	< 1 W (stand by) < 8 W (motor activated)
Hardware interface	IRT supply and control via integrated smart Bias-T: Input: 7-16 female (–45°)
Modem carrier frequency	2.176 MHz
Modem data rate	9.6 kB / 38.4 kB
Software interface ¹⁾	HEX coded commands based on HDLC protocol; according to AISG 2.0 / 3GPP
Adjustment time (full range)	< 30 sec.
Adjustment cycles	> 50,000

¹⁾ Please note: The primary station must be able to support an integrated remote tilt unit with 3GPP / AISG 2.0 protocol, e.g. Kathrein CCU with firmware 2.00 or higher or the Kathrein PCA with software 2.1.0 or higher.

Multi-band Panel Dual Polarization Half-power Beam Width

1920...2170

X

65°

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XPoI Panel IRT+ISB IA 12dB 1920–1980,2110–2170 65° 17.5dBi 0°–15°T

Type No.	800 10519
System Specifications	
Frequency range, Rx	1920 – 1980 MHz
Bandwidth, Rx	60 MHz
Frequency range, Tx	2110 – 2170 MHz
Bandwidth, Tx	60 MHz
Impedance	50 Ω
Gain, Rx at 0° tilt	29.5 ±1.0 dBi (DC ON) 14 dBi (DC OFF)
Gain, Tx at 0° tilt	17.2 dBi
VSWR, Rx	< 1.5 (DC ON) < 1.7 (DC OFF)
VSWR, Tx	< 1.5
Intermodulation IM7 in Rx band	< -160 dBc (2 x 43 dBm carrier)
Max. power per input	75 W (at 45 °C ambient temperature)
Hardware interface	IA / IRT supply and control via integrated smart Bias-T; Input: 7-16 female (-45°) or (+45°)
DC supply	10 – 30 V
Power consumption	Inactive motor: < 4 W (LNA active) Aktive motor: < 13 W (LNA active)
Modem carrier frequency	2,176 MHz
Modem data rate	9.6 kB / 38.4 kB

A) Antenna Specifications	
Polarization	+45°, -45°
Gain at 0° tilt, full band	17.5 dBi
Horizontal Pattern:	
Half-power beam width	65°
Front-to-back ratio (180° ±30°)	Copolar: > 30 dB Total power: > 25 dB
Cross polar ratio Sector 0° ±60°	Typically 20 dB Typically 10 dB
Vertical Pattern:	
Half-power Beam Width	7.5°
Electrical tilt	0° – 15°, continuously adjustable (via IRT)
Sidelobe suppression for first sidelobe above main beam	> 16 dB
Null-fill at 0° tilt	19 dB
Isolation between +45°, -45° Polarization	> 30 dB

B) IA Specifications	
Rx Characteristics	
Gain -40 ... +60 °C (DC on) +22 ... +28 °C	12.0 ±1.0 dB 12.0 ±0.5 dB
Gain ripple	< ±0.3 dB
Loss in by-pass mode (DC off)	Typically 3.3 dB
Noise figure	Typically 1.4 dB
Output 1-dB compression point	> 14 dBm
3 rd order intercept point (OIP3)	> 24 dBm
Tx Characteristics	
Insertion loss	Typically 0.3 dB
Ripple	< ±0.2 dB
Alarm management ¹⁾	According to AISG 2.0 / 3GPP

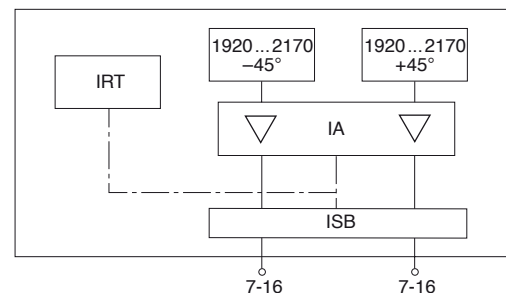
C) IRT Specifications	
Software interface ¹⁾	HEX coded commands based on HDLC protocol, according to AISG 2.0 / 3GPP
Adjustment time (full range)	40 sec.
Adjustment cycles	> 50,000

¹⁾ The protocol of the software interface can be switched between AISG 2.0 / 3GPP and AISG 1.1 with a vendor specific command.

The protocol as supplied is AISG 2.0 / 3GPP, if the primary station does not support this protocol, it has to be switched before system start up. Please contact Kathrein for further information.



1800/1900/2000/2500
XPoI



D) Mechanical specifications	
Input	2 x 7-16 female (long neck)
Connector position	Bottom
Weight	10 kg
Wind load (at 150 km/h)	Frontal: 360 N Lateral: 90 N Rearside: 360 N
Max. wind velocity	200 km/h
Packing size	1460 x 172 x 92 mm
Height/width/depth	1336 / 155 / 70 mm

Tri-Sector Pipe Antenna

Frequency Range

Dual Polarization

Half-power Beam Width

Adjust. Electr. Downtilt

0°

120°

240°

1710–2170

1710–2170

1710–2170

X

X

X

65°

65°

65°

0°–12°

0°–12°

0°–12°

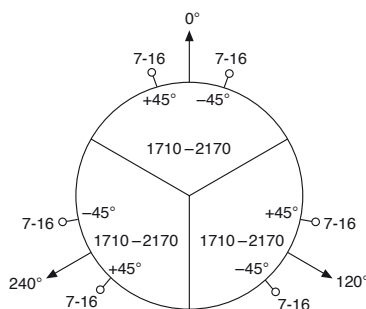
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Antennen · Electronic

set by hand or by optional RCUs (Remote Control Units)

XPol Tri-Sector Pipe 1710–2170 65° 15.5dBi 0°–12°T

Type No.	800 10375			Electrical datas per sector
Frequency range	1710–2170			
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz	
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	
Gain per Input (dBi)	0° ... 4° ... 8° ... 12° T 15.4 ... 15.2 ... 15.0 ... 14.8	0° ... 4° ... 8° ... 12° T 15.5 ... 15.4 ... 15.3 ... 14.9	0° ... 4° ... 8° ... 12° T 15.7 ... 15.6 ... 15.4 ... 14.9	
Half-power beam width Copolar +45°/–45°	Horizontal: 67° Vertical: 12.7°	Horizontal: 65° Vertical: 12°	Horizontal: 62° Vertical: 11.2°	
Electrical tilt continuously adjustable	0°–12°	0°–12°	0°–12°	
Sidelobe suppression for first sidelobe above horizon	0° ... 4° ... 8° ... 12° T 16 ... 16 ... 15 ... 15 dB	0° ... 4° ... 8° ... 12° T 18 ... 17 ... 17 ... 16 dB	0° ... 4° ... 8° ... 12° T 18 ... 18 ... 16 ... 16 dB	
Front-to-back ratio	Copolar: > 25 dB	Copolar: > 25 dB	Copolar: > 25 dB	
Cross polar ratio Maindirection Sector	0° ±60° Typically: 20 dB Typically: > 10 dB	Typically: 20 dB Typically: > 10 dB	Typically: 20 dB Typically: > 10 dB	
Isolation: Intrasystem	> 30 dB	> 30 dB	> 30 dB	
Isolation: Intersystem	> 40 dB	> 40 dB	> 40 dB	
Impedance	50 Ω	50 Ω	50 Ω	
VSWR	< 1.5	< 1.5	< 1.5	
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)			
Max. power per input	250 W (at 50 °C ambient temperature)			



Mechanical specifications

Input	3 x 2 x 7-16 female
Connector position	Bottom – inside service area
Adjustment mechanism	3 x 1, Position bottom continuously adjustable inside service area
Weight	32 kg
Wind load	205 N (at 150 km/h)
Max. wind velocity	200 km/h
Natural frequency	45 – 47 Hz
Damping ratio	0.032
Mechanical interface	Flange connection 12 x 12M at a graduated diameter of 208 mm 0°–360° continuously adjustable (for further details see application note)
Packing size	1395 x 315 x 330 mm
Height / diameter	1241 / 230 and 280 mm

Tri-Sector Pipe Antenna

Frequency Range

Dual Polarization

Half-power Beam Width

Adjust. Electr. Downtilt

set by hand or by optional RCUs (Remote Control Units)

KATHREIN

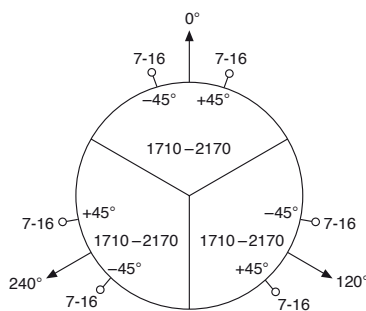
Antennen · Electronic

XPol Tri-Sector Pipe 1710-2170 65° 18dBi 0°-10°T

Type No.	800 10360			Electrical datas per sector
Frequency range	1710-2170			
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz	
Polarization	+45°, -45°	+45°, -45°	+45°, -45°	
Average gain (dBi)	17.2 ... 17.5 ... 17.2	17.6 ... 17.8 ... 17.6	17.8 ... 17.9 ... 17.4	
Tilt	0° ... 5° ... 10°	0° ... 5° ... 10°	0° ... 5° ... 10°	
Half-power beam width	Horizontal: 66°	Horizontal: 63°	Horizontal: 60°	
Copolar +45°/-45°	Vertical: 7°	Vertical: 6.7°	Vertical: 6.4°	
Electrical tilt continuously adjustable	0°-10°	0°-10°	0°-10°	
Sidelobe suppression for first sidelobe above horizon	0° ... 5° ... 10° T 17 ... 15 ... 15 dB	0° ... 5° ... 10° T 17 ... 17 ... 15 dB	0° ... 5° ... 10° T 17 ... 17 ... 15 dB	
Front-to-back ratio (180° ± 30°)	Copolar: > 30 dB Total power: > 25 dB	Copolar: > 30 dB Total power: > 25 dB	Copolar: > 30 dB Total power: > 25 dB	
Cross polar ratio				
Maindirection	0°			
Sector	±60°			
Isolation: Intrasystem	> 30 dB	> 30 dB	> 30 dB	
Isolation: Intersystem	> 45 dB	> 42 dB	> 42 dB	
Impedance	50 Ω	50 Ω	50 Ω	
VSWR	< 1.5	< 1.5	< 1.5	
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)			
Max. power per input	300 W (at 50 °C ambient temperature)			



1800/1900/2000/2500
XPol



Mechanical specifications

Input	3 x 2 x 7-16 female
Connector position	Bottom – inside service area
Adjustment mechanism	3 x 1, Position bottom continuously adjustable inside service area
Weight	56 kg
Wind load	320 N (at 150 km/h)
Max. wind velocity	200 km/h
Natural frequency	19 – 21 Hz
Damping ratio	0.032
Mechanical interface	Flange connection 12 x 12M at a graduated diameter of 208 mm 0°-360° continuously adjustable (for further details see application note)
Packing size	2030 x 400 x 400 mm
Height / diameter	1823 / 230 and 280 mm

Tri-Sector Pipe Antenna

Frequency Range

Dual Polarization

Half-power Beam Width

Adjust. Electr. Downtilt

0°

120°

240°

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Antennen · Electronic

1710–2170

1710–2170

1710–2170

X

X

X

65°

65°

65°

0°–10°

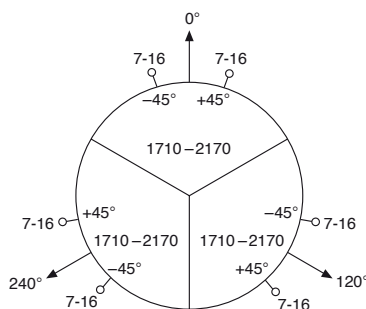
0°–10°

0°–10°

set by hand or by optional RCUs (Remote Control Units)

XPol Tri-Sector Pipe 1710–2170 65° 18dBi 0°–10°T

Type No.	800 10270			Electrical datas per sector
Frequency range	1710–2170			
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz	
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	
Average gain (dBi)	17.2 ... 17.5 ... 17.2	17.6 ... 17.8 ... 17.6	17.8 ... 17.9 ... 17.4	
Tilt	0° ... 5° ... 10°	0° ... 5° ... 10°	0° ... 5° ... 10°	
Half-power beam width	Horizontal: 66°	Horizontal: 63°	Horizontal: 60°	
Copolar +45°/–45°	Vertical: 7°	Vertical: 6.7°	Vertical: 6.4°	
Electrical tilt continuously adjustable	0°–10°	0°–10°	0°–10°	
Sidelobe suppression for first sidelobe above horizon	0° ... 5° ... 10° T 17 ... 15 ... 15 dB	0° ... 5° ... 10° T 17 ... 17 ... 15 dB	0° ... 5° ... 10° T 17 ... 17 ... 15 dB	
Front-to-back ratio (180° ± 30°)	Copolar: > 30 dB Total power: > 25 dB	Copolar: > 30 dB Total power: > 25 dB	Copolar: > 30 dB Total power: > 25 dB	
Cross polar ratio				
Maindirection	0°			
Sector	±60°	Typically: 25 dB Typically: > 10 dB	Typically: 20 dB Typically: > 10 dB	Typically: 20 dB Typically: > 10 dB
Isolation: Intrasystem	> 30 dB	> 30 dB	> 30 dB	
Isolation: Intersystem	> 45 dB	> 42 dB	> 42 dB	
Impedance	50 Ω	50 Ω	50 Ω	
VSWR	< 1.5	< 1.5	< 1.5	
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)			
Max. power per input	300 W (at 50 °C ambient temperature)			



Mechanical specifications

Input	3 x 2 x 7-16 female
Connector position	Bottom – inside service area
Adjustment mechanism	3 x 1, Position bottom continuously adjustable inside service area
Weight	70 kg
Wind load	450 N (at 150 km/h)
Max. wind velocity	200 km/h
Natural frequency	17.5 – 19 Hz
Damping ratio	0.032
Mechanical interface	Flange connection 12 x 12M at a graduated diameter of 208 mm 0°–360° continuously adjustable (for further details see application note)
Packing size	2500 x 330 x 315 mm
Height / diameter	2296 / 230 and 280 mm

Tri-Sector Pipe Antenna

KATHREIN

Frequency Range

Antennen · Electronic

Dual Polarization

Half-power Beam Width

Adjust. Electr. Downtilt

set by hand or by optional RCUs (Remote Control Units)

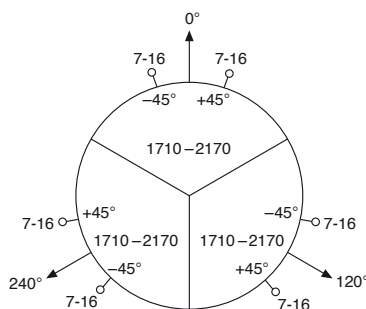
XPol Tri-Sector Pipe 1710-2170 65° 19.5dBi 0°-6°T

Type No.	800 10271			Electrical datas per sector
Frequency range	<input type="text" value="1710-2170"/>			
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz	
Polarization	+45°, -45°	+45°, -45°	+45°, -45°	
Average gain (dBi)	18.7 ... 19.0 ... 18.7	18.8 ... 19.2 ... 19.1	19.0 ... 19.5 ... 19.3	
Tilt	0° ... 3° ... 6°	0° ... 3° ... 6°	0° ... 3° ... 6°	
Half-power beam width Copolar +45°/-45°	Horizontal: 67° Vertical: 4.7°	Horizontal: 66° Vertical: 4.5°	Horizontal: 64° Vertical: 4.3°	
Electrical tilt continuously adjustable	0°-6°	0°-6°	0°-6°	
Sidelobe suppression for first sidelobe above main beam	0° ... 3° ... 6° T 18 ... 18 ... 16 dB	0° ... 3° ... 6° T 18 ... 18 ... 18 dB	0° ... 3° ... 6° T 18 ... 18 ... 17 dB	
Front-to-back ratio (180° ± 30°)	Copolar: > 28 dB Total power: > 28 dB	Copolar: > 26 dB Total power: > 25 dB	Copolar: > 26 dB Total power: > 25 dB	
Cross polar ratio Maindirection Sector	0° ±60°	Typically: 25 dB > 10 dB	Typically: 20 dB > 10 dB	Typically: 20 dB > 10 dB
Isolation: Intrasystem	> 30 dB	> 30 dB	> 30 dB	
Isolation: Intersystem	> 45 dB	> 42 dB	> 42 dB	
Impedance	50 Ω	50 Ω	50 Ω	
VSWR	< 1.5	< 1.5	< 1.5	
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)			
Max. power per input	300 W (at 50 °C ambient temperature)			



compact service area

1800/190/200/2500
XPol



Mechanical specifications	
Input	3 x 2 x 7-16 female
Connector position	Bottom – inside service area
Adjustment mechanism	3 x 1, Position bottom continuously adjustable inside service area
Weight	64 kg
Wind load	445 N (at 150 km/h)
Max. wind velocity	200 km/h
Natural frequency	9.5 – 11 Hz
Damping ratio	0.032
Mechanical interface	Flange connection 12 x 12M at a graduated diameter of 208 mm 0°-360° continuously adjustable (for further details see application note)
Packing size	2605 x 330 x 315 mm
Height / diameter	2460 / 230 and 280 mm

Accessories delivered with the Tri-Sector-Pipe Antenna:

1. Clamping ring for mounting the antenna on the customer-supplied base
2. Lightning conductor rod
3. Ring bolt as attachment possibility for lifting aid
4. Wrench (SW41 + SW27) for attaching the RCU

Optional Accessories:

The following components may be ordered separately

1. 860 10025 Slimline Remote Control Unit (RCU), see page 169
2. 782 10352 Multipack TMA MPTMA-UMTS-12-AISG-6P with 12 dB (equals 3*DTMA) and RET-Support
3. 782 10353 Multipack TMA MPTMA-UMTS-24-AISG-6P with 24 dB (equals 3*DTMA) and RET-Support
4. 782 10354 Multipack TMA MPTMA-UMTS-12-CW-6P with 12 dB (equals 3*DTMA) without RET-Support
5. 782 10355 Multipack TMA MPTMA-UMTS-24-CW-6P with 24 dB (equals 3*DTMA) without RET-Support
6. 850 10010 Flexible Sealing Frame (Roxtec frame to seal connection between the mast and the antenna, see below)
7. 738 440 Azimuth Adjustment Tool, see page 203
8. 737 306 3-way power splitter for optional omni pattern
9. 850 10111 Inlay mounting plate kit for 3-way splitter and DTMA for omni pattern
10. 782 10xxx Double TMA optional for omni pattern (several types, see page 286)



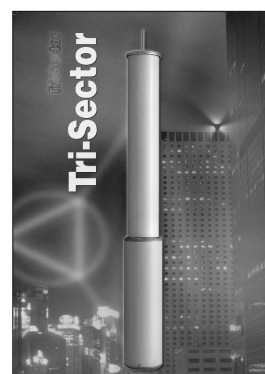
View inside service zone with MPTMA and Slimline RCU

Flexible Sealing Frame

Type No.	850 10010
Outer diameter	180 mm
Cable diameter (6x)	15 – 42 mm
Cable diameter (3x)	3.5 – 10.5 mm
Frame-Material	Stainless steel
Sealing-Material	Halogen free cross linkable compound on ethylene-propylene rubber (EPDM)
Material of screws	Stainless steel
Accessories	Mounting lubricant
Required assembly tools	Socket wrench size 6 mm
Weight (without packaging)	1.8 kg
Packing size (L x W x H)	approx. 208 x 208 x 68 mm



For further information please refer to separate application note under:
www.kathrein.de/en/mca/index-customerportal.htm



Summary – Directional Antennas

2-Multi-band

1800/1900/2000/2500

Dual Polarization +45°/–45°

Type	Type No.	Height [mm]	Connector position	Page
XXPol Panel 1710–2170 65° 15dBi 0°–10°T 1710–2170 65° 15dBi 0°–10°T	742 233	679	bottom	74
XXPol Panel 1710–2690 65° 15.5dBi 0°–10°T 1710–2690 65° 15.5dBi 0°–10°T	800 10682	724	bottom	120
XXPol Panel 1710–2200 65° 18dBi 0°–10°T 1710–2200 65° 18dBi 0°–10°T	742 236	1319	bottom	74
XXPol Panel 1710–2200 65° 18dBi 0°–15°T ESLS 1710–2200 65° 18dBi 0°–15°T	800 10510	1389	bottom	75
XXPol Panel 1710–2200 65° 18dBi 0°–15°T 2300–2690 60° 17.5dBi 0°–12°T	800 10544	1389	bottom	122
XXPol Panel 1710–2690 65° 18dBi 0°–12°T ESLS 1710–2690 65° 18dBi 0°–12°T	800 10622	1389	bottom	123
XXPol Panel 1710–2170 65° 19.5dBi 0°–6°T 1710–2170 65° 19.5dBi 0°–6°T	742 235	1959	bottom	76
XXPol Panel 1710–2200 65° 19dBi 0°–10°T ESLS 1710–2200 65° 19dBi 0°–10°T	800 10511	1999	bottom	77
XXPol Panel 1710–2180 88° 16.5dBi 0°–10°T 1710–2180 88° 16.5dBi 0°–10°T	742 352	1319	bottom	78

New or changed product

*When deploying
2-Multi-band Antennas,
please also consider using
special Dual-band Combiners
(see pages 228 and 229)*

Abbreviations:
ESLS: Enhanced Side Lobe Suppression (above or below horizon)

1800/1900/2000/2500
XXPol 2-Multi

2-Multi-band Panel

Dual Polarization

Half-power Beam Width

1710–2200

1710–2200

X

X

65°

65°

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XXPol Panel 1710–2170/1710–2170 65°/65° 15/15dBi 0°–10°/0°–10°T

Type No.	742 233		
Frequency range	1710–2170		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz
Polarization	+45°, –45°; +45°, –45°	+45°, –45°; +45°, –45°	+45°, –45°; +45°, –45°
Gain	4 x 15 dBi	4 x 15.2 dBi	4 x 15.3 dBi
Horizontal Pattern:			
Half-power beam width	67°	65°	62°
Front-to-back ratio	Copolar: > 25 dB Total power: > 25 dB	Copolar: > 25 dB Total power: > 25 dB	Copolar: > 25 dB Total power: > 25 dB
Cross polar ratio			
Main direction	0°	Typically: 20 dB	Typically: 20 dB
Sector	±60°	Typically: 10 dB	Typically: 10 dB
Vertical Pattern:			
Half-power beam width	14°	13.7°	13°
Electrical tilt	0°–10°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 4° ... 8° ... 10°T 16 ... 16 ... 15 ... 15 dB	0° ... 4° ... 8° ... 10°T 16 ... 16 ... 16 ... 16 dB	0° ... 4° ... 8° ... 10°T 16 ... 16 ... 16 ... 16 dB
VSWR	< 1.5		
Isolation, between inputs	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	250 W (at 50 °C ambient temperature)		
Input	4 x 7-16 female		
Connector position	Bottom		
Adjustment mechanism	2x, Position bottom, continuously adjustable		
Weight	10.4 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 300 / 60 / 300 N		
Height/width/depth	679 / 323 / 71 mm		



XXPol Panel 1710–2200/1710–2200 65°/65° 18/18dBi 0°–10°/0°–10°T

Type No.	742 236		
Frequency range	1710–2200		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2200 MHz
Polarization	+45°, –45°; +45°, –45°	+45°, –45°; +45°, –45°	+45°, –45°; +45°, –45°
Gain	4 x 17.6 dBi	4 x 17.8 dBi	4 x 18 dBi
Horizontal Pattern:			
Half-power beam width	64°	64°	62°
Front-to-back ratio	Copolar: > 30 dB Total power: > 25 dB	Copolar: > 30 dB Total power: > 25 dB	Copolar: > 30 dB Total power: > 25 dB
Cross polar ratio			
Main direction	0°	Typically: 25 dB	Typically: 25 dB
Sector	±60°	> 10 dB	> 10 dB
Vertical Pattern:			
Half-power beam width	7°	6.8°	6.5°
Electrical tilt	0°–10°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 5° ... 10° T 20 ... 18 ... 16 dB	0° ... 5° ... 10° T 20 ... 18 ... 16 dB	0° ... 5° ... 10° T 16 ... 18 ... 16 dB
VSWR	< 1.5		
Isolation, between inputs	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	300 W (at 50 °C ambient temperature)		
Input	4 x 7-16 female		
Connector position	Bottom		
Adjustment mechanism	2x, Position bottom continuously adjustable		
Weight	14.6 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 650 / 100 / 700 N		
Height/width/depth	1319 / 323 / 71 mm		



2-Multi-band Panel

Dual Polarization

Half-power Beam Width

1710–2200	1710–2200
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X	X
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65°	65°
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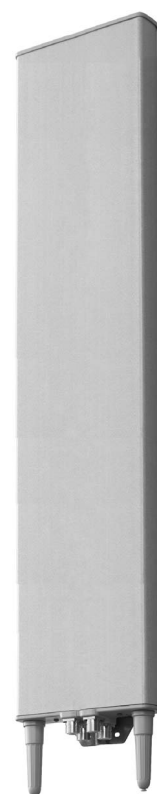
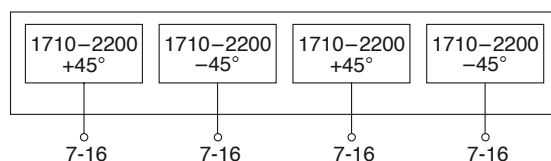
KATHREIN

Antennen · Electronic

XXPol Panel 1710–2200/1710–2200 65°/65° 18/18dBi 0°–15°/0°–15°T ESLS

Type No.	800 10510			
Frequency range	1710–2200			
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz	2000 – 2200 MHz
Polarization	+45°, –45°; +45°, –45°	+45°, –45°; +45°, –45°	+45°, –45°; +45°, –45°	+45°, –45°; +45°, –45°
Gain at 0° tilt	4 x 17.5 dBi	4 x 17.6 dBi	4 x 17.7 dBi	4 x 17.8 dBi
Horizontal Pattern:				
Half-power beam width	65°	63°	62°	62°
Front-to-back ratio (180° ±30°)	≥ 30 dB	≥ 30 dB	≥ 30 dB	≥ 28 dB
Cross polar ratio	24 dB	24 dB	24 dB	26 dB
Sector	0°	±60°	±60°	±60°
	≥ 9 dB	≥ 9 dB	≥ 10 dB	≥ 10 dB
Vertical Pattern:				
Half-power beam width	7.9°	7.5°	7.2°	6.9°
Electrical tilt	0°–15°, continuously adjustable			
Sidelobe suppression	0° ... 5° ... 10° ... 15° T	0° ... 5° ... 10° ... 15° T	0° ... 5° ... 10° ... 15° T	0° ... 5° ... 10° ... 15° T
– for first sidelobe above main beam	≥ 17 ... 20 ... 18 ... 17 dB	≥ 16 ... 20 ... 18 ... 18 dB	≥ 15 ... 19 ... 18 ... 17 dB	≥ 14 ... 18 ... 18 ... 16 dB
– within 0°–20° sector above horizon	≥ 17 ... 18 ... 18 ... 16 dB	≥ 16 ... 17 ... 17 ... 16 dB	≥ 15 ... 17 ... 17 ... 16 dB	≥ 14 ... 16 ... 16 ... 15 dB
Null-fill at 0° tilt	23 dB	22 dB	21 dB	20 dB
VSWR	< 1.5			
Isolation, between ports	> 30 dB			
Intermodulation IM3	< –153 dBc (2 x 43 dBm carrier)			
Max. power per input	300 W (at 50 °C ambient temperature)			
Input	4 x 7-16 female			
Connector position	Bottom			
Adjustment mechanism	2x, Position bottom, continuously adjustable			
Weight	17 kg			
Wind load (at 150 km/h)	Frontal / lateral / rearside: 600 / 120 / 650 N			
Height/width/depth	1389 / 323 / 71 mm			

1800/1900/2000/2500
XXPol 2-Multi



2-Multi-band Panel

Dual Polarization

Half-power Beam Width

1710–2170

1710–2170

X

X

65°

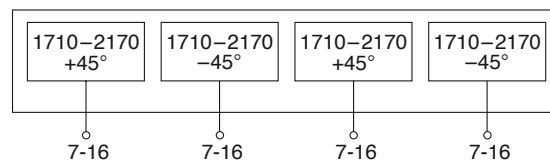
65°

KATHREIN

Antennen · Electronic

XXPol Panel 1710–2170/1710–2170 65°/65° 19.5/19.5dBi 0°–6°/0°–6°T

Type No.	742 235		
Frequency range	1710–2170		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz
Polarization	+45°, –45°; +45°, –45°	+45°, –45°; +45°, –45°	+45°, –45°; +45°, –45°
Gain	4 x 19 dBi	4 x 19.2 dBi	4 x 19.5 dBi
Horizontal Pattern:			
Half-power beam width	65°	64°	63°
Front-to-back ratio	Copolar: > 30 dB Total power: > 25 dB	Copolar: > 30 dB Total power: > 25 dB	Copolar: > 30 dB Total power: > 24 dB
Cross polar ratio			
Main direction	Typically: 25 dB	Typically: 25 dB	Typically: 25 dB
Sector	±60° > 10 dB	> 10 dB	> 10 dB
Vertical Pattern:			
Half-power beam width	4.6°	4.4°	4.2°
Electrical tilt	0°–6°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 2° ... 4° ... 6° T 17 ... 17 ... 14 ... 14 dB	0° ... 2° ... 4° ... 6° T 17 ... 17 ... 15 ... 15 dB	0° ... 2° ... 4° ... 6° T 17 ... 17 ... 15 ... 15 dB
VSWR	< 1.5		
Isolation, between inputs	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	300 W (at 50 °C ambient temperature)		
Input	4 x 7-16 female		
Connector position	Bottom		
Adjustment mechanism	2x, Position bottom, continuously adjustable		
Weight	18 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 920 / 190 / 920 N		
Height/width/depth	1959 / 323 / 71 mm		



2-Multi-band Panel

Dual Polarization

Half-power Beam Width

1710–2200

1710–2200

X

X

65°

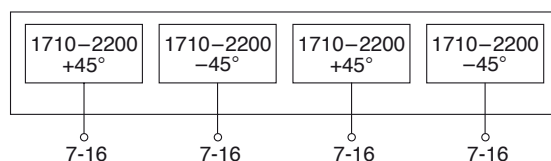
65°

KATHREIN

Antennen · Electronic

XXPol Panel 1710–2200/1710–2200 65°/65° 19/19dBi 0°–10°/0°–10°T ESLS

Type No.	800 10511			
Frequency range	1710–2200			
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz	2000 – 2200 MHz
Polarization	+45°, –45°; +45°, –45°	+45°, –45°; +45°, –45°	+45°, –45°; +45°, –45°	+45°, –45°; +45°, –45°
Gain	18.5 ... 18.7 ... 18.5 dBi	18.7 ... 19.0 ... 18.5 dBi	18.7 ... 19.0 ... 18.4 dBi	18.7 ... 18.9 ... 18.3 dBi
Tilt	0° ... 5° ... 10° T	0° ... 5° ... 10° T	0° ... 5° ... 10° T	0° ... 5° ... 10° T
Horizontal Pattern:				
Half-power beam width	66°	65°	65°	63°
Front-to-back ratio (180° ±30°)	≥ 30 dB	≥ 30 dB	≥ 30 dB	≥ 28 dB
Cross polar ratio 0°	Typically: 22 dB	Typically: 22 dB	Typically: 22 dB	Typically: 22 dB
Sector ±60°	≥ 10 dB	≥ 10 dB	≥ 10 dB	≥ 10 dB
Vertical Pattern:				
Half-power beam width	5.0°	4.8°	4.6°	4.4°
Electrical tilt	0°–10°, continuously adjustable			
Sidelobe suppression	0° ... 4° ... 8° ... 10° T	0° ... 4° ... 8° ... 10° T	0° ... 4° ... 8° ... 10° T	0° ... 4° ... 8° ... 10° T
– for first sidelobe above main beam	≥ 20 ... 20 ... 18 ... 18 dB	≥ 20 ... 20 ... 18 ... 18 dB	≥ 19 ... 20 ... 18 ... 18 dB	≥ 18 ... 20 ... 18 ... 18 dB
– within 0°–20° sector above horizon	≥ 18 ... 18 ... 17 ... 17 dB	≥ 17 ... 18 ... 17 ... 15 dB	≥ 17 ... 17 ... 17 ... 15 dB	≥ 17 ... 17 ... 14 ... 12 dB
VSWR	< 1.5			
Isolation, between ports	> 30 dB			
Intermodulation IM3	< –153 dBc (2 x 43 dBm carrier)			
Max. power per input	300 W (at 50 °C ambient temperature)			
Input	4 x 7-16 female			
Connector position	Bottom			
Adjustment mechanism	2x, Position bottom, continuously adjustable			
Weight	18 kg			
Wind load (at 150 km/h)	Frontal / lateral / rearside: 920 / 190 / 950 N			
Height/width/depth	1999 / 323 / 71 mm			



1800/1900/2000/2500
XXPol 2-Multi

2-Multi-band Panel

Dual Polarization

Half-power Beam Width

1710–2180	1710–2180
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X	X
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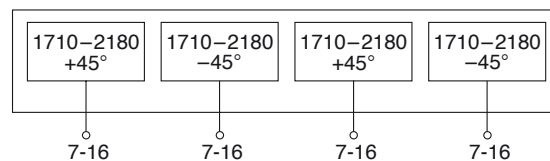
88°	88°
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KATHREIN

Antennen · Electronic

XXPol Panel 1710–2180/1710–2180 88°/88° 16.5/16.5dBi 0°–10°/0°–10°T

Type No.	742 352		
Frequency range	1710 – 1880 MHz 1710–2180 1850 – 1990 MHz 1920 – 2180 MHz		
Polarization	+45°, –45°; +45°, –45°	+45°, –45°; +45°, –45°	+45°, –45°; +45°, –45°
Gain (average)	16.1 ... 16.3 ... 16.0 dBi	16.2 ... 16.4 ... 16.1 dBi	16.5 ... 16.7 ... 16.2 dBi
Tilt	0° ... 5° ... 10°	0° ... 5° ... 10°	0° ... 5° ... 10°
Horizontal Pattern:			
Half-power beam width	88°	90°	88°
Front-to-back ratio	Copolar: > 24 dB Total power: > 24 dB	Copolar: > 24 dB Total power: > 24 dB	Copolar: > 24 dB Total power: > 24 dB
Cross polar ratio			
Maindirection	Typically: 15 dB	Typically: 15 dB	Typically: 15 dB
Sector	0° ±60° > 8 dB	> 7.5 dB	> 7 dB
Vertical Pattern:			
Half-power beam width	7.4°	7°	6.5°
Electrical tilt	0°–10°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 4° ... 8° ... 10° T 18 ... 17 ... 16 ... 15 dB	0° ... 4° ... 8° ... 10° T 18 ... 17 ... 16 ... 15 dB	0° ... 4° ... 8° ... 10° T 17 ... 17 ... 16 ... 15 dB
VSWR	< 1.5		
Isolation: Intrasystem	> 30 dB		
Isolation: Intersystem	> 30 dB		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	300 W (at 50 °C ambient temperature)		
Input	4 x 7-16 female		
Connector position	Bottom		
Adjustment mechanism	2x, Position bottom, continuously adjustable		
Weight	16.5 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 600 / 120 / 600 N		
Height/width/depth	1319 / 323 / 71 mm		



1800/1900/2000/2500
XXPol 2-Multi

Summary – Directional Antennas

Vertical Polarization

1800/1900/2000

VPol

Type						Type No.	Height [mm]	Connector position	Page
VPol Panel	1710–2180	12°	18.5dBi	0°T		800 10368	299	side	80
Dual Yagi	870–960 C 1710–2170	30° 23°	16.5dBi 19.5dBi	0°T 0°T		800 10658	1100	rearside	81
VPol BiDir	790–960 / 1710–2170	65°	5dBi	0°T		738 445	312		82
VPol BiDir	790–960 / 1710–2170	65°	5dBi	0°T		738 446	312		82
VPol LogPer	806–2170	65°	11dBi	0°T		742 192	300	bottom	83

VVPol

VVPol Panel	824–960 1710–2170	C	90° 82°	7dBi 7dBi	0°T 0°T	742 290	328	bottom or top	84
VVPol Panel	824–960 1710–2170	C	90° 82°	10dBi 11dBi	0°T 0°T	800 10046	662	bottom or top	84

C = integrated Combiner

New or changed product

**Multi-band Panel
Vertical Polarization
Half-power Beam Width**

1710–2180

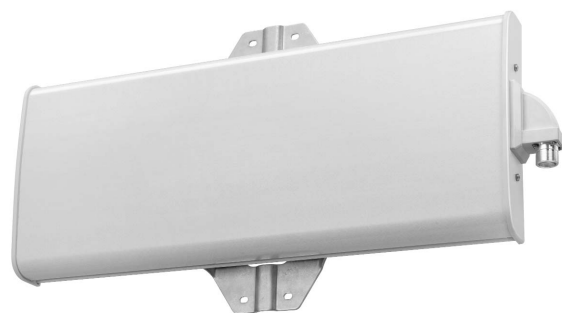
V

12°

KATHREIN
Antennen · Electronic

VPol Panel 1710–2180 12° 18.5dBi 0°T

Type No.	800 10368		
Frequency range	1710 – 1880 MHz	1710–2180 1850 – 1990 MHz	1920 – 2180 MHz
Polarization	Vertical	Vertical	Vertical
Gain	18.1 dBi	18.4 dBi	18.7 dBi
Horizontal Pattern:			
Half-power beam width	13.3°	12.8°	12°
Front-to-back ratio (180° ± 30°)	> 30 dB	> 30 dB	> 30 dB
Sidelobe suppression	> 18 dB	> 18 dB	> 17 dB
Vertical Pattern:			
Half-power beam width	37°	36°	36°
Electrical tilt	0°, fixed	0°, fixed	0°, fixed
Sidelobe suppression for first sidelobe above main beam	> 18 dB	> 18 dB	> 18 dB
VSWR	< 1.5		
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)		
Max. power	300 W (at 50 °C ambient temperature)		
Input	1 x 7-16 female		
Connector position	Side (see picture)		
Weight	9 kg		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 400 / 25 / 400 N		
Height/width/depth	299 / 743 / 69 mm		



**Yagi Multi-band Antenna
Dual Polarization
Half-power Beam Width
Integrated Combiner**

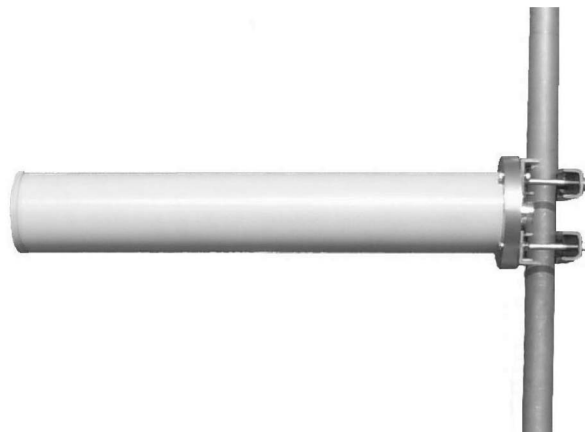
870–960	1710–2170
+45°	–45°
30°	23°
C	

KATHREIN
Antennen · Electronic

Dual Yagi 870–960/1710–2170 C 30°/23° 16.5/19dBi

Type No.	800 10658		
Frequency range	870–960 870 – 960 MHz	1710–2170 1710 – 1880 MHz 1920 – 2170 MHz	
VSWR	< 1.5	< 1.5	< 1.5
Gain	16.5 dBi	18 dBi	19 dBi
Polarization	+45°	–45°	–45°
Front-to-back ratio	≥ 20 dB	≥ 27 dB	≥ 27 dB
Half-power beam width			
horizontal	30°	26°	20°
vertical	30°	27°	20°
Max. power	100 W (at 50 °C ambient temperature)		
Input	1 x 7-16 female		
Connector position	Rearside		
Weight	4.0 kg		
Dimensions	1100 / Ø 170 mm		
Integrated combiner	The insertion loss is included in the given antenna gain values.		

Please note: This antenna is suitable for tunnel applications.



1800/1900/2000
VPoI

Multi-band Bidirectional Antenna

Vertical Polarization

Half-power Beam Width

790–960/1710–2170

KATHREIN

V

Antennen · Electronic

65°

VPol BiDir 790–960/1710–2170 65° 5dBi

Type No.	738 445	738 446
Input	1 x 7-16 female	1 x N female
Frequency range	790 – 960 MHz, 1710 – 2170 MHz	
VSWR	790 – 806 MHz: < 2.2 806 – 824 MHz: < 1.7 824 – 960 / 1710 – 2170 MHz: < 1.5	
Gain	790 – 960 MHz: 5 dBi 1710 – 1880 MHz: 5.5 dBi 1880 – 2170 MHz: 6.5 dBi	
Impedance	50 Ω	
Polarization	Vertical	
Max. power (total)	200 W (at 50 °C ambient temperature)	
Weight	0.8 kg	
Wind load	Frontal: 25 N (at 150 km/h) Lateral: 65 N (at 150 km/h) Rearside: 35 N (at 150 km/h)	
Max. wind velocity	200 km/h	
Packing size	422 x 212 x 95 mm	
Height/width/depth	312 / 55 / 188 mm	



Material:	Radiator: Tin-plated copper. Reflector: Weather-proof aluminum. Radome: High impact plastic, colour: Grey. All screws and nuts: Stainless steel.
Mounting:	Wall mounting: No additional mounting kit needed. For pipe mast mounting use clamps listed below (order separately).
Ice protection:	The radiating system is protected by the radome. Due to its very sturdy construction, the antenna remains operational even under icy conditions.
Grounding:	All metal parts of the antenna as well as the inner conductor are DC grounded.

Accessories (order separately)

Type No.	Description	Remarks	Weight approx.	Units per antenna
734 360	2 clamps	Mast: 34 – 60 mm diameter	60 g	1
734 361	2 clamps	Mast: 60 – 80 mm diameter	70 g	1
734 362	2 clamps	Mast: 80 – 100 mm diameter	80 g	1
734 363	2 clamps	Mast: 100 – 120 mm diameter	90 g	1
734 364	2 clamps	Mast: 120 – 140 mm diameter	110 g	1
734 365	2 clamps	Mast: 45 – 125 mm diameter	80 g	1

Logarithmic Periodic Vertical Polarization Half-power Beam Width

806–2170

V

65°

KATHREIN
Antennen · Electronic

VPol LogPer 806–2170 65° 11dBi

Type No.	742 192		
Input	1 x 7-16 female		
Connector position	Bottom		
Frequency range	806 – 1000 MHz	1000 – 1700 MHz	1700 – 2170 MHz
VSWR	< 1.5	< 1.5	< 1.5
Gain	11 dBi	11.3 dBi	11.5 dBi
Polarization	Vertical	Vertical	Vertical
Front-to-back ratio	> 25 dB	> 25 dB	> 23 dB
Half-power Beam Width			
horizontal	65°	55°	50°
vertical	55°	50°	45°
Intermodulation IM3 (2 x 43 dBm carrier)	< -150 dBc	< -150 dBc	< -150 dBc
Max. power	300 W	250 W	200 W
	(at 50 °C ambient temperature)		
Weight	5.7 kg		
Wind load	Frontal:	20 N (at 150 km/h)	
	Lateral:	260 N (at 150 km/h)	
	Rearside:	30 N (at 150 km/h)	
Height/width/depth	300 / 155 / 785 mm		



1800/1900/2000
VPol

- Material:** Radiator: Weather-proof aluminum.
Reflector screen: Weather-proof aluminum.
Radome: Fiberglass, colour: Grey.
All screws and nuts: Stainless steel.
- Mounting:** The antenna can be mounted on tubular mast with a diameter of 30 – 70 mm with supplied clamps.
- Ice protection:** Due to the very sturdy antenna construction and the protection of the radiating system by the radome, the antenna remains operational even under icy conditions.
- Grounding:** All metal parts of the antenna as well as the inner conductor are DC grounded.

Dual-band Panel Vertical Polarization Half-power Beam Width

824–960

1710–2170

V

V

90°

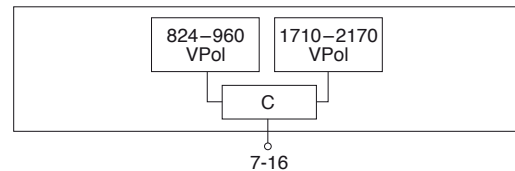
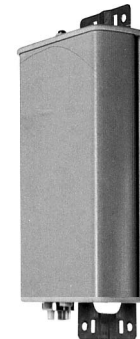
82°

KATHREIN

Antennen · Electronic

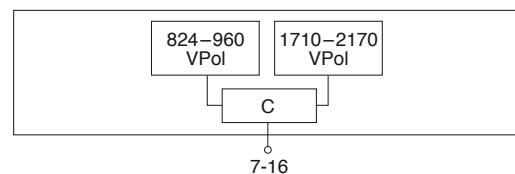
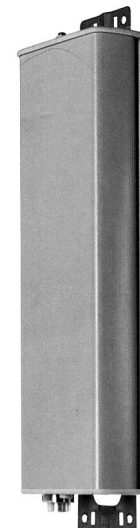
VVPol Panel 824–960/1710–2170 C 90°/82° 7/7dBi

Type No.	742 290	
Frequency range	824 – 960 MHz	1710 – 2170 MHz
Polarization	Vertical	Vertical
Gain	7 dBi	7 dBi
Half-power beam width	Horizontal: 90° Vertical: 60°	Horizontal: 82° Vertical: 70°
Front-to-back ratio	> 18 dB	> 20 dB
VSWR	< 1.7 (824 – 960 MHz) < 1.5 (870 – 960 MHz)	< 1.7 (1710 – 2170 MHz) < 1.5 (1710 – 1990 MHz)
Intermodulation IM3 (2 x 43 dBm carrier)	< -150 dBc	< -150 dBc
Max. power	100 W (at 50 °C ambient temperature)	
Input	1 x 7-16 female	
Connector position	Bottom or top	
Weight	2.8 kg	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 90 / 23 / 100 N	
Height/width/depth	328 / 155 / 69 mm	



VVPol Panel 824–960/1710–2170 C 90°/82° 10/11dBi

Type No.	800 10046	
Frequency range	824 – 960 MHz	1710 – 2170 MHz
Polarization	Vertical	Vertical
Gain	10 dBi	11 dBi
Half-power beam width	Horizontal: 90° Vertical: 33°	Horizontal: 82° Vertical: 19°
Front-to-back ratio	> 18 dB	> 20 dB
VSWR	< 1.7 (824 – 960 MHz) < 1.5 (870 – 960 MHz)	< 1.5
Intermodulation IM3 (2 x 43 dBm carrier)	< -150 dBc	< -150 dBc
Max. power	100 W (at 50 °C ambient temperature)	
Input	1 x 7-16 female	
Connector position	Bottom or top	
Weight	5 kg	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 175 / 47 / 200 N	
Height/width/depth	662 / 155 / 69 mm	



Summary – Directional Antennas

Dual-band

800/900 – 1800/2000

Dual Polarization +45°/–45°

Type	Type No.	Height [mm]	Connector position	Page
XXPol Panel 806–960 C 65° 8.5dBi 0°T 1710–2180 60° 9.5dBi 0°T	800 10454	270	bottom or top	86
XXPol Panel 806–960 65° 12dBi 0°T 1710–2170 60° 14dBi 0°T	742 226	579	bottom or top	87
XXPol Panel 806–960 C 65° 12dBi 0°T 1710–2170 60° 14dBi 0°T	742 222	579	bottom or top	88
XXPol Panel 824–960 65° 14dBi 0°–14°T 1710–2180 65° 17dBi 0°–8°T	742 264	1316	bottom	89
XXPol Panel 824–960 C 65° 14dBi 0°–14°T 1710–2180 65° 17dBi 0°–8°T	742 223	1316	bottom	90
XXPol Panel 870–960 65° 17dBi 0°T 1710–1880 60° 18.5dBi 0°T	741 327	1936	bottom or top	91
XXPol Panel 870–960 C 65° 17dBi 0°T 1710–1880 60° 18dBi 0°T	741 322	1936	bottom or top	91
XXPol Panel 824–960 65° 16dBi 0°–10°T 1710–2180 65° 18.5dBi 0°–6°T	742 265	1916	bottom	92
XXPol Panel 790–960 65° 16.5dBi 2°–14°T 1710–2180 65° 18.5dBi 4°–14°T	800 10485	1998	bottom	93
XXPol Panel 824–960 C 65° 16dBi 0°–10°T 1710–2180 65° 18.5dBi 0°–6°T	742 224	1916	bottom	94
XXPol Panel 870–960 C 65° 17.5dBi 6°T 1710–1880 60° 17.5dBi 6°T	741 336	2580	bottom	95
XXPol Panel 870–960 C 65° 17dBi 2°–8°T 1710–1880 60° 18dBi 2°T	742 047	2580	bottom	95
XXPol Panel 790–960 65° 17dBi 0°–7°T 1710–2180 65° 18.5dBi 0°–6°T	742 266	2516	bottom	96
XXPol Panel 790–960 65° 17.5dBi 4°–12°T 1710–2180 65° 18.5dBi 4°–14°T	800 10486	2516	bottom	97
XXPol Panel 824–960 C 65° 17dBi 0°–7°T 1710–2180 65° 18.5dBi 0°–6°T	742 225	2516	bottom	98
XXPol Panel 806–960 88° 13.5dBi 0°–12°T 1710–2180 88° 16.5dBi 0°–10°T	800 10121	1384	bottom	99
XXPol Panel 806–960 88° 15.2dBi 0°–10°T 1710–2180 88° 18dBi 0°–6°T	800 10122	1917	bottom	100
XXPol Panel 806–960 88° 16.5dBi 0°–7°T 1710–2180 88° 18dBi 0°–6°T	800 10123	2635	bottom	101

C = integrated Combiner

New or changed product

*When deploying
Dual-band Antennas,
please also consider using
special Dual-band Combiners
(see pages 228 and 229)*

800/900 –
1800/2000
XXPol

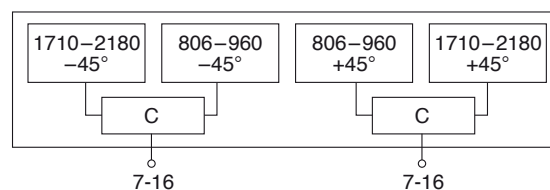
Dual-band Panel Dual Polarization Half-power Beam Width

806–960	1710–2180
X	X
65°	65°

KATHREIN
Antennen · Electronic

XXPol Panel 806–960/1710–2180 C 65°/65° 8.5/9.5dBi

Type No.	800 10454					
Frequency range	806–960		1710–2180			
	806 – 866 MHz	824 – 894 MHz	880 – 960 MHz	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2180 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Average gain	2 x 8.5 dBi	2 x 8.5 dBi	2 x 8.5 dBi	2 x 9.5 dBi	2 x 9.5 dBi	2 x 9.2 dBi
Horizontal Pattern:						
Half-power beam width	67°	67°	65°	60°	63°	68°
Front-to-back ratio [dB]	Copolar: > 25	Copolar: > 25	Copolar: > 25	Copolar: > 25	Copolar: > 25	Copolar: > 25
[dB]	Total power: > 20	Total power: > 20	Total power: > 22	Total power: > 22	Total power: > 22	Total power: > 22
Cross polar ratio	Typically: 25 dB	Typically: 25 dB	Typically: 20 dB	Typically: 20 dB	Typically: 19 dB	Typically: 20 dB
Maindirection	0°	0°	0°	0°	0°	0°
Sector	±60°	±60°	±60°	±60°	±60°	±60°
Vertical Pattern:						
Half-power beam width	68°	68°	69°	64°	62°	60°
VSWR	< 1.5					
Isolation: Intrasystem	> 30 dB					
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)					
Max. power	250 W (at 50 °C ambient temperature)			100 W (at 50 °C ambient temperature)		
Max. power per combined input	350 W (at 50 °C ambient temperature)					
Input	2 x 7-16 female					
Connector position	Bottom or top					
Weight	4.3 kg					
Wind load (at 150 km/h)	Frontal / lateral / rearside: 45 / 25 / 95 N					
Height/width/depth	270 / 262 / 116 mm					
Integrated combiner	The insertion loss is included in the given antenna gain values.					



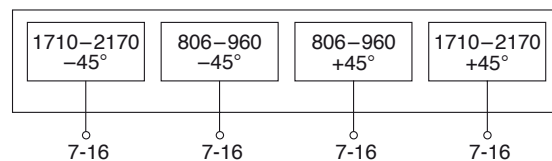
Dual-band Panel Dual Polarization Half-power Beam Width

806–960	1710–2170
X	X
65°	60°

KATHREIN
Antennen · Electronic

XXPol Panel 806–960/1710–2170 65°/60° 12/14dBi 0°/0°T

Type No.	742 226					
Frequency range	806–960		1710–2170			
	806 – 866 MHz	824 – 894 MHz	880 – 960 MHz	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 11.1 dBi	2 x 11.4 dBi	2 x 11.8 dBi	2 x 12.8 dBi	2 x 13.3 dBi	2 x 13.6 dBi
Half-power beam width Copolar +45°/–45°	Horizontal: 67° Vertical: 34°	Horizontal: 66° Vertical: 33°	Horizontal: 64° Vertical: 30°	Horizontal: 66° Vertical: 20°	Horizontal: 60° Vertical: 18°	Horizontal: 60° Vertical: 17.5°
Front-to-back ratio (180° ±30°)	[dB] [dB]	Copolar: > 23 Total power: > 20	Copolar: > 23 Total power: > 20	Copolar: > 25 Total power: > 22	Copolar: > 25 Total power: > 22	Copolar: > 25 Total power: > 22
Cross polar ratio Maindirection Sector	0° ±60°	Typically: 25 dB > 10 dB	Typically: 25 dB > 10 dB	Typically: 25 dB > 10 dB	Typically: 16 dB > 10 dB	Typically: 18 dB > 10 dB
Isolation: Intrasystem		> 30 dB	> 30 dB	> 30 dB	> 30 dB	> 30 dB
Isolation: Intersystem	> 45 dB (806–960 // 1710–2170 MHz)					
VSWR	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Intermodulation IM3 (2 x 43 dBm carrier)	< –150 dBc			< –150 dBc		
Max. power per input	250 W (at 50 °C ambient temperature)			200 W (at 50 °C ambient temperature)		
Input	4 x 7-16 female					
Connector position	Bottom or top					
Weight	7.5 kg					
Wind load (at 150 km/h)	Frontal / lateral / rearside: 100 / 80 / 180 N					
Height/width/depth	579 / 262 / 139 mm					



806/960 –
1800/2000
XXPol

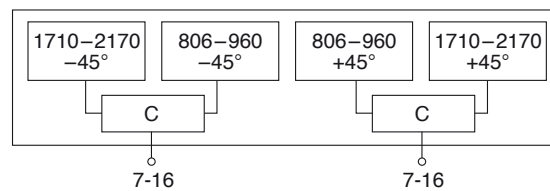
Dual-band Panel Dual Polarization Half-power Beam Width

806–960	1710–2170
X	X
65°	60°

KATHREIN
Antennen · Electronic

XXPol Panel 806–960/1710–2170 C 65°/60° 12/14dBi 0°/0°T

Type No.	742 222					
Frequency range	806–960		1710–2170			
	806 – 866 MHz	824 – 894 MHz	880 – 960 MHz	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 11.1 dBi	2 x 11.4 dBi	2 x 11.8 dBi	2 x 12.5 dBi	2 x 13.3 dBi	2 x 13.6 dBi
Half-power beam width Copolar +45°/–45°	Horizontal: 67° Vertical: 34°	Horizontal: 66° Vertical: 33°	Horizontal: 64° Vertical: 30°	Horizontal: 66° Vertical: 20°	Horizontal: 60° Vertical: 18°	Horizontal: 60° Vertical: 17.5°
Front-to-back ratio (180° ± 30°)	[dB] [dB]	Copolar: > 23 Total power: > 20	Copolar: > 23 Total power: > 20	Copolar: > 25 Total power: > 22	Copolar: > 25 Total power: > 22	Copolar: > 25 Total power: > 22
Cross polar ratio Mairdirection Sector	0° ±60°	Typically: 25 dB > 10 dB	Typically: 25 dB > 10 dB	Typically: 25 dB > 10 dB	Typically: 18 dB > 10 dB	Typically: 18 dB > 10 dB
Isolation: Intrasystem		> 30 dB	> 30 dB	> 30 dB	> 30 dB	> 30 dB
VSWR		< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Intermodulation IM3 (2 x 43 dBm carrier)		< –150 dBc			< –150 dBc	
Max. power	250 W (at 50 °C ambient temperature)			200 W (at 50 °C ambient temperature)		
Max. power per combined input	450 W (at 50 °C ambient temperature)					
Input	2 x 7-16 female					
Connector position	Bottom or top					
Weight	7.2 kg					
Wind load (at 150 km/h)	Frontal / lateral / rearside: 100 / 80 / 180 N					
Height/width/depth	579 / 262 / 139 mm					
Integrated combiner	The insertion loss is included in the given antenna gain values.					



800/900 – 1800/2000 XXPol

Dual-band Panel Dual Polarization Half-power Beam Width

824–960	1710–2180
X	X
65°	65°

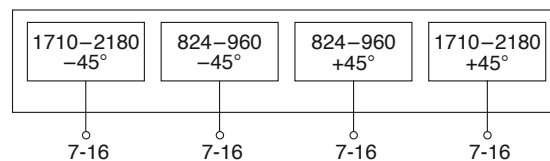
KATHREIN
Antennen · Electronic

XXPol Panel 824–960/1710–2180 65°/65° 14/17dBi 0°–14°/0°–8°T

Type No.	742 264				
Frequency range	824–960 824–894 MHz 870–960 MHz		1710–2180 1710–1880 MHz 1850–1990 MHz 1920–2180 MHz		
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 14 dBi	2 x 14 dBi	2 x 16.5 dBi	2 x 16.8 dBi	2 x 17 dBi
Horizontal Pattern:					
Half-power beam width	68°	65°	65°	65°	63°
Front-to-back ratio, copolar	> 26 dB	> 26 dB	> 25 dB	> 25 dB	> 25 dB
Cross polar ratio Maindirection 0° Sector ±60°	Typically: 20 dB > 10 dB	Typically: 20 dB > 10 dB	Typically: 16 dB > 10 dB	Typically: 18 dB > 10 dB	Typically: 20 dB > 10 dB
Vertical Pattern:					
Half-power beam width	16°	14.5°	7.8°	7.5°	7.2°
Electrical tilt continuously adjustable	0°–14°	0°–14°	0°–8°	0°–8°	0°–8°
Sidelobe suppression for first sidelobe above main beam	0° ... 7° ... 14° T 14 ... 14 ... 13 dB	0° ... 7° ... 14° T 14 ... 14 ... 13 dB	0° ... 4° ... 8° T 14 ... 14 ... 14 dB	0° ... 4° ... 8° T 16 ... 16 ... 15 dB	0° ... 4° ... 8° T 15 ... 16 ... 15 dB
VSWR	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Isolation: Intrasystem	> 30 dB	> 30 dB	> 30 dB	> 30 dB	> 30 dB
Isolation: Intersystem	Typically: > 50 dB (824–960 // 1710–2180 MHz)				
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		< –150 dBc (2 x 43 dBm carrier)		
Max. power per input Total power	500 W 1000 W		250 W 500 W		
(at 50 °C ambient temperature)					
Input	4 x 7-16 female (long neck)				
Connector position	Bottom				
Adjustment mechanism	2x, Position bottom, continuously adjustable				
Weight	16.5 kg				
Wind load (at 150 km/h)	Frontal / lateral / rearside: 230 / 180 / 430 N				
Height/width/depth	1316 / 262 / 139 mm				



800/900 –
1800/2000
XXPol



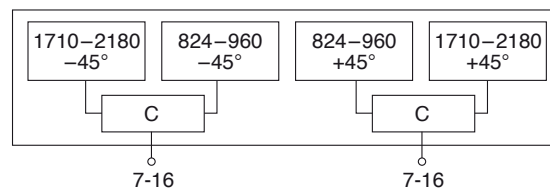
Dual-band Panel Dual Polarization Half-power Beam Width

824–960	1710–2180
X	X
65°	65°

KATHREIN
Antennen · Electronic

XXPol Panel 824–960/1710–2180 C 65°/65° 14/17dBi 0°–14°/0°–8°T

Type No.	742 223				
Frequency range	824–960		1710–2180		
	824–894 MHz	880–960 MHz	1710–1880 MHz	1850–1990 MHz	1900–2180 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 14 dBi	2 x 14 dBi	2 x 16.5 dBi	2 x 16.8 dBi	2 x 17 dBi
Horizontal Pattern:					
Half-power beam width	68°	65°	66°	63°	62°
Front-to-back ratio, copolar	> 26 dB	> 26 dB	> 25 dB	> 25 dB	> 25 dB
Cross polar ratio Maindirection 0° Sector ±60°	Typically: 20 dB > 10 dB	Typically: 20 dB > 10 dB	Typically: 18 dB > 10 dB	Typically: 19 dB > 10 dB	Typically: 20 dB > 10 dB
Vertical Pattern:					
Half-power beam width	15.5°	14.3°	7.8°	7.7°	7.4°
Electrical tilt	0°–14°, continuously adjustable		0°–8°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 7° ... 14° T 14 ... 13 ... 12 dB	0° ... 7° ... 14° T 16 ... 14 ... 13 dB	0° ... 4° ... 8° T 18 ... 18 ... 15 dB	0° ... 4° ... 8° T 18 ... 18 ... 16 dB	0° ... 4° ... 8° T 15 ... 17 ... 17 dB
VSWR	< 1.5				
Isolation: Intrasystem	> 30 dB				
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)				
Max. power	250 W		200 W		
	(at 50 °C ambient temperature)				
Max. power per combined input	450 W (at 50 °C ambient temperature)				
Input	2 x 7-16 female (long neck)				
Connector position	Bottom				
Adjustment mechanism	2x, Position bottom continuously adjustable				
Weight	16.5 kg				
Wind load (at 150 km/h)	Frontal / lateral / rearside: 230 / 180 / 430 N				
Height/width/depth	1316 / 262 / 139 mm				
Integrated combiner	The insertion loss is included in the given antenna gain values.				



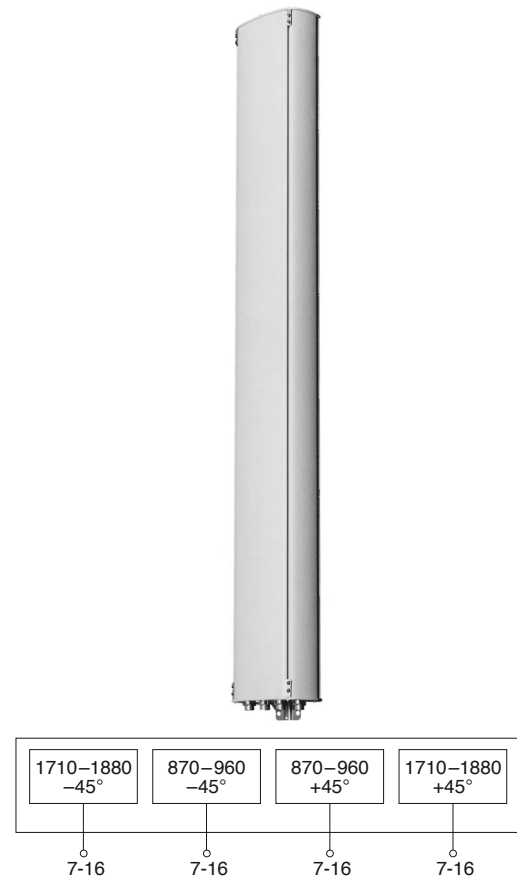
Dual-band Panel Dual Polarization Half-power Beam Width

870–960	1710–1880
X	X
65°	60°

KATHREIN
Antennen · Electronic

XXPol Panel 870–960/1710–1880 65°/60° 17/18.5dBi

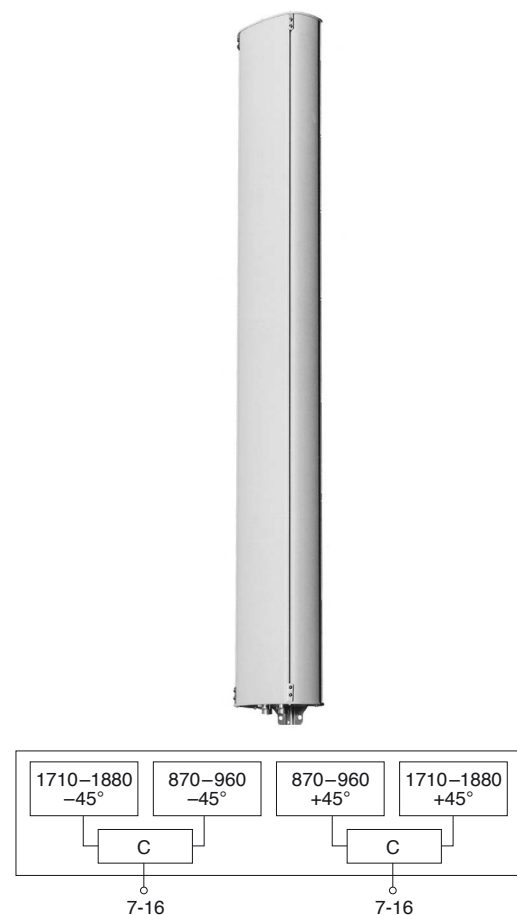
Type No.	741 327	
Frequency range	870–960 870 – 960 MHz	1710–1880 1710 – 1880 MHz
Polarization	+45°, –45°	+45°, –45°
Gain	2 x 17 dBi	2 x 18.5 dBi
Half-power beam width Copolar +45°/–45°	Horizontal: 65° Vertical: 9.5°	Horizontal: 60° Vertical: 5.5°
Sidelobe suppression for first sidelobe above horizon	> 15 dB	
Front-to-back ratio, copolar	> 30 dB	> 30 dB
Isolation, between ports	> 30 dB (GSM 900 – GSM 900) > 30 dB (GSM 1800 – GSM 1800) > 30 dB (GSM 900 – GSM 1800)	
VSWR	< 1.5	< 1.5
Intermodulation IM3 (2 x 43 dBm carrier)	< –150 dBc	< –150 dBc
Max. power per input	400 W	200 W (at 50 °C ambient temperature)
Input	4 x 7-16 female	
Connector position	Bottom or top	
Weight	19 kg	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 330 / 200 / 770 N	
Height/width/depth	1936 / 262 / 116 mm	



800/900 –
1800/2000
XXPol

XXPol Panel 870–960/1710–1880 C 65°/60° 17/18dBi

Type No.	741 322	
Frequency range	870–960 870 – 960 MHz	1710–1880 1710 – 1880 MHz
Polarization	+45°, –45°	+45°, –45°
Gain	2 x 17 dBi	2 x 18 dBi
Half-power beam width Copolar +45°/–45°	Horizontal: 65° Vertical: 9.5°	Horizontal: 60° Vertical: 5.5°
Sidelobe suppression for first sidelobe above horizon	> 15 dB	> 15 dB
Front-to-back ratio, copolar	> 30 dB	> 30 dB
Isolation, between ports	> 30 dB	> 30 dB
VSWR	< 1.5	< 1.5
Intermodulation IM3 (2 x 43 dBm carrier)	< –150 dBc	< –150 dBc
Max. power per input	250 W	150 W (at 50 °C ambient temperature)
Input	2 x 7-16 female	
Connector position	Bottom or top	
Weight	19 kg	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 330 / 200 / 770 N	
Height/width/depth	1936 / 262 / 116 mm	
Integrated combiner	The insertion loss is included in the given antenna gain values.	



Dual-band Panel Dual Polarization Half-power Beam Width

824–960

1710–2180

X

X

65°

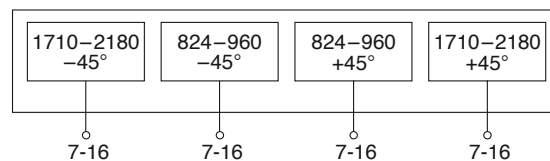
65°

KATHREIN

Antennen · Electronic

XXPol Panel 824–960/1710–2180 65°/65° 16/18.5dBi 0°–10°/0°–6°T

Type No.	742 265				
Frequency range	824–960 824–894 MHz 880–960 MHz		1710–2180 1710–1880 MHz 1850–1990 MHz 1920–2180 MHz		
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 15.5 dBi	2 x 16 dBi	2 x 17.8 dBi	2 x 18.2 dBi	2 x 18.3 dBi
Horizontal Pattern:					
Half-power beam width	68°	65°	67°	65°	63°
Front-to-back ratio (180°±30°)	> 27 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB
Cross polar ratio Maindirection 0° Sector ±60°	Typically: 20 dB > 10 dB	Typically: 20 dB > 10 dB	Typically: 16 dB > 10 dB	Typically: 18 dB > 10 dB	Typically: 18 dB > 10 dB
Vertical Pattern:					
Half-power beam width	10.5°	10°	5.2°	5.0°	4.9°
Electrical tilt continuously adjustable	0.5°–9.5°	0.5°–9.5°	0°–6°	0°–6°	0°–6°
Sidelobe suppression for first sidelobe above main beam	0.5°... 5°... 9.5°T 15 ... 15 ... 15 dB	0.5°... 5°... 9.5°T 15 ... 17 ... 19 dB	0° ... 3° ... 6° T 14 ... 15 ... 15 dB	0° ... 3° ... 6° T 18 ... 17 ... 17 dB	0° ... 3° ... 6° T 17 ... 17 ... 16 dB
VSWR	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Isolation: Intrasystem	> 30 dB	> 30 dB	> 30 dB	> 30 dB	> 30 dB
Isolation: Intersystem	Typically: > 50 dB (824–960 // 1710–2180 MHz)				
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		< –150 dBc (2 x 43 dBm carrier)		
Max. power per input Total power	500 W 1000 W (at 50 °C ambient temperature)		250 W 500 W		
Input	4 x 7-16 female (long neck)				
Connector position	Bottom				
Adjustment mechanism	2x, Position bottom, continuously adjustable				
Weight	22 kg				
Wind load (at 150 km/h)	Frontal / lateral / rearside: 340 / 280 / 640 N				
Height/width/depth	1916 / 262 / 139 mm				



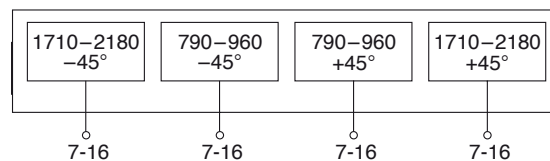
Dual-band Panel Dual Polarization Half-power Beam Width

790 – 960	1710–2180
X	X
65°	65°

KATHREIN
Antennen · Electronic

XXPol Panel 790–960/1710–2180 65°/65° 16.5/18.5dBi 2°–14°/4°–14°T

Type No.	800 10485					
Frequency range	790–960		1710–2180			
	790 – 862 MHz	824 – 896 MHz	880 – 960 MHz	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2180 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Average gain (dBi)	16.2 ... 16 ... 15.7	16.3 ... 16.1 ... 15.8	16.4 ... 16.2 ... 15.8	18 ... 18.2 ... 17.7	18.4 ... 18.5 ... 17.8	18.7 ... 18.6 ... 18
Tilt	2° ... 8° ... 14°	2° ... 8° ... 14°	2° ... 8° ... 14°	4° ... 9° ... 14°	4° ... 9° ... 14°	4° ... 9° ... 14°
Horizontal Pattern:						
Half-power beam width	68°	67°	65°	66°	64°	60°
Front-to-back ratio (180°±30°)	> 25 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB
Cross polar ratio	Typically:	Typically:	Typically:	Typically:	Typically:	Typically:
Maindirection	0°	25 dB	25 dB	25 dB	20 dB	20 dB
Sector	±60°	> 10 dB	> 10 dB	> 10 dB	> 10 dB	> 10 dB
Vertical Pattern:						
Half-power beam width	10°	9.7°	9.3°	5°	4.7°	4.5°
Electrical tilt	2°–14°, continuously adjustable			4°–14°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	2° ... 8° ... 14° T 17 ... 17 ... 15 dB	2° ... 8° ... 14° T 17 ... 17 ... 16 dB	2° ... 8° ... 14° T 17 ... 17 ... 16 dB	4° ... 9° ... 14° T 20 ... 18 ... 15 dB	4° ... 9° ... 14° T 19 ... 18 ... 15 dB	4° ... 9° ... 14° T 18 ... 17 ... 15 dB
VSWR	< 1.5					
Isolation: Intrasystem	> 30 dB					
Isolation: Intersystem	> 35 dB (790–960 // 1710–2180 MHz)					
Intermodulation IM3	< –153 dBc (2 x 43 dBm carrier)					
Max. power per input	400 W (at 50 °C ambient temperature)			250 W (at 50 °C ambient temperature)		
Total power	800 W (at 50 °C ambient temperature)			500 W (at 50 °C ambient temperature)		
Input	4 x 7-16 female (long neck)					
Connector position	Bottom					
Adjustment mechanism	2x, Position bottom continuously adjustable					
Weight	24 kg					
Wind load (at 150 km/h)	Frontal / lateral / rearside: 750 / 380 / 900 N					
Height/width/depth	2038 / 262 / 139 mm					



800/900 –
1800/2000
XXPol

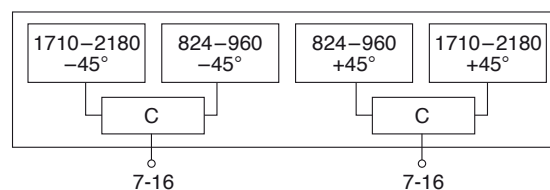
Dual-band Panel Dual Polarization Half-power Beam Width

824–960	1710–2180
X	X
65°	65°

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Antennen · Electronic

XXPol Panel 824–960/1710–2180 C 65°/65° 16/18.5dBi 0°–10°/0°–6°T

Type No.	742 224				
Frequency range	824–960		1710–2180		
	824–894 MHz	880–960 MHz	1710–1880 MHz	1850–1990 MHz	1900–2180 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 15.5 dBi	2 x 16 dBi	2 x 17.8 dBi	2 x 18.2 dBi	2 x 18.3 dBi
Horizontal Pattern:					
Half-power beam width	68°	65°	67°	65°	63°
Front-to-back ratio, copolar	> 27 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB
Cross polar ratio	Typically:	Typically:	Typically:	Typically:	Typically:
Maindirection 0°	20 dB	20 dB	17 dB	18 dB	19 dB
Sector ±60°	> 10 dB	> 10 dB	> 10 dB	> 10 dB	> 10 dB
Vertical Pattern:					
Half-power beam width	10.7°	10.2°	5.0°	4.7°	4.5°
Electrical tilt	0.5°–9.5°, continuously adjustable		0°–6°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 5° ... 10° T 15 ... 15 ... 17 dB	0° ... 5° ... 10° T 16 ... 17 ... 18 dB	0° ... 3° ... 6° T 19 ... 17 ... 13 dB	0° ... 3° ... 6° T 19 ... 18 ... 14 dB	0° ... 3° ... 6° T 19 ... 18 ... 15 dB
VSWR	< 1.5				
Isolation: Intrasystem	> 30 dB				
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)				
Max. power	250 W		200 W		
	(at 50 °C ambient temperature)				
Max. power per combined input	450 W (at 50 °C ambient temperature)				
Input	2 x 7-16 female (long neck)				
Connector position	Bottom				
Adjustment mechanism	2x, Position bottom continuously adjustable				
Weight	23 kg				
Wind load (at 150 km/h)	Frontal / lateral / rearside: 340 / 280 / 640 N				
Height/width/depth	1916 / 262 / 139 mm				
Integrated combiner	The insertion loss is included in the given antenna gain values.				



800/900 – 1800/2000 XXPol

Dual-band Panel Dual Polarization Half-power Beam Width

870–960

1710–1880

X

X

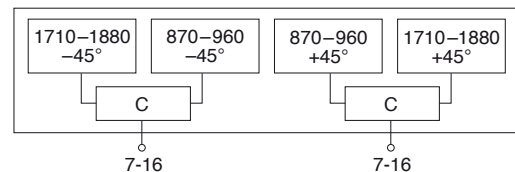
65°

60°

KATHREIN
Antennen · Electronic

XXPol Panel 870–960/1710–1880 C 65°/60° 17.5/17.5dBi 6°T

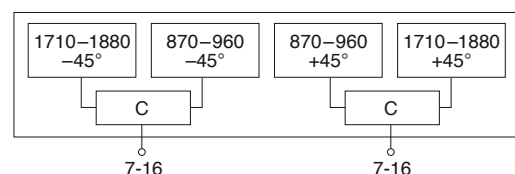
Type No.	741 336	
Frequency range	870–960 870 – 960 MHz	1710–1880 1710 – 1880 MHz
Polarization	+45°, –45°	+45°, –45°
Gain	2 x 17.5 dBi	2 x 17.5 dBi
Half-power beam width Copolar +45°/–45°	Horizontal: 65° Vertical: 7°	Horizontal: 60° Vertical: 6.5°
Electrical tilt	6°, fixed	6°, fixed
Front-to-back ratio, copolar	> 30 dB	> 30 dB
Isolation, between ports	> 30 dB	> 30 dB
VSWR	< 1.5	< 1.5
Intermodulation IM3 (2 x 43 dBm carrier)	< –150 dBc	< –150 dBc
Max. power per input	250 W	150 W (at 50 °C ambient temperature)
Input	2 x 7-16 female	
Connector position	Bottom	
Weight	25 kg	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 470 / 280 / 1040 N	
Height/width/depth	2580 / 262 / 116 mm	
Integrated combiner	The insertion loss is included in the given antenna gain values.	



800/900 –
1800/2000
XXPol

XXPol Panel 870–960/1710–1880 C 65°/60° 17/18dBi 2°–8°T/2°T

Type No.	742 047	
Frequency range	870–960 870 – 960 MHz	1710–1880 1710 – 1880 MHz
Polarization	+45°, –45°	+45°, –45°
Gain	2 x 17 dBi (–0.5 dB)	2 x 18 dBi (–0.5 dB)
Half-power beam width Copolar +45°/–45°	Horizontal: 65° Vertical: 7°	Horizontal: 60° Vertical: 6°
Electrical tilt	2°–8°, adjustable	2°, fixed
Sidelobe suppression for first sidelobe above horizon	2° ... 4° ... 6° ... 8° T 20 ... 18 ... 17 ... 15 dB	2° T 17 dB
Front-to-back ratio, copolar	> 30 dB	> 30 dB
Isolation, between ports	> 30 dB	> 30 dB
VSWR	< 1.5	< 1.5
Intermodulation IM3 (2 x 43 dBm carrier)	< –150 dBc	< –150 dBc
Max. power per input	250 W	150 W (at 50 °C ambient temperature)
Input	2 x 7-16 female	
Connector position	Bottom	
Adjustment mechanism	1x, Position bottom, continuously adjustable	
Weight	25 kg	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 470 / 280 / 1040 N	
Height/width/depth	2580 / 262 / 116 mm	
Integrated combiner	The insertion loss is included in the given antenna gain values.	



Dual-band Panel Dual Polarization Half-power Beam Width

790–960

1710–2180

X

X

65°

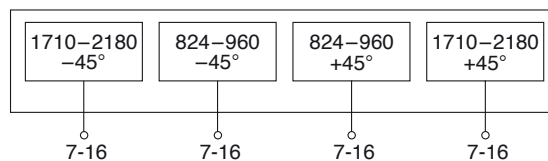
65°

KATHREIN

Antennen · Electronic

XXPol Panel 790–960/1710–2180 65°/65° 17/18.5dBi 0°–7°/0°–6°T

Type No.	742 266				
Frequency range	790–960 790–862 MHz 880–960 MHz		1710–2180 1710–1880 MHz 1850–1990 MHz 1920–2180 MHz		
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Gain (dBi)	16.6 ... 16.6 ... 16.5	17.0 ... 17.1 ... 16.9	18.2 ... 18.5 ... 18.3	18.5 ... 18.7 ... 18.3	18.5 ... 18.7 ... 18.3
Tilt	0° ... 3° ... 7°	0° ... 3° ... 7°	0° ... 3° ... 6°	0° ... 3° ... 6°	0° ... 3° ... 6°
Horizontal Pattern:					
Half-power beam width	68°	65°	65°	65°	61°
Front-to-back ratio, copolar	> 30 dB	> 30 dB	> 30 dB	> 30 dB	> 30 dB
Cross polar ratio	Typically:	Typically:	Typically:	Typically:	Typically:
Maindirection	0°	0°	0°	0°	0°
Sector	±60°	±60°	±60°	±60°	±60°
Vertical Pattern:					
Half-power beam width	7.7°	7.2°	5.0°	4.8°	4.6°
Electrical tilt continuously adjustable	0°–7°	0°–7°	0°–6°	0°–6°	0°–6°
Sidelobe suppression for first sidelobe above main beam: average:	0° ... 4° ... 7° T ≥ 15 ... 16 ... 14 dB ≥ 17 ... 17 ... 15 dB	0° ... 4° ... 7° T ≥ 17 ... 16 ... 15 dB ≥ 18 ... 17 ... 15 dB	0° ... 3° ... 6° T ≥ 16 ... 15 ... 13 dB ≥ 18 ... 17 ... 15 dB	0° ... 3° ... 6° T ≥ 17 ... 16 ... 14 dB ≥ 18 ... 18 ... 16 dB	0° ... 3° ... 6° T ≥ 16 ... 15 ... 15 dB ≥ 18 ... 18 ... 16 dB
VSWR	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Isolation: Intrasystem	> 30 dB	> 30 dB	> 30 dB	> 30 dB	> 30 dB
Isolation: Intersystem	> 45 dB, Typ. > 50 dB (790–960 // 1710–2180 MHz)				
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	500 W		250 W		
Total power	1000 W		500 W		
(at 50 °C ambient temperature)					
Input	4 x 7-16 female (long neck)				
Connector position	Bottom				
Adjustment mechanism	2x, Position bottom, continuously adjustable				
Weight	23 kg				
Wind load (at 150 km/h)	Frontal / lateral / rearside: 1160 / 500 / 1210 N (at 150 km/h)				
Height/width/depth	2533 / 269 / 154 mm				



800/900 –
1800/2000
XXPol

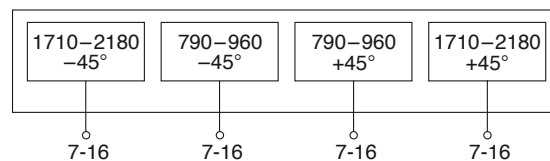
Dual-band Panel Dual Polarization Half-power Beam Width

790–960	1710–2180
X	X
65°	65°

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XXPol Panel 790–960/1710–2180 65°/65° 17.5/18.5dBi 4°–12°/4°–14°T

Type No.	800 10486					
Frequency range	790–960		1710–2180			
	790 – 862 MHz	824 – 896 MHz	880 – 960 MHz	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2180 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Average gain (dBi)	16.8 ... 16.7 ... 16.6	17 ... 16.8 ... 16.8	17.2 ... 17.0 ... 16.8	17.8 ... 18.1 ... 17.5	18.3 ... 18.3 ... 17.8	18.7 ... 18.7 ... 18.0
Tilt	4° ... 8° ... 12°	4° ... 8° ... 12°	4° ... 8° ... 12°	4° ... 9° ... 14°	4° ... 9° ... 14°	4° ... 9° ... 14°
Horizontal Pattern:						
Half-power beam width	68°	67°	66°	66°	64°	61°
Front-to-back ratio (180°±30°)	> 25 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB
Cross polar ratio	Typically:	Typically:	Typically:	Typically:	Typically:	Typically:
Maindirection	0°	23 dB	24 dB	25 dB	18 dB	18 dB
Sector	±60°	> 10 dB	> 10 dB	> 10 dB	> 10 dB	> 10 dB
Vertical Pattern:						
Half-power beam width	7.5°	7.4°	7.2°	5°	4.8°	4.6°
Electrical tilt	4°–12°, continuously adjustable			4°–14°, continuously adjustable		
Sidelobe suppression	4° ... 8° ... 12° T	4° ... 8° ... 12° T	4° ... 8° ... 12° T	4° ... 9° ... 14° T	4° ... 9° ... 14° T	4° ... 9° ... 14° T
– for first sidelobe above main beam	18 ... 17 ... 16 dB	19 ... 18 ... 18 dB	19 ... 18 ... 18 dB	20 ... 18 ... 16 dB	19 ... 19 ... 16 dB	18 ... 18 ... 18 dB
– within 0°–20° sector above horizon	15 ... 15 ... 14 dB	16 ... 15 ... 14 dB	16 ... 15 ... 14 dB	17 ... 17 ... 15 dB	17 ... 17 ... 15 dB	17 ... 17 ... 15 dB
VSWR	< 1.5					
Isolation: Intrasystem	> 30 dB					
Isolation: Intersystem	> 45 dB (790–960 // 1710–2180 MHz)					
Intermodulation IM3	< –153 dBc (2 x 43 dBm carrier)					
Max. power per input	400 W (at 50 °C ambient temperature)			250 W (at 50 °C ambient temperature)		
Total power	800 W (at 50 °C ambient temperature)			500 W (at 50 °C ambient temperature)		
Input	4x 7-16 female (long neck)					
Connector position	Bottom					
Adjustment mechanism	2x, Position bottom continuously adjustable					
Weight	28 kg					
Wind load (at 150 km/h)	Frontal / lateral / rearside: 920 / 460 / 1150 N					
Height/width/depth	2516 / 262 / 139 mm					



800/900 -
1800/2000
XXPol

Dual-band Panel Dual Polarization Half-power Beam Width

824–960 1710–2180

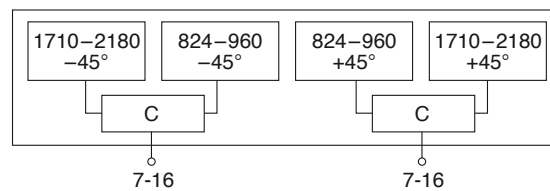
X X

65° 65°

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XXPol Panel 824–960/1710–2180 C 65°/65° 17/18.5dBi 0°–7°/0°–6°T

Type No.	742 225				
Frequency range	824–960		1710–2180		
	824–894 MHz	880–960 MHz	1710–1880 MHz	1850–1990 MHz	1900–2180 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 16.5 dBi	2 x 16.8 dBi	2 x 17.8 dBi	2 x 18.1 dBi	2 x 18.3 dBi
Horizontal Pattern:					
Half-power beam width	68°	66°	66°	65°	61°
Front-to-back ratio, copolar	> 28 dB	> 28 dB	> 25 dB	> 25 dB	> 25 dB
Cross polar ratio	Typically:	Typically:	Typically:	Typically:	Typically:
Maindirection 0°	20 dB	20 dB	16 dB	18 dB	19 dB
Sector ±60°	> 10 dB	> 10 dB	> 10 dB	> 10 dB	> 10 dB
Vertical Pattern:					
Half-power beam width	7.5°	7.2°	5.1°	4.9°	4.6°
Electrical tilt continuously adjust.	0.5°–7°		0°–6°		
Sidelobe suppression for first sidelobe above main beam	0° ... 4° ... 7° T 15 ... 15 ... 15 dB	0° ... 4° ... 7° T 17 ... 17 ... 16 dB	0° ... 3° ... 6° T 17 ... 16 ... 14 dB	0° ... 3° ... 6° T 17 ... 16 ... 15 dB	0° ... 3° ... 6° T 16 ... 17 ... 15 dB
VSWR	< 1.5				
Isolation: Intrasystem	> 30 dB				
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)				
Max. power	250 W		200 W		
	(at 50 °C ambient temperature)				
Max. power per combined input	450 W (at 50 °C ambient temperature)				
Input	2 x 7-16 female (long neck)				
Connector position	Bottom				
Adjustment mechanism	2x, Position bottom, continuously adjustable				
Weight	26 kg				
Wind load (at 150 km/h)	Frontal / lateral / rearside: 460 / 380 / 860 N				
Height/width/depth	2516 / 262 / 139 mm				
Integrated combiner	The insertion loss is included in the given antenna gain values.				



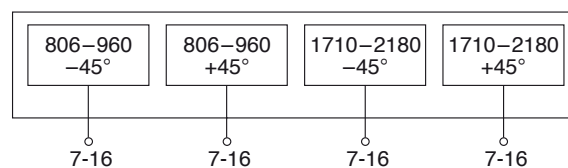
Dual-band Panel Dual Polarization Half-power Beam Width

806–960	1710–2180
X	X
88°	88°

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Antennen · Electronic

XXPol Panel 806–960/1710–2180 88°/88° 13.5/16.5dBi 0°–12°/0°–10°T

Type No.	800 10121					
Frequency range	806–960		1710–2180			
	806 – 866 MHz	824 – 896 MHz	880 – 960 MHz	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2180 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Average gain (dBi)	13.4 ... 13.4 ... 13.1	13.6 ... 13.6 ... 13.4	13.9 ... 13.8 ... 13.5	16.4 ... 16.4 ... 16.2	16.4 ... 16.5 ... 16	16.4 ... 15.9 ... 15.3
Tilt	0° ... 6° ... 12°	0° ... 6° ... 12°	0° ... 6° ... 12°	0° ... 5° ... 10°	0° ... 5° ... 10°	0° ... 5° ... 10°
Horizontal Pattern:						
Half-power beam width	88°	86°	88°	82°	85°	90°
Front-to-back ratio, copolar	> 23 dB	> 23 dB	> 23 dB	> 23 dB	> 23 dB	> 23 dB
Cross polar ratio	Typically:	Typically:	Typically:	Typically:	Typically:	Typically:
Maindirection	0°	0°	0°	0°	0°	0°
Sector	±60°	±60°	±60°	±60°	±60°	±60°
	> 10 dB	> 10 dB	> 13 dB	> 10 dB	> 12 dB	> 10 dB
	avg. 16 dB	avg. 16 dB	avg. 19 dB	avg. 17 dB	avg. 19 dB	avg. 19 dB
Vertical Pattern:						
Half-power beam width	15.0°	14.5°	13.5°	7.0°	6.6°	6.4°
Electrical tilt	0.5°–12.5°, continuously adjustable			0.5°–10°, continuously adjustable		
Min. sidelobe suppression for first sidelobe above main beam: average:	0° ... 6° ... 12° T 16 ... 16 ... 16 dB 17 ... 17 ... 19 dB	0° ... 6° ... 12° T 16 ... 16 ... 16 dB 17 ... 17 ... 19 dB	0° ... 6° ... 12° T 14 ... 14 ... 13 dB 17 ... 16 ... 16 dB	0° ... 5° ... 10° T 17 ... 17 ... 16 dB 20 ... 20 ... 18 dB	0° ... 5° ... 10° T 17 ... 18 ... 16 dB 21 ... 22 ... 17 dB	0° ... 5° ... 10° T 18 ... 16 ... 16 dB 20 ... 20 ... 16 dB
VSWR	< 1.5					
Isolation: Intrasystem	> 30 dB					
Isolation: Intersystem	> 45 dB (806–960 // 1710–2180 MHz)					
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)					
Max. power per input	500 W (at 50 °C ambient temperature)			250 W (at 50 °C ambient temperature)		
Total power	1000 W (at 50 °C ambient temperature)			500 W (at 50 °C ambient temperature)		
Input	4 x 7-16 female (long neck)					
Connector position	Bottom					
Adjustment mechanism	2x, Position bottom continuously adjustable					
Weight	21 kg					
Wind load (at 150 km/h)	Frontal / lateral / rearside: 420 / 260 / 620 N					
Height/width/depth	1384 / 262 / 149 mm					



800/900 -
1800/2000
XXPol

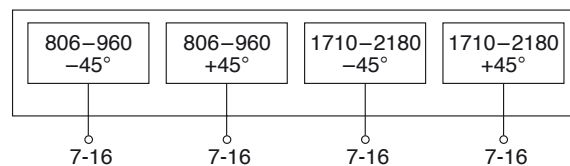
Dual-band Panel Dual Polarization Half-power Beam Width

806–960	1710–2180
X	X
88°	88°

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Antennen · Electronic

XXPol Panel 806–960/1710–2180 88°/88° 15.2/18dBi 0°–10°/0°–6°T

Type No.	800 10122					
Frequency range	806–960		1710–2180			
	806 – 866 MHz	824 – 896 MHz	880 – 960 MHz	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2180 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Average gain (dBi)	14.7 ... 14.9 ... 14.7	15.0 ... 15.2 ... 15.0	15.0 ... 15.2 ... 15.0	17.7 ... 17.8 ... 17.7	17.7 ... 18.0 ... 17.6	17.6 ... 17.8 ... 17.4
Tilt	0° ... 5° ... 10°	0° ... 5° ... 10°	0° ... 5° ... 10°	0° ... 3° ... 6°	0° ... 3° ... 6°	0° ... 3° ... 6°
Horizontal Pattern:						
Half-power beam width	88°	86°	88°	82°	85°	90°
Front-to-back ratio, copolar	> 23 dB	> 23 dB	> 23 dB	> 23 dB	> 23 dB	> 23 dB
Cross polar ratio	Typically:	Typically:	Typically:	Typically:	Typically:	Typically:
Maindirection	0°	0°	0°	0°	0°	0°
Sector	±60°	±60°	±60°	±60°	±60°	±60°
	> 10 dB	> 10 dB	> 13 dB	> 10 dB	> 12 dB	> 10 dB
	avg. 16 dB	avg. 16 dB	avg. 19 dB	avg. 17 dB	avg. 19 dB	avg. 19 dB
Vertical Pattern:						
Half-power beam width	10.5°	10°	9°	5.5°	5.2°	5°
Electrical tilt	0°–10°, continuously adjustable			0°–6°, continuously adjustable		
Min. sidelobe suppression for first sidelobe above main beam	0° ... 5° ... 10° T	0° ... 5° ... 10° T	0° ... 5° ... 10° T	0° ... 3° ... 6° T	0° ... 3° ... 6° T	0° ... 3° ... 6° T
	16 ... 16 ... 14 dB	16 ... 16 ... 16 dB	16 ... 16 ... 14 dB	18 ... 18 ... 16 dB	18 ... 18 ... 16 dB	18 ... 18 ... 16 dB
VSWR	< 1.5					
Isolation: Intrasystem	> 30 dB					
Isolation: Intersystem	> 45 dB (806–960 // 1710–2180 MHz)					
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)					
Max. power per input	500 W (at 50 °C ambient temperature)			250 W (at 50 °C ambient temperature)		
Total power	1000 W (at 50 °C ambient temperature)			500 W (at 50 °C ambient temperature)		
Input	4 x 7-16 female (long neck)					
Connector position	Bottom					
Adjustment mechanism	2x, Position bottom, continuously adjustable					
Weight	27 kg					
Wind load (at 150 km/h)	Frontal / lateral / rearside: 580 / 360 / 870 N					
Height/width/depth	1917 / 262 / 149 mm					



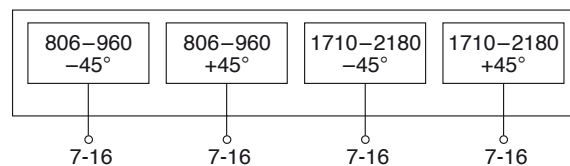
Dual-band Panel Dual Polarization Half-power Beam Width

806–960	1710–2180
X	X
88°	88°

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XXPol Panel 806–960/1710–2180 88°/88° 16.5/18dBi 0°–7°/0°–6°T

Type No.	800 10123					
Frequency range	806–960		1710–2180			
	806 – 866 MHz	824 – 896 MHz	880 – 960 MHz	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2180 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Average gain (dBi)	16.1 ... 16.2 ... 16.1	16.3 ... 16.4 ... 16.3	16.5 ... 16.6 ... 16.5	17.8 ... 17.7 ... 17.4	18.0 ... 17.9 ... 17.4	17.9 ... 17.8 ... 17.3
Tilt	0° ... 4° ... 7°	0° ... 4° ... 7°	0° ... 4° ... 7°	0° ... 3° ... 6°	0° ... 3° ... 6°	0° ... 3° ... 6°
Horizontal Pattern:						
Half-power beam width	86°	86°	86°	84°	85°	88°
Front-to-back ratio, copolar	> 25 dB	> 25 dB	> 25 dB	> 23 dB	> 23 dB	> 23 dB
Cross polar ratio	Typically: 18 dB	Typically: 18 dB	Typically: 20 dB	Typically: 16 dB	Typically: 16 dB	Typically: 15 dB
Maindirection	0°					
Sector	±60°	> 10 dB	> 13 dB	> 10 dB	> 12 dB	> 10 dB
	±60°	avg. 16 dB	avg. 19 dB	avg. 16 dB	avg. 17 dB	avg. 18 dB
Vertical Pattern:						
Half-power beam width	7.3°	7.2°	6.9°	4.8°	4.5°	4.2°
Electrical tilt	0.5°–7°, continuously adjustable			0°–6°, continuously adjustable		
Min. sidelobe suppression for first sidelobe above main beam	0° ... 4° ... 7° T 15 ... 14 ... 14 dB	0° ... 4° ... 7° T 15 ... 14 ... 14 dB	0° ... 4° ... 7° T 15 ... 14 ... 15 dB	0° ... 3° ... 6° T 18 ... 17 ... 16 dB	0° ... 3° ... 6° T 18 ... 17 ... 17 dB	0° ... 3° ... 6° T 18 ... 16 ... 17 dB
VSWR	< 1.5					
Isolation: Intrasystem	> 30 dB					
Isolation: Intersystem	> 45 dB (806–960 // 1710–2180 MHz)					
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)					
Max. power per input	500 W (at 50 °C ambient temperature)			250 W (at 50 °C ambient temperature)		
Total power	1000 W (at 50 °C ambient temperature)			500 W (at 50 °C ambient temperature)		
Input	4 x 7-16 female (long neck)					
Connector position	Bottom					
Adjustment mechanism	2x, Position bottom continuously adjustable					
Weight	33 kg					
Wind load (at 150 km/h)	Frontal / lateral / rearside: 840 / 510 / 1260 N					
Height/width/depth	2635 / 262 / 149 mm					



800/900 - 1800/2000 XXPol

Summary – Directional Antennas

Triple-band

800/900 – 1800/2000

Dual Polarization +45°/-45°

Type	Type No.	Height [mm]	Connector position	Page
XXXPol Panel 806-960	742 270	1498	bottom	104
1710-1880				
1920-2170				
XXXPol Panel 790-960	800 10670	1498	bottom	105
1710-1880 C				
1920-2170				
XXXPol Panel 806-960	800 10290	1540	bottom	106
1710-2180				
1710-2180				
XXXPol Panel 806-960	742 271	2058	bottom	107
1710-1880				
1920-2170				
XXXPol Panel 806-960	800 10671	2058	bottom	108
1710-1880 C				
1920-2170				
XXXPol Panel 806-960	800 10291	2058	bottom	109
1710-2180				
1710-2180				
XXXPol Panel 806-960	742 272	2628	bottom	110
1710-1880				
1920-2170				
XXXPol Panel 790-960	800 10672	2628	bottom	111
1710-1880 C				
1920-2170				
XXXPol Panel 806-960	800 10292	2694	bottom	112
1710-2180				
1710-2180				
XXXPol Panel 806-960	800 10492	2694	bottom	113
1710-2180				
1710-2180				

C = integrated Combiner

New or changed product

When deploying Triple-band Antennas, please also consider using special Triple-band Combiners (see page 229)

Triple-band Panel

Dual Polarization

Half-power Beam Width

806–960	1710–1880	1920–2170
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X	X	X
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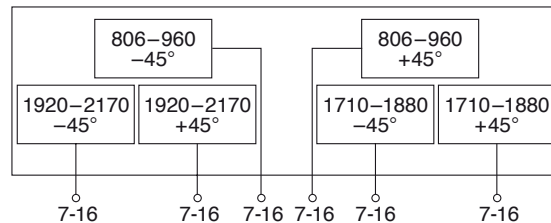
66°	66°	65°
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Antennen · Electronic

XXXPol Panel 806–960/1710–1880/1920–2170 66°/66°/65° 15/16.5/17dBi 0°–12°/0°–8°/0°–8°T

Type No.	742 270				
Frequency range	806–960		1710–1880	1920–2170	
	806–866 MHz	824–894 MHz	880–960 MHz	1710–1880 MHz	1920–2170 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 14.8 dBi	2 x 15 dBi	2 x 15.2 dBi	2 x 16.5 dBi	2 x 17.2 dBi
Horizontal Pattern:					
Half-power beam width	69°	67°	65°	66°	65°
Front-to-back ratio, copolar	> 27 dB	> 27 dB	> 27 dB	> 25 dB	> 25 dB
Cross polar ratio	Typically: 25 dB	Typically: 25 dB	Typically: 25 dB	Typically: 16 dB	Typically: 18 dB
Main direction	0°				
Sector	±60°	> 10 dB	> 10 dB	> 10 dB	> 10 dB
Vertical Pattern:					
Half-power beam width	14°	13.6°	13°	6.7°	6.2°
Electrical tilt, contin. adjust.	0.5°–12°			0.5°–8°	0°–8°
Sidelobe suppression for first sidelobe above main beam	0° ... 6° ... 12° T 17 ... 17 ... 14 dB	0° ... 6° ... 12° T 17 ... 17 ... 14 dB	0° ... 6° ... 12° T 18 ... 18 ... 15 dB	0° ... 4° ... 8° T 18 ... 16 ... 14 dB	0° ... 4° ... 8° T 18 ... 16 ... 15 dB
VSWR	< 1.5			< 1.5	< 1.5
Isolation: Intrasystem	> 30 dB			> 30 dB	> 30 dB
Isolation: Intersystem	Typically: > 50 dB (806–960 // 1710–1880 MHz) Typically: > 50 dB (806–960 // 1920–2170 MHz) > 30 dB (1710–1880 // 1920–2170 MHz)				
Intermodulation IM3 (2 x 43 dBm carrier)	< –150 dBc			< –150 dBc	< –150 dBc
Max. power per input	250 W			200 W	200 W
	(at 50 °C ambient temperature)				
Input	6 x 7-16 female (long neck)				
Connector position	Bottom				
Adjustment mechanism	3x, Position bottom continuously adjustable				
Weight	22 kg				
Wind load (at 150 km/h)	Frontal / lateral / rearside: 460 / 300 / 690 N				
Height/width/depth	1498 / 262 / 149 mm				



Triple-band Panel

Dual Polarization

Half-power Beam Width

790–960 1710–1880 1920–2170

X X X

66° 66° 65°

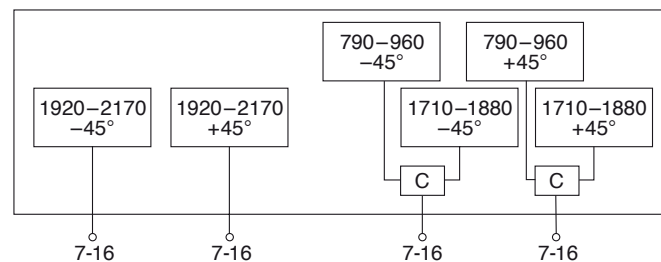
KATHREIN

Antennen · Electronic

XXXPol Panel 790–960/1710–1880/1920–2170 C 66°/66°/65° 15/16.5/17dBi 0°–12°/0°–8°/0°–8°T

Type No.	800 10670				
Frequency range	790–960		1710–1880	1920–2170	
	790–866 MHz	824–894 MHz	880–960 MHz	1710–1880 MHz	1920–2170 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 14.8 dBi	2 x 15 dBi	2 x 15.2 dBi	2 x 16.5 dBi	2 x 17.2 dBi
Horizontal Pattern:					
Half-power beam width	69°	67°	65°	66°	65°
Front-to-back ratio, copolar	> 27 dB			> 25 dB	> 25 dB
Cross polar ratio	Typically: 25 dB			Typically: 16 dB	Typically: 18 dB
Main direction	0°			0°	0°
Sector	±60°			> 10 dB	> 10 dB
Vertical Pattern:					
Half-power beam width	14°	13.6°	13°	6.7°	6.2°
Electrical tilt, contin. adjust.	0.5°–12°			0.5°–8°	0°–8°
Sidelobe suppression for first sidelobe above main beam	0° ... 6° ... 12° T 17 ... 17 ... 14 dB			0° ... 4° ... 8° T 18 ... 16 ... 14 dB	0° ... 4° ... 8° T 18 ... 16 ... 15 dB
VSWR	< 1.5				
Isolation: Intrasystem	> 30 dB				
Isolation: Intersystem	Typically: > 50 dB (790–960 // 1920–2170 MHz) > 30 dB (1710–1880 // 1920–2170 MHz)				
Intermodulation IM3 (2 x 43 dBm carrier)	< –150 dBc				< –150 dBc
Max. power per input	250 W		200 W	200 W	
	(at 50 °C ambient temperature)				
Max. power per combined input	450 W (at 50 °C ambient temperature)				
Input	4 x 7-16 female (long neck)				
Connector position	Bottom				
Adjustment mechanism	3x, Position bottom continuously adjustable				
Weight	21.5 kg				
Wind load (at 150 km/h)	Frontal / lateral / rearside: 460 / 300 / 680 N				
Height/width/depth	1498 / 262 / 149 mm				
Integrated combiner	The insertion loss is included in the given antenna gain values.				

800/900 -
1800/2000
XXXPol



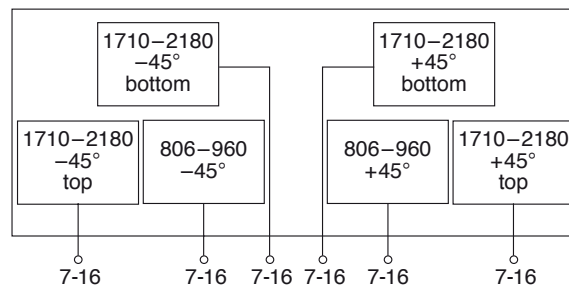
Triple-multiband Panel Dual Polarization Half-power Beam Width

806–960	1710–2180	1710–2180
X	X	X
65°	65°	65°

KATHREIN
Antennen · Electronic

XXXPol Panel 806–960/1710–2180/1710–2180 65°/65°/65° 15/15/15dBi 0°–14°/0°–14°/0°–14°T

Type No.	800 10290					
Frequency range	806 – 866 MHz	806–960 824–894 MHz	880–960 MHz	1710–1880 MHz	1710–2180 1850–1990 MHz	1710–2180 1920–2180 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Gain: (dBi)	14.4 ... 14.3 ... 14	14.6 ... 14.4 ... 14.2	14.9 ... 14.7 ... 14.4	14.5 ... 14.5 ... 14.2	14.8 ... 14.8 ... 14.5	15.1 ... 14.8 ... 14.4
1710–2180 MHz (Syst. bottom)				14 ... 14 ... 13.7	14.4 ... 14.3 ... 13.9	14.9 ... 14.8 ... 14.2
1710–2180 MHz (Syst. top)				0° ... 7° ... 14°	0° ... 7° ... 14°	0° ... 7° ... 14°
Tilt	0° ... 7° ... 14°	0° ... 7° ... 14°	0° ... 7° ... 14°			
Horizontal Pattern:						
Half-power beam width	69°	68°	67°	67°	63°	60°
Front-to-back ratio (180°±30°)	> 25 dB			> 25 dB		
Cross polar ratio	Typically: 25 dB			Typically: 20 dB		
Maindirection	0°			0°		
Sector	±60°			> 10 dB		
Vertical Pattern:						
Half-power beam width	14.7°	14.3°	13.9°	13.8°	13.2°	12.6°
Electrical tilt	0°–14°, continuously adjustable			Syst. bottom: 0°–14°, continuously adjustable Syst. top: 0°–14°, continuously adjustable		
Sidelobe suppression	0° ... 7° ... 14°	0° ... 7° ... 14°	0° ... 7° ... 14°	0° ... 7° ... 14°	0° ... 7° ... 14°	0° ... 7° ... 14°
– for first sidelobe above main beam	18 ... 16 ... 16 dB	18 ... 16 ... 16 dB	18 ... 17 ... 16 dB	18 ... 16 ... 15 dB	18 ... 17 ... 17 dB	18 ... 16 ... 17 dB
VSWR	< 1.5					
Isolation: Intrasystem	> 30 dB					
Isolation: Intersystem	> 35 dB (806–960 // 1710–2180 MHz) > 30 dB (1710–2180 // 1710–2180 MHz)					
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)					
Max. power per input	400 W (at 50 °C ambient temperature)			250 W (at 50 °C ambient temperature)		
Input	6 x 7-16 female (long neck)					
Connector position	Bottom					
Adjustment mechanism	3x, Position bottom continuously adjustable					
Weight	21 kg					
Wind load (at 150 km/h)	Frontal / lateral / rearside: 480 / 300 / 700 N					
Height/width/depth	1540 / 262 / 149 mm					



Triple-band Panel

Dual Polarization

Half-power Beam Width

806–960 1710–1880 1920–2170

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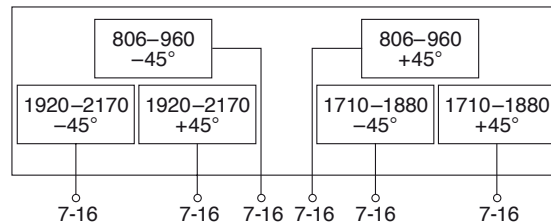
X X X

Antennen · Electronic

67° 65° 65°

XXXPol Panel 806–960/1710–1880/1920–2170 67°/65°/65° 16.5/17.5/18dBi 0°–10°/0°–6°/0°–6°T

Type No.	742 271				
Frequency range	806–866 MHz	806–960 824–894 MHz	880–960 MHz	1710–1880 MHz	1920–2170 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 16 dBi	2 x 16.1 dBi	2 x 16.3 dB	2 x 17.5 dBi	2 x 18 dBi
Horizontal Pattern:					
Half-power beam width	69°	68°	67°	65°	65°
Front-to-back ratio, copolar	> 25 dB	> 25 dB	> 25 dB	> 24 dB	> 25 dB
Cross polar ratio	Typically: 25 dB	Typically: 25 dB	Typically: 25 dB	Typically: 18 dB	Typically: 20 dB
Main direction Sector	> 10 dB	> 10 dB	> 10 dB	> 10 dB	> 10 dB
Vertical Pattern:					
Half-power beam width	9.5°	9.3°	9.0°	4.7°	4.3°
Electrical tilt continuously adjustable	0°–10°			0°–6°	0°–6°
Sidelobe suppression for first sidelobe above main beam	0° ... 5° ... 10° T 15 ... 15 ... 13 dB	0° ... 5° ... 10° T 15 ... 15 ... 13 dB	0° ... 5° ... 10° T 15 ... 15 ... 13 dB	0° ... 3° ... 6° T 18 ... 17 ... 16 dB	0° ... 3° ... 6° T 18 ... 16 ... 15 dB
VSWR	< 1.5				
Isolation: Intrasystem	> 30 dB				
Isolation: Intersystem	Typically: > 50 dB (806–960 // 1710–1880 MHz) Typically: > 50 dB (806–960 // 1920–2170 MHz) > 30 dB (1710–1880 // 1920–2170 MHz)				
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)				
Max. power per input	300 W (at 50 °C ambient temperature)		200 W	200 W	
Input	6 x 7-16 female (long neck)				
Connector position	Bottom				
Adjustment	3x, Position bottom continuously adjustable				
Weight	28.5 kg				
Wind load (at 150 km/h)	Frontal / lateral / rearside: 640 / 410 / 950 N				
Height/width/depth	2058 / 262 / 149 mm				



800/900 –
1800/2000
XXXPol

Triple-band Panel

Dual Polarization

Half-power Beam Width

806–960 1710–1880 1920–2170

X X X

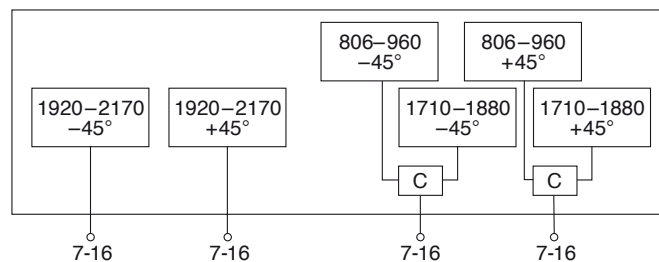
67° 65° 65°

KATHREIN

Antennen · Electronic

XXXPol Panel 806–960/1710–1880/1920–2170 C 67°/65°/65° 16.5/17.5/18dBi 0°–10°/0°–6°/0°–6°T

Type No.	800 10671				
Frequency range	806–960		1710–1880	1920–2170	
	806–866 MHz	824–894 MHz	880–960 MHz	1710–1880 MHz	1920–2170 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 16 dBi	2 x 16.1 dBi	2 x 16.3 dBi	2 x 17.5 dBi	2 x 18 dBi
Horizontal Pattern:					
Half-power beam width	69°	68°	67°	65°	65°
Front-to-back ratio, copolar	> 25 dB			> 24 dB	> 25 dB
Cross polar ratio	Typically: 25 dB			Typically: 18 dB	Typically: 20 dB
Main direction	0°			0°	0°
Sector	±60°			> 10 dB	> 10 dB
Vertical Pattern:					
Half-power beam width	9.5°	9.3°	9.0°	4.7°	4.3°
Electrical tilt, contin. adjust.	0°–10°			0°–6°	0°–6°
Sidelobe suppression for first sidelobe above main beam	0° ... 5° ... 10° T 15 ... 15 ... 13 dB			0° ... 3° ... 6° T 18 ... 17 ... 16 dB	0° ... 3° ... 6° T 18 ... 16 ... 15 dB
VSWR	< 1.5				
Isolation: Intrasystem	> 30 dB				
Isolation: Intersystem	Typically: > 50 dB (806–960 // 1920–2170 MHz) > 30 dB (1710–1880 // 1920–2170 MHz)				
Intermodulation IM3 (2 x 43 dBm carrier)	< –150 dBc				< –150 dBc
Max. power per input	250 W		200 W	200 W	
	(at 50 °C ambient temperature)				
Max. power per combined input	450 W (at 50 °C ambient temperature)				
Input	4 x 7-16 female (long neck)				
Connector position	Bottom				
Adjustment mechanism	3x, Position bottom continuously adjustable				
Weight	27.5 kg				
Wind load (at 150 km/h)	Frontal / lateral / rearside: 640 / 410 / 950 N				
Height/width/depth	2058 / 262 / 149 mm				
Integrated combiner	The insertion loss is included in the given antenna gain values.				



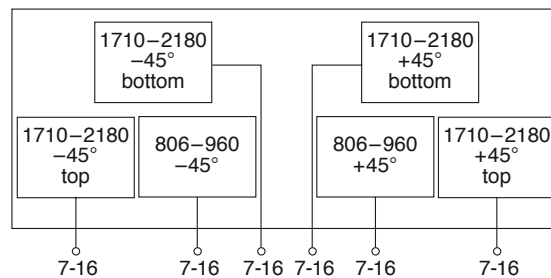
Triple-multiband Panel Dual Polarization Half-power Beam Width

806–960	1710–2180	1710–2180
X	X	X
65°	65°	65°

KATHREIN
Antennen · Electronic

XXXPol Panel 806–960/1710–2180/1710–2180 65°/65°/65° 16.5/16.5/16.5dBi 2°–14°/0°–14°/0°–14°T

Type No.	800 10291					
Frequency range	806 – 866 MHz	806–960 824–894 MHz	880–960 MHz	1710–1880 MHz	1710–2180 1850–1990 MHz	1710–2180 1920–2180 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Average Gain: (dBi)	16.2 ... 16 ... 15.7	16.3 ... 16.1 ... 15.8	16.4 ... 16.2 ... 15.8	15.9 ... 15.9 ... 15.5	16.2 ... 16.2 ... 15.7	16.3 ... 16.3 ... 15.8
1710–2180 MHz (Syst. bottom)				15.8 ... 15.8 ... 15.4	16.1 ... 16.1 ... 15.4	16.3 ... 16.2 ... 15.5
1710–2180 MHz (Syst. top)				0° ... 7° ... 14°	0° ... 7° ... 14°	0° ... 7° ... 14°
Tilt	2° ... 8° ... 14°	2° ... 8° ... 14°	2° ... 8° ... 14°			
Horizontal Pattern:						
Half-power beam width	68°	67°	65°	65°	64°	60°
Front-to-back ratio (180°±30°)	> 25 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB
Cross polar ratio	Typically:	Typically:	Typically:	Typically:	Typically:	Typically:
Maindirection	25 dB	25 dB	25 dB	18 dB	19 dB	20 dB
Sector	> 10 dB	> 10 dB	> 10 dB	> 10 dB	> 10 dB	> 10 dB
Vertical Pattern:						
Half-power beam width	10°	9.7°	9.3°	9.5°	9°	8.7°
Electrical tilt	2°–14°, continuously adjustable			0°–14°, continuously adjustable		
Sidelobe suppression	2° ... 8° ... 14° T	2° ... 8° ... 14° T	2° ... 8° ... 14° T	0° ... 7° ... 14° T	0° ... 7° ... 14° T	0° ... 7° ... 14° T
– for first sidelobe above main beam	17 ... 17 ... 15 dB	17 ... 17 ... 16 dB	17 ... 17 ... 16 dB	18 ... 17 ... 17 dB	18 ... 17 ... 17 dB	18 ... 17 ... 17 dB
VSWR	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Isolation: Intrasystem	> 30 dB					
Isolation: Intersystem	> 35 dB (806–960 // 1710–2180 MHz) > 30 dB (1710–2180 // 1710–2180 MHz)					
Intermodulation IM3	< –153 dBc (2 x 43 dBm carrier)					
Max. power per input	400 W (at 50 °C ambient temperature)			250 W (at 50 °C ambient temperature)		
Input	6 x 7-16 female (long neck)					
Connector position	Bottom					
Adjustment mechanism	3x, Position bottom/continuously adjustable					
Weight	27 kg					
Wind load (at 150 km/h)	Frontal / rateral / rearside: 640 / 410 / 950 N					
Height/width/depth	2058 / 262 / 149 mm					



800/900 –
1800/2000
XXXPol

Triple-band Panel

806–960

1710–1880

1920–2170

KATHREIN

Dual Polarization

X

X

X

Antennen · Electronic

Half-power Beam Width

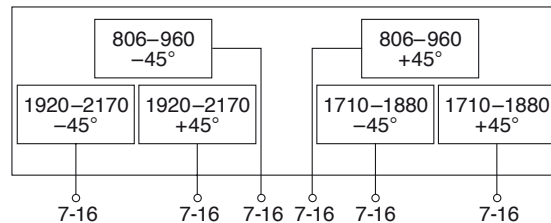
66°

65°

63°

XXXPol Panel 806–960/1710–1880/1920–2170 66°/65°/63° 17.5/17.5/18dBi 0°–7°/0°–6°/0°–6°T

Type No.	742 272				
Frequency range	806–960		1710–1880	1920–2170	
	806–866 MHz	824–894 MHz	880–960 MHz	1710–1880 MHz	1920–2170 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 17 dBi	2 x 17.2 dBi	2 x 17.5 dBi	2 x 17.5 dBi	2 x 18 dBi
Horizontal Pattern:					
Half-power beam width	69°	68°	66°	65°	63°
Front-to-back ratio, copolar	> 25 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB
Cross polar ratio	Typically: 25 dB	Typically: 25 dB	Typically: 25 dB	Typically: 14 dB	Typically: 17 dB
Main direction	0°				
Sector	±60°	> 10 dB	> 10 dB	> 10 dB	> 10 dB
Vertical Pattern:					
Half-power beam width	7.4°	7.2°	6.8°	4.7°	4.4°
Electrical tilt, contin. adjust.	0.5°–7°			0°–6°	0°–6°
Sidelobe suppression for first sidelobe above main beam	0° ... 4° ... 7° T 15 ... 16 ... 16 dB	0° ... 4° ... 7° T 15 ... 16 ... 16 dB	0° ... 4° ... 7° T 16 ... 17 ... 16 dB	0° ... 3° ... 6° T 17 ... 17 ... 16 dB	0° ... 3° ... 6° T 17 ... 15 ... 14 dB
VSWR	< 1.5			< 1.5	< 1.5
Isolation: Intrasystem	> 30 dB			> 30 dB	> 30 dB
Isolation: Intersystem	Typically: > 50 dB (806–960 // 1710–1880 MHz) Typically: > 50 dB (806–960 // 1920–2170 MHz) > 30 dB (1710–1880 // 1920–2170 MHz)				
Intermodulation IM3 (2 x 43 dBm carrier)	< –150 dBc			< –150 dBc	< –150 dBc
Max. power per input	250 W			200 W	200 W
	(at 50 °C ambient temperature)				
Input	6 x 7-16 female (long neck)				
Connector position	Bottom				
Adjustment mechanism	3x, Position bottom continuously adjustable				
Weight	34 kg				
Wind load (at 150 km/h)	Frontal / lateral / rearside: 860 / 520 / 1270 N				
Height/width/depth	2628 / 262 / 149 mm				



Triple-band Panel

Dual Polarization

Half-power Beam Width

790–960 1710–1880 1920–2170

X X X

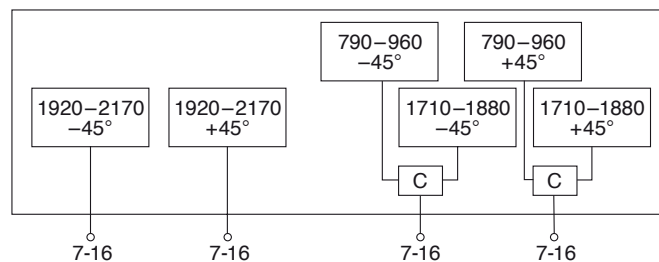
66° 65° 63°

KATHREIN

Antennen · Electronic

XXXPol Panel 790–960/1710–1880/1920–2170 C 66°/65°/63° 17.5/17.5/18dBi 0°–7°/0°–6°/0°–6°T

Type No.	800 10672				
Frequency range	790–960		1710–1880	1920–2170	
	790–866 MHz	824–894 MHz	880–960 MHz	1710–1880 MHz	1920–2170 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 17 dBi	2 x 17.2 dBi	2 x 17.5 dBi	2 x 17.5 dBi	2 x 18 dBi
Horizontal Pattern:					
Half-power beam width	69°	68°	66°	65°	63°
Front-to-back ratio, copolar	> 25 dB			> 25 dB	> 25 dB
Cross polar ratio	Typically: 25 dB			Typically: 14 dB	Typically: 17 dB
Main direction	0°			0°	0°
Sector	±60°			> 10 dB	> 10 dB
Vertical Pattern:					
Half-power beam width	7.4°	7.2°	6.8°	4.7°	4.4°
Electrical tilt, contin. adjust.	0.5°–7°			0°–6°	0°–6°
Sidelobe suppression for first sidelobe above main beam	0° ... 4° ... 7° T 15 ... 16 ... 16 dB			0° ... 3° ... 6° T 17 ... 17 ... 16 dB	0° ... 3° ... 6° T 17 ... 15 ... 14 dB
VSWR	< 1.5				
Isolation: Intrasystem	> 30 dB				
Isolation: Intersystem	Typically: > 50 dB (790–960 // 1920–2170 MHz) > 30 dB (1710–1880 // 1920–2170 MHz)				
Intermodulation IM3 (2 x 43 dBm carrier)	< –150 dBc				< –150 dBc
Max. power per input	250 W		200 W	200 W	
	(at 50 °C ambient temperature)				
Max. power per combined input	450 W (at 50 °C ambient temperature)				
Input	4 x 7-16 female (long neck)				
Connector position	Bottom				
Adjustment mechanism	3x, Position bottom continuously adjustable				
Weight	32 kg				
Wind load (at 150 km/h)	Frontal / lateral / rearside: 850 / 510 / 1270 N				
Height/width/depth	2628 / 262 / 149 mm				
Integrated combiner	The insertion loss is included in the given antenna gain values.				



800/900 -
1800/2000
XXXPol

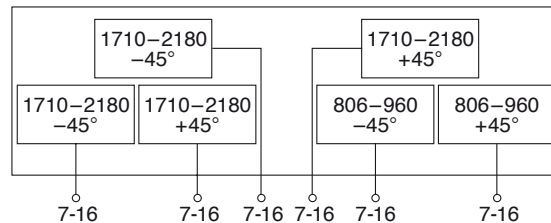
Triple-multiband Panel Dual Polarization Half-power Beam Width

806–960	1710–2180	1710–2180
X	X	X
65°	65°	65°

KATHREIN
Antennen · Electronic

XXXPol Panel 806–960/1710–2180/1710–2180 65°/65°/65° 17.5/17.5/17dBi 2°–10°/0°–10°/0°–10°T

Type No.	800 10292					
Frequency range	806–960		1710–2180 1710–2180			
	806–866 MHz	824–894 MHz	880–960 MHz	1710–1880 MHz	1850–1990 MHz	1920–2180 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Average Gain: (dBi)	16.8...17.0...16.8	17.0...17.1...17.0	17.4...17.4...17.1	16.5...16.7...16.5	17.0...17.1...16.7	17.3...17.4...16.8
1710–2180 MHz (Syst. bottom)				16.2...16.3...16.1	16.7...16.7...16.4	17.0...17.0...16.5
1710–2180 MHz (Syst. top)				0°...5°...10°	0°...5°...10°	0°...5°...10°
Tilt	2°...6°...10°	2°...6°...10°	2°...6°...10°			
Horizontal Pattern:						
Half-power beam width	69°	68°	66°	65°	64°	60°
Front-to-back ratio, copolar	> 30 dB	> 30 dB	> 30 dB	> 26 dB	> 26 dB	> 26 dB
Cross polar ratio	Typically:	Typically:	Typically:	Typically:	Typically:	Typically:
Maindirection 0°	25 dB	25 dB	25 dB	18 dB	18 dB	18 dB
Sector ±60°	> 10 dB	> 10 dB	> 10 dB	> 10 dB	> 10 dB	> 10 dB
±60°	avg. 20 dB	avg. 20 dB	avg. 17 dB	avg. 14 dB	avg. 16 dB	avg. 16 dB
Vertical Pattern:						
Half-power beam width	7.8°	7.6°	7.1°	7.4°	7.2°	6.8°
Electrical tilt	2.5°–9.5°, continuously adjustable			0°–10°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	2° ... 6° ... 10° T 17 ... 16 ... 14 dB	2° ... 6° ... 10° T 17 ... 16 ... 14 dB	2° ... 6° ... 10° T 17 ... 16 ... 14 dB	0° ... 5° ... 10° T 16 ... 16 ... 16 dB	0° ... 5° ... 10° T 16 ... 17 ... 16 dB	0° ... 5° ... 10° T 16 ... 16 ... 14 dB
VSWR	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5	< 1.5
Isolation: Intrasystem	> 30 dB	> 30 dB	> 30 dB	> 30 dB	> 30 dB	> 30 dB
Isolation: Intersystem	> 36 dB (806–960 // 1710–2180 MHz) > 36 dB (1710–2180 // 1710–2180 MHz)					
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)			< –150 dBc (2 x 43 dBm carrier)		
Max. power per input	250 W (at 50 °C ambient temperature)			200 W (at 50 °C ambient temperature)		
Input	6 x 7-16 female					
Connector position	Bottom					
Adjustment mechanism	3x, Position bottom continuously adjustable					
Weight	36 kg					
Wind load (at 150 km/h)	Frontal / lateral / rearside: 870 / 520 / 1320 N					
Height/width/depth	2694 / 262 / 149 mm					



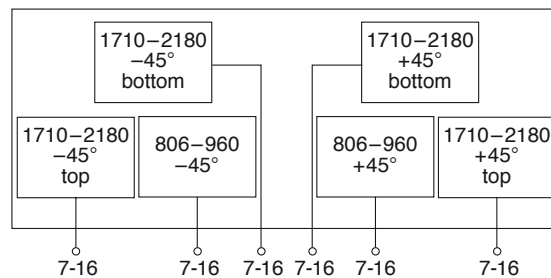
Triple-multiband Panel Dual Polarization Half-power Beam Width

806–960	1710–2180	1710–2180
X	X	X
65°	65°	65°

KATHREIN
Antennen · Electronic

XXXPol Panel 806–960/1710–2180/1710–2180 65°/65°/65° 17.5/17/17dBi 4°–12°/0°–14°/0°–14°T

Type No.	800 10492					
Frequency range	806 – 866 MHz	806–960 824–894 MHz	880–960 MHz	1710–1880 MHz	1710–2180 1850–1990 MHz	1710–2180 1920–2180 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Average Gain: (dBi)	16.8 ... 16.7 ... 16.6	17.0 ... 16.9 ... 16.8	17.2 ... 17.0 ... 16.8	16.1 ... 16.3 ... 16.0	16.7 ... 16.8 ... 16.3	17.0 ... 17.0 ... 16.6
1710–2180 MHz (Syst. bottom)				16.1 ... 16.1 ... 15.8	16.7 ... 16.5 ... 16.2	17.0 ... 16.9 ... 16.4
1710–2180 MHz (Syst. top)				0° ... 7° ... 14°	0° ... 7° ... 14°	0° ... 7° ... 14°
Tilt	4° ... 8° ... 12°	4° ... 8° ... 12°	4° ... 8° ... 12°			
Horizontal Pattern:						
Half-power beam width	68°	67°	66°	65°	63°	60°
Front-to-back ratio (180°±30°)	> 25 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB	> 25 dB
Cross polar ratio	Typically:	Typically:	Typically:	Typically:	Typically:	Typically:
Maindirection	23 dB	24 dB	25 dB	18 dB	18 dB	19 dB
Sector	> 10 dB	> 10 dB	> 10 dB	> 10 dB	> 10 dB	> 10 dB
Vertical Pattern:						
Half-power beam width	7.5°	7.4°	7.2°	7.8°	7.6°	7.2°
Electrical tilt	4°–12°, continuously adjustable			0°–14°, continuously adjustable		
Sidelobe suppression	4° ... 8° ... 12° T	4° ... 8° ... 12° T	4° ... 8° ... 12° T	0° ... 7° ... 14° T	0° ... 7° ... 14° T	0° ... 7° ... 14° T
– for first sidelobe above main beam	19 ... 17 ... 16 dB	19 ... 18 ... 18 dB	19 ... 18 ... 18 dB	18 ... 17 ... 15 dB	18 ... 17 ... 15 dB	18 ... 17 ... 15 dB
– within 0°–20° sector above horizon	15 ... 15 ... 14 dB	16 ... 15 ... 14 dB	16 ... 15 ... 14 dB	18 ... 17 ... 15 dB	17 ... 17 ... 15 dB	15 ... 14 ... 14 dB
VSWR	< 1.5					
Isolation: Intrasystem	> 30 dB					
Isolation: Intersystem	> 36 dB (806–960 // 1710–2180 MHz) > 36 dB (1710–2180 // 1710–2180 MHz)					
Intermodulation IM3	< –153 dBc (2 x 43 dBm carrier)					
Max. power per input	400 W (at 50 °C ambient temperature)			250 W (at 50 °C ambient temperature)		
Input	6 x 7-16 female (long neck)					
Connector position	Bottom					
Adjustment mechanism	3x, Position bottom continuously adjustable					
Weight	34 kg					
Wind load (at 150 km/h)	Frontal / lateral / rearside: 870 / 520 / 1320 N					
Height/width/depth	2694 / 262 / 149 mm					



800/900 –
1800/2000
XXXPol

Summary – Directional Antennas Omnidirectional Antennas 2300 ... 3800

Dual Polarization +45°/–45° – Directional – 2300

Type	Type No.	Height [mm]	Connector position	Page
XPol Panel 1710–2690 65° 15.5dBi 0°–10°T	800 10681	724	bottom	116
XPol Panel 2300–2690 60° 18dBi 0°–12°T	800 10541	1149	bottom	117
XPol Panel 1710–2690 65° 17.5dBi 2°T	800 10471	1302	bottom	118
XPol Panel 1710–2690 65° 18dBi 0°–12°T ESLS	800 10621	1398	bottom	119
XXPol Panel 1710–2690 65° 15.5dBi 0°–10°T	800 10682	724	bottom	120
1710–2690 65° 15.5dBi 0°–10°T				
XXPol Panel 2300–2690 60° 18dBi 0°–12°T	800 10543	1220	bottom	121
2300–2690 60° 18dBi 0°–12°T				
XXPol Panel 1710–2200 65° 18dBi 0°–15°T	800 10544	1389	bottom	122
2300–2690 60° 18dBi 0°–12°T				
XXPol Panel 1710–2690 65° 18dBi 0°–12°T ESLS	800 10622	1389	bottom	123
1710–2690 65° 18dBi 0°–10°T				

Dual Polarization +45°/–45° – Directional – 3500

XPol Panel 3300–3800 65° 17.5dBi 0°T	800 10390	736	bottom or top	124
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Vertical Polarization – Omnidirectional

VPol Omni 1710–2700 360° 2dBi 0°T	800 10431	115	bottom or top	149
VPol Omni 2500–2700 360° 11dBi 0°T	800 10442	1132	bottom	137
VPol Omni 3400–3600 360° 11dBi 0°T	800 10528	860	bottom	138

New or changed product

Further types on request.
Please contact:
antennas.mobilcom@kathrein.de

Multi-band Panel Dual Polarization Half-power Beam Width

1710–2690

X

65°

KATHREIN

Antennen · Electronic

XPol Panel 1710–2690 65° 15.5dBi 0°–10°T

Type No.	800 10681			
Frequency range	1710–2690			
	1710 – 1990 MHz	1920 – 2200 MHz	2200 – 2490 MHz	2490 – 2690 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Gain at 0° tilt	2 x 15 dBi	2 x 15.5 dBi	2 x 16 dBi	2 x 16 dBi
Horizontal Pattern:				
Half-power beam width	67°	63°	60°	60°
Front-to-back ratio (180° ±30°)	> 28 dB	> 28 dB	> 25 dB	> 25 dB
Cross polar ratio Sector 0° ±60°	Typically: 25 dB > 10 dB	Typically: 25 dB > 10 dB	Typically: 25 dB > 9 dB	Typically: 25 dB > 10 dB
Vertical Pattern:				
Half-power beam width	14°	13°	12°	11°
Electrical tilt	0°–10°, continuously adjustable			
Sidelobe suppression – for first sidelobe above main beam	0° ... 5° ... 10° T ≥ 14 ... 15 ... 16 dB	0° ... 5° ... 10° T ≥ 14 ... 15 ... 16 dB	0° ... 5° ... 10° T ≥ 14 ... 15 ... 16 dB	0° ... 5° ... 10° T ≥ 14 ... 15 ... 16 dB
VSWR	< 1.5			
Isolation, between ports	> 30 dB			
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)			
Max. power per input	300 W (at 50 °C ambient temperature)			
Input	2 x 7-16 female			
Connector position	Bottom			
Adjustment mechanism	1 x, Position bottom continuously adjustable			
Weight	Approx. 7.5 kg			
Wind load (approx.)	Frontal / lateral / rearside: 200 / 85 / 200 N (at 150 km/h)			
Height/width/depth	Approx. 724 / 155 / 69 mm			



Multi-band Panel Dual Polarization Half-power Beam Width

2300–2690

X

65°

KATHREIN
Antennen · Electronic

XPol Panel 2300–2690 60° 18dBi 0°–12°T

Type No.	800 10541	
Frequency range	2300–2690	
	2300 – 2500 MHz	2490 – 2690 MHz
Polarization	+45°, –45°	+45°, –45°
Gain at 0° tilt	2 x 18 dBi	2 x 18 dBi
Horizontal Pattern:		
Half-power beam width	61°	58°
Front-to-back ratio (180°±30°)	≥ 25 dB	≥ 25 dB
Cross polar ratio Sector	Typically: 20 dB ≥ 8 dB	Typically: 20 dB ≥ 8 dB
	0°	±60°
Vertical Pattern:		
Half-power beam width	6.5°	6.2°
Electrical tilt	0°–12°, continuously adjustable	
Sidelobe suppression for first sidelobe above main beam	0° ... 6° ... 12° T ≥ 15 ... 17 ... 17 dB	0° ... 6° ... 12° T ≥ 15 ... 17 ... 17 dB
VSWR	< 1.5	
Isolation, between inputs	> 30 dB	
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)	
Max. power per input	250 W (at 50 °C ambient temperature)	
Input	2 x 7-16 female	
Connector position	Bottom	
Weight	6.8 kg	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 330 / 100 / 370 N	
Height/width/depth	1149 / 155 / 69 mm	



2300 ... 3800
XPol, VPol

Multi-band Panel Dual Polarization Half-power Beam Width

1710–2690

X

65°

KATHREIN

Antennen · Electronic

XPol Panel 1710–2690 65° 17.5dBi 2°T

Type No.	800 10471				
Frequency range	[1710–2690]				
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2200 MHz	2200 – 2490 MHz	2490 – 2690 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 16.7 dBi	2 x 17.4 dBi	2 x 17.8 dBi	2 x 17.8 dBi	2 x 17.0 dBi
Horizontal Pattern:					
Half-power beam width	68°	68°	66°	66°	65°
Front-to-back ratio, copolar	> 28 dB	> 30 dB	> 30 dB	> 26 dB	> 25 dB
Cross polar ratio Sector 0° ±60°	Typically: 20 dB > 8 dB	Typically: 20 dB > 10 dB	Typically: 20 dB > 10 dB	Typically: 20 dB > 10 dB	Typically: 20 dB > 8 dB
Vertical Pattern:					
Half-power beam width	6.7°	6.4°	6.1°	5.5°	5.0°
Electrical tilt	2°, fixed				
Sidelobe suppression for first sidelobe above main beam	> 14 dB	> 15 dB	> 16 dB	> 16 dB	> 15 dB
VSWR	< 1.5				
Isolation, between inputs	> 30 dB				
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)				
Max. power per input	250 W (at 50 °C ambient temperature)				
Input	2 x 7-16 female				
Connector position	Bottom				
Weight	6.4 kg				
Wind load (at 150 km/h)	Frontal / lateral / rearside: 130 / 110 / 310 N				
Height/width/depth	1302 / 155 / 69 mm				



Multi-band Panel Dual Polarization Half-power Beam Width

1710–2690

X

65°

KATHREIN

Antennen · Electronic

XPol Panel 1710–2690 65° 18dBi 0°–12°T ESLS

Type No.	800 10621			
Frequency range	1710–2690			
	1710 – 1990 MHz	1920 – 2200 MHz	2200 – 2490 MHz	2490 – 2690 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Gain (dBi)	17.4 ... 17.4 ... 17.3	18.2 ... 18.0 ... 17.9	18.2 ... 18.1 ... 17.7	18.3 ... 18.0 ... 17.6
Tilt	0° ... 6° ... 12°	0° ... 6° ... 12°	0° ... 6° ... 12°	0° ... 6° ... 12°
Horizontal Pattern:				
Half-power beam width	68°	64°	61°	60°
Front-to-back ratio (180° ±30°)	> 25 dB	> 25 dB	> 25 dB	> 25 dB
Cross polar ratio Sector 0° ±60°	Typically: 25 dB > 10 dB	Typically: 25 dB > 10 dB	Typically: 25 dB > 10 dB	Typically: 25 dB > 10 dB
Vertical Pattern:				
Half-power beam width	7.1°	6.5°	5.9°	5.7°
Electrical tilt	0°–12°, continuously adjustable			
Sidelobe suppression – for first sidelobe above main beam – within 0°–20° sector above horizon	0° ... 6° ... 12° T ≥ 18 ... 18 ... 18 dB ≥ 17 ... 17 ... 16 dB	0° ... 6° ... 12° T ≥ 18 ... 18 ... 18 dB ≥ 17 ... 17 ... 16 dB	0° ... 6° ... 12° T ≥ 18 ... 17 ... 17 dB ≥ 16 ... 18 ... 17 dB	0° ... 6° ... 12° T ≥ 18 ... 18 ... 16 dB ≥ 15 ... 15 ... 14 dB
VSWR	< 1.5			
Isolation, between ports	> 30 dB			
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)			
Max. power per input	300 W (at 50 °C ambient temperature)			
Input	2x 7-16 female			
Connector position	Bottom			
Adjustment mechanism	1x, Position bottom continuously adjustable			
Weight	8 kg			
Wind load (approx.)	Frontal / lateral / rearside: 380 / 120 / 420 N (at 150 km/h)			
Height/width/depth	1400 / 155 / 69 mm			



2300 ... 3800
XPol, VPol

Multi-band Panel Dual Polarization Half-power Beam Width

1710–2690 1710–2690

X X

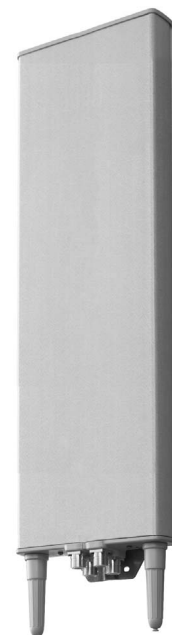
65° 65°

KATHREIN

Antennen · Electronic

XXPol Panel 1710–2690/1710–2690 65°/65° 15.5/15.5dBi 0°–10°/0°–10°T

Type No.	800 10682			
Frequency range	1710–2690			
	1710 – 1990 MHz	1920 – 2200 MHz	2200 – 2490 MHz	2490 – 2690 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Gain at 0° tilt	4 x 15 dBi	4 x 15.5 dBi	4 x 16 dBi	4 x 16 dBi
Horizontal Pattern:				
Half-power beam width	67°	63°	60°	60°
Front-to-back ratio (180° ±30°)	> 28 dB	> 28 dB	> 25 dB	> 25 dB
Cross polar ratio Sector 0° ±60°	Typically: 25 dB > 10 dB	Typically: 25 dB > 10 dB	Typically: 25 dB > 9 dB	Typically: 25 dB > 10 dB
Vertical Pattern:				
Half-power beam width	14°	13°	12°	11°
Electrical tilt	0°–10°, continuously adjustable			
Sidelobe suppression – for first sidelobe above main beam	0° ... 5° ... 10° T ≥ 14 ... 15 ... 16 dB	0° ... 5° ... 10° T ≥ 14 ... 15 ... 16 dB	0° ... 5° ... 10° T ≥ 14 ... 15 ... 16 dB	0° ... 5° ... 10° T ≥ 14 ... 15 ... 16 dB
VSWR	< 1.5			
Isolation, between ports	> 30 dB			
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)			
Max. power per input	300 W (at 50 °C ambient temperature)			
Input	4 x 7-16 female			
Connector position	Bottom			
Adjustment mechanism	2 x, Position bottom continuously adjustable			
Weight	Approx. 11 kg			
Wind load (approx.)	Frontal / lateral / rearside: 320 / 60 / 320 N (at 150 km/h)			
Height/width/depth	Approx. 724 / 323 / 71 mm			



2-Multi-band Panel

Dual Polarization

Half-power Beam Width

2300–2690

2300–2690

X

X

60°

60°

KATHREIN

Antennen · Electronic

XXPol Panel 2300–2690/2300–2690 60°/60° 17.5/17.5dBi 0°–12°/0°–12°T

Type No.	800 10543	
Frequency range	2300–2690	
	2300 – 2500 MHz	2490 – 2690 MHz
Polarization	+45°, –45°; +45°, –45°	+45°, –45°; +45°, –45°
Gain at 0° tilt	4 x 17.5 dBi	4 x 17.5 dBi
Horizontal Pattern:		
Half-power beam width	62°	60°
Front-to-back ratio (180°±30°)	≥ 25 dB	≥ 25 dB
Cross polar ratio	0°	0°
Sector	±60°	±60°
	typ. 20 dB	typ. 20 dB
	≥ 10 dB	≥ 10 dB
Vertical Pattern:		
Half-power beam width	6.5°	6.3°
Electrical tilt	0°–12°, continuously adjustable	
Sidelobe suppression for first sidelobe above main beam	0° ... 6° ... 12° T	0° ... 6° ... 12° T
	≥ 15 ... 17 ... 17 dB	≥ 15 ... 17 ... 15 dB
VSWR	< 1.5	
Isolation, between inputs	> 30 dB	
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)	
Max. power per input	250 W (at 50 °C ambient temperature)	
Input	4 x 7-16 female	
Connector position	Bottom	
Adjustment mechanism	2x, Position bottom continuously adjustable	
Weight	15.8 kg	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 620 / 100 / 640 N	
Height/width/depth	1220 / 323 / 71 mm	

2300 ... 3800
XPoI, VPoI

2-Multi-band Panel

Dual Polarization

Half-power Beam Width

1710–2200	2300–2690
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X	X
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65°	60°
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KATHREIN

Antennen · Electronic

XXPol Panel 1710–2200/2300–2690 65°/60° 18/17.5dBi 0°–15°/0°–12°T

Type No.	800 10544	
Frequency range	1710 – 2200 MHz	2300 – 2690 MHz
Polarization	+45°, –45°	+45°, –45°
Gain at 0° tilt	2 x 17.8 dBi	2 x 17.5 dBi
Horizontal Pattern:		
Half-power beam width	63°	61°
Front-to-back ratio (180°±30°)	≥ 25 dB	≥ 25 dB
Cross polar ratio Sector	0° ±60°	> 20 dB Typically: 10 dB
Vertical Pattern:		
Half-power beam width	7°	6.5°
Electrical tilt	0°–15°, continuously adjustable	0°–12°, continuously adjustable
Sidelobe suppression for first sidelobe above main beam	≥ 16 dB	≥ 15 dB
VSWR	< 1.5	< 1.5
Isolation, between inputs	> 30 dB	> 30 dB
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)	< –150 dBc (2 x 43 dBm carrier)
Max. power per input	250 W (at 50 °C ambient temperature)	250 W (at 50 °C ambient temperature)
Input	4 x 7-16 female	
Connector position	Bottom	
Adjustment mechanism	2x, Position bottom continuously adjustable	
Weight	17.3 kg	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 710 / 160 / 730 N	
Height/width/depth	1389 / 323 / 71 mm	



Multi-band Panel

1710–2690

1710–2690

Dual Polarization

X

X

Half-power Beam Width

65°

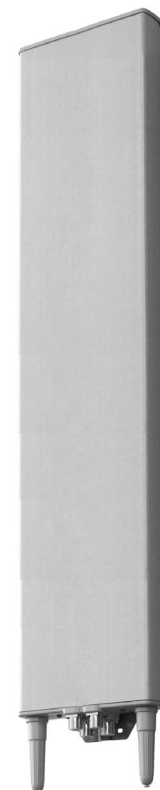
65°

KATHREIN

Antennen · Electronic

XXPol Panel 1710–2690/1710–2690 65°/65° 18/18dBi 0°–12°/0°–12°T ESLs

Type No.	800 10622			
Frequency range	1710–2690			
	1710 – 1990 MHz	1920 – 2200 MHz	2200 – 2490 MHz	2490 – 2690 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°	+45°, –45°
Gain (dBi)	17.4 ... 17.4 ... 17.3	17.8 ... 17.4 ... 17.5	18.0 ... 17.9 ... 17.5	18.0 ... 17.7 ... 17.3
Tilt	0° ... 6° ... 12°	0° ... 6° ... 12°	0° ... 6° ... 12°	0° ... 6° ... 12°
Horizontal Pattern:				
Half-power beam width	65°	65°	61°	61°
Front-to-back ratio (180° ±30°)	> 25 dB, avg. 28 dB	> 26 dB, avg. 28 dB	> 25 dB, avg. 27 dB	> 25 dB, avg. 27 dB
Cross polar ratio Sector 0° ±60°	Typically: 30 dB > 10 dB	Typically: 30 dB > 10 dB	Typically: 25 dB > 8 dB	Typically: 25 dB > 10 dB
Vertical Pattern:				
Half-power beam width	7.1°	6.5°	5.9°	5.7°
Electrical tilt	0°–12°, continuously adjustable			
Sidelobe suppression for first sidelobe above main beam	0° ... 6° ... 12° T ≥ 18 ... 18 ... 18 dB	0° ... 6° ... 12° T ≥ 18 ... 18 ... 18 dB	0° ... 6° ... 12° T ≥ 18 ... 17 ... 17 dB	0° ... 6° ... 12° T ≥ 18 ... 18 ... 17 dB
VSWR	< 1.5			
Isolation, between ports	> 30 dB			
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)			
Max. power per input	300 W (at 50 °C ambient temperature)			
Input	4 x 7-16 female			
Connector position	Bottom			
Adjustment mechanism	2 x, Position bottom continuously adjustable			
Weight	Approx. 17 kg			
Wind load (approx.)	Frontal / lateral / rearside: 600 / 120 / 650 N (at 150 km/h)			
Height/width/depth	Approx. 1398 / 323 / 71 mm			

2300 ... 3800
XPoI, VPoI

**Panel
Dual Polarization
Half-power Beam Width**

3300–3800

X

65°

KATHREIN
Antennen · Electronic

XPol Panel 3300–3800 65° 17.5dBi 0°T

Type No.	800 10390
Frequency range	3300 – 3800 MHz
Polarization	+45°, –45°
Gain	2 x 17.5 dBi
Half-power beam width Copolar +45°/–45°	Horizontal: 65° Vertical: 7°
Electrical tilt	0°, fixed
Front-to-back ratio (180°±30°)	> 30 dB
Isolation, between ports	> 25 dB
VSWR	< 1.5
Intermodulation IM3	< –140 dBc (2 x 40 dBm carrier)
Max. power per input	50 W (at 50 °C ambient temperature)
Input	2 x N-connector female
Connector position	Bottom or top
Weight	1.7 kg
Wind load (at 150 km/h)	Frontal / lateral / rearside: 160 / 50 / 160 N
Height/width/depth	736 / 112 / 50 mm



Vertical Polarization – 800/900

Type	Type No.	Connector female	Height [mm]	Remarks	Page
VPol Omni	870–960 360° 2dBi 0°T	738 450	N	180	indoor/outdoor 126
VPol Omni	806–960 360° 2dBi 0°T	K 75 11 61	N	348	127
VPol Omni	890–960 360° 5dBi 0°T	K 75 15 64 1	N	715	128
VPol Omni	870–960 360° 8dBi 0°T	736 350	7-16	1543	129
VPol Omni	806–894 360° 11dBi 0°T	738 192	7-16	3237	130
VPol Omni	870–960 360° 11dBi 0°T	736 347	7-16	3033	131
VPol Omni	870–960 360° 10.5dBi 5°T	736 349	7-16	2954	132

Vertical Polarization – Dual-band

VPol Omni	870–960/1710–1880 360° 2dBi 0°T	738 449	N	216	indoor/outdoor 148
VPol Omni	824–960/1805–2170 360° 2dBi 0°T	800 10147	N	216	indoor/outdoor 150
VVPol Omni	870–960 360° 9dBi 0°T 1920–2170 360° 10dBi 0°T	800 10274	7-16	3033	separate inputs 133
VVPol Omni	870–960/1710–1880 360° 2dBi 0°T 1920–2170 360° 2dBi 0°T	800 10111	N	493	separate inputs 134

Vertical Polarization – 1800

VPol Omni	1710–1880 360° 11dBi 0°T	738 187	7-16	1568	135
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Vertical Polarization – 1800/2000/2500/3500

VPol Omni	1710–2700 360° 2 dBi 0°T	800 10431	N	115	indoor/outdoor 149
VPol Omni	1920–2170 360° 11 dBi 0°T	741 790	7-16	1387	136
VPol Omni	2500–2700 360° 11dBi 0°T	800 10442	7-16	1132	137
VPol Omni	3400–3600 360° 11dBi 0°T	800 10528	7-16	860	138

Omnidirectional Antenna Vertical Polarization Indoor and outdoor use

870–960

V

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Antennen · Electronic

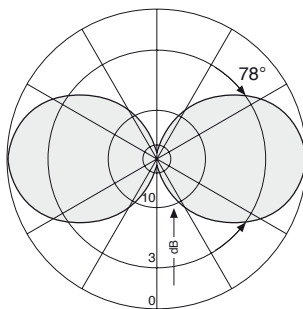
VPol Omni 870–960 360° 2dBi

Type No.	738 450
Input	N female
Connector position	Bottom or top
Frequency range	870 – 960 MHz
VSWR	< 1.5
Gain	2 dBi
Impedance	50 Ω
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)
Polarization	Vertical
Max. power	100 W (at 50 °C ambient temperature)
Weight	200 g
Radome diameter	20 mm
Height	180 mm

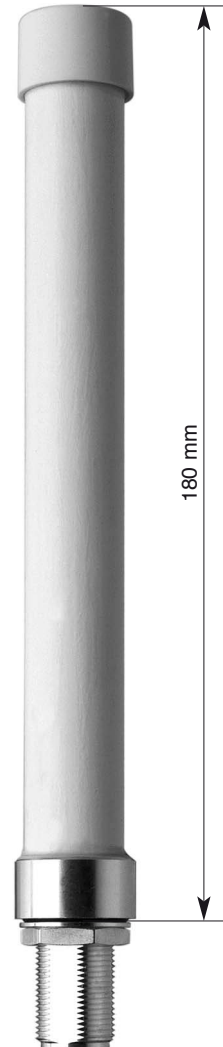
Material: Radiator: Brass.
Radome: Fiberglass, colour: White.

Mounting: One hole mounting (16 mm diameter) to surfaces of max. 10 mm thickness.

Grounding: All metal parts of the antenna as well as the inner conductor and the mounting kit are DC grounded.



Vertical Pattern



Omnidirectional Antenna Vertical Polarization

806–960

V

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VPol Omni 806–960 360° 2dBi

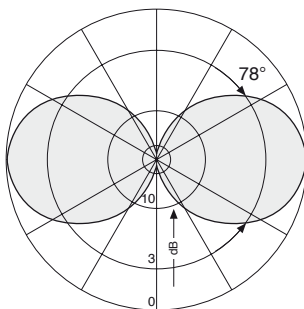
Type No.	K 75 11 61
Frequency range	806 – 960 MHz
Polarization	Vertical
Gain	2 dBi
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3	< -150 dBc (2 x 37 dBm carrier)
Max. power	100 W (at 50 °C ambient temperature)

Mounting: The antenna can be attached in two ways with the supplied mounting kit:

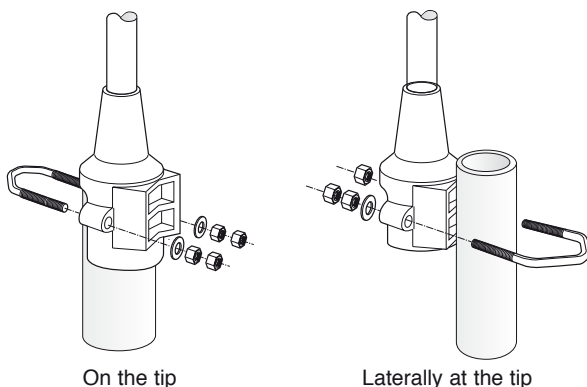
1. On the tip of a tubular mast of 40 – 54 mm diameter (connecting cable runs inside the mast).
2. Laterally at the tip of a tubular mast of 20 – 54 mm diameter (connecting cable runs outside the mast).

Material: Radiator: Brass.
Radome: Fiberglass, colour: Grey.
Base: Weather-proof aluminum.
Mounting kit, screws and nuts: Stainless steel.

Grounding: All metal parts of the antenna as well as the inner conductor and the mounting kit are DC grounded.



Vertical Pattern



Mechanical specifications

Input	N female
Connector position	Bottom
Weight	0.74 kg
Radome diameter	21 mm
Wind load	17 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	455 x 112x 97 mm
Height	348 mm

Omnidirectional Antenna Vertical Polarization

890–960

V

KATHREIN
Antennen · Electronic

VPol Omni 890–960 360° 5dBi

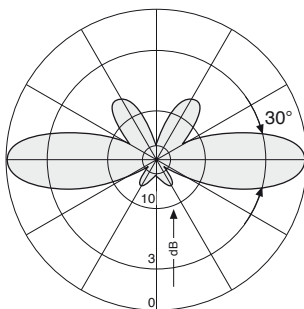
Type No.	K 75 15 64 1
Frequency range	890 – 960 MHz
Polarization	Vertical
Gain	5 dBi
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3	< -150 dBc (2 x 37 dBm carrier)
Max. power	250 W (at 50 °C ambient temperature)

Mounting: The antenna can be attached in two ways with the supplied mounting kit:

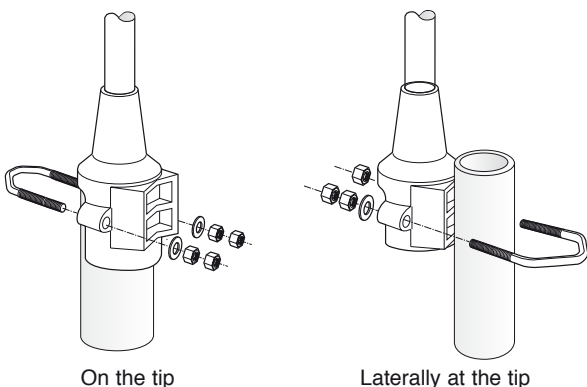
1. On the tip of a tubular mast of 40 – 54 mm diameter (connecting cable runs inside the mast).
2. Laterally at the tip of a tubular mast of 20 – 54 mm diameter (connecting cable runs outside the mast).

Material: Radiator: Brass.
Radome: Fiberglass, colour: Grey.
Base: Weather-proof aluminum.
Mounting kit, screws and nuts: Stainless steel.

Grounding: All metal parts of the antenna as well as the inner conductor and the mounting kit are DC grounded.



Vertical Pattern



On the tip

Laterally at the tip

Mechanical specifications

Input	N female
Connector position	Bottom
Weight	0.90 kg
Radome diameter	21 mm
Wind load	20 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	825 x 112 x 97 mm
Height	715 mm

Omnidirectional Antenna Vertical Polarization

870–960

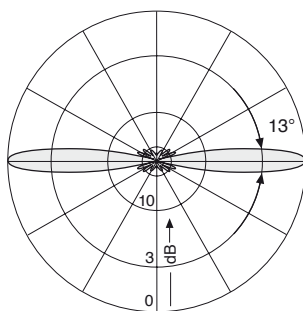
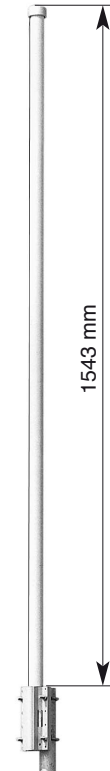
V

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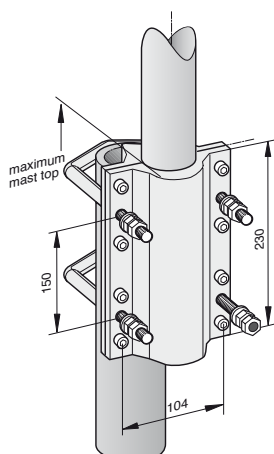
VPol Omni 870–960 360° 8dBi

Type No.	736 350
Frequency range	870 – 960 MHz
Polarization	Vertical
Gain	8 dBi
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)
Max. power	500 W (at 50 °C ambient temperature)

- Mounting:** The antenna can be attached laterally at the tip of a tubular mast of 50 – 94 mm diameter with two U-bolt brackets supplied with the antenna (connecting cable runs outside the mast).
- Material:** Radiator: Copper and brass. Radome: Fiberglass, colour: Grey. Base: Weather-proof aluminum. Mounting kit, screws and nuts: Stainless steel.
- Anti-static protection:** All metal parts of the antenna as well as the supplied clamp attachment are grounded. The inner conductor is capacitively coupled.
- Lightning protection:** The antenna is designed to withstand a lightning current of up to 150 KA (impulse: 10/350 μs), according to IEC 62305 parts 1–4 and VDE 0855-300, and thereby fulfils the requirements of lightning protection class II. Grounding cross-section: 22 mm² copper.



Vertical Pattern



Mechanical specifications	
Input	7-16 female
Connector position	Bottom
Weight	5.5 kg
Radome diameter	51 mm
Wind load	130 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	1846 x 148 x 112 mm
Height	1543 mm

Omnidirectional Antenna Vertical Polarization

806–894

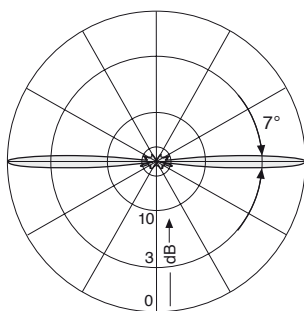
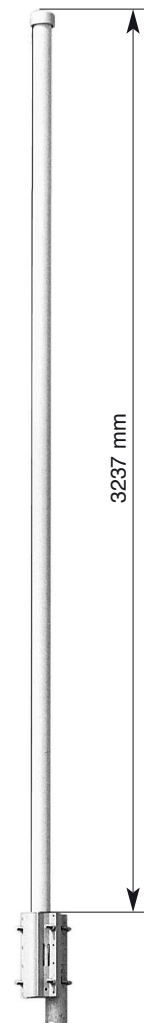
V

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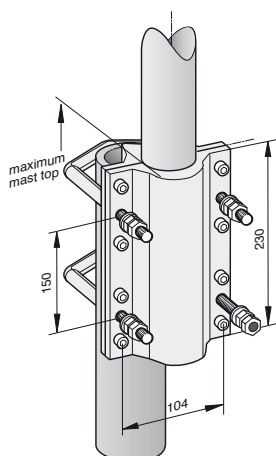
VPol Omni 806–894 360° 11dBi

Type No.	738 192
Frequency range	806 – 894 MHz
Polarization	Vertical
Gain	11 dBi
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)
Max. power	500 W (at 50 °C ambient temperature)

- Mounting:** The antenna can be attached laterally at the tip of a tubular mast of 50 – 94 mm diameter with two U-bolt brackets supplied with the antenna (connecting cable runs outside the mast).
- Material:** Radiator: Copper and brass.
Radome: Fiberglass, colour: Grey.
Base: Weather-proof aluminum.
Mounting kit, screws and nuts: Stainless steel.
- Anti-static protection:** All metal parts of the antenna as well as the supplied clamp attachment are grounded.
The inner conductor is capacitively coupled.
- Lightning protection:** The antenna is designed to withstand a lightning current of up to 150 KA (impulse: 10/350 μs), according to IEC 62305 parts 1–4 and VDE 0855-300, and thereby fulfils the requirements of lightning protection class II. Grounding cross-section: 22 mm² copper.



Vertical Pattern



Mechanical specifications

Input	7-16 female
Connector position	Bottom
Weight	8.5 kg
Radome diameter	51 mm
Wind load	230 N (at 150 km/h)
Max. wind velocity	180 km/h
Packing size	3516 x 148 x 112 mm
Height	3237 mm

Omnidirectional Antenna Vertical Polarization

870–960

V

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VPol Omni 870–960 360° 11dBi

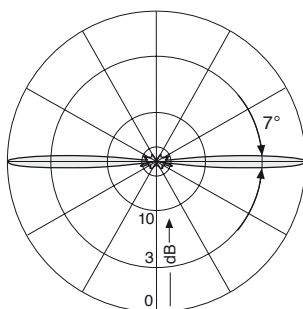
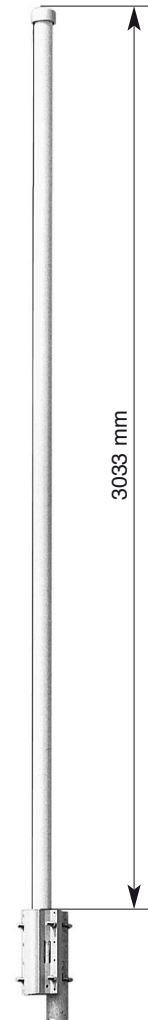
Type No.	736 347
Frequency range	870 – 960 MHz
Polarization	Vertical
Gain	11 dBi
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)
Max. power	500 W (at 50 °C ambient temperature)

Mounting: The antenna can be attached laterally at the tip of a tubular mast of 50 – 94 mm diameter with two U-bolt brackets supplied with the antenna (connecting cable runs outside the mast).

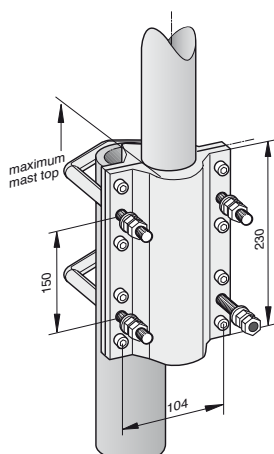
Material: Radiator: Copper and brass.
Radome: Fiberglass, colour: Grey.
Base: Weather-proof aluminum.
Mounting kit, screws and nuts: Stainless steel.

Anti-static protection: All metal parts of the antenna as well as the supplied clamp attachment are grounded.
The inner conductor is capacitively coupled.

Lightning protection: The antenna is designed to withstand a lightning current of up to 150 kA (impulse: 10/350 μs), according to IEC 62305 parts 1–4 and VDE 0855-300, and thereby fulfils the requirements of lightning protection class II. Grounding cross-section: 22 mm² copper.



Vertical Pattern



Mechanical specifications

Input	7-16 female
Connector position	Bottom
Weight	8 kg
Radome diameter	51 mm
Wind load	210 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	3316 x 148 x 112 mm
Height	3033 mm

Omnidirectional Antenna Vertical Polarization Fixed Electrical Downtilt

870–960

V

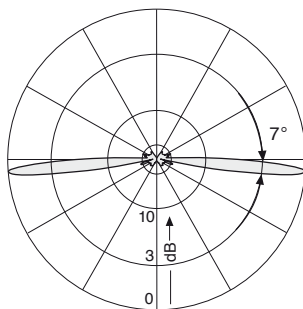
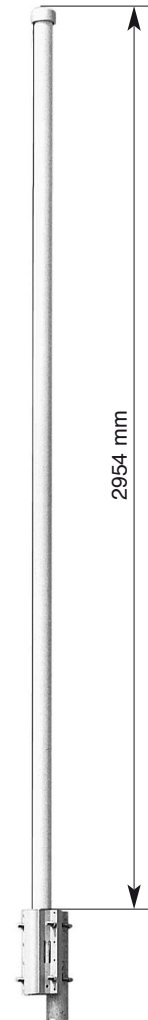
5°

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Antennen · Electronic

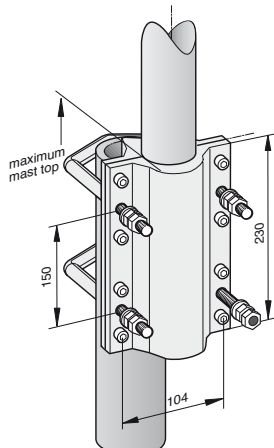
VPol Omni 870–960 360° 10.5dBi 5°T

Type No.	736 349
Frequency range	870 – 960 MHz
Polarization	Vertical
Gain	10.5 dBi
Electrical tilt	5°, fixed
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)
Max. power	500 W (at 50 °C ambient temperature)

- Mounting:** The antenna can be attached laterally at the tip of a tubular mast of 50 – 94 mm diameter with two U-bolt brackets supplied with the antenna (connecting cable runs outside the mast).
- Material:** Radiator: Copper and brass.
Radome: Fiberglass, colour: Grey.
Base: Weather-proof aluminum.
Mounting kit, screws and nuts: Stainless steel.
- Anti-static protection:** All metal parts of the antenna as well as the supplied clamp attachment are grounded.
The inner conductor is capacitively coupled.
- Lightning protection:** The antenna is designed to withstand a lightning current of up to 150 kA (impulse: 10/350 μs), according to IEC 62305 parts 1–4 and VDE 0855-300, and thereby fulfils the requirements of lightning protection class II. Grounding cross-section: 22 mm² copper.



Vertical Pattern
5° electrical downtilt



Mechanical specifications

Input	7-16 female
Connector position	Bottom
Weight	8 kg
Radome diameter	51 mm
Wind load	210 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	3316 x 148 x 112 mm
Height	2954 mm

Dual-band Omni Antenna 870–960 1920–2170

Vertical Polarization V V

VVPol Omni 870–960/1920-2170 360°/360° 9/10dBi

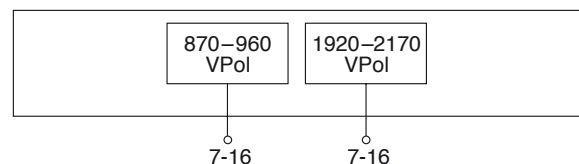
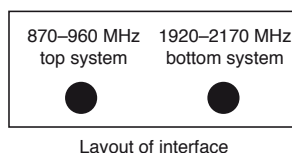
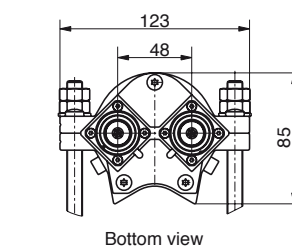
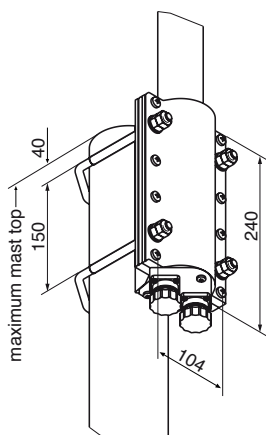
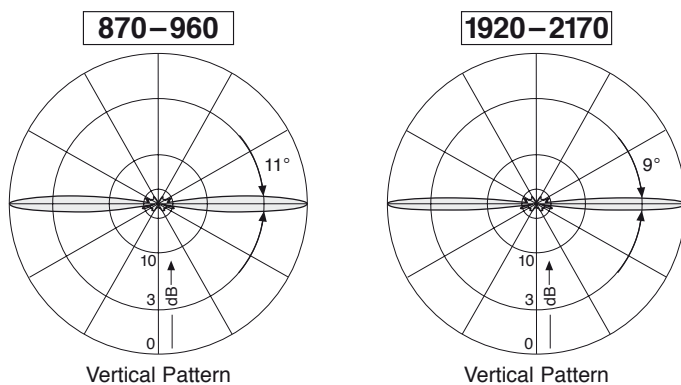
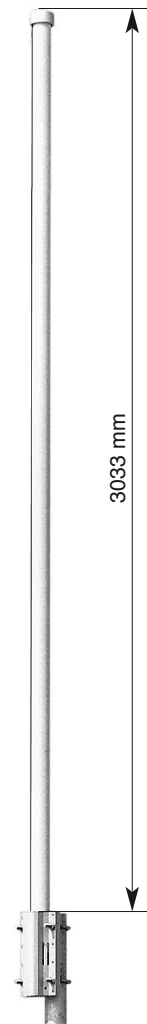
Type No.	800 10274	
Frequency range	Top system 870 – 960 MHz	Bottom system 1920 – 2170 MHz
Polarization	Vertical	Vertical
Gain	9 dBi	10 dBi
Half-power beam width	Horizontal: Omni Vertical: 11°	Horizontal: Omni Vertical: 9°
Isolation, between ports	> 30 dB	
Impedance	50 Ω	
VSWR	< 1.5	< 1.5
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)	
Max. power per input	150 W	100 W (at 50 °C ambient temperature)

Mounting: The antenna can be attached laterally at the tip of a tubular mast of 50 – 94 mm diameter with two U-bolt brackets supplied with the antenna (connecting cable runs outside the mast).

Material: Radiator: Copper and brass.
Radome: Fiberglass, colour: Grey.
Base: Weather-proof aluminum.
Mounting kit, screws and nuts: Stainless steel.

Anti-static protection: All metal parts of the antenna as well as the supplied clamp attachment are grounded. The inner conductors of both systems are coupled capacitively.

Lightning protection: The antenna is designed to withstand a lightning current of up to 150 kA (impulse: 10/350 μs), according to IEC 62305 parts 1–4 and VDE 0855-300, and thereby fulfils the requirements of lightning protection class II. Grounding cross-section: 22 mm² copper.



Mechanical specifications	
Input	2 x 7-16 female
Connector position	Bottom
Weight	8 kg
Wind load	210 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	3380 x 148 x 112 mm
Height	3033 mm
Radome diameter	51 mm

Multi-band Omni Antenna

870–960
1710–1880

1920–2170

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Vertical Polarization

V

V

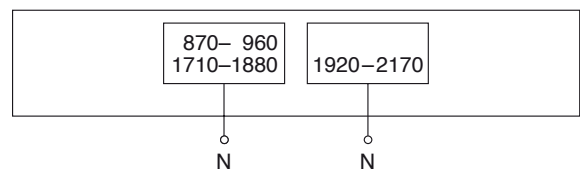
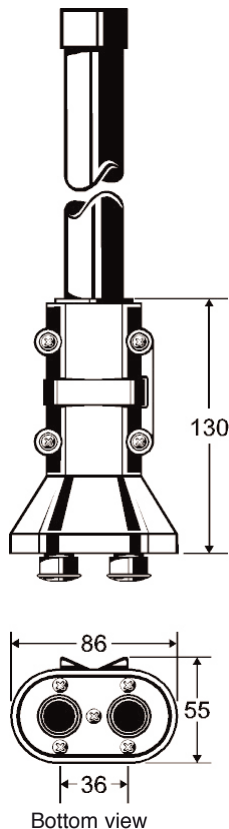
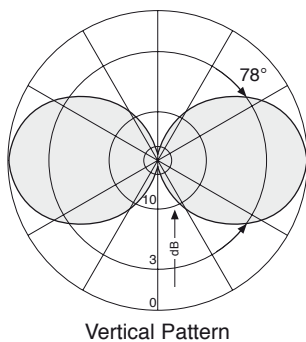
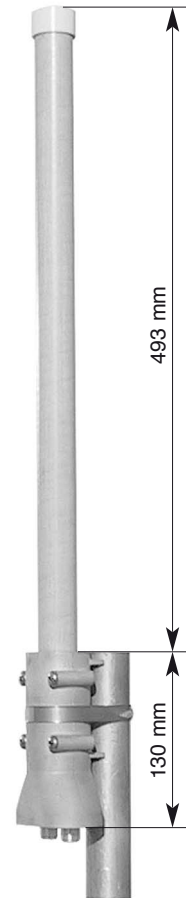
VVPol Omni 870–960/1710–1880/1920-2170 360°/360° 2/2dBi

Type No.	800 10111	
Frequency range	Upper unit 870 – 960 MHz 1710 – 1880 MHz	Lower unit 1920 – 2170 MHz
Polarization	Vertical	Vertical
Gain	2 dBi	2 dBi
Isolation, between ports	> 25 dB	> 25 dB
Impedance	50 Ω	50 Ω
VSWR	< 1.7	< 1.5
Intermodulation IM3 (2 x 43 dBm carrier)	< -150 dBc	
Max. power per input	50 W (at 50 °C ambient temperature)	

Material: Radiator: Copper and brass.
Radome: Fiberglass, colour: Grey.
Base: Weather-proof aluminum.
Mounting kit and screws: Stainless steel.

Mounting: The antenna can be attached laterally at the tip of a tubular mast of 40 – 70 mm diameter with a mounting clamp supplied with the antenna. The connecting cables (not supplied) run outside the mast.

Excellent grounding: The metal parts of the antenna and the mounting kit (exclusive the inner conductor of the upper unit) are DC grounded.



Mechanical specifications	
Input	2 x N female
Connector position	Bottom
Weight	0.85 kg
Wind load	30 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	665 x 112 x 97 mm
Height	493 mm
Radome diameter	30 mm

Omnidirectional Antenna Vertical Polarization

1710–1880

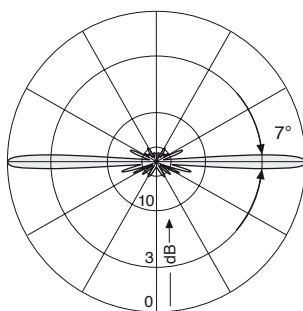
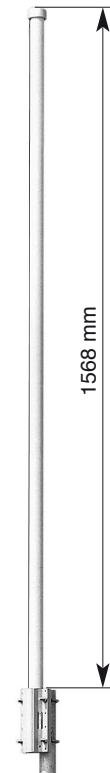
V

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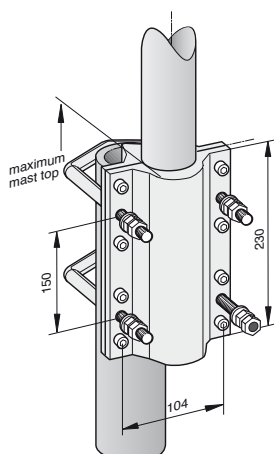
VPol Omni 1710–1880 360° 11dBi

Type No.	738 187
Frequency range	1710 – 1880 MHz
Polarization	Vertical
Gain	11 dBi
Impedance	50 Ω
VSWR	< 1.3
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)
Max. power	200 W (at 50 °C ambient temperature)

- Mounting:** The antenna can be attached laterally at the tip of a tubular mast of 50 – 94 mm diameter with two U-bolt brackets supplied with the antenna (connecting cable runs outside the mast).
- Material:** Radiator: Copper and brass.
Radome: Fiberglass, colour: Grey.
Base: Weather-proof aluminum.
Mounting kit, screws and nuts: Stainless steel.
- Anti-static protection:** All metal parts of the antenna as well as the supplied clamp attachment are grounded.
The inner conductor is capacitively coupled.
- Lightning protection:** The antenna is designed to withstand a lightning current of up to 150 KA (impulse: 10/350 μs), according to IEC 62305 parts 1–4 and VDE 0855-300, and thereby fulfils the requirements of lightning protection class II. Grounding cross-section: 22 mm² copper.



Vertical Pattern



Mechanical specifications

Input	7-16 female
Connector position	Bottom
Weight	5.5 kg
Radome diameter	51 mm
Wind load	130 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	1846 x 148 x 112 mm
Height	1568 mm

Omni
VPol

Omnidirectional Antenna Vertical Polarization

1920–2170

V

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VPol Omni 1920–2170 360° 11dBi

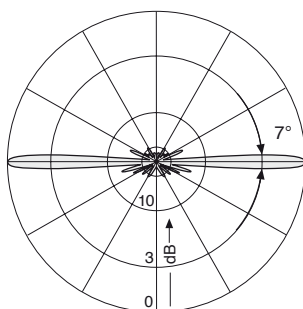
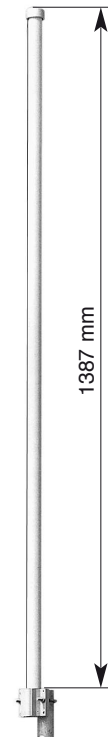
Type No.	741 790
Frequency range	1920 – 2170 MHz
Polarization	Vertical
Gain	11 dBi
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)
Max. power	150 W (at 50 °C ambient temperature)

Mounting: The antenna can be attached laterally at the tip of a tubular mast of 50 – 94 mm diameter with one U-bolt bracket supplied with the antenna (connecting cable runs outside the mast).

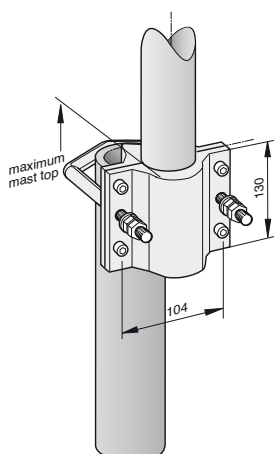
Material: Radiator: Copper and brass.
Radome: Fiberglass, colour: Grey.
Base: Weather-proof aluminum.
Mounting kit, screws and nuts: Stainless steel.

Anti-static protection: All metal parts of the antenna as well as the supplied clamp attachment are grounded. The inner conductor is capacitively coupled.

Lightning protection: The antenna is designed to withstand a lightning current of up to 150 kA (impulse: 10/350 μs), according to IEC 62305 parts 1–4 and VDE 0855-300, and thereby fulfils the requirements of lightning protection class II. Grounding cross-section: 22 mm² copper.



Vertical Pattern



Mechanical specifications

Input	7-16 female
Connector position	Bottom
Weight	5 kg
Radome diameter	51 mm
Wind load	120 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	1570 x 148 x 112 mm
Height	1387 mm

Omnidirectional Antenna Vertical Polarization

2500–2700

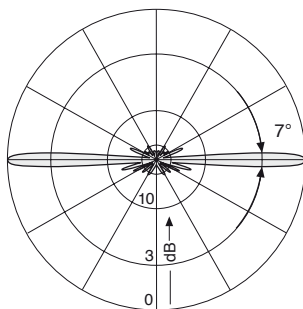
V

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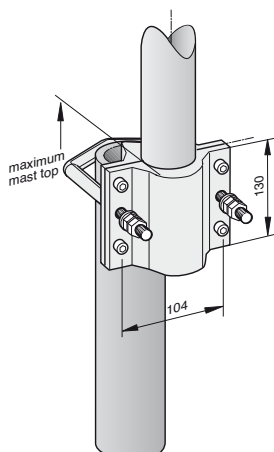
VPol Omni 2500–2700 360° 11dBi 0°T

Type No.	800 10442
Frequency range	2500 – 2700 MHz
Polarization	Vertical
Gain	11 dBi
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)
Max. power	200 W (at 50 °C ambient temperature)

- Mounting:** The antenna can be attached laterally at the tip of a tubular mast of 50 – 94 mm diameter with one U-bolt bracket supplied with the antenna (connecting cable runs outside the mast).
- Material:** Radiator: Copper and brass.
Radome: Fiberglass, colour: Grey.
Base: Weather-proof aluminum.
Mounting kit, screws and nuts: Stainless steel.
- Anti-static protection:** All metal parts of the antenna as well as the supplied clamp attachment are grounded.
The inner conductor is capacitively coupled.
- Lightning protection:** The antenna is designed to withstand a lightning current of up to 150 kA (impulse: 10/350 μs), according to IEC 62305 parts 1–4 and VDE 0855-300, and thereby fulfils the requirements of lightning protection class II. Grounding cross-section: 22 mm² copper.



Vertical Pattern



Mechanical specifications

Input	7-16 female
Connector position	Bottom
Weight	4.5 kg
Radome diameter	51 mm
Wind load	110 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	1232 x 148 x 112 mm
Height	1132 mm

Omnidirectional Antenna Vertical Polarization

3400–3600

V

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VPol Omni 3400–3600 360° 11dBi 0°T

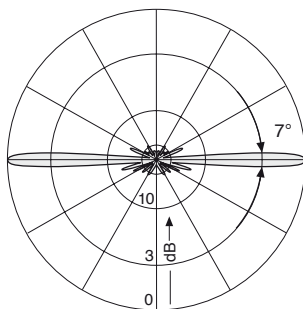
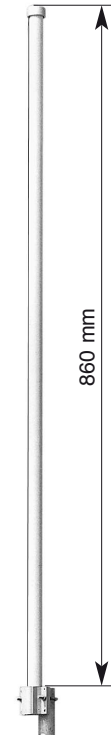
Type No.	800 10528
Frequency range	3400 – 3600 MHz
Polarization	Vertical
Gain	11 dBi
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)
Max. power	150 W (at 50 °C ambient temperature)

Mounting: The antenna can be attached laterally at the tip of a tubular mast of 50 – 94 mm diameter with one U-bolt bracket supplied with the antenna (connecting cable runs outside the mast).

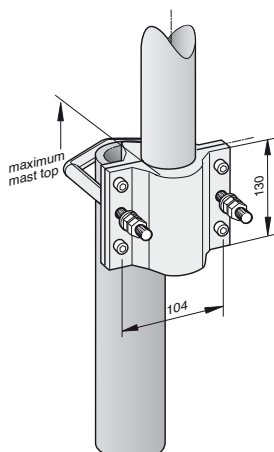
Material: Radiator: Copper and brass.
Radome: Fiberglass, colour: Grey.
Base: Weather-proof aluminum.
Mounting kit, screws and nuts: Stainless steel.

Anti-static protection: All metal parts of the antenna as well as the supplied clamp attachment are grounded.
The inner conductor is capacitively coupled.

Lightning protection: The antenna is designed to withstand a lightning current of up to 150 KA (impulse: 10/350 μs), according to IEC 62305 parts 1–4 and VDE 0855-300, and thereby fulfils the requirements of lightning protection class II. Grounding cross-section: 22 mm² copper.



Vertical Pattern



Mechanical specifications	
Input	7-16 female
Connector position	Bottom
Weight	4 kg
Radome diameter	51 mm
Wind load	110 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	1043 x 148 x 112 mm
Height	860 mm

Vertical Polarization

Indoor – Directional

Type	Type No.	Frequency range	Connector female	Page
VPol BiDir 65° 5dBi	738 446	790–960/1710–2170	N	82
VPol Indoor 90° 7dBi	800 10465	790–960/1710–2700	N	140
VPol Indoor 90° 7dBi	800 10433	3300–3800	SMA	141

Indoor – Directional Dual Polarization

VXPol Indoor 90° C 7dBi	800 10677	790–960/1710–2700	2 x N	142
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Indoor – Multi-band Omnidirectional

VPol Indoor 360° 2dBi	800 10137	876–960/1710–2500	N	143
VPol Indoor 360° 2dBi	800 10173	876–960/1710–2500	N	144
VPol Indoor 360° 2dBi	800 10249	790–960/1425–3800/5150–6000	N	145
VPol Indoor 360° 2dBi	741 573	1710–2700	N	146
VPol Indoor 360° 2dBi	800 10430	1710–6000	N	147

Indoor / Outdoor – Single-band

VPol Omni 360° 2dBi	738 450	870–960	N	126
VPol Panel 90° 7.5dBi	736 854	872–960	N	44

Indoor / Outdoor – Dual-band / Multi-band

VPol Omni 360° 2dBi	738 449	870–960/1710–1880	N	148
VPol Omni 360° 2dBi	800 10431	1710–2700	N	149
VPol Omni 360° 2dBi	800 10147	824–960/1805–2170	N	150

New or changed product

**Indoor Multi-band
Directional Antenna
Vertical Polarization
Half-power Beam Width
Integrated Combiner**

790–960 1710–2700

V V

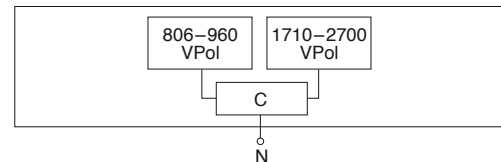
90° 90°

C

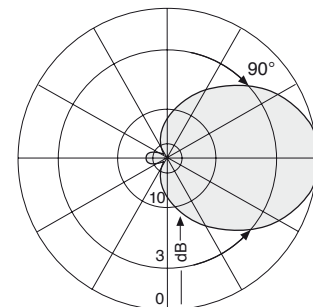
KATHREIN
Antennen · Electronic

VVPol Indoor 790–960/1710–2700 C 90° 7dBi

Type No.	800 10465
Frequency range	790 – 960 MHz / 1710 – 2700 MHz
Polarization	Vertical
Gain	Approx. 7 dBi
Half-power beam width	Horizontal: Approx. 90°
Impedance	50 Ω
VSWR	790 – 806 MHz: < 2.2 806 – 960 MHz: < 2.0 1710 – 2700 MHz: < 2.0
Max. power	50 W (at 50 °C ambient temperature)
Input	Cable RG 223/CU of 1m length, white, with N female connector
Protection class	IP 30
Weight	500 g
Packing size	363 x 152 x 62 mm
Height/width/depth	231 / 140 / 50 mm

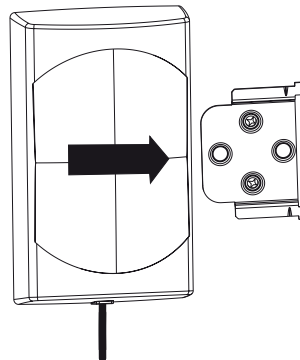
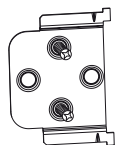


- Material:** Reflector: Aluminum.
Radome: High impact polystyrol, colour: White.
Additional painting is possible.
Mounting plates: Stainless steel.
- Mounting:** Two holes of 6 mm diameter in the mounting plate.
Screws are not supplied.
Avoid to stress the cable.
- Grounding:** All metal parts inclusive the inner conductor are DC grounded.
- Available accessories:** Broadband power splitters (694 – 3800 MHz) and tappers (790 – 2500 MHz).

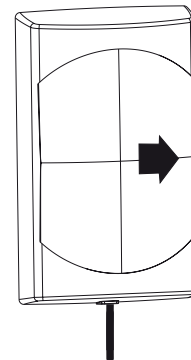


Horizontal Pattern

Mounting:



Align the antenna over the attachment plate.



Pull the antenna to the stop.

Mount the attachment plate to the wall using two screws of 4 mm diameter in the position as indicated.

**Indoor Directional Antenna
Vertical Polarization
Half-power Beam Width**

3300–3800

V

90°

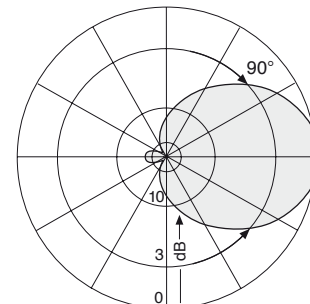
VPol Indoor 3300–3800 90° 7dBi

Type No.	800 10433
Frequency range	3300 – 3800 MHz
Polarization	Vertical
Gain	Approx. 7 dBi
Half-power beam width	Horizontal: Approx. 90°
Impedance	50 Ω
VSWR	< 2.0
Max. power	50 W (at 50 °C ambient temperature)
Input	Cable of 1 m length with SMA female connector
Diameter / depth	111 x 23 mm

Material: Radome: High impact polystyrol, colour: White. Additional painting is possible. Mounting plates: Stainless steel.

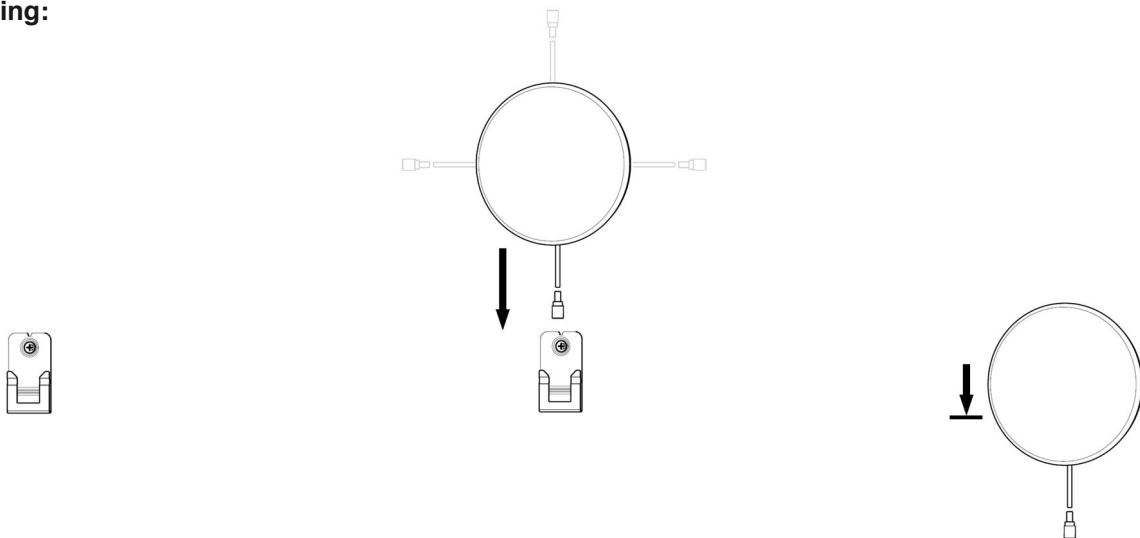
Mounting: One hole of 6 mm diameter in the mounting plate. Screws are not supplied. Avoid stressing the cable.

Cable: Minimum bending radius: Single bending 10 mm, repeated bending 20 mm.



Horizontal Pattern

Mounting:



Attach the mounting plate to the wall using one screw of 6 mm diameter in the position as indicated.

Align the antenna over the mounting plate. Antenna can be mounted in 90 degree steps as indicated.

Pull the antenna to the stop.

Indoor Multi-band Directional Antenna

790–960 1710–2700 1710–2700

KATHREIN

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Vertical / Dual Polarization

V

X (−45°)

X (+45°)

Half-power Beam Width

90°

90°

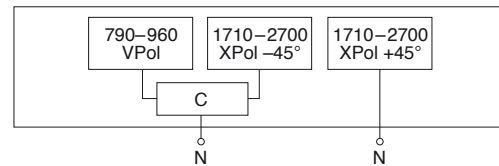
90°

Integrated Combiner

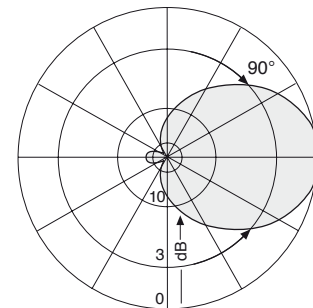
C

VXPol Indoor 790–960/1710–2700 C 90° 7dBi

Type No.	800 10677	
Frequency range	790 – 960 MHz	1710 – 2700 MHz
Polarization	Vertical	+45°, −45°
Gain	Approx. 7 dBi	Approx. 2 x 7 dBi
Half-power beam width	Horizontal: Approx. 90°	
Impedance	50 Ω	
VSWR	< 2.0	
Isolation, between ports	Approx. > 25 dB	
Max. power	50 W (at 50 °C ambient temperature)	
Input	Cable RG 223/CU of 1m length, white, with N female connector	
Protection class	IP 30	
Weight	Approx. 600 g	
Packing size	363 x 152 x 62 mm	
Height/width/depth	232 / 140 / 50 mm	

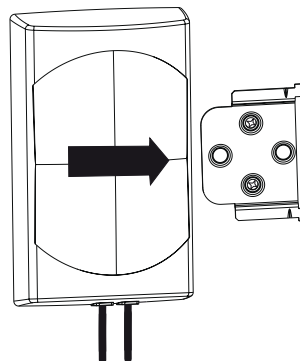
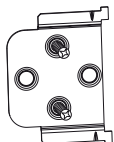


- Material:** Reflector: Aluminum.
Radome: High impact polystyrol, colour: White.
Additional painting is possible.
Mounting plates: Stainless steel.
- Mounting:** Two holes of 6 mm diameter in the mounting plate.
Screws are not supplied.
Avoid stressing the cable.
No stress on the hexagonal crimp.
Minimum cable bending radius: 30 mm without tensile load.
- Grounding:** All metal parts inclusive the inner conductor are DC grounded.
- Available accessories:** Broadband power splitters and tappers (790 – 2700 MHz).

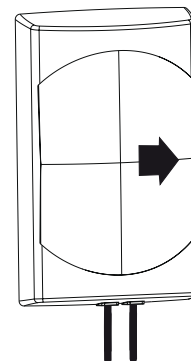


Horizontal Pattern

Mounting:



Align the antenna over the attachment plate.



Pull the antenna to the stop.

Mount the attachment plate to the wall using two screws of 4 mm diameter in the position as indicated.

Indoor Multi-band Omni Antenna Vertical Polarization

876–960 1710–2500

KATHREIN
Antennen · Electronic

V

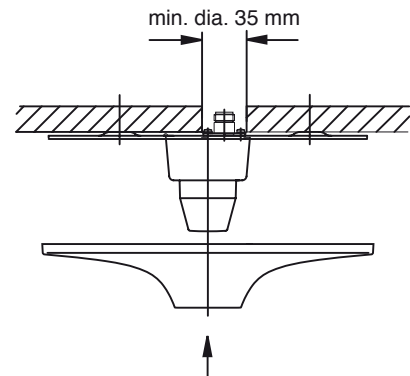
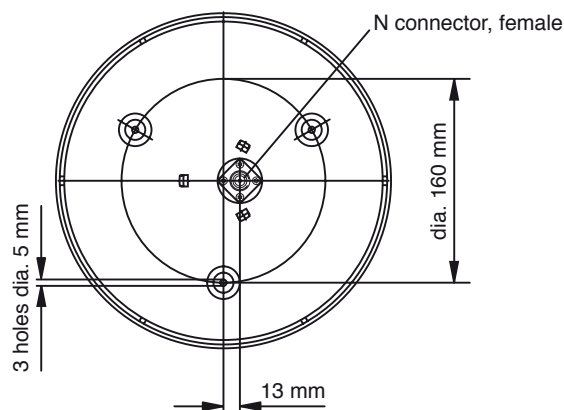
- The antenna can be operated in all frequency ranges simultaneously.
- The antennas need no additional groundplane.

VPol Indoor 876–960/1710–2500 360° 2dBi

Type No.	800 10137
Frequency range	876 – 960 MHz 1710 – 2500 MHz
VSWR	< 1.9: 876 – 890 MHz < 1.6: 890 – 960 MHz < 1.6: 1710 – 2170 MHz < 2.0: 2170 – 2500 MHz
Input	1 x N female
Gain	2 dBi
Impedance	50 Ω
Polarization	Vertical
Max. power (per band)	50 W (at 50 °C ambient temperature)
Weight	300 g
Diameter	210 mm
Height	78 mm (without connector)



- Material:** Base: Aluminum.
Protective housing: High impact polystyrol, colour: White.
Additional painting is possible.
- Mounting:** Three holes in the base enable a mounting on the ceiling. Two types of screws are supplied. For the N connector a hole in the ceiling with a diameter of 35 mm is required.
- Grounding:** All metal parts including the inner conductor are DC grounded.
- Available accessories:** Broadband power splitters and tappers (800 – 2500 MHz).



Clip the protective housing into position after the antenna has been mounted with the help of the three supplied screws.

Indoor Multi-band Omni Antenna Vertical Polarization

876–960

1710–2500

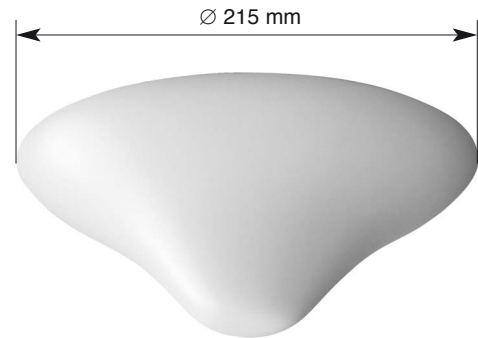
KATHREIN
Antennen · Electronic

V

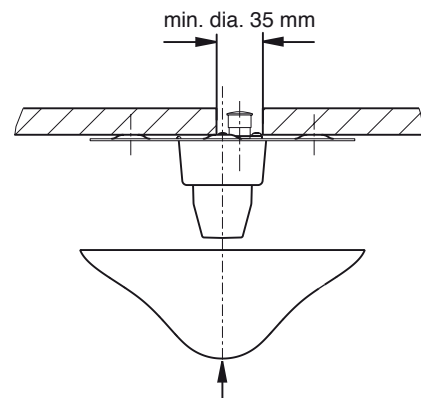
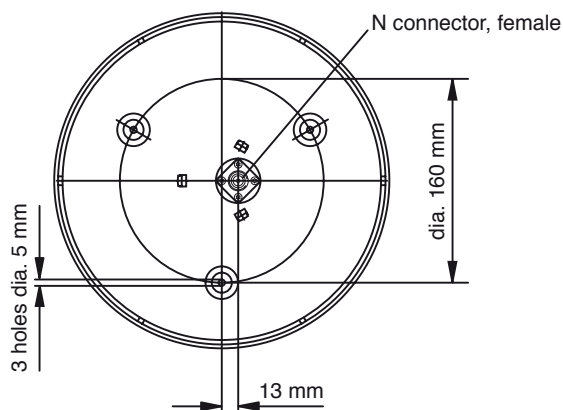
- The antenna needs no additional groundplane.

VPol Indoor 876–960/1710–2500 360° 2dBi

Type No.	800 10173
Frequency range	876 – 960 MHz 1710 – 2500 MHz
Polarization	Vertical
Gain	2 dBi
Impedance	50 Ω
VSWR	876 – 890 MHz: < 1.8 890 – 960 MHz: < 1.6 1710 – 2170 MHz: < 1.6 2170 – 2500 MHz: < 2.0
Max. power (per band)	50 W (at 50 °C ambient temperature)
Input	1 x N female
Weight	340 g
Diameter	215 mm
Height	85 mm (without connector)



- Material:** Base: Aluminum.
Protective housing: High impact polystyrol, colour: White.
Additional painting is possible.
- Mounting:** Three holes in the base enable a mounting on the ceiling. Two types of screws are supplied.
For the N connector a hole in the ceiling with a diameter of 35 mm is required.
- Grounding:** All metal parts including the inner conductor are DC grounded.
- Available accessories:** Broadband power splitters and tappers (800 – 2500 MHz).



Clip the protective housing into position after the antenna has been mounted with the help of the three supplied screws.

Indoor Multi-band Omni Antenna Vertical Polarization

790–960

1425–3800

5150–6000

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Antennen · Electronic

V

- The antenna can be operated in all frequency ranges simultaneously.
- The antennas need no additional groundplane.

VPol Indoor 790–960/1425–3800/5150–6000 360° 2dBi

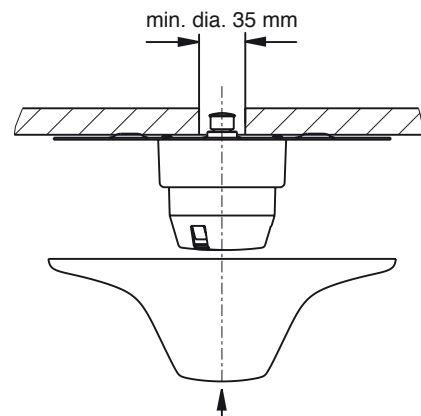
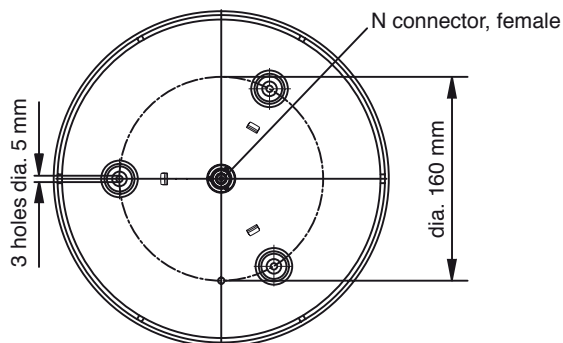
Type No.	800 10249
Frequency range	790 – 960 MHz 1425 – 3800 MHz 5150 – 6000 MHz
Polarization	Vertical
Gain	≈ 2 dBi
Impedance	50 Ω
VSWR	790 – 806 MHz: < 1.7 806 – 960 MHz: < 1.5 1425 – 1710 MHz: < 2.0 1710 – 2200 MHz: < 1.4 2200 – 3800 MHz: < 1.6 5150 – 6000 MHz: < 2.2
Max. power	50 W (at 50 °C ambient temperature)
Input	1 x N female
Protection class	IP 30
Weight	466 g
Packing size	277 x 277 x 169 mm
Diameter	258 mm
Height	94 mm (without connector)



Material: Reflector: Aluminum.
Radome: High impact polystyrol, colour: White.
Additional painting is possible.

Mounting: Three holes in the base enable a mounting on the ceiling. Two types of screws are supplied. For the N connector a hole in the ceiling with a diameter of 35 mm is required.

Available accessories: Broadband power splitters (694 – 3800 MHz) and tappers (790 – 2500 MHz).



Clip the protective housing into position after the antenna has been mounted with the help of the three supplied screws.

Indoor Omnidirectional Antenna Vertical Polarization Multi-band

1710–2700

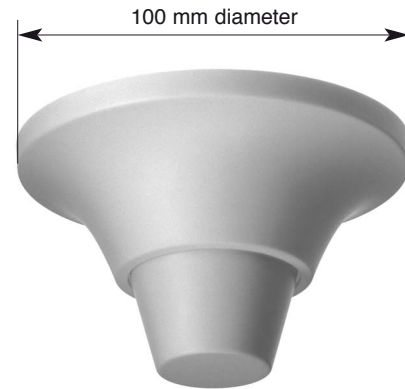
V

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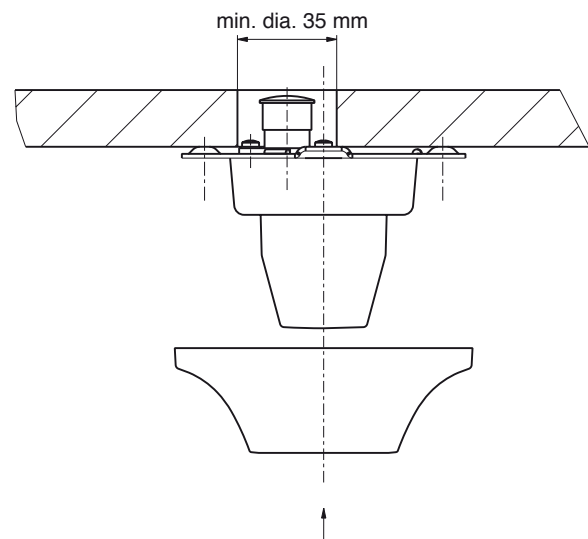
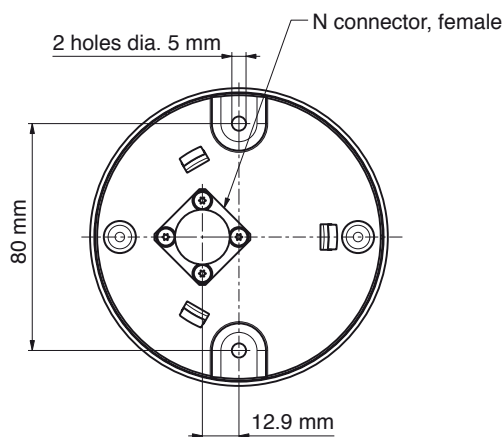
- The antenna can be operated in the total frequency range simultaneously.
- The antenna needs no additional groundplane.

VPol Indoor 1710–2700 360° 2dBi

Type No.	741 573
Frequency range	1710 – 2700 MHz
VSWR	1710 – 1880 MHz: < 1.6 1850 – 1990 MHz: < 1.6 1920 – 2170 MHz: < 1.6 2170 – 2500 MHz: < 2.0 2500 – 2700 MHz: < 2.2
Input	1 x N female
Gain	2 dBi
Impedance	50 Ω
Polarization	Vertical
Max. power (per band)	50 W (at 50 °C ambient temperature)
Weight	150 g
Diameter	100 mm
Height	50 mm (without connector)



- Material:** Base: Aluminum.
Protective housing: High impact polystyrol, colour: White.
Additional painting is possible.
- Mounting:** Holes in the base enable a mounting on the ceiling. Screws are supplied.
For the N connector a hole in the ceiling with a diameter of 35 mm is required.
- Grounding:** All metal parts including the inner conductor are DC grounded.
- Available accessories:** Broadband power splitters (694 – 3800 MHz) and tappers (790 – 2500 MHz).



Clip the protective housing into position after the antenna has been mounted with the help of the three supplied screws.

Indoor Omnidirectional Antenna Vertical Polarization Multi-band

1710–6000

V

KATHREIN

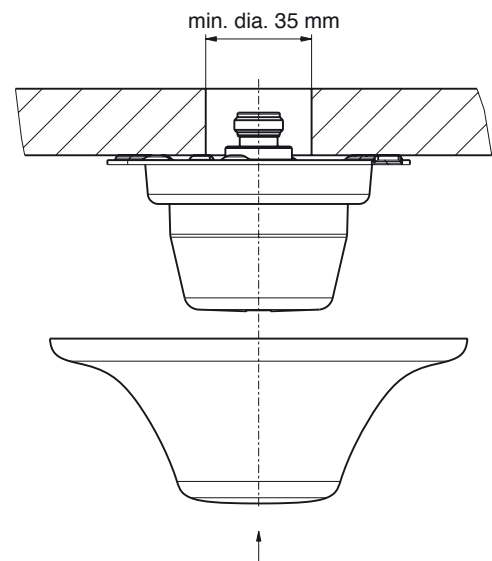
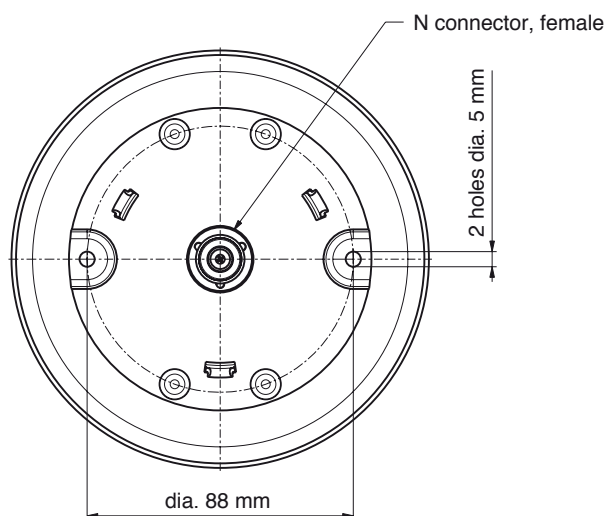
Antennen · Electronic

- The antenna can be operated in all frequency ranges simultaneously.
- The antenna needs no additional groundplane.

VPol Indoor 1710–6000 360° 2dBi

Type No.	800 10430
Frequency range	1710 – 6000 MHz
Polarization	Vertical
Gain	2 dBi
Impedance	50 Ω
VSWR	< 1.5
Max. power	50 W (at 50 °C ambient temperature)
Input	1 x N female
Protection class	IP 30
Weight	133 g
Diameter	138 mm
Height	56 mm (without connector)

- Material:** Base: Aluminum.
Protective housing: High impact polystyrol, colour: White.
Additional painting is possible.
- Mounting:** Holes in the base enable a mounting on the ceiling. Screws are supplied.
For the N connector a hole in the ceiling with a diameter of 35 mm is required.
- Available accessories:** Broadband power splitters and tappers (800 – 2500 MHz).



Clip the protective housing into position after the antenna has been mounted with the help of two supplied screws.

Dual-band Omni Antenna 870–960/1710–1880

Vertical Polarization

Indoor and outdoor use

870–960/1710–1880

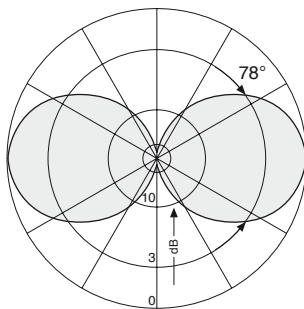
V

VPol Omni 870–960/1710–1880 360° 2dBi

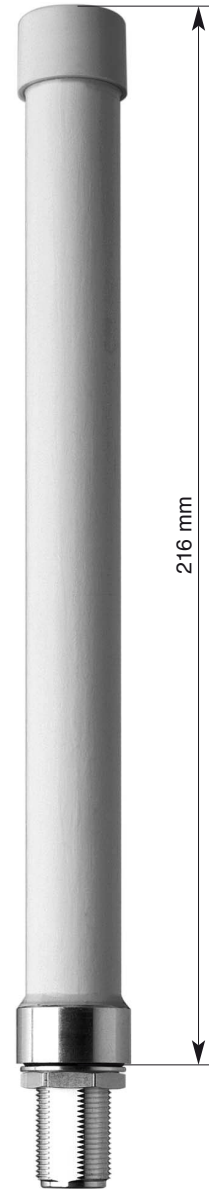
Type No.	738 449
Input	1 x N female
Connector position	Bottom or top
Frequency range	870 – 960 MHz / 1710 – 1880 MHz
VSWR	< 1.7
Gain	2 dBi
Impedance	50 Ω
Intermodulation IM3 (2 x 43 dBm carrier)	< -150 dBc
Polarization	Vertical
Max. power	50 W: 870 – 960 MHz 50 W: 1710 – 1880 MHz (at 50 °C ambient temperature)
Weight	250 g
Radome diameter	20 mm
Height	216 mm

Material: Radiator: Brass.
Radome: Fiberglass, colour: White.

Mounting: One hole mounting (16 mm diameter) to surfaces of max. 10 mm thickness.



Vertical Pattern



Omnidirectional Antenna Vertical Polarization Indoor and outdoor use

1710–2700

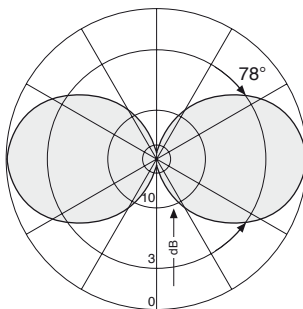
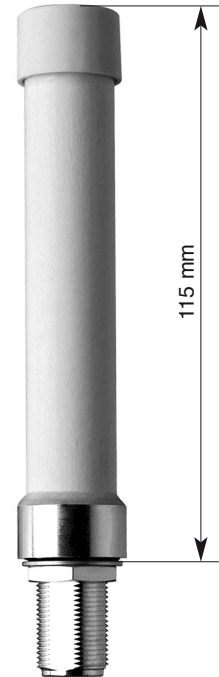
V

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VPol Omni 1710–2700 360° 2dBi

Type No.	800 10431
Input	N female
Connector position	Bottom or top
Frequency range	1710 – 2700 MHz
VSWR	< 1.8
Gain	2 dBi
Impedance	50 Ω
Intermodulation IM3 (2 x 43 dBm carrier)	< -150 dBc
Polarization	Vertical
Max. power	50 W (at 50 °C ambient temperature)
Weight	150 g
Radome diameter	20 mm
Height	115 mm

- Material: Radiator: Brass.
Radome: Fiberglass, colour: White.
- Mounting: One hole mounting (16 mm diameter) to surfaces of max. 10 mm thickness.
- Grounding: All metal parts of the antenna and the mounting kit are DC grounded. The inner conductor is not DC grounded.



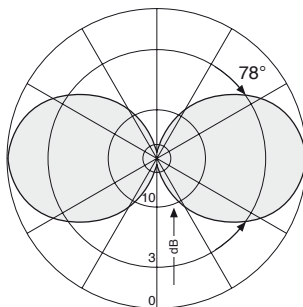
Vertical Pattern

Dual-band Omni Antenna 824–960/1805–2170 Vertical Polarization V Indoor and outdoor use

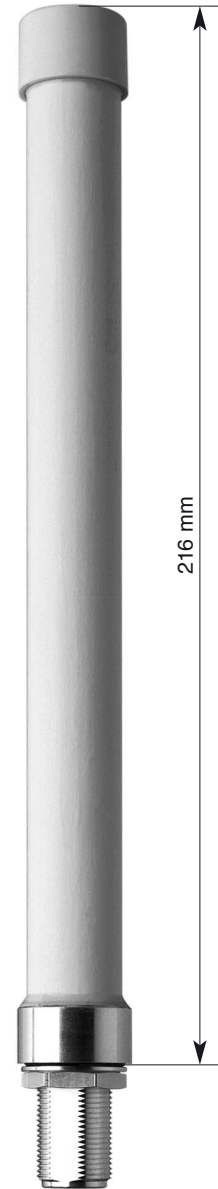
VPol Omni 824–960/1805–2170 360° 2dBi

Type No.	800 10147
Input	1 x N female
Connector position	Bottom or top
Frequency range	824 – 960 MHz / 1805 – 2170 MHz
VSWR	< 2.0
Gain	2 dBi
Impedance	50 Ω
Polarization	Vertical
Max. power	50 Watt: 824 – 960 MHz 50 Watt: 1805 – 2170 MHz (at 50 °C ambient temperature)
Weight	250 g
Radome diameter	20 mm
Height	216 mm

- Material:** Radiator: Brass.
Radome: Fiberglass, colour: White.
- Mounting:** One hole mounting (16 mm diameter) to surfaces of max. 10 mm thickness.
- Grounding:** All metal parts of the antenna as well as the inner conductor and the mounting kit are DC grounded.



Vertical Pattern



Type	Type No.	Page
Kathrein's Remote Electrical Tilt System		
General information		152
Data sheets of RET components		
Slimline Remote Control Unit (RCU)	860 10025 / 860 10118	154
Central Control Unit (CCU) for indoor use	860 10006 / 860 10026	155
Central Control Unit (CCU) for indoor use (cost efficient version)	860 10140 / 86010141	156
Central Control Unit with Layer-one Converter (CCU-LOC)	860 10068	157
Central Control Unit (CCU) for outdoor use	860 10113	159
Portable Control Adapter (PCA)	860 10046	160
Power Supply and Signal Cable	860 10007, ...	161
SMB Control Cable	860 10078 / ..79 / ..84 / ..90	162
DC Power and Signal Splitter	860 10002	163
Lightning Protection Device	860 10030	164
Earthing Clamp	860 10031	165
Smart Bias Tee	782 10253 / ..54 / ..55 / ..56	286
	782 10453 / ..54 / ..55 / ..56	
Bias Tee	782 10429	284

New or changed product

The answer to all current and future network demands

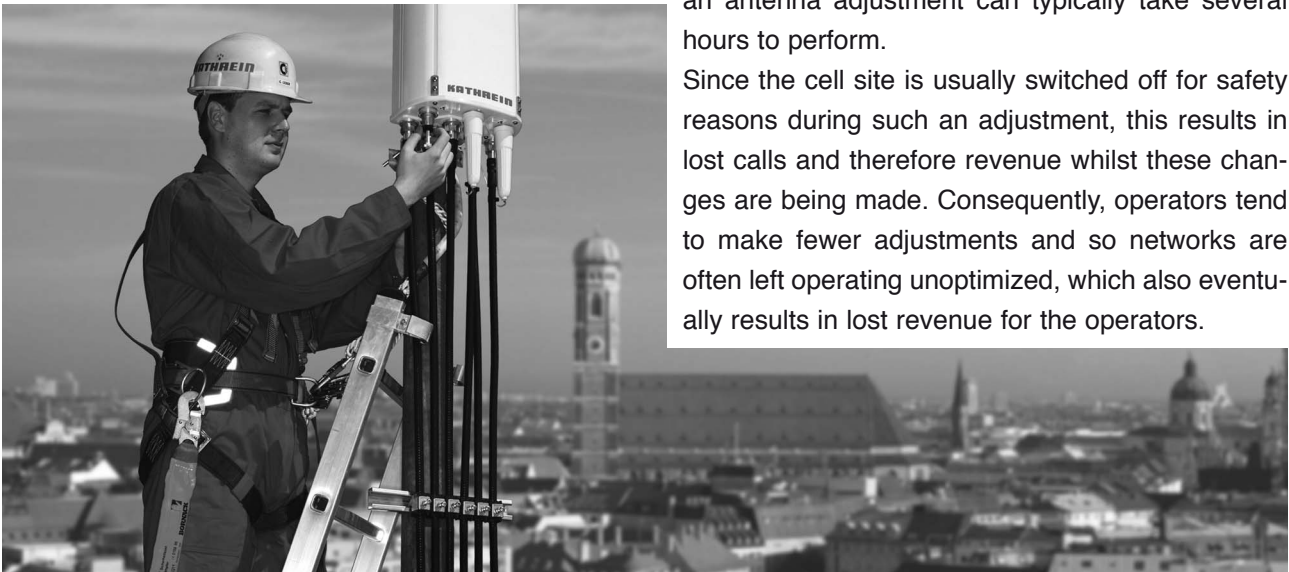
Network planning is becoming ever more complicated, especially with the advent of 3G.

The challenge for wireless network operators is to balance coverage, capacity, call quality and costs in order to gain maximum revenue from their network. Each of the above factors affects the others and so network engineers use many different techniques

for establishing the right balance they are trying to achieve.

One of these methods is adjusting the antenna's downtilt. Here, the engineer must take into consideration certain facts, such as the weather, access to the cell site, availability of specialized installation teams and special equipment etc. Moreover, such an antenna adjustment can typically take several hours to perform.

Since the cell site is usually switched off for safety reasons during such an adjustment, this results in lost calls and therefore revenue whilst these changes are being made. Consequently, operators tend to make fewer adjustments and so networks are often left operating unoptimized, which also eventually results in lost revenue for the operators.



However, with Kathrein's Remote Electrical Tilt unit engineers can make the necessary adjustments without shutting down the whole system!

Further advantages of using Kathrein's Remote Electrical Tilt (RET) system:

- No need for specialized teams trained in altitude work or with special safety skills
- Limited site access and/or time restrictions are not so important
- No special platforms or other means of access to the antenna are required
- Adjustments can be made and the relevant measurements performed speedily
- Network alterations can be carried out irrespective of weather conditions
- No reduction in coverage – cells remain fully operational whilst changes are being made
- Operators estimate that approx. 20% of UMTS equipment can be saved by using such a RET system.

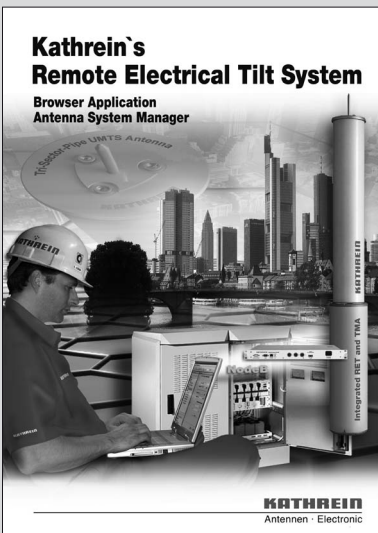


RET components



Kathrein's overall RET system works in accordance with the AISG (Antenna Interface Standards Group) standard and 3 GPP (3rd Generation Partnership Project).

For details of RET system please see Kathrein RET system brochure



Slimline RCU
(Remote Control Unit)



CCU (Central Control Unit)



CCU with LOC
(Central Control Unit with Layer-one Converter)



CCU outdoor
(Central Control Unit, outdoor)



PCA
(Portable Control Adapter)



DC Power and Signal Splitter



Control Cable



SMB Control Cable



Lightning Protection Device



Earthing Clamp



Optional:

Smart Bias Tee



DTMA (Double Tower Mounted Amplifier)



Bias Tee



Remote Control Unit (RCU) for Kathrein base station antennas with adjustable electrical down-tilt and appropriate mechanical interface.

- Compliant to AISG 1.1 and 3GPP/AISG 2.0
- Compact size
- Daisy Chain feasibility
- Suitable for operation under outdoor conditions



Type No.	860 10025	860 10118
Protocols	compliant to AISG 1.1 and 3GPP/AISG 2.0	
Logical interface ex factory ¹⁾	AISG 1.1	3GPP/AISG 2.0
Input voltage range	10 ... 30 V (pin 1, pin 6)	
Power consumption	< 1 W (stand by); < 8.5 W (motor activated)	
Connectors ²⁾	2 x 8 pin connector according to IEC 60130-9; according to AISG Daisy chain in: male; Daisy chain out: female	
Hardware interfaces	RS 485A/B (pin 5, pin 3); power supply (pin 1, pin 6); DC return (pin 7); according to AISG	
Adjustment time (full range)	40 sec (typically, depending on antenna type)	
Adjustment cycles	> 50,000	
Temperature range	-40 °C ... +60 °C	
Protection class	IP 24	
Housing material	Profile: Aluminium coated; cover: Zinc diecast coated; varnished housing (RAL 7035, lightgrey)	
Weight	525 g (1.16 lbs)	
Packing size	245 x 93 x 102 mm, (9.6 x 3.6 x 4 inches)	
Dimensions (H x W x D)	177.5 x 59.5 x 49.5 mm, (7.0 x 2.3 x 1.9 inches)	



¹⁾The protocol of the logical interface can be switched from AISG 1.1 to 3GPP/AISG 2.0 and vice versa with a vendor specific command. Start-up operation of the RCU 860 10025 is only possible in a RET system supporting AISG 1.1 and start-up operation of the RCU 860 10118 is only possible in a RET system supporting 3GPP/AISG 2.0!

Please note:

If the Primary of the RET system doesn't support the standard of the 'logical interface ex factory', the RCU must be switched to the appropriate standard of the Primary before installation. Please contact Kathrein for further information.

²⁾The tightening torque for fixing the connector must be 0.5 – 1.0 Nm ('hand-tightened'). The connector should be tightened by hand only!

- Standards
- EN 60950-1 (Safety)
 - EN 55022 (Emission)
 - EN 55024 (Immunity)
 - ETS 300019-1-4 (Environmental)
 - UL 60950-1; 1st edition

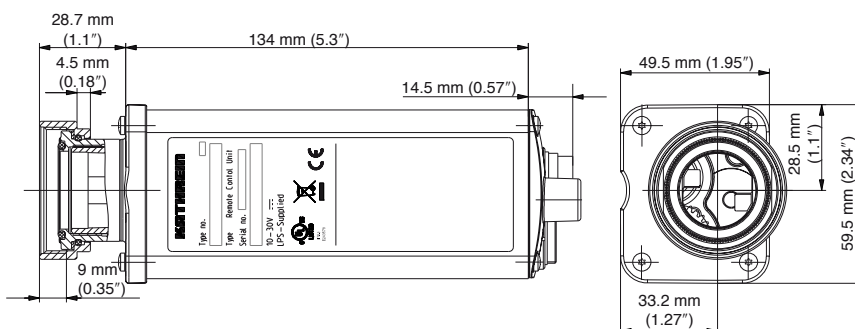
Certification: CE, UL, FCC15.107 class B

Scope of supply: Remote Control Unit
Assembly paste

Daisy chain in (male) Daisy chain out (female)



Bottom view of RCU



Central Control Unit (CCU) For Remote Electrical Tilt (RET) and Tower Mounted Amplifier (TMA) Control

For indoor use



Central Control Unit

Type No.	860 10006	860 10026
Connectors ¹⁾ to RCU	3 x 8 pin connector acc. to IEC 60130-9, female, acc. to AISG	
Power supply from BTS	DC: -48 V / max. 1.7 A AC: 100 ... 240 V / 50 ... 60 Hz / max. 1.6 A	DC: -48 V / max. 1.7 A
Power supply to RCU	3 x +29 V DC / max. 1.7 A (in total) 3 x +13 V DC / max. 3.8 A (in total)	
Total output power	Max. 50 W	
Interface to RCU and TMA	RS 485 / power supply	
Protocol to RCU and TMA	HDLC hex-coded command set, acc. to AISG	
Interface to BTS	Ethernet (10 Base-T) and RS 232	
Protocols to BTS	TCP/IP, PPP, HTTP/HTML, UDP, DHCP, FTP, SNMP, ICMP/PING	
Alarm interface to BTS	8 x open collector output, user programmable	
Max. number of RCU's and/or TMA's	Up to 27 RCU's in daisy chain and up to 6 DTMA's; depending on cable configuration and max. power	
Max. length of control cable	200 m (9 RCU's in daisy chain configuration)	
Temperature range	-25 °C ... +55 °C ambient temperature	
Packing size	597 mm x 367 mm x 148 mm	
Dimensions (h / w / d)	19" 1 HU* (43.6 mm / 483 mm / 250 mm)	

* HU = Height Unit

¹⁾ The tightening torque for fixing the connector must be 0.5 – 1.0 Nm ('hand tightened').
The connector should be tightened by hand only.

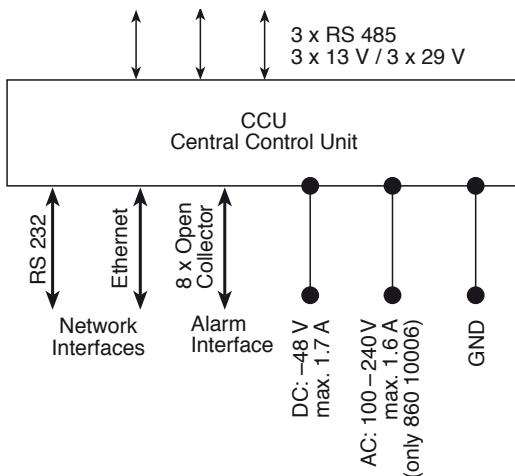
Standards: EN 60950-1
EN 55022
EN 55024
UL 60950-1, 1st edition

Certifications: CE, FCC part 15 class B; UL

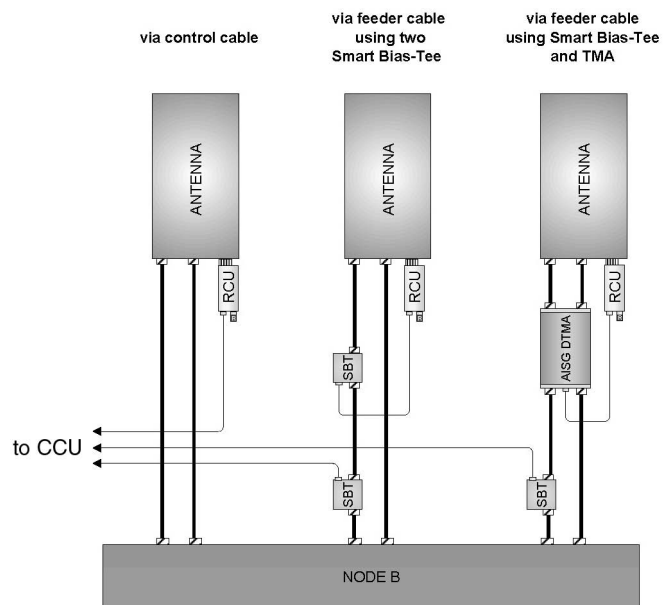
Scope of supply: CCU
RET Manual
DC Cable
AC Power Cords for USA, UK and Germany
Ethernet cable, crossed



CCU Interfaces



Examples of CCU – RCU connections



Central Control Unit (CCU) For Remote Electrical Tilt (RET) and Tower Mounted Amplifier (TMA) Control

For indoor use

Central Control Unit

Type No.	860 10140	860 10141
Connector ¹⁾ to RCU	8 pin connector acc. to IEC 60130-9, female, acc. to AISG	
Power supply from BTS	AC: 100 ... 240 V / 50 ... 60 Hz / max. 1.6 A	DC: -48 V / max. 1.7 A
Power supply to RCU	+29 V DC / max. 1.7 A	
Total output power	Max. 50 W	
Interface to RCU and TMA	RS 485 / power supply	
Protocol to RCU and TMA	HDLC hex-coded command set, acc. to AISG	
Interface to BTS	Ethernet (10 Base-T) and RS 232	
Protocols to BTS	TCP/IP, PPP, HTTP/HTML, UDP, DHCP, FTP, SNMP, ICMP/PING	
Alarm interface to BTS	8 x open collector output, user programmable	
Lightning protection	No lightning protection for AISG interface ²⁾ 8/20 μ s, 2.5 KA Ethernet-, DC- and Alarm Interface	
Max. number of RCU's and/or TMA's	Up to 27 RCU's in daisy chain and up to 6 DTMA's; depending on cable configuration and max. power	
Max. length of control cable	200 m (9 RCU's in daisy chain configuration)	
Temperature range	-25 °C ... +55 °C ambient temperature	
Packing size	597 mm x 367 mm x 148 mm	
Dimensions (h / w / d)	19" 1 HU* (43.6 mm / 483 mm / 250 mm)	



* HU = Height Unit

¹⁾ The tightening torque for fixing the connector must be 0.5 – 1.0 Nm ('hand tightened').
The connector should be tightened by hand only.

²⁾ **Please note:** In order to achieve lightning protection acc. to IEC 61643-1/-3 (10/350 μ s), please install the Kathrein Lightning Protection Device (type no. 860 10030). For additional information about lightning protection of the CCU, we kindly refer to RET Installation Manual.

Standards: EN 60950-1
EN 55022
EN 55024
UL 60950-1, 1st edition

Certifications: CE, FCC part 15 class B; UL

Scope of supply: CCU
RET Manual
DC Cable (only 860 10141)
AC Power Cords for USA,
UK and Germany (only 860 10140)
Ethernet cable, crossed

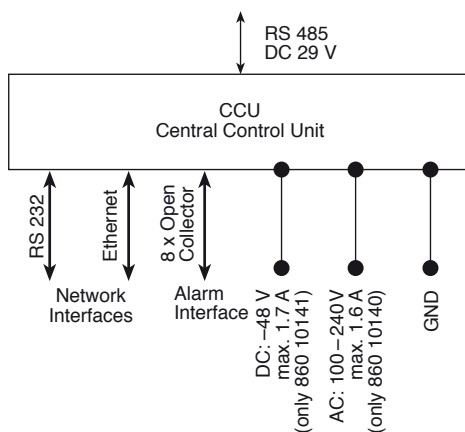


860 10140

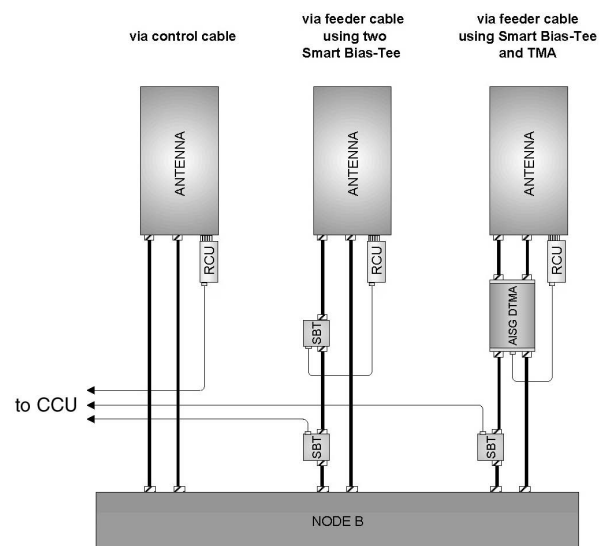


860 10141

CCU Interfaces



Examples of CCU – RCU connections



Central Control Unit with Layer-one Converter For Remote Electrical Tilt (RET) and Tower Mounted Amplifier (TMA) Control

KATHREIN
Antennen · Electronic

For indoor use

The **Central Control Unit with integrated Layer-one Converter** (CCU-LOC) combines the features of the standard Kathrein CCU (86010026) with the functionality of an additional RF-modem for layer-one conversion according to AISG specification. The CCU provides on its outputs a DC voltage with an OOK-modulated carrier signal at 2.176 MHz for controlling all connected AISG devices via feeder cables. In order to feed-in the output signal (DC voltage / carrier-signal) into the feeder cable, a passive Bias-T with appropriate lightning protection is required (Kathrein 78210429). The measures taken to protect against static discharge and lightning ensure a high level of reliability and operational safety.



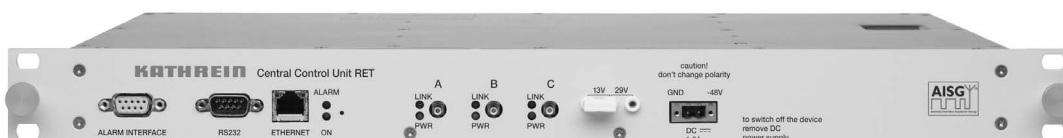
- AISG 1.1 compliant
- 13 VDC or 29 VDC output voltage - switchable with external jumper
- LED signalling for output power and alarming

CCU with Layer-one Converter

Type No.	86010068
RET-Interface	3 x Coaxial Interface 13 VDC or 29 VDC; OOK modulated carrier at 2.176 MHz
Connector of RET-Interface	3 x SMB; female acc. IEC 169-10
Power supply from BTS	DC: -48V / max. 1.7A
Power supply to RET	3 x +13 VDC (3.8 A in total) or 3 x +29 VDC (1.7 A in total) switchable with external jumper Over current protection per SMB output: 1.8 A / 13 VDC 1.0 A / 29 VDC
Total output power	max. 50 W (in total)
Protocol to RET	HDLC command set, conform to AISG
Interface to BTS	PPP; IP; TCP; UDP; ICMP/PING; HTTP/HTML; DHCP; FTP; SNMP
Alarm Interface to BTS	8 x open collector output, user programmable
LED signalling	1 x green POWER ON 1 x red ALARM SMB-connectors: 3 x green POWER ON 3 x red ALARM
Max. number of TMA's and RCU's	max. 1 x DTMA and 9 x RCU per output (Kathrein devices) depending on system configuration
Temperature range	-25 °C ... +55 °C ambient temperature
Weight	3.7 kg
Packing size (h x w x d)	597 mm x 367 mm x 148 mm
Dimensions (h x w x d)	19" 1 HU* (43.6 mm x 483 mm x 250 mm)

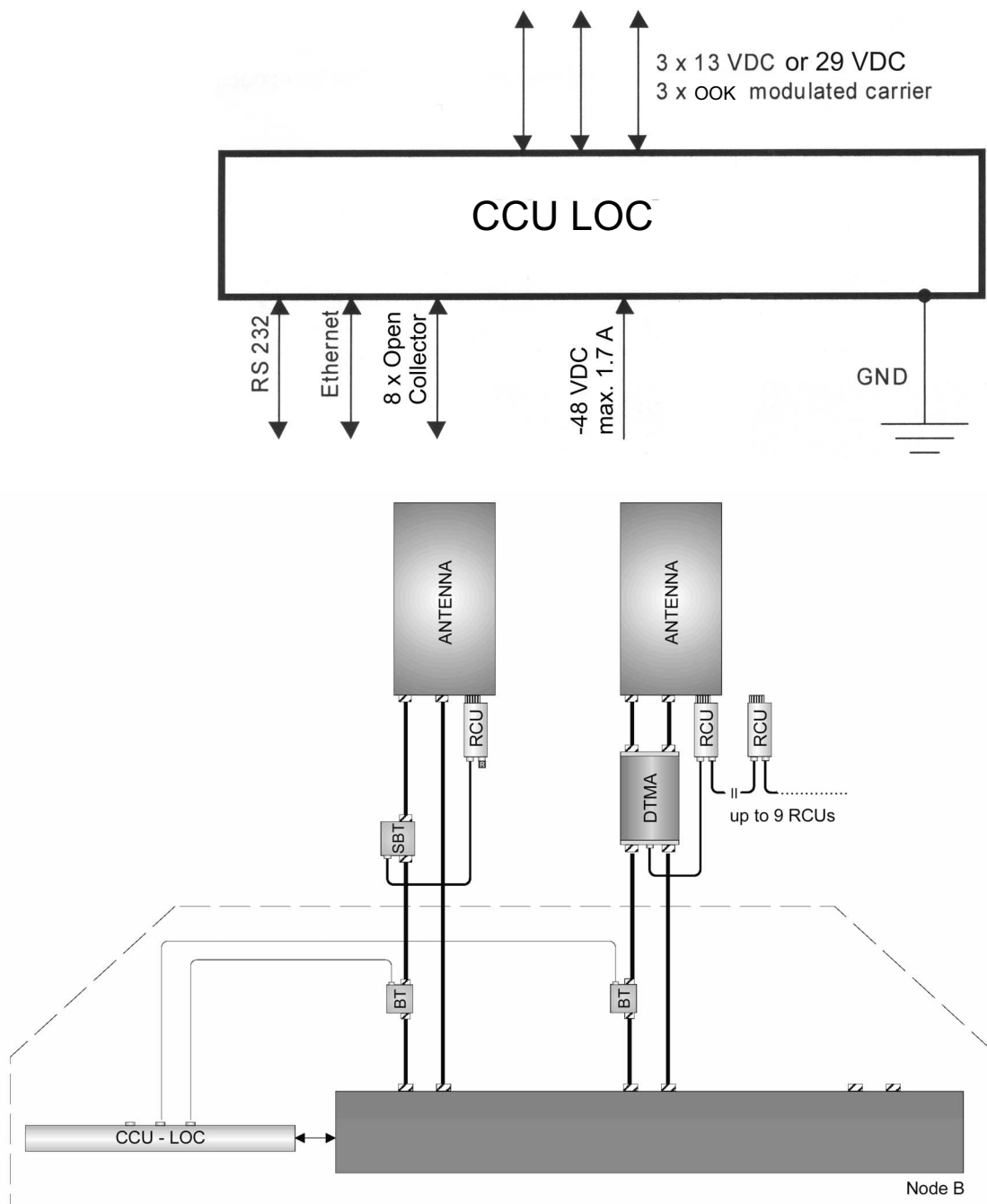
Standards EN 60950-1 (Safety)
EN 55022 (Emmission)
EN 55024 (Immunity)

Certification: CE
Scope of supply: CCU-LOC
Manual
DC-cable



RET

Central Control Unit with Layer-one Converter For Remote Electrical Tilt (RET) and Tower Mounted Amplifier (TMA) Control



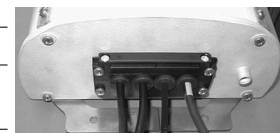
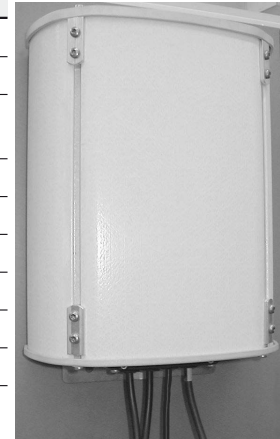
Central Control Unit (CCU) For Remote Electrical Tilt (RET) and Tower Mounted Amplifier (TMA) Control

for outdoor use

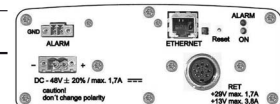


Central Control Unit, outdoor

Type No.	860 10113
Connectors to RCU/Splitter	1 x 8 pin connector according IEC 60130-9, female, conform to AISG
Power supply from BTS	DC: -48 V ±20 % / max. 1.7 A
Power supply to RCU	+29 V DC / max. 1.7 A +13 V DC / max. 3.8 A
Total output power	Max. 50 W
Interface to RCU and TMA	RS 485 / power supply, conform to AISG
Protocol to RCU and TMA	HDLC hex-coded command set, conform to AISG 1.1 and 3GPP/AISG 2.0
Interface to BTS	RJ 45, 10 Base-T, Ethernet 802.3
Protocols to BTS	TCP/IP, UDP, HTTP/HTML, DHCP, FTP, ICMP/PING, SNMP
Alarm Interface	1 x open collector output
Lightning Protection	No Lightning Protection for AISG interface ¹⁾ 8/20 μs, 2.5 kA Ethernet-, DC- and Alarm Interface
Max. number of RCU's and/or TMA's	Up to 27 RCU's in daisy chain und up to 6 DTMA's; depending on cable configuration and max. power ²⁾
Max. length of control cable	200 m (9 RCU's in daisy chain configuration) ²⁾
Material of housing	Covers: Aluminium, varnished (lightgrey) Profile: Glass-fibre reinforced plastic (lightgrey)
Temperature range	-40 ... +55 °C ambient temperature
Mounting ³⁾	Wall and mast mounting (with additional clamps)
Weight	4.6 kg
Dimensions (h x w x d)	328 mm x 270 mm x 131 mm



Cable feedthrough with gasket at the bottom side.



Interfaces at the internal connector panel.

¹⁾ **Please note:** In order to achieve lightning protection acc. to IEC 61643-1-3 (10/350μs), please install the Kathrein Lightning Protection Device (type-no. 860 10030). For additional information about lightning protection of the CCU, we kindly refer to the RET Installation Manual.

²⁾ Please refer to the RET Installation Manual for detailed information.

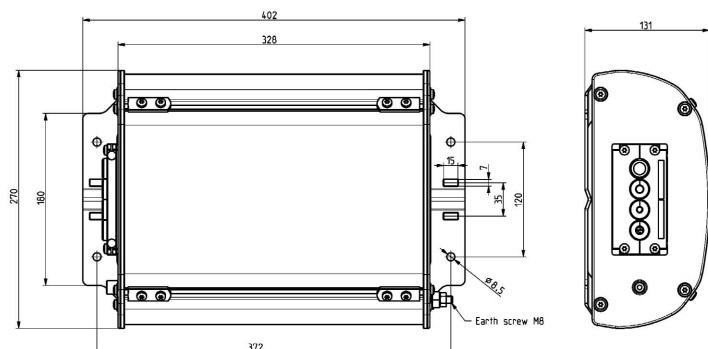
³⁾ **Please note:** The CCU 860 10113 is suitable for operation under outdoor conditions.
Cable feedthrough must point downward!
The cable installation must provide adequate strain relief!
The CCU should not be installed at locations with hazardous risks for the installation team!
Please follow the instructions in the RET Installation Manual.

Standards: EN 60950-1 (Safety)
EN 55022 (Emission)
EN 55024 (Immunity)
ETS 300019-1-4 (Environmental)

Certifications: CE

Scope of supply: Central Control Unit, outdoor
Connectors for Power Supply and Alarm interface

Installation manual
Ethernet cable, crossed



Portable Control Adapter (PCA) For Remote Control Unit (RCU)



Portable Control Adapter

Type No.	860 10046
Connector * to RCU/TMA	1 x 8-pin connector according to IEC 60130-9, female, conforming to AISG RF-connector (SMB male)
Input voltage of PCA	24 V DC
Output voltage to RCU's/TMA's	AISG female pin 6 (24 V DC): 24 V DC \pm 10% AISG female pin 1 (12 V DC): 14 V DC \pm 7% RF male (at 24 V DC): 24 V DC \pm 10% *** RF male (at 12 V DC): 14 V DC \pm 7% ***
Output power (power supply to RCU's/TMA's)	AISG female pin 6 (24 V DC) without load on pin 1 (12 V DC) and on RF-plug: \leq 60 W AISG female Pin 1 (12 V DC) with max. 30 W load on pin 6 (24 V DC) and/or on RF plug: \leq 30 W
Current monitoring measurement level	Per branch (12 V, 24 V, RF): 10 – 2500 mA
Over-current protection	Per branch (12 V, 24 V, RF): < 2500 mA
Interface to RCU/TMA	RS 485 / power supply / RF connector (SMB male)
Protocol to RCU/TMA	HDLC hex-coded command set, conforming to AISG 1.1 and 3GPP / AISG 2.0
Interface to PC	USB 1.1/2.0
Max. number of RCU's/TMA's	27/3 pcs., depending on system configuration and length of control cable
Max. length of control cable	200 m / 9 RCU's (in daisy chain configuration) 150 m / 6 RCU's (in splitter configuration)
Weight	535 g (incl. external power adapter)
Temperature range	0 ... +55 °C ambient temperature
Height x width x depth	40 mm x 95 mm x 160 mm
External power supply **	Input: 90 – 264 V AC, 47 – 63 Hz 24 V DC / 3.0 A

* Tightening torque for fixing the connector must be 0.5 – 1.0 Nm ('hand-tightened').

The connector should be tightened by hand only!

** If powered via AISG-interface, no external power supply is required.

*** Switchable with software

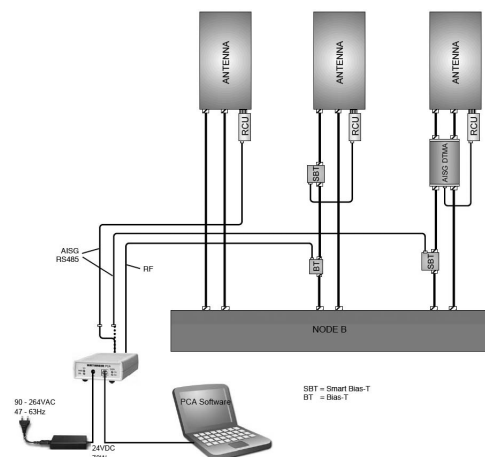
Certificate: CE
FCC part 15 class B
UL (for external power adapter)

Standards: EN 60950-1
EN 55022
EN 55024

System requirements for PCA Software: Windows 2000; Windows XP (32 bit version)



Scope of supply: PCA
External power supply (24 V DC / 70 W)
USB cable
AC power cable
CD-ROM with PCA software, drivers and manual
Installation guide
Transport case



Connecting Cable For Remote Electrical Tilt (RET) System

For indoor and outdoor use



RET Cable for power supply and control

Type No.	860 10007 ...
Connectors	2 x 8 pin connector according IEC 60130-9, female/male
Tightening torque for fixing the connectors	0.5 – 1 Nm (The connector should be tightened by hand only)
Construction	Screen 1x twisted pair 100 Ω/1 MHz 2x power supply, 1x ground AWM style 20317 I/II A/B + 20549 + 20233
Rated current	4 A (power supply) (at 50 °C air temperature)
Temperature range	–40 °C to +80 °C, (fixed position)
Protection class	IP 67 (connected)
Cable diameter	8 mm
Flammability	VL 1581 VW-1 CSA FT 1
Colour	Black, similar to RAL 9005

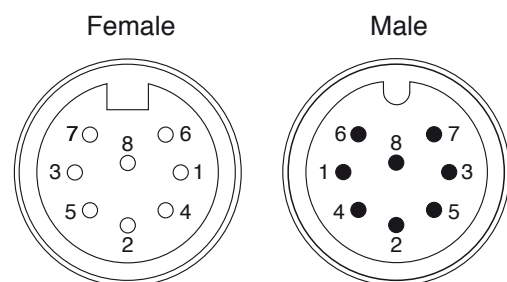
Minimum bending radius: One time 60 mm, several times 120 mm.

The male and female connectors of all Kathrein RET products are compatible components which are designed to operate under the environmental conditions as described in ETS 300 019-1-4 class 4.1 E.



Control Cable

Length	Type No.
0.5 m	860 10054
1 m	860 10007
2 m	860 10008
3 m	860 10029
5 m	860 10009
10 m	860 10010
20 m	860 10032
25 m	860 10011
40 m	860 10012
50 m	860 10033
60 m	860 10013
80 m	860 10014
100 m	860 10015



PIN assignment according AISG:

- 1 +13 V DC (+12 V DC nominal)
- 2 not connected
- 3 RS485 B
- 4 not connected
- 5 RS485 A
- 6 +29 V DC (+24 V DC nominal)
- 7 DC Return
- 8 not connected

SMB Control Cable For Remote Electrical Tilt (RET) System

For indoor use

Coax cable (RG58) assembled with SMB connectors. The DC Control Cable is used to connect the CCU with Layer One Converter (type no. 860 10068) to the Bias Tee with SMB interface (type no. 782 10429).

Type No.	860 10078/860 10079/860 10084/860 10090
Connectors	2 x SMB-Angle Jack; gold plated
Cable	RG58C/U
Temperature range	-40 °C to +70 °C, (fixed position)
Cable diameter	4.95 mm ±0.1 mm
Colour of cable	Black, similar to RAL 9005

Minimum bending radius: One time 25 mm
several times 50 mm



860 10079

Control Cable

Type No.	Description	Length
860 10078	SMB Control Cable	2 m
860 10084	SMB Control Cable	3 m
860 10079	SMB Control Cable	5 m
860 10090	SMB Control Cable	10 m

DC-Power and Signal Splitter For Remote Electrical Tilt (RET) Indoor and Outdoor Use

AISG compliant device for splitting of DC-power and control signals from one input to three outputs.



3-way-Splitter for RET

Type No.	860 10002
Connectors ¹⁾	4 x 8 pin connector according IEC 60130-9, 1 x male, 3 x female
Rated current (power supply)	3 A (at 50 °C)
Max. voltage	60 V
Protection class	IP 65
Weight	250 g
Packing size	114 mm x 117 mm x 117 mm
Height/width/depth	91 mm / 103 mm / 72 mm

¹⁾ The tightening torque for fixing the connector must be 0.5 – 1.0 Nm ('hand-tightened'). The connector should be tightened by hand only!

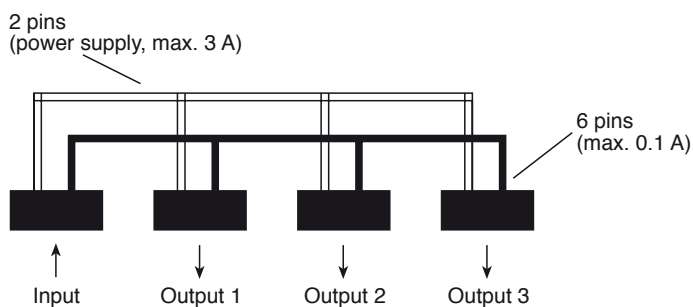


Material: Connector plate: Aluminum.
Cap: Plastic.

Mounting: Mast mounting (50 – 145 mm diameter) by clamp.
Wall mounting by screws (not supplied).

Note: Connectors must be situated at the bottom.
No inverted mounting possible.

Scope of supply: 3-way Splitter
Clamp (Art.-No. 1311847)



Clamp, Art. No. 1311847

Lightning Protection Device (LPD) For Remote Electrical Tilt (RET) Indoor and Outdoor Use



The device is designed for lightning protection of control cables carrying partial lightning currents up to 25 kA (shield) and 2.5 kA (inner conductor), according IEC 61643-1, IEC 61312-3. Each pin is protected individually.

Lightning Protection Device for RET

Type No.	860 10030
Connectors ¹⁾	2 x 8 pin connector according IEC 60130-9, input: male, output: female
SPD-Type	8 x bipolar gas tube
Max. impuls current	25 kA (housing, shield) (10/350 μ s) inner conductors: 2.5 kA/pin (10/350 μ s)
Max. dynamic overvoltage at spark gap (1 kV/ μ s)	< 700 V
Static overvoltage (100 V/s)	< 100 V
Grounding	Via mounting plate / clamps at metallic surfaces or via separate cable, min. cross-section 5 mm ² Cu (screw M6)
Max. operation current	4 A at 50 °C
Max. operation voltage	60 V
Weight	250 g
Packing size	114 mm x 117 mm x 117 mm
Height/width/depth	91 mm / 103 mm / 72 mm

¹⁾ The tightening torque for fixing the connector must be 0.5 – 1.0 Nm ('hand-tightened'). The connector should be tightened by hand only!



Material: Connector plate: Aluminum.
Cap: Plastic.

Mounting: Mast mounting (50 – 145 mm diameter) by clamp.
Wall mounting by screws (not supplied).

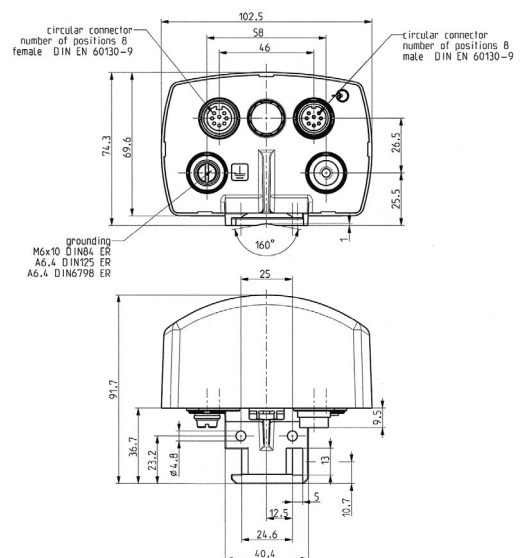
Note: **No decoupling elements are integrated. The coordination with additional LPD's (device input) should be checked according to IEC 61312.**

Grounding of the device via the mounting plate at metallic surfaces or via additional grounding cable (not included in the delivery extend).

Connectors must be situated at the bottom. No inverted mounting possible.

Important: A control cable with a minimum length of 2 meters is required between Lightning Protection Device and Central Control Unit at the BTS to achieve the required decoupling.

Scope of supply: Lightning Protection Device
Clamp (50 ... 145 mm)



Earthing Clamp For Power Supply and Control Cable For Remote Control Unit (RCU)

The clamp is designed for lightning protection of control cables according to EN 50164-1

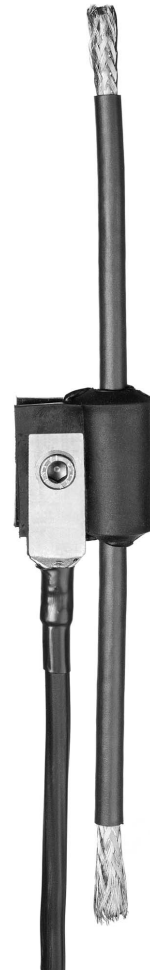
Earthing clamp for RCU power supply and signal cable

Type No.	860 10031
Max. lightning current	20 kA (pulse 10/350 μ sec)
Contact resistance	< 3 m Ω
Protection class	IP 68
Grounding	Via stranded grounding wire, 16 mm ² , length 0.5 m, one end terminated with cable eye (10 mm lug)
Packing size	Plastic bag: 210 mm x 210 mm
Weight	160 g

Material:
 Body: Stainless steel with vulcanized Ethylene-Propylene-Caoutchouc
 Screw: Stainless steel
 Skin: Copper alloy
 Grounding wire: Copper

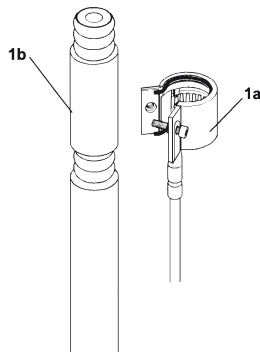
Please note:
 The earthing clamp is suitable only for the Kathrein Power Supply and Signal Cables, Type No. 860 10007 to 860 10015, 860 10029, 860 10032, 860 10033, 860 10054 to 860 10060 or shielded cables with
 – shield diameter 6.1 mm
 – jacket diameter 7.8 mm \pm 0.3 mm

The kit contains:
 1 x Grounding kit body incl. Butyl sealing rope covered with paper
 1 x Screw M6 DIN 912
 1 x Grounding wire



Mounting instructions:

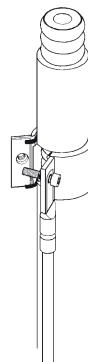
This instruction is written for qualified and experienced personnel. Please read it carefully before starting work. Any liability or responsibility for the result of improper or unsafe installation is disclaimed!



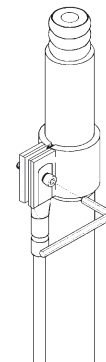
Attention!
 Install grounding kit only where the cable runs straight.

Fig. 1a Preassembled grounding kit.

Fig. 1b Clean the plastic jacket at the desired grounding point and cut out a strip of 15 mm with aid of a suitable stripping tool.



Remove covering paper from Butyl sealing. Wrap the grounding kit body around the cable and align it.



Tighten the screw (> 6 Nm)

Splitters

Type	Type No.	Frequency range	Remark	Max. power	Connector female	Page
2-way Splitter 800–2500	860 10017	694 – 2700 MHz	Indoor	100 W	N	168
3-way Splitter 800–2500	860 10018	694 – 2700 MHz	Indoor	100 W	N	168
4-way Splitter 800–2500	860 10019	694 – 2700 MHz	Indoor	100 W	N	168
2-way Splitter 800–3800	860 10100	694 – 3800 MHz	Indoor/Outdoor	200 W	N	169
2-way Splitter 800–3800	860 10101	694 – 3800 MHz	Indoor/Outdoor	700 W	7-16	169
3-way Splitter 800–3800	860 10102	694 – 3800 MHz	Indoor/Outdoor	200 W	N	169
3-way Splitter 800–3800	860 10103	694 – 3800 MHz	Indoor/Outdoor	700 W	7-16	169
4-way Splitter 800–3800	860 10104	694 – 3800 MHz	Indoor/Outdoor	200 W	N	169
4-way Splitter 800–3800	860 10105	694 – 3800 MHz	Indoor/Outdoor	700 W	7-16	169
2-way Splitter 380–3800	860 10131	380 – 3800 MHz	Indoor/Outdoor	700 W	7-16	170

Tappers

2-way Tapper 800–2500 7.0/1.0 dB	860 10136	694 – 2700 MHz	Indoor	100 W	N	171
2-way Tapper 800–2500 10.4/0.4 dB	860 10137	694 – 2700 MHz	Indoor	100 W	N	171
2-way Tapper 800–2500 15.1/0.1 dB	860 10138	694 – 2700 MHz	Indoor	100 W	N	171
2-way Tapper 800–2200 7.0/1.0 dB	K 63 23 60 67	800 – 2200 MHz	Indoor/Outdoor	500 W	7-16	172
2-way Tapper 800–2200 10.4/0.4 dB	K 63 23 61 07	800 – 2200 MHz	Indoor/Outdoor	500 W	7-16	172
2-way Tapper 800–2200 15.1/0.1 dB	K 63 23 61 57	800 – 2200 MHz	Indoor/Outdoor	500 W	7-16	172

Continuously adjustable ratio

2-way Tapper 824–960/1710–2170 5.0–15.0dB	K 63 23 60 01	824 – 960 MHz 1710 – 2170 MHz	Indoor	100 W	N	173
2-way Tapper 870–960/1710–2500 5.0–15.0dB	860 10023	870 – 960 MHz 1710 – 2500 MHz	Indoor	100 W	N	173

New or changed product

Antenna Measurement Tools (from Schomandl)

SWR Instrument FAT 2710	174
WLAN Power Meter (VSWR)	175

Power Meter

WLAN Power Meter (Power)	175
Broadcast RF Power Monitor	176
Safe One Resonal RF Safety Monitor	177

For indoor use.

2-way Splitter 694–2700

3-way Splitter 694–2700

4-way Splitter 694–2700


Type No.	860 10017	860 10018	860 10019
Frequency range	694 – 2700 MHz		
For connecting ... antennas	2	3	4
Insertion loss	< 0.05 dB		
Impedance	50 Ω		
VSWR	694 – 894 MHz: 790 – 2500 MHz: 2500 – 2700 MHz:	< 1.5 < 1.25 < 2.0	< 1.5 < 1.25 < 2.0
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power	100 W (at 50 °C ambient temperature)		
Connector	N female		
Weight	approx. 0.6 kg		
Profile cross-section	25 x 25 mm		
Packing size	242 x 110 x 95 mm		
Max. size	204 / 63 / 41 mm		

Material: Housing: Aluminum.
Inner conductor: Brass.

DC capability: DC transmission between all terminations
(suitable for remote power supply systems).

Environmental conditions: IP 52



Input 
860 10019

For indoor and outdoor use.

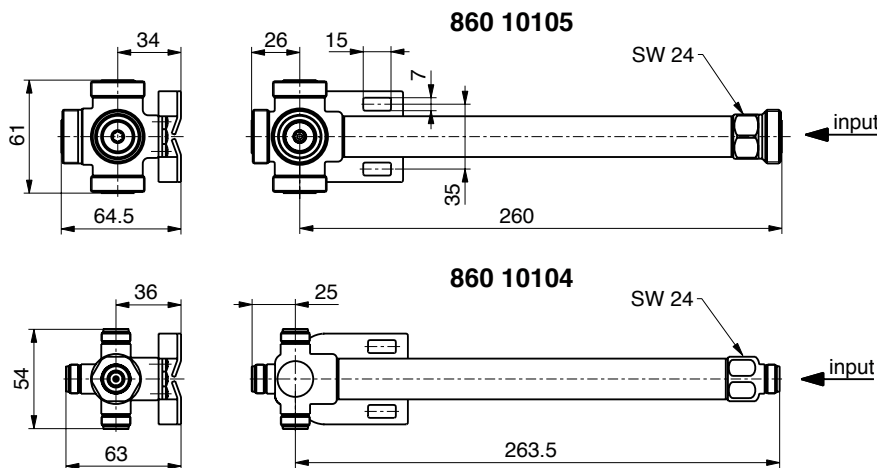
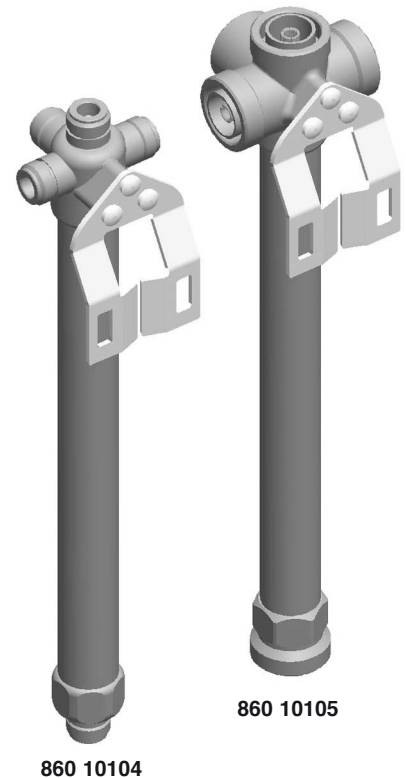
2-way Splitter 694–3800

3-way Splitter 694–3800

4-way Splitter 694–3800

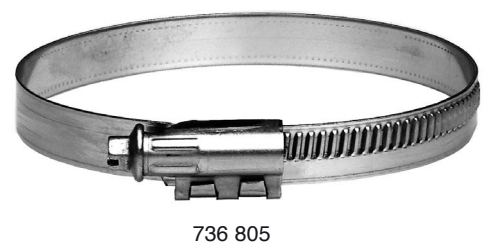
Type No.	860 10100	860 10101	860 10102	860 10103	860 10104	860 10105
Connector (female)	N	7-16	N	7-16	N	7-16
Max. power (at 50 °C ambient temperature)	200 W	700 W	200 W	700 W	200 W	700 W
For connecting ... antennas	2		3		4	
Frequency range	694 – 3800 MHz					
VSWR	694 – 894 MHz: < 1.3 790 – 3800 MHz: < 1.15					
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)					
Impedance	50 Ω					
Insertion loss	< 0.05 dB					
Weight	750 g	870 g	760 g	900 g	775 g	960 g
Packing size	300 x 75 x 75 mm					

- Material:** Brass. Surface treatment: CuSnZn3
- Mounting:** Bracket for wall mounting included in the scope of supply.
For pipe mast mounting use clamps listed below (order separately).
- DC capability:** DC transmission between all terminations (suitable for remote power supply systems).
- Environmental conditions:** ETS 300 019-1-4 class 4.1 E
– Low temperature: -55 °C
– High temperature (dry): +60 °C
IP 65



Clamps (order separately)

Type No.	Description	Remarks
736 801	1 clamp	Mast: 34 – 60 mm diameter
736 802	1 clamp	Mast: 60 – 80 mm diameter
736 803	1 clamp	Mast: 80 – 100 mm diameter
736 804	1 clamp	Mast: 100 – 120 mm diameter
736 805	1 clamp	Mast: 120 – 140 mm diameter

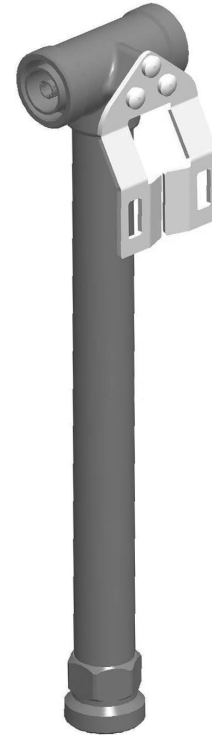


For indoor and outdoor use.

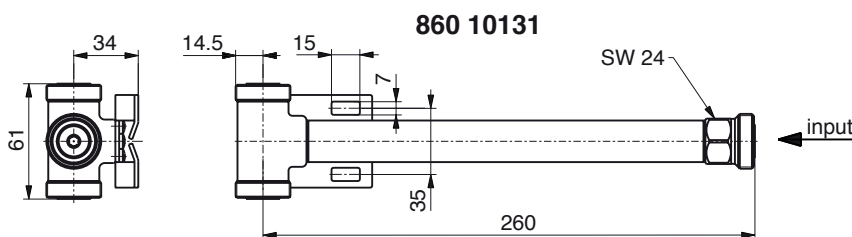
2-way Splitter 380–3800

Type No.	860 10131
Connector (female)	7-16
Max. power (at 50 °C ambient temperature)	700 W
For connecting ... antennas	2
Frequency range	380 – 3800 MHz
VSWR	< 1.5
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)
Impedance	50 Ω
Insertion loss	< 0.05 dB
Weight	870 g
Packing size	300 x 75 x 75 mm

Material: Brass. Surface treatment: CuSnZn3
 Mounting: Bracket for wall mounting included in the scope of supply.
 For pipe mast mounting use clamps listed below (order separately).
 DC capability: DC transmission between all terminations (suitable for remote power supply systems).
 Environmental conditions: ETS 300 019-1-4 class 4.1 E
 – Low temperature: -55 °C
 – High temperature (dry): +60 °C
 IP 65



860 10131



Clamps (order separately)

Type No.	Description	Remarks
736 801	1 clamp	Mast: 34 – 60 mm diameter
736 802	1 clamp	Mast: 60 – 80 mm diameter
736 803	1 clamp	Mast: 80 – 100 mm diameter
736 804	1 clamp	Mast: 100 – 120 mm diameter
736 805	1 clamp	Mast: 120 – 140 mm diameter



736 805

For indoor use

2-way Tapper 694–2700 7.0 /1.0dB
 2-way Tapper 694–2700 10.4/0.4dB
 2-way Tapper 694–2700 15.1/0.1dB

Type No.	860 10136	860 10137	860 10138
Frequency range	694 – 2700 MHz		
Tap Loss Input ↔ P ₁	– 1.0 dB	– 0.4 dB	– 0.1 dB
Input ↔ P ₂	– 7.0 dB	– 10.4 dB	– 15.1 dB
For connecting ... antennas	2		
Insertion loss	< 0.05 dB		
Impedance	50 Ω		
VSWR	694 – 790 MHz: < 2.0 790 – 2500 MHz: < 1.5 2500 – 2700 MHz: < 2.0		
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		
Max. power	100 W (at 50 °C ambient temperature)		
Connector	N female		
Weight	500 g		
Profile cross-section	25 x 25 mm		
Packing size	267 x 95 x 111 mm		
Max. size	244 / 64 / 25 mm		



Input 860 10138

Material: Housing: Aluminum.
Inner conductor: Brass.

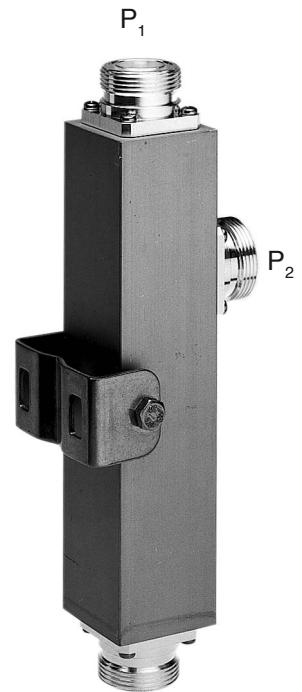
DC capability: DC transmission only between input and port P₁.
P₂ is coupled capacitively.

Environmental conditions: IP 52

For indoor and outdoor use.

2-way Tapper 800–2200 7.0 /1.0dB
2-way Tapper 800–2200 10.4/0.4dB
2-way Tapper 800–2200 15.1/0.1dB

Type No.	K 63 23 60 67	K 63 23 61 07	K 63 23 61 57
Frequency range	800 – 2200 MHz		
Tap Loss			
Input ↔ P ₁	– 1.0 dB	– 0.4 dB	– 0.1 dB
Input ↔ P ₂	– 7.0 dB	– 10.4 dB	– 15.1 dB
For connecting ... antennas	2		
Insertion loss	< 0.05 dB		
Impedance	50 Ω		
VSWR	< 1.5		
Intermodulation IM3 (2 x 43 dBm carrier)	< –150 dBc		
Max. power	500 W (at 50 °C ambient temperature)		
Connector	7-16 female		
Weight	approx. 1.3 kg		
Packing size	310 x 93 x 112 mm		
Max. size	244 / 90 / 55 mm		



Input
K 63 23 60 67

Material: Housing: Aluminum.
Inner conductor: Brass.

DC capability: DC transmission only between input and port P₁.
P₂ is coupled capacitively.

Mounting: Bracked for wall mounting included in the scope of supply.
For pipe mast mounting use clamps listed below (order separately).

Environmental conditions: IP 65

Clamps (order separately)

Type No.	Description	Remarks
736 801	1 clamp	Mast: 34 – 60 mm diameter
736 802	1 clamp	Mast: 60 – 80 mm diameter
736 803	1 clamp	Mast: 80 – 100 mm diameter
736 804	1 clamp	Mast: 100 – 120 mm diameter
736 805	1 clamp	Mast: 120 – 140 mm diameter



736 805

Multi-band 824–960 1710–2500 Low-loss Power Tapper Continuously Adjustable 5.0–15.0 5.0–15.0

For indoor use.

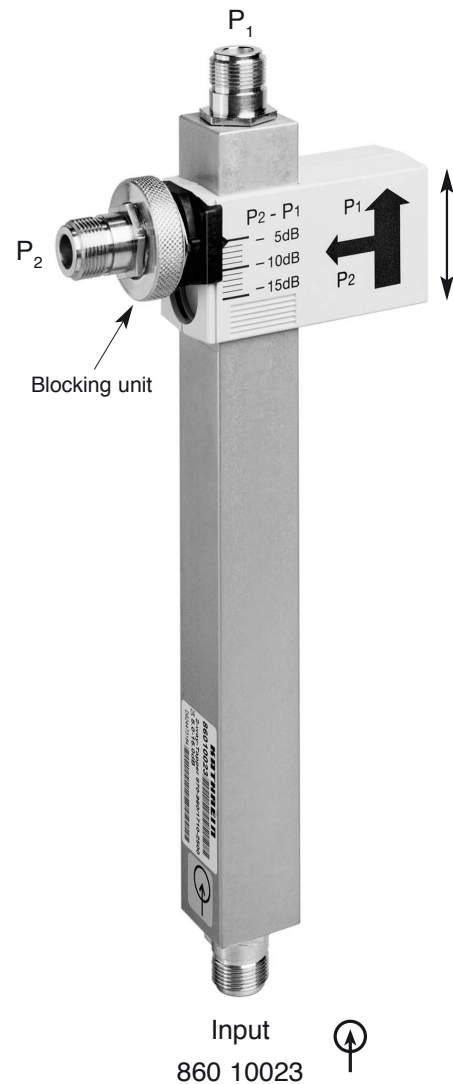
K 63 23 60 01: 2-way Tapper 824–960/1710–2170 5.0–15.0dB
860 10023: 2-way Tapper 870–960/1710–2500 5.0–15.0dB

Type No.	K 63 23 60 01	860 10023
Frequency range	824 – 960 MHz and 1710 – 2170 MHz	870 – 960 MHz and 1710 – 2500 MHz
Power ratio between outputs ($P_2 - P_1$)	–5.0 dB to –15.0 dB continuously adjustable	
For connecting ... antennas	2	
Insertion loss	< 0.1 dB	
Impedance	50 Ω	
VSWR	< 1.7	
Intermodulation IM3 (2 x 43 dBm carrier)	< –150 dBc	
Max. power	100 W (at 50 °C ambient temperature)	
Connector	N female	
Weight	0.5 kg	
Profile cross-section	25 x 25 mm	
Packing size	249 x 111 x 40 mm	277 x 111 x 40 mm
Max. size	235 / 100 / 25 mm	263 / 100 / 25 mm

Material: Housing: Aluminum.
 Inner conductor: Brass.
 Adjustment mechanism: ASA.

DC capability: DC transmission only between input and port P_1 .
 P_2 is coupled capacitively.

Environmental conditions: IP 52



Input
 860 10023

Splitting table

P_2 / P_1 [dB]	Splitting ratio P_1 / P_2	Splitting attenuation	
		$P_{\text{Input}} - P_1$ [dB]	$P_{\text{Input}} - P_2$ [dB]
–5	3.2	–1.2	–6.2
–6	4	–1.0	–7.0
–7	5	–0.8	–7.8
–8	6.3	–0.6	–8.6
–9	8	–0.5	–9.5
–10	10	–0.4	–10.4
–11	12.6	–0.3	–11.3
–12	15.8	–0.3	–12.3
–13	20	–0.2	–13.2
–14	25.1	–0.2	–14.2
–15	31.6	–0.1	–15.1

- LCD Display works in direct sunlight and with backlight in dark areas.
- Built-in synthesized RF sweeping source.
- Measured results can be stored for further analysing and documentation on internal and external storage media
- Time stamp and operator ID is possible
- All in one analysing for antenna tuning and control
- FAT 2710 measures antenna, frequency, SWR and bandwidth by sweeping band of interest
- A cost-effective SWR Analyzer covering all major Cellular and mobile radio communication bands
- FAT 2710 gives you quick and reliable trouble-shooting



Specifications

Model	FAT 2710 (BN: 86817.001)
Application	Measurement of SWR in 50 Ω transmission lines
Frequency range	30->2700 MHz entered as centre and span
Center Frequency	30 to 2700 MHz.
Span	0 to 2670 MHz.
Frequency stability	± 50 ppm
Measurement range	1.0<SWR<9.9, 0<dB<-30dB
Impedance	Nom. 50 Ω
Generator output	Approx. -4dBm
Max. input on test terminal	100 mW
Tolerance on SWR reading	30-650MHz) $\pm 5\%$; 650-1450MHz $\pm 10\%$; and 1450-2700MHz $\pm 15\%$
Operating temperature range	0° C-> + 50° C
Storage temperature range	-30°C -> + 50° C
Connectors	"N"-female RF test connector. USB A type for memory key. USB B type for serial PC communication. Mini DIN for RS232 communication up to 38400 Baud
Power supply	4 NiMH type AA rechargeable batteries (Batteries, NiMH rechargeable and 230VAC/7.5VDC charger supplied)
Auto Power off NOT OK	For battery economy, FAT 2710 automatically turns off 3 min. after last entry
Normal operating use	Fully charged: More than 10 hours.
Colour	Silver/blue
Width	82 mm
Depth	31 mm
Height	165 mm
Weight	500 gram (incl. Batteries)
EMC	Complies with directive 89/336EEC as amended by 92/31EEC and 93/68/EEC
Standards	Emissions: EN 61000-6-4: 2001 Immunity: EN 61000-6-2: 2005
Accessory	Soft carrying bag with RF-adaptor set, car charging cable and two 7/16 connectors
Order Number for Accessory:	BN: 86817.101

Please contact for technical information and orders:

SCHOMANDL-Vertriebs-GmbH
Bahnhofstraße 108 · D-83224 Grassau/Germany
Telephone: 08641-403-140 · Telefax: 08641-403-264
e-mail: info@schomandl.de · Internet: <http://www.schomandl.de>

Display forward, reflected power and VSWR

2 GHz to 6 GHz

Diagnose 802.11a,b and g WLAN

Accessory:

Soft carrying bag with SMA 50 Ohm load 6 GHz, RPSMA male BN 86817.104 to SMA female Adaptor, SMA male to RPSMA, SMA male to SMA male Adaptor and special 2,4 GHz SMA Antenna



Specifications

Model No.:	86817.004
Frequency range:	2 – 6 GHz
Insertion loss:	<0.4dB
Absolute accuracy :	±1dB
Power range indicated:	1µW – 999mW
VSWR indicated:	1.01 – 9.99 : 1
Directivity:	>30dB
Peak Detect of:	<1mS pulse
Auto Power off	1 minute
Power Supply:	3Volt (2 X AAA Alkaline)
Max power consumption:	50 mA
Operating time (no backlight)	20 Hours
Optional Accessories:	SMA to RPSMA adaptors
Belt clip	Option
EMI/RFI	EN55022 /B
Dimensions:	– Width: 58 mm – Depth: 23 mm – Height: 105 mm
Weight incl. Batteries:	approx. 130g
Temperature:	– Operating 0 to 40°C – Storage –20 to 80°C
Colour:	– Standard White/Grey

Please contact for technical information and orders:
 SCHOMANDL-Vertriebs-GmbH
 Bahnhofstraße 108 · D-83224 Grassau/Germany
 Telephone: 08641-403-140 · Telefax: 08641-403-264
 e-mail: info@schomandl.de · Internet: <http://www.schomandl.de>

Broadcast RF Power Monitor

Digital RF Power Meter



KATHREIN
Antennen · Electronic

Also available as 19" Rack mount Version:

1U Rack mount Power Monitor

including all options BN 86818.000

additional power, reflected power, VSWR calculation



Accessory:

UHF Probe 1 or 2 required BN 86818.101

VHF Probe 1 or 2 required BN 86818.102

Specifications for Broadcast Power Monitor with external coupler

Model No.:	86818.002
Frequency range: (Coupler dependent)	50 – 860 MHz
Coupling Flatness , from 6dB/octave Probes 3015,3016	±0,2dB
Absolute accuracy after offset adjustment:	±0,2dB (±4%)
True RMS Power range:	-34 dBm to +10 dBm
Peak Power range:	+24 dBm
Dynamic range:	> 50 dB
Power readout: Auto range 1KW – 999KW	1024 steps
Coupler attenuation VHF @ 100MHz:	43 dB to 73 dB
Coupler attenuation UHF @ 500MHz:	50 dB to 80 dB
VSWR readout:	1,00:1-9,99:1
Remote Temperature Sensing	0 – 99°C
Remote Voltage Sensing	0-100VDC
Remote Current Sensing	0-3V DC (1024 bits)
Relay Out/Digital Out:	Open Collector 50V/0,5A
Controller out for SNMP or dialup	RS232 1200- 9600 Bps
Power Supply: – AC power:	90-264V @ 50-60Hz
Max power consumption: – AC	10V/A
EMI/RFI	EN55022 /B
Connectors: – RF sensors – Power AC in rear Options: – Analogue/digital – RS232	DB9 Female IEC DB9 Female DB9 Male
Dimensions: – Width: 19" unit – Depth: 1HU	482.5 mm 180 mm 44 mm
Dimensions: – Width: Stand alone unit – Depth: – Height:	216 mm 180 mm 53 mm
Weight:	approx. 1.8 kg
Temperature: – Operating -Storage	5 to 50°C 20 to 80°C
Colour: – standard	Silver Anodised

Please contact for technical information and orders:

SCHOMANDL-Vertriebs-GmbH
Bahnhofstraße 108 · D-83224 Grassau/Germany
Telephone: 08641-403-140 · Telefax: 08641-403-264
e-mail: info@schomandl.de · Internet: <http://www.schomandl.de>

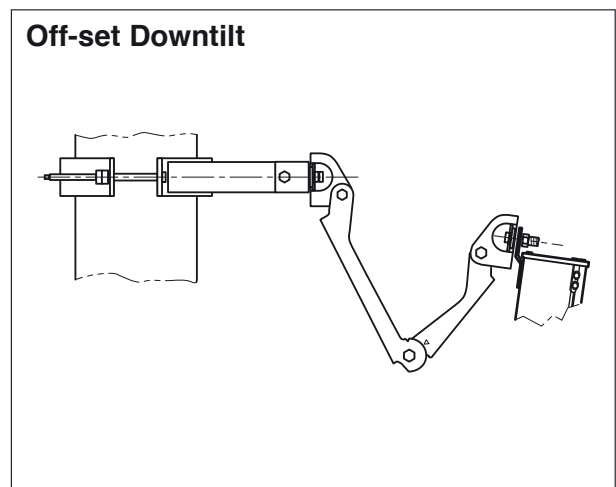
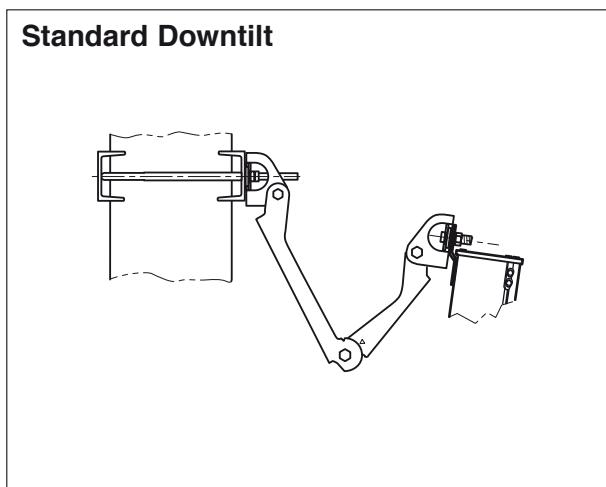
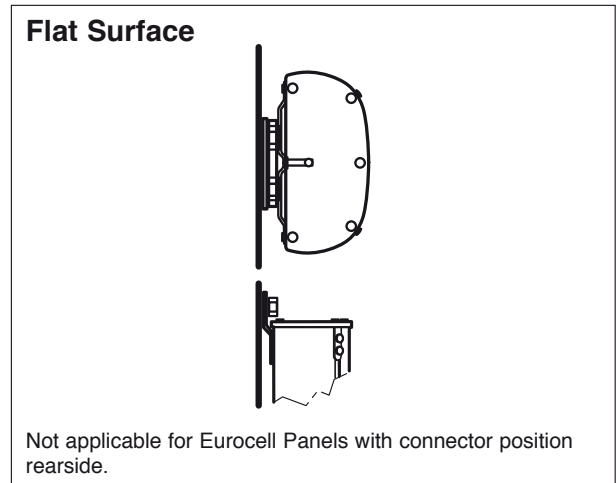
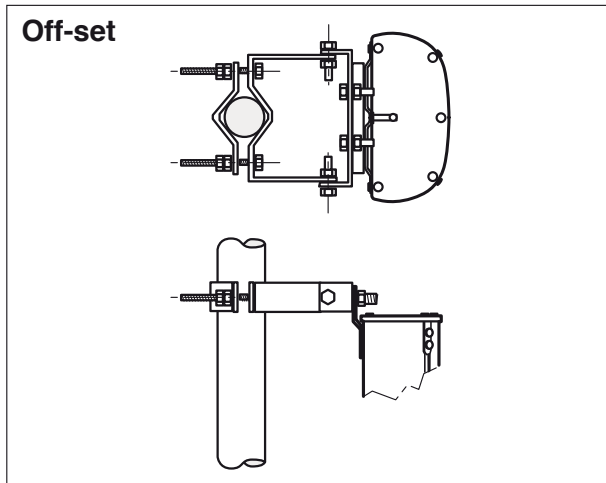
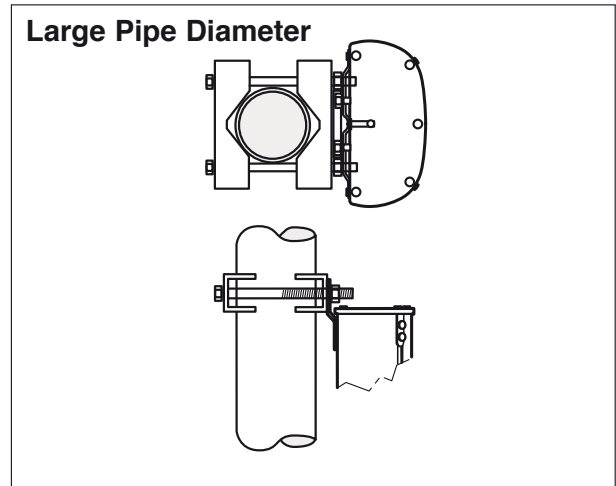
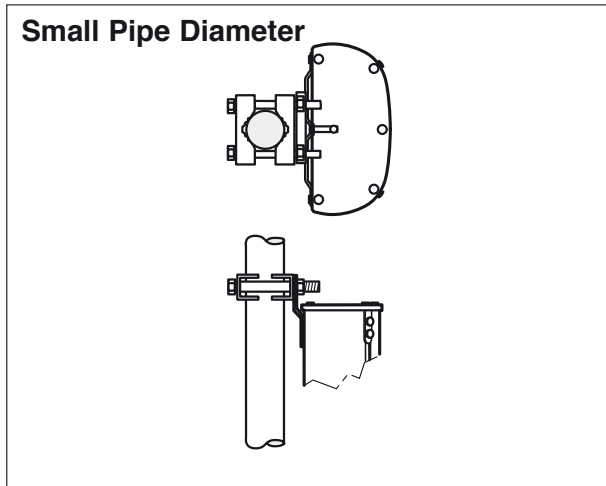
- Monitors RF fields
- Indicates RF pollution
- Alarm and Silent modes
- Broadband coverage
- General Safety According to WHO ICNIRP
- Alarm $2\text{W}/\text{m}^2$ or $10\text{W}/\text{m}^2$



Specifications for Safe One Personal Safety Monitor

Model No.:	86817.003
Frequency range:	10 – 10000 MHz
Frequency response	ICNIRP
Absolute accuracy 400–2500MHz:	$\pm 6\text{dB}$
Power range indicated:	0.1 – 100 W/m^2
Field strength indicated:	19 – 137 V/m
Dynamic range:	$>30\text{dB}$
Audio Alarm	80dBa
LED Alarm always enabled	15mcd
Normal Mode Audio and LED Alarm: (–)	$2\text{W}/\text{m}^2$ – 28 V/m or $10\text{W}/\text{m}^2$ – 137 V/m
Timed Mode Silent in: (– –)	5 minutes
Audible Alarm Off Mode: (– – –)	Never
Power Supply:	3Volt (2 X AAA Alkaline)
Max power consumption no alarm:	110 μA
Operating time (no Audio Alarm)	+500 Days
Belt clip included	
EMI/RFI	EN55022 /B
Dimensions:	
– Width:	58 mm
– Depth:	23 mm
– Height:	105 mm
Weight incl. Batteries:	approx. 88g
Temperature:	
– Operating	-10 to 40°C
– Storage	-20 to 80°C
Colour:	
– Standard	Black/Grey

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Panels XPol 800/900

30° Half-power Beam Width

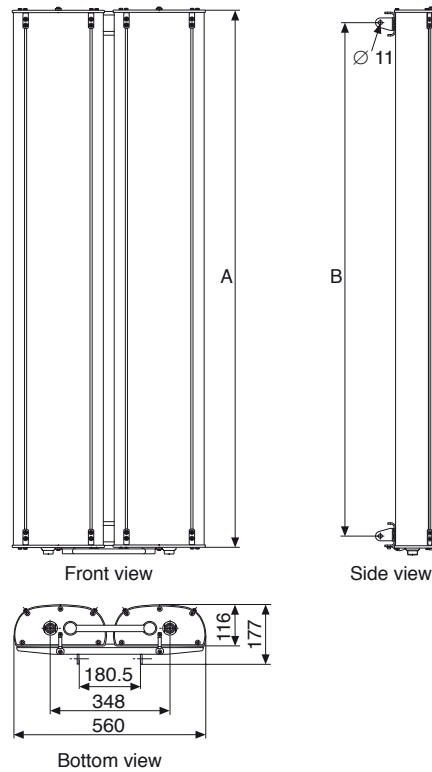
Antenna Dimensions

XPol Panels 800/900 with 30° Half-power Beam Width

width 560 mm

A	1296 mm
B	1224 mm

A Corresponds with the antenna height mentioned in the technical data.

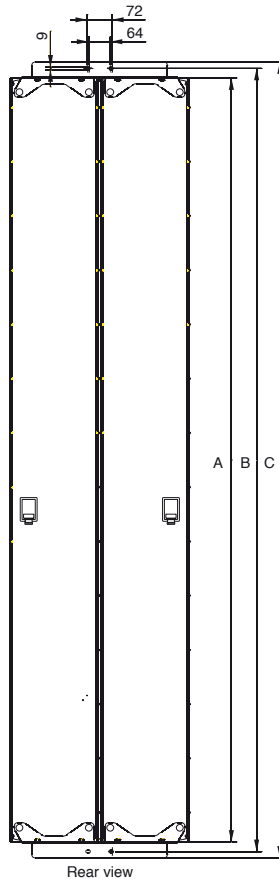
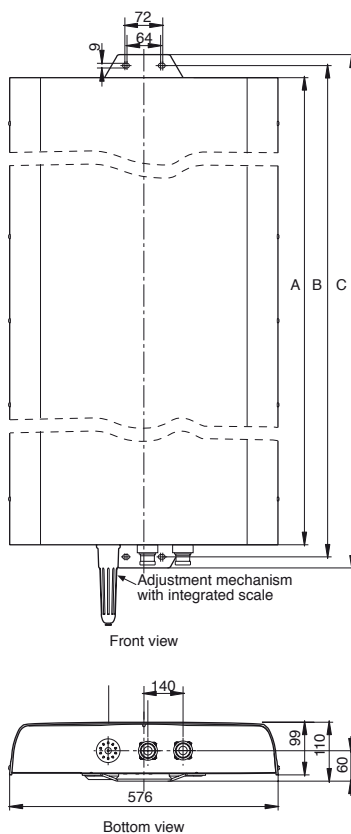


XPol Panels 800/900 with 30° Half-power Beam Width

width 576 mm

A	2254 mm
B	2284 mm
C	2326 mm

A Corresponds with the antenna height mentioned in the technical data.



XPol Panels 800/900 with 30° Half-power Beam Width

width 527 mm

A	2254 mm
B	2313 mm
C	2351 mm

A Corresponds with the antenna height mentioned in the technical data.

Panels VPol / XPol / XXPoI 800/900

60°/65°/88°/90° Half-power Beam Width

Antenna Dimensions

VPol Panel 800/900

width 258 mm

A	264 mm	1294 mm	1934 mm	2254 mm	2574 mm
B	—	1350 mm	1990 mm	2310 mm	2630 mm
C	—	1390 mm	2030 mm	2350 mm	2670 mm

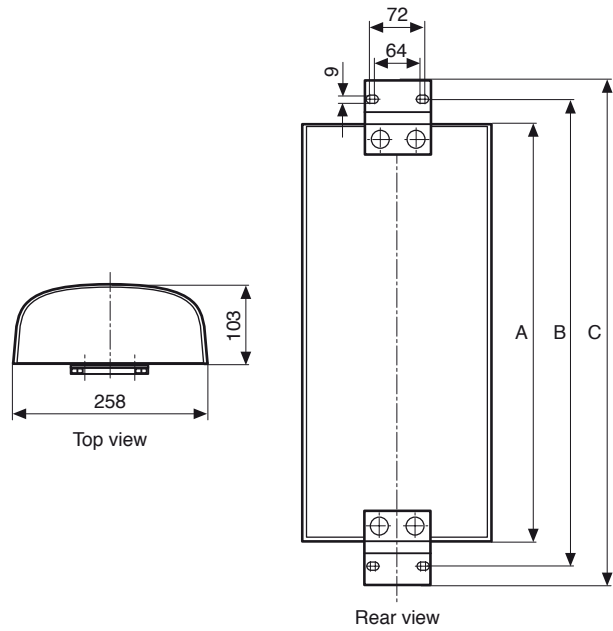
A Corresponds with the antenna height mentioned in the technical data.

XPol Panel 800/900

width 258 mm

A	1294 mm	1934 mm	2254 mm	2574 mm
B	1340 mm	1980 mm	2300 mm	2604 mm
C	1382 mm	2022 mm	2342 mm	2674 mm

A Corresponds with the antenna height mentioned in the technical data.

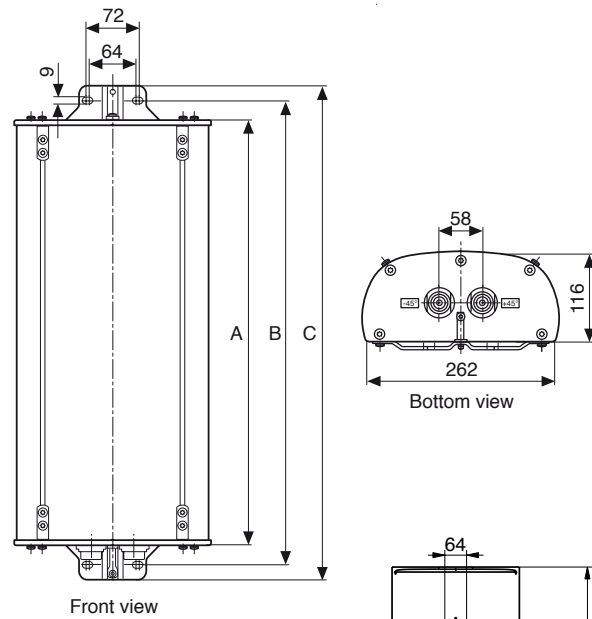


XPol Panel 800/900 XXPoI Panel 900/1800 with 65° and 90° Half-power Beam Width

width 262 mm

A	256 mm	656 mm	1296 mm	1936 mm	2580 mm
B	310 mm	710 mm	1350 mm	1990 mm	2634 mm
C	350 mm	750 mm	1390 mm	2030 mm	2674 mm

A Corresponds with the antenna height mentioned in the technical data.

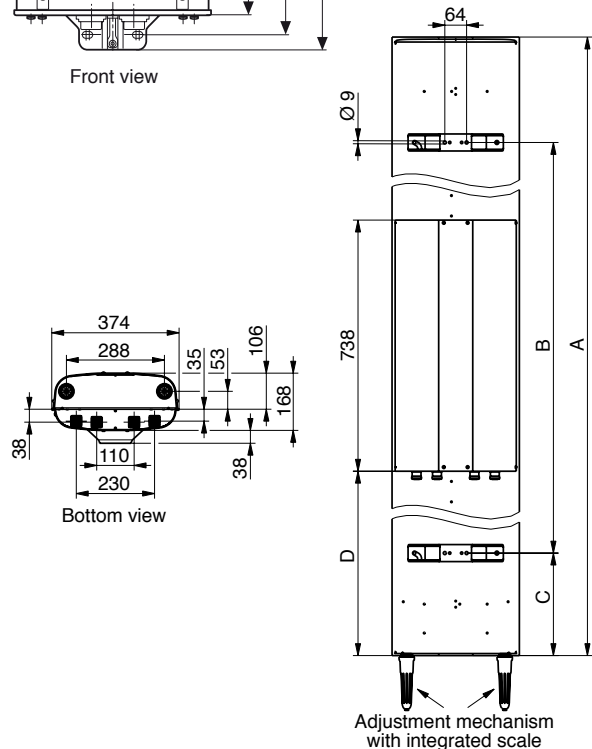


XXPoI Panel 800/900 with 60°, 65° and 88° Half-power Beam Width

width 374 mm

A	2024 mm	2631 mm
B	1490 mm	2020 mm
C	221 mm	301 mm
D	617 mm	921 mm

A Corresponds with the antenna height mentioned in the technical data.

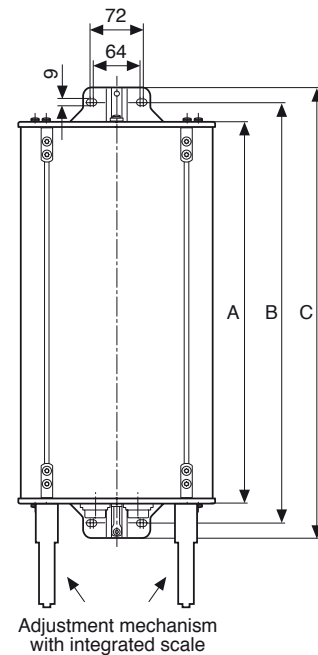
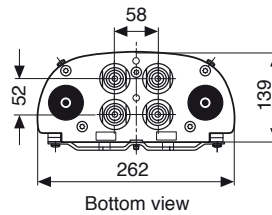


Panels Dual-band / Triple-band Antenna Dimensions

Dual-band XXPoI 800/900 / 1800/2000 with 65° Half-power Beam Width

A	270 mm	770 mm	1316 mm	1916 mm	2516 mm	2580 mm
B	322 mm	824 mm	1367 mm	1967 mm	2567 mm	2634 mm
C	362 mm	864 mm	1407 mm	2007 mm	2607 mm	2674 mm

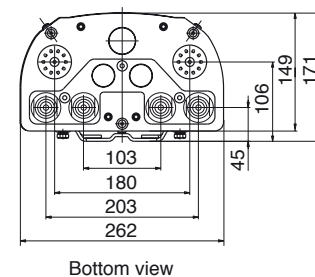
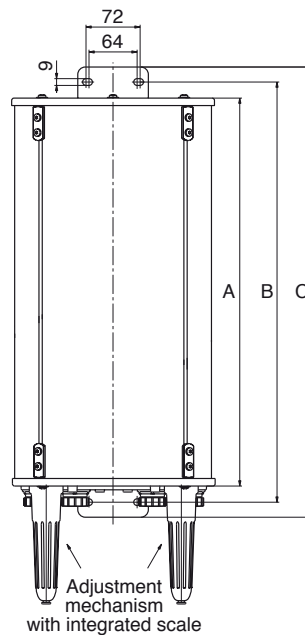
A Corresponds with the antenna height mentioned in the technical data.



Dual-band XXPoI Panel 800/900 / 1800/2000 with 90° Half-power Beam Width

A	1384 mm	1917 mm	2635 mm
B	1427 mm	1960 mm	2677 mm
C	1467 mm	2000 mm	2717 mm

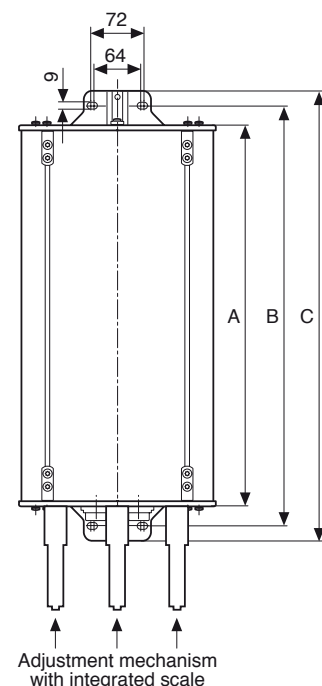
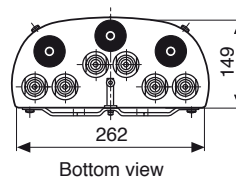
A Corresponds with the antenna height mentioned in the technical data.



Triple-band XXXPoI Panel 800/900 – 1800 – 2000 with 65° Half-power Beam Width

A	1498 mm	2058 mm	2628 mm
B	1541 mm	2101 mm	2671 mm
C	1581 mm	2141 mm	2711 mm

A Corresponds with the antenna height mentioned in the technical data.



Panels 1800 – 2700 MHz with 33° / 45° / 65° / 88° Half-power Beam Width Antenna Dimensions

Dimensions [mm]

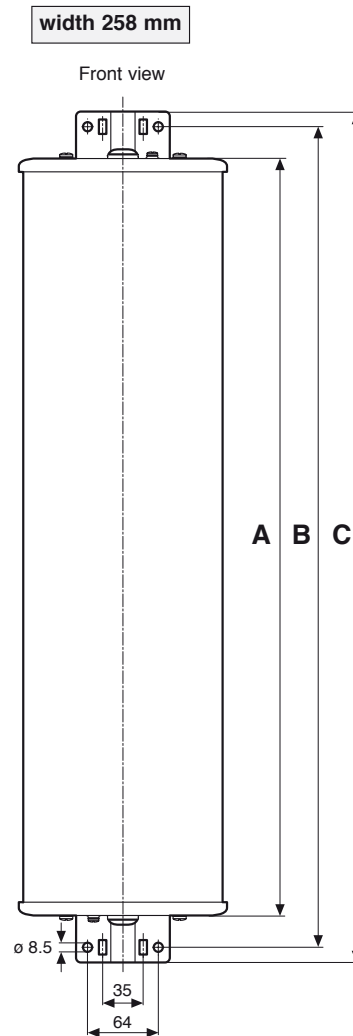
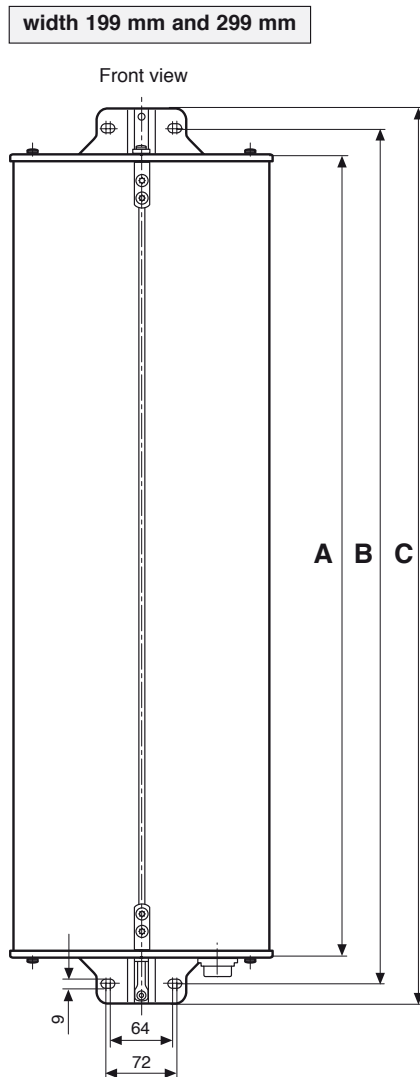
('A' corresponds to the antenna height given on the data sheet)

33° – 45° Half-power Beam Width

A	B	C
982	1036	1076
1032	1109	1149
1302	1356	1396
1304	1381	1421
1306	1412	1442
1942	1996	2036
1946	2052	2082

65° – 88° Half-power Beam Width

A	B	C
155	209	239
182	236	266
342	396	426
502	556	586
662	716	746
702	756	786
735	789	819
982	1036	1066
1302	1356	1386
1319	1384	1424
1358	1415	1445
1622	1676	1706
1942	1996	2026
2160	2214	2244
2172	2246	2276
2582	2636	2666

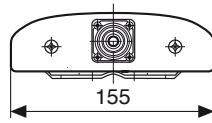


Panels 1800 – 2700 MHz

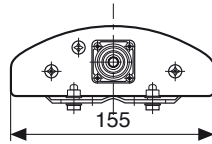
Detailed Connector Position

Antenna Dimensions

Vertical Polarization

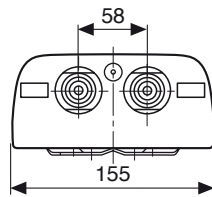


60° – 65° Half-power Beam Width

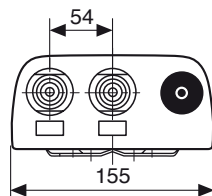


90° Half-power Beam Width

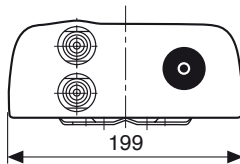
+45°/-45° Polarization



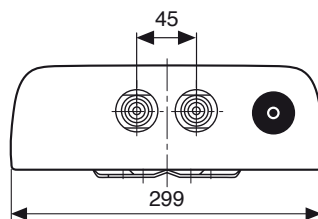
90° Half-power Beam Width



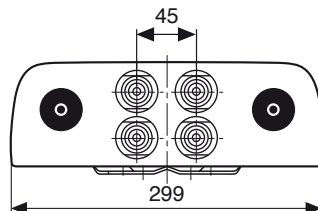
65° and 90° Half-power Beam Width
adjustable electrical downtilt



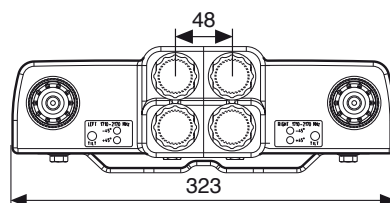
45° Half-power Beam Width
Multi-band
adjustable electrical downtilt



30° Half-power Beam Width
Multi-band
adjustable electrical downtilt



65° Half-power Beam Width
2-Multi-band
adjustable electrical downtilt



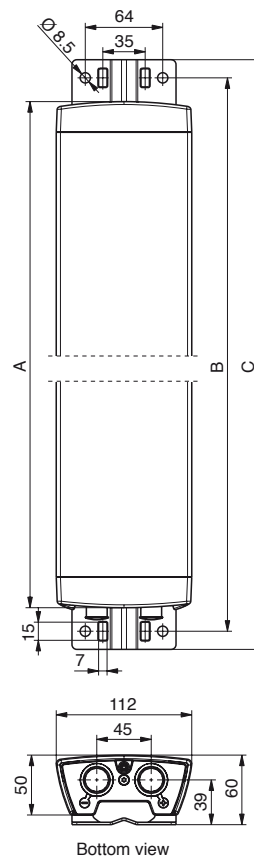
65° Half-power Beam Width
2-Multi-band
adjustable electrical downtilt

Panels XPol 3300 – 3800 MHz Antenna Dimensions

XPol 65° 3300 – 3800 MHz

A	736 mm
B	775 mm
C	805 mm

A Corresponds with the antenna height mentioned in the technical data.



Panel width [mm] Additional restriction	mast diameter [mm]		576	560	258 – 374 + 527 weight > 30 kg	258 – 323 weight > 25 kg	199 + 258 – 323 weight < 25 kg	155 length > 1.4 m	112 + 155 length < 1.4 m	pcs per ordered type *
	Clamp Type No.									
Clamp Standard										
731 651		28 – 64					X	X	(X)	1 pc
738 546		50 – 115	X		X		X	X	(X)	1 pc
850 10002		110 – 220	X		X		X	X	(X)	1 pc
850 10003		210 – 380	X		X		X	X	(X)	1 pc
Clamp Off Set										
733 677		60 – 115		X	X		X	X	(X)	1 pc
733 678		115 – 210		X	X		X	X	(X)	1 pc
733 679		210 – 380		X	X		X	X	(X)	1 pc
733 680		380 – 521		X	X		X	X	(X)	1 pc
Clamp Special										
733 736		50 – 125		X						2 pcs
K 61 14 03		116 – 210		X						2 pcs
K 61 14 04		210 – 380		X						2 pcs
K 61 14 05		380 – 521		X						2 pcs
Tensionband										
734 360		34 – 60							X	2 pcs
734 361		60 – 80							X	2 pcs
734 362		80 – 100							X	2 pcs
734 363		100 – 120							X	2 pcs
734 364		120 – 140							X	2 pcs
734 365		45 – 125							X	2 pcs
3-Sector Clamp (3x 120°)										
742 263		88.9							X	2 pcs
742 033		114.3				X			(X)	2 pcs
742 034		139.7				X			(X)	2 pcs
2 Panel side-by-side mounting kit										
742 113		smaller panels							X	2 pcs
850 10006		broader panels				X			(X)	2 pcs
Azimuth adjustment kits										
850 10014 – 850 10017			X	X	X	X	X	X	X	2 pcs

X = allowed (X) = allowed, but not optimized

* Amount of needed pcs per antenna type, see page 188

Mounting Hardware

Amount of needed clamps

VPoI 800/900

Antenna height: 2574 mm

All other Panels

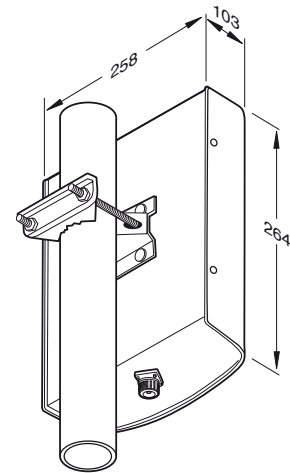
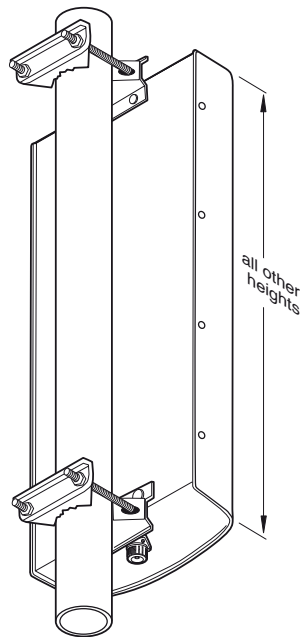
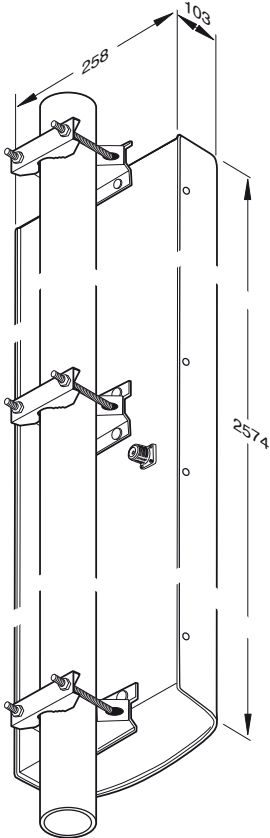
VPoI 800/900

Antenna height: 264 mm

Amount: 3 pcs

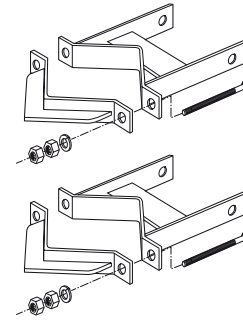
2 pcs

1 pc



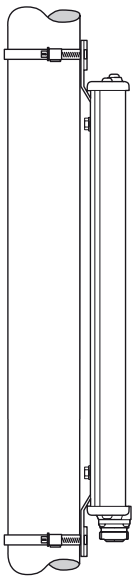
Clamp Types for XPol 800/900 with width 560 mm

Type No.	Description	Remarks	Weight approx.	pcs per antenna
733 736	2 clamps	Mast: 50 – 125 mm diameter	5.9 kg	1
K 61 14 03	2 clamps	Mast: 116 – 210 mm diameter	4.6 kg	1
K 61 14 04	2 clamps	Mast: 210 – 380 mm diameter	6.5 kg	1
K 61 14 05	2 clamps	Mast: 380 – 521 mm diameter	9.4 kg	1



Pair of clamps K 61 14 03

Clamp types for Panels with width 112 mm and 155 mm (height < 1.4 m)

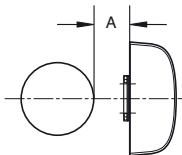
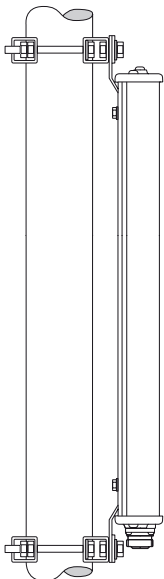


Type No.	Mast diameter	Antenna height	Weight approx.	pcs per antenna
734 360	34 – 60 mm	182 ... 1302 mm	60 g	1
734 361	60 – 80 mm	182 ... 1302 mm	70 g	1
734 362	80 – 100 mm	182 ... 1302 mm	80 g	1
734 363	100 – 120 mm	182 ... 1302 mm	90 g	1
734 364	120 – 140 mm	182 ... 1302 mm	110 g	1
734 365	45 – 125 mm	182 ... 1302 mm	80 g	1

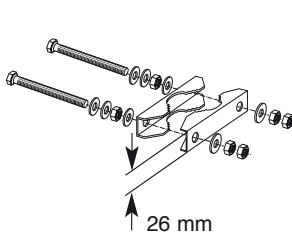
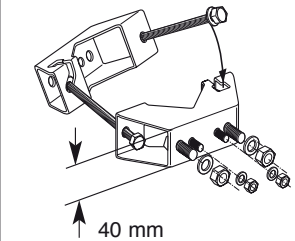
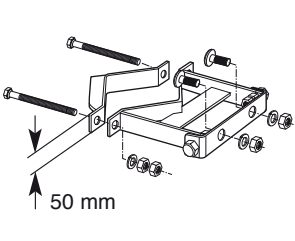
Type No. 734 362



All other Panels



Description	Mast diameter	Type No.	Distance A mm	Weight approx.	pcs per antenna
Small Pipe	28 – 64 mm	731 651	22 – 30	330 g	see page 188
Large Pipe	50 – 115 mm	738 546	18 – 26	1.0 kg	see page 188
	110 – 220 mm	850 10002	47 – 56	2.7 kg	see page 188
	210 – 380 mm	850 10003	48 – 69	4.8 kg	see page 188
Off-set	60 – 115 mm	733 677	117 – 124	2.0 kg	see page 188
	115 – 210 mm	733 678	146 – 160	2.6 kg	see page 188
	210 – 380 mm	733 679	148 – 168	4.0 kg	see page 188
	380 – 521 mm	733 680	150 – 175	5.3 kg	see page 188

731 651	738 546	733 678
		

3 Sector Panel Arrangement

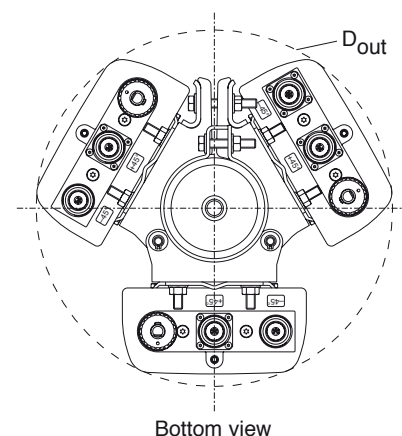
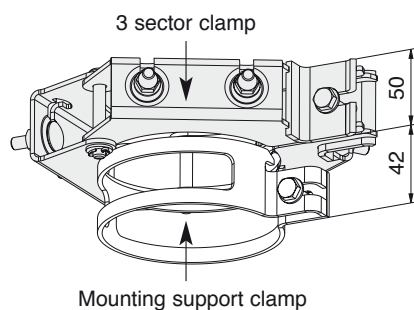
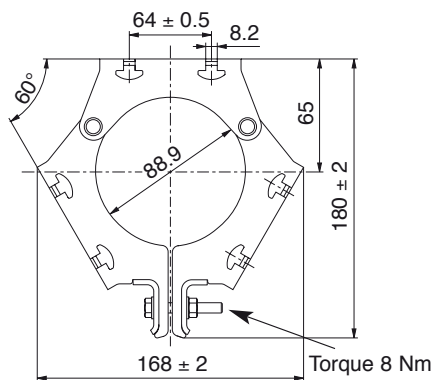
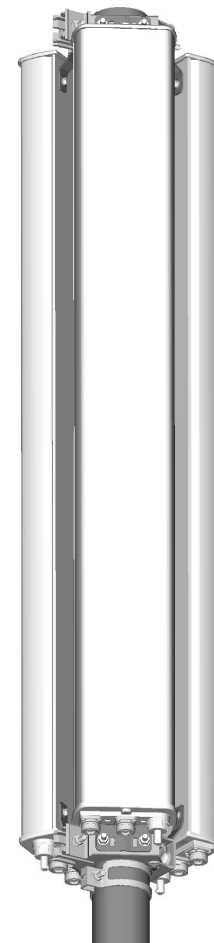
3 Sector Clamp Kit

for Panels width 112 mm and 155 mm

- Slim and unobstrusive design
- Nearly cylindrical optical appearance with small outer diameter
- Suitable for all Panels with an antenna housing width of 112 mm and 155 mm

3 Sector Clamp Kit

Type No.	742 263
Angle between antennas	120°
Suitable for mast diameter	88.9 mm
Number of pieces	2 x 3 sector clamp 2 x mounting support clamp
Material	Hot-dip galvanized steel Aluminum Stainless steel
Outer diameter (D _{out}) of the 3 F-Panel Arrangement	315 mm
Weight	3.0 kg 1.4 kg
Remark	This clamp kit is not suitable for use with additional mechanical downtilt kits



Panels VPol / XPol 800/900 XXPoI 800/900 / 1800/2000

3 Sector Panel Arrangement – Mounting Hardware

3 Sector Clamp Kit / Pipe Mast with Flange Base

- Slim and unobstrusive design
- Nearly cylindrical optical appearance with small outer diameter
- Suitable for all Panels with an antenna housing width less than 350 mm

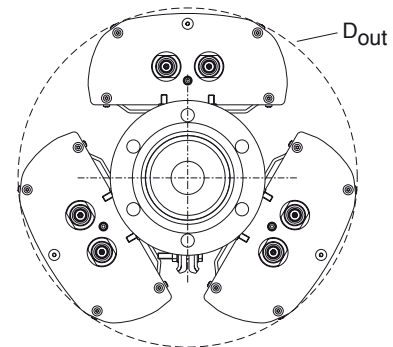
Please note:

If downtilt kits are used the complete weight per sector (antenna and accessories) is limited to 30 kg.

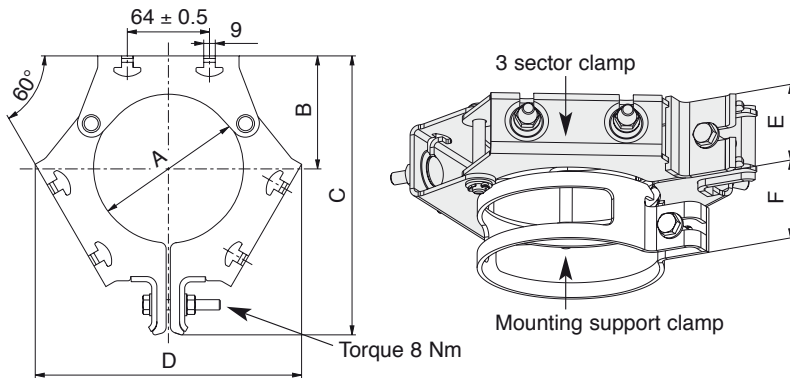
Does not fit for Panels with connector position “Rearside, pointing downwards”.

3 Sector Clamp Kit

Type No.	742 033	742 034
Angle between antennas	120°	120°
Suitable for mast diameter	114.3 mm	139.7 mm
Type no. of pipe mast (please order separately)	742 035	742 036
Number of pieces	2 x 3 sector clamp 2 x mounting support clamp	2 x 3 sector clamp 2 x mounting support clamp
Material	Hot-dip galvanized steel Aluminum	Hot-dip galvanized steel Aluminum
–3 sector clamp		
–Mounting support clamp		
–Screws	Stainless steel	Stainless steel
Outer diameter (D _{out}) of the		
3 A-Panel Arrangement	460 mm	482 mm
3 Dual-band A-Panel Arr.	511 mm	533 mm
3 Triple-band A-Panel Arr.	532 mm	555 mm
Weight		
–Clamp kit	3.0 kg	3.2 kg
–3 sector clamp	1.4 kg	1.5 kg



Bottom view without downtilt kit



Type No.	A	B	C	D	E	F
742 033	114.3	88	217	207	49	45
742 034	139.7	100	236	228	49	45

all dimensions in mm

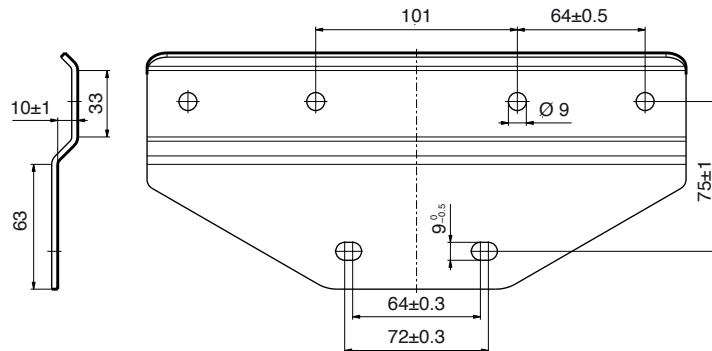
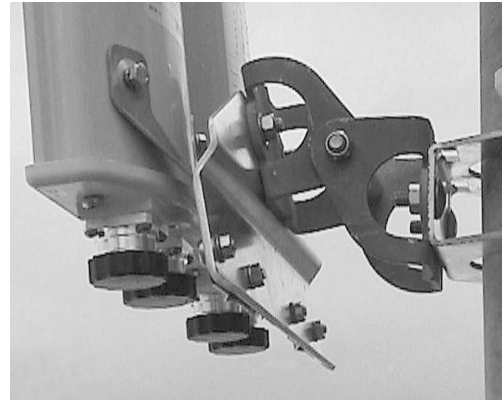
Panel Accessories

2 x Panel Mounting Kit for Panels width 112 mm and 155 mm

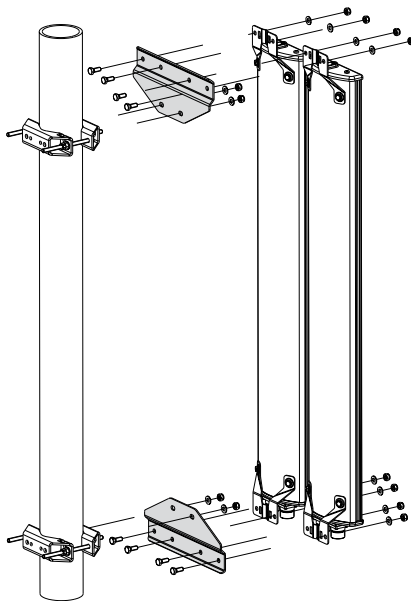
- For arranging two Panels 65°, 90° side by side.
- The mounting kit consists of two mounting plates.

2 x Panel Mounting Kit

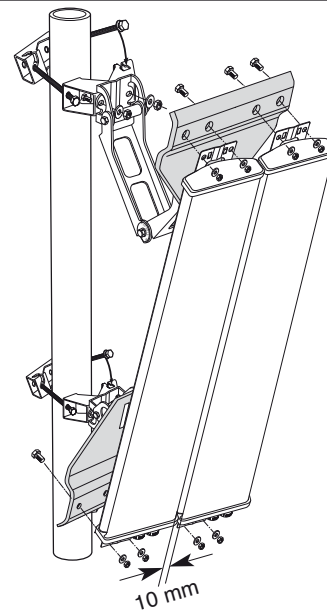
Type No.	742 113
No of units	2
Suitable for Panels 65°, 90° with max. height of	2 m
Material	Hot-dip galvanized steel
Weight	approx. 1.6 kg
Mounting	Screws are supplied



Configuration without mechanical downtilt



Configuration with mechanical downtilt



Use the 2 x Panel Mounting Kit together with the following mounting accessories

Type No.	Description	Remarks	Weight approx.	Units per antenna
738 546	1 clamp	Mast: 50 – 115 mm diameter	1.0 kg	2
733 677	1 offset clamp	Mast: 60 – 115 mm diameter	2.0 kg	2
733 678	1 offset clamp	Mast: 115 – 210 mm diameter	2.6 kg	2
733 679	1 offset clamp	Mast: 210 – 380 mm diameter	4.0 kg	2
733 680	1 offset clamp	Mast: 380 – 521 mm diameter	5.3 kg	2
737 978	1 downtilt kit	Downtilt angle: depending on antenna height	2.8 kg	1

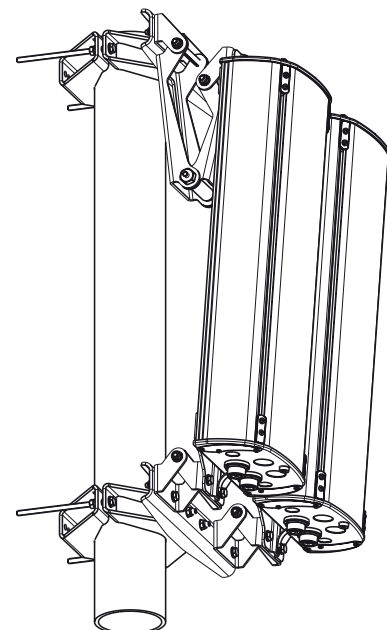
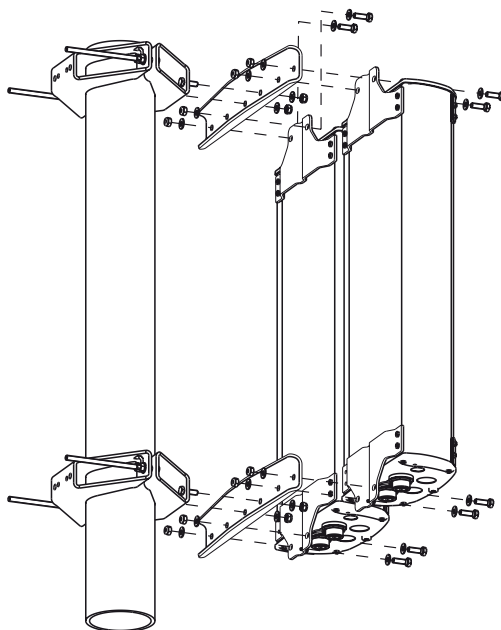
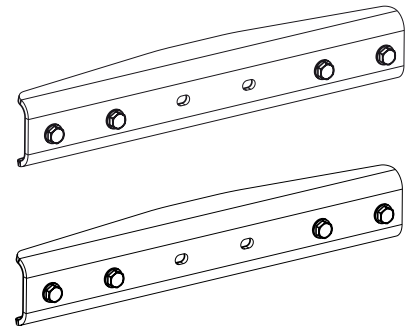
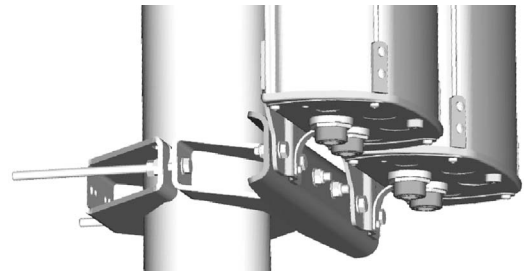
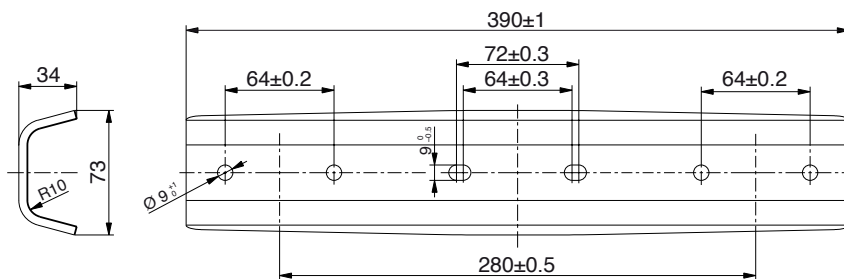
For a three sector panel arrangement, use the mounting kit type no. 742 113 together with the three sector clamp (see page 191). Three sector clamp 742 263 is not allowed.

Panels VPol / XPol 800/900 Panels XXPoI 800/900 / 1800/2000 2 x Panel Mounting Kit

Use this mounting kit only for Panels with a maximum width of 262 mm and less than 25 kg each.

Type No.	850 10006
No. of pieces	2 x brackets
Suitable for Panels 65°, 90° with a max. height	2.6 m
Material: – Clamp – Screws	Hot-dip galvanized steel Stainless steel
Weight	Approx. 3.3 kg
Mounting	Screws are supplied

Recommended torque for M8 bolted connections: 12 Nm



Mounting Accessories (order separately)

Clamps (only the listed clamps are allowed!)

Type No.	Description	Remarks	Weight approx.	Units per antenna
850 10002	1 clamp	Mast: 110 – 220 mm diameter	2.7 kg	2
850 10003	1 clamp	Mast: 210 – 380 mm diameter	4.8 kg	2

Please chose the fitting downtilt kit that you need, from the antenna datasheet.

Matrix of Downtilt kits Usage with Clamps Possible Combinations

Downtilt kit Type No.		733 695	737 971 – 737 978	850 10007 weight > 25 kg	732 317 – 732 327
Clamp Type No.	mast diameter [mm]				
Clamp Standard					
731 651	28 – 64		X		
738 546	50 – 115		X	X	(X)
850 10002	110 – 220		X	X	(X)
850 10003	210 – 380		X	X	(X)
Clamp Off Set					
733 677	60 – 115		X		(X)
733 678	115 – 210		X		(X)
733 679	210 – 380		X		(X)
733 680	380 – 521		X		(X)
Clamp Special					
733 736	50 – 125	X			
K 61 14 03	116 – 210	X			
K 61 14 04	210 – 380	X			
K 61 14 05	380 – 521	X			
Tensionband					
734 360	34 – 60				X
734 361	60 – 80				X
734 362	80 – 100				X
734 363	100 – 120				X
734 364	120 – 140				X
734 365	45 – 125				X
3-Sector Clamp (3x 120°)					
742 263	88.9		X		X
742 033	114.3		X	X	X
742 034	139.7		X	X	X
2 Panel side-by-side mounting kit					
742 113	smaller panels		X		
850 10006	broader panels		X	X	

X = allowed (X) = allowed, but not optimized

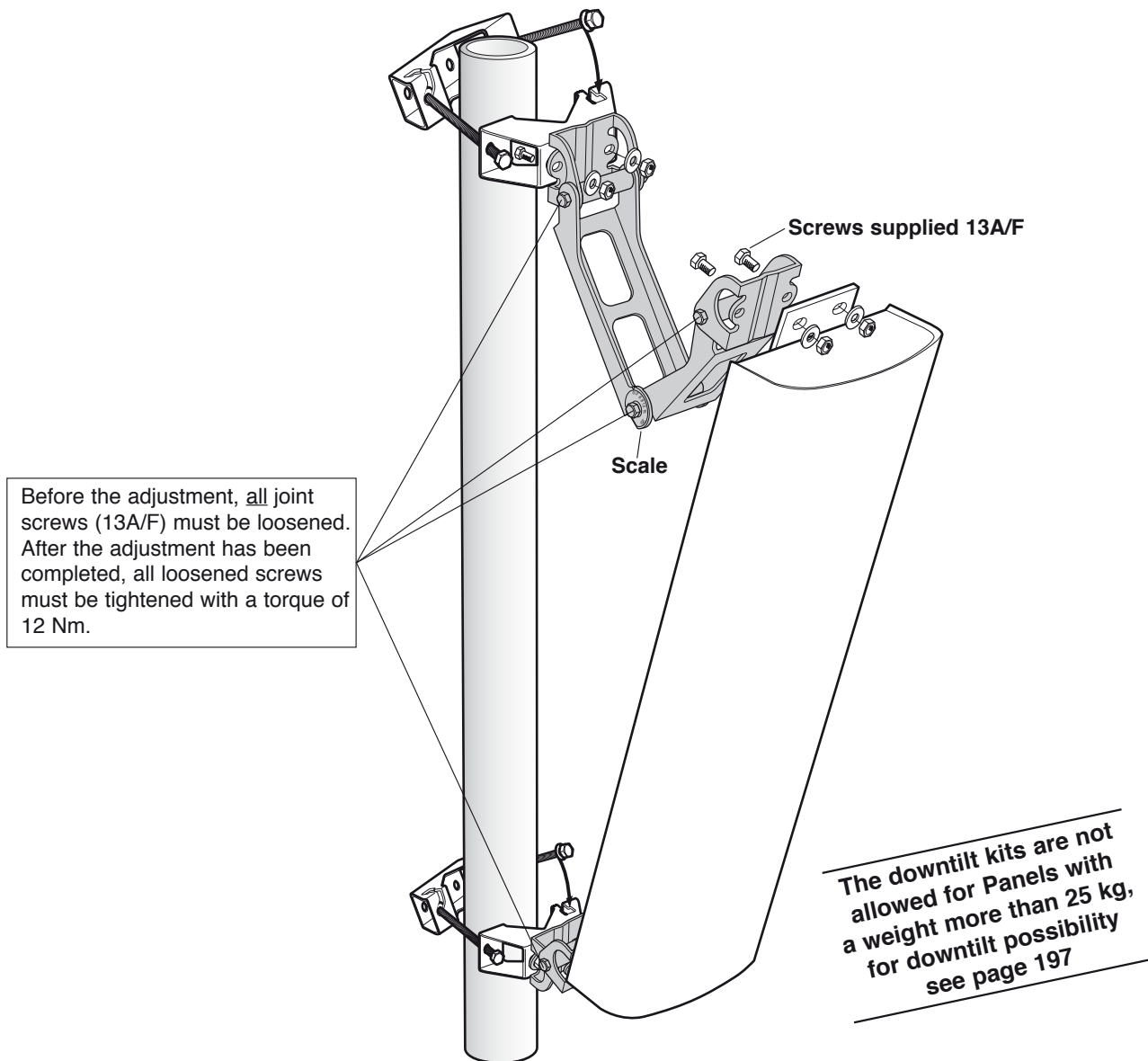
Please check usage per antenna type on the following pages!

Panels VPol / XPol

Standard Downtilt kit

Antenna height: 654 – 735 mm
 974 – 1032 mm
 1294 – 1306 mm
 1622 mm
 1934 – 1946 mm
 2254 / 2256 mm

Use the downtilt kit together with the clamps (see page 194)



For heights not mentioned in this table please use downtilt kit 737 978.

Downtilt angle		Downtilt kit with scale	Downtilt kit without scale*	Weight
Antenna height	Downtilt angle	Type No.	Type No.	
654 – 656 mm	0° – 30°	737 972	737 978	approx. 2.8 kg
974 – 982 mm	0° – 21°	737 973		
1294 – 1306 mm	0° – 16°	737 974		
1622 mm	0° – 12°	–		
1934 – 1946 mm	0° – 11°	737 975		
2254 / 2256 mm	0° – 9°	737 977		

* Instructions to adjust the required downtilt angle are given in the datasheet or on the rearside of the antenna.

Mounting a downtilt kit enlarges the spacing between mast and antenna by 84 mm.

Panels VPol / XPol

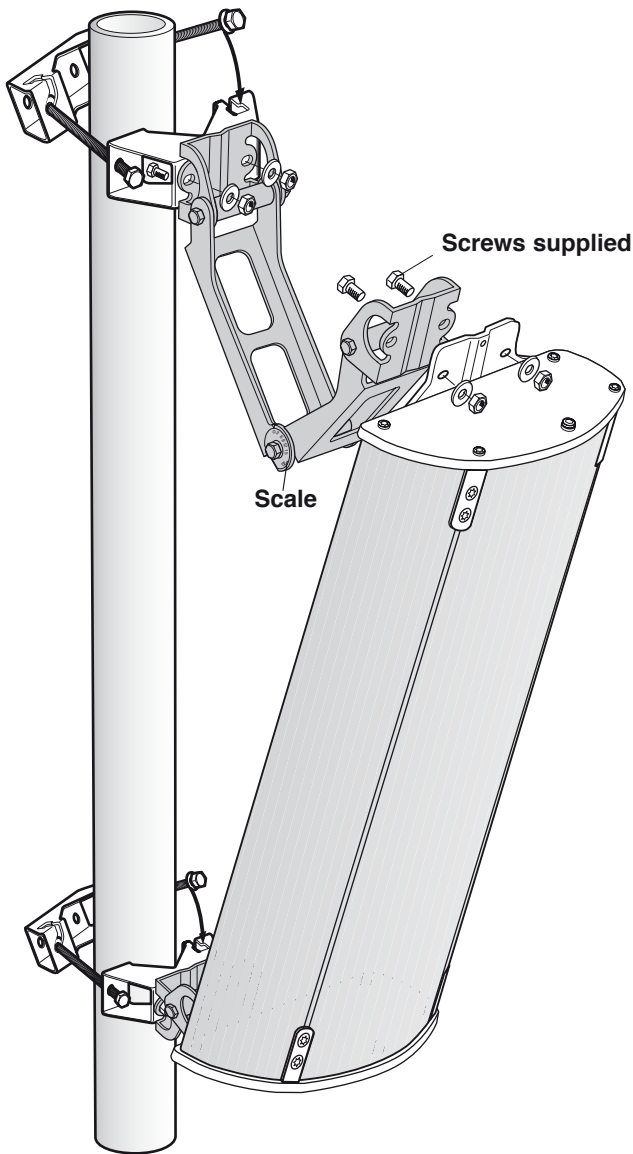
Downtilt kits

for height 2574 – 2582 mm

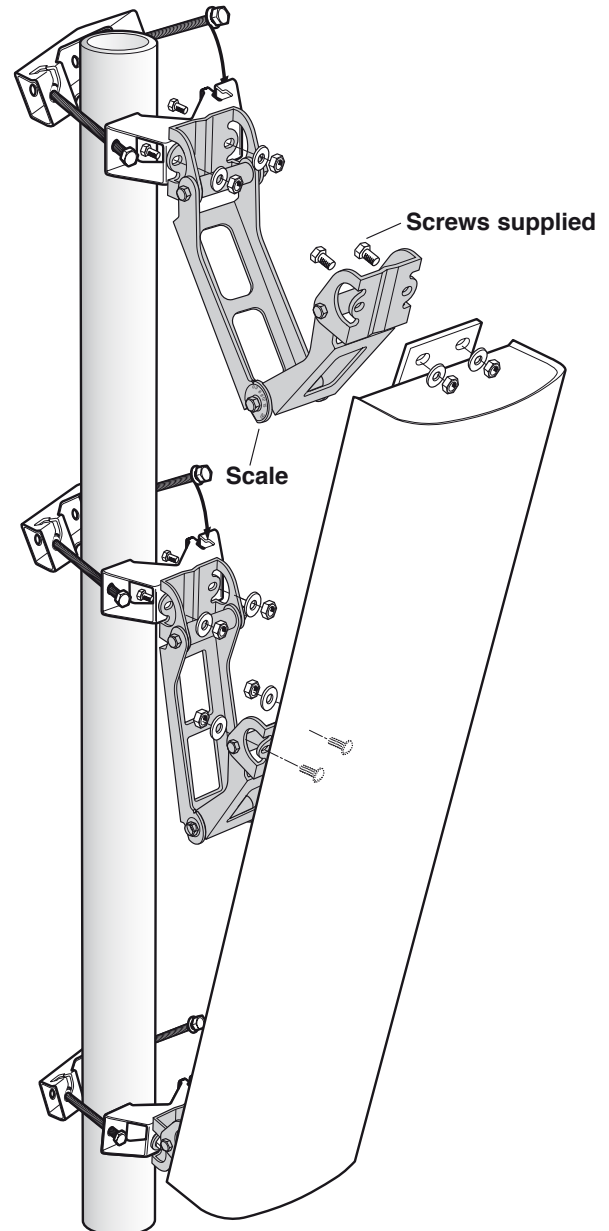
Suitable for:

XPol Panels with an antenna height of 2574 – 2582 mm

VPol Panels with an antenna height of 2574 mm



Type No. 737 971
Downtilt angle: 0° – 8°



Type No. 737 976
Downtilt angle: 0° – 8°

The downtilt kits are not allowed for Panels with a weight more than 25 kg, for downtilt possibility see page 197

The downtilt kits should only be mounted with clamps
738 546, 850 1002, 850 1003

Mounting a downtilt kit enlarges the spacing between mast and antenna by 84 mm.

Panels VPol / XPol

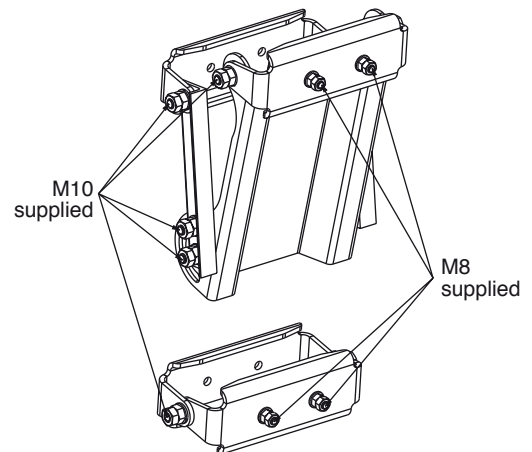
Downtilt Kit

Antenna Weight > 25 kg

Special downtilt kit for Panel antennas with a weight greater than 25 kg.

Downtilt kit

Type No.	850 10007
Preferred range of use	– Panel antennas with a weight of ≥ 25 kg – Panel antennas with attached mounting plates – Downtilt kit without scale for universal use
Weight	5.9 kg
Material	Hot-dip galvanized steel
All screws and nuts	Stainless steel



Recommended mast clamps:

Type No.	Description	Mast diameter	Weight approx.	Units per antenna
738 546	1 clamp	50 – 115 mm	1.0 kg	2
850 10002	1 clamp	110 – 220 mm	2.7 kg	2
850 10003	1 clamp	210 – 380 mm	4.8 kg	2

Recommended torque for all bolted connections:

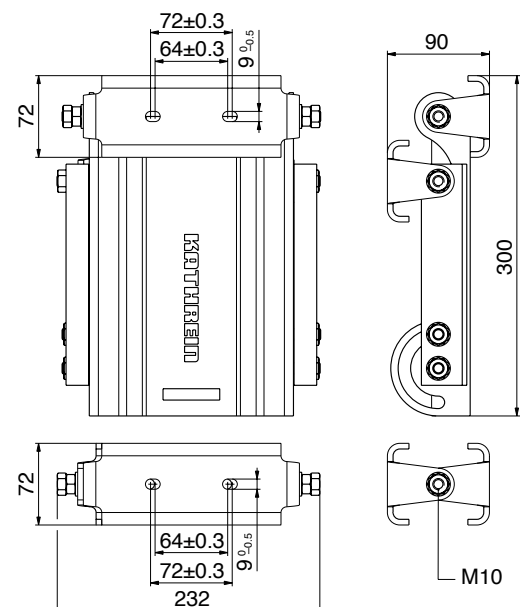
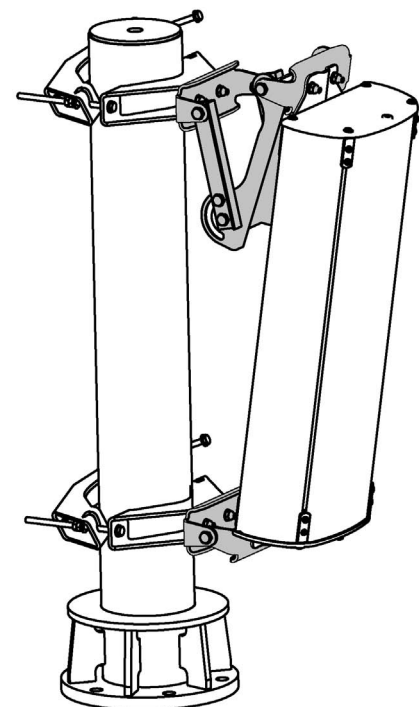
Screw size	Torque
M8	12 Nm
M10	26 Nm

Maximum acceptable load:

Frontal wind load	< 2500 N
Lateral wind load	< 830 N
Antenna weight	≤ 50 kg

Downtilt angle

Antenna height	Downtilt angle
1498 mm	0° – 15°
2058 mm	0° – 11°
2516 mm	0° – 8°
2628 mm	0° – 8°



Panels VPol / XPol Mounting Accessories

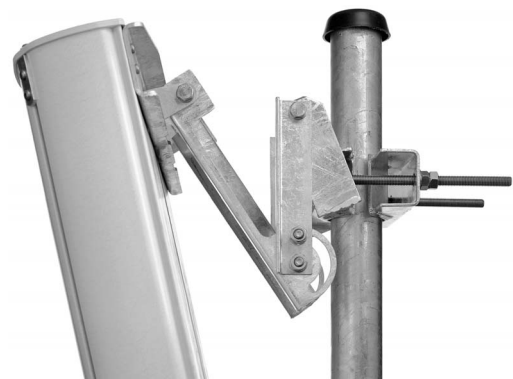
KATHREIN

Antennen · Electronic

Panels width 560 mm or 112 and 155 mm (height < 1.4 m)

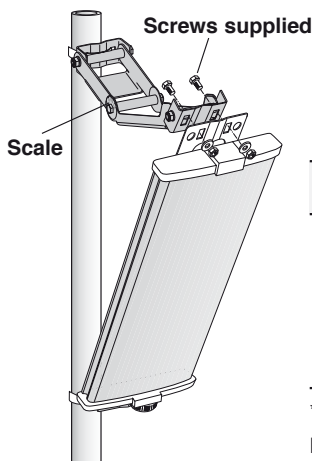
Downtilt kits for XPol 30° width 560 mm

Antenna height	Downtilt angle	Type No.	Weight
1296 mm	0 – 16°	733 695	3.4 kg



Downtilt kit 733 695

Downtilt Kits with Type No. 732 ... are suitable for Panels width 112 mm and 155 mm height < 1.4 m

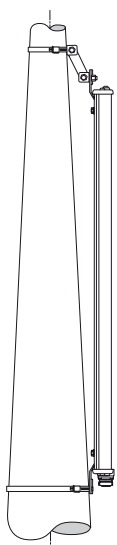


Use the downtilt kit together with the clamps (see page 187).

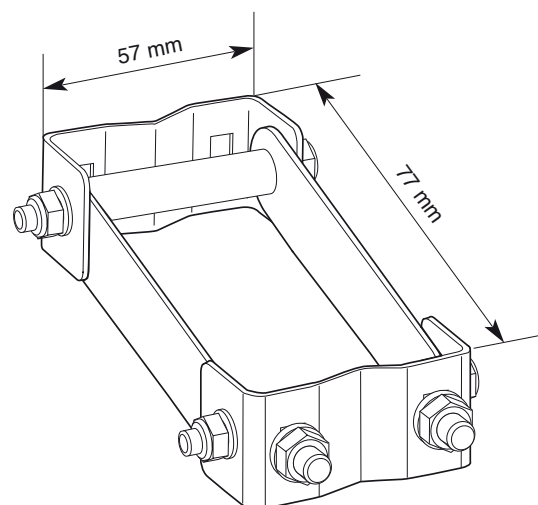
Antenna height	Downtilt angle	Downtilt kit with scale	Downtilt kit without scale*	Weight
		Type No.	Type No.	
342 mm	0° – 40°	–		approx. 1.0 kg
502 mm	0° – 25°	732 322		
662 mm	0° – 20°	732 321	732 327	
982 mm	0° – 14°	732 318		
1302 mm	0° – 10°	732 317		

* Instructions to adjust the required downtilt angle are given in the datasheet or on the rearside of the antenna.
Mounting a downtilt kit enlarges the spacing between mast and antenna by 42 mm.

Slant Compensation Kit Type No. 732 319 for Panels width 112 mm and 155 mm

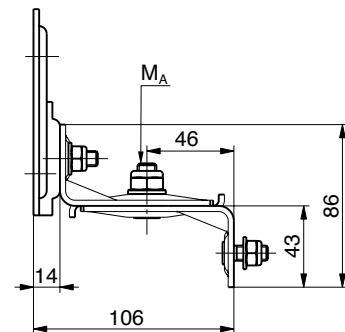
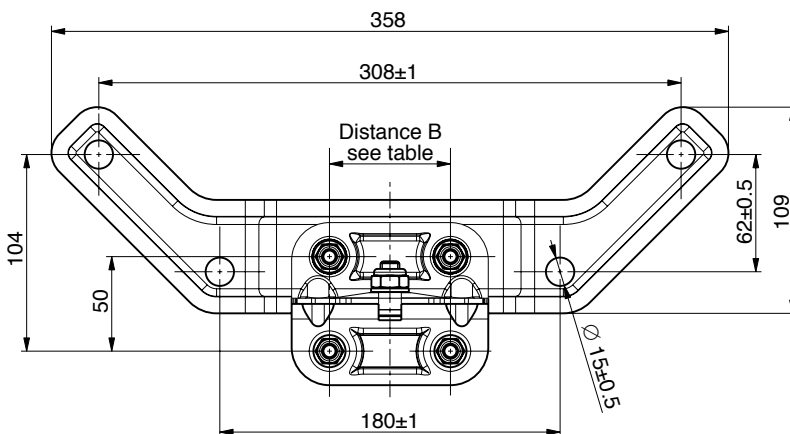
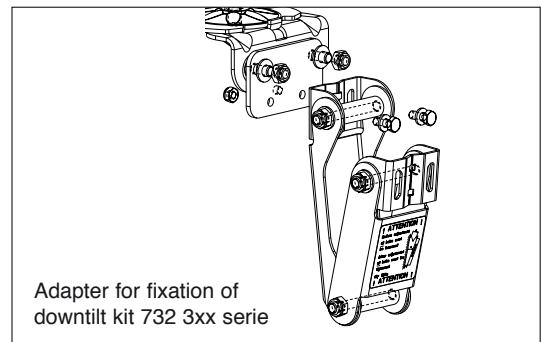
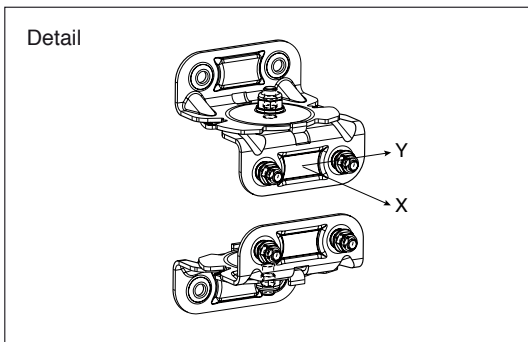
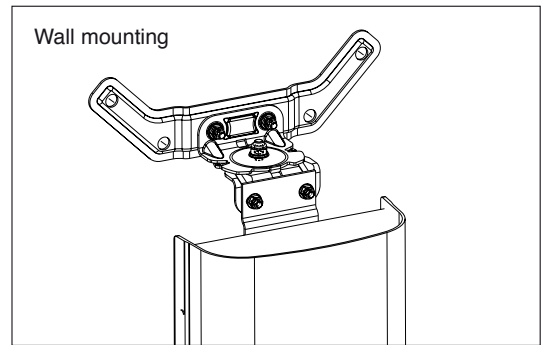
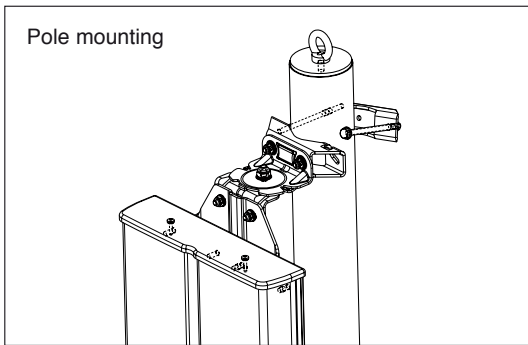


Use the slant compensation kit type no. 732 319 together with the clamps (see page 187).



Weight: approx. 200 g

All Panels Mounting Hardware Azimuth Adjustment Kits



The azimuth adjustment kit for pole mounting can be mounted with all suitable clamps, 3-Sector clamps and 2x Panel mounting kits (with the latter only as an interface between mounting kit and antenna).

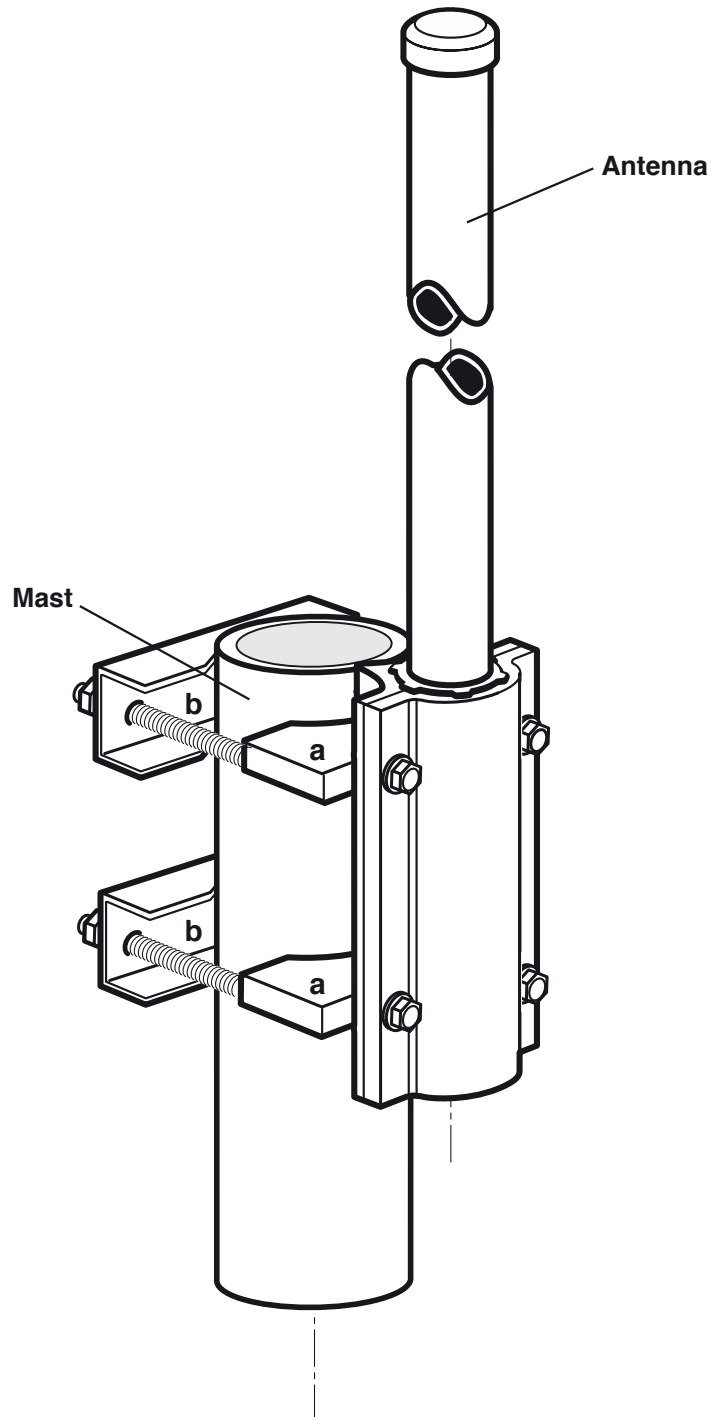
Type No.	850 10014	850 10015	850 10016	850 10017
Suitable for	pole mounting		wall mounting	
Number of pieces	2 brackets	2 brackets	2 brackets	2 brackets
Distance between screws [B]	64 mm	72 mm	64 mm	72 mm
Angular range	± 30°		± 30°	
Weight / kit	approx. 1260 g	approx. 1260 g	approx. 2500 g	approx. 2500 g
Supplied mounting accessories	all screws		Screws and dowels for wall fastening are not supplied, they must be chosen by installer according to on-site requirements.	
	Adapter for downtilt kit 732 3xx serie		Adapter for downtilt kit 732 3xx serie	
Materials	Parts are hot-dip galvanized steel; Captive nuts are stainless steel			
Max. permissible static load / kit				
– X direction	2150 N	5100 N	2150 N	5100 N
– Y direction	760 N	1350 N	760 N	1350 N

**Recommended torque: Screws M6: 8 Nm; Screws M8: 20 Nm; MoS₂ greased.
Minimum torque M_A: 30 Nm; MoS₂ greased**

Side-mounting Clamp Omnidirectional Antennas Large Pipe

Type No. 738 908

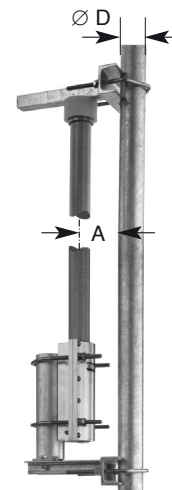
For mast diameters of 94 – 125 mm



Side-mounting Bracket Omnidirectional Antennas

Type No. 737 398

Side-mounting bracket
(for mast diameters of 40 – 105 mm)



Type No.	737 398			
Bracket	At the top and at the bottom			
Fits for antenna type no:	800/900 MHz	1800 MHz	UMTS	Dual-band
	736 347	739 785	741 790	800 10274
	736 348	738 187		
	736 349	739 404		
	736 350	737 190		
	736 351			
	738 664			
	738 192			

Side-mounting is possible for four fixed distances between the tubular mast and the antenna:

800/900 MHz (holes 1 and 3)			1800/2000 MHz (hole 2)																							
<p>$A = 100 \text{ mm} = 0.3 \lambda$</p>			<p>$A = 160 \text{ mm} = 0.5 \lambda$</p>			<p>$A = 240 \text{ mm} = 0.75 \lambda$</p>			<p>$A = 80 \text{ mm} = 0.5 \lambda$</p>																	
<table border="1"> <thead> <tr> <th>Pipe D</th> <th>Horizontal Radiation Pattern</th> <th>Spacing A / Curve</th> </tr> </thead> <tbody> <tr> <td rowspan="3">40 mm</td> <td rowspan="3"></td> <td>100 mm</td> </tr> <tr> <td>160 mm</td> </tr> <tr> <td>240 mm</td> </tr> </tbody> </table> <p>direction from mast to antenna →</p>	Pipe D	Horizontal Radiation Pattern	Spacing A / Curve	40 mm		100 mm	160 mm	240 mm	<table border="1"> <thead> <tr> <th>Pipe D</th> <th>Horizontal Radiation Pattern</th> <th>Spacing A / Curve</th> </tr> </thead> <tbody> <tr> <td rowspan="3">100 mm</td> <td rowspan="3"></td> <td>100 mm</td> </tr> <tr> <td>160 mm</td> </tr> <tr> <td>240 mm</td> </tr> </tbody> </table> <p>direction from mast to antenna →</p>	Pipe D	Horizontal Radiation Pattern	Spacing A / Curve	100 mm		100 mm	160 mm	240 mm	<table border="1"> <thead> <tr> <th>Pipe D / Curve</th> <th>Horizontal Radiation Pattern</th> <th>Spacing A</th> </tr> </thead> <tbody> <tr> <td>40 mm</td> <td rowspan="3"></td> <td rowspan="3">80 mm</td> </tr> <tr> <td>100 mm</td> </tr> <tr> <td>direction from mast to antenna →</td> </tr> </tbody> </table>	Pipe D / Curve	Horizontal Radiation Pattern	Spacing A	40 mm		80 mm	100 mm	direction from mast to antenna →
Pipe D	Horizontal Radiation Pattern	Spacing A / Curve																								
40 mm		100 mm																								
		160 mm																								
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Pipe D / Curve	Horizontal Radiation Pattern	Spacing A																								
40 mm		80 mm																								
100 mm																										
direction from mast to antenna →																										

Side-mounting Brackets Omnidirectional Antennas 900

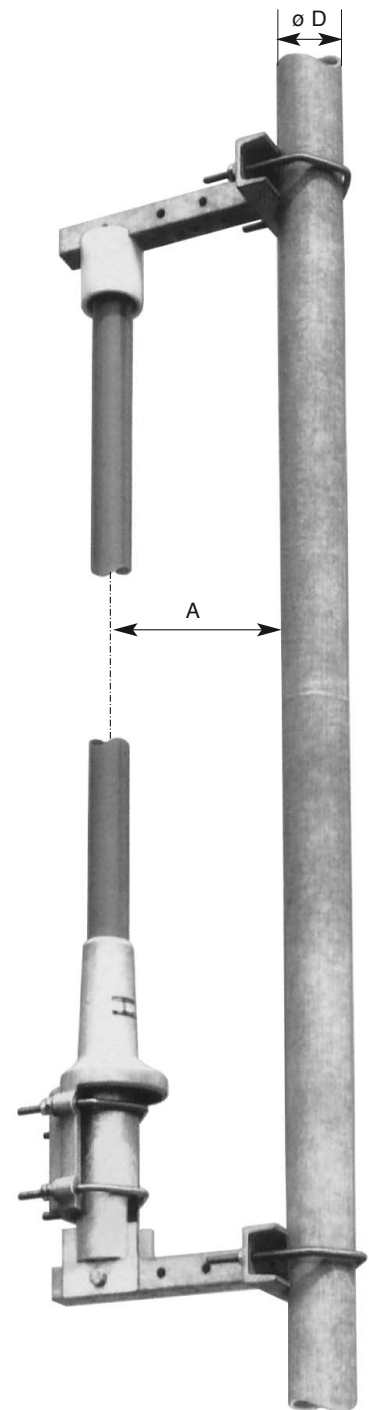
For mast diameters of 40 – 105 mm

Type No.	K 61 33 5	K 61 33 6
Bracket	at the bottom only	at both the top and the bottom
Fits for antenna type no.	K 75 11 6 .. K 75 15 6 ..	738 779 741 558

Side mounting is possible for three fixed distances between the tubular mast and the antenna:

- 100 mm = 0.3λ
- 160 mm = 0.5λ
- 240 mm = 0.75λ

Pipe D	Horizontal Radiation Pattern	Spacing A Curve	Additional gain to the nominal value of the antenna gain
40 mm		100 mm —————	2 dB
		160 mm - - - - -	3 dB
		240 mm - - - - -	2 dB
100 mm		100 mm —————	2.5 dB
		160 mm - - - - -	3.5 dB
		240 mm - - - - -	2.5 dB



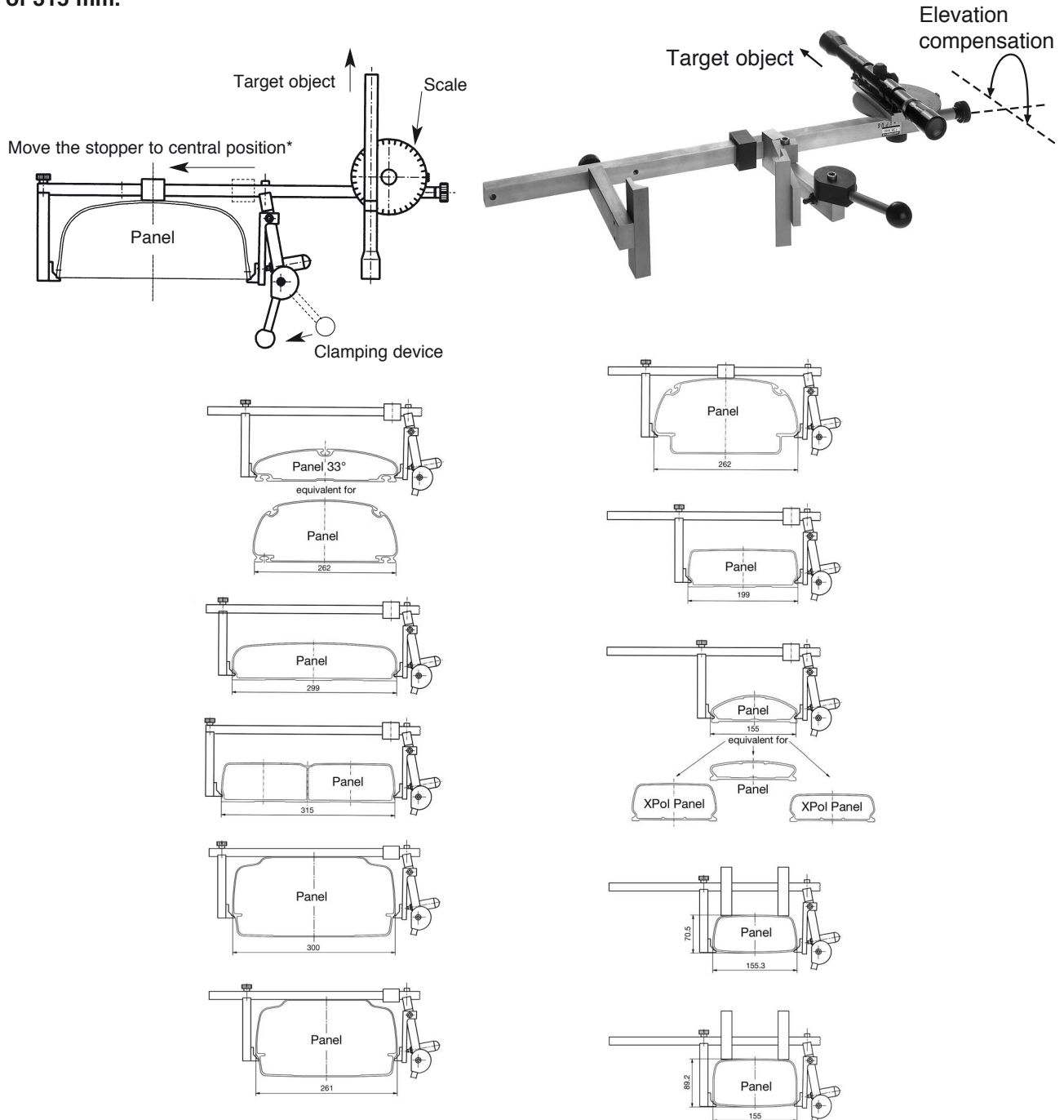
K 61 33 6

All Panels Accessories Azimuth Adjustment Tool

Type No. 738 440

Precise azimuth adjustment for mast mounted antennas can easily be achieved by using the azimuth adjustment tool.

This tool is suitable to all types of Panels and Tri-Sector Pipe Antennas with a maximum width of 315 mm.



Instruction:

- Use a map to work out the angle between the designed antenna azimuth and target (church, building, mountain peak).
- Set this angle on the scale of the adjustment tool.
- Place the adjustment tool onto the antenna and tighten the clamping device.
- Use the telescope to aim at the target object, if necessary, use elevation compensation.
- Then rotate the antenna until the target object appears in the telescope.

* Observe the position of the stopper when fitting the azimuth adjustment tool.

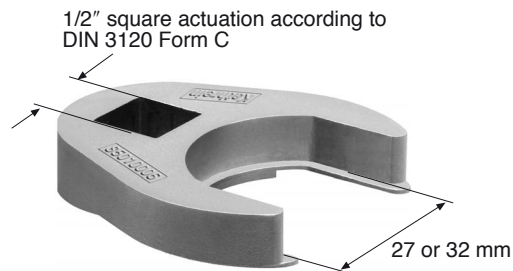
Kathrein Installation Tool for Triple-band Antennas Type No. 850 10005

Please note: To avoid any damage to the interfaces, please ensure that only suitable tools are used. To tighten the feederline connector interfaces, we strongly recommend using a special Kathrein installation tool (as shown below) in combination with a standard torque-wrench.

Kathrein installation set: Type No. 850 10005

Set has to be ordered separately!

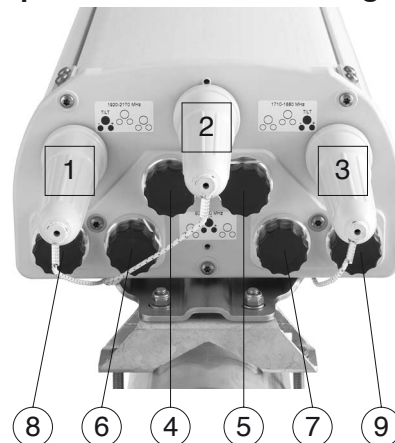
Set consists of two spanners of 27 and 32 mm width.



These tools are suitable for 7-16 connectors with a wrench size of 27 mm or 32 mm.

Tighten nut within a torque range of **25 – 33 Nm** depending on connector manufacturers' specifications.

Description of connector arrangement:



Adjustment mechanisms (1 – 3)

Feederline connectors (4 – 9)

There are six feederline connectors and three adjustment mechanisms located at the bottom of the antenna.

For detailed information about feederline installation for Triple-band Antennas please see Kathrein RET system brochure.

Filters / Duplexers

Multiband Combiners

Dual-Band Combiners
Triple-Band Combiners
Quad-Band Combiners

Same-Band Combiners Hybrid Combiners

Same-Band Combiner
Duplex Hybrid Combiner
Hybrid Combiner 2 : 1
Hybrid Combiner 4 : 4
3-dB Couplers
Hybrid Ring Junctions

System Components

Bias Tees
Measuring Directional Couplers
DC-Stops
Attenuators
50- Ω Loads
Power Distribution Unit

DTMAs

Repeaters

Summary of Filter, Combiner, Amplifier and Repeater Types

The articles are listed by type number in numerical order.

Type No.	Page	Type No.	Page	Type No.	Page	Type No.	Page
782 10153	307	782 10448	309	782 10633	254, 255	790 881	274, 275
782 10154	307	782 10453	286 – 288	782 10640	256, 257	791 145	234
782 10161	220	782 10454	286 – 288	782 10641	256, 257	791 498	274, 275
782 10162	220	782 10455	286 – 288	782 10642	256, 257	791 918	294
782 10164	220	782 10456	286 – 288	782 10643	256, 257	791 919	294
782 10165	220	782 10457	232, 233	782 10652	312, 313	791 920	294
782 10167	221	782 10458	232, 233	782 10653	312, 313	791 921	294
782 10168	216, 217	782 10460	232, 233	782 10660	242, 243	792 542	222
782 10169	216, 217	782 10469	250	782 10661	242, 243	792 544	223
782 10170	216, 217	782 10474	289	782 10662	242, 243	792 699	261
782 10171	216, 217	782 10500	264	782 10663	242, 243	792 702	262
782 10172	216, 217	782 10502	265	782 10680	244, 245	792 972	295
782 10192	224	782 10504	266	782 10681	244, 245	793 004	215
782 10193	224	782 10532	267	782 10682	244, 245	793 005	215
782 10203	268	782 10550	285	782 10683	244, 245	793 006	277
782 10215	218, 219	782 10555	301	782 10711	317	793 301	281
782 10216	218, 219	782 10556	301	782 10717	318	793 304	283
782 10248	240, 241	782 10557	301	782 10731	319	793 506	276
782 10249	240, 241	782 10558	301	782 10736	320	793 532	238, 239
782 10250	240, 241	782 10561	308	782 10751	321	793 533	238, 239
782 10251	240, 241	782 10562	308	782 10800	252	793 539	212
782 10253	286 – 288	782 10563	308	782 10801	226	793 540	213
782 10254	286 – 288	782 10564	308	782 10802	214	793 554	278
782 10255	286 – 288	782 10565	308	782 10805	270, 271	793 555	263
782 10256	286 – 288	782 10566	308	782 10808	250		
782 10257	218, 219	782 10567	308	782 10809	251	K 62 26 11 1	290
782 10264	253	782 10568	308	782 10810	251	K 62 26 20 1	291
782 10265	218, 219	782 10569	308	782 10811	304	K 62 26 20 7	291
782 10278	246, 247	782 10570	308	782 10850	282	K 62 26 21 1	291
782 10279	246, 247	782 10571	308	782 10858	269	K 62 26 21 7	291
782 10305	246, 247	782 10579	308	782 10860	314	K 62 26 30 1	291
782 10306	246, 247	782 10601	305	782 10925	272, 273	K 62 26 30 7	291
782 10312	300	782 10602	306	782 10970	236, 237	K 62 26 31 1	291
782 10341	235	782 10610	310	782 10971	236, 237	K 62 26 31 7	291
782 10344	292, 293	782 10612	310	782 10972	236, 237	K 62 26 40 1	290
782 10390	210	782 10613	311	782 10973	236, 237	K 62 26 41 1	290
782 10391	210	782 10620	248, 249			K 62 26 50 1	291
782 10392	211	782 10621	248, 249	784 10235	294	K 62 26 50 7	291
782 10403	302	782 10622	248, 249	784 10236	294	K 62 26 51 1	291
782 10406	303	782 10623	248, 249	784 10237	294	K 62 26 61 1	290
782 10415	222	782 10624	248, 249	784 10238	294	K 63 73 62 1	274, 275
782 10418	225	782 10625	248, 249	784 10367	290		
782 10429	284	782 10630	254, 255	784 10470	290		
782 10440	299	782 10631	254, 255				
782 10442	299	782 10632	254, 255	728 954	231		

Filters / Duplexers

Filters:

Description	Type No.	Frequency range ... tunable bandwidth – fixed bandwidth	Max. Input power	Page
Band-pass Filter	782 10390	890 – 960 MHz	400 W	210
Band-pass Filter	782 10391	890 – 960 MHz	400 W	210
Band-pass Filter	782 10392	824 – 880 MHz	400 W	211
Low-pass Filter	793 539	876 – 960 MHz	300 W	212
Band-pass Filter	793 540	1710 – 1880 MHz	500 W	213
Band-pass filter	782 10802	3400 ... 3600 MHz	50 W	214

Duplexers:

Description	Type No.	Frequency range	Max. input power	Page
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Duplexer	793 005	Low band: 876 – 880 MHz High band: 921 – 925 MHz	250 W	215
Duplexer	782 10168	Low band: 824 – 835 MHz High band: 869 – 880 MHz	400 W	216, 217
Duplexer	782 10169	Low band: 824 – 835 MHz High band: 869 – 880 MHz	400 W	216, 217
Duplexer	782 10170	Low band: 824 – 835 MHz High band: 869 – 880 MHz	400 W	216, 217
Duplexer	782 10171	Low band: 835 – 851 MHz High band: 880 – 896 MHz	400 W	216, 217
Duplexer	782 10172	Low band: 835 – 851 MHz High band: 880 – 896 MHz	400 W	216, 217
Duplexer	782 10215	Low band: 824 – 851 MHz High band: 869 – 896 MHz	400 W	218, 219
Duplexer	782 10216	Low band: 824 – 851 MHz High band: 869 – 896 MHz	400 W	218, 219
Duplexer	782 10257	Low band: 824 – 846.5 MHz High band: 869 – 891.5 MHz	400 W	218, 219
Duplexer	782 10265	Low band: 824 – 846.5 MHz High band: 869 – 891.5 MHz	800 W	218, 219
Duplexer	782 10164	Low band: 890 – 915 MHz High band: 935 – 960 MHz	500 W	220
Duplexer	782 10165	Low band: 890 – 915 MHz High band: 935 – 960 MHz	500 W	220
Duplexer	782 10161	Low band: 890 – 915 MHz High band: 935 – 960 MHz	500 W	220
Duplexer	782 10162	Low band: 890 – 915 MHz High band: 935 – 960 MHz	500 W	220
Duplexer	782 10167	Low band: 880 – 915 MHz High band: 925 – 960 MHz	250 W	221
Duplexer	792 542	Low band: 1710 – 1785 MHz High band: 1805 – 1880 MHz	250 W	222
Duplexer	782 10415	Low band: 1710 – 1785 MHz High band: 1805 – 1880 MHz	250 W	222
Duplexer	792 544	Low band: 1850 – 1910 MHz High band: 1930 – 1990 MHz	300 W	223
Duplexer	782 10192	Low band: 1920 – 1980 MHz High band: 2110 – 2170 MHz	250 W	224
Duplexer	782 10193	Low band: 1920 – 1980 MHz High band: 2110 – 2170 MHz	250 W	224
Duplexer	782 10418	Low band: 1920 – 1980 MHz High band: 2110 – 2170 MHz	250 W	225
Duplexer	782 10801	3400 ... 3600 MHz	50 W	226

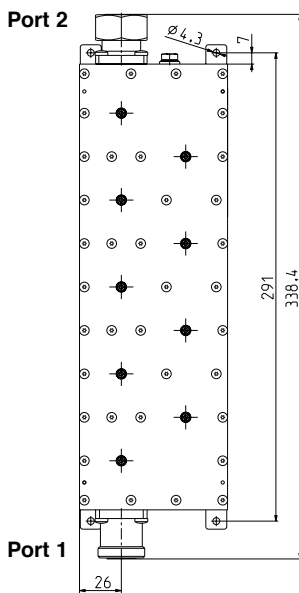
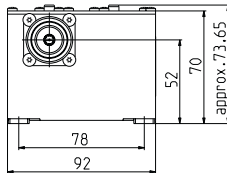
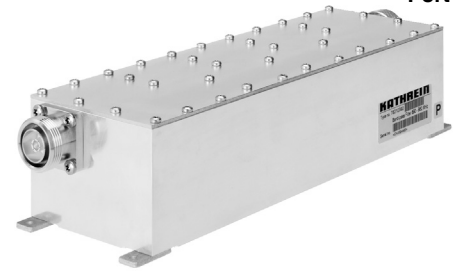
Band-pass Filter

890 – 960 MHz

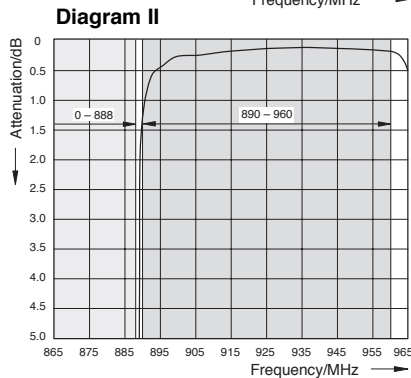
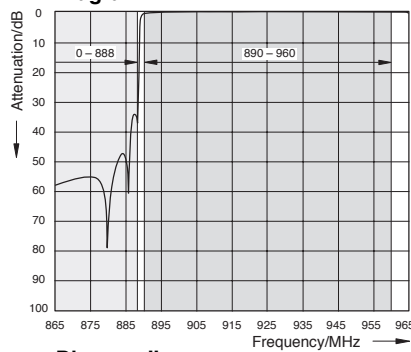
- GSM 900 Tx/Rx preselector filter
- Suppression of interfering Tx signals of an adjacent AMPS or CDMA frequency band
- Suitable for indoor applications
- Built-in DC stop

Port 2

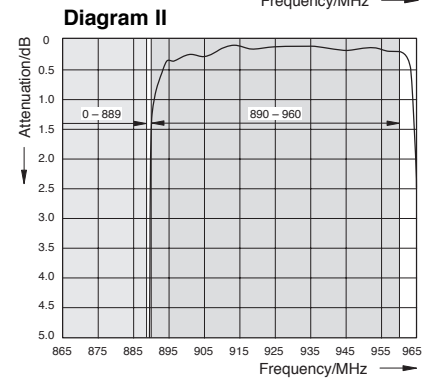
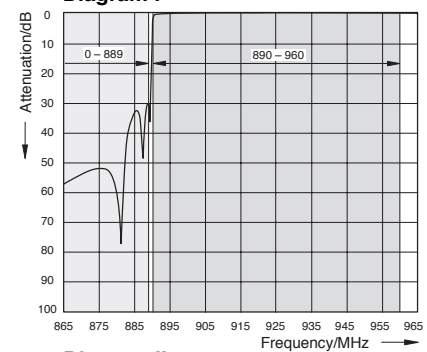
Port 1



782 10390
Typical Attenuation Curves
Diagram I



782 10391
Typical Attenuation Curves
Diagram I



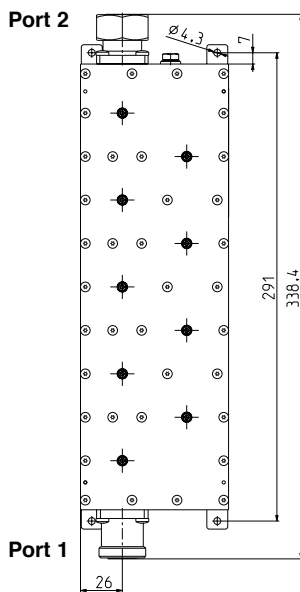
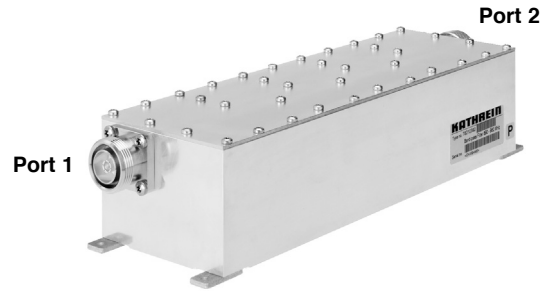
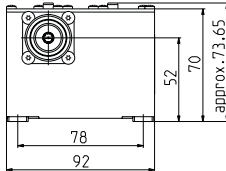
Technical Data

Type No.	782 10390	782 10391
Stop band Frequency spacing	0 – 888 MHz 2 MHz	0 – 889 MHz 1 MHz
Pass band	890 – 960 MHz	890 – 960 MHz
Insertion loss	< 1.5 dB (890 – 892 MHz) < 0.8 dB (892 – 893 MHz) < 0.6 dB (893 – 905 MHz) < 0.3 dB (905 – 960 MHz)	< 4.0 dB (890 – 891 MHz) < 2.5 dB (891 – 892 MHz) < 1.0 dB (892 – 893 MHz) < 0.6 dB (893 – 905 MHz) < 0.3 dB (905 – 960 MHz)
Stop band attenuation	> 50 dB (0 – 880 MHz) > 40 dB (880 – 885 MHz) > 30 dB (885 – 888 MHz)	> 50 dB (0 – 869 MHz) > 30 dB (869 – 889 MHz)
VSWR	< 1.25 (890 – 960 MHz)	< 1.3 (891 – 960 MHz)
Impedance	50 Ω	
Input power	< 400 W (935 – 960 MHz)	
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)	
Temperature range	-20 ... +55 °C	-5 ... +45 °C
Connectors	Port 1: 7-16 female, long neck / Port 2: 7-16 male	
Application	Indoor	
DC/AISG transparency Port 1 ↔ Port 2	Stop	
Mounting	With 4 screws (max. 4 mm diameter)	
Weight	2 kg	
Packing size	387 x 137 x 130 mm	
Dimensions (w x h x d)	92 x 74 x 338.4 mm (including connectors and mounting feet)	

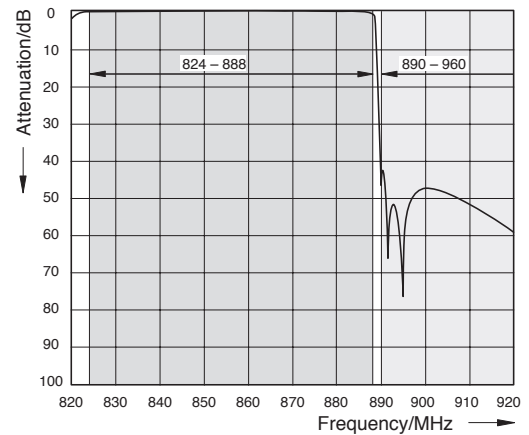
Band-pass Filter

824 – 888 MHz (AMPS/CDMA850)

- AMPS/CDMA850 Tx/Rx filter
- Suppression of spurious emissions at adjacent GSM900 Rx frequencys
- Suitable for indoor applications
- Built-in DC stop



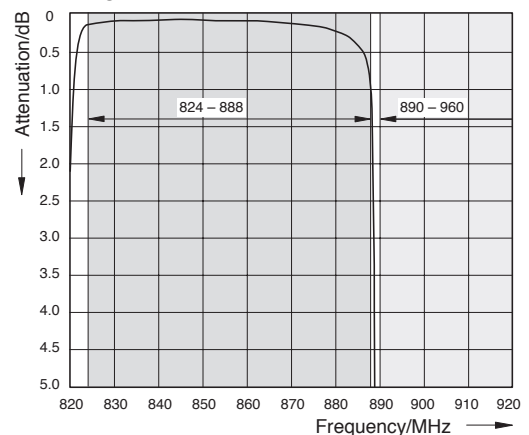
Calculated Attenuation Curves
Diagram I



Technical Data

Type No.	782 10392
Pass band	824 – 888 MHz
Insertion loss	< 0.5 dB (824 – 885 MHz) < 0.8 dB (885 – 886 MHz) < 1.5 dB (886 – 888 MHz)
Stop band attenuation	> 40 dB (890 – 960 MHz)
VSWR	< 1.25
Impedance	50 Ω
Input power	< 400 W (824 – 888 MHz)
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)
Temperature range	-20 ... +55 °C
Connectors	Port 1: 7-16 female (long neck) / Port 2: 7-16 male
Application	Indoor
DC/AISG transparency Port 1 ↔ Port 2	Stop
Mounting	With 4 screws (max. 4 mm diameter)
Weight	2 kg
Packing size	387 x 137 x 130 mm
Dimensions (w x h x d)	92 x 74 x 338.4 mm (including connectors and mounting feet)

Diagram II

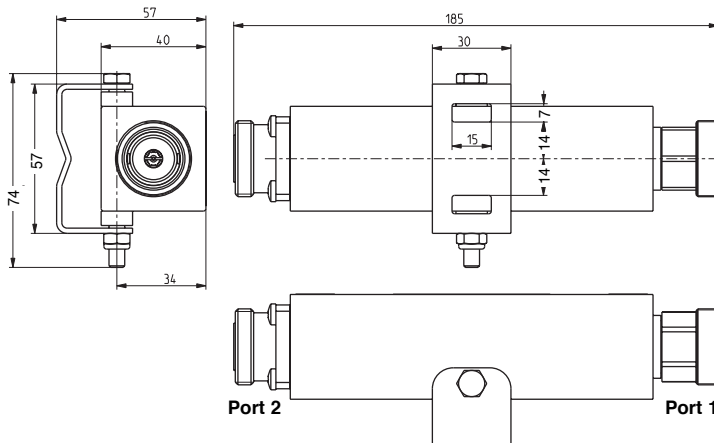


Low-pass Filter

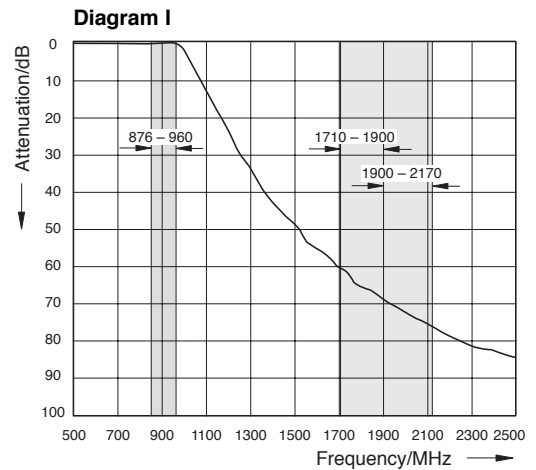
876 – 960 MHz (GSM 900)

The Low-pass Filter is designed for use in GSM 900 systems where GSM 1800 or UMTS systems are co-sited.

- Suppression of GSM 900 spurious emissions
- Improvement of GSM 900 receiving selectivity
- Inline design
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- Either port 1 or 2 can be used as the input port
- DC by-pass between ports 1 and 2
- External DC Stop available as an accessory

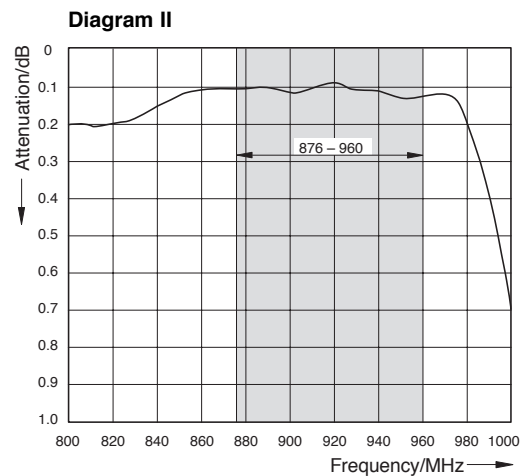


Typical Attenuation Curves



Technical Data

Type No.	793 539
Pass band	876 – 960 MHz
Insertion loss	< 0.15 dB (876 – 960 MHz)
Stop band attenuation	> 55 dB (1710 – 1900 MHz) > 62 dB (1900 – 2170 MHz)
VSWR	< 1.2 (876 – 960 MHz)
Impedance	50 Ω
Input power	< 300 W
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)
Temperature range	-40 ... +60 °C
Connectors	Port 1: 7-16 male Port 2: 7-16 female
Application	Indoor or outdoor (IP 66)
DC/AISG transparency Port 1 ↔ Port 2	By-pass (max. 2500 mA)
Mounting	Wall mounting: With 2 screws (max. 6 mm diameter) Mast mounting: With additional clamp set
Weight	0.75 kg
Packing size	240 x 110 x 100 mm
Dimensions (w x h x d)	184 x 57 x 75 mm (including mounting bracket)

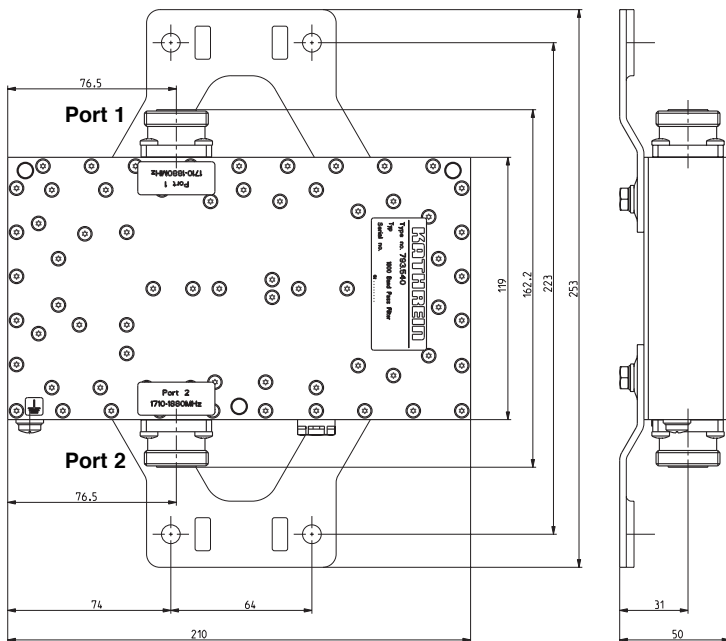
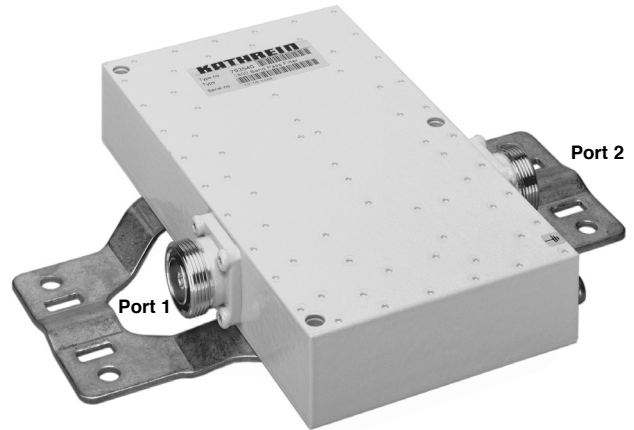


Band-pass Filter

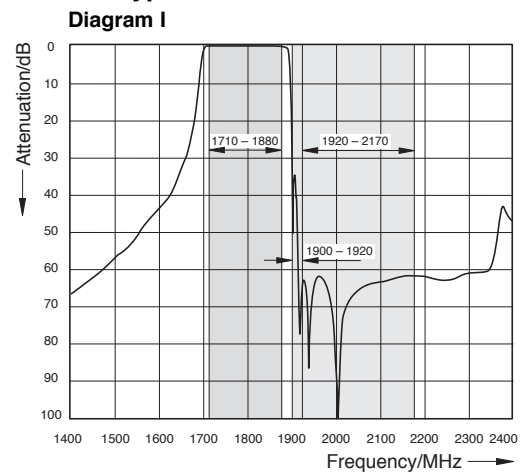
1710 – 1880 MHz (GSM 1800)

The Band-pass Filter is designed for use in GSM 1800 systems where UMTS or GSM 900 systems are co-sited.

- Suppression of GSM 1800 spurious emissions
- Improvement of GSM 1800 receiving selectivity
- Inline design
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- Either port 1 or 2 can be used as the input port
- Built-in lightning protection
- DC by-pass between ports 1 and 2
- External DC Stop available as an accessory

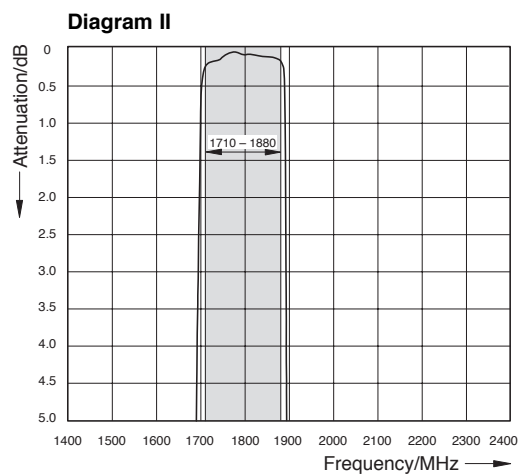


Typical Attenuation Curves



Technical Data

Type No.	793 540
Pass band	1710 – 1880 MHz
Insertion loss	< 0.3 dB (1710 – 1880 MHz)
Stop band attenuation	> 80 dB (800 – 960 MHz) > 28 dB (1900 – 1920 MHz) > 58 dB (1920 – 2170 MHz)
VSWR	< 1.2 (1710 – 1880 MHz)
Impedance	50 Ω
Input power	< 500 W
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)
Temperature range	-40 ... +60 °C
Connectors	7-16 female
Application	Indoor or outdoor (IP 66)
DC/AISG transparency Port 1 ↔ Port 2	By-pass (max. 2500 mA)
Lightning protection	3 kA, 10/350 μs pulse
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set
Weight	2.2 kg
Packing size	260 x 250 x 110 mm
Dimensions (w x h x d)	210 x 253 x 49 mm (including mounting brackets)



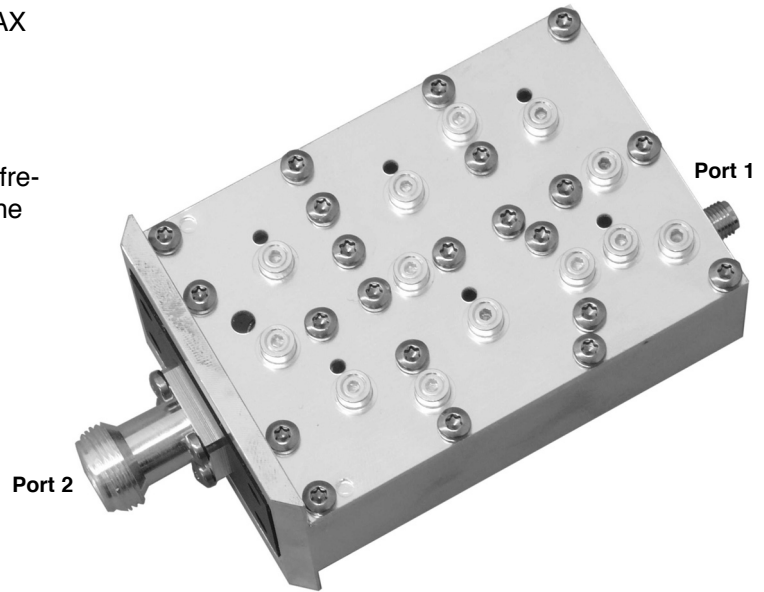
Band-pass Filter

3400 ... 3600 MHz (WiMAX 3.5)

The Band-pass Filter is designed as a WiMAX Tx/Rx preselector filter in order to suppress interfering transmitting signals.

Tuning:

The duplexer is tunable within the specified frequency range. When ordering please note the desired frequencies.



Tuning example:

Calculated Attenuation Curves

Diagram I

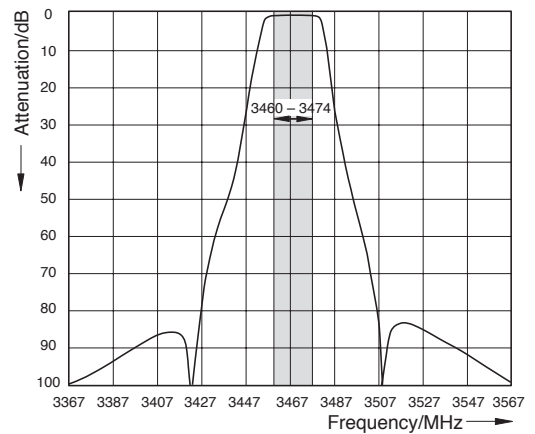
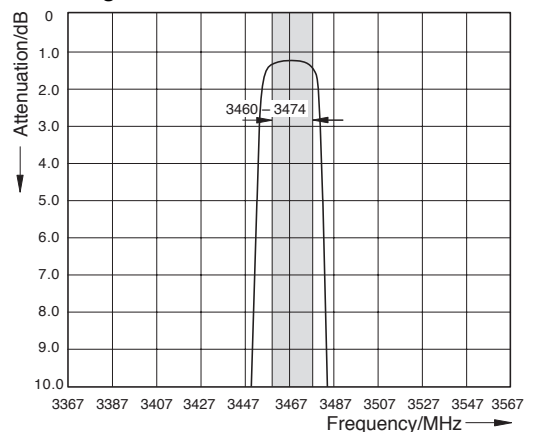


Diagram II



Technical Data

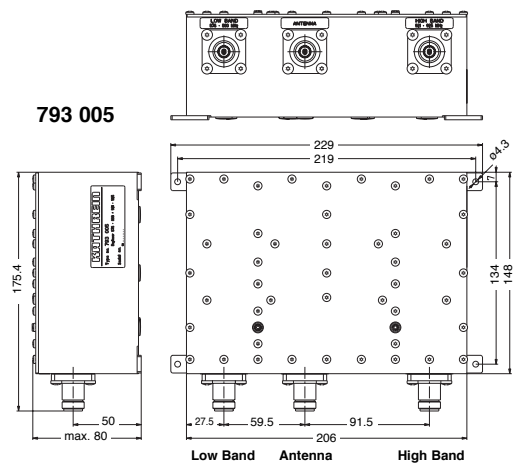
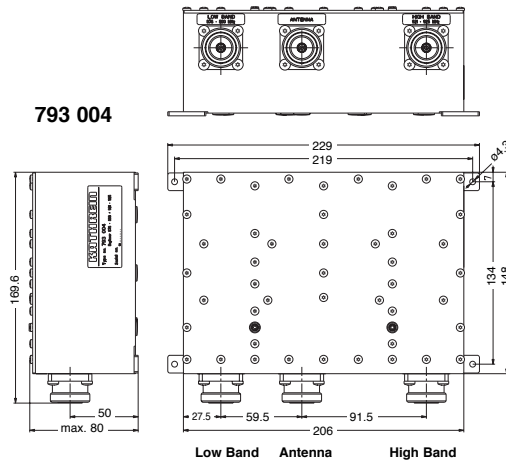
Type No.	782 10802
Pass band	3400 ... 3600 MHz
Bandwidth	14 MHz
Insertion loss	< 1.8 dB (1.3 typically)
Stop band attenuation at $f_o \pm 43$ MHz	80 dB
VSWR	< 1.2
Impedance	50 Ω
Input power	< 50 W
Temperature range	-20 ... +60 °C
Connectors Port 1 Port 2	Tx/Rx input, SMA female Antenna output, N-female
Application	Indoor
Special features	Built-in DC stop between all ports
Mounting	With 4 screws (max. 4 mm diameter)
Weight	0.4 kg
Packing size	387 x 137 x 130 mm
Dimensions (w x h x d)	60 x 50 x 120 mm (including connectors and mounting feet)

Duplexer

876 – 880 / 921 – 925 MHz (GSM-R)

The Duplexer is designed to combine/split GSM-R Tx and Rx signals onto/from one common Tx/Rx antenna in order to save feeder cable and antenna costs.

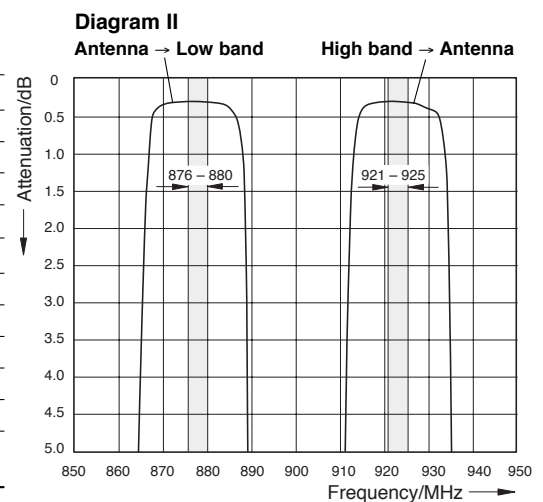
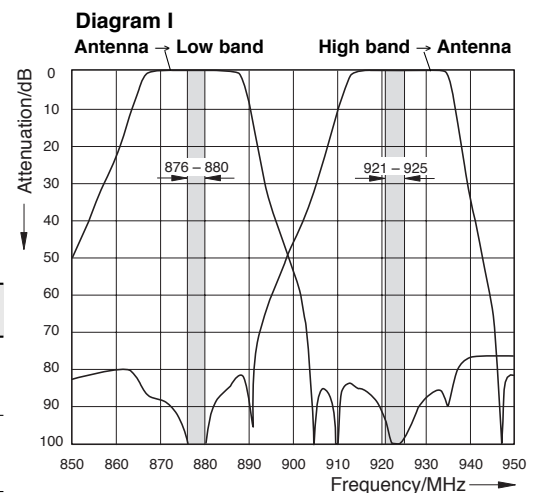
- Suitable for indoor applications
- Built-in DC stop



Technical Data

Type No.	793 004	793 005
Pass band		
Low band	876 – 880 MHz	
High band	921 – 925 MHz	
Insertion loss		
Antenna → Low band	< 0.4 dB (876 – 880 MHz)	
High band → Antenna	< 0.4 dB (921 – 925 MHz)	
Isolation		
Low band ↔ High band	> 85 dB (876 – 880 MHz) > 80 dB (880 – 921 MHz) > 85 dB (921 – 925 MHz)	
VSWR	< 1.25 (876 – 880 / 921 – 925 MHz)	
Impedance	50 Ω	
Input power	< 250 W (low band or high band)	
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)	
Temperature range	-20 ... +55 °C	
Connectors	7-16 female	N female
Application	Indoor	
Special features	Built-in DC stop between all ports	
Mounting	With 4 screws (max. 4 mm diameter)	
Weight	2.6 kg	
Packing size	309 x 162 x 252 mm	
Dimensions (w x h x d)	229 x 80 x 169.6 mm 229 x 80 x 175.4 mm (including connectors and mounting feet)	

Typical Attenuation Curves



Duplexer

824 – 835 / 869 – 880 MHz (AMPS A-Band)

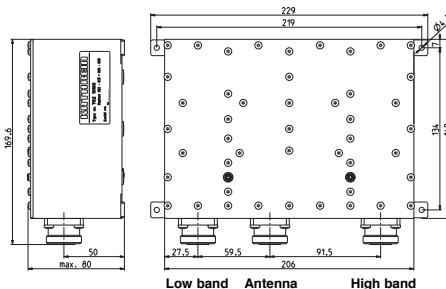
835 – 851 / 880 – 896 MHz (AMPS B-Band)

KATHREIN

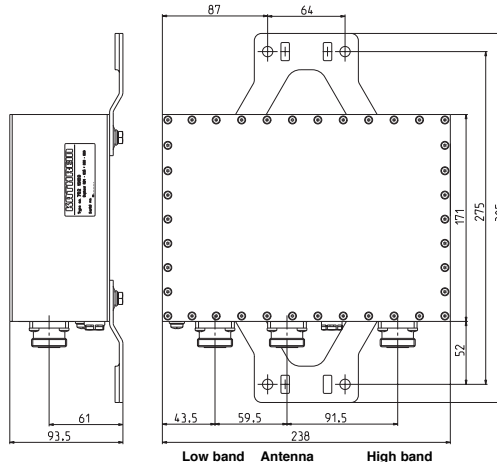
Antennen · Electronic

The Duplexer is designed to combine/split GSM Tx and Rx signals onto/from one common Tx/Rx antenna in order to save feeder cable and antenna costs.

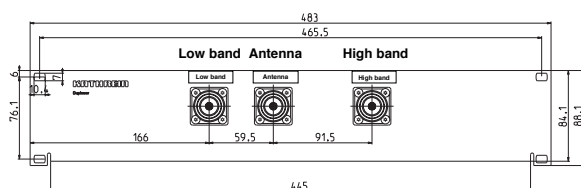
- **78210168:** AMPS A-Band, indoor version
- **78210169:** AMPS A-Band, outdoor version
- **78210170:** AMPS A-Band, indoor version mounted onto a 19" drawer
- **78210171:** AMPS B-Band, indoor version
- **78210172:** AMPS B-Band, outdoor version



782 10168
782 10171
(indoor)



782 10169
782 10172
(outdoor)



782 10170 (19" drawer)

Technical Data

Type No.	782 10168 782 10169 782 10170			782 10171 782 10172	
	AMPS A-Band			AMPS B-Band	
Pass band					
Low band	824 – 835 MHz			835 – 851 MHz	
High band	869 – 880 MHz			880 – 896 MHz	
Insertion loss					
Antenna → Low band	< 0.5 dB (824 – 835 MHz)			< 0.5 dB (835 – 851 MHz)	
High band → Antenna	< 0.5 dB (869 – 880 MHz)			< 0.5 dB (880 – 896 MHz)	
Isolation					
Low band ↔ High band	> 85 dB (824 – 835 / 869 – 880 MHz)			> 85 dB (835 – 851 / 880 – 896 MHz)	
VSWR	< 1.25 (824 – 835 / 869 – 880 MHz)			< 1.25 (835 – 851 / 880 – 896 MHz)	
Impedance	50 Ω			50 Ω	
Input power	< 400 W (high band; with max. 8 carriers)			< 400 W (high band; with max. 12 carriers)	
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)			< -160 dBc (3 rd order; with 2 x 20 W)	
Temperature range	-20 ... +55 °C	-40 ... +60 °C	-20 ... +55 °C	-20 ... +55 °C	-40 ... +60 °C
Connectors	7-16 female			7-16 female	
Application	Indoor	Outdoor (IP 66)	Indoor, 19" drawer	Indoor	Outdoor (IP 66)
Special features	Built-in DC stop between all ports				
Mounting	With 4 screws (max. 4 mm diameter)	Wall mounting with 4 screws (max. 8 mm diameter) Mast mounting with additional clamp set	With 4 screws (max. 6 mm diameter)	With 4 screws (max. 4 mm diameter)	Wall mounting with 4 screws (max. 8 mm diameter) Mast mounting with additional clamp set
Weight	2.8 kg	5.5 kg	3.7 kg	2.8 kg	5.5 kg
Packing size	309 x 162 x 252 mm	347 x 297 x 174 mm	612 x 312 x 224 mm	309 x 162 x 252 mm	347 x 297 x 174 mm
Dimensions (w x h x d)	229 x 80 x 170 mm	238 x 305 x 93.5 mm	19" drawer, 2 height units, plug-in depth 170 mm	229 x 80 x 170 mm (including connectors and mounting feet)	238 x 305 x 93.5 mm (including mounting feet)

Duplexer

824 – 835 / 869 – 880 MHz (AMPS A-Band)

835 – 851 / 880 – 896 MHz (AMPS B-Band)

KATHREIN

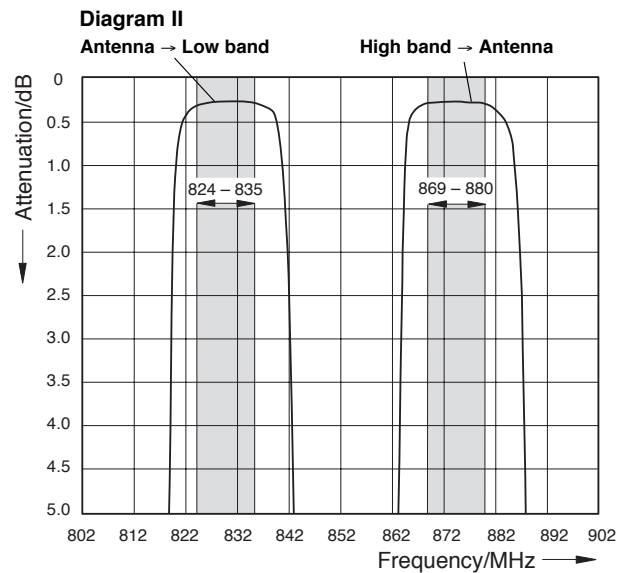
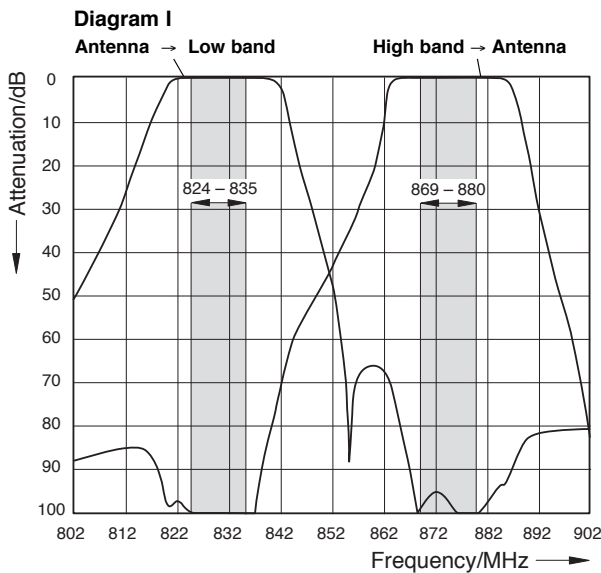
Antennen · Electronic

Accessories (order separately)

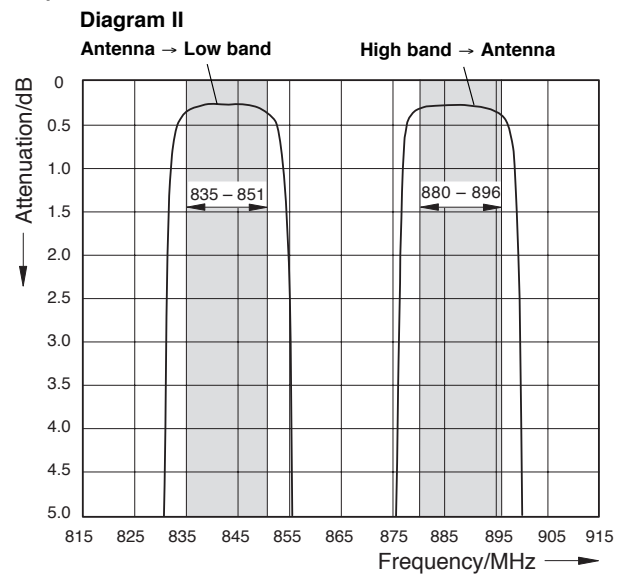
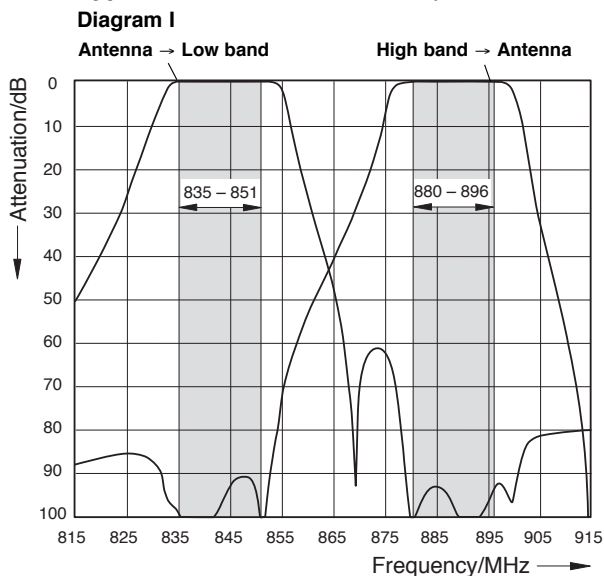
Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
734 365	45 – 125 mm



Typical Attenuation Curves (782 10168, 782 10169, 782 10170)



Typical Attenuation Curves (782 10171, 782 10172)



Duplexer

824 – 851 / 869 – 896 MHz (AMPS A/B-Band)

824 – 846.5 / 869 – 891.5 MHz (AMPS A/B-Band)

KATHREIN

Antennen · Electronic

The Duplexer is designed to combine/split AMPS Tx and Rx signals onto/from one common Tx/Rx antenna in order to save feeder cable and antenna costs.

- Suitable for indoor application
- Built-in DC stop

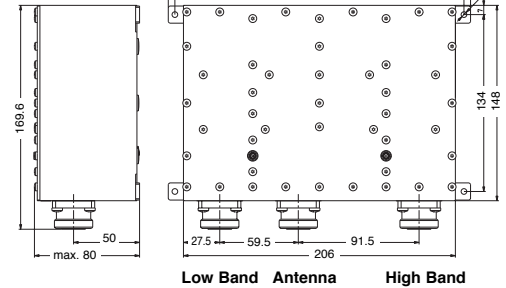


782 10215, 782 10257



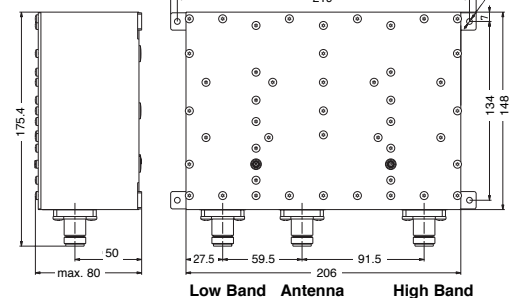
782 10216

782 10215
782 10257



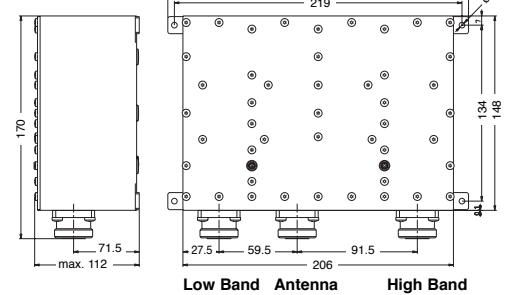
Low Band Antenna High Band

782 10216



Low Band Antenna High Band

782 10265



Low Band Antenna High Band

Technical Data

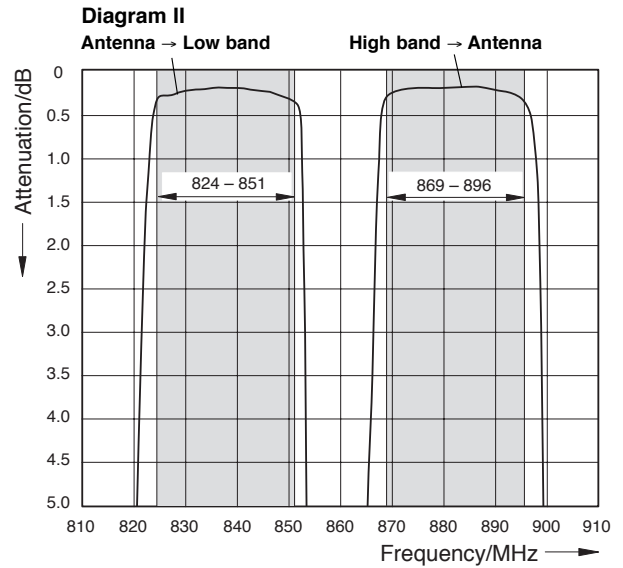
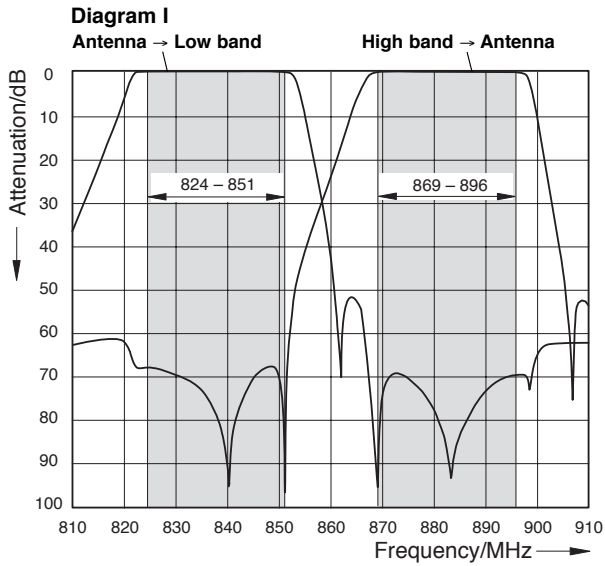
Type No.	782 10215 AMPS A/B-Band	782 10216	782 10257 AMPS A/B-Band (reduced bandwidth)	782 10265
Pass band Low band High band	824 – 851 MHz 869 – 896 MHz		824 – 846.5 MHz 869 – 891.5 MHz	
Insertion loss Antenna → Low band High band → Antenna	< 0.5 dB (824 – 851 MHz) < 0.5 dB (869 – 896 MHz)		< 0.5 dB (824 – 846.5 MHz) < 0.5 dB (869 – 891.5 MHz)	
Isolation Low band ↔ High band	> 65 dB (824 – 851 / 869 – 896 MHz)		> 70 dB (824 – 846.5 / 869 – 891.5 MHz)	
VSWR	< 1.25 (824 – 851 / 869 – 896 MHz)		< 1.25 (824 – 846.5 / 869 – 891.5 MHz)	
Impedance	50 Ω		50 Ω	
Input power	< 400 W (high band; with max. 16 carriers)		< 400 W (high band; with max. 16 carriers)	< 800 W (high band; with max. 32 carriers)
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)		< -160 dBc (3 rd order; with 2 x 20 W)	
Temperature range	-20 ... +55 °C		-20 ... +55 °C	
Connectors	7-16 female	N female	7-16 female	
Application	Indoor		Indoor	
Special features	Built-in DC stop between all ports		Built-in DC stop between all ports	
Mounting	With 4 screws (max. 4 mm diameter)		With 4 screws (max. 4 mm diameter)	
Weight	2.6 kg		2.6 kg	Approx. 3 kg
Packing size	309 x 252 x 162 mm		309 x 252 x 162 mm	309 x 252 x 162 mm
Dimensions (w x h x d)	229 x 80 x 170 mm 229 x 80 x 175.4 mm (including connectors and mounting feet)		229 x 80 x 170 mm	229 x 112 x 170 mm (including connectors and mounting feet)

Duplexer

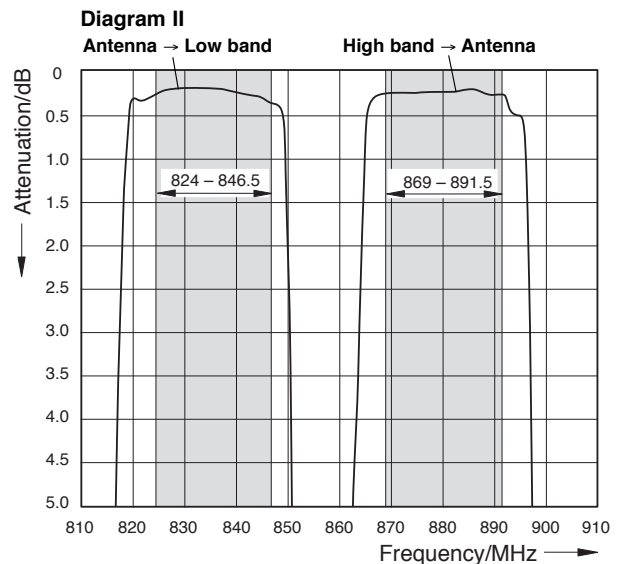
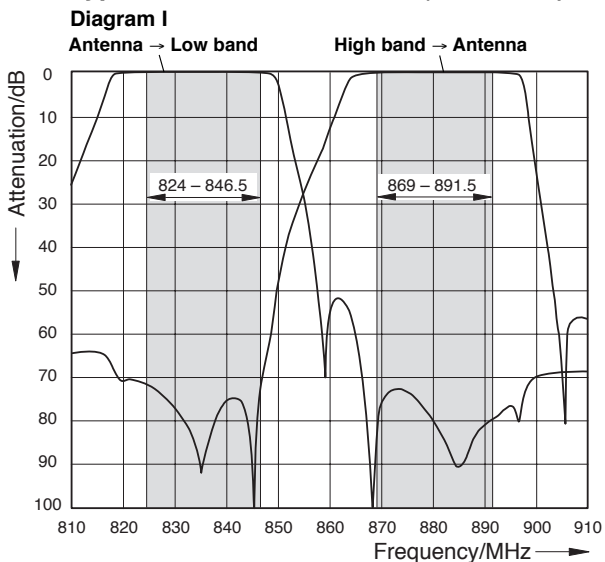
824 – 851 / 869 – 896 MHz (AMPS A/B-Band)

824 – 846.5 / 869 – 891.5 MHz (AMPS A/B-Band)

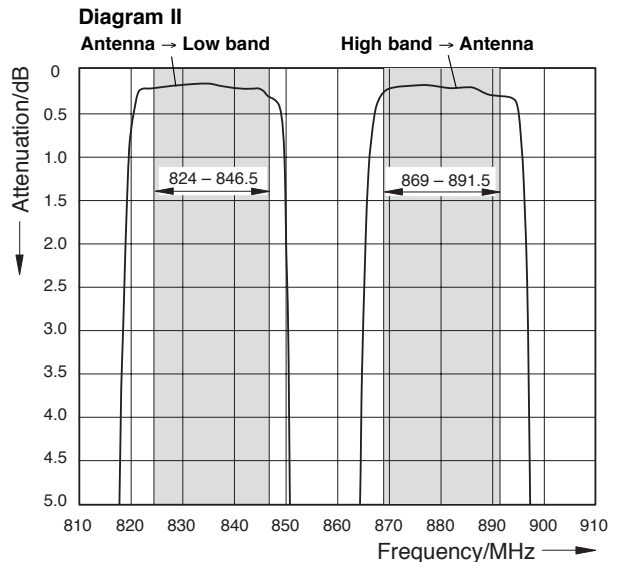
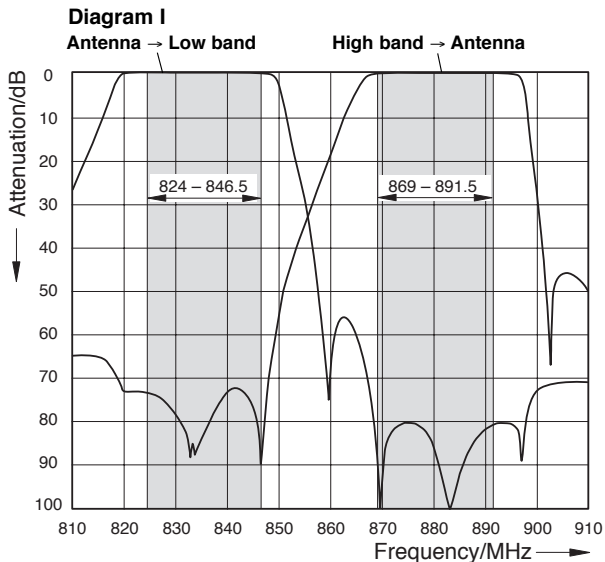
Typical Attenuation Curves (782 10215, 782 10216)



Typical Attenuation Curves (782 10257)



Typical Attenuation Curves (782 10265)



Duplexer

890 – 915 / 935 – 960 MHz (GSM)

KATHREIN
Antennen · Electronic

The Duplexer is designed to combine/split GSM Tx and Rx signals onto/from one common Tx/Rx antenna in order to save feeder cable and antenna costs.

- **782 10164:** Indoor version with 7-16 female connectors
- **782 10165:** Indoor version with 7-16/N female connectors
- **782 10161:** Indoor version with 7-16 female connectors mounted onto a 19" drawer
- **782 10162:** Outdoor version with 7-16 female connectors



782 10164 (indoor)



782 10162 (outdoor)



782 10161 (19" drawer)



782 10165 (indoor)

Typical Attenuation Curves

Diagram I

Antenna → Low band High band → Antenna

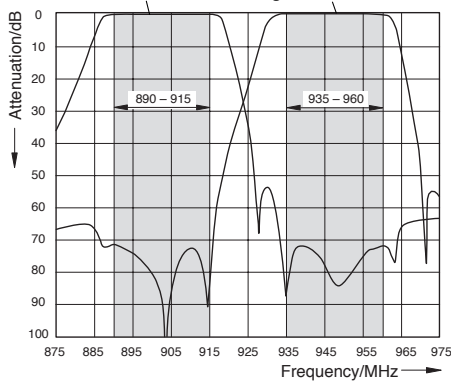
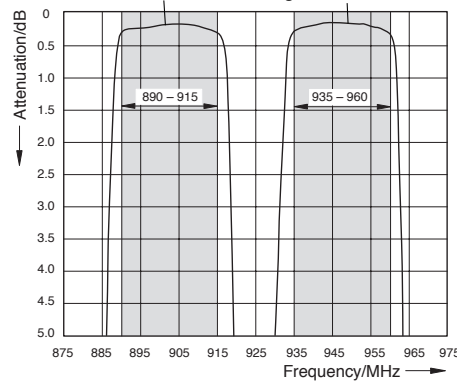


Diagram II

Antenna → Low band High band → Antenna



Technical Data

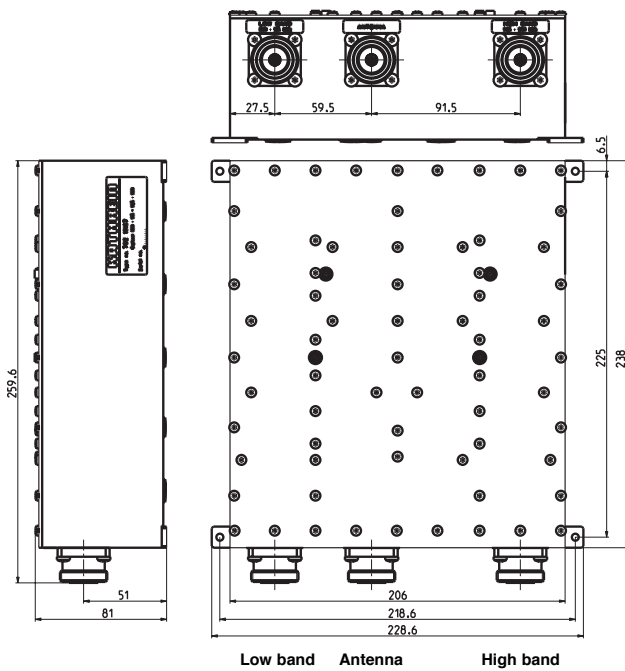
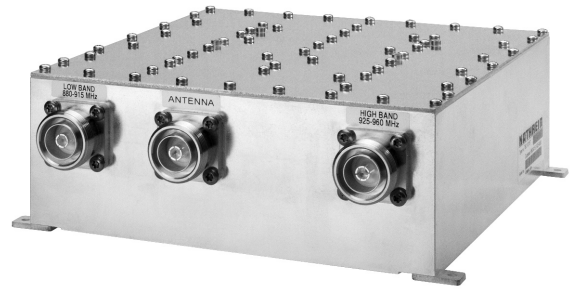
Type No.	782 10164	782 10165	782 10161	782 10162
Pass band Low band High band		890 – 915 MHz 935 – 960 MHz		
Insertion loss Antenna → Low band High band → Antenna		< 0.5 dB (890 – 915 MHz) < 0.5 dB (935 – 960 MHz)		
Isolation Low band ↔ High band		> 70 dB (890 – 915 / 935 – 960 MHz)		
VSWR		< 1.25 (890 – 915 / 935 – 960 MHz)		
Impedance		50 Ω		
Input power		< 500 W (high band; with max. 16 carriers)		
Intermodulation products		< -160 dBc (3 rd order; with 2 x 20 W)		
Temperature range		-20 ... +55 °C		-40 ... +60 °C
Connectors Low band High band Antenna	7-16 female 7-16 female 7-16 female	N female 7-16 female 7-16 female	7-16 female 7-16 female 7-16 female	7-16 female 7-16 female 7-16 female
Application	Indoor	Indoor	Indoor, 19" drawer	Outdoor (IP 66)
Special features	Built-in DC stop between all ports			
Mounting	With 4 screws (max. 4 mm diameter)		With 4 screws (max. 6 mm diameter)	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set
Weight	2.6 kg		3.5 kg	5.5 kg
Packing size	309 x 162 x 252 mm		612 x 312 x 224 mm	347 x 294 x 174 mm
Dimensions (w x h x d)	228.6 x 80 x 169.6 mm (including connectors and mounting feet)		19" drawer, 2 height units, plug-in depth 172 mm	238 x 93.5 x 305 mm (including connectors and mounting brackets)

Duplexer

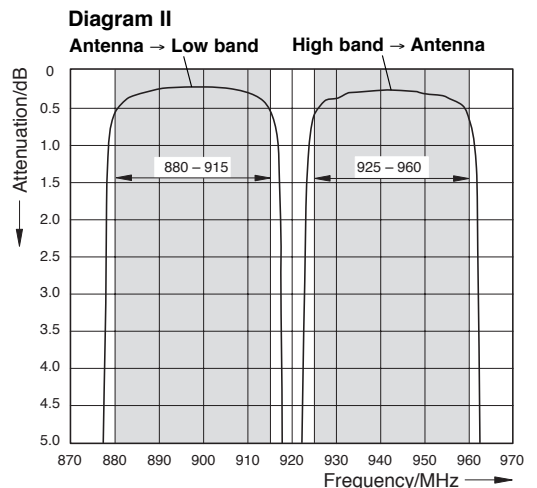
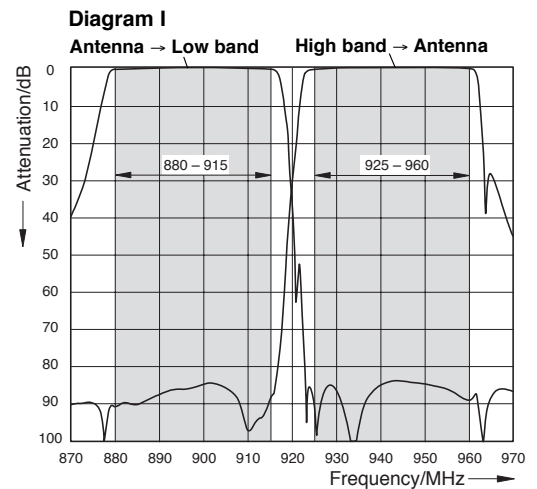
880 – 915 / 925 – 960 MHz (EGSM)

The Duplexer is designed to combine/split EGSM Tx and Rx signals onto/from one common Tx/Rx antenna in order to save feeder cable and antenna costs.

- Suitable for indoor applications
- Built-in DC Stop



Typical Attenuation Curves



Technical Data

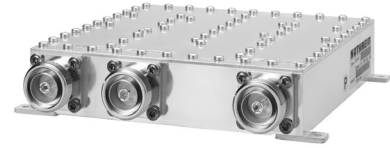
Type No.	782 10167
Pass band Low band High band	880 – 915 MHz 925 – 960 MHz
Insertion loss Antenna → Low band High band → Antenna	< 0.9 dB (880 – 915 MHz) < 0.9 dB (925 – 960 MHz)
Isolation Low band ↔ High band	> 75 dB (880 – 915 / 925 – 960 MHz)
VSWR	< 1.25 (880 – 915 / 925 – 960 MHz)
Impedance	50 Ω
Input power	< 250 W (low band or high band)
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)
Temperature range	-20 ... +55 °C
Connectors	7-16 female
Application	Indoor
Special features	Built-in DC stop between all ports
Mounting	With 4 screws (max. 4 mm diameter)
Weight	4.6 kg
Packing size	347 x 297 x 174 mm
Dimensions (w x h x d)	229 x 81 x 260 mm (including connectors and mounting feet)

Duplexer

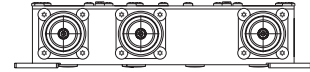
1710 – 1785 / 1805 – 1880 MHz (GSM 1800)

The Duplexer is designed to combine/split GSM 1800 Tx and Rx signals onto/from one common Tx/Rx antenna in order to save feeder cable and antenna costs.

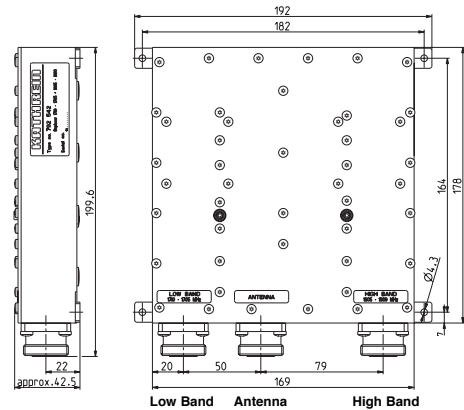
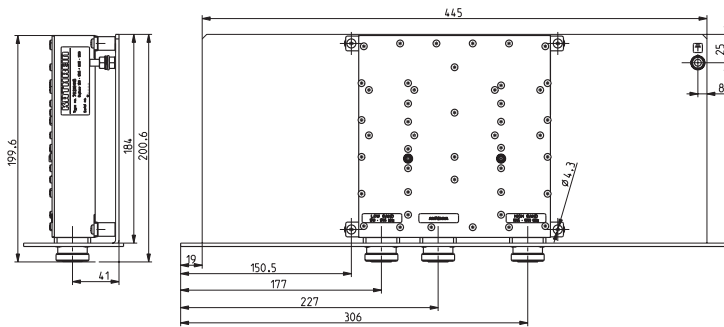
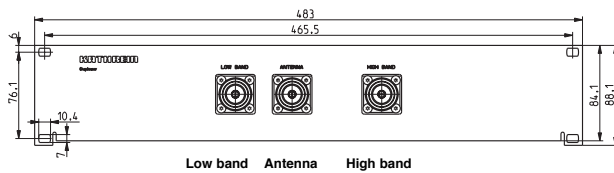
- Suitable for indoor applications
- Built-in DC stop between all ports



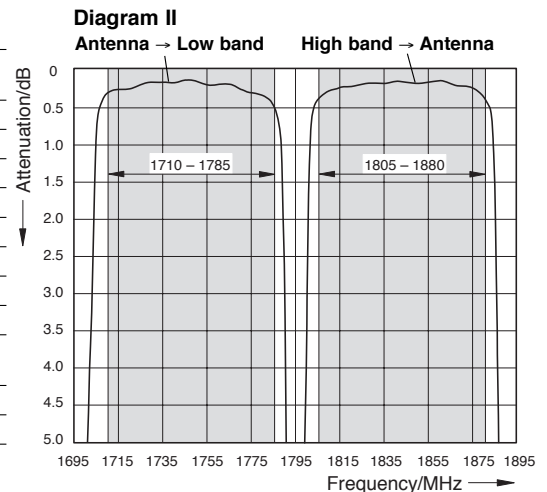
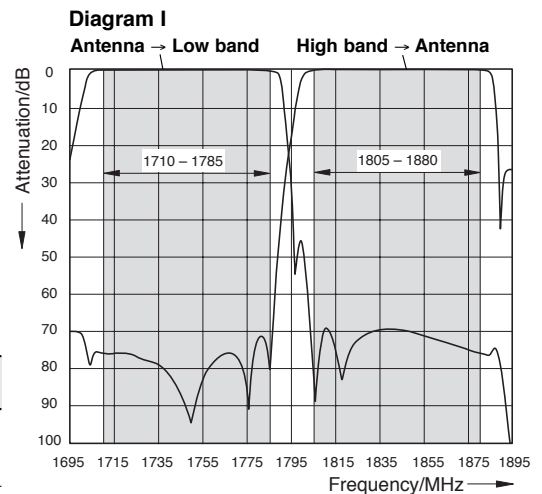
792 542



782 10415



Typical Attenuation Curves



Technical Data

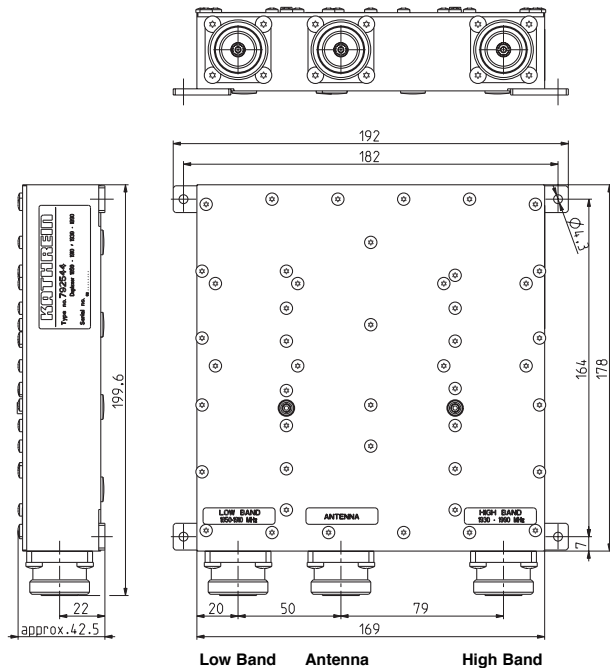
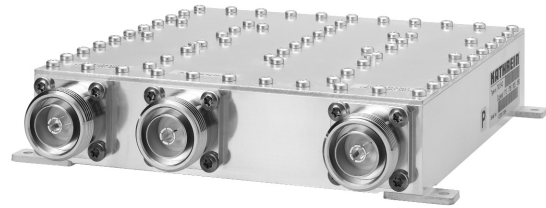
Type No.	792 542	782 10415
Pass band Low band High band	1710 – 1785 MHz 1805 – 1880 MHz	
Insertion loss Antenna → Low band High band → Antenna	< 0.7 dB (1710 – 1785 MHz) < 0.7 dB (1805 – 1880 MHz)	
Isolation Low band ↔ High band	> 65 dB (1710 – 1785 / 1805 – 1880 MHz)	
VSWR	< 1.25 (1710 – 1785 / 1805 – 1880 MHz)	
Impedance	50 Ω	
Input power	< 250 W (low band or high band, with max. 8 carriers)	
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)	
Temperature range	-20 ... +55 °C	
Connectors	7-16 female	
Application	Indoor	Indoor, 19" drawer
DC/AISG transparency	Built-in DC stop between all ports	
Mounting	With 4 screws (max. 4 mm diameter)	With 4 screws (max. 6 mm diameter)
Weight	1.6 kg	2.6 kg
Packing size	282 x 252 x 114 mm	612 x 312 x 224 mm
Dimensions (w x h x d)	192 x 42.5 x 199.6 mm (including connectors and mounting feet)	19" drawer, 2 height units plug-in depth 184 mm

Duplexer

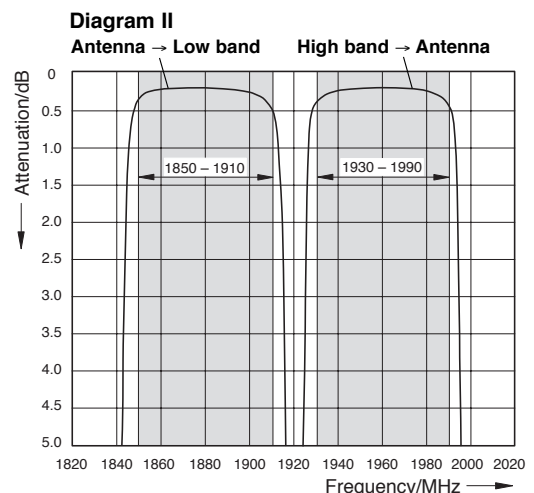
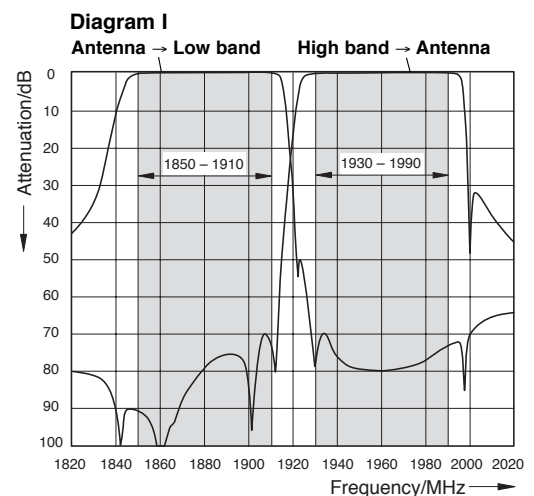
1850 – 1910 / 1930 – 1990 MHz (GSM 1900)

The Duplexer is designed to combine/split GSM 1900 Tx and Rx signals onto/from one common Tx/Rx antenna in order to save feeder cable and antenna costs.

- Suitable for indoor applications
- Built-in DC stop



Typical Attenuation Curves



Technical Data

Type No.	792 544
Pass band Low band High band	1850 – 1910 MHz 1930 – 1990 MHz
Insertion loss Antenna → Low band High band → Antenna	< 0.7 dB (1850 – 1910 MHz) < 0.7 dB (1930 – 1990 MHz)
Isolation Low band ↔ High band	> 65 dB (1850 – 1910 / 1930 – 1990 MHz)
VSWR	< 1.25 (1850 – 1910 / 1930 – 1990 MHz)
Impedance	50 Ω
Input power	< 300 W (low band or high band)
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)
Temperature range	-20 ... +55 °C
Connectors	7-16 female
Application	Indoor
Special features	Built-in DC stop between all ports
Mounting	With 4 screws (max. 4 mm diameter)
Weight	1.7 kg
Packing size	282 x 252 x 114 mm
Dimensions (w x h x d)	192 x 42.5 x 199.6 mm (including connectors and mounting feet)

Duplexer

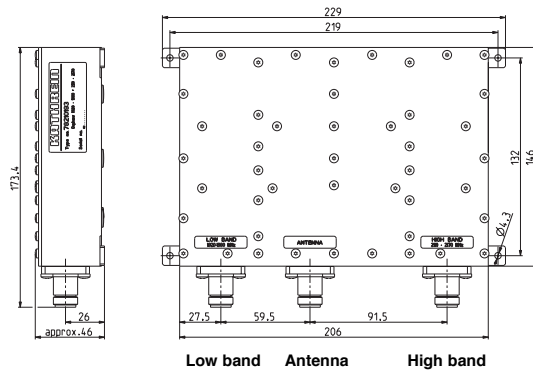
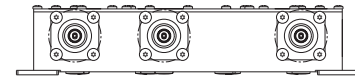
1920 – 1980 / 2110 – 2170 MHz (UMTS)

The Duplexer is designed to combine/split UMTS Tx and Rx signals onto/from one common Tx/Rx antenna in order to save feeder cable and antenna costs.

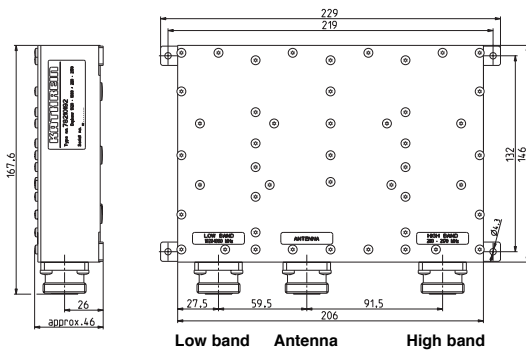
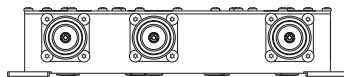
- Suitable for indoor applications
- Built-in DC stop



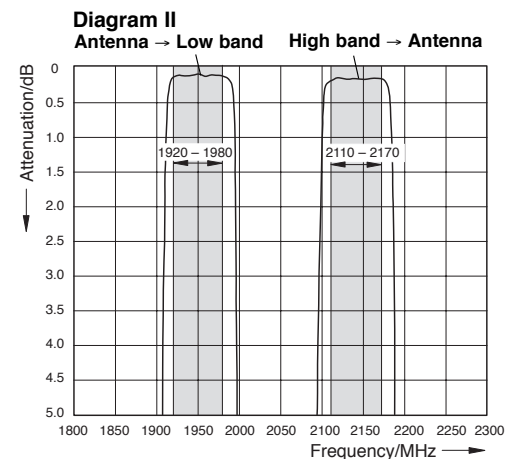
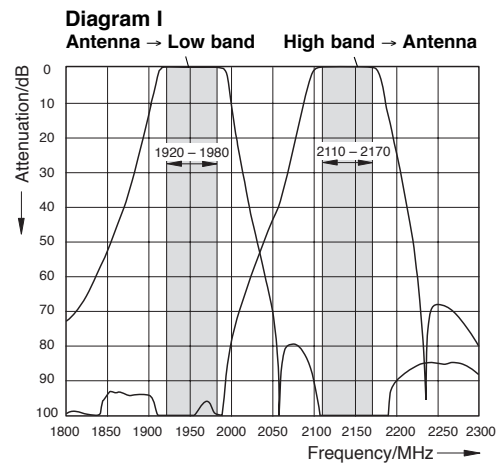
782 10193



782 10192



Typical Attenuation Curves



Technical Data

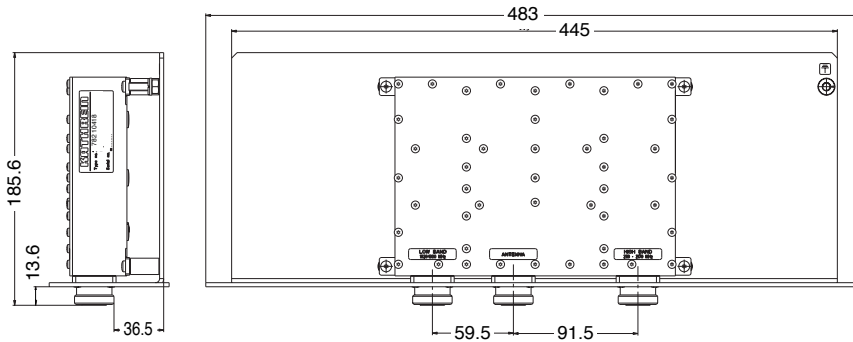
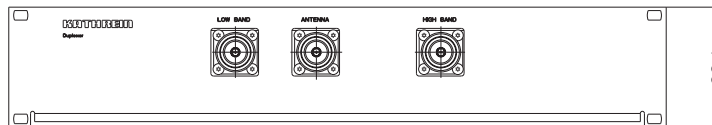
Type No.	782 10192	782 10193
Pass band Low band High band	1920 – 1980 MHz 2110 – 2170 MHz	
Insertion loss Antenna → Low band High band → Antenna	< 0.3 dB (1920 – 1980 MHz) < 0.3 dB (2110 – 2170 MHz)	
Isolation Low band ↔ High band	> 90 dB (1920 – 1980 / 2110 – 2170 MHz)	
VSWR	< 1.25 (1920 – 1980 / 2110 – 2170 MHz)	
Impedance	50 Ω	
Input power	< 250 W (low band or high band)	
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)	
Temperature range	-20 ... +55 °C	
Connectors	7-16 female	N female
Application	Indoor	
Special features	Built-in DC stop between all ports	
Mounting	With 4 screws (max. 4 mm diameter)	
Weight	1.67 kg	
Packing size	272 x 237 x 119 mm	
Dimensions (w x h x d)	229 x 46 x 167.6 mm 229 x 46 x 173.4 mm (including connectors and mounting feet)	

Duplexer

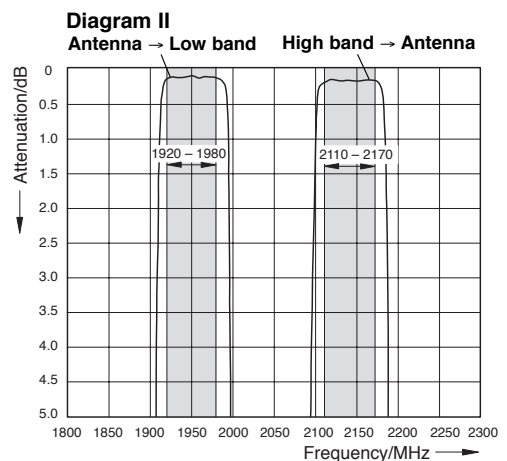
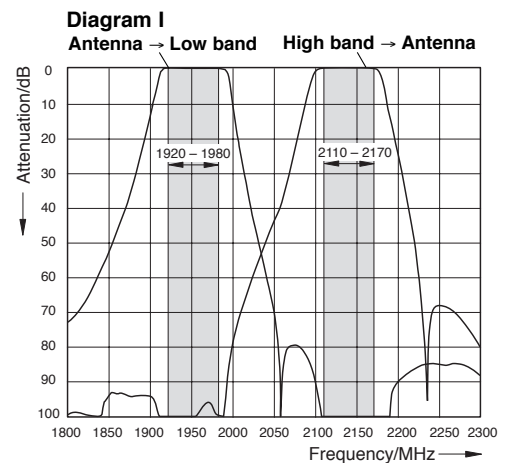
1920 – 1980 / 2110 – 2170 MHz (UMTS)

The Duplexer is designed to combine/split UMTS Tx and Rx signals onto/from one common Tx/Rx antenna in order to save feeder cable and antenna costs.

- Suitable for indoor applications
- Built-in DC stop



Typical Attenuation Curves



Technical Data

Type No.	782 10418
Pass band Low band High band	1920 – 1980 MHz 2110 – 2170 MHz
Insertion loss Antenna → Low band High band → Antenna	< 0.3 dB (1920 – 1980 MHz) < 0.3 dB (2110 – 2170 MHz)
Isolation Low band ↔ High band	> 90 dB (1920 – 1980 / 2110 – 2170 MHz)
VSWR	< 1.25 (1920 – 1980 / 2110 – 2170 MHz)
Impedance	50 Ω
Input power	< 250 W (low band or high band)
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)
Temperature range	-20 ... +55 °C
Connectors	7-16 female
Application	Indoor, 19" drawer
Special features	Built-in DC stop between all ports
Mounting	With 4 screws (max. 6 mm diameter)
Weight	Approx. 2.7 kg
Packing size	Approx. 612 x 312 x 224 mm
Dimensions (w x h x d)	19" drawer, 2 height units, plug-in depth 170 mm

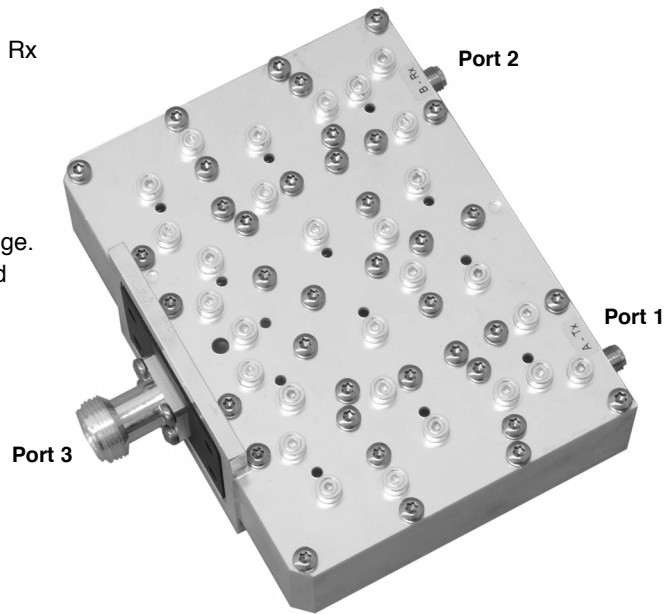
Duplexer

3400 ... 3600 MHz (WiMAX 3.5)

The Duplexer is designed to combine/split WiMAX Tx and Rx signals onto/from one common Tx/Rx antenna in order to save feeder cable and antenna costs.

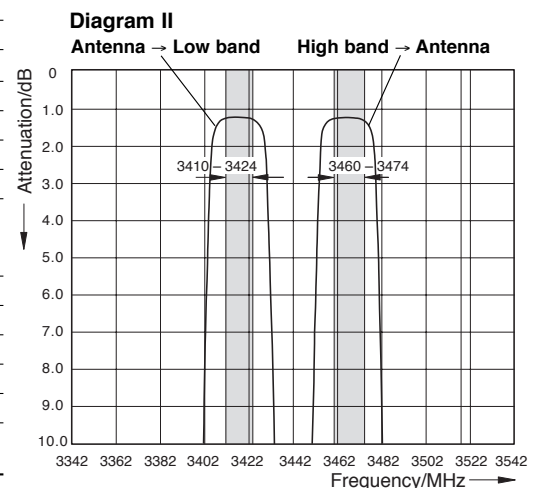
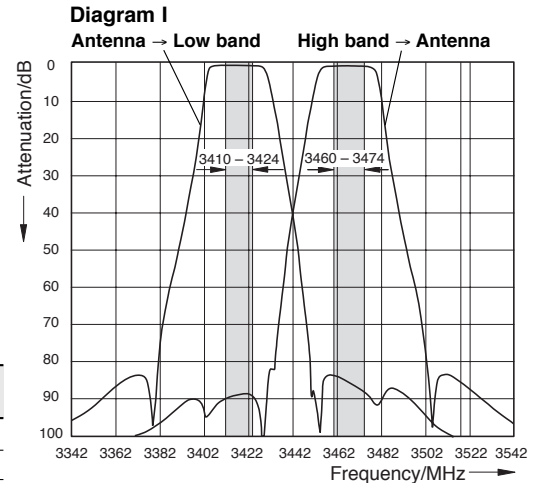
Tuning:

The duplexer is tunable within the specified frequency range. When ordering please note the desired low **and** high band frequencies.



Tuning example:

Calculated Attenuation Curves



Technical Data

Type No.	782 10801
Frequency range	3400 – 3600 MHz
Duplex spacing	50 MHz / 100 MHz
Bandwidth	14 MHz
Insertion loss	< 1.8 dB (1.3 typically)
Isolation	80 dB
VSWR	< 1.2
Impedance	50 Ω
Input power	< 50 W (low band or high band)
Intermodulation products	< -160 dBc (with 2 x 20 W)
Temperature range	-20 ... +60 °C
Connectors Port 1, Port 2 Port 3	Tx/Rx input, SMA female Antenna output, N-female
Application	Indoor
Special features	Built-in DC stop between all ports
Mounting	With 4 screws (max. 4 mm diameter)
Weight	0.6 kg
Packing size	282 x 252 x 114 mm
Dimensions (w x h x d)	120 x 50 x 120 mm (including connectors)

Multiband Combiners

Dual-Band Combiners
Triple-Band Combiners
Quad-Band Combiners

Multiband Combiners:

Description	Type No.	Frequency range	Max. input power	Page
Dual-Band Combiner	728 954	Band 1: 68 – 470 MHz Band 2: 870 – 970 MHz	50 W 50 W	231
Dual-Band Combiner	782 10460	Band 1: 50 – 470 MHz Band 2: 806 – 2500 MHz	500 W 500 W	232, 233
Dual-Band Combiner	782 10457	Band 1: 87.5 – 470 MHz Band 2: 806 – 2500 MHz	500 W 500 W	232, 233
Dual-Band Combiner	782 10458	Band 1: 87.5 – 470 MHz Band 2: 806 – 2500 MHz	500 W 500 W	232, 233
Dual-Band Combiner	791 145	Band 1: 50 – 1000 MHz Band 2: 1600 – 2000 MHz	100 W 50 W	234
Dual-Band Combiner	782 10341	Band 1: 824 – 880 MHz Band 2: 890 – 960 MHz	400 W 400 W	235
Dual-Band Combiner	782 10970	Band 1: 790 – 862 MHz Band 2: 880 – 960 MHz	200 W 200 W	236, 237
Dual-Band Combiner	782 10971	Band 1: 790 – 862 MHz Band 2: 880 – 960 MHz	200 W 200 W	236, 237
Dual-Band Combiner	782 10972	Band 1: 790 – 862 MHz Band 2: 880 – 960 MHz	200 W 200 W	236, 237
Dual-Band Combiner	782 10973	Band 1: 790 – 862 MHz Band 2: 880 – 960 MHz	200 W 200 W	236, 237
Dual-Band Combiner	793 532	Band 1: 806 – 960 MHz Band 2: 1710 – 2170 MHz	250 W 200 W	238, 239
Dual-Band Combiner	793 533	Band 1: 806 – 960 MHz Band 2: 1710 – 2170 MHz	250 W 200 W	238, 239
Dual-Band Combiner	782 10248	Band 1: 470 – 960 MHz Band 2: 1710 – 2170 MHz	700 W 650 W	240, 241
Dual-Band Combiner	782 10249	Band 1: 470 – 960 MHz Band 2: 1710 – 2170 MHz	700 W 650 W	240, 241
Dual-Band Combiner	782 10250	Band 1: 470 – 960 MHz Band 2: 1710 – 2170 MHz	700 W 650 W	240, 241
Dual-Band Combiner	782 10251	Band 1: 470 – 960 MHz Band 2: 1710 – 2170 MHz	700 W 650 W	240, 241
Dual-Band Combiner	782 10660	Band 1: 470 – 960 MHz Band 2: 1710 – 2700 MHz	650 W 350 W	242, 243
Dual-Band Combiner	782 10661	Band 1: 470 – 960 MHz Band 2: 1710 – 2700 MHz	650 W 350 W	242, 243
Dual-Band Combiner	782 10662	Band 1: 470 – 960 MHz Band 2: 1710 – 2700 MHz	650 W 350 W	242, 243
Dual-Band Combiner	782 10663	Band 1: 470 – 960 MHz Band 2: 1710 – 2700 MHz	650 W 350 W	242, 243
Dual-Band Combiner	782 10680	Band 1: 380 – 960 MHz Band 2: 1710 – 2700 MHz	700 W 650 W	244, 245
Dual-Band Combiner	782 10681	Band 1: 380 – 960 MHz Band 2: 1710 – 2700 MHz	700 W 650 W	244, 245
Dual-Band Combiner	782 10682	Band 1: 380 – 960 MHz Band 2: 1710 – 2700 MHz	700 W 650 W	244, 245
Dual-Band Combiner	782 10683	Band 1: 380 – 960 MHz Band 2: 1710 – 2700 MHz	700 W 650 W	244, 245
Dual-Band Combiner	782 10278	Band 1: 806 – 1880 MHz Band 2: 1920 – 2170 MHz	500 W 500 W	246, 247
Dual-Band Combiner	782 10279	Band 1: 806 – 1880 MHz Band 2: 1920 – 2170 MHz	500 W 500 W	246, 247
Dual-Band Combiner	782 10305	Band 1: 806 – 1880 MHz Band 2: 1920 – 2170 MHz	500 W 500 W	246, 247
Dual-Band Combiner	782 10306	Band 1: 806 – 1880 MHz Band 2: 1920 – 2170 MHz	500 W 500 W	246, 247
Dual-Band Combiner	782 10620	Band 1: 1710 – 1880 MHz Band 2: 1920 – 2170 MHz	300 W 300 W	248, 249
Dual-Band Combiner	782 10621	Band 1: 1710 – 1880 MHz Band 2: 1920 – 2170 MHz	300 W 300 W	248, 249

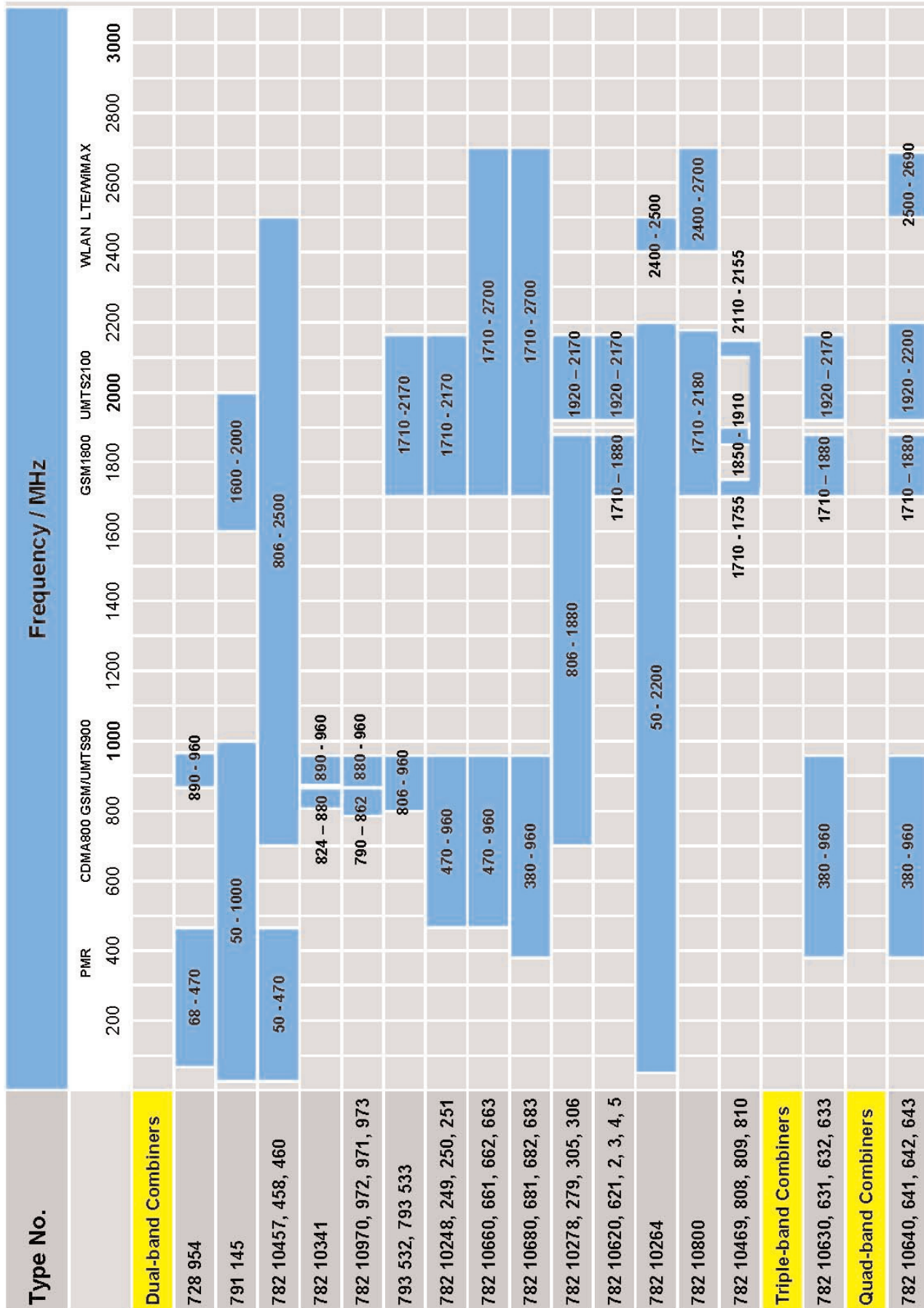
Multiband Combiners:

Description	Type No.	Frequency range	Max. input power	Page
Dual-Band Combiner	782 10622	Band 1: 1710 – 1880 MHz Band 2: 1920 – 2170 MHz	300 W 300 W	248, 249
Dual-Band Combiner	782 10623	Band 1: 1710 – 1880 MHz Band 2: 1920 – 2170 MHz	300 W 300 W	248, 249
Dual-Band Combiner	782 10624	Band 1: 1710 – 1880 MHz Band 2: 1920 – 2170 MHz	300 W 300 W	248, 249
Dual-Band Combiner	782 10625	Band 1: 1710 – 1880 MHz Band 2: 1920 – 2170 MHz	300 W 300 W	248, 249
Dual-Band Combiner	782 10469	Band 1: 1850 – 1990 MHz Band 2: 1710 – 2155 MHz	250 W 250 W	250
Dual-Band Combiner	782 10808	Band 1: 1850 – 1990 MHz Band 2: 1710 – 2155 MHz	250 W 250 W	250
Dual-Band Combiner	782 10809	Band 1: 1850 – 1990 MHz Band 2: 1710 – 2155 MHz	250 W 250 W	251
Dual-Band Combiner	782 10810	Band 1: 1850 – 1990 MHz Band 2: 1710 – 2155 MHz	250 W 250 W	251
Dual-Band Combiner	782 10800	Band 1: 1710 – 2180 MHz Band 2: 2400 – 2700 MHz	275 W 150 W	252
Dual-Band Combiner	782 10264	Band 1: 50 – 2200 MHz Band 2: 2400 – 2500 MHz	200 W 200 W	253
Triple-Band Combiner	782 10630	Band 1: 380 – 960 MHz Band 2: 1710 – 1880 MHz Band 3: 1920 – 2170 MHz	700 W 300 W 300 W	254, 255
Triple-Band Combiner	782 10631	Band 1: 380 – 960 MHz Band 2: 1710 – 1880 MHz Band 3: 1920 – 2170 MHz	700 W 300 W 300 W	254, 255
Triple-Band Combiner	782 10632	Band 1: 380 – 960 MHz Band 2: 1710 – 1880 MHz Band 3: 1920 – 2170 MHz	700 W 300 W 300 W	254, 255
Triple-Band Combiner	782 10633	Band 1: 380 – 960 MHz Band 2: 1710 – 1880 MHz Band 3: 1920 – 2170 MHz	700 W 300 W 300 W	254, 255
Quad-Band Combiner	782 10640	Band 1: 380 – 960 MHz Band 2: 1710 – 1880 MHz Band 3: 1920 – 2200 MHz Band 4: 2500 – 2690 MHz	700 W 300 W 300 W 200 W	256, 257
Quad-Band Combiner	782 10641	Band 1: 380 – 960 MHz Band 2: 1710 – 1880 MHz Band 3: 1920 – 2200 MHz Band 4: 2500 – 2690 MHz	700 W 300 W 300 W 200 W	256, 257
Quad-Band Combiner	782 10642	Band 1: 380 – 960 MHz Band 2: 1710 – 1880 MHz Band 3: 1920 – 2200 MHz Band 4: 2500 – 2690 MHz	700 W 300 W 300 W 200 W	256, 257
Quad-Band Combiner	782 10643	Band 1: 380 – 960 MHz Band 2: 1710 – 1880 MHz Band 3: 1920 – 2200 MHz Band 4: 2500 – 2690 MHz	700 W 300 W 300 W 200 W	256, 257

New Products

Multiband Combiner – Frequency combinations

Dual-Band Combiner, Triple-Band Combiner, Quad-Band Combiner



Dual-Band Combiner

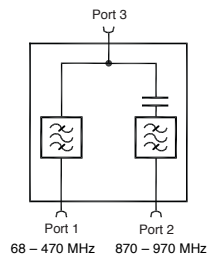
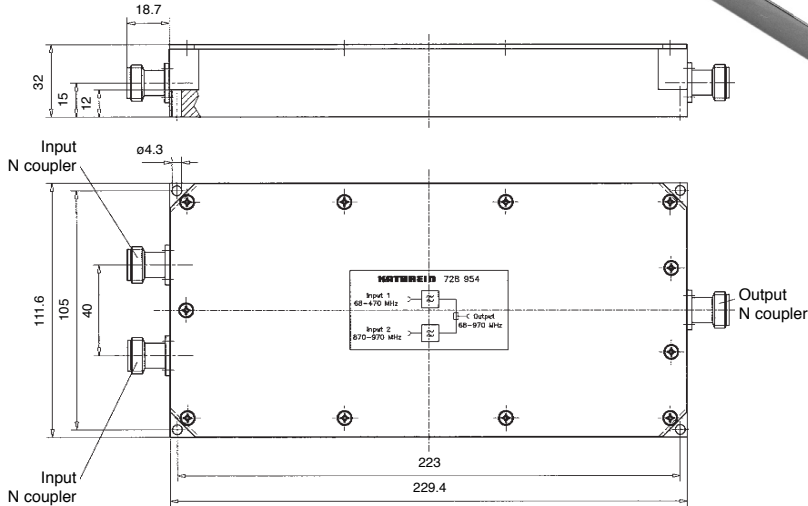
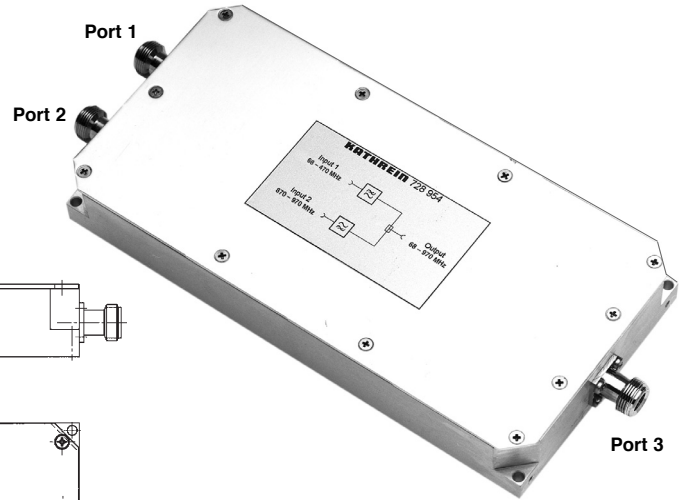
KATHREIN

Antennen · Electronic

68 – 470 MHz
80 / 160 / 400 MHz

870 – 970 MHz
GSM 900

- Designed for inhouse multiband distribution network
- Enables feeder sharing
- DC by-pass between port 1 and port 3
- Built-in DC stop between port 2 and port 3



Typical Attenuation Curves

Diagram I

Port 1 ↔ Port 3

Port 2 ↔ Port 3

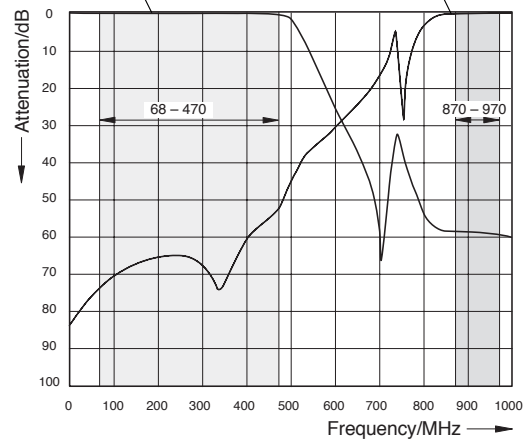
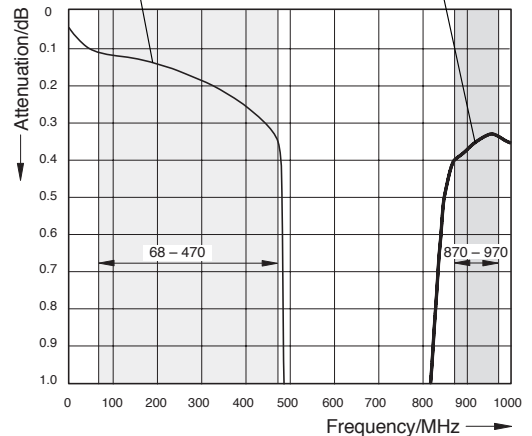


Diagram II

Port 1 ↔ Port 3

Port 2 ↔ Port 3



Technical Data

Type No.	728 954
Pass band Band 1 Band 2	68 – 470 MHz 870 – 970 MHz
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	< 0.5 dB (68 – 470 MHz) < 0.5 dB (870 – 970 MHz)
Isolation Port 1 ↔ Port 2	> 45 dB
VSWR	< 1.2
Impedance	50 Ω
Input power Band 1 Band 2	< 50 W < 50 W
Intermodulation products	< -160 dBc (2 nd /3 rd order; with 2 x 20 W)
Temperature range	-20 ... +70 °C
Connectors	N female
Application	Indoor
DC transparency Port 1 ↔ Port 3 Port 2 → Port 3 Port 3 → Port 2	By-pass (max. 2500mA) short circuited stop
Weight	0.8 kg
Packing size	285 x 55 x 125 mm
Dimensions (w x h x d)	229.4 x 32 x 111.6 mm (without connectors)

Dual-Band Combiner

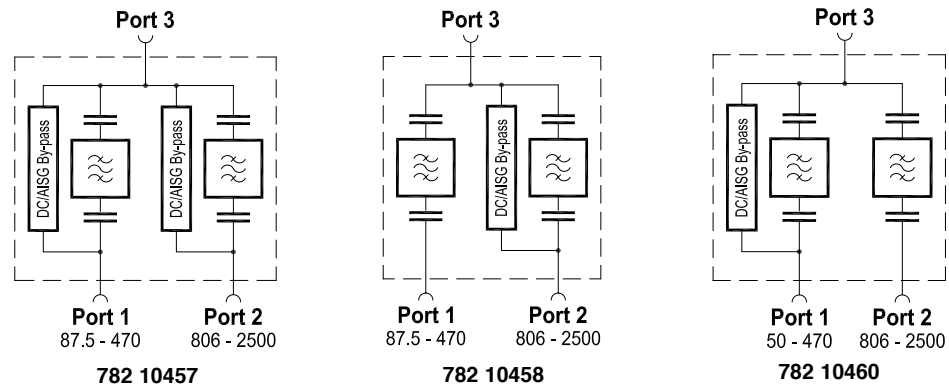
KATHREIN

Antennen · Electronic

50 – 470 MHz
PMR / TETRA / TETRAPOL

806 – 2500 MHz
CDMA 800 / GSM 900 / GSM 1800 / UMTS / WLAN

- Designed for co-siting purposes
- Enables feeder sharing
- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- External DC stop available as an accessory
- **Very low insertion loss**
- **High input power**



Technical Data

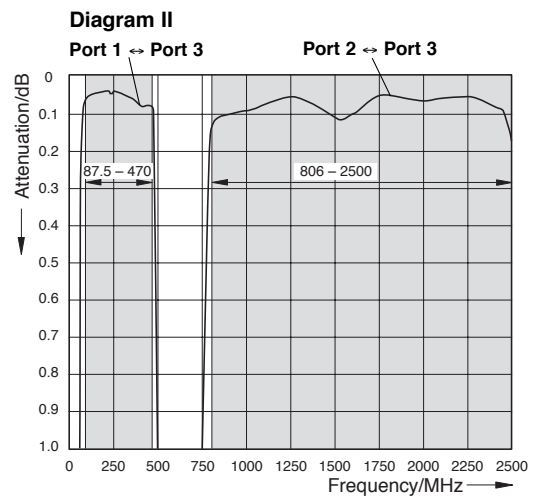
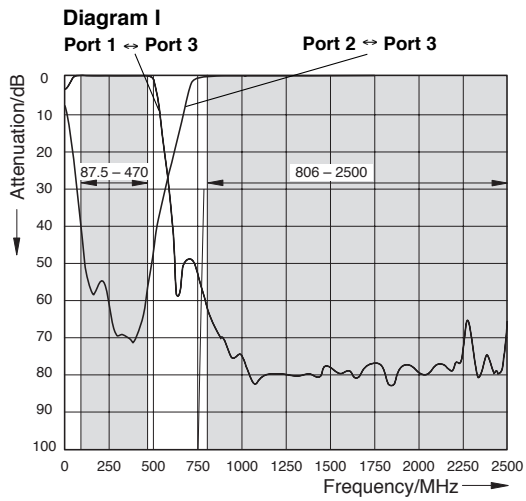
Type No.	782 10457	782 10458	782 10460
Pass band Band 1 Band 2	87.5 – 470 MHz 806 – 2500 MHz		50 – 470 MHz 806 – 2500 MHz
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	< 0.15 dB (87.5 – 470 MHz) < 0.15 dB (806 – 2500 MHz)		< 0.15 dB (50 – 470 MHz) < 0.15 dB (806 – 2500 MHz)
Isolation Port 1 ↔ Port 2	> 50 dB (250 – 470 / 806 – 2500 MHz) > 40 dB (87.5 – 250 MHz)		> 50 dB (50 – 470 / 806 – 2500 MHz)
VSWR	< 1.25 (87.5 – 470 / 806 – 960 / 1710 – 2500 MHz)		< 1.25 (50 – 470 / 806 – 960 / 1710 – 2500 MHz)
Impedance	50 Ω		
Input power Band 1 Band 2	< 500 W < 500 W		
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)		
Temperature range	-55 ... +60 °C		
Connectors	7-16 female, long neck		
Application	Indoor or outdoor (IP 66)		
DC/AISG transparency Port 1 ↔ Port 3 Port 2 ↔ Port 3	By-pass (max. 2500 mA) By-pass (max. 2500 mA)	Stop By-pass (max. 2500 mA)	By-pass (max. 2500 mA) Stop
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set		
Weight	4 kg		
Dimensions (w x h x d)	122 x 52 x 284.7 mm (without connectors, without mounting brackets)		

50 – 470 MHz
PMR / TETRA / TETRAPOL

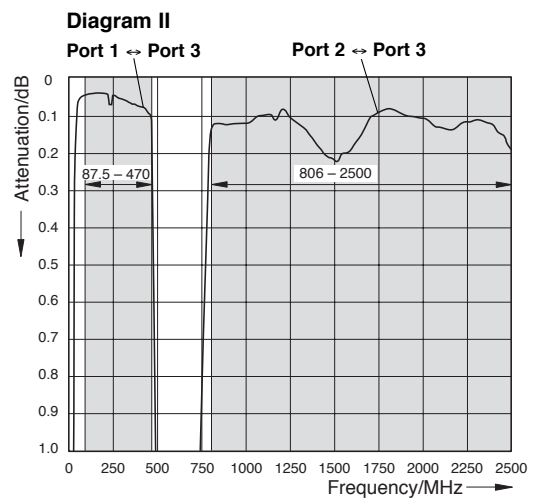
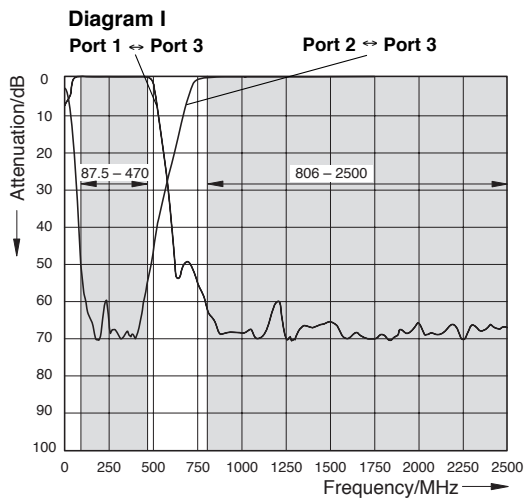
806 – 2500 MHz
CDMA 800 / GSM 900 / GSM 1800 / UMTS / WLAN

Typical Attenuation Curves

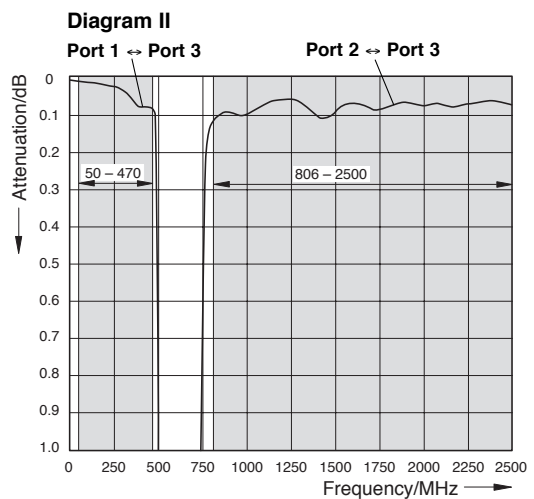
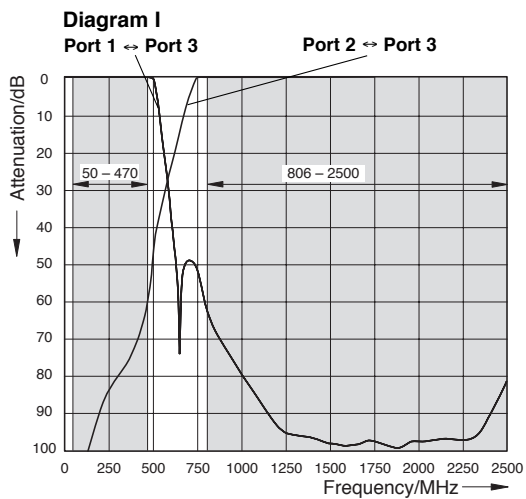
782 10457



782 10458



782 10460



Dual-Band Combiner

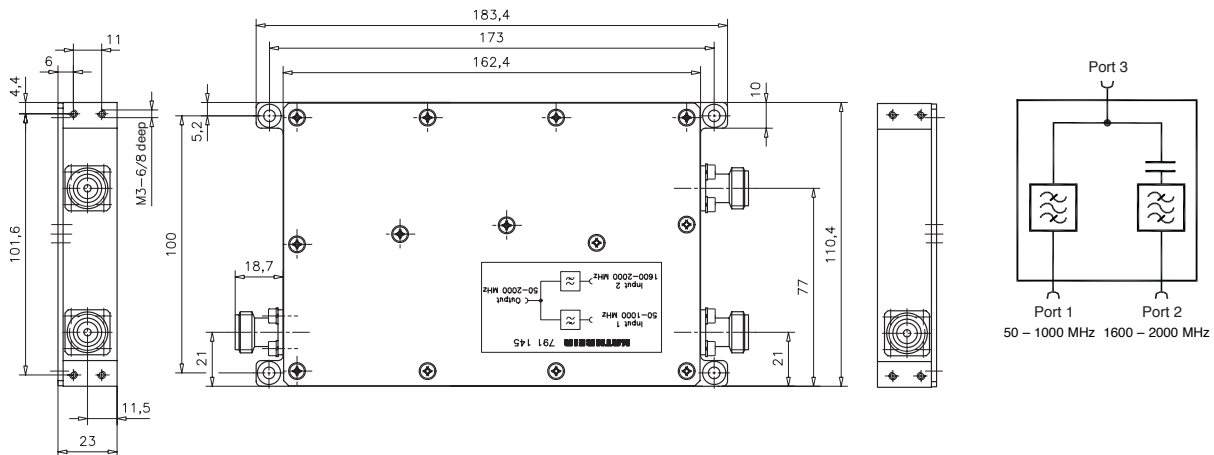
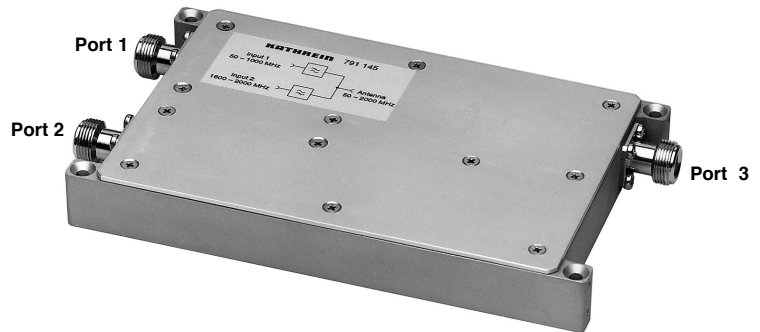
KATHREIN

Antennen · Electronic

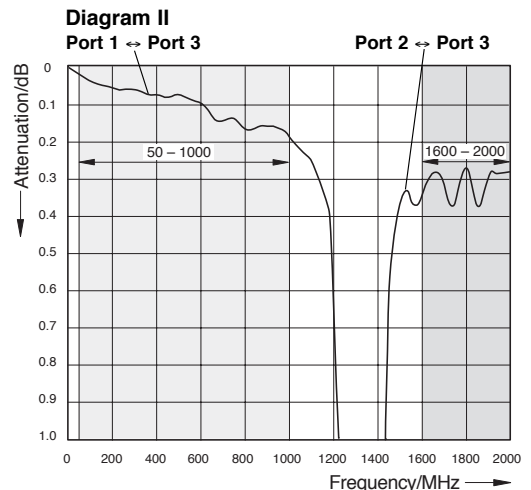
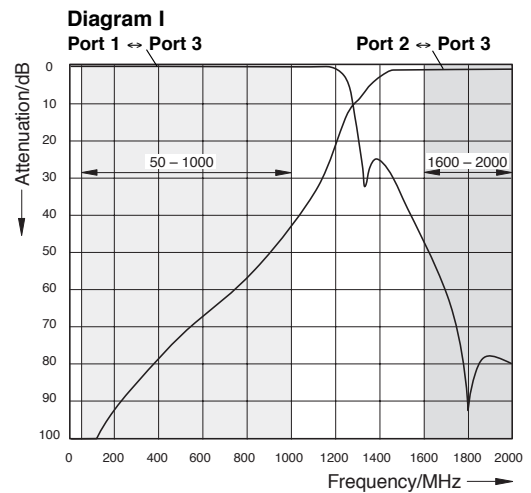
50 – 1000 MHz
80 / 160 / 400 / GSM 900

1600 – 2000 MHz
GSM 1800

- Designed for inhouse multiband distribution network
- Enables feeder sharing
- DC by-pass between port 1 and port 3
- Built-in DC stop between port 2 and port 3



Typical Attenuation Curves



Technical Data

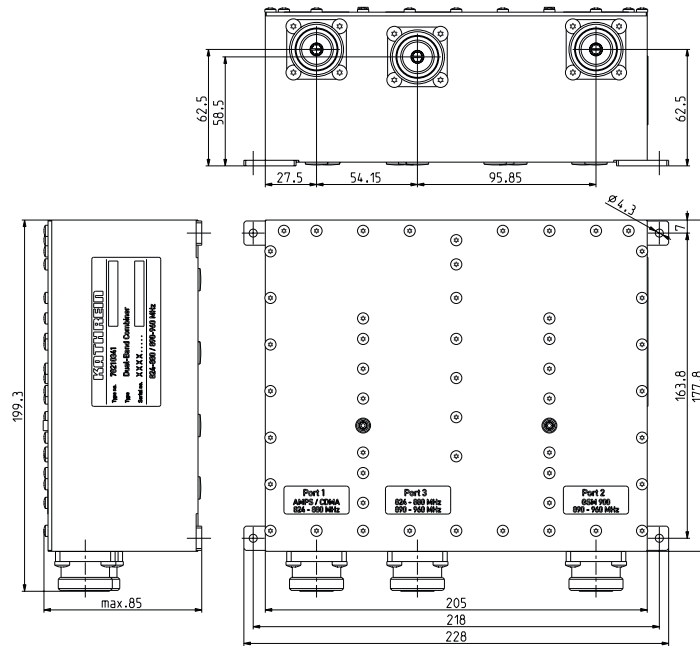
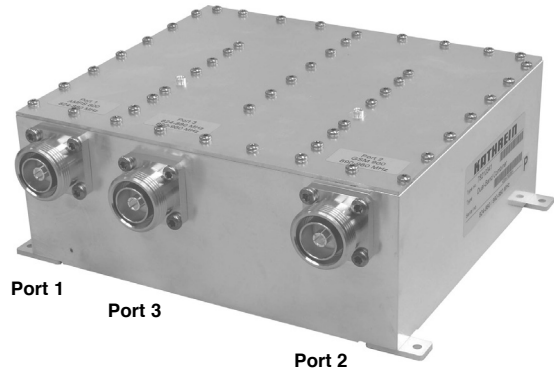
Type No.	791 145
Pass band	
Band 1	50 – 1000 MHz
Band 2	1600 – 2000 MHz
Insertion loss	
Port 1 ↔ Port 3	< 0.3 dB (50 – 1000 MHz)
Port 2 ↔ Port 3	< 0.5 dB (1600 – 2000 MHz)
Isolation	
Port 1 ↔ Port 2	> 40 dB (50 – 1000 / 1600 – 2000 MHz)
VSWR (all ports)	< 1.2 (50 – 1000 / 1600 – 2000 MHz)
Impedance	50 Ω
Input power	
Band 1	< 100 W
Band 2	< 50 W
Temperature range	-30 ... +60 °C
Connectors	N female
Application	Indoor
DC transparency	
Port 1 ↔ Port 3	By-pass (max. 2500mA)
Port 2 → Port 3	Short circuited
Port 3 → Port 2	Stop
Mounting	With 4 screws (max.4 mm diameter)
Weight	0.7 kg
Packing size	220 x 40 x 140 mm
Dimensions (w x h x d)	201 x 23 x 112 mm (incl. connectors)

Dual-Band Combiner

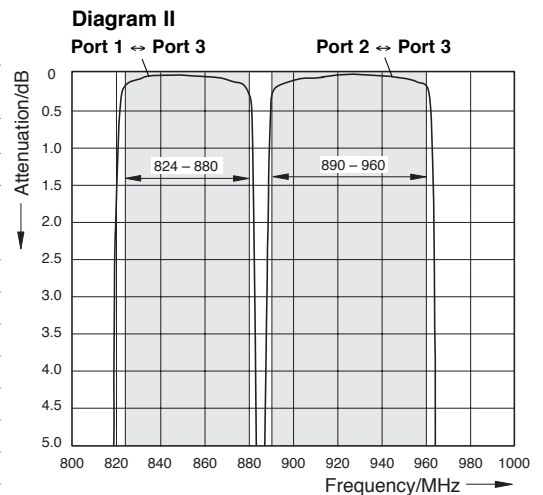
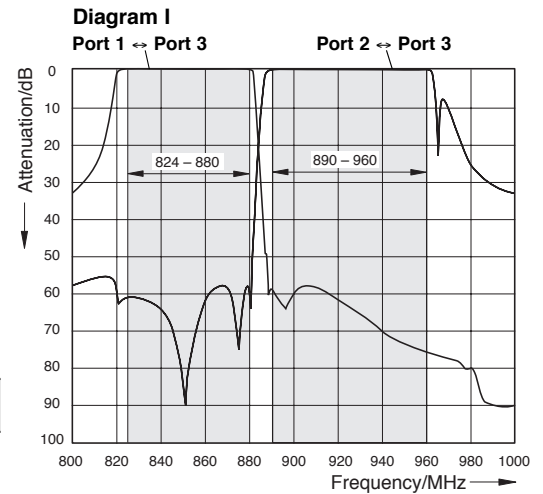
824 – 880 MHz
AMPS / CDMA 800

890 – 960 MHz
GSM 900

- Designed for co-siting purposes
- Enables feeder sharing
- Suitable for indoor applications
- Built-in DC stop between all ports



Typical Attenuation Curves



Technical Data

Type No.	782 10341
Pass band Band 1 (AMPS / CDMA 800) Band 2 (GSM 900)	824 – 880 MHz 890 – 960 MHz
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	< 0.6 dB (824 – 880 MHz) < 0.6 dB (890 – 960 MHz)
Isolation Port 1 ↔ Port 2	> 55 dB (824 – 880 / 890 – 960 MHz)
VSWR	< 1.2 (824 – 880 / 890 – 960 MHz)
Impedance	50 Ω
Input power Band 1 Band 2	< 400 W (with max. 8 carriers) < 400 W (with max. 8 carriers)
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)
Temperature range	-20 ... +55 °C
Connectors	7-16 female
Application	Indoor
Special features	Built-in DC stop between all ports
Mounting	With 4 screws (max. 4 mm diameter)
Weight	3.2 kg
Dimensions (w x h x d)	228 x 85 x 199.3 mm (including connectors and mounting feet)

Dual-Band Combiner

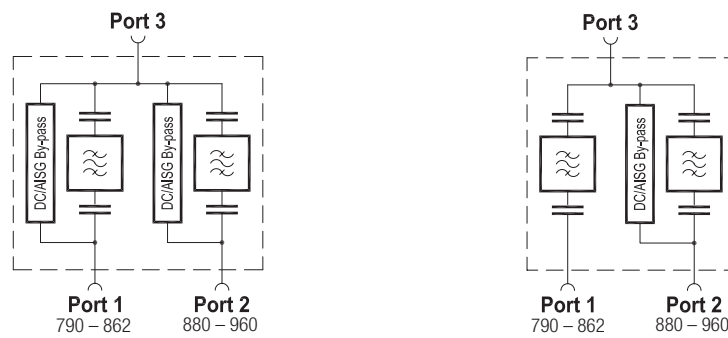
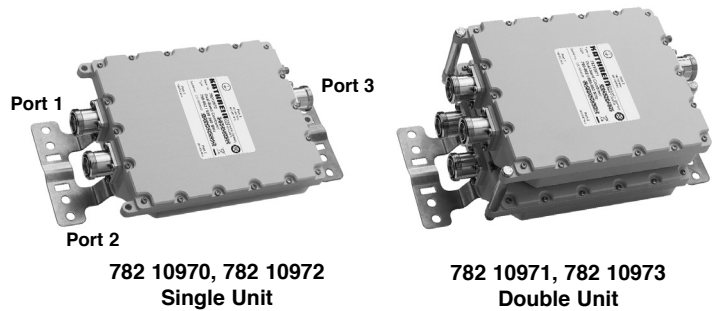
KATHREIN

Antennen · Electronic

790 – 862 MHz
DD (Digital Dividend) / CDMA 800

880 – 960 MHz
GSM 900

- Designed for co-siting purposes
- Enables feeder sharing
- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- Available as a single unit, or for XPol antennas as a double unit
- Built-in lightning protection
- External DC stop available as an accessory



Technical Data

Type No.	782 10970 Single Unit	782 10972 Single Unit
	782 10971 Double Unit	782 10973 Double Unit
Pass band Band 1 Band 2	790 – 862 MHz 880 – 960 MHz	
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	< 0.4 dB, typically 0.2 dB (790 – 862 MHz) < 0.4 dB, typically 0.2 dB (880 – 960 MHz)	
Isolation Port 1 ↔ Port 2	> 50 dB (790 – 862 MHz / 880 – 960 MHz)	
VSWR	< 1.2 (790 – 862 / 880 – 960 MHz)	
Impedance	50 Ω	
Input power Band 1 / Band 2	< 200 W / < 200 W	
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)	
Temperature range	-40 ... +60 °C	
Connectors	7-16 female (long neck)	
Application	Indoor or outdoor (IP 66)	
DC/AISG transparency Port 1 ↔ Port 3 Port 2 ↔ Port 3	By-pass (max. 2500 mA) By-pass (max. 2500 mA)	Stop By-pass (max. 2500 mA)
Lightning protection	3 kA, 10/350 μs pulse	
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) / Mast mounting: With additional clamp set	
Weight	Single Unit: Approx. 3.2 kg / Double Unit: Approx. 6.1 kg	
Dimensions (w x h x d)	Single Unit: 175 x 51 x 207 mm / Double Unit: 175 x 106 x 207 mm (without connectors, without mounting brackets)	

Dual-Band Combiner

KATHREIN

Antennen · Electronic

790 – 862 MHz
DD (Digital Dividend) / CDMA 800

880 – 960 MHz
GSM 900

Accessories (order separately)

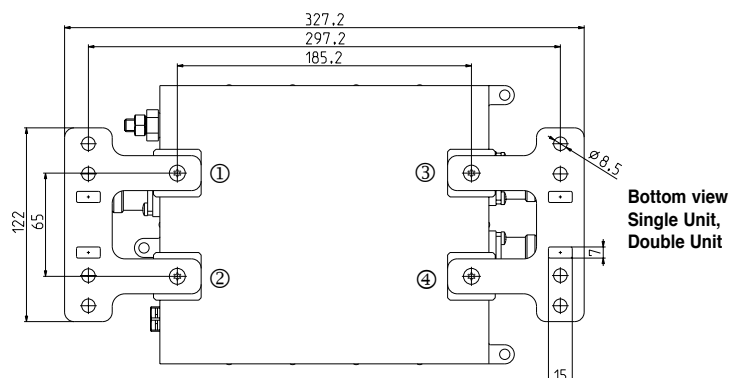
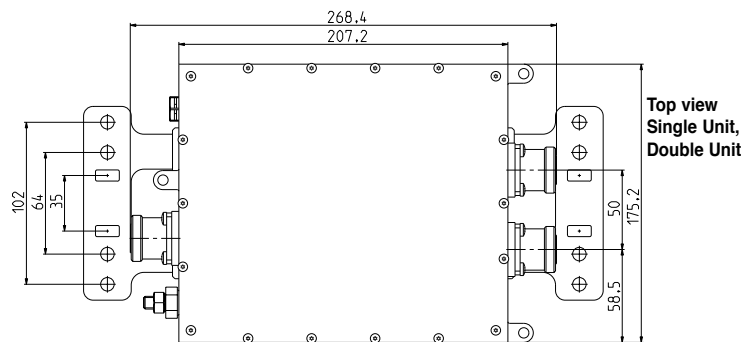
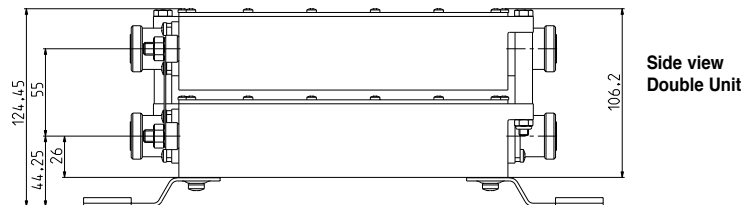
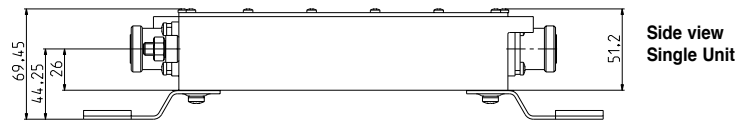
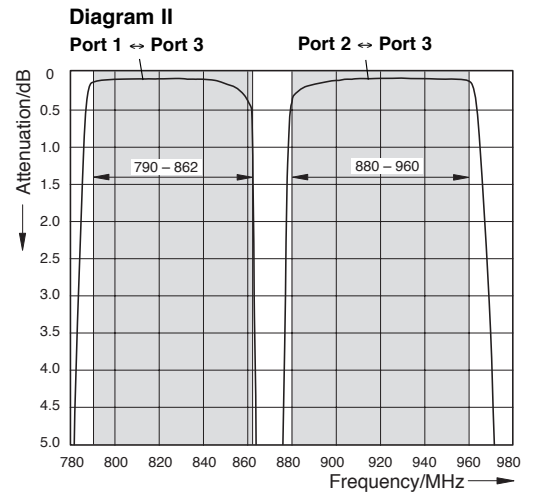
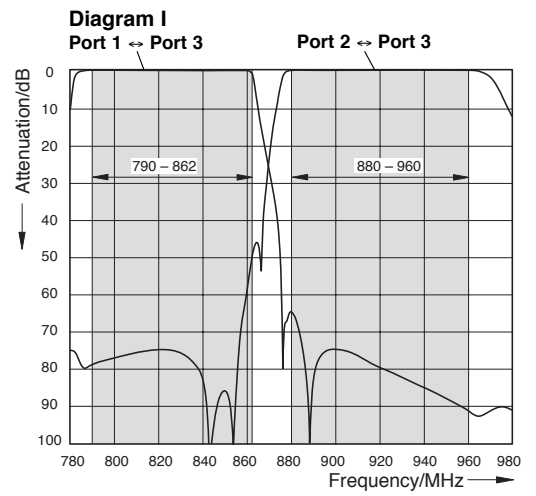
Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
734 365	45 – 125 mm



Type No.	Description
793 301	DC stop
784 10367	50-Ω load 1.5 W / indoor or outdoor



Calculated Attenuation Curves



Please note:

The mounting plates can be removed by loosening the screws ① to ④ (M5 x 12) and replaced with other means of mounting, always provided that the max. drilled depth of 7.5 mm is respected with the choice of replacement screws.

Dual-Band Combiner

806 – 960 MHz
CDMA 800 / GSM 900

1710 – 2170 MHz
GSM 1800 / UMTS

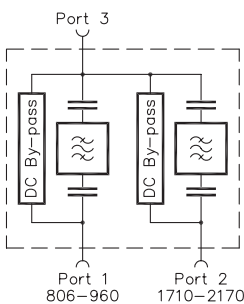
- Designed for co-siting purposes
- Enables feeder sharing
- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- Available as a single unit, or for XPol antennas as a double unit
- DC by-pass between all ports
- DC stop available as an accessory



793 532
Single Unit

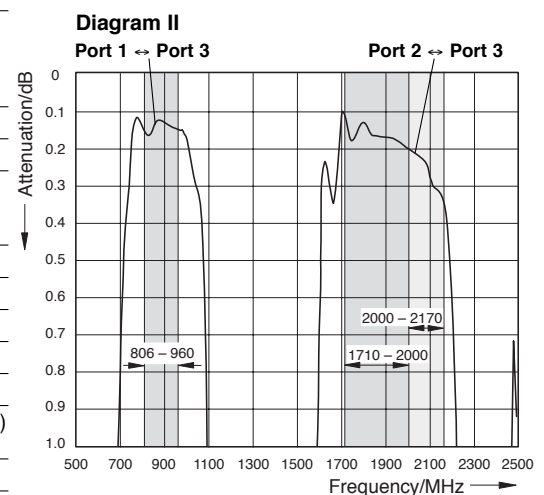
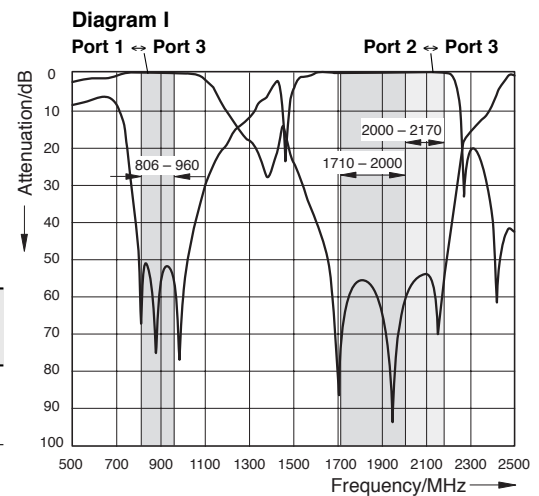


793 533
Double Unit



Single Unit 793 532
Double Unit 793 533
(only 1 unit shown)

Typical Attenuation Curves



Technical Data

Type No.	793 532 Single Unit	793 533 Double Unit
Pass band Band 1 Band 2	806 – 960 MHz 1710 – 2170 MHz	
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	Typically 0.15 dB (806 – 960 MHz) Typically 0.25 dB (1710 – 2000 MHz) Typically 0.35 dB (2000 – 2170 MHz)	
Isolation Port 1 ↔ Port 2	> 45 dB (806 – 824 MHz) > 50 dB (824 – 960 MHz) > 50 dB (1710 – 2170 MHz)	
VSWR	< 1.2 (806 – 960 / 1710 – 2170 MHz)	
Impedance	50 Ω	
Input power Band 1 Band 2	< 250 W < 200 W	
Intermodulation products	< -160 dBc (2 nd /3 rd order; with 2 x 20 W)	
Temperature range	-55 ... +60 °C	
Connectors	7-16 female	
Application	Indoor or outdoor (IP 66)	
Special features	DC by-pass between all ports (max. 2500 mA)	
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set	
Weight	1.6 kg	3.0 kg
Packing size	350 x 165 x 138 mm	350 x 165 x 190 mm
Dimensions (w x h x d)	125 x 197.7 x 41.4 mm	125 x 197.7 x 91.8 mm (without connectors, without mounting brackets)

Dual-Band Combiner

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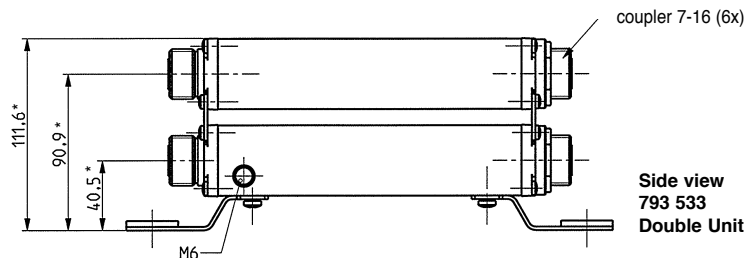
806 – 960 MHz
CDMA 800 / GSM 900

1710 – 2170 MHz
GSM 1800 / UMTS

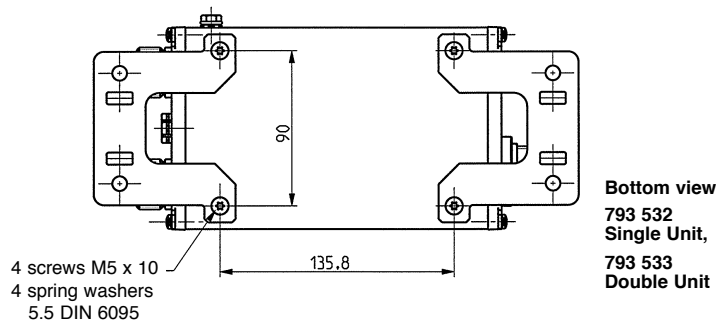
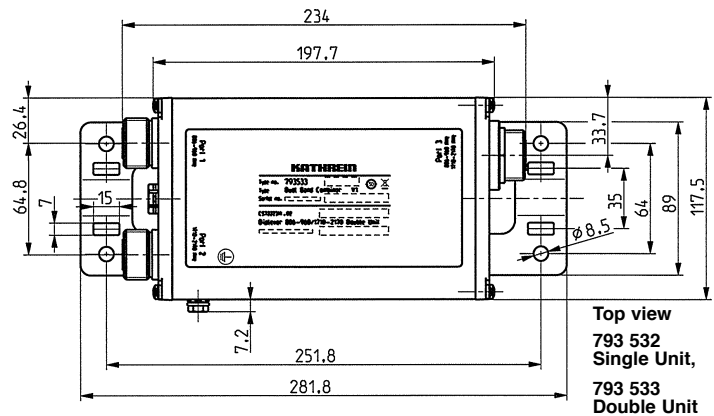
Accessories (order separately)

Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
734 365	45 – 125 mm

Type No.	Description
793 301	DC stop
784 10367	50-Ω load 1.5 W indoor or outdoor



* Valid if labelled "Dual-Band Combiner V1" (not valid for previous version labelled "Dual-Band Combiner")



Dual-Band Combiner

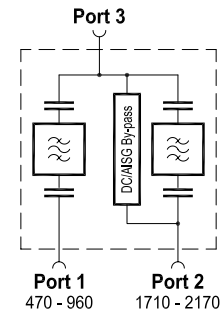
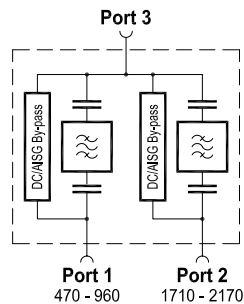
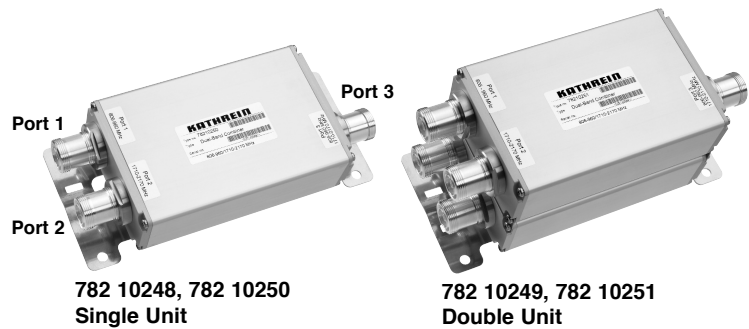
KATHREIN

Antennen · Electronic

470 – 960 MHz
DVB-H / CDMA 800 / GSM 900

1710 – 2170 MHz
GSM 1800 / UMTS

- Designed for co-siting purposes
- Enables feeder sharing
- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- Available as a single unit, or for XPol antennas as a double unit
- Built-in lightning protection
- External DC stop available as an accessory
- **Very low insertion loss**
- **High input power**



Technical Data

Type No.	782 10248 Single Unit	782 10250 Single Unit
	782 10249 Double Unit	782 10251 Double Unit
Pass band Band 1 Band 2	470 – 960 MHz 1710 – 2170 MHz	
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	< 0.1 dB (470 – 960 MHz), typically 0.05 dB (470 – 960 MHz) < 0.1 dB (1710 – 2170 MHz), typically 0.05 dB (1710 – 2170 MHz)	
Isolation Port 1 ↔ Port 2	> 45 dB (470 – 550 MHz) / > 55 dB (550 – 960 MHz) / > 65 dB (1710 – 2170 MHz)	
VSWR	< 1.2 (470 – 960 / 1710 – 2170 MHz)	
Impedance	50 Ω	
Input power Band 1 / Band 2	< 700 W / < 650 W	
Intermodulation products	< -160 dBc (2 nd /3 rd order; with 2 x 20 W)	
Temperature range	-55 ... +60 °C	
Connectors	7-16 female (long neck)	
Application	Indoor or outdoor (IP 66)	
DC/AISG transparency Port 1 ↔ Port 3 Port 2 ↔ Port 3	By-pass (max. 2500 mA) By-pass (max. 2500 mA)	Stop By-pass (max. 2500 mA)
Lightning protection	3 kA, 10/350 μs pulse	
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) / Mast mounting: With additional clamp set	
Weight	Single Unit: 2.9 kg / Double Unit: 5.7 kg	
Packing size	Single Unit: 365 x 207 x 150 mm / Double Unit: 365 x 207 x 214 mm	
Dimensions (w x h x d)	Single Unit: 125 x 194.5 x 50 mm / Double Unit: 125 x 194.5 x 105.4 mm (without connectors, without mounting brackets)	

Dual-Band Combiner

KATHREIN

Antennen · Electronic

470 – 960 MHz
DVB-H / CDMA 800 / GSM 900

1710 – 2170 MHz
GSM 1800 / UMTS

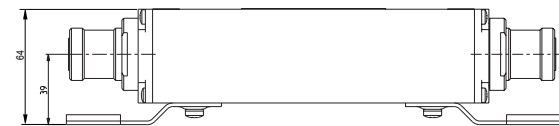
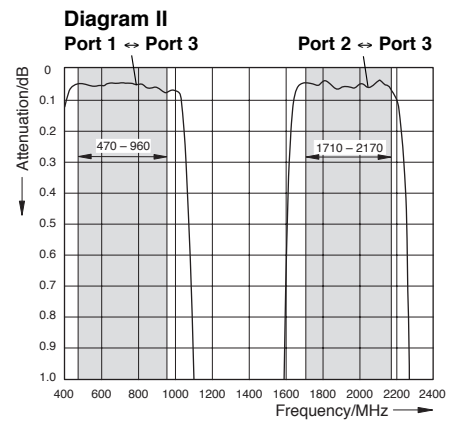
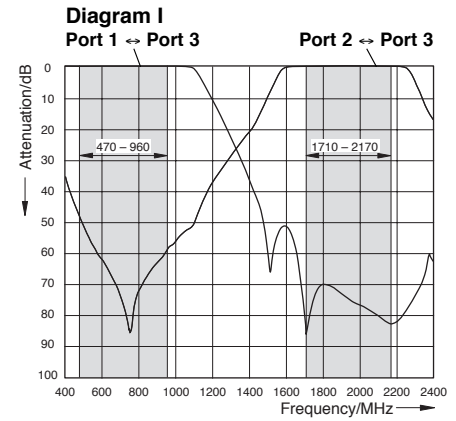
Accessories (order separately)

Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
734 365	45 – 125 mm

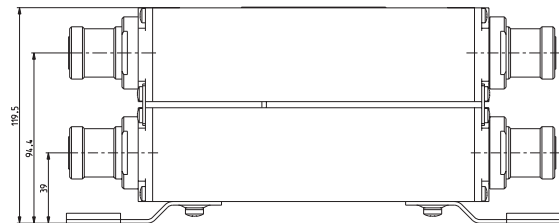


Type No.	Description
784 10367	50-Ω load 1.5 W / indoor or outdoor
793 301	DC stop

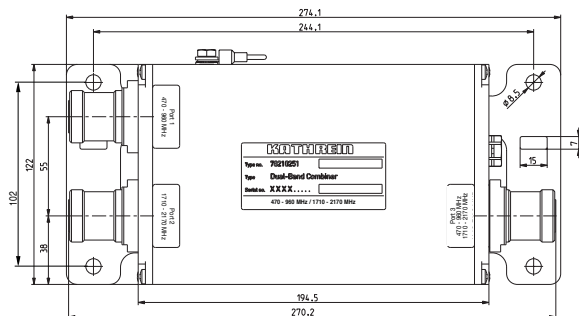
Typical Attenuation Curves



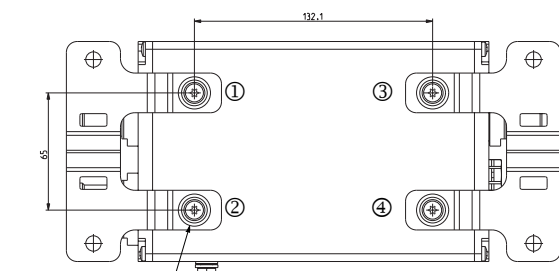
Side view
Single Unit



Side view
Double Unit



Top view
Single Unit,
Double Unit



Bottom view
Single Unit,
Double Unit

4 screws M5 x 10
4 spring washers
5.5 DIN 6095

Please note:

The mounting plates can be removed by loosening the screws ① to ④ (M5 x 10) and replaced with other means of mounting, always provided that the max. drilled depth of 8.5 mm is respected with the choice of replacement screws.

Dual-Band Combiner

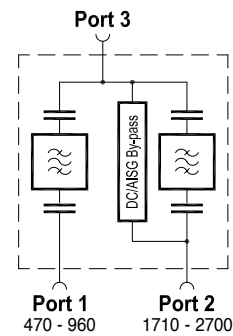
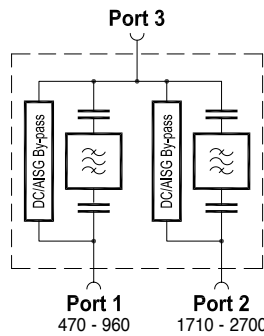
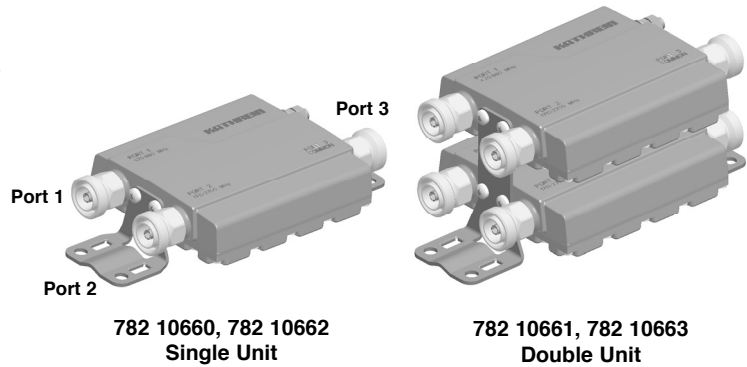
KATHREIN

Antennen · Electronic

470 – 960 MHz
DVB-H / CDMA 800 / GSM 900

1710 – 2700 MHz
GSM 1800 / UMTS / WiMAX / LTE 2600

- Designed for co-siting purposes
- Enables feeder sharing
- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- Available as a single unit, or for XPol antennas as a double unit
- Built-in lightning protection
- External DC stop available as an accessory
- **Extremely small dimensions and low weight**
- **Very low insertion loss**
- **High input power**



Technical Data

Type No.	782 10660 Single Unit	782 10662 Single Unit
	782 10661 Double Unit	782 10663 Double Unit
Pass band Band 1 Band 2	470 – 960 MHz 1710 – 2700 MHz	
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	< 0.15 dB (470 – 960 MHz), typically 0.1 dB (470 – 960 MHz) < 0.2 dB (1710 – 2700 MHz), typically 0.1 dB (1710 – 2700 MHz)	
Isolation Port 1 ↔ Port 2	> 55 dB (470 – 960 MHz) / > 65 dB (1710 – 2700 MHz)	
VSWR	< 1.2 (470 – 960 / 1710 – 2700 MHz)	
Impedance	50 Ω	
Input power Band 1 / Band 2	< 650 W / < 350 W	
Intermodulation products	< -160 dBc (3 rd order with 2 x 20 W)	
Temperature range	-55 ... +60 °C	
Connectors	7-16 female (long neck)	
Application	Indoor or outdoor (IP 66)	
DC/AISG transparency Port 1 ↔ Port 3 Port 2 ↔ Port 3	By-pass (max. 2500 mA) By-pass (max. 2500 mA)	Stop By-pass (max. 2500 mA)
Lightning protection	3 kA, 10/350 μs pulse	
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) / Mast mounting: With additional clamp set	
Weight	Single Unit: Approx. 1.0 kg / Double Unit: Approx. 1.9 kg	
Dimensions (w x h x d)	Single Unit: 126 x 145 x 38 mm / Double Unit: 126 x 145 x 93 mm (without connectors, without mounting brackets)	

Dual-Band Combiner

KATHREIN

Antennen · Electronic

470 – 960 MHz
DVB-H / CDMA 800 / GSM 900

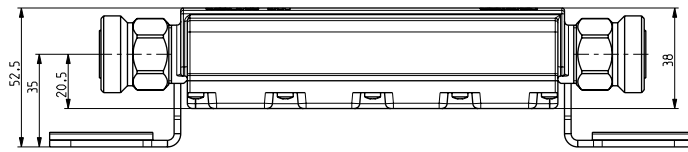
1710 – 2700 MHz
GSM 1800 / UMTS / WiMAX / LTE 2600

Accessories (order separately)

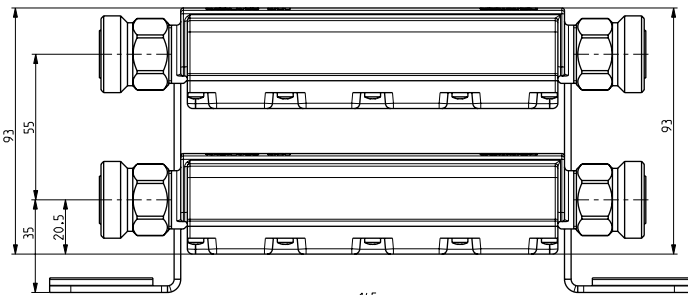
Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
734 365	45 – 125 mm



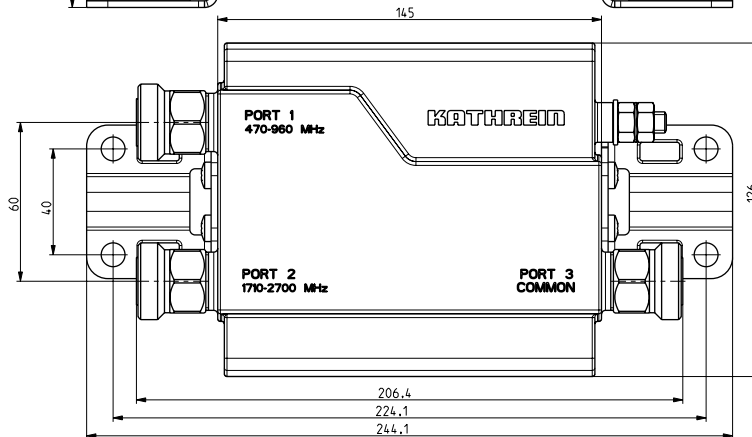
Type No.	Description
784 10367	50-Ω load 1.5 W / indoor or outdoor
793 301	DC stop



Side view
Single Unit



Side view
Double Unit



Top view
Single Unit,
Double Unit

Dual-Band Combiner

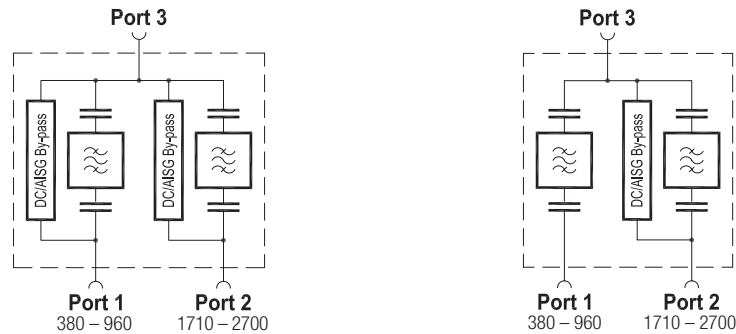
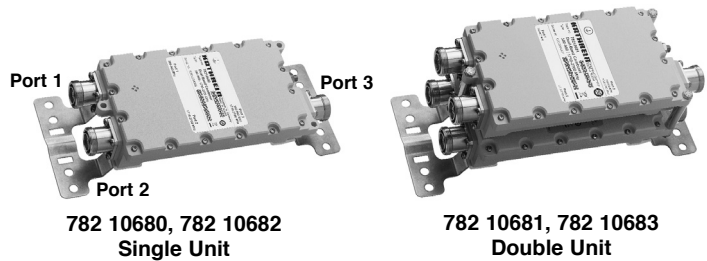
KATHREIN

Antennen · Electronic

380 – 960 MHz
TETRA / DVB-H / CDMA 800 / GSM 900

1710 – 2700 MHz
GSM 1800 / UMTS / WiMAX / LTE 2600

- Designed for co-siting purposes
- Enables feeder sharing
- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- Available as a single unit, or for XPol antennas as a double unit
- Built-in lightning protection
- External DC stop available as an accessory
- **Extremely low insertion loss**
- **High input power**



Technical Data

Type No.	782 10680 Single Unit	782 10682 Single Unit
	782 10681 Double Unit	782 10683 Double Unit
Pass band Band 1 Band 2	380 – 960 MHz 1710 – 2700 MHz	
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	< 0.1 dB (380 – 960 MHz), typically 0.05 dB (380 – 960 MHz) < 0.1 dB (1710 – 2700 MHz), typically 0.05 dB (1710 – 2700 MHz)	
Isolation Port 1 ↔ Port 2	> 55 dB (380 – 550 MHz) / > 65 dB (550 – 960 MHz) / > 65 dB (1710 – 2700 MHz)	
VSWR	< 1.2 (380 – 960 / 1710 – 2700 MHz)	
Impedance	50 Ω	
Input power Band 1 / Band 2	< 700 W / < 650 W	
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)	
Temperature range	-55 ... +60 °C	
Connectors	7-16 female (long neck)	
Application	Indoor or outdoor (IP 66)	
DC/AISG transparency Port 1 ↔ Port 3 Port 2 ↔ Port 3	By-pass (max. 2500 mA) By-pass (max. 2500 mA)	Stop By-pass (max. 2500 mA)
Lightning protection	3 kA, 10/350 μs pulse	
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) / Mast mounting: With additional clamp set	
Weight	Single Unit: 2.2 kg / Double Unit: 4.3 kg	
Packing size	Single Unit: 365 x 207 x 150 mm / Double Unit: 365 x 207 x 214 mm	
Dimensions (w x h x d)	Single Unit: 117 x 210 x 50 mm / Double Unit: 117 x 210 x 102 mm (without connectors, without mounting brackets)	

Dual-Band Combiner

KATHREIN

Antennen · Electronic

380 – 960 MHz
TETRA / DVB-H / CDMA 800 / GSM 900

1710 – 2700 MHz
GSM 1800 / UMTS / WiMAX / LTE 2600

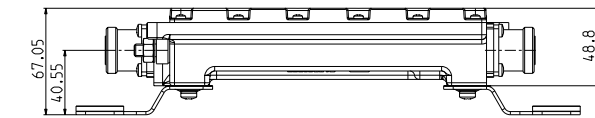
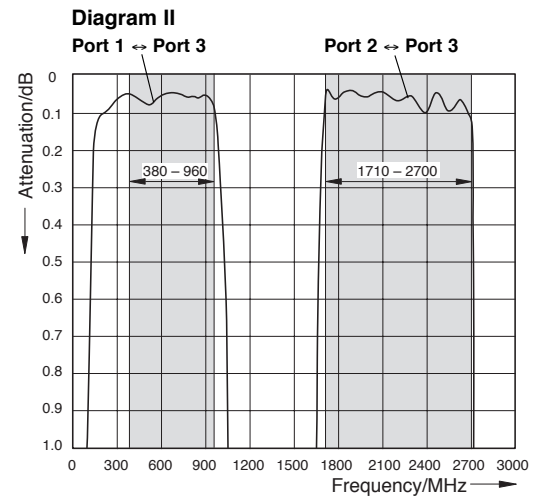
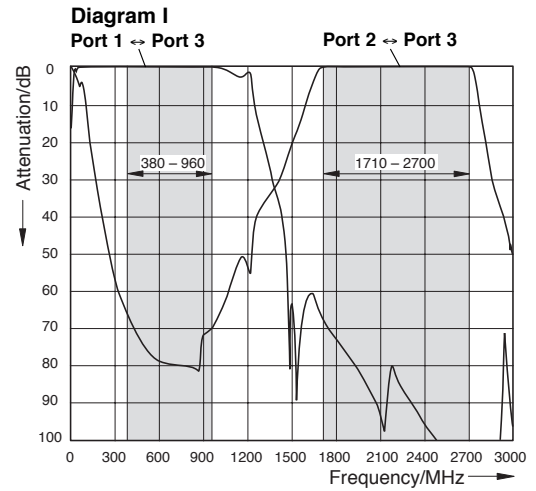
Accessories (order separately)

Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
734 365	45 – 125 mm

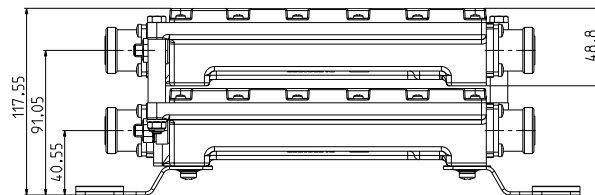
Type No.	Description
784 10367	50-Ω load 1.5 W / indoor or outdoor
793 301	DC stop



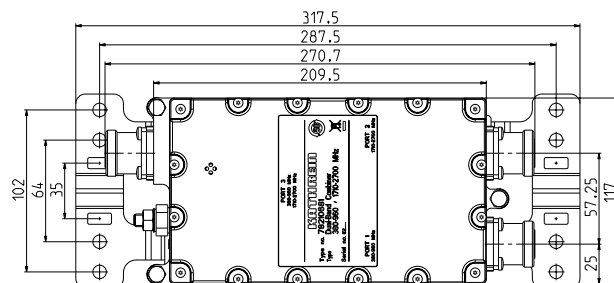
Typical Attenuation Curves



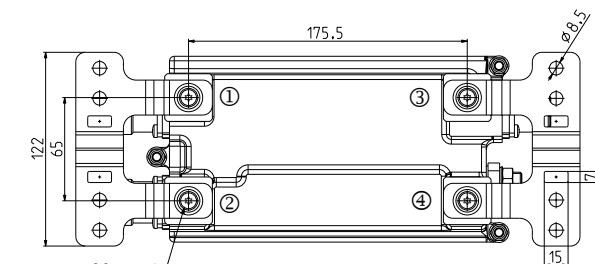
Side view
Single Unit



Side view
Double Unit



Top view
Single Unit,
Double Unit



Bottom view
Single Unit,
Double Unit

4 screws M5 x 12

Please note:

The mounting plates can be removed by loosening the screws ① to ④ (M5 x 12) and replaced with other means of mounting, always provided that the max. drilled depth of 7.5 mm is respected with the choice of replacement screws.

Dual-Band Combiner

KATHREIN

Antennen · Electronic

806 – 1880 MHz
CDMA 800 / GSM 900 / GSM 1800

1920 – 2170 MHz
UMTS

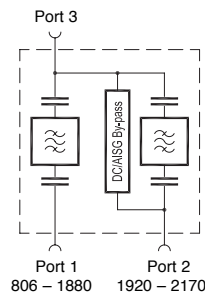
- Designed for co-siting purposes
- Enables feeder sharing
- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- Available as a single unit, or for XPol antennas as a double unit
- Built-in lightning protection
- External DC Stop available as an accessory



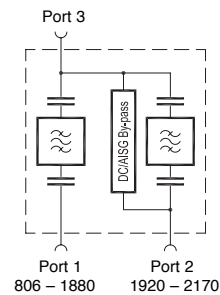
782 10278, 782 10305
Single Unit



782 10279, 782 10306
Double Unit



Single Unit 782 10278
Double Unit 782 10279
(only 1 unit shown)



Single Unit 782 10305
Double Unit 782 10306
(only 1 unit shown)

Technical Data

Type No.	782 10278 Single Unit	782 10279 Double Unit	782 10305 Single Unit	782 10306 Double Unit
Pass band Band 1 Band 2	806 – 1880 MHz 1920 – 2170 MHz			
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	< 0.1 dB, typically 0.05 dB (806 – 960 MHz) / < 0.4 dB, typically 0.2 dB (1710 – 1880 MHz) < 0.4 dB typically 0.2 dB (1920 – 2170 MHz)			
Isolation Port 1 ↔ Port 2	> 55 dB (806 – 960 MHz) / > 50 dB (1710 – 1880 MHz) > 50 dB (1920 – 1980 MHz) / > 50 dB (2110 – 2170 MHz)			
VSWR	< 1.2 (806 – 960 MHz) / < 1.25 (1710 – 1880 MHz) < 1.2 (1920 – 2170 MHz)			
Impedance	50 Ω			
Input power Band 1 / Band 2	< 500 W / < 500 W			
Intermodulation products	< -160 dBc (2 nd /3 rd order; with 2 x 20 W)			
Temperature range	-55 ... +60 °C			
Connectors	7-16 female (long neck)			
Application	Indoor <i>or</i> outdoor (IP 66)			
DC/AISG transparency Port 1 ↔ Port 3 Port 2 ↔ Port 3	By-pass (max. 2500 mA) By-pass (max. 2500 mA)		Stop By-pass (max. 2500 mA)	
Lightning protection	3 kA, 10/350 μs pulse			
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set			
Weight	3.4 kg	6.6 kg	3.4 kg	6.6 kg
Packing size	430 x 210 x 150 mm	430 x 210 x 220 mm	430 x 210 x 150 mm	430 x 210 x 220 mm
Dimensions (w x h x d)	130 x 269.6 x 43 mm	130 x 269.6 x 98.5 mm (without connectors, without mounting brackets)	130 x 269.6 x 43 mm	130 x 269.6 x 98.5 mm

Dual-Band Combiner

KATHREIN

Antennen · Electronic

806 – 1880 MHz
CDMA 800 / GSM 900 / GSM 1800

1920 – 2170 MHz
UMTS

Accessories (order separately)

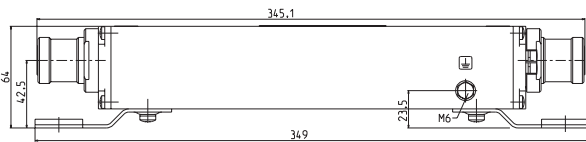
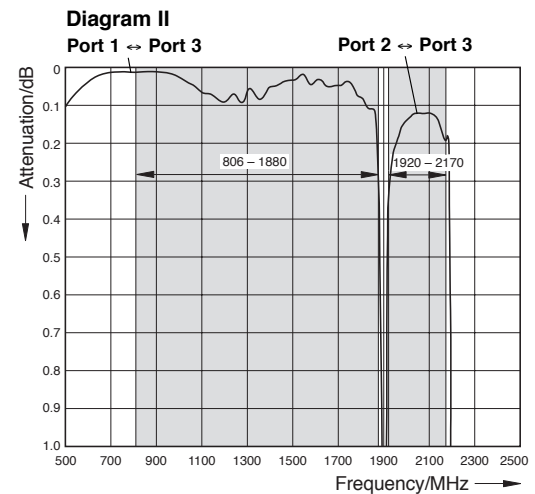
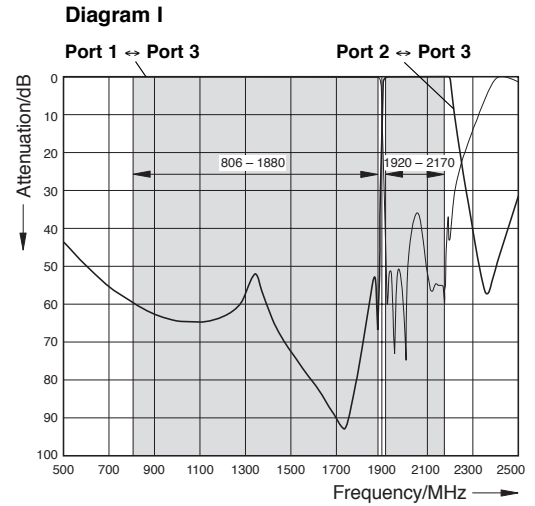
Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
734 365	45 – 125 mm



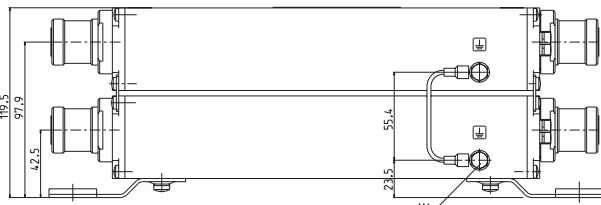
Type No.	Description
793 301	DC stop
784 10367	50-Ω load 1.5 W indoor or outdoor



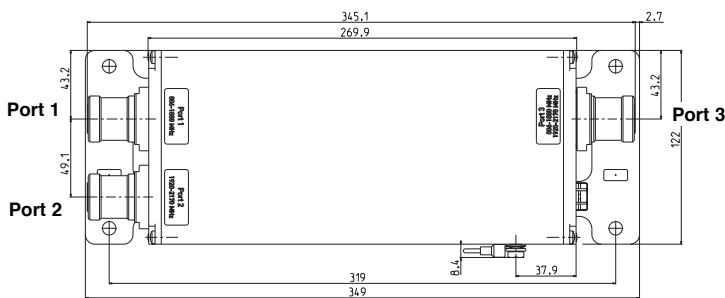
Typical Attenuation Curves



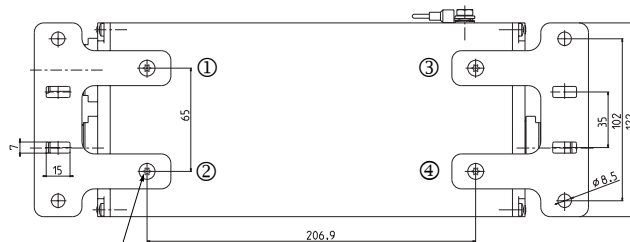
Side view, 782 10278, 782 10305 Single Unit



Side view, 782 10279, 782 10306 Double Unit



Top view, 782 10278, 782 10305 Single Unit,
782 10279, 782 10306 Double Unit



4 screws M5 x 10
4 spring washers
5.5 DIN 6095

Bottom view, 782 10278, 782 10305 Single Unit,
782 10279, 782 10306 Double Unit

Please note:

The mounting plates can be removed by loosening the screws ① to ④ (M5 x 10) and replaced with other means of mounting, always provided that the max. drilled depth of 8.5 mm is respected with the choice of replacement screws.

Dual-Band Combiner

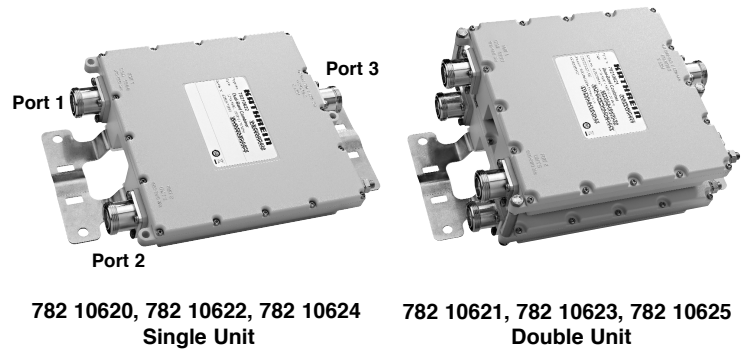
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Antennen · Electronic

1710 – 1880 MHz
GSM 1800

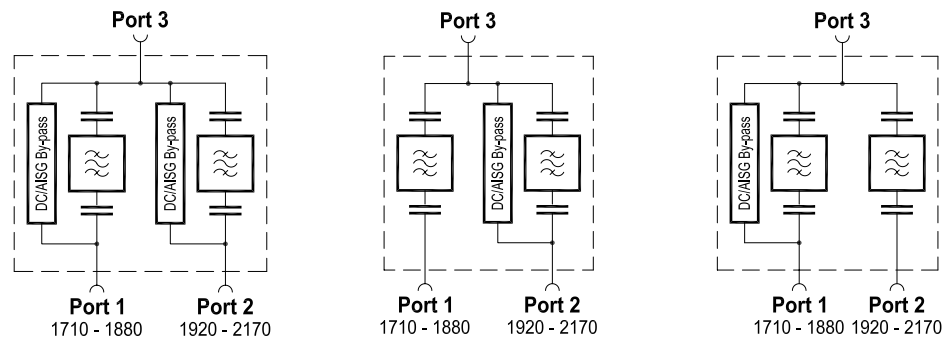
1920 – 2170 MHz
UMTS

- Designed for co-siting purposes
- Enables feeder sharing
- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- Available as a single unit, or for XPol antennas as a double unit
- Built-in lightning protection
- External DC Stop available as an accessory



782 10620, 782 10622, 782 10624
Single Unit

782 10621, 782 10623, 782 10625
Double Unit



Technical Data

Type No.	782 10620 Single Unit	782 10622 Single Unit	782 10624 Single Unit
	782 10621 Double Unit	782 10623 Double Unit	782 10625 Double Unit
Pass band Band 1 (GSM 1800) Band 2 (UMTS)	1710 – 1880 MHz 1920 – 2170 MHz		
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	< 0.3 dB (1710 – 1880 MHz) < 0.3 dB (1920 – 2170 MHz)		
Isolation Port 1 ↔ Port 2	> 50 dB (1710 – 1880 / 1920 – 2170 MHz)		
VSWR	< 1.25 (1710 – 1880 / 1920 – 2170 MHz)		
Impedance	50 Ω		
Input power Band 1 / Band 2	< 300 W / < 300 W		
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)		
Temperature range	-40 ... +60 °C		
Connectors	7-16 female (long neck)		
Application	Indoor or outdoor (IP 66)		
DC/AISG transparency Port 1 ↔ Port 3 Port 2 ↔ Port 3	By-pass (max. 2500 mA) By-pass (max. 2500 mA)	Stop By-pass (max. 2500 mA)	By-pass (max. 2500 mA) Stop
Lightning protection	3 kA, 10/350 μs pulse		
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) / Mast mounting: With additional clamp set		
Weight	Single Unit: 2.9 kg / Double Unit: 5.7 kg		
Packing size	Single Unit: 392 x 272 x 139 mm / Double Unit: 392 x 272 x 189 mm		
Dimensions (w x h x d)	Single Unit: 199 x 199 x 48 mm / Double Unit: 199 x 199 x 100 mm (without connectors, without mounting brackets)		

Dual-Band Combiner

KATHREIN

Antennen · Electronic

1710 – 1880 MHz
GSM 1800

1920 – 2170 MHz
UMTS

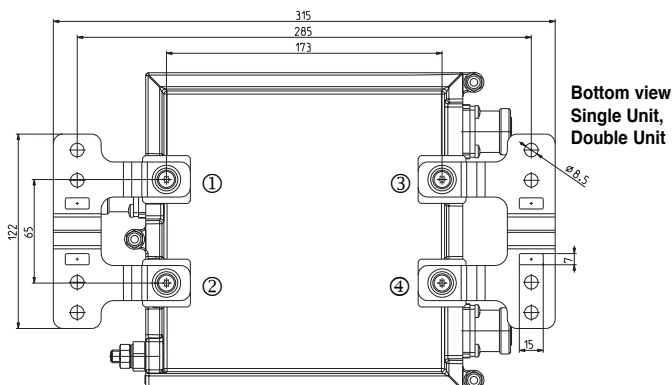
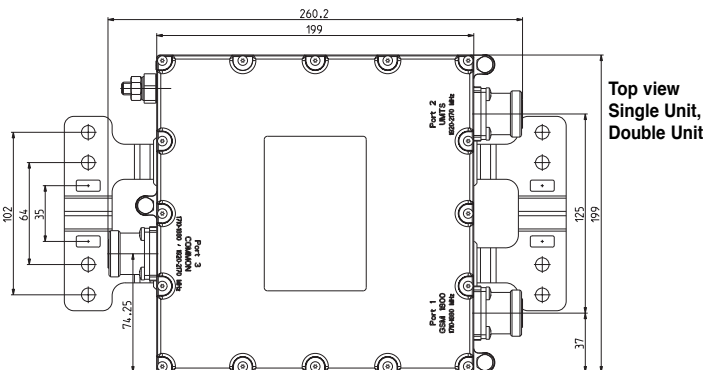
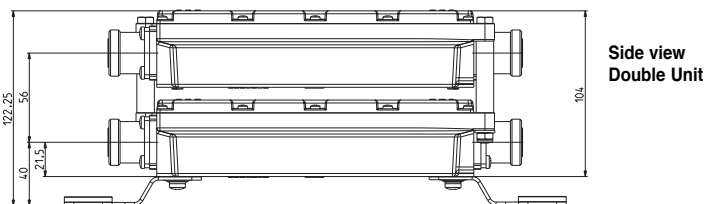
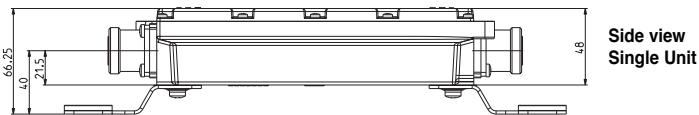
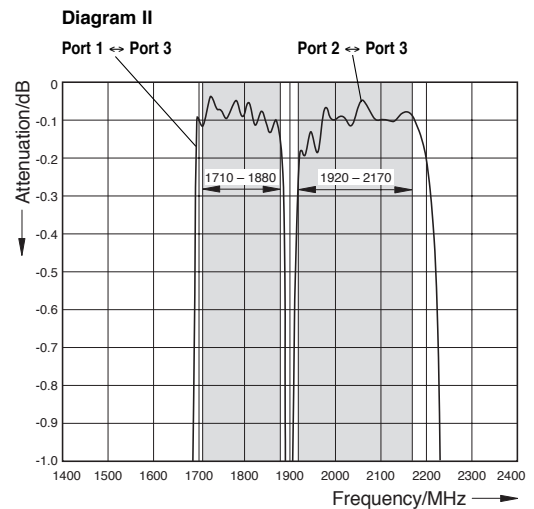
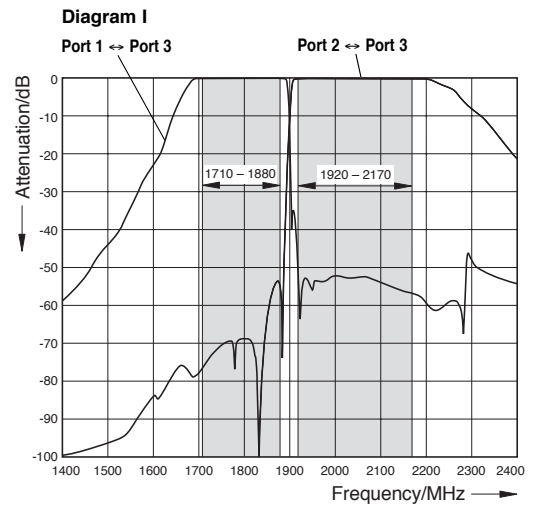
Accessories (order separately)

Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
734 365	45 – 125 mm

Type No.	Description
793 301	DC stop
784 10367	50-Ω load 1.5 W indoor or outdoor



Typical Attenuation Curves



Please note:

The mounting plates can be removed by loosening the screws ① to ④ (M5 x 12) and replaced with other means of mounting, always provided that the max. drilled depth of 7.5 mm is respected with the choice of replacement screws.

Dual-Band Combiner

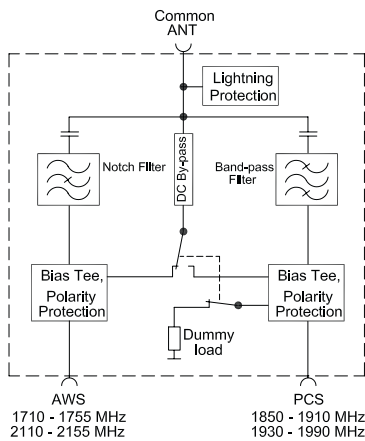
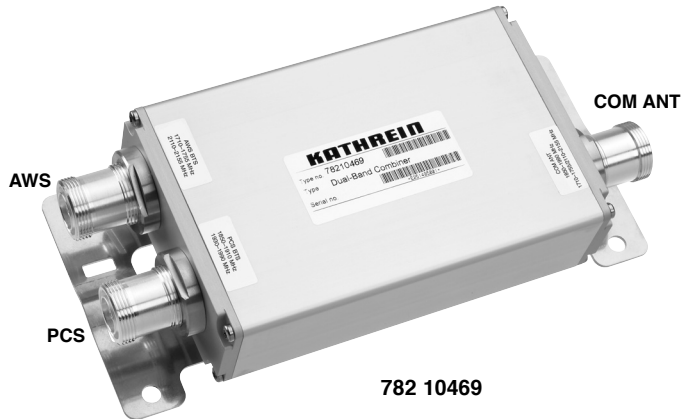
KATHREIN

Antennen · Electronic

1850 – 1910 / 1930 – 1990 MHz
PCS

1710 – 1755 / 2110 – 2155 MHz
AWS

- Designed for co-siting purposes
- Enables feeder sharing
- Suitable for indoor or outdoor applications
- With fault detection and integrated switch for multiple DC power supply



Typical Attenuation Curves

Diagram I

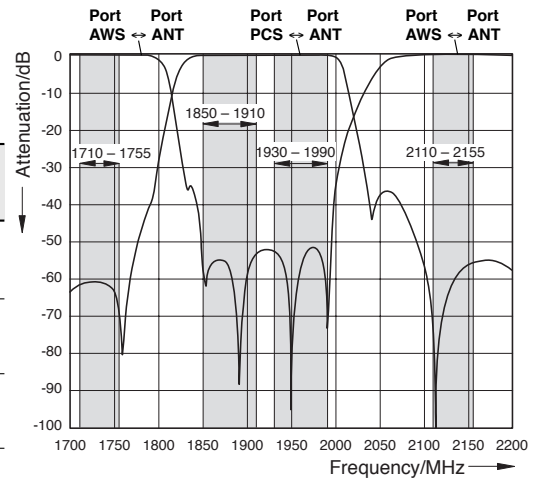
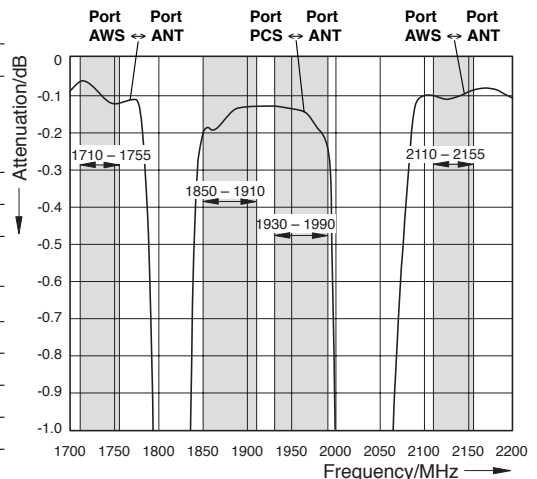


Diagram II



Technical Data

Type No.	782 10469 Single unit	782 10808 Double unit
Pass band Band 1 (PCS) Band 2 (AWS)	1850 – 1910 (Rx) / 1930 – 1990 (Tx) MHz 1710 – 1755 (Rx) / 2110 – 2155 (Tx) MHz	
Insertion loss Port PCS ↔ Port ANT Port AWS ↔ Port ANT	< 0.3 dB (1850 – 1910 / 1930 – 1990 MHz) < 0.2 dB (1710 – 1755 / 2110 – 2155 MHz)	
Isolation Port PCS ↔ Port AWS	> 50 dB (1850 – 1910 / 1930 – 1990 MHz) > 50 dB (1710 – 1755 / 2110 – 2155 MHz)	
VSWR	< 1.25 (1850 – 1910 / 1930 – 1990 MHz) < 1.25 (1710 – 1755 / 2110 – 2155 MHz)	
Impedance	50 Ω	
Input power Port PCS Port AWS	< 250 W (1850 – 1910 / 1930 – 1990 MHz) < 250 W (1710 – 1755 / 2110 – 2155 MHz)	
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)	
Power supply voltage operational survival	+10 ... +15 V DC (Port PCS) +10 ... +30 V DC (Port AWS) +10 ... +35 V DC	
Polarity protection	-48 V DC (Port PCS, Port AWS)	
Max. Current	1.5 A (Port ANT)	
Power supply current at PCS port operating with dummy load	100 mA ±20 mA (+10 ... +15 V DC)	
Lightning protection	8/20 μs, 20 kA; 10/350 μs, 3 kA (Port ANT)	
Temperature range	-40 ... +65 °C	
Connectors	7-16 female (long neck)	
Application	Indoor or outdoor (IP 66)	
Weight	2.5 kg	5 kg
Dimensions (w x h x d)	122 x 216.3 x 47 mm	122 x 216.3 x 102.6 mm (without connectors, without mounting brackets)

Dual-Band Combiner

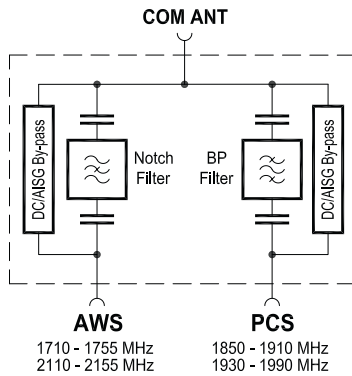
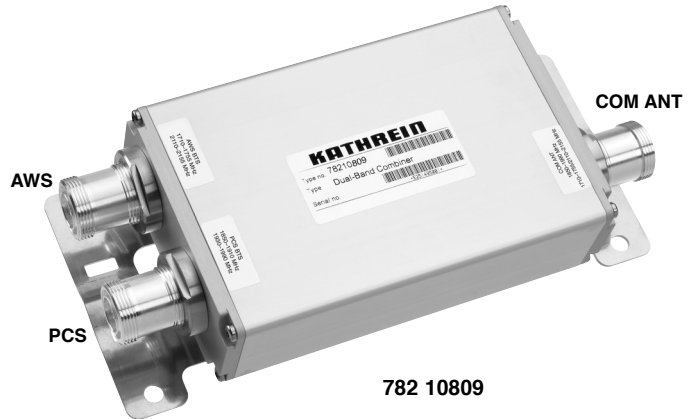
KATHREIN

Antennen · Electronic

1850 – 1910 / 1930 – 1990 MHz
PCS

1710 – 1755 / 2110 – 2155 MHz
AWS

- Designed for co-siting purposes
- Enables feeder sharing
- Suitable for indoor or outdoor applications
- DC by-pass between all ports
- External DC stop available as an accessory



782 10809

Typical Attenuation Curves

Diagram I

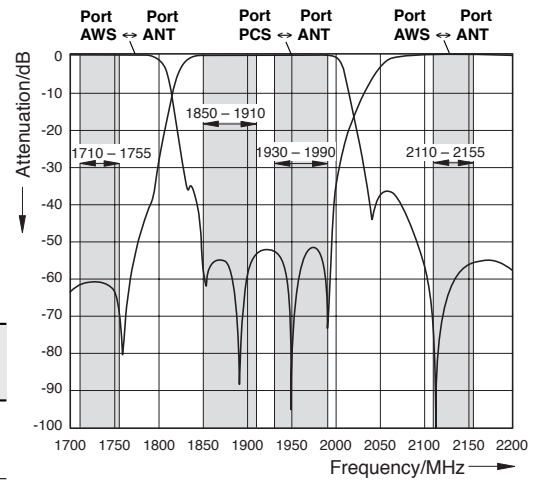
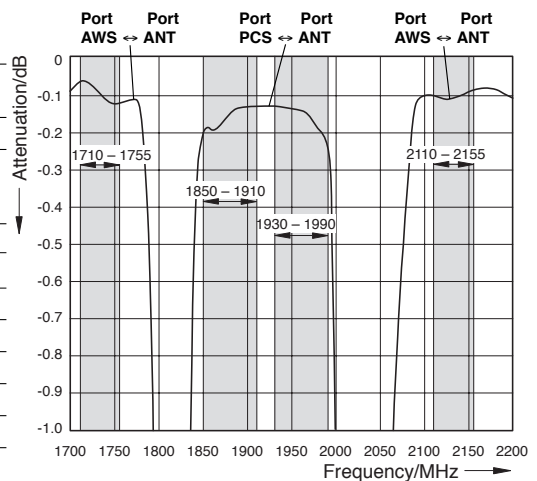


Diagram II



Technical Data

Type No.	782 10809 Single unit	782 10810 Double unit
Pass band Band 1 (PCS) Band 2 (AWS)	1850 – 1910 (Rx) / 1930 – 1990 (Tx) MHz 1710 – 1755 (Rx) / 2110 – 2155 (Tx) MHz	
Insertion loss Port PCS ↔ Port ANT Port AWS ↔ Port ANT	< 0.3 dB (1850 – 1910 / 1930 – 1990 MHz) < 0.2 dB (1710 – 1755 / 2110 – 2155 MHz)	
Isolation Port PCS ↔ Port AWS	> 50 dB (1850 – 1910 / 1930 – 1990 MHz) > 50 dB (1710 – 1755 / 2110 – 2155 MHz)	
VSWR	< 1.25 (1850 – 1910 / 1930 – 1990 MHz) < 1.25 (1710 – 1755 / 2110 – 2155 MHz)	
Impedance	50 Ω	
Input power Port PCS Port AWS	< 250 W (1850 – 1910 / 1930 – 1990 MHz) < 250 W (1710 – 1755 / 2110 – 2155 MHz)	
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)	
Lightning protection	3 kA, 10/350 μs pulse	
Temperature range	-40 ... +65 °C	
Connectors	7-16 female (long neck)	
Application	Indoor or outdoor (IP 66)	
DC/AISG transparency	By-pass between all ports (max. 2500 mA)	
Weight	2.5 kg	5 kg
Dimensions (w x h x d)	122 x 216.3 x 47 mm	122 x 216.3 x 102.6 mm (without connectors, without mounting brackets)

Dual-Band Combiner

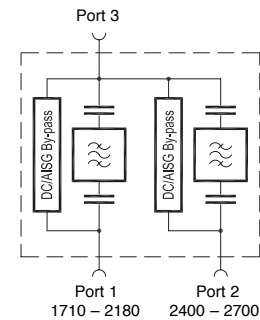
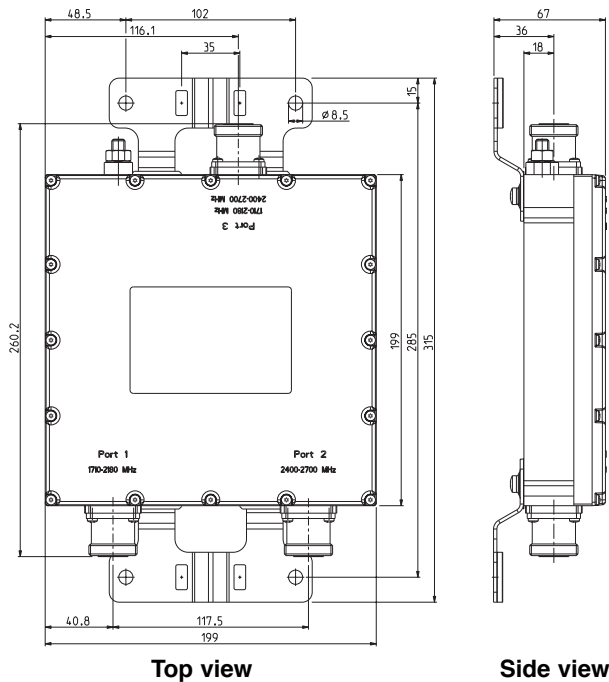
KATHREIN

Antennen · Electronic

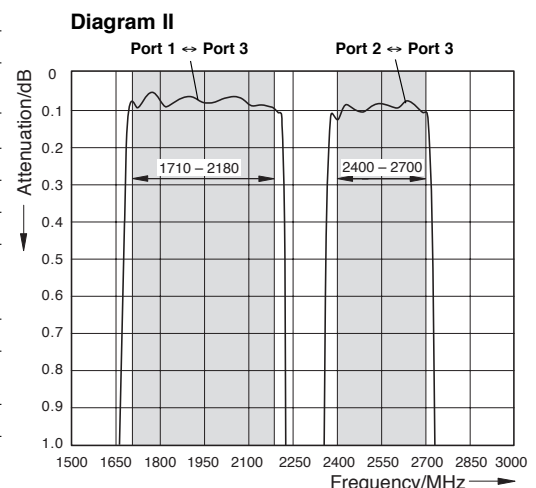
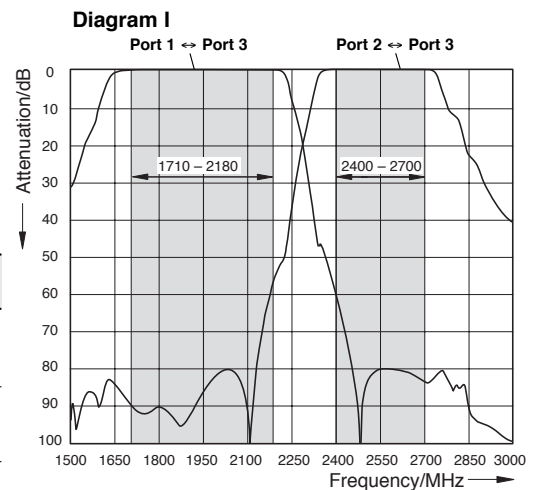
1710 – 2180 MHz
GSM 1800 / PCS 1900 / AWS / UMTS

2400 – 2700 MHz
WLAN / WiMAX 2.6 / UMTS 2.6 / BRS / LTE

- Designed for co-siting purposes
- Enables feeder sharing
- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- Built-in lightning protection
- External DC stop available as an accessory



Typical Attenuation Curves



Technical Data

Type No.	782 10800
Pass band	
Band 1	1710 – 2180 MHz
Band 2	2400 – 2700 MHz
Insertion loss	
Port 1 ↔ Port 3	< 0.15 dB
Port 2 ↔ Port 3	< 0.15 dB
Isolation	
Port 1 ↔ Port 2	> 50 dB
VSWR	< 1.25 (1710 – 2180 / 2400 – 2700 MHz)
Impedance	50 Ω
Input power	
Band 1 / Band 2	< 275 W / < 150 W
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)
Temperature range	-40 ... +60 °C
Connectors	7-16 female, long neck
Application	Indoor or outdoor (IP 66)
DC/ASG transparency	
Port 1 ↔ Port 3	By-pass (max. 2500 mA)
Port 2 ↔ Port 3	By-pass (max. 2500 mA)
Lightning protection	3 kA, 10/350 μs pulse
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set
Weight	2.9 kg
Dimensions (w x h x d)	199 x 199 x 49 mm (without connectors, without mounting brackets)

Dual-Band Combiner

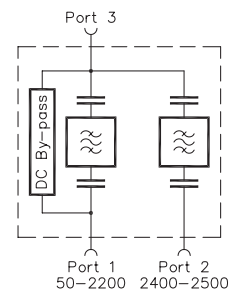
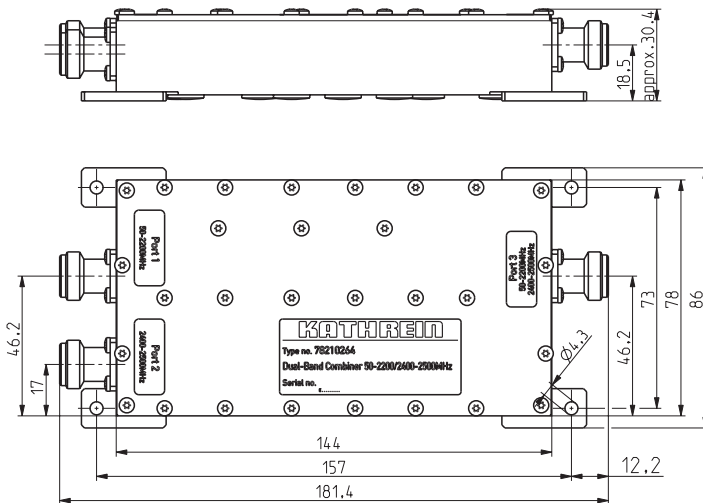
KATHREIN

Antennen · Electronic

50 – 2200 MHz
80 / 160 / 400 / 900 / 1800 / UMTS

2400 – 2500 MHz
WLAN

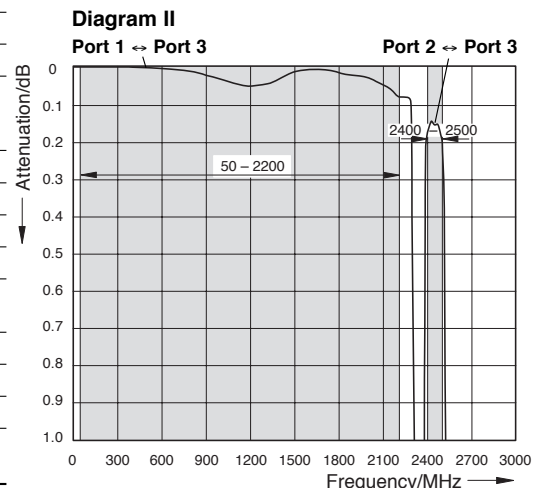
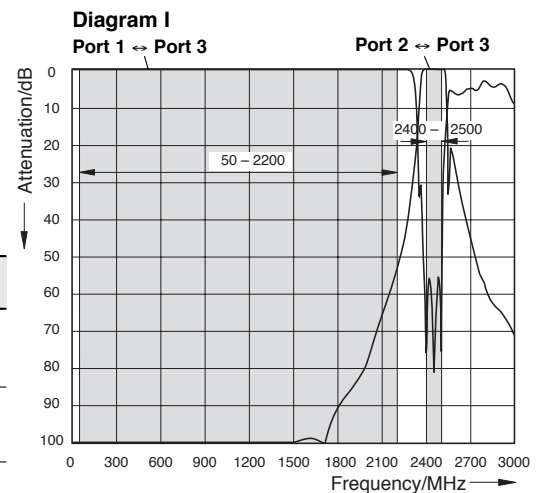
- Designed for inhouse multiband distribution networks
- Enables feeder sharing
- DC by-pass between ports 1 and 3
- Built-in DC stop between ports 2 and 3



Technical Data

Type No.	782 10264
Pass band Band 1 Band 2	50 – 2200 MHz 2400 – 2500 MHz
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	< 0.1 dB (50 – 2200 MHz) < 0.2 dB (2400 – 2500 MHz)
Isolation Port 1 ↔ Port 2	> 50 dB (50 – 2200 / 2400 – 2500 MHz)
VSWR	< 1.25 (50 – 2200 / 2400 – 2500 MHz)
Impedance	50 Ω
Input power Band 1 Band 2	< 200 W < 200 W
Intermodulation products	< -150 dBc (3 rd order; with 2 x 20 W)
Temperature range	-20 ... +55 °C
Connectors	N female
Application	Indoor
Special features	Built-in DC stop between ports 2 and 3 DC by-pass between ports 1 and 3 (max. 2500 mA)
Mounting	With 4 screws (max. 4 mm diameter)
Weight	0.47 kg
Packing size	225 x 140 x 75 mm
Dimensions (w x h x d)	86 x 30.4 x 181.4 mm (including connectors and mounting feet)

Typical Attenuation Curves



Triple-Band Combiner

KATHREIN

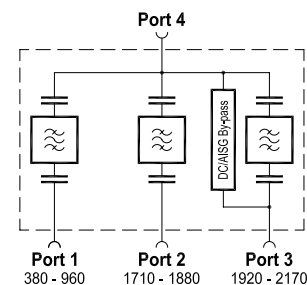
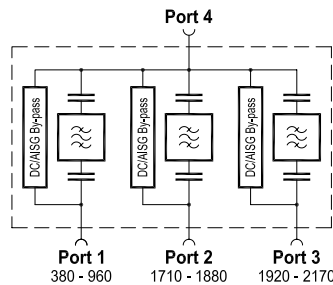
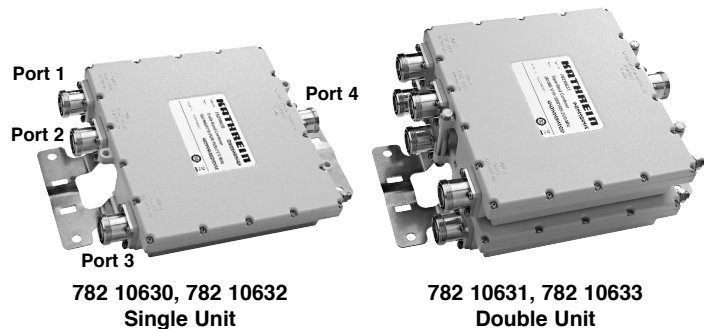
Antennen · Electronic

380 – 960 MHz
TETRA, DVB-H, CDMA 800, GSM 900

1710 – 1880 MHz
GSM 1800

1920 – 2170 MHz
UMTS

- Designed for co-siting purposes
- Enables feeder sharing
- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- Available as a single unit, or for XPol antennas as a double unit
- Built-in lightning protection
- External DC Stop available as an accessory



Technical Data

Type No.	782 10630 Single Unit	782 10632 Single Unit
	782 10631 Double Unit	782 10633 Double Unit
Pass band Band 1 (TETRA ... GSM 900) Band 2 (GSM 1800) Band 3 (UMTS)	380 – 960 MHz 1710 – 1880 MHz 1920 – 2170 MHz	
Insertion loss Port 1 ↔ Port 4 Port 2 ↔ Port 4 Port 3 ↔ Port 4	< 0.2 dB (380 – 960 MHz) < 0.3 dB (1710 – 1880 MHz) < 0.3 dB (1920 – 2170 MHz)	
Isolation Port 1 ↔ Port 2 Port 1 ↔ Port 3 Port 2 ↔ Port 3	> 45 dB (380 – 600 MHz) / > 50 dB (600 – 960 / 1710 – 1880 MHz) > 45 dB (380 – 600 MHz) / > 50 dB (600 – 960 / 1920 – 2170 MHz) > 50 dB (1710 – 1880 / 1920 – 2170 MHz)	
VSWR	< 1.25 (380 – 960 / 1710 – 1880 / 1920 – 2170 MHz)	
Impedance	50 Ω	
Input power Band 1 / Band 2 / Band 3	< 700 W / < 300 W / < 300 W	
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)	
Temperature range	-40 ... +60 °C	
Connectors	7-16 female (long neck)	
Application	Indoor or outdoor (IP 66)	
DC/AISG transparency Port 1 ↔ Port 4 Port 2 ↔ Port 4 Port 3 ↔ Port 4	By-pass (max. 2500 mA) By-pass (max. 2500 mA) By-pass (max. 2500 mA)	Stop Stop By-pass (max. 2500 mA)
Lightning protection	3 kA, 10/350 μs pulse	
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) / Mast mounting: With additional clamp set	
Weight	Single Unit: 3.2 kg / Double Unit: 6.3 kg	
Packing size	Single Unit: 392 x 292 x 139 mm / Double Unit: 392 x 292 x 189 mm	
Dimensions (w x h x d)	Single Unit: 219 x 199 x 48 mm / Double Unit: 219 x 199 x 104 mm (without connectors, without mounting brackets)	

Triple-Band Combiner

KATHREIN

Antennen · Electronic

380 – 960 MHz
TETRA, DVB-H, CDMA 800, GSM 900

1710 – 1880 MHz
GSM 1800

1920 – 2170 MHz
UMTS

Accessories (order separately)

Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
734 365	45 – 125 mm

Clamp Set



DC stop

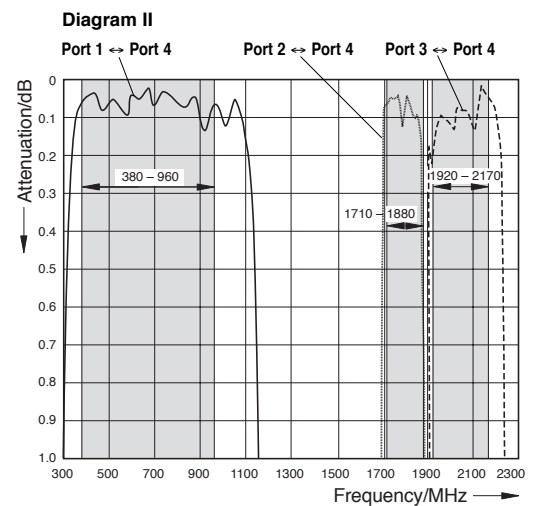
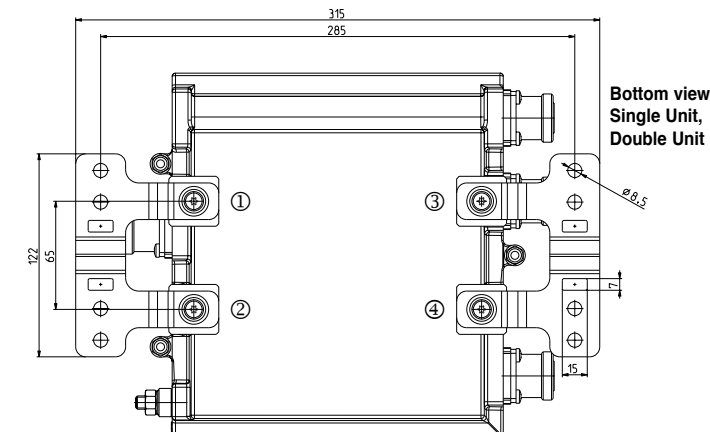
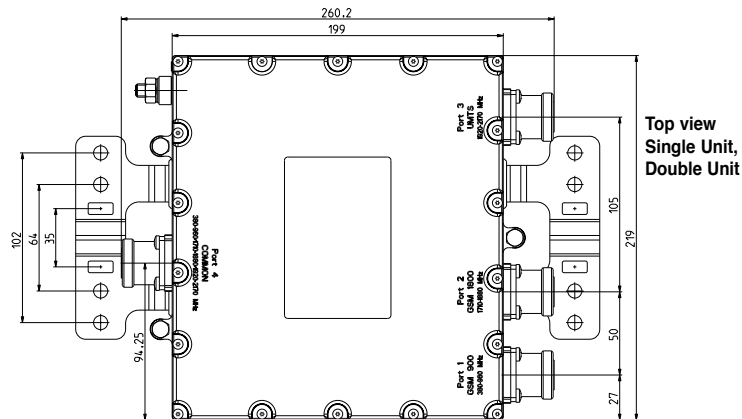
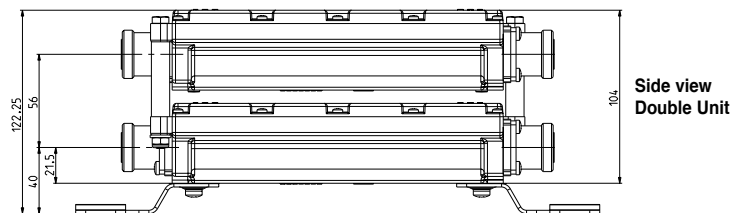
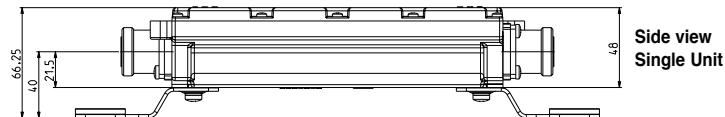
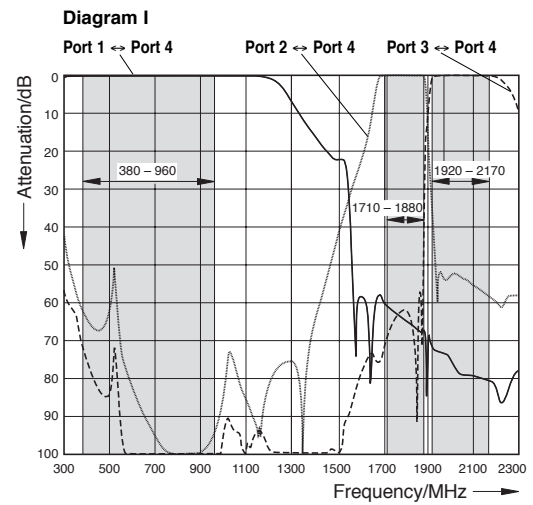


50-Ω load



Type No.	Description
793 301	DC stop
784 10367	50-Ω load 1.5 W / indoor or outdoor

Typical Attenuation Curves



Please note:

The mounting plates can be removed by loosening the screws ① to ④ (M5 x 12) and replaced with other means of mounting, always provided that the max. drilled depth of 7.5 mm is respected with the choice of replacement screws.

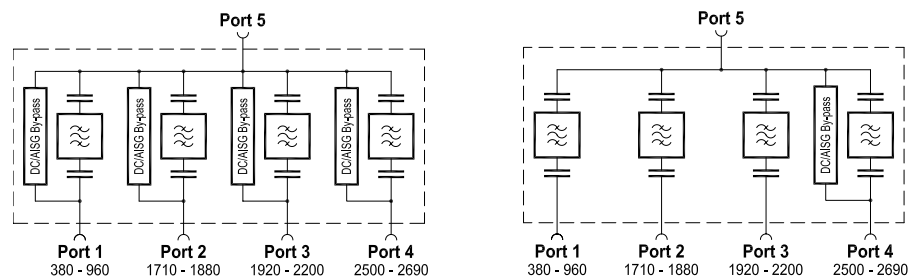
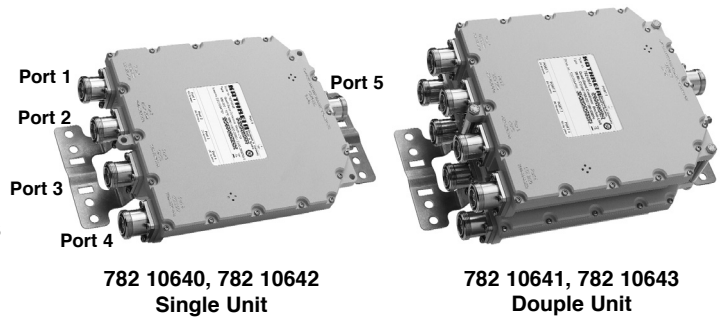
Quad-Band Combiner

KATHREIN

Antennen · Electronic

380 – 960 MHz TETRA / DVB-H / CDMA 800 / GSM 900	1710 – 1880 MHz GSM 1800	1920 – 2200 MHz UMTS	2500 – 2690 MHz LTE 2600
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- Designed for co-siting purposes
- Enables feeder sharing
- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- Available as a single unit, or for XPol antennas as a double unit
- Built-in lightning protection
- External DC Stop available as an accessory



Technical Data

Type No.	782 10640 Single Unit	782 10642 Single Unit
	782 10641 Double Unit	782 10643 Double Unit
Pass band	Band 1 (TETRA ... GSM 900) 380 – 960 MHz Band 2 (GSM 1800) 1710 – 1880 MHz Band 3 (UMTS) 1920 – 2200 MHz Band 4 (LTE 2600) 2500 – 2690 MHz	
Insertion loss	Port 1 ↔ Port 5 < 0.2 dB (380 – 960 MHz) Port 2 ↔ Port 5 < 0.3 dB (1710 – 1880 MHz) Port 3 ↔ Port 5 < 0.3 dB (1920 – 2200 MHz) Port 4 ↔ Port 5 < 0.2 dB (2500 – 2690 MHz)	
Isolation	Port 1 ↔ Port 2 > 45 dB (380 – 600 MHz) / > 50 dB (600 – 960 / 1710 – 1880 MHz) Port 1 ↔ Port 3 > 45 dB (380 – 600 MHz) / > 50 dB (600 – 960 / 1920 – 2200 MHz) Port 1 ↔ Port 4 > 45 dB (380 – 600 MHz) / > 50 dB (600 – 960 / 2500 – 2690 MHz) Port 2 ↔ Port 3 > 50 dB (1710 – 1880 / 1920 – 2200 MHz) Port 2 ↔ Port 4 > 50 dB (1710 – 1880 / 2500 – 2690 MHz) Port 3 ↔ Port 4 > 50 dB (1920 – 2200 / 2500 – 2690 MHz)	
VSWR	< 1.25 (380 – 960 / 1710 – 1880 / 1920 – 2200 / 2500 – 2690 MHz)	
Impedance	50 Ω	
Input power	Band 1 / Band 2 / Band 3 / Band 4 < 700 W / < 300 W / < 300 W / < 200 W	
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)	
Temperature range	-40 ... +60 °C	
Connectors	7-16 female (long neck)	
Application	Indoor or outdoor (IP 66)	
DC/AISG transparency	Max. 2500 mA Port 1 ↔ Port 5 By-pass Port 2 ↔ Port 5 By-pass Port 3 ↔ Port 5 By-pass Port 4 ↔ Port 5 By-pass	Max. 2500 mA Port 1 ↔ Port 5 Stop Port 2 ↔ Port 5 Stop Port 3 ↔ Port 5 Stop Port 4 ↔ Port 5 By-pass
Lightning protection	3 kA, 10/350 μs pulse	
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) / Mast mounting: With additional clamp set	
Weight	Single Unit: Approx. 4 kg / Double Unit: Approx. 8 kg	
Dimensions (w x h x d)	Single Unit: 214 x 228 x 52 mm / Double Unit: 214 x 228 x 108 mm (without connectors, without mounting brackets)	

Quad-Band Combiner

KATHREIN

Antennen · Electronic

380 – 960 MHz TETRA / DVB-H / CDMA 800 / GSM 900	1710 – 1880 MHz GSM 1800	1920 – 2200 MHz UMTS	2500 – 2690 MHz LTE 2600
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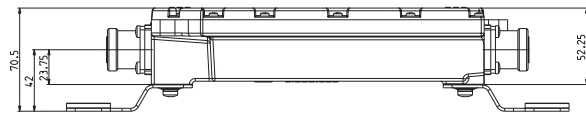
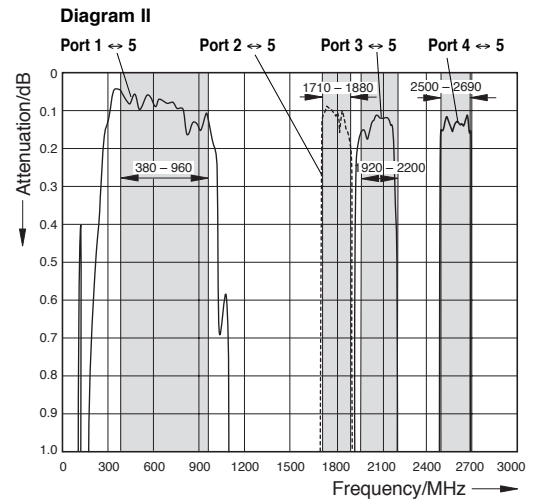
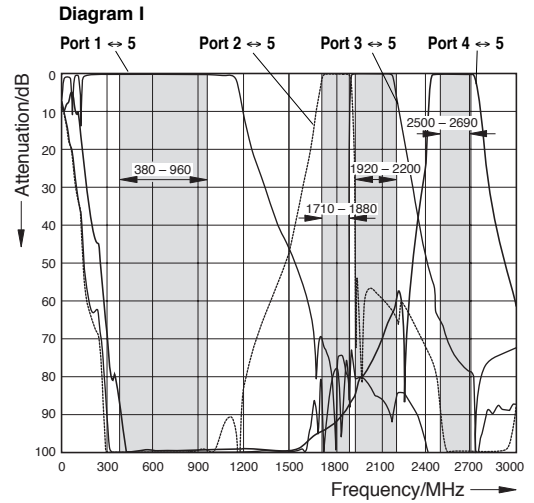
Accessories (order separately)

Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
734 365	45 – 125 mm

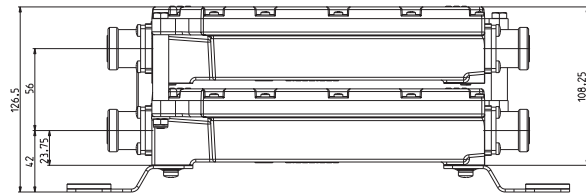
Type No.	Description
793 301	DC stop
784 10367	50-Ω load 1.5 W / indoor or outdoor



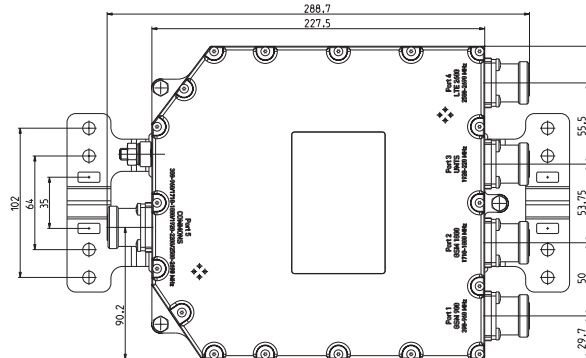
Typical Attenuation Curves



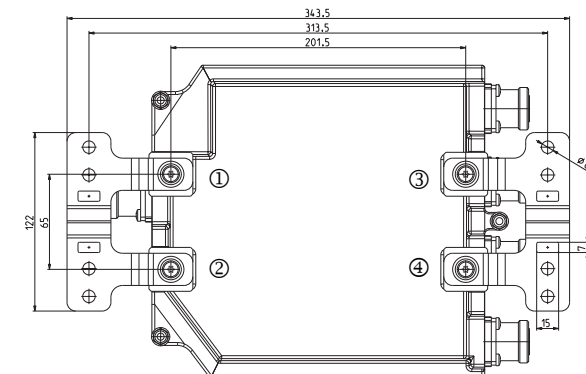
Side view
Single Unit



Side view
Double Unit



Top view
Single Unit,
Double Unit



Bottom view
Single Unit,
Double Unit

Please note:

The mounting plates can be removed by loosening the screws ① to ④ (M5 x 12) and replaced with other means of mounting, always provided that the max. drilled depth of 7.5 mm is respected with the choice of replacement screws.

Same-Band Combiners Hybrid Combiners

Same-Band Combiner
Duplex Hybrid Combiner
Hybrid Combiner 2 : 1
Hybrid Combiner 4 : 4
3-dB Couplers
Hybrid Ring Junctions

Hybrid Combiners and Couplers:

Description	Type No.	Frequency range	Max. input power	Connector	Page
Hybrid Combiner 2:1	792 699	806 – 960 MHz	150 W per Tx/Rx port	7-16	261
Hybrid Combiner 2:1	792 702	1700 – 2200 MHz	150 W per Tx/Rx port	7-16	262
Hybrid Combiner 2:1	793 555	800 – 2200 MHz	150 W per Tx/Rx port	7-16	263
Hybrid Combiner 2:1	782 10500	806 – 960 MHz	60 W at each port	7-16	264
Hybrid Combiner 2:1	782 10502	1710 – 2170 MHz	60 W at each port	7-16	265
Hybrid Combiner 2:1	782 10504	698 – 2690 MHz	60 W at each port	7-16	266
Hybrid Combiner 4:4	782 10532	1710 – 2170 MHz	60 W at each port	7-16	267
Hybrid Combiner 4:4	782 10203	800 – 2200 MHz	150 W at each port	7-16	268
Hybrid Combiner 8:4	782 10858	806 – 960 MHz 1710 – 2170 MHz	60 W at each port	7-16	269
Duplex Hybrid Combiner	78210805	Rx: 880 – 915 MHz Tx: 925 – 960 MHz	250 W	7-16	270, 271
Same-Band Combiner	782 10925	1920 – 2170 MHz	100 W at each port	7-16	272, 273
Hybrid Ring Junction	K 63 73 621	806 – 960 MHz	100 W per input	N	274, 275
Hybrid Ring Junction	790 881	890 – 960 MHz	100 W per input	N	274, 275
Hybrid Ring Junction	791 498	1710 – 1880 MHz	50 W per input	N	274, 275
3-dB Coupler	793 506	806 – 960 MHz	500 W	7-16	276
3-dB Coupler	793 006	1700 – 2200 MHz	300 W	7-16	277
3-dB Coupler	793 554	800 – 2200 MHz	300 W	7-16	278

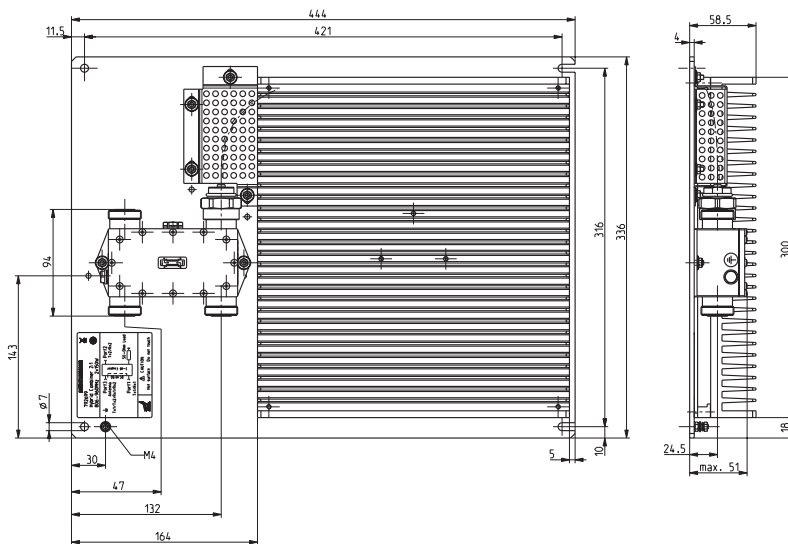
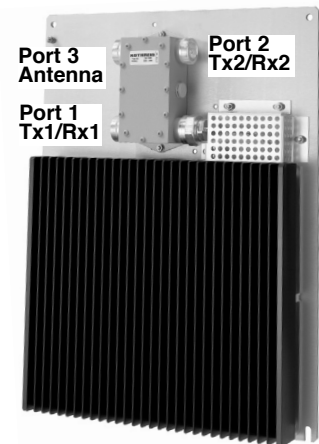
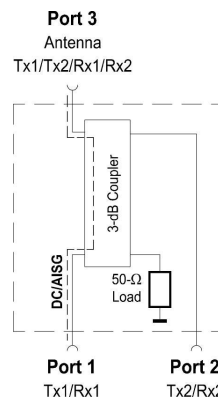
New Products

Hybrid Combiner 2:1

806 – 960 MHz

2 x 150 W

- Designed for the decoupled combining of 2 transmitter or receiver signals onto one common antenna
- The frequency spacing between transmitter signals can be as small as required
- **Excellent intermodulation performance**
- Suitable for indoor applications
- Wall or 19" rack mounting
- DC by-pass between port 1 and port 3
- External DC stop available as an accessory

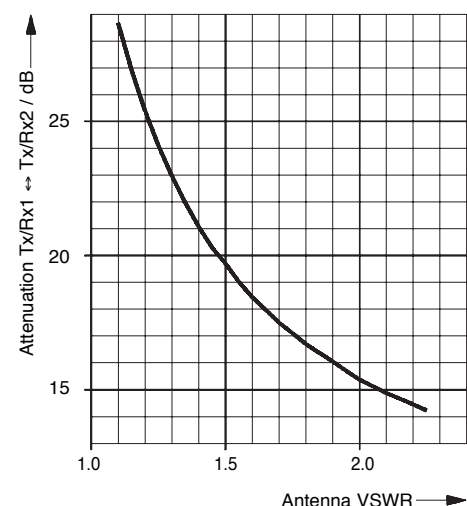


Technical Data

Type No.	792 699
Frequency range	806 – 960 MHz
Attenuation	
Port 1 ↔ Port 3	3.1 ± 0.4 dB
Port 2 ↔ Port 3	3.1 ± 0.4 dB
Port 1 ↔ Port 2	> 27 dB*
VSWR (all ports)	< 1.11
Impedance	50 Ω
Input power	
Port 1	< 150 W (with max. 16 signals)
Port 2	< 150 W (with max. 16 signals)
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)
Temperature range	-20 ... +50 °C
Connectors	7-16 female
Application	Indoor
DC/AISG transparency	
Port 1 ↔ Port 3	By-pass (max. 2500 mA)
Port 2	Short circuit (External DC stop available as an accessory)
Mounting	Wall mounting: With 4 screws (max. 7 mm diameter) 19" rack mounting: To be inserted on pre-installed 19" sliding bars (2 height units required)
Weight	10.3 kg
Packing size	510 x 410 x 100 mm
Dimensions (w x h x d)	336 x 444 x 64 mm

* Valid if all ports are terminated with 50-Ω loads (see diagram).

Typical attenuation Tx/Rx1 ↔ Tx/Rx2 vs. Antenna VSWR



Note:

The input power rating of 150 W per port is specified at an ambient temperature of +55 °C with the combiner mounted vertically (see photo), without additional cooling, and while respecting the safety standard EN IEC 60950 (max. surface temperature +90 °C).

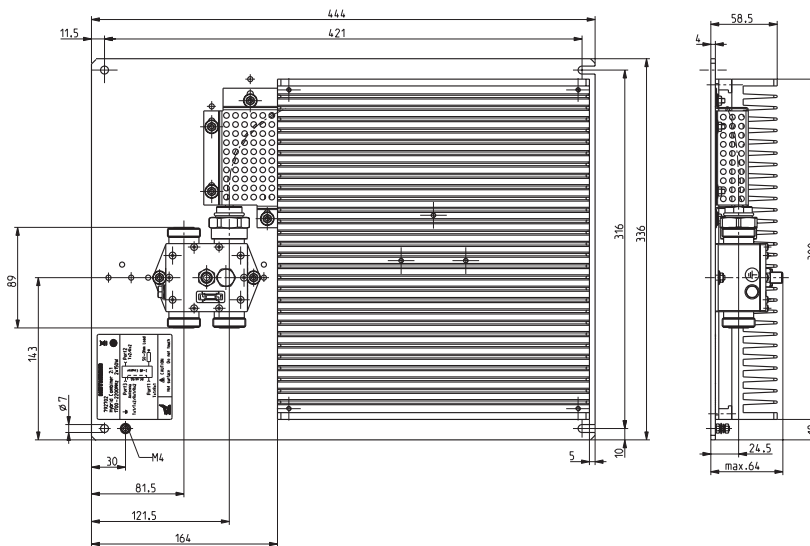
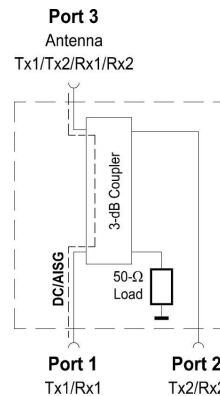
When installed in a 19" rack, it must be ensured that the max. power of 150 W is sufficiently dissipated, so that the ambient temperature does not rise above +50 °C. This can be achieved for example by the additional installation of a correspondingly dimensioned ventilator in the 19" rack or by reducing the maximum input power.

Hybrid Combiner 2:1

1700 – 2200 MHz

2 x 150 W

- Designed for the decoupled combining of 2 transmitter or receiver signals onto one common antenna
- The frequency spacing between transmitter signals can be as small as required
- **Excellent intermodulation performance**
- Suitable for indoor applications
- Wall or 19" rack mounting
- DC by-pass between port 1 and port 3
- External DC stop available as an accessory

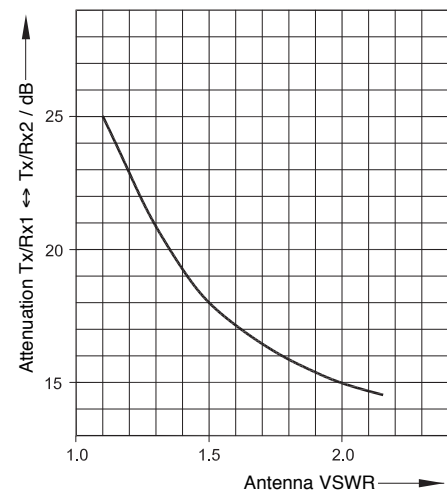


Technical Data

Type No.	792 702
Frequency range	1700 – 2200 MHz
Attenuation	
Port 1 ↔ Port 3	3.1 ± 0.4 dB
Port 2 ↔ Port 3	3.1 ± 0.4 dB
Port 1 ↔ Port 2	> 24 dB*
VSWR (all ports)	< 1.15
Impedance	50 Ω
Input power	
Port 1	< 150 W (with max. 16 signals)
Port 2	< 150 W (with max. 16 signals)
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)
Temperature range	-20 ... +50 °C
Connectors	7-16 female
Application	Indoor
DC/AISG transparency	
Port 1 ↔ Port 3	By-pass (max. 2500 mA)
Port 2	Short circuit (External DC stop available as an accessory)
Mounting	Wall mounting: With 4 screws (max. 7 mm diameter) 19" rack mounting: To be inserted on pre-installed 19" sliding bars (2 height units required)
Weight	9.8 kg
Packing size	510 x 410 x 100 mm
Dimensions (w x h x d)	336 x 444 x 64 mm

* Valid if all ports are terminated with 50-Ω loads (see diagram).

Typical attenuation Tx/Rx1 ↔ Tx/Rx2 vs. Antenna VSWR



Note:

The input power rating of 150 W per port is specified at an ambient temperature of +55 °C with the combiner mounted vertically (see photo), without additional cooling, and while respecting the safety standard EN IEC 60950 (max. surface temperature +90 °C).

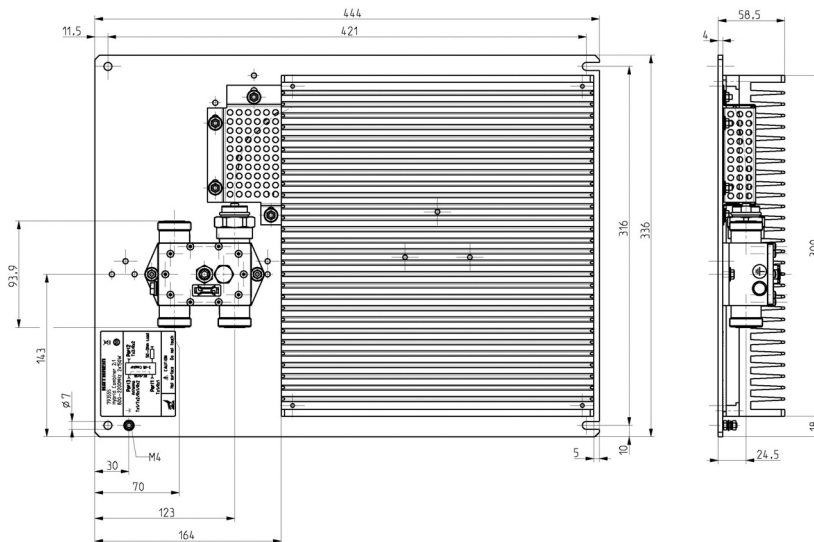
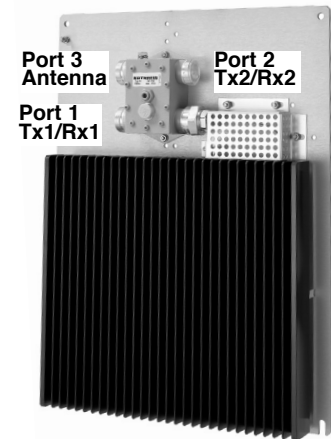
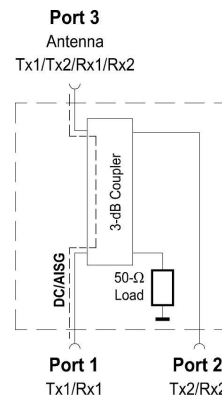
When installed in a 19" rack, it must be ensured that the max. power of 150 W is sufficiently dissipated, so that the ambient temperature does not rise above +50 °C. This can be achieved for example by the additional installation of a correspondingly dimensioned ventilator in the 19" rack or by reducing the maximum input power.

Hybrid Combiner 2:1

800 – 2200 MHz

2 x 150 W

- Designed for the decoupled combining of 2 transmitter or receiver signals onto one common antenna
- The frequency spacing between transmitter signals can be as small as required
- **Excellent intermodulation performance**
- Suitable for indoor applications
- Wall or 19" rack mounting
- DC by-pass between port 1 and port 3
- External DC stop available as an accessory

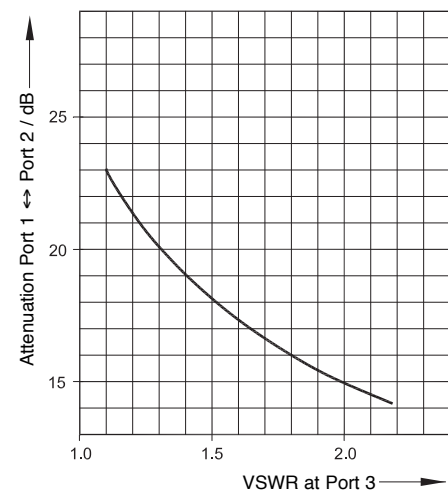


Technical Data

Type No.	793 555
Frequency range	800 – 2200 MHz
Attenuation	
Port 1 ↔ Port 3	3.1 ±1.2 dB
Port 2 ↔ Port 3	3.1 ±1.2 dB
Port 1 ↔ Port 2	> 22 dB*
VSWR (all ports)	< 1.2
Impedance	50 Ω
Input power	
Port 1	< 150 W (with max. 16 signals)
Port 2	< 150 W (with max. 16 signals)
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)
Temperature range	-20 ... +50 °C
Connectors	7-16 female
Application	Indoor
DC/AISG transparency	
Port 1 ↔ Port 3	By-pass (max. 2500 mA)
Port 2	Short circuit (External DC stop available as an accessory)
Mounting	Wall mounting: With 4 screws (max. 7 mm diameter) 19" rack mounting: To be inserted on pre-installed 19" sliding bars (2 height units required)
Weight	10 kg
Packing size	510 x 410 x 100 mm
Dimensions (w x h x d)	336 x 444 x 64 mm

* Valid if all ports are terminated with 50-Ω loads (see diagram)

Typical attenuation Port 1 ↔ Port 2 vs. VSWR at Port 3



Note:

The input power rating of 150 W per port is specified at an ambient temperature of +55 °C with the combiner mounted vertically (see photo), without additional cooling, and while respecting the safety standard EN IEC 60950 (max. surface temperature +90 °C).

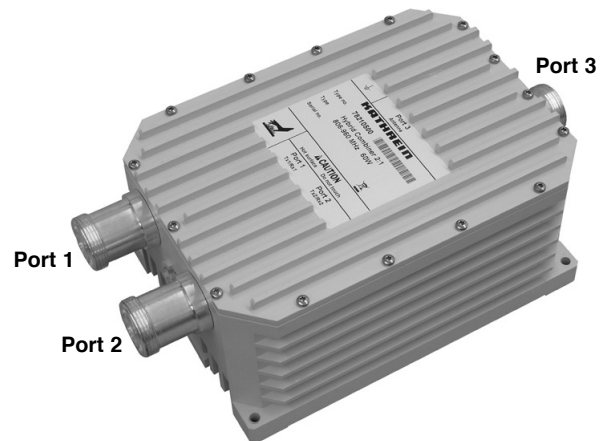
When installed in a 19" rack, it must be ensured that the max. power of 150 W is sufficiently dissipated, so that the ambient temperature does not rise above +50 °C. This can be achieved for example by the additional installation of a correspondingly dimensioned ventilator in the 19" rack or by reducing the maximum input power.

Hybrid Combiner 2:1

806 – 960 MHz

2 x 60 W

- Designed for the decoupled combining of 2 transmitter or receiver signals onto one common antenna
- The frequency spacing between transmitter signals can be as small as required
- **Excellent intermodulation performance**
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- DC by-pass between all ports
- External DC stop available as an accessory



Technical Data

Type No.	782 10500
Frequency range	806 – 960 MHz
Attenuation	
Port 1 ↔ Port 3	3.1 ± 0.5 dB
Port 2 ↔ Port 3	3.1 ± 0.5 dB
Port 1 ↔ Port 2	> 23 dB*
VSWR (all ports)	< 1.15
Impedance	50 Ω
Input power	
Port 1	< 60 W
Port 2	< 60 W
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)
Temperature range	-40 ... +55 °C
Connectors	7-16 female (long neck)
Application	Indoor or outdoor (IP 66)
DC/AISG transparency	By-pass between all ports (max. 2500 mA) AISG: Attenuation 3 dB with / 6 dB without external DC stop at either Port 1 or Port 2
Mounting	Wall mounting: With 4 screws (max. 6.5 mm diameter) Mast mounting: With additional clamp set (see data sheet)
Weight	3.7 kg
Packing size	377 x 232 x 189 mm
Dimensions (w x h x d)	143.6 x 258 x 97.5 mm (including connectors)

* Valid if all ports are terminated with 50-Ω loads.

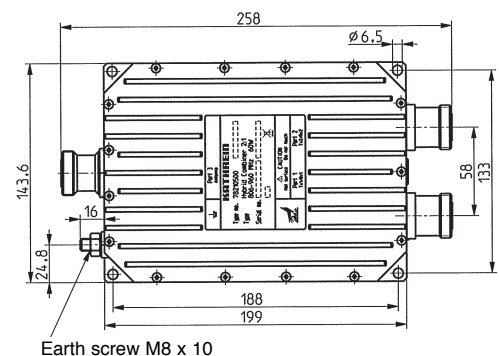
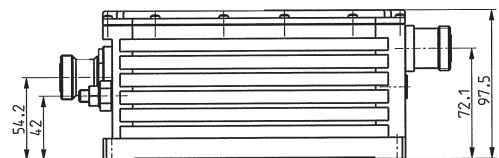
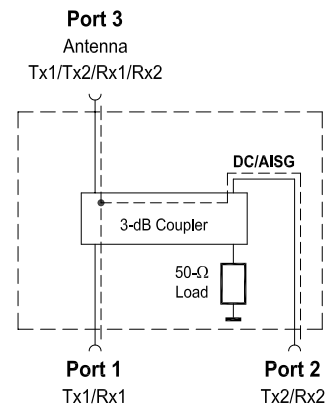
Note:

The input power rating of 60 W per port is specified at an ambient temperature of +55 °C with the combiner mounted horizontally, without additional cooling, and while respecting the safety standard EN IEC 60950 (max. surface temperature +90 °C).

If mounted vertically and/or used at a lower ambient temperature, then a higher input power in accordance with the following table is possible:

Max. input power per port

	Mounted horizontally	Mounted vertically
Max. ambient temperature		
+55 °C	60 W	70 W
+40 °C	70 W	80 W
+25 °C	75 W	85 W

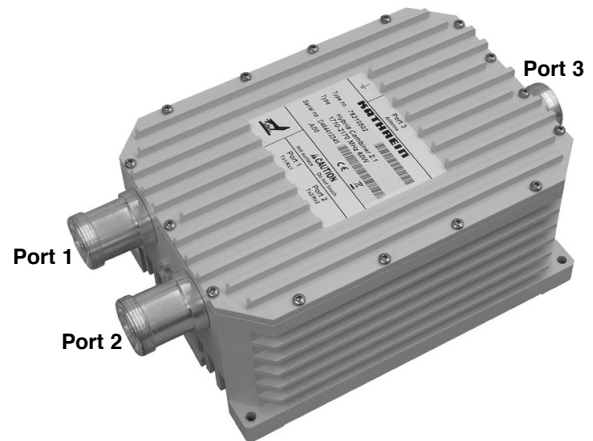


Hybrid Combiner 2:1

1710 – 2170 MHz

2 x 60 W

- Designed for the decoupled combining of 2 transmitter or receiver signals onto one common antenna
- The frequency spacing between transmitter signals can be as small as required
- **Excellent intermodulation performance**
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- DC by-pass between all ports
- External DC stop available as an accessory



Technical Data

Type No.	782 10502
Frequency range	1710 – 2170 MHz
Attenuation	
Port 1 ↔ Port 3	3.1 ± 0.5 dB
Port 2 ↔ Port 3	3.1 ± 0.5 dB
Port 1 ↔ Port 2	> 22 dB*
VSWR (all ports)	< 1.25
Impedance	50 Ω
Input power	
Port 1	< 60 W
Port 2	< 60 W
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)
Temperature range	-40 ... +55 °C
Connectors	7-16 female (long neck)
Application	Indoor or outdoor (IP 66)
DC/AISG transparency	By-pass between all ports (max. 2500 mA) AISG: Attenuation 3 dB with / 6 dB without external DC stop at either Port 1 or Port 2
Mounting	Wall mounting: With 4 screws (max. 6.5 mm diameter) Mast mounting: With additional clamp set
Weight	3.7 kg
Packing size	377 x 232 x 189 mm
Dimensions (w x h x d)	143.6 x 256 x 97.5 mm (including connectors)

* Valid if all ports are terminated with 50-Ω loads.

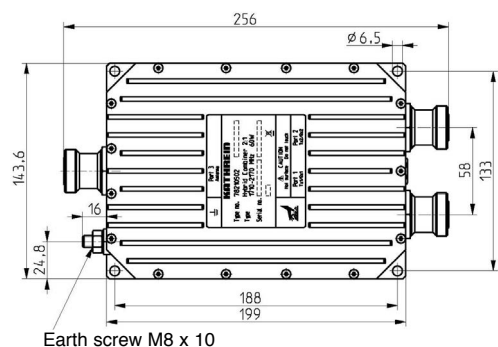
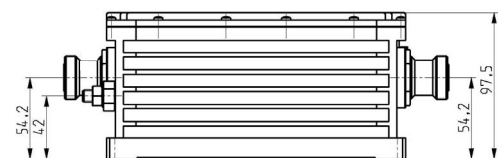
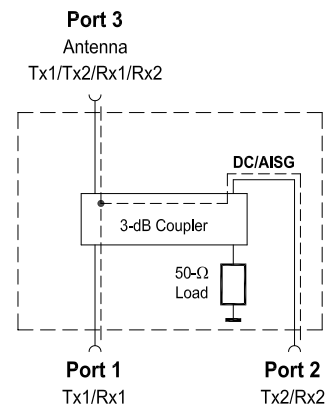
Note:

The input power rating of 60 W per port is specified at an ambient temperature of +55 °C with the combiner mounted horizontally, without additional cooling, and while respecting the safety standard EN IEC 60950 (max. surface temperature +90 °C).

If mounted vertically and/or used at a lower ambient temperature, then a higher input power in accordance with the following table is possible:

Max. input power per port

	Mounted horizontally	Mounted vertically
Max. ambient temperature		
+55 °C	60 W	70 W
+40 °C	70 W	80 W
+25 °C	75 W	85 W



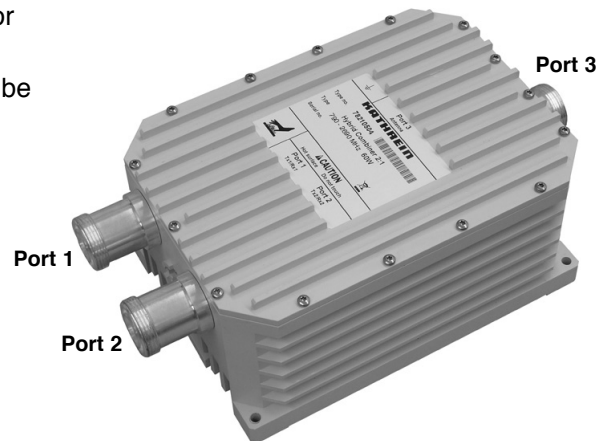
Earth screw M8 x 10

Hybrid Combiner 2:1

790 – 2690 MHz

2 x 60 W

- Designed for the decoupled combining of 2 transmitter or receiver signals onto one common antenna
- The frequency spacing between transmitter signals can be as small as required
- **Excellent intermodulation performance**
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- DC by-pass between port 1 and port 3
- External DC stop available as an accessory



Technical Data

Type No.	782 10504
Frequency range	790 – 2690 MHz
Attenuation	
Port 1 ↔ Port 3	3.1 ±0.5 dB
Port 2 ↔ Port 3	3.1 ±0.5 dB
Port 1 ↔ Port 2	> 23 dB*
VSWR (all ports)	< 1.25
Impedance	50 Ω
Input power	
Port 1	< 60 W
Port 2	< 60 W
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)
Temperature range	-40 ... +55 °C
Connectors	7-16 female (long neck)
Application	Indoor or outdoor (IP 66)
DC/AISG transparency	
Port 1 ↔ Port 3	By-pass (max. 2500 mA)
Port 2	Short circuit
	(External DC stop available as an accessory)
Mounting	Wall mounting: With 4 screws (max. 6.5 mm diameter) Mast mounting: With additional clamp set (see data sheet)

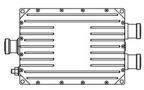
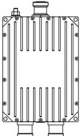
* Valid if all ports are terminated with 50-Ω loads.

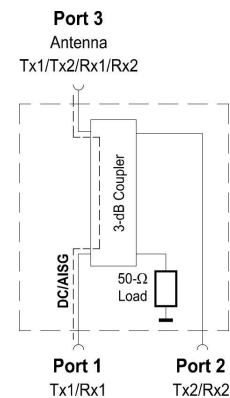
Note:

The input power rating of 60 W per port is specified at an ambient temperature of +55 °C with the combiner mounted horizontally, without additional cooling, and while respecting the safety standard EN IEC 60950 (max. surface temperature +90 °C).

If mounted vertically and/or used at a lower ambient temperature, then a higher input power in accordance with the following table is possible:

Max. input power per port

	Mounted horizontally	Mounted vertically
Max. ambient temperature		
+55 °C	60 W	70 W
+40 °C	70 W	80 W
+25 °C	75 W	85 W

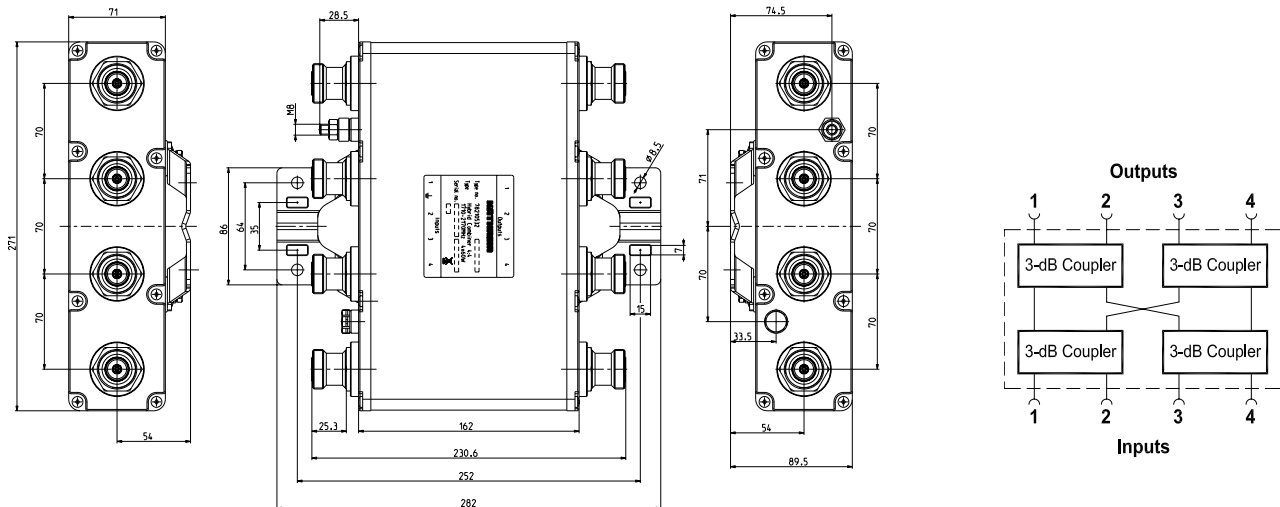
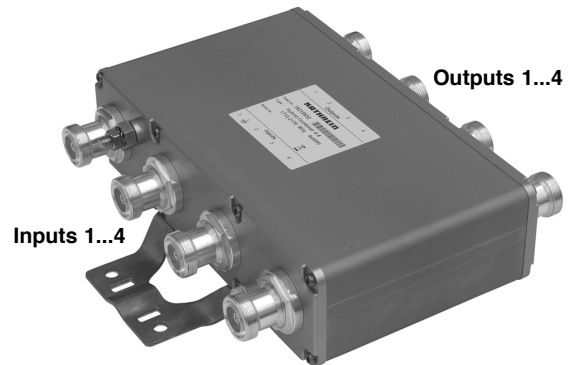


Hybrid Combiner 4:4

1710 – 2170 MHz

4 x 60 W

- Designed for the decoupled combining of 4 transmitter or receiver signals and distributing these signals equally onto 4 antenna outputs
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- DC by-pass between all ports
- External DC stop available as an accessory



Technical Data

Type No.	782 10532
Frequency range	1710 – 2170 MHz
Insertion Loss Input 1...4 ↔ Output 1...4	0.5 dB ±0.2 dB
Power distribution loss (excluding insertion loss) Input 1...4 ↔ Output 1...4	6 ±0.75 dB
Isolation Input 1...4 ↔ Input 1...4 Output 1...4 ↔ Output 1...4	> 22 dB* > 22 dB*
VSWR (all ports)	< 1.25
Impedance	50 Ω
Input power	< 60 W at each port
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)
Temperature range	-40 ... +60 °C
Connectors	7-16 female (long neck)
Application	Indoor or outdoor (IP 66)
DC/AISG transparency	By-pass between all ports (max. 2500 mA) External DC stop available as an accessory
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set
Weight	4.4 kg
Packing size	357 x 312 x 189 mm
Dimensions (w x h x d)	271 x 262 x 89.5 mm (including connectors and mounting brackets)

* Valid if all ports are terminated with 50-Ω loads

Note:

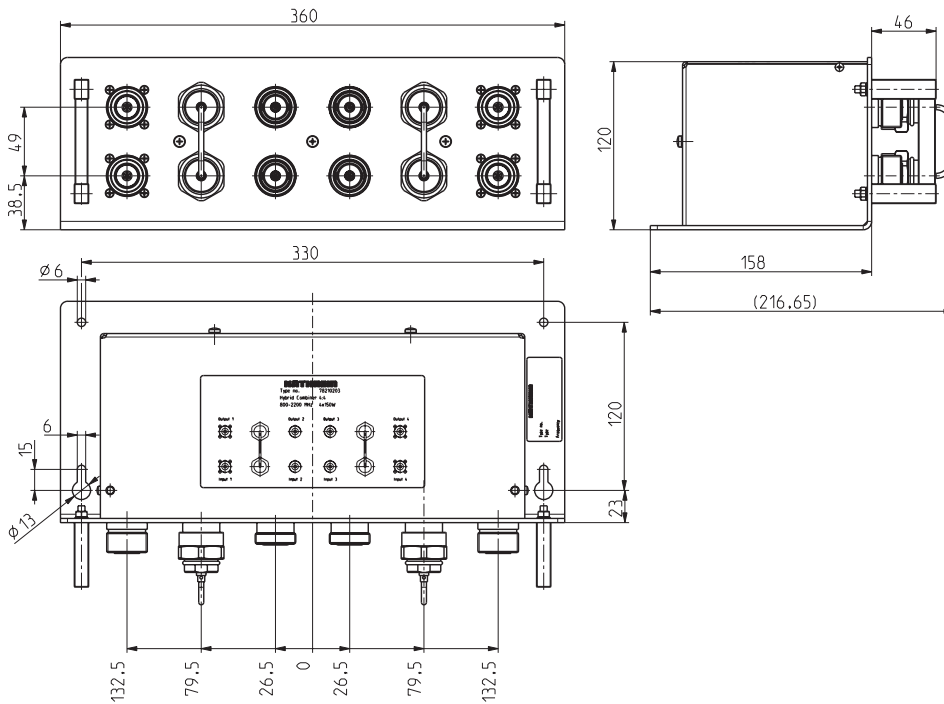
The use of fewer than 4 inputs or outputs is possible. Any unused input ports have to be terminated with low-power 50-Ohm loads (e.g. Kathrein type 784 10367), unused output ports have to be terminated with high-power 50-Ohm loads (e.g. Kathrein low-intermodulation type 782 10474).

Hybrid Combiner 4:4

800 – 2200 MHz

4 x 150 W

- Designed for the decoupled combining of 4 transmitter or receiver signals and distributing these signals evenly onto 4 antenna outputs.



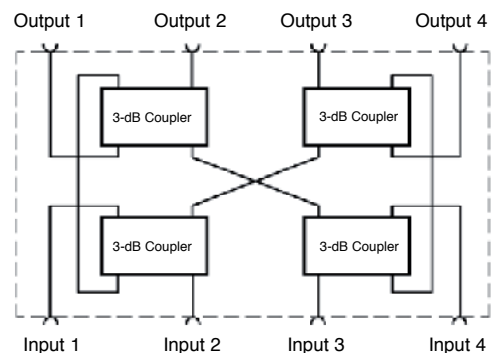
Technical Data

Type No.	782 10203
Frequency range	800 – 2200 MHz
Power distribution loss (including insertion loss) Input 1...4 ↔ Output 1...4	< 6.5 ±2 dB
Insertion Loss	< 0.5 dB
Isolation Input 1...4 ↔ Input 1...4	> 20 dB
Output 1...4 ↔ Output 1...4	> 20 dB
VSWR (all ports)	< 1.3 *
Impedance	50 Ω
Input power	< 150 W at each port
Intermodulation products	< -155 dBc (3 rd order; with 2 x 20 W)
Temperature range	-40 ... +60 °C
Connectors	7-16 female
Application	Indoor
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter)
Dimensions (w x h x d)	360 x 180 x 216 mm

* Valid if all ports are terminated with 50-Ω loads.

Note:

The use of fewer than 4 inputs or outputs is possible. Any unused input ports have to be terminated with low-power 50-Ω loads (e.g. Kathrein type 784 10367), unused output ports have to be terminated with high-power 50-Ω loads (e.g. Kathrein low-intermodulation type 782 10474).

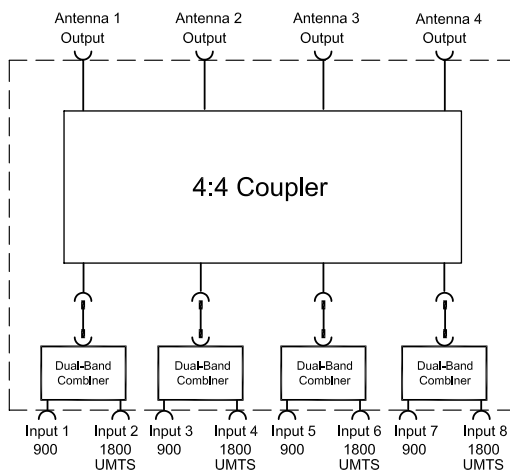
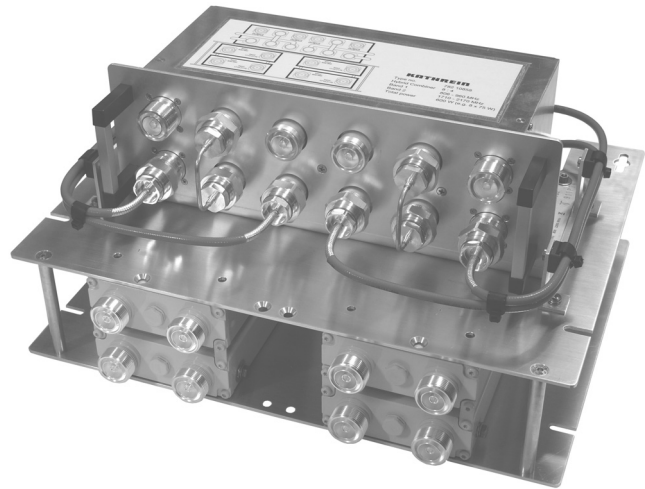


Hybrid Combiner 8:4

806 – 2170 MHz

8 x 75 W

- Designed for the decoupled combining of 8 transmitter or receiver signals and distributing these signals evenly onto 4 antenna outputs.



Technical Data

Type No.	782 10858
Frequency range	
Band 1:	806 – 960 MHz
Band 2:	1710 – 2170 MHz
Power distribution loss (excluding insertion loss) Input 1...8 ↔ Output 1...4	6 ±2 dB
Insertion Loss Input 1...8 ↔ Output 1...4	< 1.0 dB
Isolation between input ports	
Same bands	> 22 dB
Different bands	> 50 dB
Impedance	50 Ω
Input power	600 W total (e.g. 8 x 75 W)
Intermodulation products	< -150 dBc (3 rd order; with 2 x 20 W)
Temperature range	-40 ... +60 °C
Connectors	7-16 female
Application	Indoor
Mounting	Wall mounting: With 4 screws (max. 6 mm diameter)
Weight	17.1 kg
Dimensions (w x h x d)	448 x 223.5 x 330 mm

Note:

The use of fewer than 8 inputs or 4 outputs is possible. Any unused input ports have to be terminated with low-power 50-Ohm loads (e.g. Kathrein type 784 10367), unused output ports have to be terminated with high-power 50-Ohm loads (e.g. Kathrein low-intermodulation type 782 10474).

Duplex Hybrid Combiner (Same-Band Combiner)

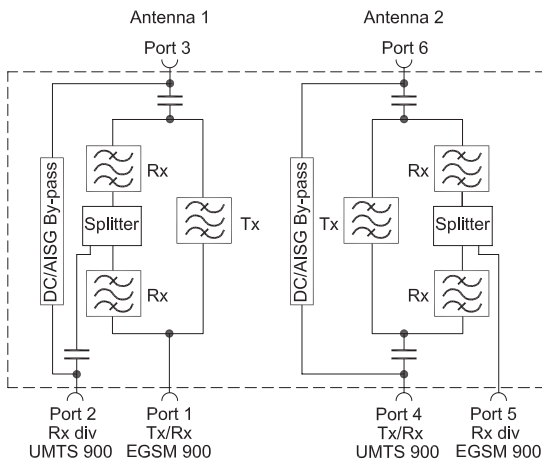
KATHREIN

Antennen · Electronic

880 – 960 MHz
GSM 900

880 – 960 MHz
UMTS 900

- Enables antenna and feeder sharing for two base stations in the 900 MHz frequency band
- Very low insertion loss over full EGSM/UMTS 900 Tx bandwidth compared to standard hybrid combiners
- Double unit in one housing for XPol antennas
- Suitable for indoor or outdoor applications
- DC/AISG by-pass for DTMA supply (for UMTS paths only)



Typical Attenuation Curves

Diagram I

Port 1 ↔ Port 3
Port 4 ↔ Port 6

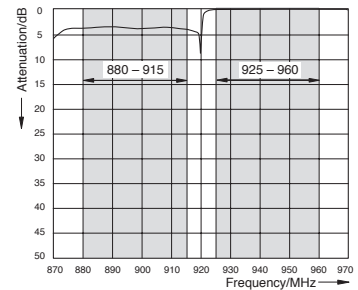


Diagram II

Port 1 ↔ Port 3
Port 4 ↔ Port 6

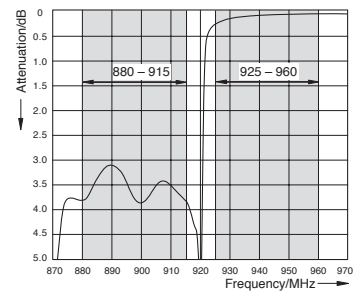


Diagram III

Port 2 ↔ Port 3
Port 5 ↔ Port 6

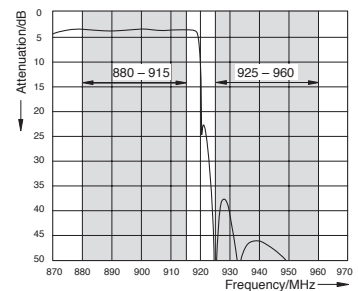
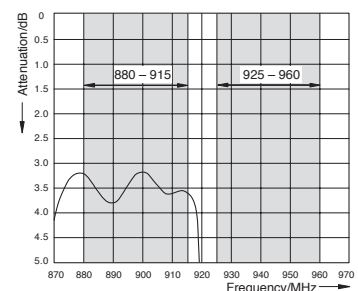


Diagram IV

Port 2 ↔ Port 3
Port 5 ↔ Port 6



Technical Data

Type No.	782 10805
Pass band	
Rx	880 – 915 MHz
Tx	925 – 960 MHz
Insertion loss	
Port 1 ↔ Port 3 / Port 4 ↔ Port 6	< 0.4 dB, typically 0.2 dB (925 – 960 MHz) – see Diagram I and II
Port 2 ↔ Port 3 / Port 5 ↔ Port 6	< 4.3 dB, typically 3.6 dB (880 – 915 MHz) – see Diagram I and II
Port 2 ↔ Port 3 / Port 4 ↔ Port 6	< 4.0 dB, typically 3.5 dB (880 – 915 MHz) – see Diagram III and IV
Isolation	
Port 1 ↔ Port 2 / Port 4 ↔ Port 5	> 25 dB (880 – 915 MHz) > 35 dB (925 – 960 MHz)
VSWR	< 1.2 (880 – 915 / 925 – 960 MHz)
Impedance	50 Ω
Input power	Port 1: < 250 W Port 4: < 250 W
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)
Temperature range	-40 ... +60 °C
Connectors	7-16 female (long neck)
Application	Indoor or outdoor (IP 66)
DC/AISG transparency	
Port 1 ↔ Port 3 / Port 5 ↔ Port 6	Stop
Port 2 ↔ Port 3 / Port 4 ↔ Port 6	By-pass (max. 2500 mA)
Lightning protection	3 kA, 10/350 μs pulse
Mounting	With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set
Weight	6.5 kg
Packing size	390 x 470 x 160 mm
Dimensions (w x h x d)	287.1 x 278.6 x 71 mm (without connectors, without mounting brackets)

Duplex Hybrid Combiner (Same-Band Combiner) **KATHREIN**

Antennen · Electronic

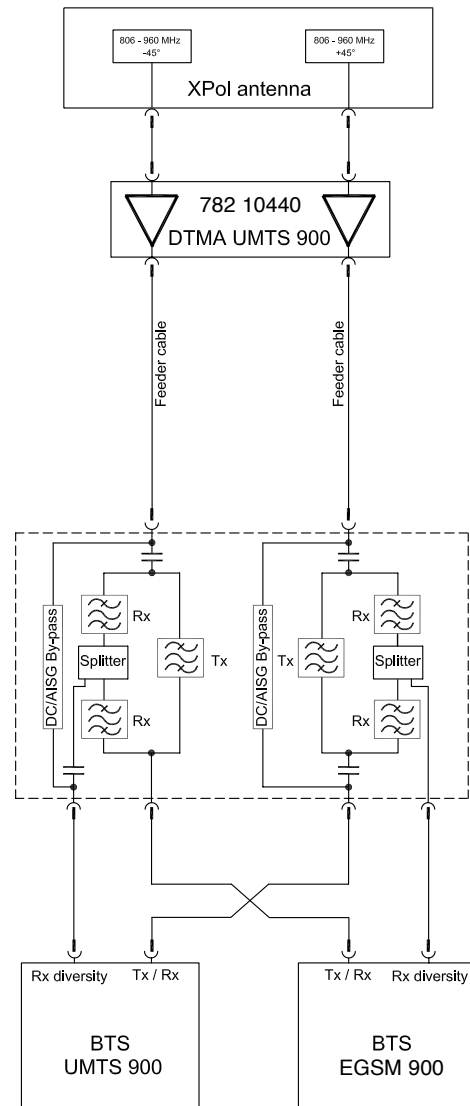
880 – 960 MHz
GSM 900

880 – 960 MHz
UMTS 900

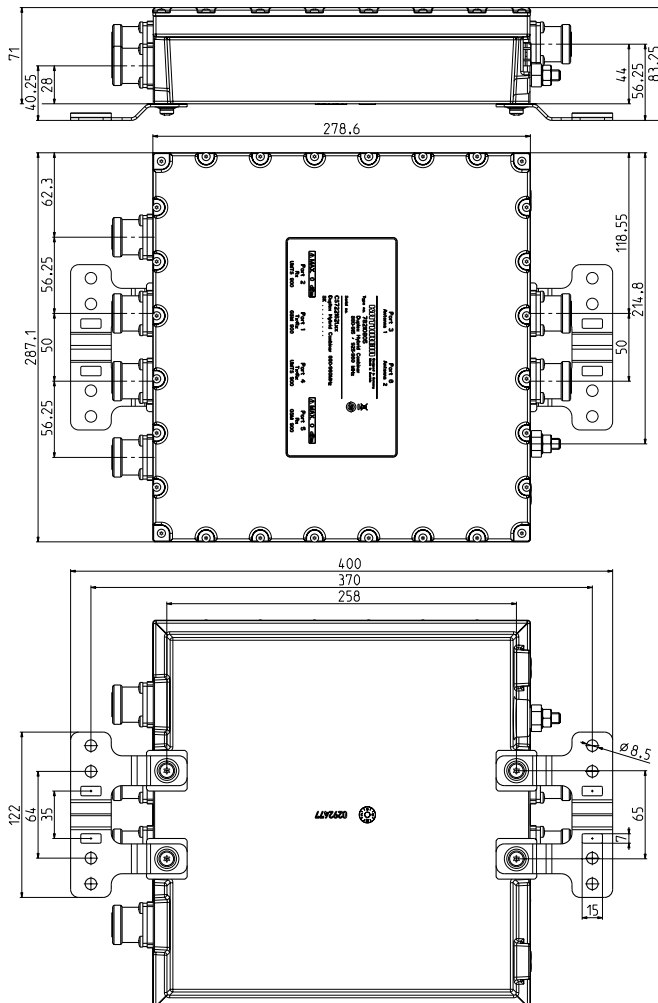
Accessories (order separately)

Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
734 365	45 – 125 mm

Type No.	Description
793 301	DC stop
784 10367	50-Ω load 1.5 W indoor or outdoor



Application example



Same-Band Combiner

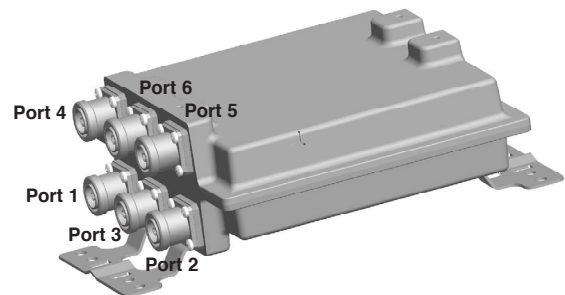
KATHREIN

Antennen · Electronic

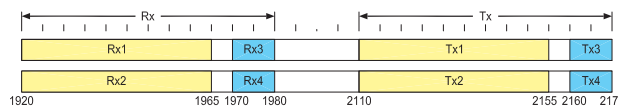
1920 – 1980 / 2110 – 2170 MHz
UMTS 2100

1920 ... 1980 / 2110 ... 2170 MHz
UMTS 2100 (10 MHz Bandwidth)

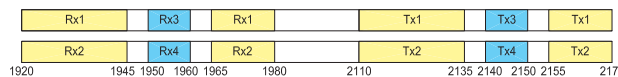
- Enables antenna and feeder sharing for two base stations in the same frequency band
- Customized 10 MHz Tx/Rx bandpass filters (factory tunable) available for inserting a second UMTS 2100 base station
- Full pass-band (without the second UMTS 2100 10 MHz Tx/Rx frequency blocks) available for the first UMTS 2100 base station
- Low insertion loss over complete UMTS 2100 Tx/Rx bandwidth compared to standard hybrid combiners
- Double unit for XPol antennas
- Suitable for indoor or outdoor applications
- DC/AISG by-pass for DTMA supply



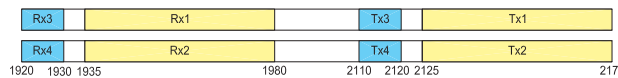
Tuning Example 1



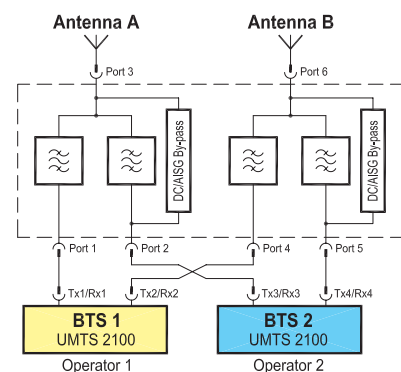
Tuning Example 2



Tuning Example 3



Block Diagram



Technical Data

Type No.	782 10925
Pass band BTS 1 (UMTS 2100) BTS 2 (UMTS 2100)	Rx = 1920 – 1980 / Tx = 2110 – 2170 MHz (without assigned BTS 2 10 MHz Tx/Rx frequency blocks and ±5 MHz guard bands) Rx = 1920 ... 1980 / Tx = 2110 ... 2170 MHz (factory tunable 10 MHz frequency blocks)
Guard band	5 MHz (between Tx1/Rx1 and Tx3/Rx3, between Tx2/Rx2 and Tx4/Rx4 e.g. tuning example 1: Rx1 (Rx2) = 1920 – 1965 and Tx1 (Tx2) = 2110 – 2155 MHz Rx3 (Rx4) = 1970 – 1980 and Tx3 (Tx4) = 2160 – 2170 MHz
Insertion loss Port 1 ↔ Port 3 / Port 4 ↔ Port 6 Port 2 ↔ Port 3 / Port 5 ↔ Port 6	< 0.8 dB – see diagram I and II for tuning example 1 < 0.8 dB – see diagram III and IV for tuning example 1
Isolation Port 1 ↔ Port 2 / Port 4 ↔ Port 5	> 30 dB (1920 – 1980 / 2110 – 2170 MHz)
VSWR	< 1.25 (pass bands)
Impedance	50 Ω
Input power Tx1 / Tx2 / Tx3 / Tx4	< 100 W / < 100 W / < 100 W / < 100 W
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)
Temperature range	-40 ... +60 °C
Connectors	7-16 female (long neck)
Application	Indoor <i>or</i> outdoor (IP66)
DC/AISG transparency Port 1 ↔ Port 3 / Port 4 ↔ Port 6 Port 2 ↔ Port 3 / Port 5 ↔ Port 6	Stop By-pass (max. 2500 mA)
Lightning protection	3 kA, 10/350 μs pulse
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) / Mast mounting: With additional clamp set
Weight	6.5 kg
Dimensions (w x h x d)	243 x 240 x 100 mm (without connectors, without mountain brackets)

Same-Band Combiner

KATHREIN

Antennen · Electronic

1920 – 1980 / 2110 – 2170 MHz
UMTS 2100

1920 ... 1980 / 2110 ... 2170 MHz
UMTS 2100 (10 MHz Bandwidth)

Accessories (order separately)

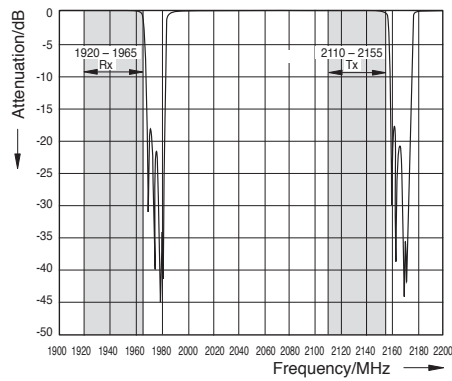
Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
734 365	45 – 125 mm



Calculated Attenuation Curves (Tuning Example 1)

BTS 1 (UMTS 2100)

Diagram I (Port 1 ↔ Port 3 / Port 4 ↔ Port 6)



BTS 2 (UMTS 2100)

Diagram III (Port 2 ↔ Port 3 / Port 5 ↔ Port 6)

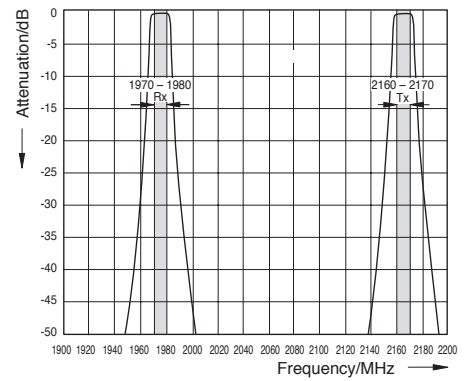


Diagram II (Port 1 ↔ Port 3 / Port 4 ↔ Port 6)

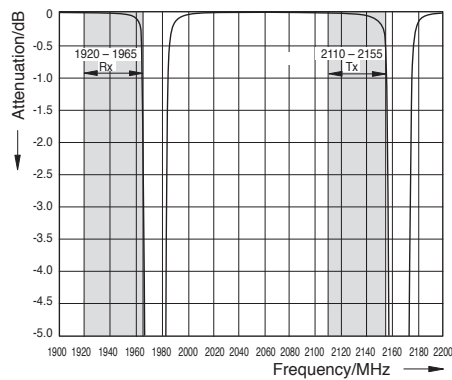
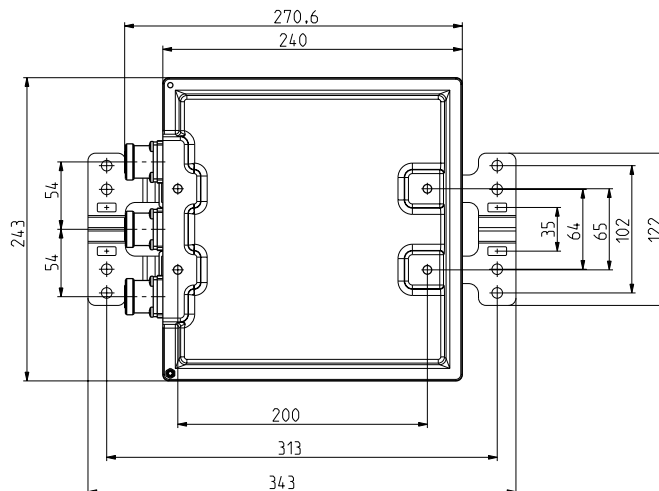
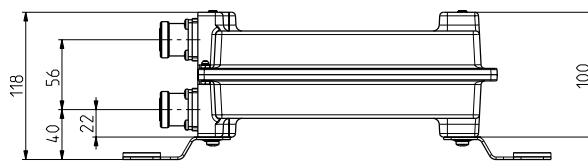
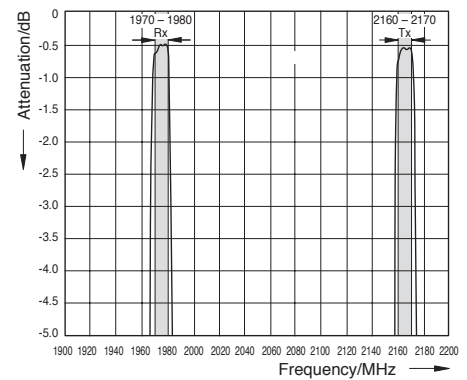


Diagram IV (Port 2 ↔ Port 3 / Port 5 ↔ Port 6)



Hybrid Ring Junction (180° Hybrid)

806 – 960 MHz / 1710 – 1880 MHz

The hybrid ring junction can be used:

- as a power splitter with a ratio of 1:1,
- for the decoupled combining of two transmitters with arbitrarily low frequency spacing (at 3 dB loss),
- for the decoupled combining of two receivers with arbitrarily low frequency spacing,
- for the decoupled combining of two transmitter/receiver units, whose integrated duplexers are within the same frequency range,
- as component to form combiners.

Description:

The hybrid ring junction has four ports, two of which are decoupled from each other. For example effective power entering into port 1 is distributed into ports 2 and 4, port 3 is decoupled and without power if ports 2 and 4 are ideally matched. In practice an absorber of suitable power at port 3 is to be planned for according to the mismatch of ports 2 and 4.

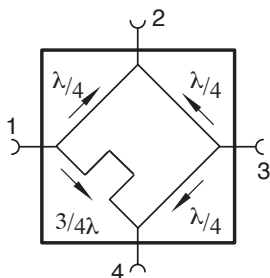
Decoupled combining can be made via ports 1 and 3 or 2 and 4.



K 63 73 621
790 881



791 498



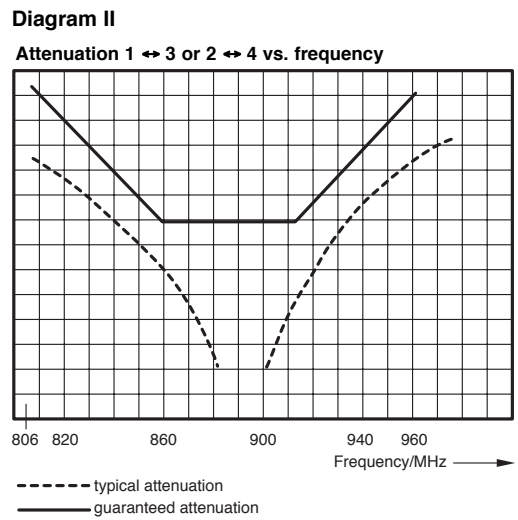
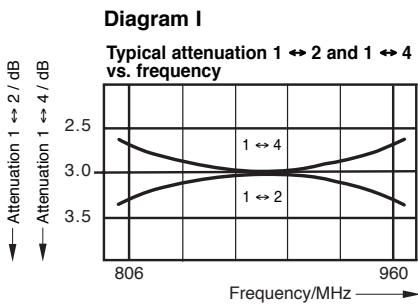
Technical Data

Type No.	K 63 73 621	790 881	791 498
Frequency range	806 – 960 MHz	890 – 960 MHz	1710 – 1880 MHz
Attenuation 1 ↔ 2 or 1 ↔ 4	3 ±0.4 dB (see diagram I)	3 ±0.3 dB (see diagram I)	3 ±0.4 dB (see diagram I)
Attenuation 1 ↔ 3 or 2 ↔ 4	See diagram II		See diagram II
VSWR	< 1.2		< 1.3
Impedance	50 Ω		50 Ω
Input power	< 100 W per input		< 50 W per input
Connectors	N female		N female
Application	Indoor		Indoor
Mounting	With 2 screws (max. 4.5 mm diameter)		With 4 screws (max. 4.5 mm diameter)
Weight	0.32 kg		0.25 kg
Packing size	Approx. 160 x 40 x 105 mm		90 x 40 x 110 mm
Dimensions (w x h x d)	150 x 30 x 87 mm (including connectors)		80 x 26 x 106 mm (including connectors)

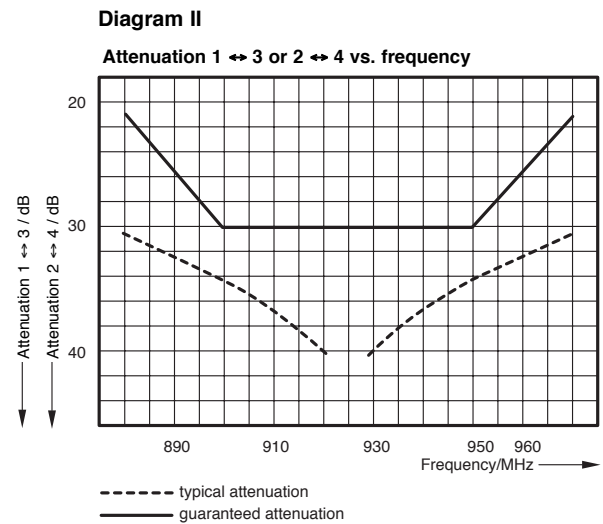
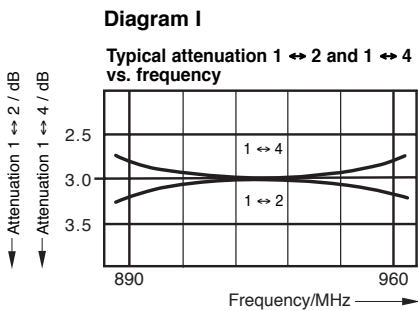
Note: VSWR and attenuation values are measured when the remaining ports are terminated with 50-Ω loads.

Typical Attenuation Curves

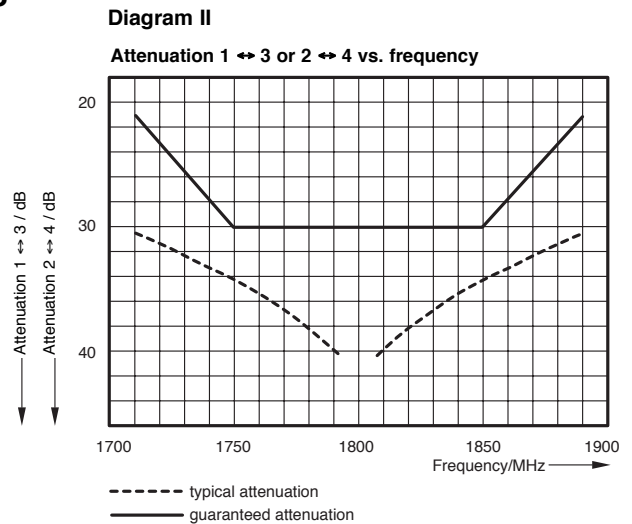
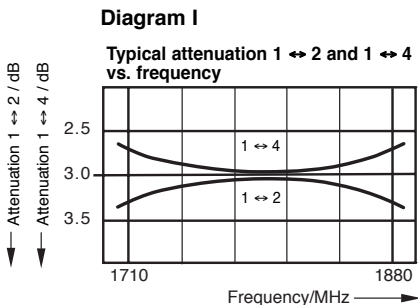
K 63 73 621



790 881



791 498



3-dB Coupler (90° Hybrid) 806 – 960 MHz

The 3-dB coupler can be used:

- as a decoupled power splitter with a ratio of 1:1,
- for the decoupled combining of two transmitters with frequency spacing as narrow as desired (at 3 dB loss),
- for the decoupled combining of two receivers with frequency spacing as narrow as desired,
- for the decoupled combining of two transmitter/receiver units, whose integrated duplexers are within the same frequency range,
- as a frequency-independent 90° phase shifter,
- as a component to form combiners.



Function:

The 3-dB coupler has four ports, two of which are decoupled from each other. For example effective power entering into port 1 is distributed into ports 2 and 3. Port 4 is decoupled and without power if ports 2 and 3 are ideally matched. In practice an absorber of suitable power at port 4 is to be planned in accordance with the mismatch of ports 2 and 3. Decoupled combining can be achieved via the diagonally opposite ports 2 and 3 or 1 and 4.

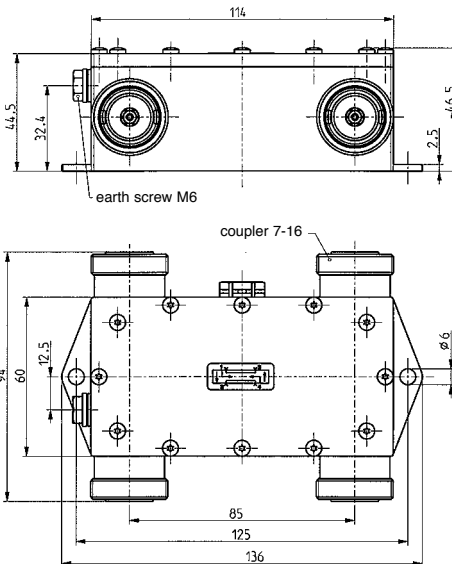
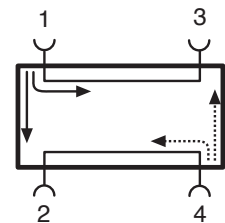
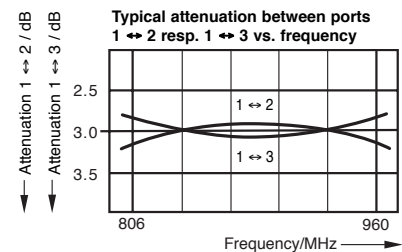


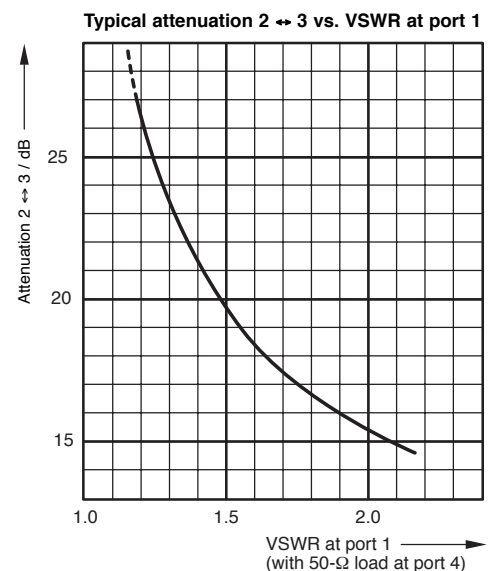
Diagram I



Technical Data

Type No.	793 506
Frequency range	806 – 960 MHz
Attenuation 1 ↔ 2 / 1 ↔ 3	3 ± 0.4 dB (see diagram I)
Attenuation 2 ↔ 3	See diagram II
Directivity	> 30 dB
VSWR	< 1.1
Impedance	50 Ω
Input power	< 500 W total power at <i>two</i> inputs, with max. 350 W at <i>one</i> input
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)
Temperature range	-30 ... +70 °C
Connectors	7-16 female
Application	Indoor or outdoor (IP66)
Mounting	With 2 screws (max. 6 mm diameter)
Weight	1.8 kg
Packing size	160 x 95 x 65 mm
Dimensions (w x h x d)	136 x 46.5 x 94 mm (including connectors)

Diagram II



Note: VSWR and attenuation values are measured when the remaining ports are terminated with 50-Ω loads.

3-dB Coupler (90° Hybrid) 1700 – 2200 MHz

The 3-dB coupler can be used:

- as a decoupled power splitter with a ratio of 1:1,
- for the decoupled combining of two transmitters with frequency spacing as narrow as desired (at 3 dB loss),
- for the decoupled combining of two receivers with frequency spacing as narrow as desired,
- for the decoupled combining of two transmitter/receiver units, whose integrated duplexers are within the same frequency range,
- as a frequency-independent 90° phase shifter,
- as a component to form combiners.



Function:

The 3-dB coupler has four ports, two of which are decoupled from each other. For example effective power entering into port 1 is distributed into ports 2 and 3. Port 4 is decoupled and without power if ports 2 and 3 are ideally matched. In practice an absorber of suitable power at port 4 is to be planned in accordance with the mismatch of ports 2 and 3. Decoupled combining can be achieved via the diagonally opposite ports 2 and 3 or 1 and 4.

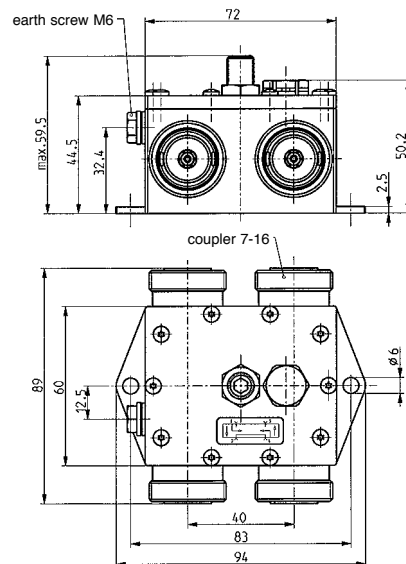
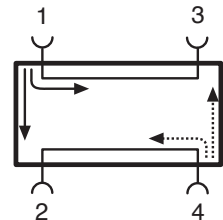
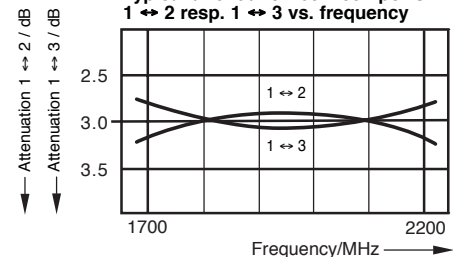


Diagram I

Typical attenuation between ports 1 ↔ 2 resp. 1 ↔ 3 vs. frequency

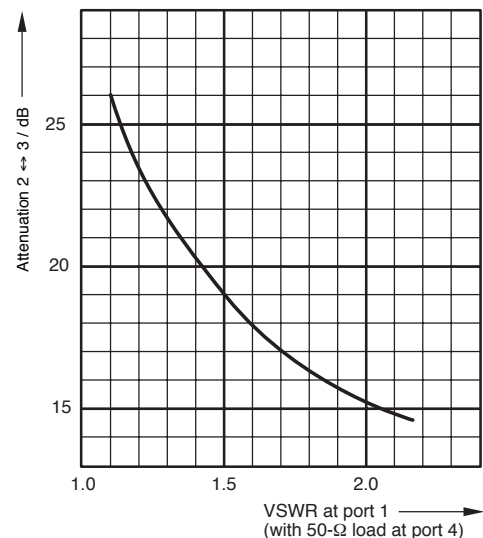


Technical Data

Type No.	793 006
Frequency range	1700 – 2200 MHz
Attenuation 1 ↔ 2 / 1 ↔ 3	3 ± 0.4 dB (see diagram I)
Attenuation 2 ↔ 3	See diagram II
Directivity	> 25 dB
VSWR	< 1.15
Impedance	50 Ω
Input power	< 300 W total power at <i>two</i> inputs, with max. 200 W at <i>one</i> input
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)
Temperature range	-30 ... +70 °C
Connectors	7-16 female
Application	Indoor or outdoor (IP66)
Mounting	With 2 screws (max. 5.5 mm diameter)
Weight	1.3 kg
Packing size	160 x 95 x 65 mm
Dimensions (w x h x d)	94 x 59.5 x 89 mm (including connectors)

Diagram II

Typical attenuation 2 ↔ 3 vs. VSWR at port 1



Note: VSWR and attenuation values are measured when the remaining ports are terminated with 50-Ω loads.

3-dB Coupler (90° Hybrid) 800 – 2200 MHz

The 3-dB coupler can be used:

- as a decoupled power splitter with a ratio of 1 : 1,
- for the decoupled combining of two transmitters with frequency spacing as narrow as desired (at 3 dB loss),
- for the decoupled combining of two receivers with frequency spacing as narrow as desired,
- for the decoupled combining of two transmitter/receiver units whose integrated duplexers are within the same frequency range,
- as a frequency-independent 90° phase shifter,
- as a combiner component.

Function:

The 3-dB coupler has four ports, two of which are decoupled from each other. For example effective power entering into port 1 is distributed into the ports 2 and 3. Port 4 is decoupled and without power if ports 2 and 3 are ideally matched. In practice an absorber of suitable power at port 4 is to be planned for according to the mismatch of ports 2 and 3.

Decoupled combining can be achieved via the diagonally opposite ports 2 and 3 respectively 1 and 4.

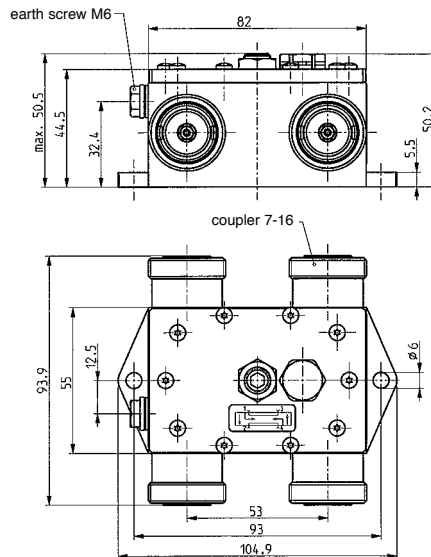
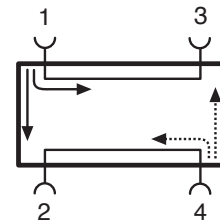
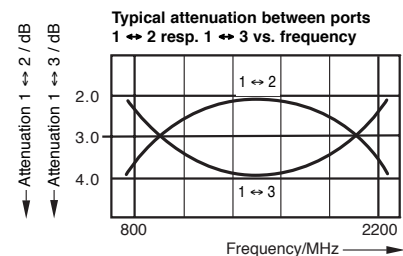


Diagram I

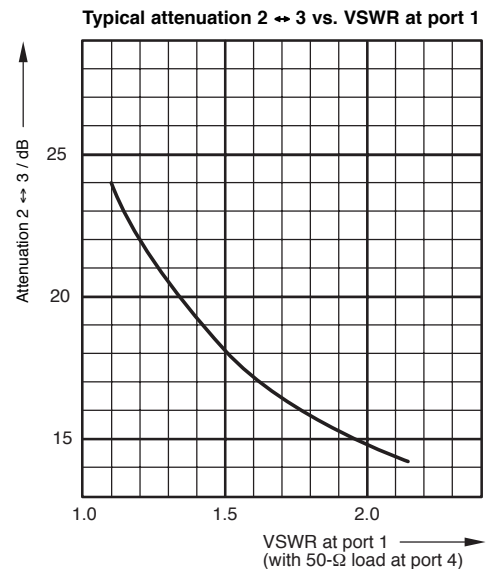


Technical Data

Type No.	793 554
Frequency range	800 – 2200 MHz
Attenuation 1 ↔ 2 / 1 ↔ 3	3 ±1.2 dB (see diagram I)
Attenuation 2 ↔ 3	See diagram II
Directivity	> 20 dB
VSWR	< 1.2
Impedance	50 Ω
Input power	< 300 W total power at <i>two</i> inputs, with max. 200 W at <i>one</i> input
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)
Temperatur range	-30 ... +70 °C
Connectors	7-16 female
Application	Indoor or outdoor (IP66)
Mounting	With 2 screws (max. 5.5 mm diameter)
Weight	1.3 kg
Packing size	160 x 95 x 65 mm
Dimensions (w x h x d)	104.9 x 50.2 x 93.9 mm (including connectors)

Note: VSWR and attenuation values are measured when the remaining ports are terminated with 50-Ω loads.

Diagram II



System Components

Bias Tees
Measuring Directional Couplers
DC-Stops
Attenuators
50- Ω Loads
Power Distribution Unit

System Components:

Description	Type No.	Frequency range	Max. input power	Page
DC Stop	793 301	800 – 2170 MHz	750 W	281
DC Stop	782 10850	250 – 2700 MHz	750 W	282
Bias Tee	793 304	800 – 2170 MHz	250 W	283
Bias Tee AISG	782 10429	800 – 2170 MHz	250 W	284
Bias Tee AISG/Bulkhead	782 10550	1710 – 2170 MHz	250 W	285
Smart Bias Tee 12 V / BTS	782 10253	800 – 2170 MHz	750 W	286 – 288
Smart Bias Tee 12 V / Antenna	782 10254	800 – 2170 MHz	750 W	286 – 288
Smart Bias Tee 24 V / BTS	782 10255	800 – 2170 MHz	750 W	286 – 288
Smart Bias Tee 24 V / Antenna	782 10256	800 – 2170 MHz	750 W	286 – 288
Smart Bias Tee 12 V / BTS	782 10453	800 – 2170 MHz	750 W	286 – 288
Smart Bias Tee 12 V / Antenna	782 10454	800 – 2170 MHz	750 W	286 – 288
Smart Bias Tee 24 V / BTS	782 10455	800 – 2170 MHz	750 W	286 – 288
Smart Bias Tee 24 V / Antenna	782 10456	800 – 2170 MHz	750 W	286 – 288
50-Ω Load (7-16 female) Low IM	782 10474	800 – 2700 MHz	80 W	289
50-Ω Load (N male)	K 62 26 61 1	0 – 2700 MHz	0.5 W	290
50-Ω Load (7-16 male)	784 10367	0 – 4000 MHz	1.5 W	290
50-Ω Load (7-16 female)	784 10470	0 – 4000 MHz	1.5 W	290
50-Ω Load (N male)	K 62 26 11 1	0 – 2700 MHz	2 W	290
50-Ω Load (N female)	K 62 26 40 1	0 – 2700 MHz	10 W	290
50-Ω Load (N male)	K 62 26 41 1	0 – 2700 MHz	10 W	290
50-Ω Load (N female)	K 62 26 20 1	0 – 2700 MHz	25 W	291
50-Ω Load (N male)	K 62 26 21 1	0 – 2700 MHz	25 W	291
50-Ω Load (7-16 female)	K 62 26 20 7	0 – 2700 MHz	25 W	291
50-Ω Load (7-16 male)	K 62 26 21 7	0 – 2700 MHz	25 W	291
50-Ω Load (N female)	K 62 26 30 1	0 – 2700 MHz	50 W	291
50-Ω Load (N male)	K 62 26 31 1	0 – 2700 MHz	50 W	291
50-Ω Load (7-16 female)	K 62 26 30 7	0 – 2700 MHz	50 W	291
50-Ω Load (7-16 male)	K 62 26 31 7	0 – 2700 MHz	50 W	291
50-Ω Load (N female)	K 62 26 50 1	0 – 1000 MHz	100 W	291
50-Ω Load (N male)	K 62 26 51 1	0 – 1000 MHz	100 W	291
50-Ω Load (7-16 female)	K 62 26 50 7	0 – 1000 MHz	100 W	291
Attenuator 3 dB	784 10235	0 – 4000 MHz	2 W	294
Attenuator 6 dB	784 10236	0 – 4000 MHz	2 W	294
Attenuator 10 dB	784 10237	0 – 4000 MHz	2 W	294
Attenuator 20 dB	784 10238	0 – 4000 MHz	2 W	294
Attenuator 3 dB	791 918	0 – 4000 MHz	15 W	294
Attenuator 6 dB	791 919	0 – 4000 MHz	12 W	294
Attenuator 10 dB	791 920	0 – 4000 MHz	10 W	294
Attenuator 20 dB	791 921	0 – 4000 MHz	10 W	294
Measuring Directional Coupler	792 972	824 – 960 MHz 960 – 2500 MHz	800 W 200 W	295

Description	Type No.	Power supply (DC input)	Page
Power Distribution Unit (PDU)	782 10344	38 ... 72 V DC	292, 293

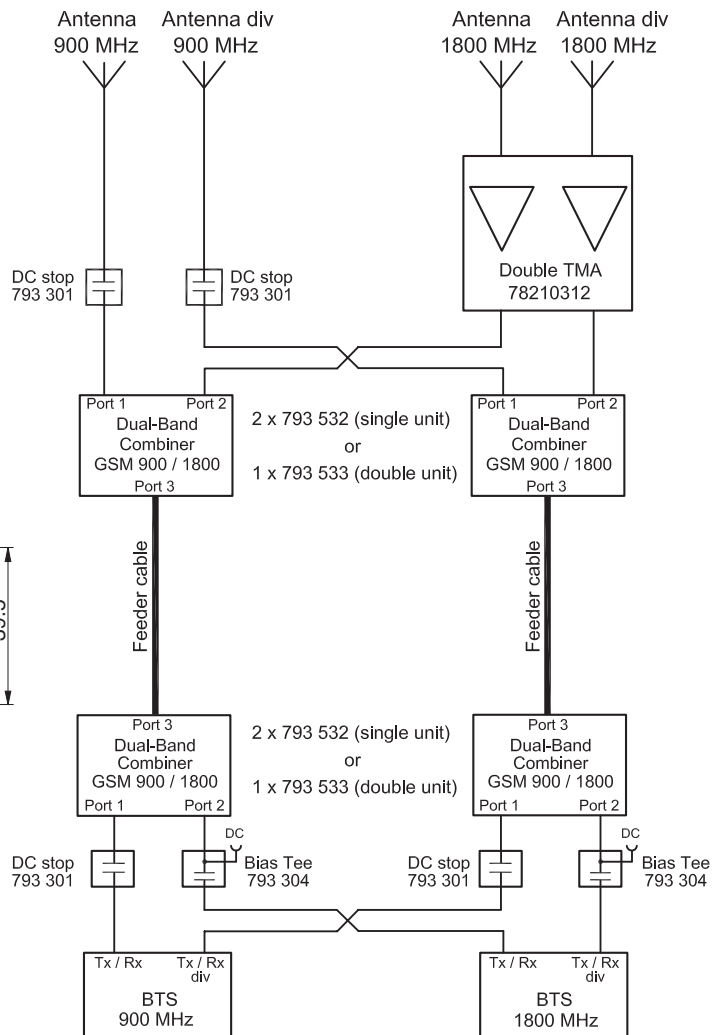
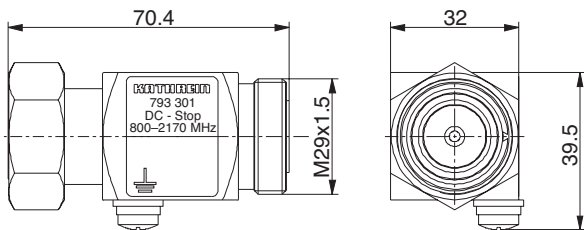
New Products

DC Stop

800 – 2170 MHz

DC Stop is used in dual- or multi-band antenna systems where one or more antenna systems require a DC supply for an installed mast head amplifier. The DC Stop prevents DC voltage from being shorted within the non-biased antenna system(s) and isolates the corresponding base station output(s) from DC voltage.

- Low RF signal insertion loss
- High DC signal isolation from port 1 to port 2 and vice versa
- Suitable for indoor or outdoor applications



Application Example

Technical Data

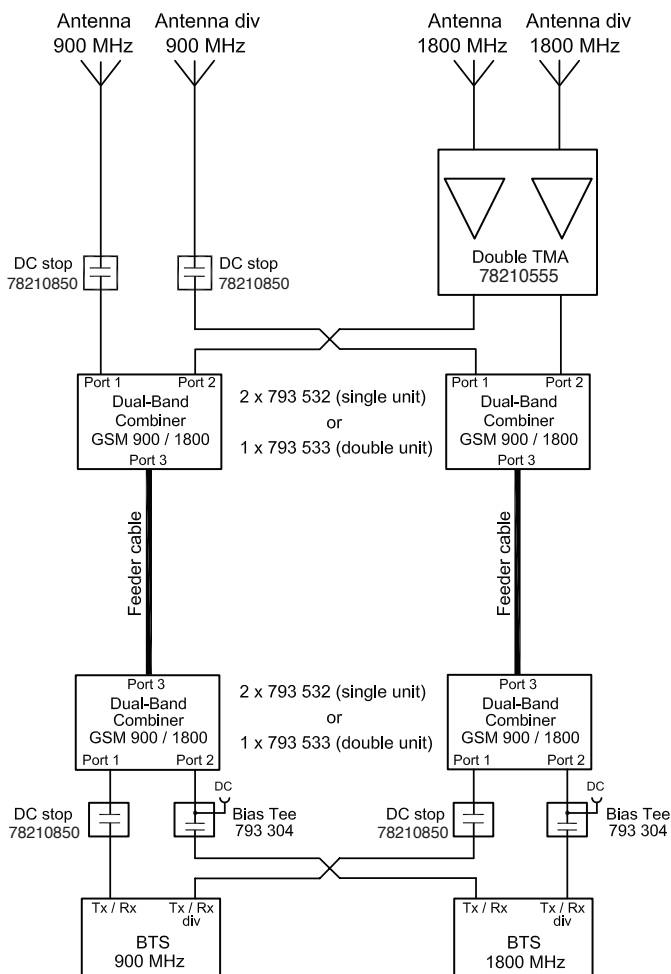
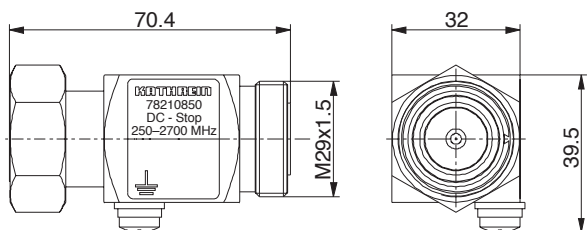
Type No.	793 301
Frequency range	800 – 2170 MHz
Insertion loss Port 1 ↔ Port 2	< 0.1 dB (800 – 2170 MHz)
Isolation Port 1 ↔ Port 2	> 70 dB (DC)
VSWR	< 1.1 (800 – 2000 MHz) < 1.2 (2000 – 2170 MHz)
Impedance	50 Ω
Input power	< 750 W (800 – 2170 MHz)
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)
Temperature range	-40 ... +70 °C
Connectors Port 1 Port 2	7-16 male 7-16 female
Application	Indoor or outdoor (IP 67)
Weight	0.32 kg
Dimensions (w x h x d)	70.4 x 39.5 x 32 mm (including connectors and earthing screw of 6 mm diameter)



DC Stop 250 – 2700 MHz

DC Stop is used in dual- or multi-band antenna systems where one or more antenna systems require a DC supply for an installed mast head amplifier. The DC Stop prevents DC voltage from being shorted within the non-biased antenna system(s) and isolates the corresponding base station output(s) from DC voltage.

- Low RF signal insertion loss
- High DC signal isolation from port 1 to port 2 and vice versa
- Suitable for indoor or outdoor applications



Application Example

Technical Data

Type No.	782 10850
Frequency range	250 – 2700 MHz
Insertion loss Port 1 ↔ Port 2	< 0.1 dB (250 – 2700 MHz)
Isolation Port 1 ↔ Port 2	> 70 dB (DC)
VSWR	< 1.1 (380 – 2700 MHz) < 1.2 (250 – 380 MHz)
Impedance	50 Ω
Input power	< 750 W (250 – 2700 MHz)
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)
Temperature range	-40 ... +70 °C
Connectors Port 1 Port 2	7-16 male 7-16 female
Application	Indoor or outdoor (IP 67)
Weight	0.32 kg
Dimensions (w x h x d)	70.4 x 39.5 x 32 mm (including connectors and earthing screw of 6 mm diameter)

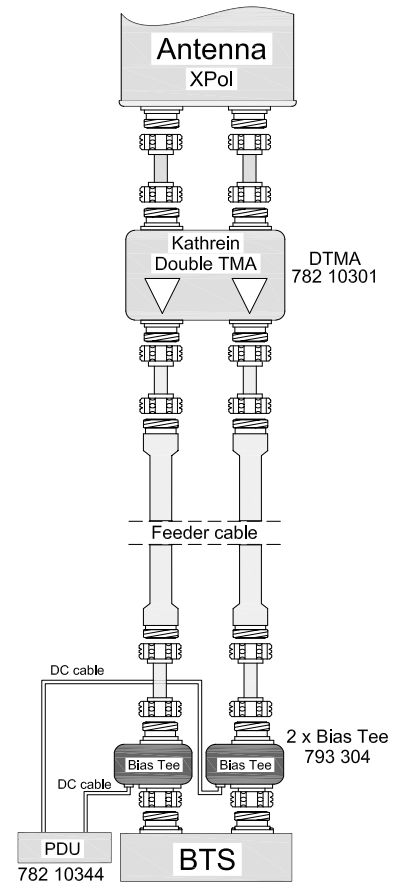
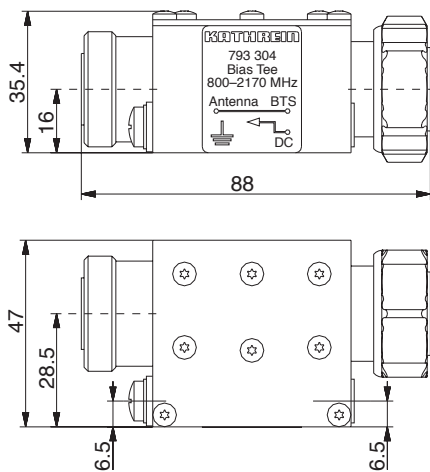


Bias Tee

800 – 2170 MHz

The Bias Tee is suitable to feed DC voltage into the feeder cable of a receiving and/or transmitting antenna system in order to provide the operating voltage for a mast head amplifier.

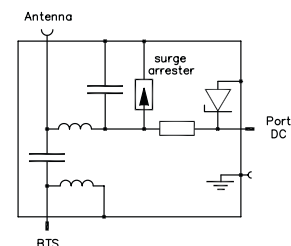
- The Bias Tee provides low RF signal insertion loss from the BTS to the antenna port and vice versa.
- The DC voltage is fed from the DC port to the antenna port while providing a high level of DC isolation from the DC to the BTS port and from the antenna to the BTS port.
- The measures taken to protect against static discharge and lightning ensure a high level of reliability and operational safety.



Application Example

Technical Data

Type No.	793 304
Frequency range	800 – 2170 MHz
Insertion loss BTS ↔ Antenna	< 0.1 dB (800 – 2170 MHz)
Isolation BTS ↔ Antenna BTS ↔ DC	> 70 dB (DC) > 70 dB (DC)
VSWR	< 1.1 (800 – 2170 MHz)
Impedance	50 Ω
Input power BTS DC	< 250 W (800 – 2170 MHz) < 1000 mA / 0 ... +30 VDC
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)
Lightning protection	5 kA, 8/20 μs pulse
Temperature range	-40 ... +70 °C
Connectors BTS Antenna Port DC	7-16 male 7-16 female SMB male
Application	Indoor
Weight	0.6 kg
Packing size	145 x 145 x 50 mm
Dimensions (w x h x d)	88 x 47 x 35.4 mm (including connectors and earthing screw of 6 mm diameter)



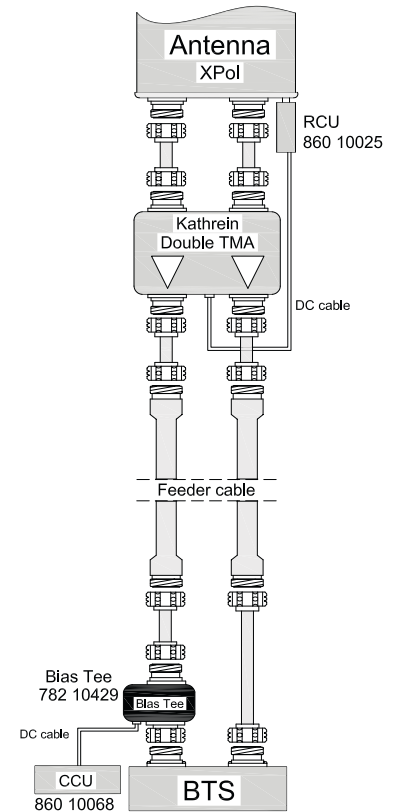
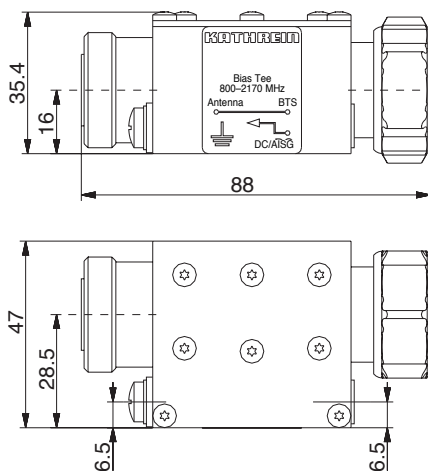
Bias Tee

800 – 2170 MHz

The Bias Tee is suitable to feed DC voltage and AISG control signals into the feeder cable in order to provide operating voltage and control signals via the RF feeder cable to the TMA or RCU.



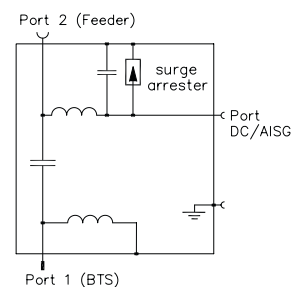
- The Bias Tee provides low RF signal insertion loss from the BTS to the antenna port and vice versa.
- The DC voltage and AISG control signal (2.176 MHz) is fed from the DC port to the antenna port while providing a high level of DC isolation from the DC to the BTS port and from the antenna to the BTS port.
- The measures taken in conjunction with the CCU-LOC to protect against static discharge and lightning ensure a high level of reliability and operational safety.



Application Example

Technical Data

Type No.	782 10429
Frequency range	800 – 2170 MHz
Insertion loss BTS ↔ Antenna	< 0.1 dB (800 – 2170 MHz)
Isolation BTS ↔ Antenna BTS ↔ DC/AISG	> 70 dB (DC) > 70 dB (DC)
VSWR	< 1.1 (800 – 2170 MHz)
Impedance	50 Ω
Input power BTS DC/AISG	< 250 W (800 – 2170 MHz) < 1.8 A / 13 VDC < 0.8 A / 29 VDC
Lightning protection	3 kA, 10/350 μs pulse
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)
Temperature range	-40 ... +70 °C
Connectors Port 1 BTS Port 2 Antenna Port DC/AISG	7-16 male 7-16 female SMB male
Application	Indoor
Weight	0.6 kg
Packing size	145 x 145 x 50 mm
Dimensions (w x h x d)	88 x 47 x 35.4 mm (including connectors and earthing screw of 6 mm diameter)



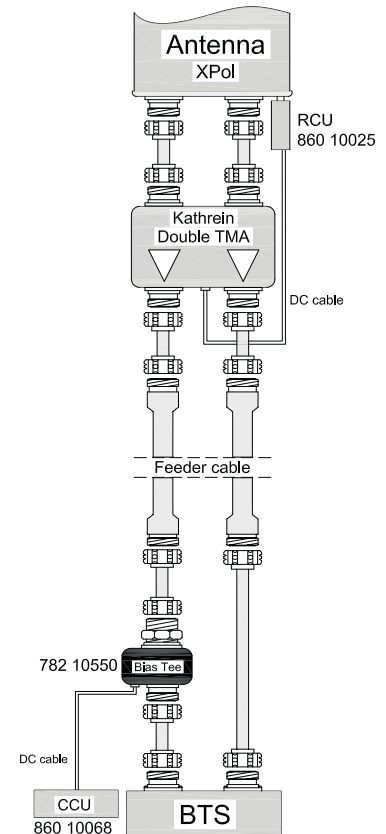
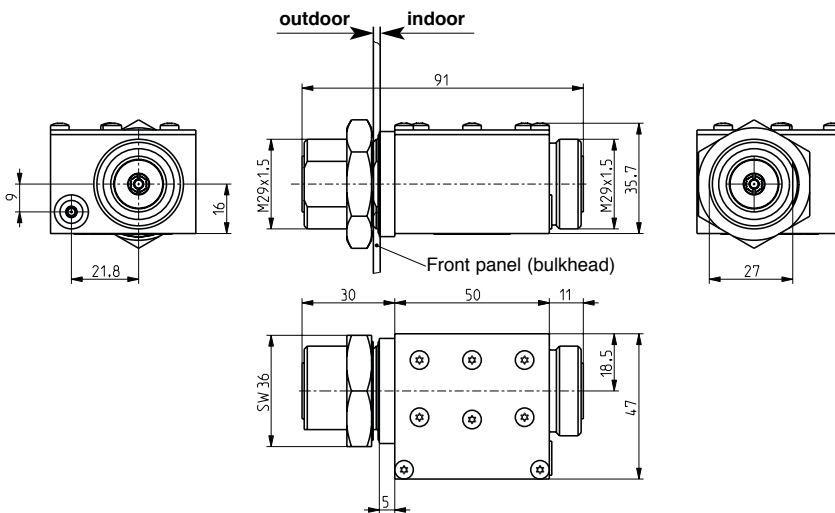
Bias Tee

1710 – 2170 MHz



The Bias Tee is suitable to feed DC voltage and AISG control signals into the feeder cable in order to provide operating voltage and control signals via the RF feeder cable to the TMA or RCU.

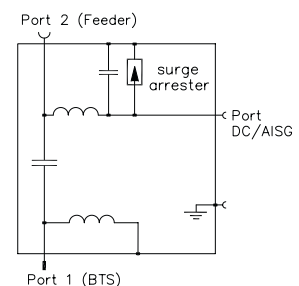
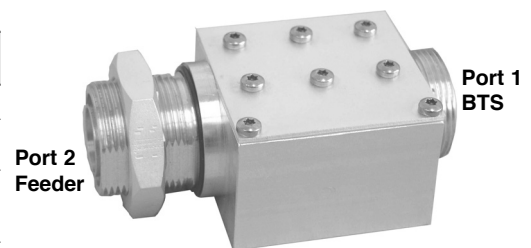
- The Bias Tee provides low RF signal insertion loss from the BTS to the antenna port and vice versa.
- The DC voltage and AISG control signal (2.176 MHz) is fed from the DC port to the antenna port while providing a high level of DC isolation from the DC to the BTS port and from the antenna to the BTS port.
- The measures taken in conjunction with the CCU-LOC to protect against static discharge and lightning ensure a high level of reliability and operational safety
- Designed for front panel mounting (Bulkhead version).



Application Example

Technical Data

Type No.	782 10550
Frequency range	1710 – 2170 MHz
Insertion loss BTS ↔ Antenna	< 0.1 dB (1710 – 2170 MHz)
Isolation BTS ↔ Antenna BTS ↔ DC/AISG	> 70 dB (DC) > 70 dB (DC)
VSWR	< 1.1 (1710 – 2170 MHz)
Impedance	50 Ω
Input power BTS DC/AISG	< 250 W (1710 – 2170 MHz) < 1.8 A / 13 VDC < 0.8 A / 29 VDC
Lightning protection	3 kA, 10/350 μs pulse; 20 kA, 8/20 μs pulse
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)
Temperature range	-40 ... +70 °C
Connectors Port 1 BTS Port 2 Antenna Port DC/AISG	7-16 female 7-16 female SMB male
Application	Indoor, port 2 connector outdoor with sealing (O-ring)
Weight	0.6 kg
Packing size	145 x 145 x 50 mm
Dimensions (w x h x d)	91 x 47 x 35.4 mm (including connectors)



Smart Bias Tee

800 – 2170 MHz



The **Smart Bias Tee** combines the performance of a standard Bias Tee (e.g. type 793 304) with the function of an additional modem (AISG standard) in order to provide either DC voltage as well as remote control signals via an RF feeder cable to a TMA or RCU.

The **Smart Bias Tee** provides low RF signal insertion loss from port 1 to port 2 and vice versa. The measures taken to protect against static discharge and lightning ensure a high level of reliability and operational safety.

- **782 10253, 782 10453:** 12 V version for use near the BTS, in order to feed-in DC voltage and RCU control signals into a feeder cable
- **782 10254, 782 10454:** 12 V version for use near the antenna, in order to control an RCU (only required if **no TMA** is in use)
- **782 10255, 782 10455:** 24 V version for use near the BTS, in order to feed-in DC voltage and RCU control signals into a feeder cable
- **782 10256, 782 10456:** 24 V version for use near the antenna, in order to control an RCU (only required if **no TMA** is in use)

Abbreviations:

RCU = Remote Control Unit for remote electrical control of antenna tilt

BTS = Base Transceiver Station

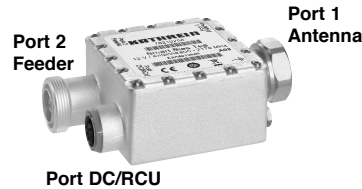
TMA = Tower Mounted Amplifier

AISG = Antenna Interface Standards Group

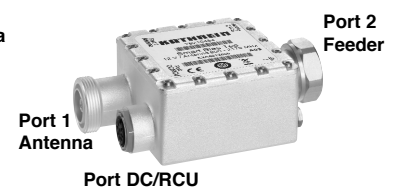
Port 1 = Port for BTS or for Antenna

Port 2 = Port for Feeder Cable

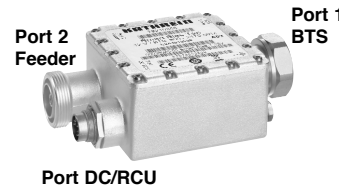
Port DC/RCU = Port for DC voltage and remote control unit signals



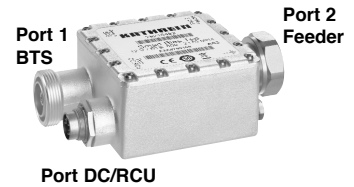
782 10254
782 10256



782 10454
782 10456



782 10253
782 10255



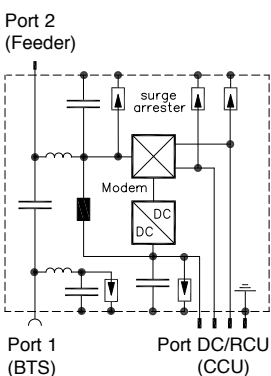
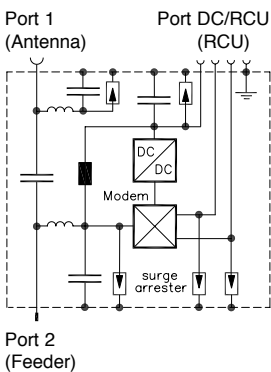
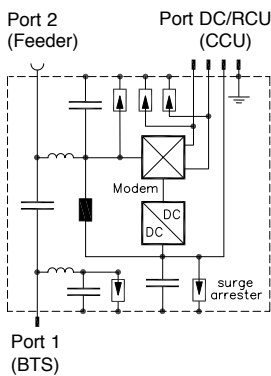
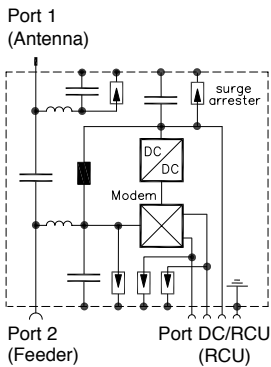
782 10453
782 10455

Technical Data

Type No.	782 10253 12 V / BTS	782 10254 12 V / Antenna	782 10255 24 V / BTS	782 10256 24 V / Antenna
Port 1: 7-16 male	BTS	Antenna	BTS	Antenna
Port 2: 7-16 female	Feeder	Feeder	Feeder	Feeder
Type No.	782 10453 12 V / BTS	782 10454 12 V / Antenna	782 10455 24 V / BTS	782 10456 24 V / Antenna
Port 1: 7-16 female	BTS	Antenna	BTS	Antenna
Port 2: 7-16 male	Feeder	Feeder	Feeder	Feeder
Frequency range	800 – 2170 MHz			
Insertion loss Port 1 ↔ Port 2	< 0.1 dB (800 – 2170 MHz)			
Isolation for DC and RCU signals Port 1 ↔ Port 2 Port 1 ↔ Port DC/RCU Port 2 ↔ Port DC/RCU	> 70 dB > 70 dB > 0 dB			
VSWR	< 1.1 (800 – 2170 MHz)			
Impedance	50 Ω			
Input power Port 1 ↔ port 2 Port DC/RCU	< 750 W (800 – 2170 MHz) < 2.5 A / +8 ... +14 VDC		< 750 W (800 – 2170 MHz) < 2.5 A / +8 ... +30 VDC	
Power consumption	Typically 0.6 W			
Lightning protection	3 kA, 10/350 μs pulse			
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)			
Temperature range	-40 ... +60 °C			
Modem carrier frequency	2.176 MHz			
Application	Indoor or outdoor (IP66)			
Weight	1.5 kg			
Packing size	167 x 102 x 86 mm			
Dimensions (w x h x d)	79 x 79 x 43.5 mm (without connectors)			

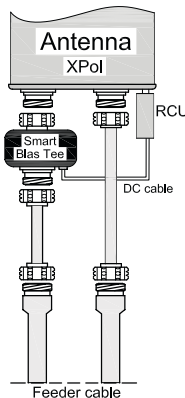


Block diagrams

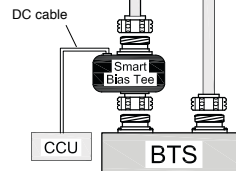


Application Examples

782 10254 (12V)
or
782 10256 (24V)

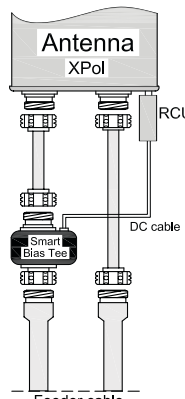


782 10253 (12V)
or
782 10255 (24V)

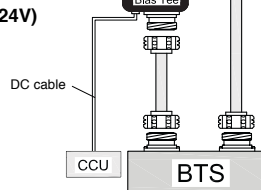


Warning:
Don't mix 12 V and 24 V Bias Tees in any configuration. Always choose corresponding voltage to suit the TMA.

782 10454 (12V)
or
782 10456 (24V)

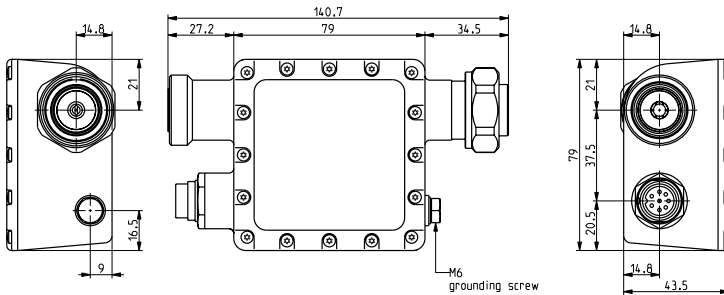


782 10453 (12V)
or
782 10455 (24V)

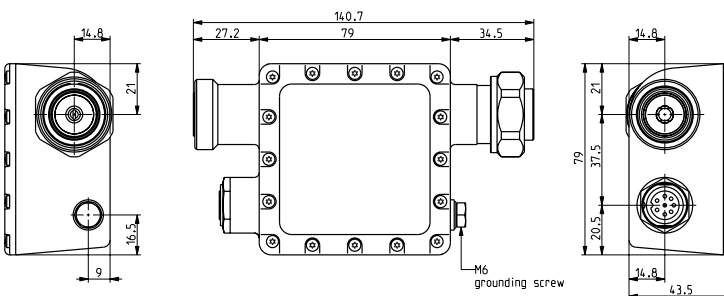


Smart Bias Tee

800 – 2170 MHz



782 10253, 782 10255
782 10453, 782 10455



782 10254, 782 10256
782 10454, 782 10456

Please note:

The Smart Bias Tees are designed to operate under the environmental conditions as described in ETS 300 019-1-4 class 4.1 E and have passed environmental tests as recommended in ETS 300 019-2-4.

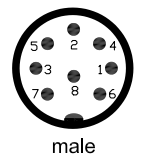
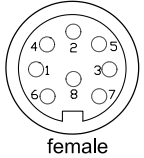
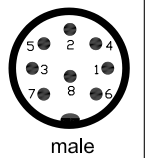
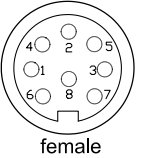
The installation team must be properly qualified and also be familiar with the relevant national safety regulations.

The coupling torque at 7-16 connectors is 25 – 30 Nm!

Hold the smart bias tee housing securely while tightening the 7-16 locking nut.

The tightening torque for fixing the AISG connector must be 0.5 – 1.0 Nm ('hand-tightened').

Pin connections

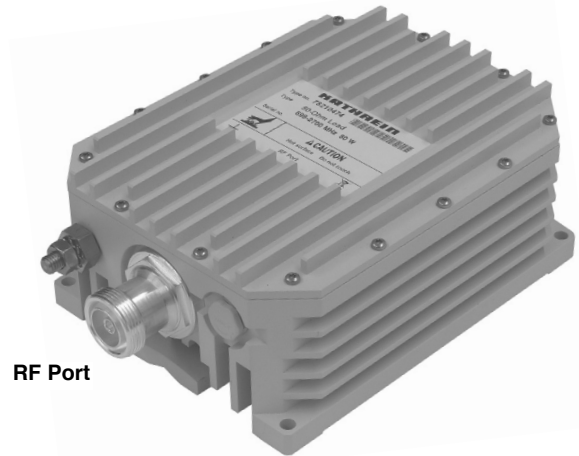
	782 10253	782 10254	782 10255	782 10256
	782 10453	782 10454	782 10455	782 10456
8-pin connector (IEC 60130-9)	 male	 female	 male	 female
	Pin 1	12 VDC in	12 VDC out	Not connected
Pin 2	Not connected	Not connected	Not connected	Not connected
Pin 3	RS485-B	RS485-B	RS485-B	RS485-B
Pin 4	Not connected	Not connected	Not connected	Not connected
Pin 5	RS485-A	RS485-A	RS485-A	RS485-A
Pin 6	Not connected	Not connected	24 VDC in	24 VDC out
Pin 7	DC return (grounded)	DC return (grounded)	DC return (grounded)	DC return (grounded)
Pin 8	Not connected	Not connected	Not connected	Not connected

50-Ohm Load

698 – 2700 MHz

80 W

- Designed as 50-Ohm termination wherever improved intermodulation performance compared to standard loads is required
- **Excellent intermodulation performance**
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- Built-in DC stop



RF Port

Technical Data

Type No.	782 10474
Frequency range	698 – 2700 MHz
VSWR	< 1.12
Impedance	50 Ω
Input power	< 80 W (see table)
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)
Temperature range	-40 ... +55 °C
Connector	7-16 female (long neck)
Application	Indoor or outdoor (IP 66)
DC/AISG transparency	Built-in DC stop AISG: Attenuation up to 3 dB when used in a network
Mounting	Wall mounting: With 4 screws (max. 6.5 mm diameter) Mast mounting: With additional clamp set (see data sheet)
Weight	3.1 kg
Packing size	377 x 232 x 189 mm
Dimensions (w x h x d)	143.6 x 216 x 79.2 mm (including connector)

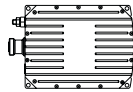
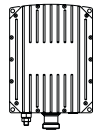
Note:

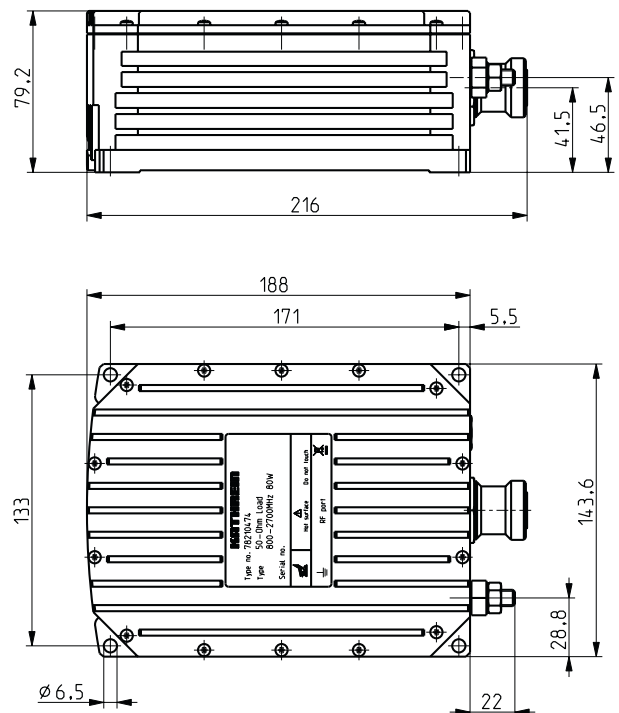
The RF port connector should always point downwards if mounted outdoors.

The input power rating of 80 W is specified at an ambient temperature of +40 °C with the combiner mounted vertically, without additional cooling, and while respecting the safety standard EN IEC 60950 (max. surface temperature +90 °C).

The max. power rating increases or decreases with falling or rising ambient temperature and depending on horizontal or vertical mounting in accordance with the following table:

Max. input power

	Mounted horizontally	Mounted vertically
Max. ambient temperature		
+55 °C	50 W	60 W
+40 °C	70 W	80 W
+25 °C	90 W	100 W



50-Ohm Load

0 ... 4000 MHz

0.5 ... 100 W

- Standard 50-Ohm terminations for small and medium power
- Suitable for terminating open ports on RF equipment for indoor and/or outdoor applications

0.5 Watt *

Type No.	K 62 26 61 1
Connector	N male
Frequency range	0 – 2700 MHz
VSWR	
0 – 1000 MHz	< 1.08
1000 – 2000 MHz	< 1.15
2000 – 2700 MHz	< 1.20
Application	Indoor
Weight	40 g
Packing size	90 x 60 x 25 mm
Dimensions	33 / 21 mm diameter



K 62 26 61 1

1.5 Watt *

Type No.	784 10367	784 10470
Connector	7-16 male	7-16 female
Frequency range	0 – 4000 MHz	
VSWR		
0 – 2000 MHz	< 1.10	
2000 – 4000 MHz	< 1.30	
Application	Indoor <i>or</i> outdoor (IP65)	
Weight	120 g	
Packing size	Approx. 50 x 90 x 100 mm	
Dimensions	40 / 32 mm diameter	42 / 29 mm diameter



784 10367

2 Watt *

Type No.	K 62 26 11 1
Connector	N male
Frequency range	0 – 2700 MHz
VSWR	
0 – 1000 MHz	< 1.08
1000 – 2000 MHz	< 1.15
2000 – 2700 MHz	< 1.20
Application	Indoor
Weight	40 g
Packing size	90 x 60 x 25 mm
Dimensions	30 / 21 mm diameter



K 62 26 11 1

10 Watt *

Type No.	K 62 26 40 1	K 62 26 41 1
Connector	N female	N male
Frequency range	0 – 2700 MHz	
VSWR		
0 – 1000 MHz	< 1.08	
1000 – 2000 MHz	< 1.15	
2000 – 2700 MHz	< 1.20	
Application	Indoor	
Weight	Approx. 250 g	
Packing size	50 x 90 x 100 mm	
Dimensions (w x h x d)	40 x 82 x 77 mm (including connector)	40 x 82 x 85 mm (including connector)



K 62 26 40 1

50-Ohm Load

0 ... 4000 MHz

0.5 ... 100 W

25 Watt *

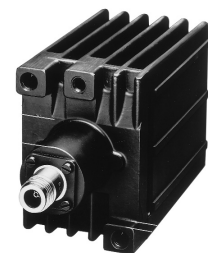
Type No.	K 62 26 20 1	K 62 26 21 1	K 62 26 20 7	K 62 26 21 7
Connector	N female	N male	7-16 female	7-16 male
Frequency range	0 – 2700 MHz			
VSWR	0 – 1000 MHz < 1.08 1000 – 2000 MHz < 1.15 2000 – 2700 MHz < 1.20			
Application	Indoor			
Weight	Approx. 0.5 kg			
Packing size	50 x 100 x 135 mm			
Dimensions (w x h x d)	35 x 94 x 113 mm (incl. connector)	35 x 94 x 121 mm (incl. connector)	35 x 94 x 125 mm (incl. connector)	35 x 94 x 124 mm (incl. connector)



K 62 26 20 1

50 Watt *

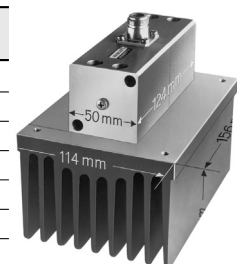
Type No.	K 62 26 30 1	K 62 26 31 1	K 62 26 30 7	K 62 26 31 7
Connector	N female	N male	7-16 female	7-16 male
Frequency range	0 – 2700 MHz			
VSWR	0 – 1000 MHz < 1.08 1000 – 2000 MHz < 1.15 2000 – 2700 MHz < 1.20			
Application	Indoor			
Weight	Approx. 0.8 kg			
Packing size	80 x 95 x 145 mm			
Dimensions (w x h x d)	67 x 90 x 130 mm (incl. connector)	67 x 90 x 138 mm (incl. connector)	67 x 90 x 134 mm (incl. connector)	67 x 90 x 133 mm (incl. connector)



K 62 26 30 1

100 Watt *

Type No.	K 62 26 50 1	K 62 26 51 1	K 62 26 50 7
Connector	N female	N male	7-16 female
Frequency range	0 – 1000 MHz		
VSWR	0 – 1000 MHz < 1.08		
Application	Indoor		
Weight	Approx. 2.4 kg		
Packing size	130 x 195 x 180 mm		
Dimensions (w x h x d)	114 x 153 x 156 mm (including connector)	114 x 161 x 156 mm (including connector)	114 x 170 x 156 mm (including connector)



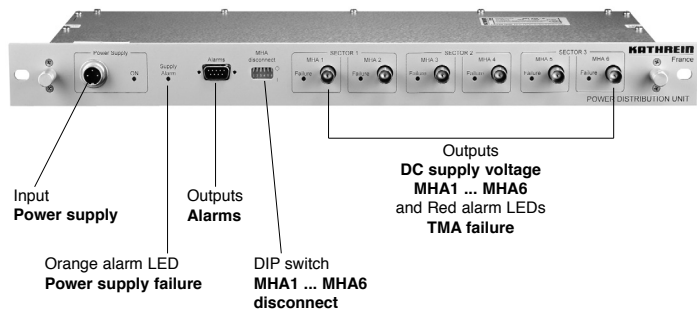
K 62 26 50 1

* Rated power at 40 °C ambient temperature. The max. power rating increases or decreases with falling or rising ambient temperature.

Note: The 50-Ohm load, type 782 010474, should be used if intermodulation requirements are of high priority.

The PDU provides DC supply voltage and alarm interfacing for up to 6 TMAs / MHAs (Tower Mounted Amplifiers / Mast Head Amplifiers) with current window alarming.

- Suitable for low DC power requirements, e.g. Kathrein DTMA 782 10301 (UMTS) or 782 10312 (GSM1800)
- Alarm signals available on SubD 9-pin connector and LEDs
- Bias Tees and cable sets for connection of up to 6 Bias Tees for servicing 6 TMAs (or 3 DTMAAs = double TMAs) are available as accessories



Alarm interface function: Under normal operating conditions each TMA pulls the nominal current from the PDU. In case of failure when a TMA consumes a current outside the specified alarm window, then an internal TMA circuit pulls an increased alarm current. Once the respective TMA failure detection threshold is registered by the PDU, then the following alarms are activated:

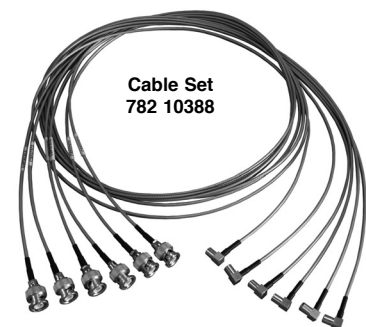
1. The DC supply voltage for the defective TMA is switched off.
 2. The corresponding red alarm LED lights up.
 3. The contacts 4 and 5 on the SubD 9-pin connector are closed. In addition, the respective pins 1 (TMA1), 2 (TMA2), 3 (TMA3), 6 (TMA4), 7 (TMA5), or 8 (TMA6) are grounded. This contact status can be used for monitoring purposes.
- If required, the additional DIP switch can be used to override the individual alarm and turn off the respective TMA supply voltage (1 = supply voltage and red LED alarm OFF, 0 = supply voltage and red LED alarm ON).

Technical Data

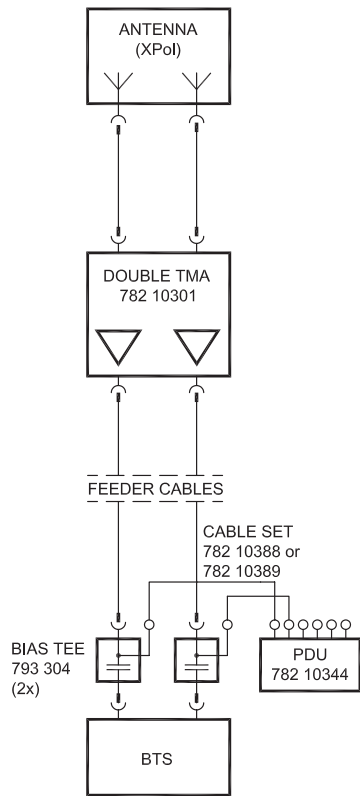
Type No.	782 10344
Power supply (DC input)	38 ... 72 V DC
DC supply voltage (DC outputs to MHA1 ... MHA6)	6x +12 ±0.3 V / nominal current: 110 mA ±20%
Failure detection threshold	> 230 mA ±10%
Alarms LED indicators	Red LED ON = TMA failure at indicated DC output Orange LED ON = power supply failure (back-up power supply in use), Green LED ON = power supply ON
SubD 9-pin connector	Contact pins 4 + 5 closed when failure detection threshold is exceeded = MHA or power supply failure Contact pins 1 ... 3, 6 ... 8 grounded when failure detection threshold is exceeded = MHA failure
Electrical protection against	Reverse voltage on DC outputs Reverse polarity voltage, over-current and over-voltage on DC input (power supply)
Temperature range	-40 ... +60 °C
Connectors	Power supply: DIN 3-pin male DC supply voltage: BNC female (6x) Alarms: SubD 9-pin
Scope of delivery	PDU, 3 m power supply cable with DIN 3-pin female connector, (brown (+), blue (-), green-yellow (grd))
MTBF	> 450 000 hours
Mounting	With 2 screws (M6)
Application	Indoor (IP20)
Weight	2.2 kg
Dimensions (w x h x d)	19 " drawer, 2 height units, plug-in depth 171 mm

Accessories (order separately)

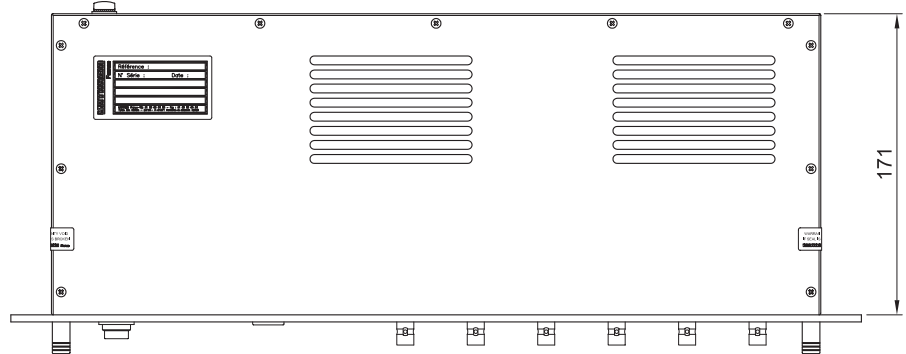
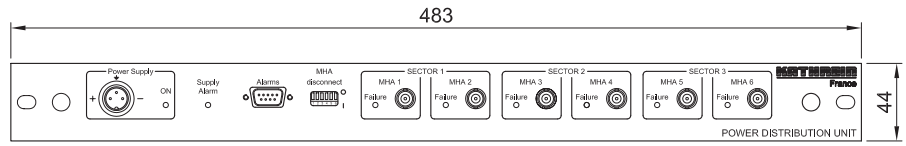
Type No.	Description	Technical data
782 10388	Cable set 2 m (6 cables)	Lenth: 2.0 m Cable type: RG 316 Connectors: BNC male / SMB female Voltage drop at 110 mA nominal current: < 0.2 V
782 10389	Cable set 5 m (6 cables)	Lenth: 5.0 m Cable type: RG 316 Connectors: BNC male / SMB female Voltage drop at 110 mA nominal current: < 0.2 V
793 304	Bias Tee	Please see separate data sheet



Bias Tee 793 304



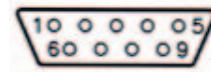
Application example
Antenna system (1 sector) with
Kathrein PDU 782 10344,
Bias Tees 793 304 and
UMTS Double TMA 782 10301



Detail
Power supply
connector



Detail
SupD 9-pin
connector



SubD 9-pin connector and LED alarms

	SubD 9-pin connector pin #									Red alarm LED #						Orange alarm LED	Green alarm LED		
	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6				
MHA1	failure	grd	-	-	contacts closed if at least 1 failure	-	-	-	grd	ON	-	-	-	-	-	-	ON		
	no failure	open	-	-		-	-	-	grd	OFF	-	-	-	-	-	-	-	ON	
MHA2	failure	-	grd	-		-	-	-	grd	-	ON	-	-	-	-	-	-	ON	
	no failure	-	open	-		-	-	-	grd	-	OFF	-	-	-	-	-	-	ON	
MHA3	failure	-	-	grd		-	-	-	grd	-	-	ON	-	-	-	-	-	ON	
	no failure	-	-	open		-	-	-	grd	-	-	OFF	-	-	-	-	-	ON	
MHA4	failure	-	-	-		contacts open if no failure	grd	-	-	grd	-	-	-	ON	-	-	-	ON	
	no failure	-	-	-			open	-	-	grd	-	-	-	OFF	-	-	-	-	ON
MHA5	failure	-	-	-			-	grd	-	grd	-	-	-	-	ON	-	-	-	ON
	no failure	-	-	-			-	open	-	grd	-	-	-	-	OFF	-	-	-	ON
MHA6	failure	-	-	-			-	-	grd	grd	-	-	-	-	-	ON	-	-	ON
	no failure	-	-	-			-	-	open	grd	-	-	-	-	-	OFF	-	-	ON
Power supply	failure	-	-	-	-		-	-	grd	-	-	-	-	-	-	-	ON	ON	
	no failure	-	-	-	-		-	-	grd	-	-	-	-	-	-	-	OFF	ON	

- contact status not defined
grd contact grounded

Attenuator

2 – 15 W

0 – 4000 MHz

Air-cooled attenuator for low power rating

- Signal attenuation for test, measuring or tuning purposes
- Good matching over large frequency range
- Closed metal housing, very stable and RF proof
- Free choice of mounting position due to convection-cooling



Technical Data

Type No.	784 10235	784 10236	784 10237	784 10238
Attenuation	3 ±0.3 dB	6 ±0.3 dB	10 ±0.3 dB	20 ±0.5 dB
Frequency range	0 – 4000 MHz			
VSWR	< 1.12			
Impedance	50 Ω			
Max. power	2 W			
Connectors	N			
IP rating	IP65			
Application	Outdoor			
Weight	60 g			
Dimensions (L x diameter)	49 x 21 mm			

Air-cooled attenuator for medium power rating

- Signal attenuation for test, measuring or tuning purposes
- Good matching over large frequency range
- Closed metal housing, very stable and RF proof
- Free choice of mounting position due to convection-cooling



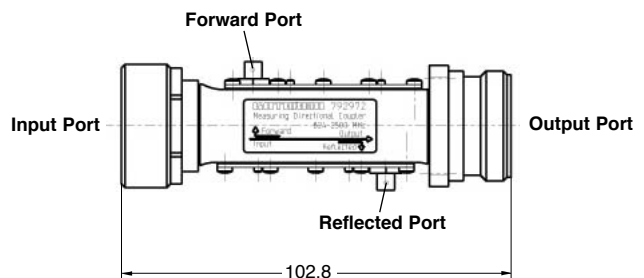
Technical Data

Type No.	791 918	791 919	791 920	791 921
Attenuation	3 ±0.3 dB	6 ±0.3 dB	10 ±0.3 dB	20 ±0.5 dB
Max. power	15 W	12 W	10 W	10 W
Frequency range	0 – 4000 MHz			
VSWR	< 1.15			
Impedance	50 Ω			
Connectors	N			
IP rating	IP65			
Application	Outdoor			
Weight	70 g			
Dimensions (L x diameter)	50 x 26 mm			

Measuring Directional Coupler 824 – 2500 MHz

The Measuring Directional Coupler provides measurement ports for monitoring the forward and reflected power of a RF signal.

- Easy implementation into existing RF systems due to male/female connectors
- Input and output ports are reciprocal in nature
- Front panel mounting possible via flange
- Suitable for indoor applications



Technical Data

Type No.	792 972
Frequency range	824 – 2500 MHz
Insertion loss Input port → Output port	< 0.05 dB (824 – 2500 MHz)
Coupling attenuation Input port → Forward port	32.0 ±0.75 dB (824 – 960 MHz) 28.5 ±1.50 dB (1710 – 2500 MHz)
Output port → Reflected port	32.0 ±0.75 dB (824 – 960 MHz) 28.5 ±1.50 dB (1710 – 2500 MHz)
Directivity	> 28 dB (824 – 2200 MHz) > 25 dB (2200 – 2500 MHz)
VSWR Input port, Output port	< 1.04 (824 – 960 MHz) < 1.08 (960 – 2500 MHz)
Forward port, Reflected port	< 1.2 (824 – 2500 MHz)
Impedance	50 Ω
Input power	< 800 W (824 – 960 MHz) < 200 W (960 – 2500 MHz)
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)
Temperature range	-20 ... +55 °C
Connectors Input port	7-16 male
Output port	7-16 female
Forward port, Reflected port	MCX female
Application	Indoor
Mounting	Front panel mounting possible with 4 screws (max. 2.5 mm diameter)
Weight	0.26 kg
Dimensions (w x h x d)	32 x 32 x 102.3 mm

DTMAs

DTMAs:

Description	Type No.	Frequency range	Gain	Page
Single Mode AISG or CWA				
DTMA-1800-12-CWA	782 10312	UL: 1710 – 1785 / DL: 1805 – 1880 MHz	12 dB	300
DTMA-1900-12-AISG	782 10403	UL: 1850 – 1910 / DL: 1930 – 1990 MHz	12 dB	302
DTMA-1900-850 BYP-12-AISG	782 10406	UL: 1850 – 1910 / DL: 1930 – 1990 MHz Bypass: 806 – 896 MHz	12 dB	303
DTMA-UMTS-24-AISG	782 10448	UL: 1920 – 1980 / DL: 2110 – 2170 MHz	24 dB	309
Dual Mode AISG and CWA				
DTMA-900-12-32-AISG-CWA	782 10440	UL: 880 – 915 / DL: 925 – 960 MHz	12/32 dB	299
DTMA-900-12-32-AISG-CWA	782 10442	UL: 880 – 915 / DL: 925 – 960 MHz	12/32 dB	299
DTMA-1800-12-AISG-CWA	782 10555	UL: 1710 – 1785 / DL: 1805 – 1880 MHz	12 dB	301
DTMA-1800-12-AISG-CWA	782 10556	UL: 1710 – 1785 / DL: 1805 – 1880 MHz	12 dB	301
DTMA-1800-12-AISG-CWA	782 10557	UL: 1710 – 1785 / DL: 1805 – 1880 MHz	12 dB	301
DTMA-1800-12-AISG-CWA	782 10558	UL: 1710 – 1785 / DL: 1805 – 1880 MHz	12 dB	301
DTMA-1900-12-AISG-CWA	782 10811	UL: 1850 – 1910 / DL: 1930 – 1990 MHz	12 dB	304
TMA-PCS-12-CWA/TMA-AWS-12-AISG	782 10601	PCS: UL: 1850 – 1910 / DL: 1930 – 1990 MHz AWS: UL: 1710 – 1755 / DL: 2110 – 2155 MHz	12 dB 12 dB	305
TMA-PCS-AWS-12-AISG-CWA	782 10602	PCS: UL: 1850 – 1910 / DL: 1930 – 1990 MHz AWS: UL: 1710 – 1755 / DL: 2110 – 2155 MHz	12 dB	306
DTMA-UMTS-12-AISG-CWA	782 10153	UL: 1920 – 1980 / DL: 2110 – 2170 MHz	12 dB	307
DTMA-UMTS-12-AISG-CWA	782 10154	UL: 1920 – 1980 / DL: 2110 – 2170 MHz	12 dB	307
DTMA-UMTS-12-AISG-CWA-FB-BS	782 10561	UL: 1970 – 1985 / DL: 2110 – 2170 MHz	12 dB	308
DTMA-UMTS-12-AISG-CWA-FB-BS	782 10562	UL: 1970 – 1985 / DL: 2110 – 2170 MHz	12 dB	308
DTMA-UMTS-12-AISG-CWA-FB-BS	782 10563	UL: 1965 – 1980 / DL: 2110 – 2170 MHz	12 dB	308
DTMA-UMTS-12-AISG-CWA-FB-BS	782 10564	UL: 1965 – 1980 / DL: 2110 – 2170 MHz	12 dB	308
DTMA-UMTS-12-AISG-CWA-FB-BS	782 10565	UL: 1950 – 1965 / DL: 2110 – 2170 MHz	12 dB	308
DTMA-UMTS-12-AISG-CWA-FB-BS	782 10566	UL: 1920 – 1935 / DL: 2110 – 2170 MHz	12 dB	308
DTMA-UMTS-12-AISG-CWA-FB-BS	782 10567	UL: 1920 – 1935 / DL: 2110 – 2170 MHz	12 dB	308
DTMA-UMTS-12-AISG-CWA-FB-BS	782 10568	UL: 1950 – 1965 / DL: 2110 – 2170 MHz	12 dB	308
DTMA-UMTS-12-AISG-CWA-FB-BS	782 10569	UL: 1970 – 1985 / DL: 2110 – 2170 MHz	12 dB	308
DTMA-UMTS-12-AISG-CWA-FB-BS	782 10570	UL: 1920 – 1935 / DL: 2110 – 2170 MHz	12 dB	308
DTMA-UMTS-12-AISG-CWA-FB-BS	782 10571	UL: 1965 – 1980 / DL: 2110 – 2170 MHz	12 dB	308
DTMA-UMTS-12-AISG-CWA-FB-BS	782 10579	UL: 1965 – 1980 / DL: 2110 – 2170 MHz	12 dB	308
DTMA-UMTS-12-AISG-CWA	782 10610	UL: 1920 – 1980 / DL: 2110 – 2170 MHz	12 dB	310
DTMA-UMTS-12-AISG-CWA	782 10612	UL: 1920 – 1980 / DL: 2110 – 2170 MHz	12 dB	310
DTMA-UMTS-24-AISG-CWA	782 10613	UL: 1920 – 1980 / DL: 2110 – 2170 MHz	24 dB	311
DTMA-UMTS-BYP900/1800-12-AISG-CWA	782 10652	UL: 1920 – 1980 / DL: 2110 – 2170 MHz Bypass: 806 – 896 MHz	12 dB	312, 313
DTMA-UMTS-BYP900/1800-12-AISG-CWA	782 10653	UL: 1920 – 1980 / DL: 2110 – 2170 MHz Bypass: 806 – 896 MHz	12 dB	312, 313
DTMA-2600-12-AISG	782 10860	UL: 2500 – 2570 / DL: 2620 – 2690 MHz	12 dB	314

New Products

UL = Up Link // DL = Down Link

DTMA-900-12-32-AISG-CWA

Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

KATHREIN

Antennen · Electronic



- Double units for easy use with XPol antennas
- Gain setting switchable from 12 dB (default) to 32 dB
- Both versions support CWA, AISG 1.1 and AISG 2.0 (default)
782 10440: CWA alarm 170 – 200 mA / 800 – 900 mA
782 10442: CWA alarm 230 – 295 mA / 800 – 900 mA
- AISG and gain setting switchable as described on data sheet
- CWA and AISG configurations as described on data sheet
- Suitable for antenna RET control according to AISG/3GPP standard
- By-pass mode to ensure cell operation in case of DC power down
- Built-in lightning protection

RET = Remote Electrical Tilt

AISG = Antenna Interface Standards Group

CWA = Current Window Alarm



Technical Data

Type No.	CWA alarm 170 – 200 mA / 800 – 900 mA	782 10440 DTMA-900-12-32-AISG-CWA (12/32 dB gain)
	CWA alarm 230 – 295 mA / 800 – 900 mA	782 10442 DTMA-900-12-32-AISG-CWA (12/32 dB gain)

Tx Characteristics

Frequency range	925 – 960 MHz
Insertion loss*	< 0.5 dB
Input power (per input)	< 180 W (+52.5 dBm) CW / < 1.6 kW (+62 dBm) peak
Intermodulation products in Rx band	< -117 dBm (2 Tx carriers at +43 dBm)
Return loss	> 18 dB

Rx Characteristics

Frequency range	880 – 915 MHz
Loss in by-pass mode	< 4 dB (DC OFF)
Return loss	> 16 dB (DC ON) / > 12 dB (DC OFF)
Gain	12/32 ±0.7 dB (+22 ... +28 °C) 12/32 ±1.0 dB (-40 ... +55 °C)
Noise figure **	< 1.3 dB (+22 ... +28 °C)
Input 1-dB compression point	> -7 dBm
Input 3 rd order intercept point (IIP3)	> 5 dBm

Environmental Characteristics

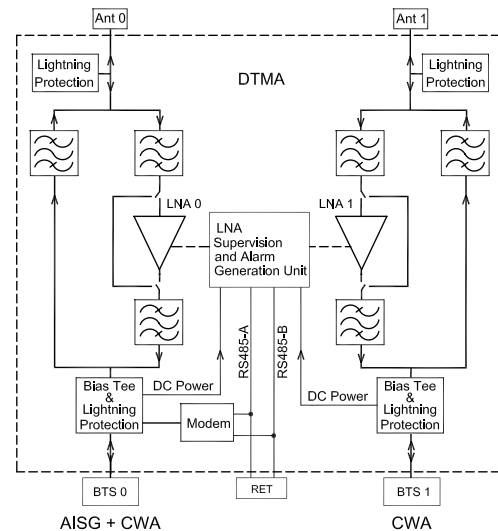
Operating temperature range	-40 ... +55 °C
IP rating	IP 67
MTBF	> 1 000 000 hours (per TMA)
EMC	According to ETS 300 342-3

DC and Alarm Characteristics

	CWA Mode	AISG Mode
DC supply	8.5 – 15 V	10 – 30 V
Operating current per TMA (without RET)	80 – 130 mA (12 dB gain) 360 – 400 mA (32 dB gain)	< 110 mA (12 dB gain) < 350 mA (32 dB gain)
Alarm management	12 dB gain 782 10440: 170 – 200 mA 782 10442: 230 – 295 mA	AISG *** 800 – 900 mA

Mechanical Characteristics

Material	Aluminium housing	
Connectors	RF	7-16 female (long neck) 8-pin female, IEC 60130-9 (Pin 3: RS485B, pin 5: RS485A, pin 6: 9 – 30 V DC, pin 7: DC return, other pins: not connected)
Weight	8.7 kg	
Packing size	342 x 579 x 212 mm	
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set	
Dimensions (w x h x d)	250 x 353 x 94 mm (without connectors, without mounting brackets)	



Accessories (order separately)

Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
734 365	45 – 125 mm



$$* \text{ Insertion loss } \bar{IL} = \frac{IL_{925 \text{ MHz}} + 2 \times IL_{942.5 \text{ MHz}} + IL_{960 \text{ MHz}}}{4}$$

$$** \text{ Noise figure } \bar{NF} = \frac{NF_{880 \text{ MHz}} + 2 \times NF_{897.5 \text{ MHz}} + NF_{915 \text{ MHz}}}{4}$$

(Additional variation at -40 ... +55 °C: $\Delta \bar{NF} < 0.3 \text{ dB}$)

*** AISG and Gain Setting

The protocol of the software interface can be switched between AISG 2.0 / 3GPP and AISG 1.1 and vice versa with a vendor specific command (depending on default setting). If the primary station does not support the default setting, it has to be switched over before system start-up. Please contact Kathrein for further information. Gain setting according to AISG commands.

DTMA-1800-12-CWA

Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

KATHREIN

Antennen · Electronic

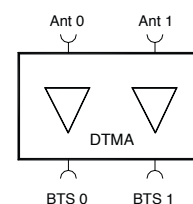
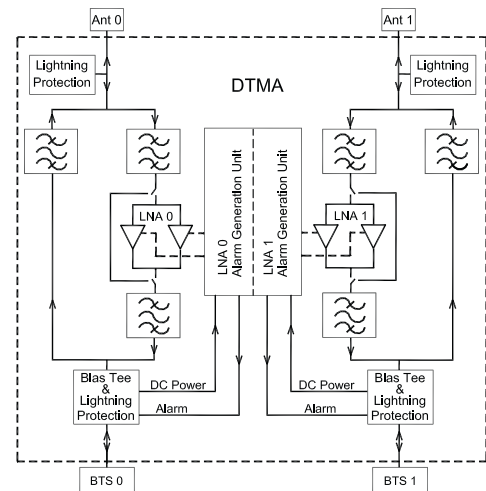
- Double unit for easy use with XPol antennas
- Kathrein redundancy amplifier design for improved system reliability
- By-pass mode to ensure cell operation in case of TMA (Alarm 2) or DC power down
- Alarm management: Supports 2 alarm levels
 - Alarm 1: One LNA of the balanced circuit failed.
 - Alarm 2: Both LNAs of the balanced circuit failed.
 - Automatically switched to by-pass mode
- Built-in lightning protection
- Compact size
- DTMA DC supply and alarming separately via BTS 0 respectively BTS 1 port

CWA = Current Window Alarm



Technical Data

Type No.	782 10312 DTMA-1800-12-CWA (12 dB gain)
Tx Characteristics	
Frequency range	1805 – 1880 MHz
Bandwidth	75 MHz
Insertion loss	< 0.45 dB over the middle 80% of BW, a further 0.25 dB over the remaining BW.
Input power	< 160 W (+52 dBm) CW < 1.6 kW (+62 dBm) Peak
Intermodulation products in Rx band	< -117 dBm (2 Tx carriers at +43 dBm)
Return loss	> 18 dB
Rx Characteristics	
Frequency range	1710 – 1785 MHz
Bandwidth (BW)	75 MHz
Loss in by-pass mode	< 2.8 dB typically
Return loss	> 18 dB (DC ON) > 15 dB By-pass mode
Gain	+22 ... +28 °C -40 ... +65 °C 12 ±0.7 dB 12 ±1.3 dB
Noise figure	+22 ... +28 °C < 1.7 dB over the middle 80% of BW, a further 0.3 dB over the remaining BW.
Noise figure	-40 ... +65 °C < 2.2 dB over the middle 80% of BW, a further 0.3 dB over the remaining BW.
Output 1-dB compression point	> 15 dBm
3 rd order intercept point (OIP3)	> 25 dBm
Environmental Characteristics	
Operating temperature range	-40 ... +65 °C
IP rating	IP67
MTBF	> 1 000 000 hours (per TMA)
EMC	ETS 300 342-3
Lightning protection	5 kA, 8/20 µs pulse
DC and Alarm Characteristics	
DC supply	+12 V nominal (7.5 – 15 V, minus grounded) Typically 110 mA per TMA
Alarm management	Current window alarm handling
Alarm current I _a	Alarm 1: I _a > 230 mA Alarm 2: I _a > 330 mA
Mechanical Characteristics	
Material	Aluminium housing
RF connectors	7-16 female
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set
Weight	5 kg
Packing size	262 x 502 x 214 mm
Dimensions (w x h x d)	166 x 278 x 77.5 mm (without connectors, without mounting brackets)



DTMA-1800-12-AISG-CWA

Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

KATHREIN

Antennen · Electronic

- Double units for easy use with XPol antennas
- All versions support CWA, AISG 1.1 and AISG 2.0
782 10555: Default setting AISG 1.1, CWA alarm 170 – 200 mA
782 10556: Default setting AISG 1.1, CWA alarm 230 – 295 mA
782 10557: Default setting AISG 2.0, CWA alarm 170 – 200 mA
782 10558: Default setting AISG 2.0, CWA alarm 230 – 295 mA
- AISG setting switchable
- CWA and AISG configurations
- Suitable for antenna RET control according to AISG/3GPP standard
- By-pass mode to ensure cell operation in case of DC power down
- Built-in lightning protection

RET = Remote Electrical Tilt
AISG = Antenna Interface Standards Group
CWA = Current Window Alarm



Technical Data

Default setting AISG 1.1 CWA alarm 170 – 200 mA	782 10555 DTMA-1800-12-AISG-CWA (12 dB gain)
Default setting AISG 1.1 CWA alarm 230 – 295 mA	782 10556 DTMA-1800-12-AISG-CWA (12 dB gain)
Default setting AISG 2.0 CWA alarm 170 – 200 mA	782 10557 DTMA-1800-12-AISG-CWA (12 dB gain)
Default setting AISG 2.0 CWA alarm 230 – 295 mA	782 10558 DTMA-1800-12-AISG-CWA (12 dB gain)

Tx Characteristics

Frequency range	1805 – 1880 MHz
Insertion loss*	< 0.4 dB
Input power (per input)	< 160 W (+52 dBm) CW / < 1.6 kW (+62 dBm) peak
Intermodulation products in Rx band	< -117 dBm (2 Tx carriers at +43 dBm)
Return loss	> 18 dB

Rx Characteristics

Frequency range	1710 – 1785 MHz
Loss in by-pass mode	Typically 2.8 dB (DC OFF)
Return loss	> 18 dB (DC ON) / > 15 dB (DC OFF)
Gain	12 ± 0.7 dB (+22 ... +28 °C) / 12 ± 1.3 dB (-40 ... +65 °C)
Noise figure**	< 1.4 dB (+22 ... +28 °C)
Output 1-dB compression point	> 10 dBm
3 rd order intercept point (OIP3)	> 25 dBm

Environmental Characteristics

Operating temperature range	-40 ... +65 °C
IP rating	IP 67
MTBF	> 1 000 000 hours (per TMA)
EMC	According to ETS 300 342-3

DC and Alarm Characteristics

	CWA Mode	AISG Mode
DC supply	9 – 15 V	9 – 30 V
Operating current per TMA (without RET)	80 – 130 mA	Nom. 95 mA at 9 V Nom. 35 mA at 30 V
Alarm management	782 10555: 170 – 200 mA 782 10556: 230 – 295 mA 782 10557: 170 – 200 mA 782 10558: 230 – 295 mA	AISG ***

Mechanical Characteristics

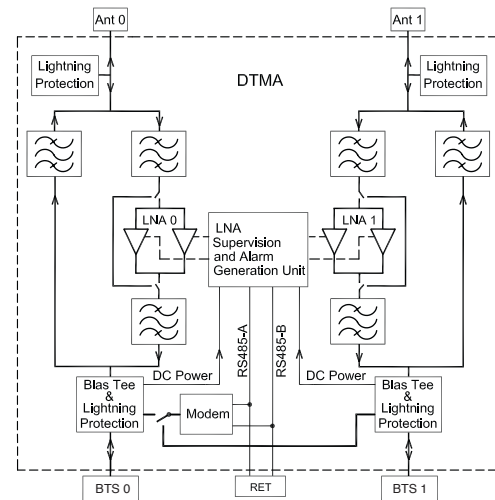
Material	Aluminium housing
Connectors	RF AISG 7-16 female (long neck) 8-pin female, IEC 60130-9 (Pin 3: RS485B, pin 5: RS485A, pin 6: 9 – 30 V DC, pin 7: DC return, other pins: not connected)
Weight	5 kg
Packing size	262 x 502 x 214 mm
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set
Dimensions (w x h x d)	166 x 278 x 77.5 mm (without connectors, without mounting brackets)

$$* \text{ Insertion loss } \overline{IL} = \frac{IL_{1805 \text{ MHz}} + 2 \times IL_{1842.5 \text{ MHz}} + IL_{1880 \text{ MHz}}}{4}$$

$$** \text{ Noise figure } \overline{NF} = \frac{NF_{1710 \text{ MHz}} + 2 \times NF_{1747.5 \text{ MHz}} + NF_{1785 \text{ MHz}}}{4}$$

(Additional variation at -40 ... +65 °C: $\Delta \overline{NF} < 0.5 \text{ dB}$)

*** The protocol of the software interface can be switched between AISG 2.0/3GPP and AISG 1.1 and vice versa with a vendor specific command (depending on default setting). If the primary station does not support the default setting, it has to be switched over before system start up. Please contact Kathrein for further information.



Accessories (order separately)

Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
734 365	45 – 125 mm



DTMA-1900-12-AISG

Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

KATHREIN

Antennen · Electronic



- Double unit for easy use with XPol antennas
- Kathrein redundancy amplifier design for improved system reliability
- By-pass mode to ensure cell operation in case of DC power down
- Built-in lightning protection
- Compact size
- Suitable for antenna RET control according to AISG standard
- **DTMA DC supply and AISG feed via Node B0 port for both TMAs**

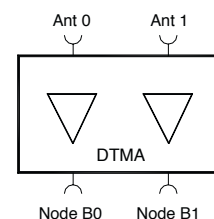
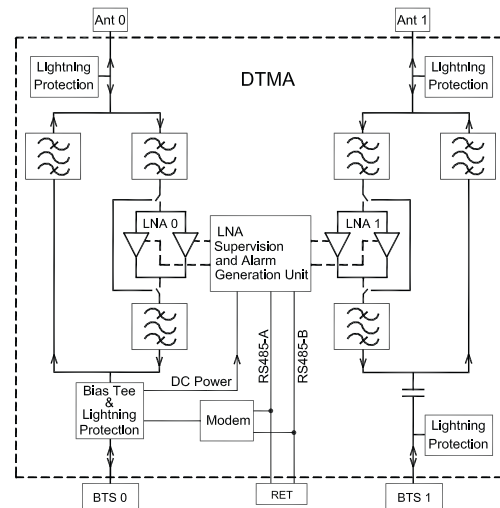
RET = Remote Electrical Tilt

AISG = Antenna Interface Standards Group



Technical Data

Type No.	782 10403 DTMA-1900-12-AISG (12 dB gain)
Tx Characteristics	
Frequency range	1930 – 1990 MHz
Bandwidth	60 MHz
Insertion loss	< 0.5 dB over the middle 80% of BW, a further 0.25 dB over the remaining BW.
Input power	< 160 W (+52 dBm) CW < 1.6 kW (+62 dBm) Peak
Intermodulation products in Rx band	< -117 dBm (2 Tx carriers at +43 dBm)
Return loss	> 18 dB
Rx Characteristics	
Frequency range	1850 – 1910 MHz
Bandwidth	60 MHz
Loss in by-pass mode	2.8 dB typically
Return loss	> 18 dB (DC ON) > 15 dB (DC OFF)
Gain	+22 ... +28 °C: 12 ±0.7 dB -40 ... +65 °C: 12 ±1.3 dB
Noise figure	+22 ... +28 °C: < 1.7 dB over the middle 80% of BW, a further 0.3 dB over the remaining BW. -40 ... +65 °C: < 2.2 dB over the middle 80% of BW, a further 0.3 dB over the remaining BW.
Noise figure	-40 ... +65 °C
Output 1-dB compression point	> 15 dBm
3 rd order intercept point (OIP3)	> 25 dBm
Environmental Characteristics	
Operating temperature range	-40 ... +65 °C
IP rating	IP67
MTBF	> 1 000 000 hours (per TMA)
EMC	ETS 300 342-3
Lightning protection	5 kA, 8/20 µs RF connections and AISG port
DC and Alarm Characteristics	
Through Node B0 Port only	
DC supply without RET	+12 V nominal (9 – 15 V, minus grounded) Typically 150 mA per TMA
Alarm management	According to AISG standard 1.1
Modem Characteristics	According to AISG standard 1.1 (Data rate: 9.6 kB)
Mechanical Characteristics	
Material	Aluminium housing
Connectors	RF: 7-16 female AISG Connector (Compliance AISG 1.1): 8-pin female, IEC 60130-9 (Pin 1: +12 V DC nominal, pin 3: RS485B, pin 5: RS485A, pin 7: DC return; other pins: Not connected)
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set
Weight	5 kg
Packing size	262 x 502 x 214 mm
Dimensions (w x h x d)	166 x 278 x 77.5 mm (without connectors, without mounting brackets)



DTMA-1900-850 BYP-12-AISG

Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

KATHREIN

Antennen · Electronic



- Double unit for easy use with XPol antennas
- RF-Bypass feature for 850 MHz
- DC-stop integrated to 850 MHz ports
- Kathrein redundancy amplifier design for improved system reliability
- Bypass mode to ensure cell operation in case of DC power down
- Built-in lightning protection
- Compact size
- Suitable for antenna RET control according to AISG standard
- **DTMA DC supply and AISG feed via BTS 0 port for both TMAs**

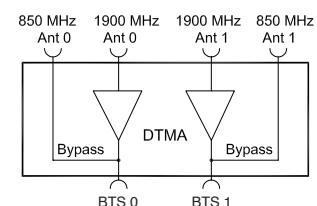
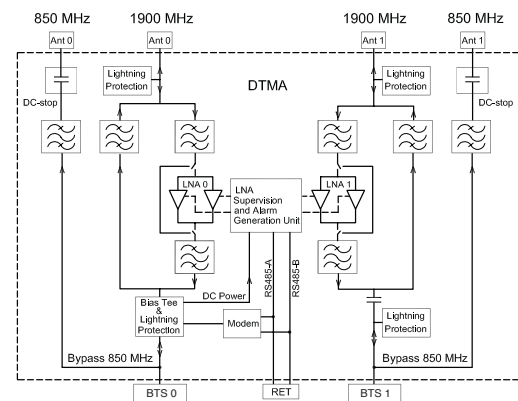
RET = Remote Electrical Tilt

AISG = Antenna Interface Standards Group

BYP = RF-BYPass

Technical Data

Type No.	782 10406 DTMA-1900-850 BYP-12-AISG (12 dB gain)
850 MHz Bypass	
Frequency range	806 – 896 MHz
Insertion loss	< 0.15 dB
Isolation to 1900 MHz	> 80 dB
Input power	500 W CW / per input
Return loss	> 18 dB
1900 MHz DTMA	
Tx Characteristics	
Frequency range	1930 – 1990 MHz
Bandwidth	60 MHz
Insertion loss	< 0.5 dB at 80% of BW, a further 0.25 dB at 100% BW.
Input power	< 160 W (+52 dBm) CW / per input < 1.6 kW (+62 dBm) Peak
Intermodulation products in Rx band	< -117 dBm (2 Tx carriers at +43 dBm)
Return loss	> 18 dB
Rx Characteristics	
Frequency range	1850 – 1910 MHz
Bandwidth	60 MHz
Loss in by-pass mode	2.8 dB typically
Return loss	> 18 dB (DC ON) > 15 dB (DC OFF)
Gain	+22 ... +28 °C -40 ... +65 °C 12 ±0.7 dB 12 ±1.3 dB
Noise figure	+22 ... +28 °C -40 ... +65 °C < 1.7 dB at 80% of BW, a further 0.3 dB at 100% BW. < 2.2 dB at 80% of BW, a further 0.3 dB at 100% BW.
Noise figure	-40 ... +65 °C
Output 1-dB compression point	> 15 dBm
3 rd order intercept point (OIP3)	> 25 dBm
Environmental Characteristics	
Operating temperature range	-40 ... +65 °C
IP rating	IP67
MTBF	> 1 000 000 hours (per TMA)
EMC	ETS 300 342-3
Lightning protection	5 kA, 8/20 µs RF connections and AISG port
DC and Alarm Characteristics	
Through BTS 0 Port only	
DC supply without RET	+12 V nominal (9 – 15 V, minus grounded) Typically 150 mA per TMA
Alarm management	According to AISG standard 1.1
Modem Characteristics	According to AISG standard 1.1 (Data rate: 9.6 kB)
Mechanical Characteristics	
Material	Aluminium housing
Connectors	7-16 female
RF	8-pin female, IEC 60130-9
AISG Connector (Compliance AISG 1.1)	(Pin 1: +12 V DC nominal, pin 3: RS485B, pin 5: RS485A, pin 7: DC return; other pins: Not connected)
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set
Weight	Approx. 8.7 kg
Dimensions (w x h x d)	271 x 278 x 77.5 mm (without connectors, without mounting brackets)



DTMA-1900-12-AISG-CWA

Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

KATHREIN

Antennen · Electronic



- Double unit for easy use with XPol antennas
- Supports CWA, AISG 1.1 and AISG 2.0 (default)
- AISG setting switchable as described on data sheet
- CWA and AISG configurations as described on data sheet
- Suitable for antenna RET control according to AISG/3GPP standard
- By-pass mode to ensure cell operation in case of DC power down
- Built-in lightning protection

RET = Remote Electrical Tilt

AISG = Antenna Interface Standards Group

CWA = Current Window Alarm



Technical Data

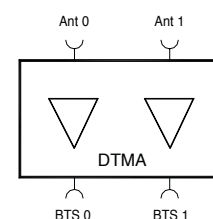
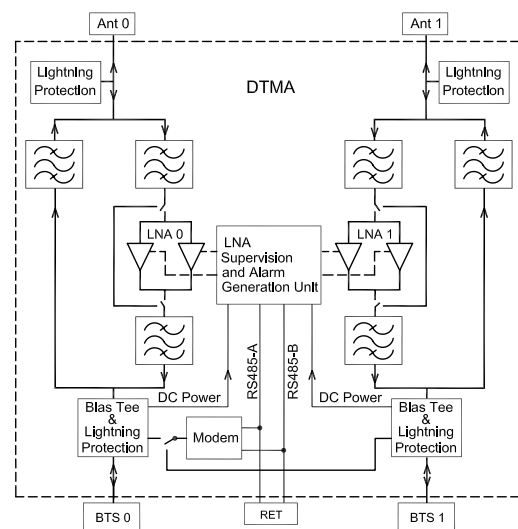
Type No.	782 10811	
	DTMA-1900-12-AISG-CWA (12 dB gain)	
Tx Characteristics		
Frequency range	1930 – 1990 MHz	
Insertion loss*	< 0.5 dB	
Input power (per input)	< 160 W (+52 dBm) CW / < 1.6 kW (+62 dBm) peak	
Intermodulation products in Rx band	< -117 dBm (2 Tx carriers at +43 dBm)	
Return loss	> 18 dB	
Rx Characteristics		
Frequency range	1850 – 1910 MHz	
Loss in by-pass mode	Typically 2.8 dB (DC OFF)	
Return loss	> 18 dB (DC ON) / > 15 dB (DC OFF)	
Gain	12 ±0.7 dB (+22 ... +28 °C) / 12 ±1.3 dB (-40 ... +65 °C)	
Noise figure**	< 1.4 dB (+22 ... +28 °C)	
Output 1-dB compression point	> 10 dBm	
3 rd order intercept point (OIP3)	> 25 dBm	
Environmental Characteristics		
Operating temperature range	-40 ... +65 °C	
IP rating	IP67	
MTBF	> 1 000 000 hours (per TMA)	
EMC	According to ETS 300 342-3	
DC and Alarm Characteristics		
	CWA-Mode	AISG-Mode
DC supply	9 – 15 V	9 – 30 V
Operating current per TMA (without RET)	80 – 130 mA	Nom. 95 mA at 9 V Nom. 35 mA at 30 V
Alarm management	170 – 200 mA	AISG***
Mechanical Characteristics		
Material	Aluminium housing	
Connectors	RF AISG 7-16 female (long neck) 8-pin female, IEC 60130-9 (Pin 3: RS485B, pin 5: RS485A, pin 6: 9 – 30 V DC, pin 7: DC return, other pins: not connected)	
Weight	5 kg	
Packing size	262 x 502 x 214 mm	
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set	
Dimensions (w x h x d)	166 x 278 x 77.5 mm (without connectors, without mounting brackets)	

$$* \text{ Insertion loss } \overline{IL} = \frac{IL_{1930 \text{ MHz}} + 2 \times IL_{1960 \text{ MHz}} + IL_{1990 \text{ MHz}}}{4}$$

$$** \text{ Noise figure } \overline{NF} = \frac{NF_{1850 \text{ MHz}} + 2 \times NF_{1880 \text{ MHz}} + NF_{1910 \text{ MHz}}}{4}$$

(Additional variation at -40 ... +65 °C: $\Delta \overline{NF} < 0.5 \text{ dB}$)

*** The protocol of the software interface can be switched between AISG 2.0/3GPP and AISG 1.1 and vice versa with a vendor specific command (depending on default setting). If the primary station does not support the default setting, it has to be switched over before system start up. Please contact Kathrein for further information.



TMA-PCS-12-CWA/TMA-AWS-12-AISG

Fullband Duplex Tower Mounted Amplifier (Masthead Amplifier)

KATHREIN

Antennen · Electronic

- Kathrein redundancy amplifier design for improved system reliability
- Built-in lightning protection
- Compact size
- Suitable for antenna RET control according to AISG standard

RET = Remote Electrical Tilt

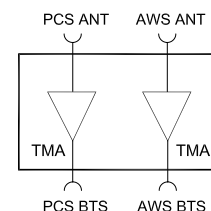
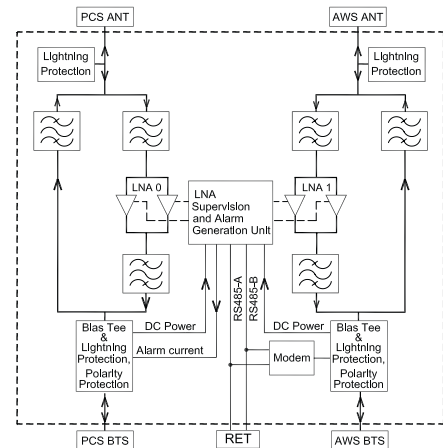
AISG = Antenna Interface Standards Group

CWA = Current Window Alarm



Technical Data

Type No.	782 10601 TMA-PCS-12-CWA/TMA-AWS-12 AISG (12 dB gain)	
TMA	PCS	AWS
Tx Characteristics		
Frequency range	1930 – 1990 MHz	2110 – 2155 MHz
Bandwidth	60 MHz	45 MHz
Insertion loss	< 0.5 dB over the middle 80% of BW, a further 0.25 dB over the remaining BW.	< 0.3 dB
Ripple	±0.2	±0.1
Input power	< 200 W (+53 dBm)	
Intermodulation products in Rx band	< -160 dBc (3 rd order; with 2 x 20 W)	
Return loss	18 dB	
Rx Characteristics		
Frequency range	1850 – 1910 MHz	1710 – 1755 MHz
Bandwidth (BW)	60 MHz	45 MHz
Gain		
-40 ... +65 °C	12 ±1.3 dB	12 ±1 dB
+22 ... +28 °C	12 ±0.7 dB	12 ±0.35 dB
Return loss	18 dB	18 dB
Noise figure		
+22 ... +28 °C	< 1.6 dB over the middle 80% of BW, a further 0.30 dB over the remaining BW.	< 1 dB
Noise figure		
-40 ... +65 °C	< 2.1 dB over the middle 80% of BW, a further 0.30 dB over the remaining BW.	< 1.3 dB
Output 1-dB compression point	> 15 dBm	
3 rd order output intercept point (OIP3)	> 25 dBm	
Environmental Characteristics		
Operating temperature range	-40 ... +65 °C	
IP rating	IP67	
MTBF	> 1 000 000 hours (per TMA)	
EMC	ETS 300 342-3	
DC and Alarm Characteristics		
DC supply without RET	+10 ... +30 V DC (minus grounded)	
Operating current	100 ±20 mA (+10 ... +15 V DC)	< 200 mA
Alarm management	CWA, > 180 mA	AISG
Modem Characteristics	According to AISG standard 1.1 (Data rate: 9.6 kB)	
Mechanical Characteristics		
Connectors		
RF	7-16 female long neck	
AISG Connector (Compliance AISG)	8-pin female, IEC 60130-9 (Pin 3: RS485B, pin 5: RS485A, pin 6: +24 V DC nominal, pin 7: DC return; other pins: NC)	
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set	
Weight	5 kg	
Packing size	262 x 502 x 214 mm	
Dimensions (w x h x d)	166 x 278 x 77.5 mm (without connectors, without mounting brackets)	



TMA-PCS-AWS-12-AISG-CWA

Fullband Duplex Tower Mounted Amplifier (Masthead Amplifier)

KATHREIN

Antennen · Electronic

- Kathrein redundancy amplifier design for improved system reliability
- By-pass mode to ensure cell operation in case of DC power down
- Built-in lightning protection
- Compact size
- Suitable for antenna RET control according to AISG standard

RET = Remote Electrical Tilt

AISG = Antenna Interface Standards Group

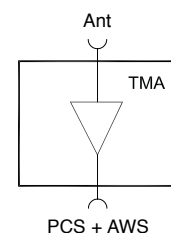
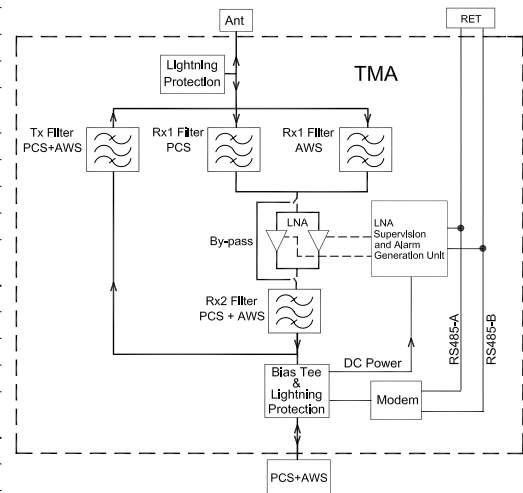
CWA = Current Window Alarm



BTS
PCS + AWS

Technical Data

Type No.	782 10602 TMA-PCS-AWS-12-AISG-CWA (12 dB gain)	
Tx Characteristics		
PCS frequency range	1930 – 1990 MHz	
AWS frequency range	2110 – 2155 MHz	
Bandwidth	60 MHz (PCS); 45 MHz (AWS)	
Insertion loss	< 0.5 dB	
Ripple per 5 MHz	< 0.2 dB	
Input power	< 250 W (+54 dBm)	
Intermodulation products in Rx band	< -160 dBc (3 rd order; with 2 x 20 W)	
Return loss	> 18 dB	
Rx Characteristics		
PCS frequency range	1850 – 1910 MHz	
AWS frequency range	1710 – 1755 MHz	
Bandwidth	60 MHz (PCS); 45 MHz (AWS)	
Gain	+22 ... +28 °C	12 ±0.5 dB
	-40 ... +65 °C	12 ±1.0 dB
Gain ripple per 5 MHz	< 0.2 dB	
Return loss	> 18 dB (DC on), > 15 dB By-pass mode	
Noise figure	< 1.2 dB AWS Band, < 2 dB PCS Band	
Output 1-dB compression point	> 15 dBm	
3 rd order intercept point (OIP3)	> 25 dBm	
Environmental Characteristics		
Operating temperature range	-40 ... +65 °C	
IP rating	IP67	
MTBF	> 1 000 000 hours	
EMC	ETS 300 342-3	
DC and Alarm Characteristics		
	CWA-Mode	AISG-Mode
DC supply	9 – 15 V	9 – 30 V
Operating current per TMA without RET	80 – 130 mA	Nom. 120 mA at 9 V Nom. 50 mA at 30 V
Alarm management	170 – 200 mA	AISG 1.1
Modem Characteristics		AISG1.1 (Data rate: 9.6 kB)
Mechanical Characteristics		
Material	Aluminium housing	
Connectors	7-16 female, long neck 8-pin female, IEC 60130-9 (Pin 6: 9 – 30 V DC, pin 3: RS485B, pin 5: RS485A, pin 7: DC return; other pins: Not connected)	
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set	
Weight	5 kg	
Packing size	262 x 502 x 214 mm	
Dimensions (w x h x d)	166 x 278 x 77.5 mm (without connectors, without mounting brackets)	



DTMA-UMTS-12-AISG-CWA

Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

KATHREIN

Antennen · Electronic



- Double units for easy use with XPol antennas
- Both versions support CWA, AISG 1.1 and AISG 2.0
782 10153 default setting: AISG 1.1
782 10154 default setting: AISG 2.0
- AISG setting switchable as described on data sheet
- CWA and AISG configurations as described on data sheet
- Suitable for antenna RET control according to AISG/3GPP standard
- By-pass mode to ensure cell operation in case of DC power down
- Built-in lightning protection

RET = Remote Electrical Tilt
AISG = Antenna Interface Standards Group
CWA = Current Window Alarm



Technical Data

Type No.	Default setting AISG 1.1	782 10153 DTMA-UMTS-12-AISG-CWA (12 dB gain)
	Default setting AISG 2.0	782 10154 DTMA-UMTS-12-AISG-CWA (12 dB gain)

Tx Characteristics

Frequency range	2110 – 2170 MHz
Insertion loss	Typ. 0.3 dB
Ripple	< 0.1 dB
Input power (per input)	< 100 W (+50 dBm) CW / < 1.6 kW (+62 dBm) peak
Intermodulation products in Rx band	< -117 dBm (2 Tx carriers at +43 dBm)
Return loss	> 18 dB

Rx Characteristics

Frequency range	1920 – 1980 MHz
Loss in by-pass mode	< 2.5 dB (DC OFF)
Return loss	> 18 dB (DC ON) / > 12 dB (DC OFF)
Gain	12 ±0.5 dB (+22 ... +28 °C) / 12 ±1.0 dB (-40 ... +65 °C)
Gain ripple	< ±0.3 dB
Noise figure	< 1.6 dB (25 °C) / < 2.0 dB (60 °C)
Output 1-dB compression point	> 15 dBm
3 rd order intercept point (OIP3)	> 25 dBm

Environmental Characteristics

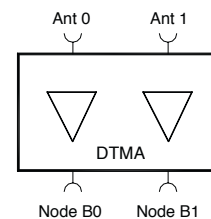
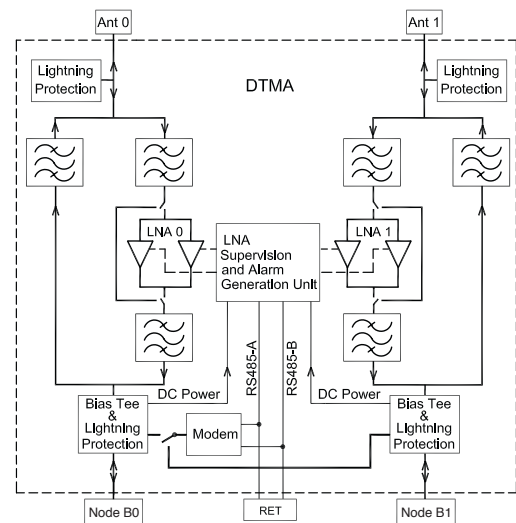
Operating temperature range	-40 ... +65 °C
IP rating	IP67
MTBF	> 1 000 000 hours (per TMA)
EMC	According to ETS 300 342-3

DC and Alarm Characteristics

	CWA Mode	AISG Mode
DC supply	9 – 15 V	9 – 30 V
Operating current per TMA (without RET)	80 – 145 mA	Nom. 115 mA at 9 V Nom. 40 mA at 30 V
Alarm management	170 – 200 mA	AISG*

Mechanical Characteristics

Material	Aluminium housing
Connectors	RF AISG 7-16 female (long neck) 8-pin female, IEC 60130-9 (Pin 3: RS485B, pin 5: RS485A, pin 6: 9 – 30 V DC, pin 7: DC return, other pins: not connected)
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set
Weight	5 kg
Packing size	262 x 502 x 214 mm
Dimensions (w x h x d)	166 x 262 x 77.5 mm (without connectors, without mounting brackets)



* The protocol of the software interface can be switched between AISG 2.0/3GPP and AISG 1.1 and vice versa with a vendor specific command (depending on default setting). If the primary station does not support the default setting, it has to be switched over before system start up. Please contact Kathrein for further information.

DTMA-UMTS-12-AISG-CWA-FB-BS

Tx-Fullband / Rx-Band Selective Double Dual Duplex

Tower Mounted Amplifier (Masthead Amplifier)

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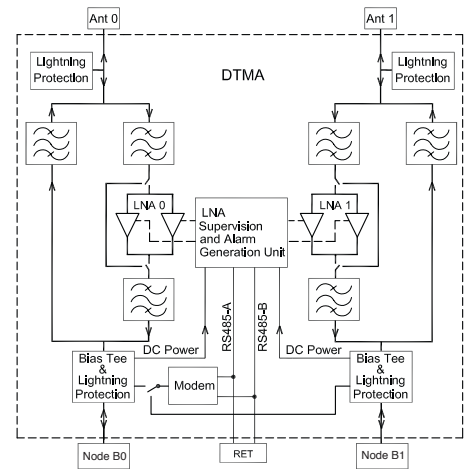
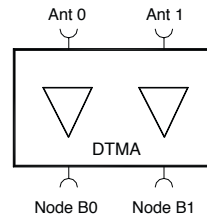
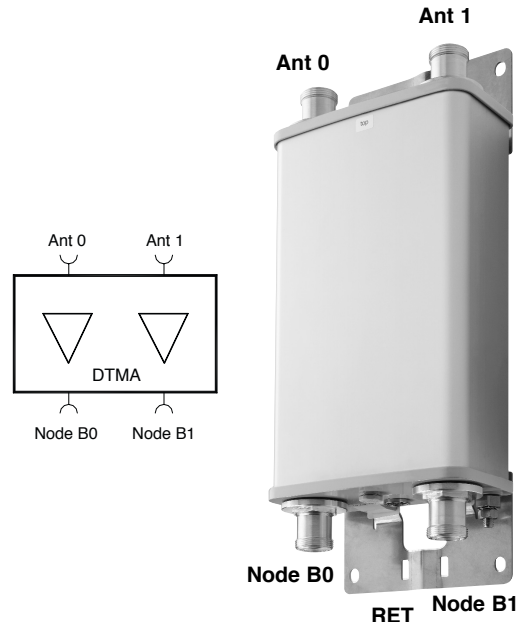
- Double unit for easy use with XPol antennas
- Supports AISG 1.1 and 2.0 (default version see table)*
- Kathrein redundancy amplifier design for improved system reliability
- By-pass mode to ensure cell operation in case of DC power down
- Built-in lightning protection
- Compact size
- DC supply
 - CWA: Via Node B0 and B1
 - AISG: Via Node B0, Node B1 or both
- Signalling
 - CWA: Via Node B0 and B1 for each LNA
 - AISG: Via Node B0, Node B1 for both LNAs
- Suitable for antenna RET control according to AISG/3GPP standard
- **DTMA DC supply and AISG feed via Node B0 or Node B1 port for both TMAs**



RET = Remote Electrical Tilt
AISG = Antenna Interface Standards Group
FB = Full Band in Tx-Band
BS = Band Selective in Rx-Band
CWA = Current Window Alarm

Technical Data

Type	DTMA-UMTS-12-AISG-CWA-FB-BS (12 dB gain)
Tx Characteristics	
Frequency range	2110 – 2170 MHz
Bandwidth	60 MHz
Insertion loss	< 0.4 dB
Ripple	< 0.1 dB
Max. Group Delay	50 ns
Max. Delta Group Delay in 5 MHz Bandwidth	5 ns
Input power	< 100 W (+50 dBm) CW < 1.6 kW (+62 dBm) Peak
Intermodulation products in Rx band	< -122 dBm (2 x 43 dBm carriers)
Return loss	> 18 dB
Rx Characteristics	
Frequency range	factory tunable within 1920 – 1985 MHz
Bandwidth	15 MHz
Loss in by-pass mode	< 3.0 dB (DC OFF)
Gain ripple	< 0.4 dB
Return loss	> 18 dB (DC ON) > 16 dB (DC OFF)
Gain	+22 ... +28 °C: 12 ± 0.5 dB -40 ... +60 °C: 12 ± 1.0 dB
Max. Group Delay	100 ns
Max. Delta Group Delay in 5 MHz Bandwidth	10 ns
Noise figure	< 1.5 dB / 25 °C
Noise figure	< 1.8 dB / 60 °C
Output 1-dB compression point	> 7 dBm
3 rd order intercept point (OIP3)	> 17 dBm
Environmental Characteristics	
Operating temperature range	-40 ... +60 °C
IP rating	IP67
MTBF	> 1 000 000 hours
EMC	ETS 300 342-3
DC and Alarm Characteristics	
DC supply	9 – 30 V, minus grounded
Alarm management	CWA or according to AISG standard*
Modem Characteristics	According to AISG standard*
Mechanical Characteristics	
Material	Aluminium housing
Connectors	RF: 7-16 female long neck AISG Connector (Compliance AISG): 8-pin female, IEC 60130-9 (Pin 3: RS485B, pin 5: RS485A, pin 6: 9 – 30 V DC, pin 7: DC return; other pins: NC)
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set
Weight	5 kg
Packing size	262 x 502 x 214 mm
Dimensions (w x h x d)	166 x 262 x 77.5 mm (without connectors, without mounting brackets)



Type no.	Rx-Frequency (MHz)	Current in CWA mode (mA)	
		nominal	alarm
AISG 1.1 (default version)			
782 10561	1970 – 1985	50 – 190	230 – 295
782 10562	1970 – 1985	80 – 120	170 – 200
782 10563	1965 – 1980	50 – 190	230 – 295
782 10564	1965 – 1980	80 – 120	170 – 200
782 10565	1950 – 1965	80 – 120	170 – 200
782 10566	1920 – 1935	50 – 190	230 – 295
782 10567	1920 – 1935	80 – 120	170 – 200
782 10568	1950 – 1965	50 – 190	230 – 295

Type no.	Rx-Frequency (MHz)	Current in CWA mode (mA)	
		nominal	alarm
AISG 2.0 (default version)			
782 10569	1970 – 1985	50 – 190	230 – 295
782 10570	1920 – 1935	50 – 190	230 – 295
782 10571	1965 – 1980	50 – 190	230 – 295
782 10579	1965 – 1980	80 – 120	170 – 200

* The protocol of the software interface can be switched between AISG 2.0/3GPP and AISG 1.1 and vice versa with a vendor specific command (depending on default setting). If the primary station does not support the default setting, it has to be switched over before system start up. Please contact Kathrein for further information.

DTMA-UMTS-24-AISG

Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

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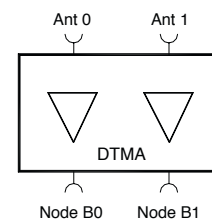
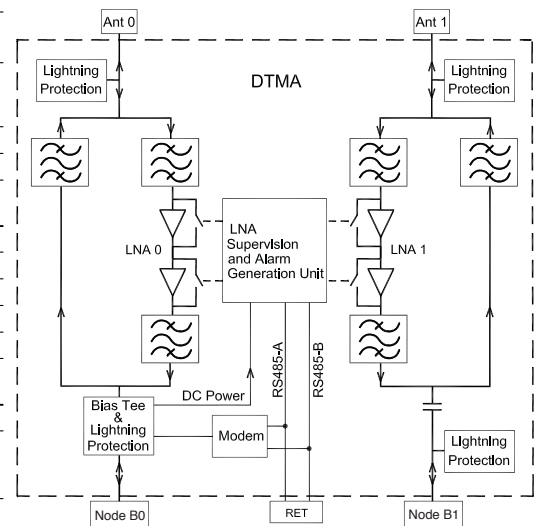
- Double unit for easy use with XPol antennas
- Supports AISG 1.1 or 2.0 (Default version AISG 1.1) *
- Kathrein redundancy amplifier design for improved system reliability
- By-pass mode to ensure cell operation in case of DC power down
- Built-in lightning protection
- Compact size
- Suitable for antenna RET control according to AISG/3GPP standard
- **DTMA DC supply and AISG feed via Node B0 port for both TMAs**

RET = Remote Electrical Tilt

AISG = Antenna Interface Standards Group

Technical Data

Type No.	782 10448 DTMA-UMTS-24-AISG (24 dB gain)
Tx Characteristics	
Frequency range	2110 – 2170 MHz
Bandwidth	60 MHz
Insertion loss	Typically 0.3 dB
Ripple	< ±0.2 dB
Input power	< 100 W (+50 dBm) CW < 1.6 kW (+62 dBm) Peak
Intermodulation products in Rx band	< -117 dBm (2 Tx carriers at +43 dBm)
Return loss	> 18 dB
Rx Characteristics	
Frequency range	1920 – 1980 MHz
Bandwidth	60 MHz
Loss in by-pass mode	Typically 2.4 dB (DC OFF)
Gain ripple	< ±0.3 dB
Return loss	> 18 dB (DC ON) > 12 dB (DC OFF)
Gain	-40 ... +65 °C: 24 ±1.0 dB +22 ... +28 °C: 24 ±0.5 dB
Noise figure	Typically 1.4 dB
Output 1-dB compression point	> 20 dBm
3 rd order intercept point (OIP3)	> 29 dBm
Environmental Characteristics	
Operating temperature range	-40 ... +65 °C
IP rating	IP67
MTBF	> 1 000 000 hours (per TMA)
EMC	ETS 300 342-3
Lightning protection	5 kA, 8/20 μs RF connections and AISG port
DC and Alarm Characteristics	
Through Node B0 Port only	
DC supply without RET	9 – 30 V, minus grounded Typically 300 mA at 9 V Typically 100 mA at 30 V
Alarm management	According to AISG standard *
Mechanical Characteristics	
Material	Aluminium housing
Connectors	RF: 7-16 female AISG Connector (Compliance AISG): 8-pin female, IEC 60130-9 (Pin 6: 9 – 30 V DC, pin1: 9-15 V DC, pin 3: RS485B, pin 5: RS485A, pin 7: DC return; other pins: Not connected)
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set
Weight	5 kg
Packing size	262 x 502 x 214 mm
Dimensions (w x h x d)	166 x 262 x 77.5 mm (without connectors, without mounting brackets)



* The protocol of the software interface can be switched between AISG 2.0/3GPP and AISG 1.1 and vice versa with a vendor specific command (depending on default setting). If the primary station does not support the default setting, it has to be switched over before system start up. Please contact Kathrein for further information.

DTMA-UMTS-12-AISG-CWA

Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

KATHREIN

Antennen · Electronic

- Slimline design
- Double units for easy use with XPol antennas
- Both versions support CWA, AISG 1.1 and AISG 2.0
782 10610 default setting: AISG 1.1
782 10612 default setting: AISG 2.0
- AISG setting switchable as described on data sheet
- CWA and AISG configurations as described on data sheet
- Suitable for antenna RET control according to AISG/3GPP standard
- By-pass mode to ensure cell operation in case of DC power down
- Built-in lightning protection

RET = Remote Electrical Tilt

AISG = Antenna Interface Standards Group

CWA = Current Window Alarm



Technical Data

Type No.	Default setting	782 10610
	AISG 1.1	DTMA-UMTS-12-AISG-CWA (12 dB gain)
	AISG 2.0	DTMA-UMTS-12-AISG-CWA (12 dB gain)

Tx Characteristics

Frequency range	2110 – 2170 MHz
Insertion loss	< 0.3 dB (typically 0.15 dB)
Ripple	< 0.1 dB
Input power (per input)	< 100 W (+50 dBm) CW / < 1.6 kW (+62 dBm) peak
Intermodulation products in Rx band	< -117 dBm (2 Tx carriers at +43 dBm)
Return loss	> 18 dB

Rx Characteristics

Frequency range	1920 – 1980 MHz
Loss in by-pass mode	< 2.5 dB (DC OFF)
Return loss	> 18 dB (DC ON) / > 12 dB (DC OFF)
Gain	12 ±1.0 dB (+22 ... +28 °C) / 12 ±1.2 dB (-40 ... +65 °C)
Gain ripple	< ±0.3 dB
Noise figure*	< 1.3 dB (+22 ... +28 °C)
Output 1-dB compression point	> 11 dBm
3 rd order intercept point (OIP3)	> 25 dBm (typically 30 dBm)

Environmental Characteristics

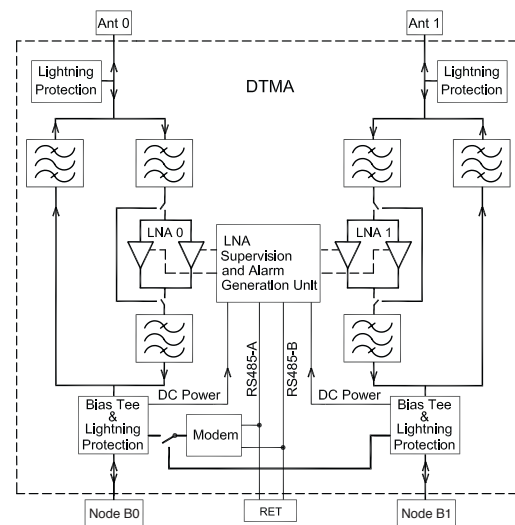
Operating temperature range	-40 ... +65 °C
IP rating	IP67
MTBF	> 1 000 000 hours (per TMA)
EMC	According to ETS 300 342-3

DC and Alarm Characteristics

	CWA Mode	AISG Mode
DC supply	9 – 15 V	9 – 30 V
Operating current per TMA (without RET)	80 – 140 mA	Nom. 95 mA at 9 V Nom. 35 mA at 30 V
Alarm management	170 – 200 mA	AISG

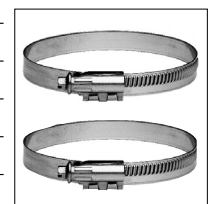
Mechanical Characteristics

Material	Aluminium housing
Connectors	RF: 7-16 female (long neck) AISG: 8-pin female, IEC 60130-9 (Pin 3: RS485B, pin 5: RS485A, pin 6: 9 – 30 V DC, pin 7: DC return, other pins: not connected)
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set
Weight	3.8 kg
Packing size	262 x 502 x 214 mm
Dimensions (w x h x d)	160 x 205 x 63 mm (without connectors, without mounting brackets)



Accessories (order separately)

Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
734 365	45 – 125 mm



* Noise figure $\overline{NF} = \frac{NF_{1920\text{ MHz}} + 2 \times NF_{1950\text{ MHz}} + NF_{1980\text{ MHz}}}{4}$

(Additional variation at -40 ... +65 °C: $\Delta \overline{NF} < 0.3\text{ dB}$)

DTMA-UMTS-24-AISG-CWA

Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

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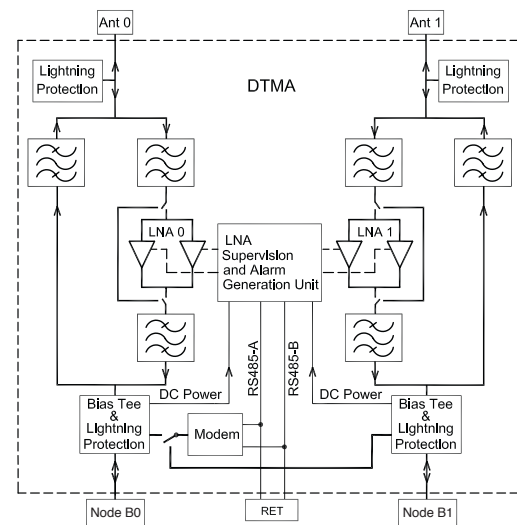
- Slimline design
- Double unit for easy use with XPol antennas
- Supports CWA, AISG 1.1 and AISG 2.0 (default)
- AISG setting switchable as described on data sheet
- CWA and AISG configurations as described on data sheet
- Suitable for antenna RET control according to AISG/3GPP standard
- By-pass mode to ensure cell operation in case of DC power down
- Built-in lightning protection

RET = Remote Electrical Tilt
AISG = Antenna Interface Standards Group
CWA = Current Window Alarm



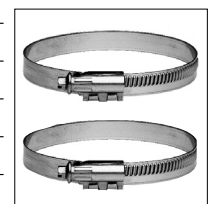
Technical Data

Type No.	782 10613 DTMA-UMTS-24-AISG-CWA (24 dB gain)	
Tx Characteristics		
Frequency range	2110 – 2170 MHz	
Insertion loss	< 0.3 dB (typically 0.15 dB)	
Ripple	< 0.1 dB	
Input power (per input)	< 100 W (+50 dBm) CW / < 1.6 kW (+62 dBm) peak	
Intermodulation products in Rx band	< -117 dBm (2 Tx carriers at +43 dBm)	
Return loss	> 18 dB	
Rx Characteristics		
Frequency range	1920 – 1980 MHz	
Loss in by-pass mode	< 2.5 dB (DC OFF)	
Return loss	> 18 dB (DC ON) / > 12 dB (DC OFF)	
Gain	24 ±1.0 dB (+22 ... +28 °C) / 24 ±1.2 dB (-40 ... +65 °C)	
Gain ripple	< ±0.3 dB	
Noise figure*	< 1.4 dB (+22 ... +28 °C)	
Output 1-dB compression point	> 18 dBm	
3 rd order intercept point (OIP3)	> 25 dBm (typically 30 dBm)	
Environmental Characteristics		
Operating temperature range	-40 ... +65 °C	
IP rating	IP67	
MTBF	> 1 000 000 hours (per TMA)	
EMC	According to ETS 300 342-3	
DC and Alarm Characteristics		
	CWA Mode	AISG Mode
DC supply	9 – 15 V	9 – 30 V
Operating current per TMA (without RET)	130 – 340 mA	Nom. 210 mA at 9 V Nom. 70 mA at 30 V
Alarm management	380 – 420 mA	AISG
Mechanical Characteristics		
Material	Aluminium housing	
Connectors	RF	7-16 female (long neck) 8-pin female, IEC 60130-9 (Pin 3: RS485B, pin 5: RS485A, pin 6: 9 – 30 V DC, pin 7: DC return, other pins: not connected)
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set	
Weight	3.8 kg	
Packing size	262 x 502 x 214 mm	
Dimensions (w x h x d)	160 x 205 x 63 mm (without connectors, without mounting brackets)	



Accessories (order separately)

Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
734 365	45 – 125 mm



* Noise figure $\overline{NF} = \frac{NF_{1920\text{ MHz}} + 2 \times NF_{1950\text{ MHz}} + NF_{1980\text{ MHz}}}{4}$
 (Additional variation at -40 ... +60 °C: $\Delta \overline{NF} < 0.4\text{ dB}$)

DTMA-UMTS-BYP900/1800-12-AISG-CWA

Fullband Double Dual Duplex Tower Mounted Amplifier with 900 MHz and 1800 MHz By-pass

KATHREIN

Antennen · Electronic

- Double units for easy use with XPol antennas
- Both versions support CWA, AISG 1.1 and AISG 2.0 (default)
782 10652: CWA alarm 170 – 200 mA
782 10653: CWA alarm 230 – 295 mA
- RF Bypass for 900 MHz and 1800 MHz
- Integrated DC stops
- AISG setting switchable as described on data sheet
- CWA and AISG configurations as described on data sheet
- Suitable for antenna RET control according to AISG/3GPP standard
- By-pass mode to ensure cell operation in case of DC power down
- Built-in lightning protection

RET = Remote Electrical Tilt
AISG = Antenna Interface Standards Group
CWA = Current Window Alarm
BYP = RF BYPass



Technical Data

Type No.	CWA alarm 170 – 200 mA	782 10652 DTMA-UMTS-BYP900/1800-12-AISG-CWA (12 dB gain)
	CWA alarm 230 – 295 mA	782 10653 DTMA-UMTS-BYP900/1800-12-AISG-CWA (12 dB gain)

UMTS Tx Characteristics

Frequency range	2110 – 2170 MHz
Insertion loss	< 0.4 dB
Input power (per input)	< 100 W (+50 dBm) CW / < 1.6 kW (+62 dBm) peak
Intermodulation products in Rx band	< -117 dBm (2 Tx carriers at +43 dBm)
Return loss	> 18 dB

UMTS Rx Characteristics

Frequency range	1920 – 1980 MHz
Loss in by-pass mode	< 3.0 dB (DC OFF)
Return loss	> 16 dB (DC ON) / > 14 dB (DC OFF)
Gain	12 ±0.7 dB (+22 ... +28 °C) / 12 ±1.3 dB (-40 ... +60 °C)
Gain ripple in 5 MHz bandwidth	< ±0.2 dB
Noise figure*	< 1.3 dB (+22 ... +28 °C)
Output 1-dB compression point	> 10 dBm
3 rd order intercept point (OIP3)	> 23 dBm

1800 MHz Bypass Characteristics

Frequency range	1710 – 1880 MHz
Insertion loss	< 0.3 dB
Return loss	> 18 dB
Isolation	> 80 dB (2400 – 2900 MHz) / > 60 dB (2110 – 2170 MHz) / > 50 dB (2010 – 2025 MHz) / > 50 dB (1920 – 1980 MHz) / > 80 dB (880 – 960 MHz)
Input power (per input)	100 W CW / 300 W peak

900 MHz Bypass Characteristics

Frequency range	870 – 970 MHz
Insertion loss	< 0.3 dB
Return loss	> 18 dB
Isolation	> 70 dB (2400 – 2900 MHz) / > 60 dB (2110 – 2170 MHz) / > 60 dB (2010 – 2025 MHz) / > 55 dB (1920 – 1980 MHz) / > 30 dB (1710 – 1880 MHz)
Input power (per input)	100 W CW / 300 W peak

Environmental Characteristics

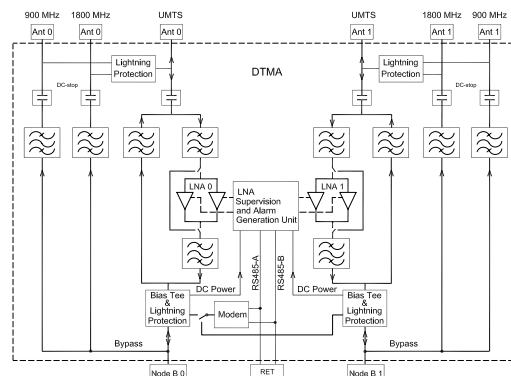
Operating temperature range	-40 ... +60 °C
IP rating	IP67 (see note on data sheet)
MTBF	> 1 000 000 hours per TMA
EMC	According to ETS 300 342-3

DC and Alarm Characteristics

	CWA Mode	AISG Mode
DC supply	9 – 15 V	9 – 30 V
Operating current per TMA (without RET)	80 – 130 mA	Nom. 95 mA at 9 V Nom. 35 mA at 30 V
Alarm management	782 10652: 170 – 200 mA 782 10653: 230 – 295 mA	AISG

Mechanical Characteristics

Material	Aluminium housing
Connectors	RF AISG 7-16 female (long neck) 8-pin female, IEC 60130-9 (Pin 3: RS485B, pin 5: RS485A, pin 6: 9 – 30 V DC, pin 7: DC return, other pins: not connected)
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set
Dimensions (w x h x d)	222 x 316.9 x 108.5 mm (without connectors, without mounting brackets)



Accessories (order separately)

Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
734 365	45 – 125 mm

Clamp Set



Type No.	Description
784 10367	50-Ω load 1.5 W / indoor or outdoor

50-Ω load



* Noise figure $NF = \frac{NF_{1920\text{ MHz}} + 2 \times NF_{1950\text{ MHz}} + NF_{1980\text{ MHz}}}{4}$
(Additional variation at -40 ... +60 °C: $\Delta NF < 0.3\text{ dB}$)

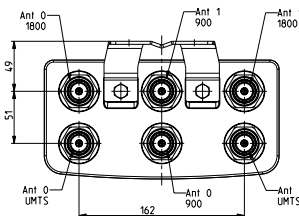
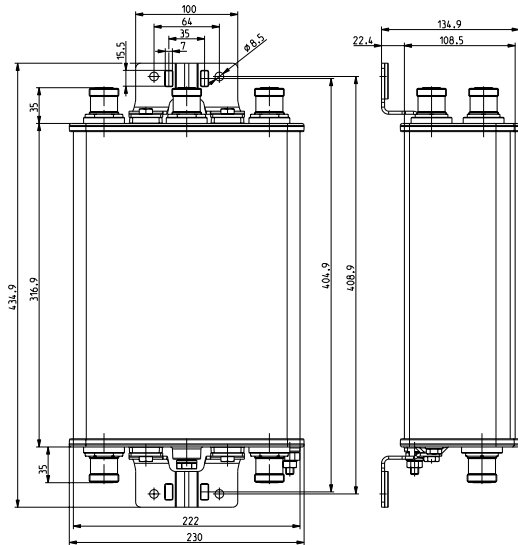
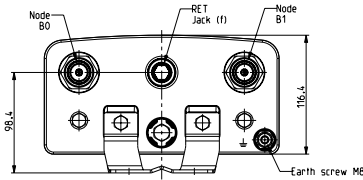
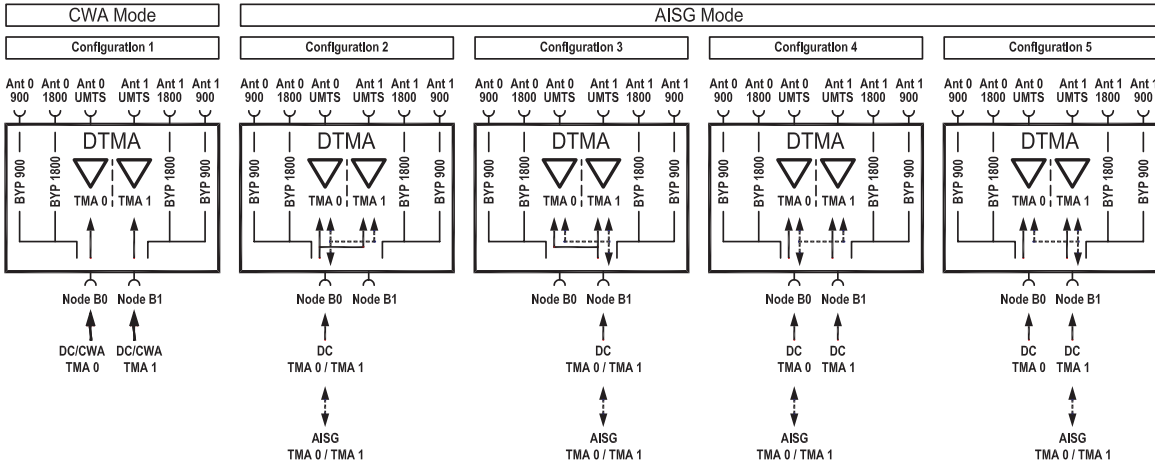
DTMA-UMTS-BYP900/1800-12-AISG-CWA

Fullband Double Dual Duplex Tower Mounted Amplifier with 900 MHz and 1800 MHz By-pass

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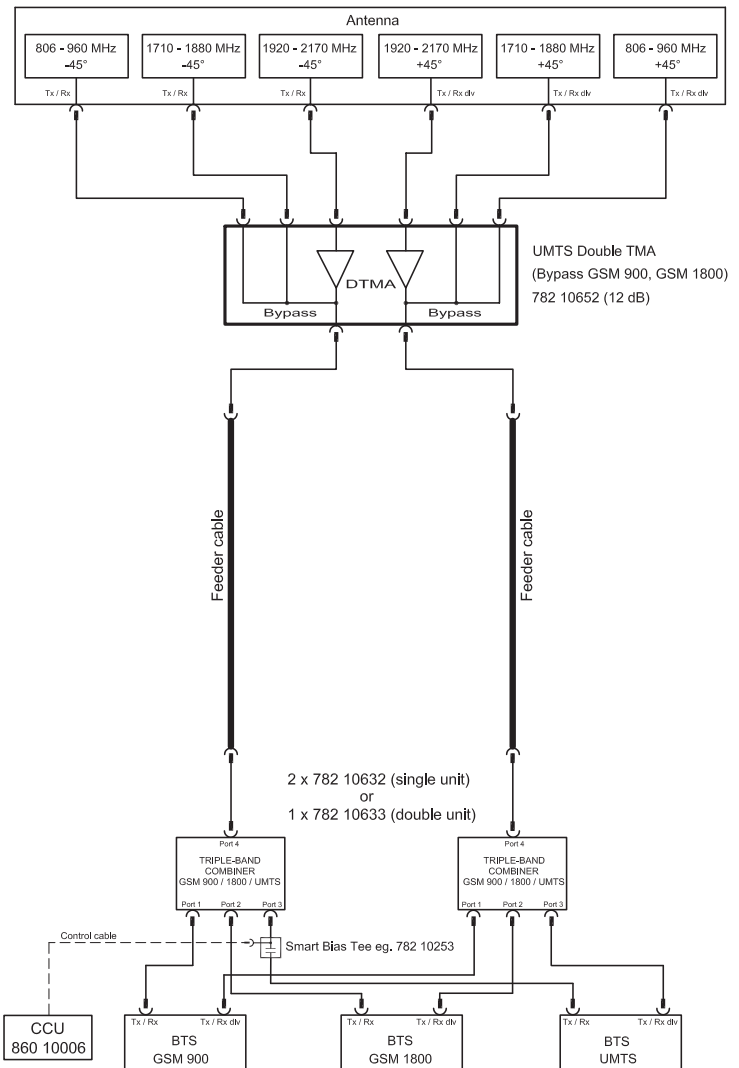
Antennen · Electronic

DC Supply, Current Window Alarm and AISG Configuration (automatically chosen by the DTMA depending on incoming signals)



782 10652, 782 10653

Application Example



AISG Setting

The protocol of the software interface can be switched between AISG 2.0 / 3GPP and AISG 1.1 and vice versa with a vendor specific command (depending on default setting). If the primary station does not support the default setting, it has to be switched over before system start-up. Please contact Kathrein for further information.

DTMA-2600-12-AISG

Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

KATHREIN

Antennen · Electronic

- Double unit for easy use with XPol antennas
- Supports AISG 1.1 and AISG 2.0 (default)
- Suitable for antenna RET control according to AISG/3GPP standard
- By-pass mode to ensure cell operation in case of DC power down
- Built-in lightning protection

RET = Remote Electrical Tilt

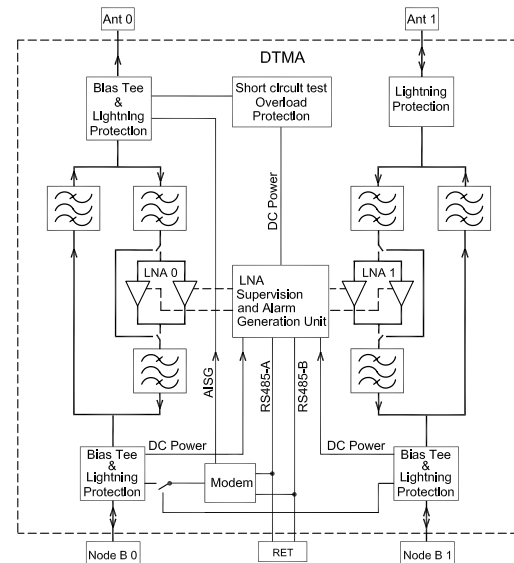
AISG = Antenna Interface Standards Group

CWA = Current Window Alarm



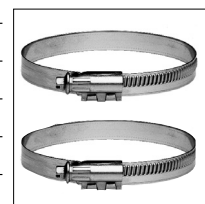
Technical Data

Type No.	782 10860 DTMA-2600-12-AISG (12 dB gain)
Tx Characteristics	
Frequency range	2620 – 2690 MHz
Insertion loss	< 0.6 dB (typ. 0.35 dB)
Ripple	< 0.35 dB
Input power (per input)	< 100 W (+50 dBm) CW / < 1.6 kW (+62 dBm) peak
Intermodulation products in Rx band	< -117 dBm (2 Tx carriers at +43 dBm)
Return loss	> 18 dB
Rx Characteristics	
Frequency range	2500 – 2570 MHz
Loss in by-pass mode	< 2.5 dB (DC OFF)
Return loss	> 18 dB (DC ON) / > 12 dB (DC OFF)
Gain	12 ±0.7 dB (+22 ... +28 °C) / 12 ±1.0 dB (-40 ... +65 °C)
Gain ripple	< ±0.5 dB
Noise figure*	< 1.3 dB (+22 ... +28 °C)
Output 1-dB compression point	> 13 dBm
3 rd order intercept point (OIP3)	> 25 dBm (typically 30 dBm)
Environmental Characteristics	
Operating temperature range	-40 ... +65 °C
IP rating	IP67
MTBF	> 1 000 000 hours (per TMA)
EMC	According to ETS 300 342-3
DC and Alarm Characteristics	
DC supply	10 – 30 V
Operating current per TMA (without RET)	Nom. 190 mA at 10 V Nom. 80 mA at 30 V
Alarm management	AISG
Mechanical Characteristics	
Material	Aluminium housing
Connectors	RF: 7-16 female (long neck) AISG: 8-pin female, IEC 60130-9 (Pin 3: RS485B, pin 5: RS485A, pin 6: 9 – 30 V DC, pin 7: DC return, other pins: not connected)
Mounting	Wall mounting: With 4 screws (max. 8 mm diameter) Mast mounting: With additional clamp set
Dimensions (w x h x d)	165.2 x 245.2 x 64.6 mm (without connectors, without mounting brackets)



Accessories (order separately)

Type No.	Clamp set suitable for mast diameter of
734 360	34 – 60 mm
734 361	60 – 80 mm
734 362	80 – 100 mm
734 363	100 – 120 mm
734 364	120 – 140 mm
734 365	45 – 125 mm



* Noise figure $\overline{NF} = \frac{NF_{2500\text{ MHz}} + 2 \times NF_{2535\text{ MHz}} + NF_{2570\text{ MHz}}}{4}$

(Additional variation at -40 ... +65 °C: $\Delta \overline{NF} < 0.3\text{ dB}$)

Repeaters

Repeater:

Description	Type No.	Frequency range	Page
900 Band Selective Repeater	782 10711	880 ... 915 / 925 ... 960 MHz	317
900 Double-Band Selective Repeater	782 10717	Band 1: 880 ... 915 / 925 ... 960 MHz Band 2: 880 ... 915 / 925 ... 960 MHz	318
1800 Band Selective Repeater	782 10731	1710 ... 1785 / 1805 ... 1880 MHz	319
1800 Double-Band Selective Repeater	782 10736	Band 1: 1710 ... 1785 / 1805 ... 1880 MHz Band 2: 1710 ... 1785 / 1805 ... 1880 MHz	320
UMTS Band Selective Repeater	782 10751	1920 ... 1980 / 2110 ... 2170 MHz	321

900 Band Selective Repeater

880 ... 915 MHz / 925 ... 960 MHz

KATHREIN

Antennen · Electronic

- Indoor repeater solution to easily improve coverage in designated areas
- Easy deployment
- Compact design
- Wall mounting, easy to install
- User-friendly operation
- Customized single-band operation



Front View

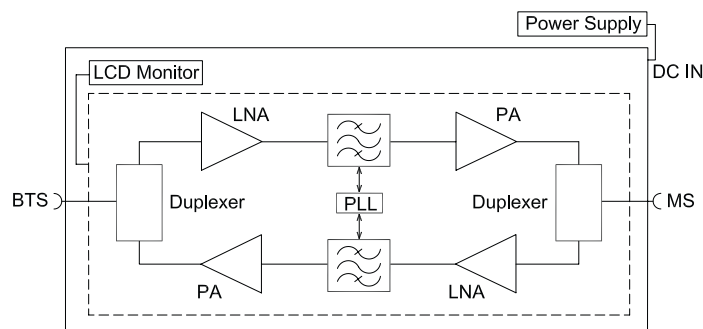
Tuning:

The repeater is tuned to the desired bandwidth at the factory.

When ordering please specify the desired frequency range for uplink and downlink.



Rear View



Technical Data

Type No.	782 10711 900 Band Selective Repeater	
Specification	Uplink	Downlink
Frequency range	880 ... 915 MHz	925 ... 960 MHz
Nominal bandwidth	0.2 ... 25 MHz (Customized tuning)	
Maximum gain	≥ 70 dB	
Auto gain control	≥ 40 dB	
Gain control (via control panel)	31 dB in step of 1 dB	
Gain flatness	≤ 5 dB (p-p)	
Output power	≥ 15 dBm / total output power ≥ 12 dBm / Ch at 2 channels	
Intermodulation product	9 KHz – 1 GHz	≤ -36 dBm
	1 GHz – 12.75 GHz	≤ -30 dBm
Spurious emission	9 KHz – 1 GHz	≤ -36 dBm
	1 GHz – 12.75 GHz	≤ -30 dBm
Out of band gain	±400 KHz	< 50 dB
	±600 KHz	< 40 dB
	±1 MHz	< 35 dB
	±5 MHz	< 25 dB
Noise figure	≤ 7 dB	
Return loss	≤ -10 dB	
Group delay	< 4.5 μs	
External power supply		
Nominal input voltage	115/230 V ~	
Line frequency	50/60 Hz	
Admissible input voltage range	90 – 264 V ~	
Secondary voltage	+9 V ±5 % =	
Current drain	max. 5.5 A =	
Consumption	Typ. 33 W	
Input connector	IEC 320-C13	
Ingress protection class	IP30	
RF Connector/Impedance	N-type female / 50 Ω (Nominal)	
Dimensions		
Repeater (W x H x D)	232.5 x 81.5 x 202 mm (without connectors)	
Power supply unit (W x H x D)	85 x 50 x 155 mm	
Weight	≤ 4.6 kg	
Operating temperature range:		
Repeater	-10 °C – +50 °C	
Power supply unit	0 °C – +40 °C	



AC input cable,
Length 1830 mm



External power supply unit
with DC output cable,
Length 1050 mm

900 Double-Band Selective Repeater

Band 1: 880 ... 915 MHz / 925 ... 960 MHz

Band 2: 880 ... 915 MHz / 925 ... 960 MHz

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- Indoor repeater solution to easily improve coverage within designated areas
- Easy deployment
- Compact design
- Wall mounting, easy to install
- User-friendly operation
- Two independent customized bands within the operational frequency range



Front View

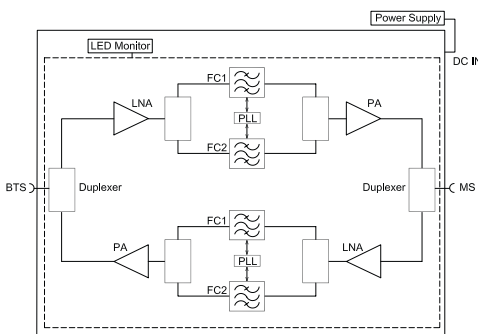


Rear View

Tuning:

The repeater is tuned to the desired bandwidth at the factory.

When ordering please specify the desired frequency range for uplink and downlink.



Technical Data

Type No.		782 10717	
		900 Double-Band Selective Repeater	
Specification		Uplink	Downlink
Frequency range	Band 1	880 ... 915 MHz	925 ... 960 MHz
	Band 2	880 ... 915 MHz	925 ... 960 MHz
Nominal bandwidth	Band 1	0.2 ... 25 MHz (Customized tuning)	
	Band 2	0.2 ... 25 MHz (Customized tuning)	
Maximum gain		≥ 70 dB	
Auto gain control		≥ 40 dB	
Gain control (via control panel)		31 dB in step of 1 dB	
Gain flatness		≤ 5 dB (p-p)	
Output power		≥ 15 dBm / total output power ≥ 12 dBm / Ch at 2 channels	
Intermodulation product	9 KHz – 1 GHz	≤ -36 dBm	
	1 GHz – 12.75 GHz	≤ -30 dBm	
Spurious emission	9 KHz – 1 GHz	≤ -36 dBm	
	1 GHz – 12.75 GHz	≤ -30 dBm	
Out of band gain	±400 KHz	< 50 dB	
	±600 KHz	< 40 dB	
	±1 MHz	< 35 dB	
	±5 MHz	< 25 dB	
Noise figure		≤ 7 dB	
Return loss		≤ -10 dB	
Group delay		< 4.5 μs	
External power supply			
Nominal input voltage		115/230 V ~	
Line frequency		50/60 Hz	
Admissible input voltage range		90 – 264 V ~	
Secondary voltage		+9 V ±5 % =	
Current drain		max. 5.5 A =	
Consumption		typ. 33 W	
Input connector		IEC 320-C13	
Ingress protection class		IP30	
RF Connector/Impedance		N-type female / 50 Ω (Nominal)	
Dimensions			
Repeater (W x H x D)		232.5 x 81.5 x 202 mm (without connectors)	
Power supply unit (W x H x D)		85 x 50 x 155 mm	
Weight		≤ 4.6 kg	
Operating temperature range:			
Repeater		-10 °C – +50 °C	
Power supply unit		0 °C – +40 °C	



AC input cable,
Length 1830 mm



External power supply unit
with DC output cable,
Length 1050 mm

1800 Band Selective Repeater

1710 ... 1785 MHz / 1805 ... 1880 MHz

- Indoor repeater solution to easily improve coverage in designated areas
- Easy deployment
- Compact design
- Wall mounting, easy to install
- User-friendly operation
- Customized single-band operation

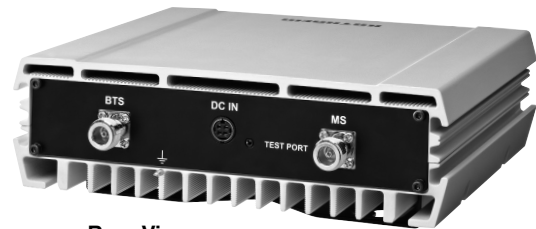


Front View

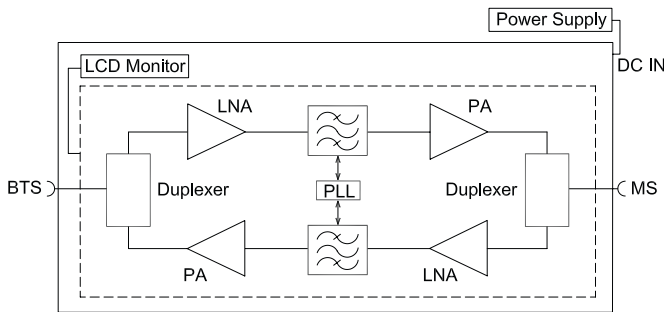
Tuning:

The repeater is tuned to the desired bandwidth at the factory.

When ordering please specify the desired frequency range for uplink and downlink.



Rear View



Technical Data

Type No.	782 10731 1800 Band Selective Repeater	
Specification	Uplink	Downlink
Frequency range	1710 ... 1785 MHz	1805 ... 1880 MHz
Nominal bandwidth	0.2 ... 25 MHz (Customized tuning)	
Maximum gain	≥ 70 dB	
Auto gain control	≥ 40 dB	
Gain control (via control panel)	31 dB in step of 1 dB	
Gain flatness	≤ 5 dB (p-p)	
Output power	≥ 15 dBm / total output power ≥ 12 dBm / Ch at 2 channels	
Intermodulation product	9 KHz – 1 GHz	≤ -36 dBm
	1 GHz – 12.75 GHz	≤ -30 dBm
Spurious emission	9 KHz – 1 GHz	≤ -36 dBm
	1 GHz – 12.75 GHz	≤ -30 dBm
Out of band gain	±400 KHz	< 50 dB
	±600 KHz	< 40 dB
	±1 MHz	< 35 dB
	±5 MHz	< 25 dB
Noise figure	≤ 7 dB	
Return loss	≤ -10 dB	
Group delay	< 4.5 μs	
External power supply		
Nominal input voltage	115/230 V ~	
Line frequency	50/60 Hz	
Admissible input voltage range	90 – 264 V ~	
Secondary voltage	+9 V ±5 % =	
Current drain	max. 5.5 A =	
Consumption	Typ. 33 W	
Input connector	IEC 320-C13	
Ingress protection class	IP30	
RF Connector/Impedance	N-type female / 50 Ω (Nominal)	
Dimensions		
Repeater (W x H x D)	232.5 x 81.5 x 202 mm (without connectors)	
Power supply unit (W x H x D)	85 x 50 x 155 mm	
Weight	≤ 4.6 kg	
Operating temperature range:		
Repeater	-10 °C – +50 °C	
Power supply unit	0 °C – +40 °C	



AC input cable,
Length 1830 mm



External power supply unit
with DC output cable,
Length 1050 mm

1800 Double-Band Selective Repeater

Band 1: 1710 ... 1785 MHz / 1805 ... 1880 MHz

Band 2: 1710 ... 1785 MHz / 1805 ... 1880 MHz

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- Indoor repeater solution to easily improve coverage within designated areas
- Easy deployment
- Compact design
- Wall mounting, easy to install
- User-friendly operation
- Two independent customized bands within the operational frequency range

Tuning:

The repeater is tuned to the desired bandwidth at the factory.

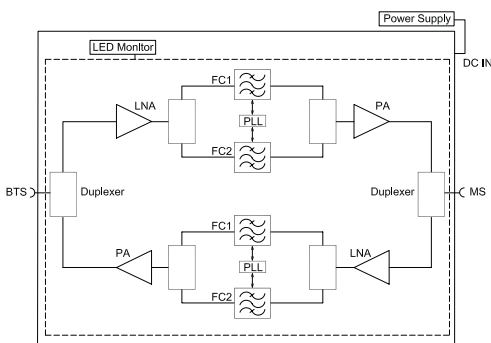
When ordering please specify the desired frequency range for uplink and downlink.



Front View



Rear View



Technical Data

Type No.		782 10736	
		1800 Double-Band Selective Repeater	
Specification		Uplink	Downlink
Frequency range	Band 1 Band 2	1710 ... 1785 MHz 1710 ... 1785 MHz	1805 ... 1880 MHz 1805 ... 1880 MHz
Nominal bandwidth	Band 1 Band 2	0.2 ... 25 MHz (Customized tuning) 0.2 ... 25 MHz (Customized tuning)	
Maximum gain		≥ 70 dB	
Auto gain control		≥ 40 dB	
Gain control (via control panel)		31 dB in step of 1 dB	
Gain flatness		≤ 5 dB (p-p)	
Output power		≥ 15 dBm / total output power ≥ 12 dBm / Ch at 2 channels	
Intermodulation product	9 KHz – 1 GHz 1 GHz – 12.75 GHz	≤ -36 dBm ≤ -30 dBm	
Spurious emission	9 KHz – 1 GHz 1 GHz – 12.75 GHz	≤ -36 dBm ≤ -30 dBm	
Out of band gain	±400 KHz ±600 KHz ±1 MHz ±5 MHz	< 50 dB < 40 dB < 35 dB < 25 dB	
Noise figure		≤ 7 dB	
Return loss		≤ -10 dB	
Group delay		< 4.5 μs	
External power supply			
Nominal input voltage		115/230 V ~	
Line frequency		50/60 Hz	
Admissible input voltage range		90 – 264 V ~	
Secondary voltage		+9 V ±5 % =	
Current drain		max. 5.5 A =	
Consumption		Typ. 33 W	
Input connector		IEC 320-C13	
Ingress protection class		IP30	
RF Connector/Impedance		N-type female / 50 Ω (Nominal)	
Dimensions			
Repeater (W x H x D)		232.5 x 81.5 x 202 mm (without connectors)	
Power supply unit (W x H x D)		85 x 50 x 155 mm	
Weight		≤ 4.6 kg	
Operating temperature range:			
Repeater		-10 °C – +50 °C	
Power supply unit		0 °C – +40 °C	



AC input cable,
Length 1830 mm



External power supply unit
with DC output cable,
Length 1050 mm

UMTS Band Selective Repeater

1920 ... 1980 MHz / 2110 ... 2170 MHz

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- Easy deployment
- Compact design
- Wall mounting, easy to install
- User-friendly operation
- Customized single-band operation

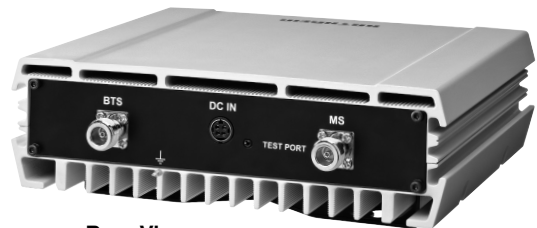


Front View

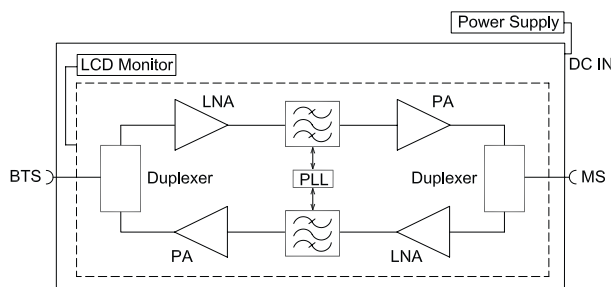
Tuning:

The repeater is tuned to the desired bandwidth at the factory.

When ordering please specify the desired frequency range for uplink and downlink.



Rear View



Technical Data

Type No.	782 10751 UMTS Band Selective Repeater	
Specification	Uplink	Downlink
Frequency range	1920 ... 1980 MHz	2110 ... 2170 MHz
Nominal bandwidth	5 ... 25 MHz (customized tuning)	
Maximum gain	≥ 70 dB	
Auto gain control	≥ 40 dB	
Gain control (Via control panel)	31 dB in step of 1 dB	
Gain flatness	≤ 5 dB (p-p)	
Output power	≥ 15 dBm / total output power ≥ 12 dBm / Ch at 2 channels	
Out of band Gain	Maximum Gain	
	2.7 ≤ f offset < 3.5 MHz	< 60 dB
	3.5 ≤ f offset < 7.5 MHz	< 45 dB
	7.5 ≤ f offset < 12.5 MHz	< 45 dB
12.5 ≤ f offset	< 35 dB	
ACRR	20 dBc/30 KHz at ±5 MHz 20 dBc/30 KHz at ±10 MHz	
Spurious mission mask	Comply with 3GPP TS 25.106	
Spurious emission	Comply with 3GPP TS 25.106 / Category B	
EVM	≤ 12.5 %	
Peak code domain error	≤ -35 dB at Spreading Factor 256	
Input/output intermodulation	Comply with 3GPP TS 25.143 <content>	
Frequency error	≤ 0.01 ppm	
Noise figure	≤ 7 dB	
Return loss	≤ -10 dB	
Group delay	< 4.5 μs	
External Power Supply		
Nominal input voltage	115/230 V ~	
Line frequency	50/60 Hz	
Admissible input voltage range	90 – 264 V ~	
Secondary voltage	+9 V ±5 % =	
Current drain	max. 5.5 A =	
Consumption	typ. 33 W	
Input connector	IEC 320-C13	
Ingress protection class	IP30	
RF Connector/Impedance	N-type female / 50 Ω (Nominal)	
Dimensions		
Repeater (W x H x D)	232.5 x 81.5 x 202 mm (without connectors)	
Power supply unit (W x H x D)	85 x 50 x 155 mm	
Weight	≤ 4.6 kg	
Operating Temperature range:		
Repeater	-10 °C – +50 °C	
Power supply unit	0 °C – +40 °C	



AC input cable,
Length 1830 mm



External power supply unit
with DC output cable,
Length 1050 mm

Subsidiaries/Affiliates

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