

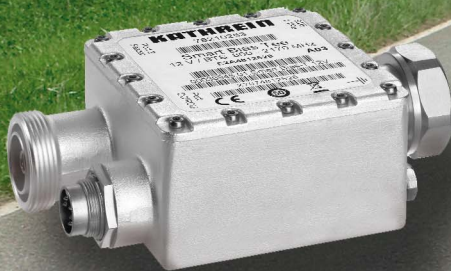
790 – 6000 MHz

Catalogue 2009

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



1919 - 2009



Quality leads the way

KATHREIN

Antennen · Electronic

Photo on title page: Ninety years of KATHREIN-Werke KG (1919–2009)

Catalogue Issue 01/2009

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.

Internet: <http://www.kathrein.de>

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KATHREIN
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The catalogue is splitted into two parts.

Part 1: Antennas

Part 2: Filters, Combiners and Amplifiers.

	Pages
Antennas	7 – 206
Filters, Combiners, Amplifiers	207 – 313

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

www.kathrein.de

Please contact for

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Fax: +49 80 31 184-973

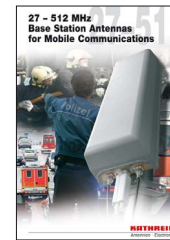
E-Mail: antennas.mobilcom@kathrein.de

List of available Catalogues for Mobile Communication Antennas and Accessories

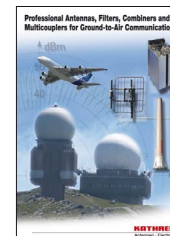
**790 – 6000 MHz Base Station Antennas,
Filters, Combiners and Amplifiers
for Mobile Communications**



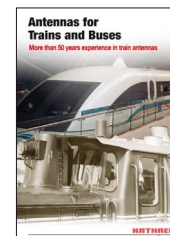
**27 – 512 MHz Base Station Antennas
for Mobile Communications**



**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.

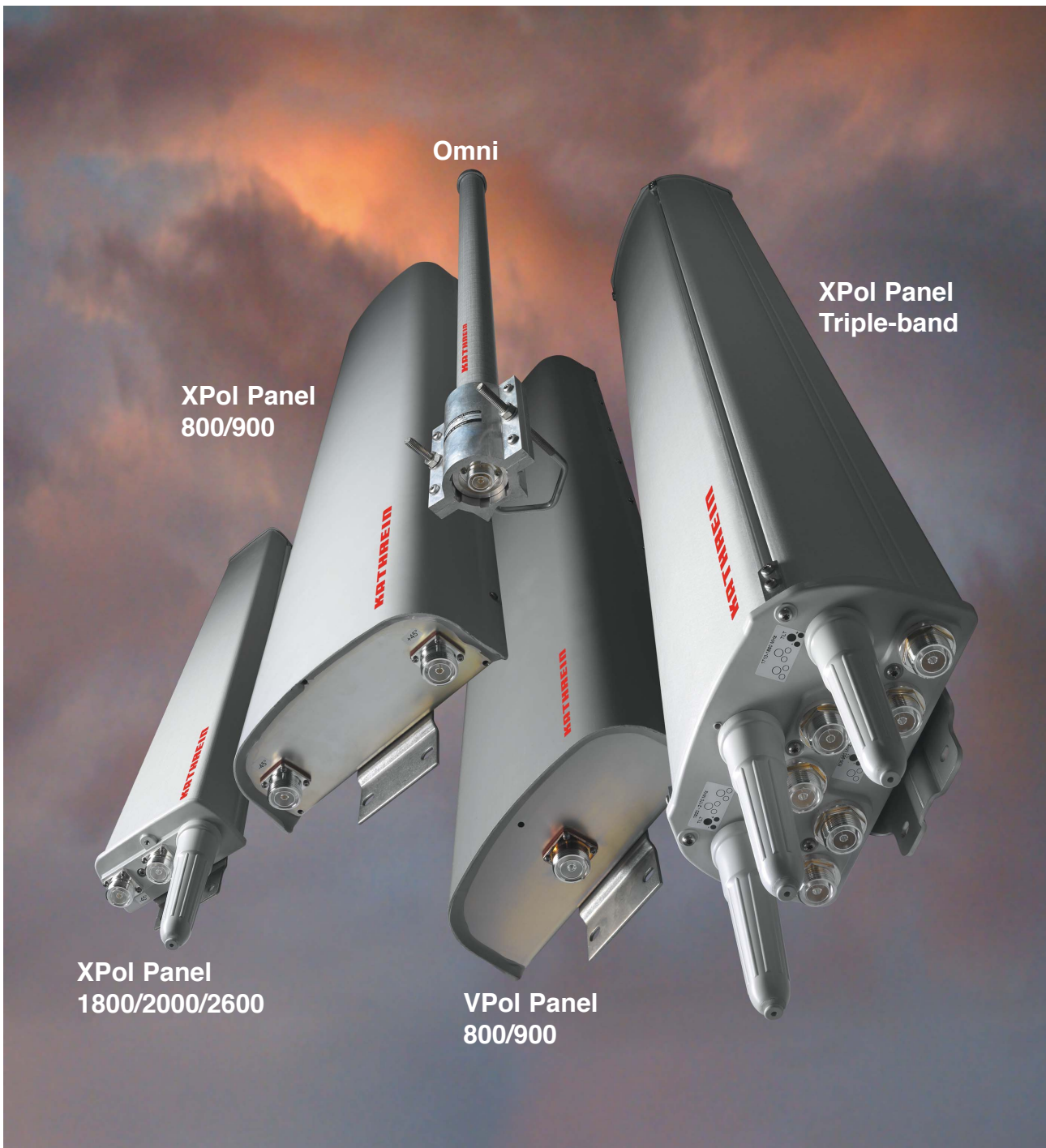
Type No.	Page	Type No.	Page	Type No.	Page	Type No.	Page
730 ...		735 ...		739 ...		742 036	193
730 368	44	735 727	42	739 489	55	742 047	105
730 376	46			739 498	61	742 113	194
730 378	48	736 ...		739 619	21	742 151	97
730 382	49	736 347	133	739 620	21	742 186	63
730 677	44	736 349	134	739 637	28	742 192	89
730 691	45	736 350	131	739 648	30	742 196	56
		736 801	171 ...	739 649	32	742 210	55
731 ...		736 802	171 ...	739 658	30	742 211	57
731 651	191	736 803	171 ...	739 660	32	742 213	61
		736 804	171 ...	739 662	34	742 215	59
732 ...		736 805	171 ...	739 664	31	742 218	54
732 317	200	736 854	48 ...	739 665	33	742 219	54
732 318	200			739 666	35	742 222	96
732 319	200			739 695	64	742 223	99
732 321	200	737 ...		739 710	67	742 224	103
732 322	200	737 398	203			742 225	108
732 327	200	737 547	46	741 ...		742 226	95
732 689	47	737 971	198	741 322	100	742 233	80
732 691	45	737 972	197	741 327	100	742 235	82
		737 973	197	741 336	104	742 236	80
733 ...		737 974	197	741 344	104	742 263	192
733 677	191 ...	737 975	197	741 573	148	742 264	98
733 678	191 ...	737 976	198	741 622	24	742 265	101
733 679	191 ...	737 977	197	741 623	53	742 266	106
733 680	191 ...	737 978	194 ...	741 717	18	742 270	114
733 695	200			741 790	138	742 271	116
733 736	191	738 ...		741 984	65	742 272	118
		738 187	137	741 987	66	742 290	91
734 ...		738 192	132	741 988	65	742 351	52
734 304	87	738 440	205	741 989	66	742 352	84
734 360	191	738 445	88	741 990	68	742 445	90
734 361	191	738 446	88 ...				
734 362	191	738 449	152	742 ...			
734 363	191	738 450	128 ...	742 033	193	800 100..	
734 364	191	738 546	191 ...	742 034	193	800 10046	91
734 365	191	738 908	202	742 035	193		

Summary of Antenna Types

The articles are listed by type number in numerical order.

Type No.	Page	Type No.	Page	Type No.	Page	Type No.	Page
800 101..		800 10360	73	800 10543	125	860 10046	163
800 10111	136	800 10368	86	800 10551	122	860 10068	160
800 10121	109	800 10375	72	800 10553	125	860 10078	165
800 10122	110	800 10390	126			860 10079	165
800 10123	111			800 106..		860 10084	165
800 10137	145			800 10603	126	860 10090	165
800 10141	18	800 104..		800 10618	69	860 10100	171
800 10147	154 ...	800 10414	70	800 10621	124	860 10101	171
800 10173	146	800 10424	56			860 10102	171
		800 10425	58	850 ...		860 10103	171
800 102..		800 10426	58	850 10002	191 ...	860 10104	171
800 10202	22	800 10428	59	850 10003	191 ...	860 10105	171
800 10203	23	800 10430	149	850 10005	206	860 10113	162
800 10204	26	800 10431	153	850 10006	195	860 10118	158
800 10207	22	800 10433	144	850 10007	199	860 10131	172
800 10208	27	800 10439	63	850 10010	77		
800 10213	34	800 10442	139	850 10012	76	K 61 ...	
800 10215	27	800 10454	94	850 10014	201	K 61 14 02	42
800 10247	57	800 10456	20	850 10015	201	K 61 14 03	42 ...
800 10249	147	800 10465	143	850 10016	201	K 61 14 04	42 ...
800 10251	52	800 10471	123	850 10017	201	K 61 14 05	42 ...
800 10270	74	800 10485	102			K 61 33 5	204
800 10271	75	800 10486	107	860 ...		K 61 33 6	204
800 10274	135	800 10492	120	860 10002	166		
800 10290	115			860 10006	159	K 63 ...	
800 10291	117			860 10007	164	K 63 23 60 01	175
800 10292	119	800 105..		860 10017	170	K 63 23 60 67	174
800 10294	24	800 10504	60	860 10018	170	K 63 23 61 07	174
		800 10505	62	860 10019	170	K 63 23 61 57	174
800 103..		800 10510	81	860 10020	173		
800 10302	19	800 10511	83	860 10021	173	K 73 ...	
800 10303	23	800 10516	38	860 10022	173	K 73 22 67	43
800 10304	25	800 10517	39	860 10023	175		
800 10305	26	800 10518	40	860 10025	158	K 75 ...	
800 10306	28	800 10519	71	860 10026	159	K 75 11 61	129
800 10307	29	800 10528	140	860 10030	167	K 75 15 64 1	130
800 10314	69	800 10541	122	860 10031	168		

Antenna Designs:
Antenna Families
Harmony of Design and Technology



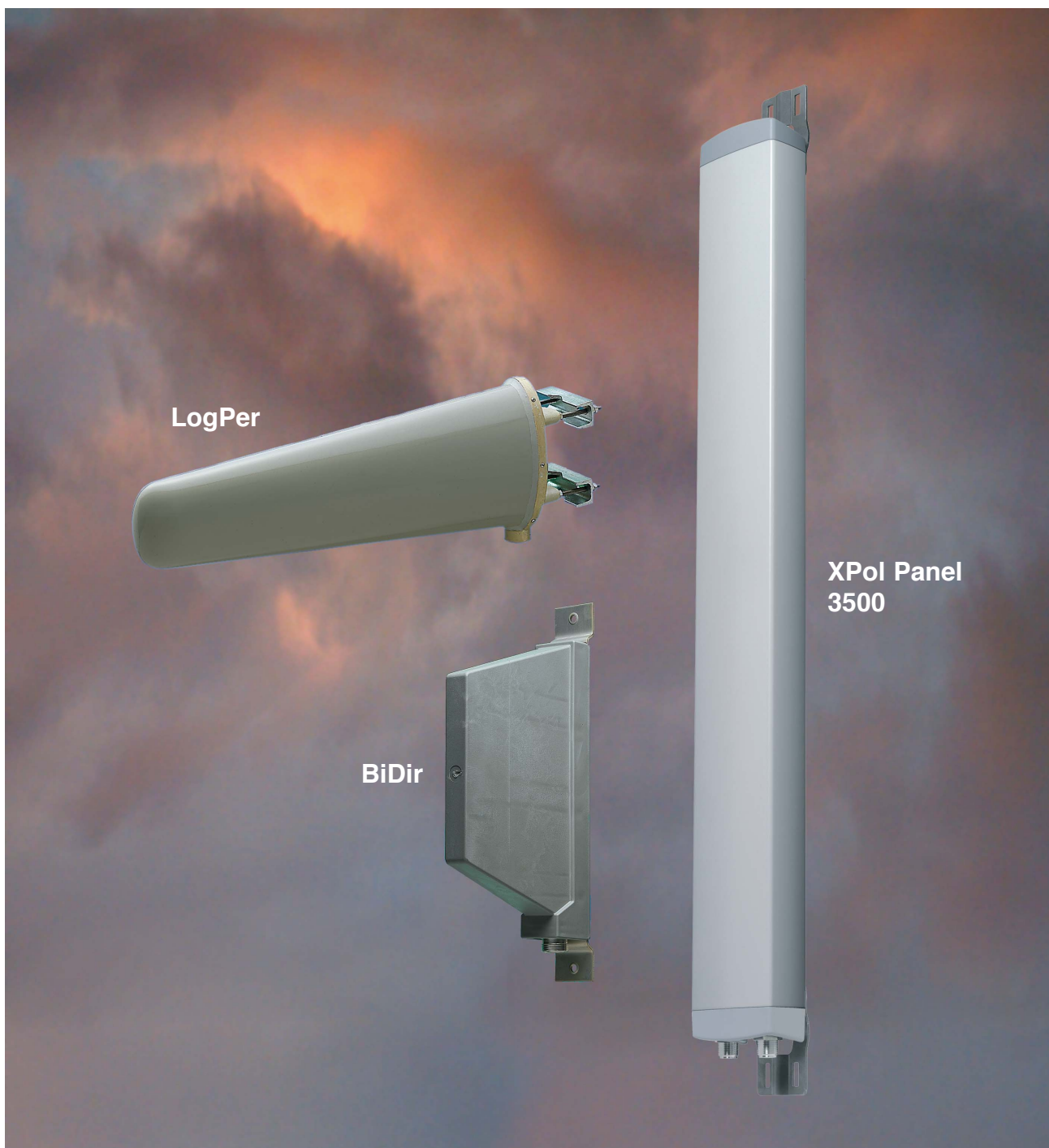
Directional Antenna Designs: Special Directional Antennas For Particular Applications

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
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.

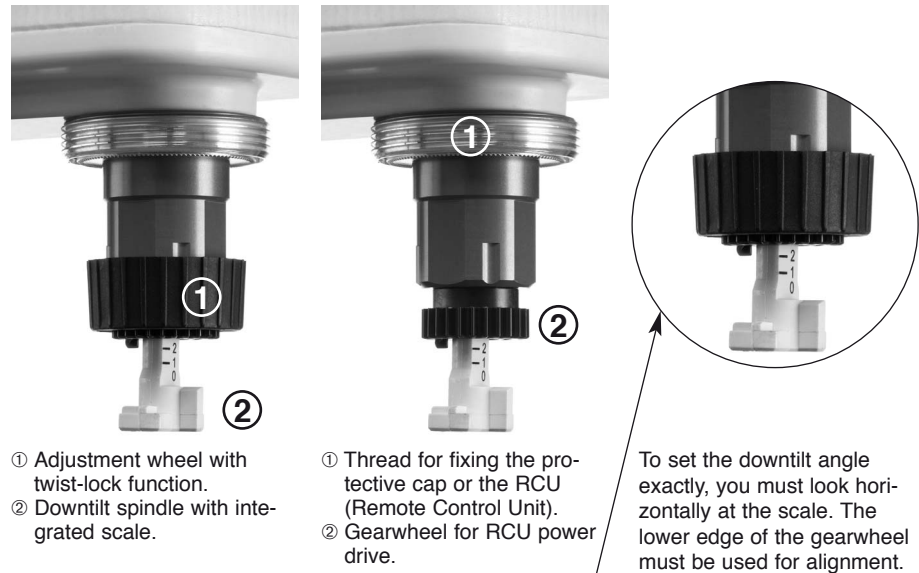
Downtilting of Antennas: Downtilt Possibilities

Mechanical downtilt

For further technical information please see “Mechanical Accessories”, pages 196 – 200.

Electrical downtilt

Description of the adjustment mechanism (protective cap removed):

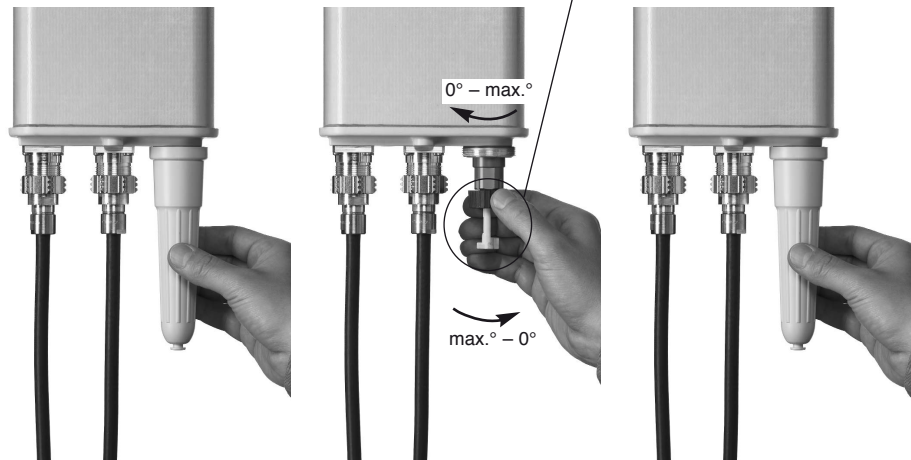


- ① Adjustment wheel with twist-lock function.
- ② Downtilt spindle with integrated scale.

- ① Thread for fixing the protective cap or the RCU (Remote Control Unit).
- ② Gearwheel for RCU power drive.

To set the downtilt angle exactly, you must look horizontally at the scale. The lower edge of the gearwheel must be used for alignment.

Manual adjustment procedure:



Remove the protective cap.

Set downtilt angle by rotating the adjustment wheel.

Screw on the protective cap again.

For antennas without RET, the interface looks different. In this case you just have to rotate the adjustment wheel in order to set the downtilt.



Remote Electrical Tilt (RET)

For further technical information please see “RET”, pages 156 and 157.

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)

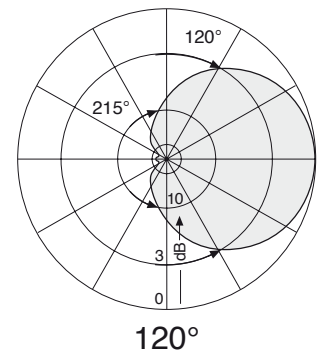
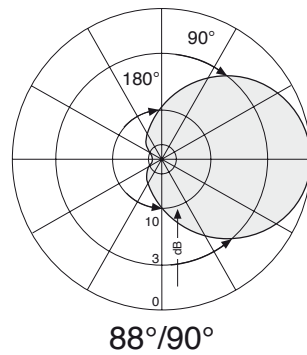
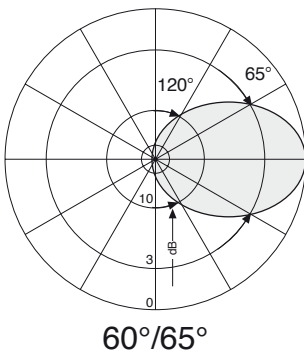
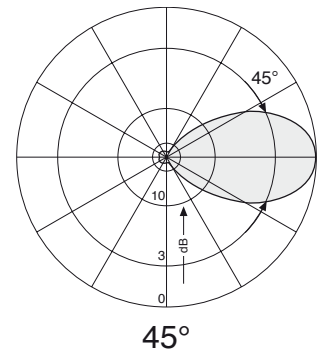
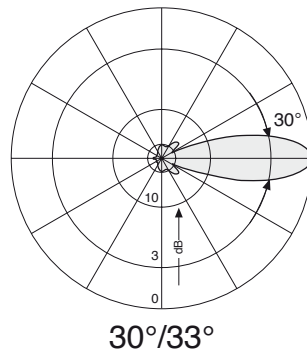
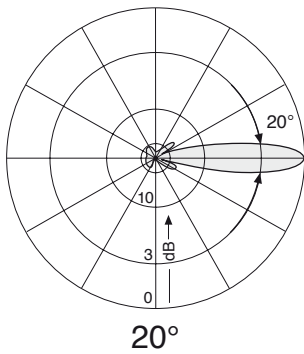
Integrated Combiner

Horizontal
Half-power Beam Width(s)

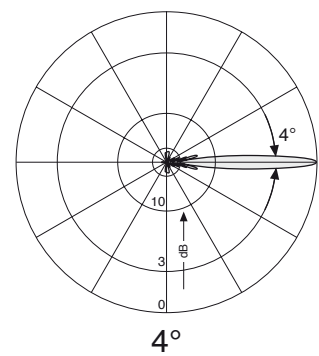
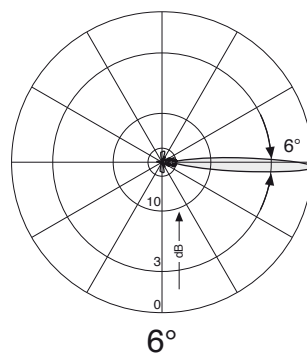
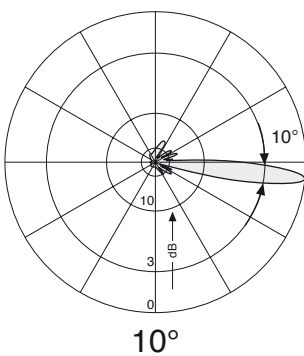
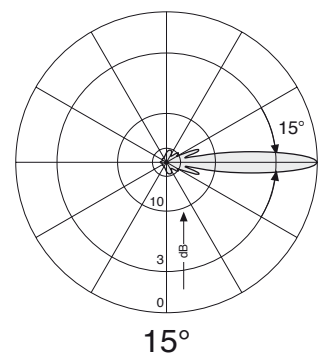
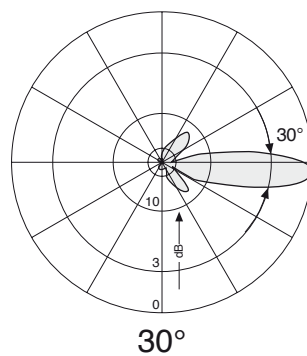
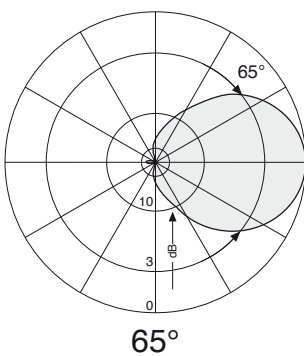
Gain Value(s)

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 870–960 30° 15.5dBi 0°T	741 717	656	bottom	18
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	19
XPol Panel 806–960 30° 20.5dBi 0°–10°T	800 10456	2254	rearside	20
XPol Panel 806–960 65° 9dBi 0°T	739 619	256	bottom or top	21
XPol Panel 806–960 65° 12.5dBi 0°T	739 620	656	bottom or top	21
XPol Panel 806–960 65° 15.5dBi 0°T	800 10202	1294	bottom	22
XPol Panel 806–960 65° 15dBi 6°T	800 10207	1294	bottom	22
XPol Panel 806–960 65° 15dBi 0°–14°T	800 10303	1294	bottom	23
XPol Panel 806–960 65° 17dBi 0°T	800 10203	1934	rearside	23
XPol Panel 806–960 65° 17dBi 6°T	800 10294	1934	rearside	24
XPol Panel 824–960 65° 17dBi 9°T	741 622	1936	bottom	24
XPol Panel 806–960 65° 16.3dBi 0°–10°T	800 10304	1694	rearside	25
XPol Panel 806–960 65° 18dBi 0°T	800 10204	2254	rearside	26
XPol Panel 806–960 65° 17.5dBi 0°–8°T	800 10305	2254	rearside	26
XPol Panel 806–960 65° 18dBi 0°T	800 10215	2574	rearside	27
XPol Panel 806–960 65° 18dBi 6°T	800 10208	2574	rearside	27
XPol Panel 806–960 65° 18dBi 9°T	739 637	2580	bottom	28
XPol Panel 806–960 65° 17.5dBi 0°–10°T	800 10306	2574	bottom	28
XPol Panel 806–960 65° 18dBi 0°–10°T	800 10307	2574	rearside	29
XPol Panel 806–960 88° 13.5dBi 0°T	739 648	1296	bottom or top	30
XPol Panel 806–960 88° 14dBi 6°T	739 658	1296	bottom	30
XPol Panel 824–960 88° 13.5dBi 0°–14°T	739 664	1296	bottom	31
XPol Panel 806–960 88° 15.5dBi 0°T	739 649	1936	bottom or top	32
XPol Panel 806–960 88° 15.5dBi 6°T	739 660	1936	bottom	32
XPol Panel 806–960 88° 15dBi 0°–10°T	739 665	1996	bottom	33
XPol Panel 806–960 88° 17dBi 0°T	800 10213	2254	rearside	34
XPol Panel 806–960 88° 17dBi 6°T	739 662	2580	bottom	34
XPol Panel 806–960 88° 16dBi 0°–7°T	739 666	2580	bottom	35

New Products

Panel Dual Polarization Half-power Beam Width

806–960

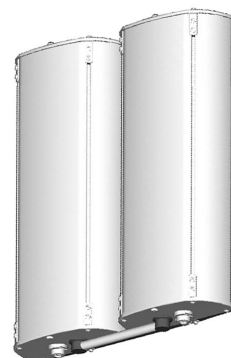
X

30°

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XPoI Panel 870–960 30° 15.5dBi

Type No.	741 717	
Frequency range	870 – 960 MHz	
Polarization	+45°, –45°	
Gain	2 x 15.5 dBi	
Half-power beam width Copolar +45°/–45°	Horizontal:	30°
	Vertical:	27°
Front-to-back ratio, copolar	> 30 dB	
Isolation	> 30 dB	
Impedance	50 Ω	
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	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 330 / 60 / 470 N	
Height/width/depth	656 / 560 / 116 mm	



XPoI 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
Impedance	50 Ω	50 Ω
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	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 680 / 130 / 970 N	
Height/width/depth	1296 / 560 / 116 mm	



Panel Dual Polarization Half-power Beam Width

806–960

X

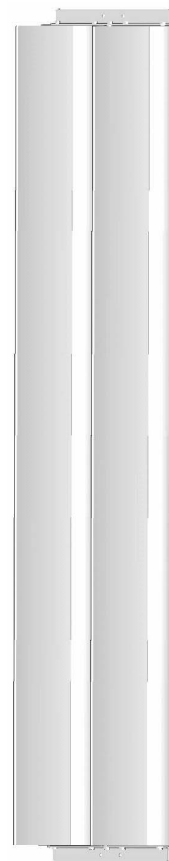
33°

KATHREIN

Antennen · Electronic

XPoI Panel 806–960 33° 21dBi 0°T

Type No.	800 10302		
Frequency range	806 – 866 MHz	806–960 824 – 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 Copolars +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
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	500 W (at 50 °C ambient temperature)		
Input	2 x 7-16 female		
Connector position	Rearside, pointing downwards		
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°

KATHREIN
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XPoI 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
Impedance	50 Ω		
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		
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	
Impedance	50 Ω	
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	
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	
Impedance	50 Ω	
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	
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

806–960

X

65°

KATHREIN
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XPoI Panel 806–960 65° 15.5dBi 0°T

Type No.	800 10202		
Frequency range	806–960		
	806 – 866 MHz	824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 14.7 dBi	2 x 15 dBi	2 x 15.3 dBi
Half-power beam width Copolar +45°/–45°	Horizontal: 67° Vertical: 15.5°	Horizontal: 66° Vertical: 14.8°	Horizontal: 64° Vertical: 14°
Sidelobe suppression for: first sidelobe above horizon sector 0°–30° above horizon	> 15 dB > 15 dB	> 15 dB > 15 dB	> 14 dB > 14 dB
Front-to-back ratio, copolar	> 30 dB	> 30 dB	> 30 dB
Isolation	> 30 dB	> 30 dB	> 30 dB
Crosspolar ratio			
Maindirection 0°	> 20 dB	> 20 dB	> 20 dB
Sector ±30°	> 19 dB	> 19 dB	> 20 dB
Sector ±60°	> 11 dB	> 11 dB	> 11 dB
Impedance	50 Ω	50 Ω	50 Ω
VSWR	< 1.5	< 1.4	< 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		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 220 / 140 / 490 N		
Height/width/depth	1294 / 259 / 99 mm		



XPoI 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°	Typically: > 20 dB	Typically: > 20 dB	Typically: > 20 dB
Sector ±60°	Typically: > 10 dB	Typically: > 10 dB	Typically: > 10 dB
Impedance	50 Ω	50 Ω	50 Ω
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		
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

806–960

X

65°

KATHREIN

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XPoI 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
Impedance	50 Ω		
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		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 220 / 140 / 490 N		
Height/width/depth	1294 / 259 / 99 mm		



XPoI Panel 806–960 65° 17dBi 0°T

Type No.	800 10203		
Frequency range	806 – 866 MHz	806–960 824 – 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
Horizontal Pattern:			
Half-power beam width	68°	66°	65°
Front-to-back ratio, copolar	> 30 dB	> 30 dB	> 30 dB
Cross polar ratio			
Maindirection 0°	> 20 dB	> 20 dB	> 20 dB
Sector ±30°	> 18 dB	> 18 dB	> 18 dB
Sector ±60°	> 12 dB	> 12 dB	> 12 dB
Vertical Pattern:			
Half-power beam width	10.2°	10°	9.3°
Sidelobe suppression for first sidelobe above horizon	> 15 dB	> 16 dB	> 15 dB
Impedance	50 Ω		
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		
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

806–960

X

65°

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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 Sector	0° ±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 824–960 65° 17dBi 9°T

Type No.	741 622	
Frequency range	824–960	
	824 – 880 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°
Gain	2 x 16.5 dBi	2 x 17 dBi
Half-power beam width Copolar +45°/–45°	Horizontal: 68° Vertical: 10°	Horizontal: 65° Vertical: 9.5°
Electrical tilt	9°, fixed	9°, fixed
Sidelobe suppression for first sidelobe above horizon	≥ 14 dB	≥ 16 dB
Front-to-back ratio, copolar	> 30 dB	> 30 dB
Isolation	> 32 dB	> 32 dB
Impedance	50 Ω	50 Ω
VSWR	< 1.5	< 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	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 330 / 200 / 770 N	
Height/width/depth	1936 / 262 / 116 mm	



Panel Dual Polarization Half-power Beam Width

806–960

X

65°

KATHREIN

Antennen · Electronic

XPoI Panel 806–960 65° 16.3dBi 0°–10°T

Type No.	800 10304		
Frequency range	806 – 866 MHz	806–960 824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45	+45°, –45°
Average gain (dBi)	15.6 ... 15.8 ... 15.5	15.7 ... 16.1 ... 15.7	16 ... 16.3 ... 15.9
Tilt	0° ... 5° ... 10°	0° ... 5° ... 10°	0° ... 5° ... 10°
Horizontal Pattern:			
Half-power beam width	69°	67°	65°
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	> 10 dB	> 10 dB	> 10 dB
Vertical Pattern:			
Half-power beam width	12.5°	12°	11.5°
Electrical tilt	0°–10°, continuously adjustable		
Sidelobe suppression for first sidelobe above horizon	0° ... 3° ... 6° ... 10° T 15 ... 14 ... 12 ... 12 dB	0° ... 3° ... 6° ... 10° T 15 ... 15 ... 15 ... 14 dB	0° ... 3° ... 6° ... 10° T 15 ... 15 ... 15 ... 14 dB
Impedance	50 Ω		
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	Rearside, pointing downwards		
Adjustment mechanism	1x, Position bottom, continuously adjustable		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 300 / 195 / 660 N		
Height/width/depth	1694 / 259 / 99 mm		



Panel

Dual Polarization

Half-power Beam Width

806–960

X

65°

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XPoI 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
Impedance	50 Ω		
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		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 400 / 260 / 890 N		
Height/width/depth	2254 / 259 / 99 mm		



XPoI Panel 806–960 65° 17.5dBi 0°–8°T

Type No.	800 10305		
Frequency range	806 – 866 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 17 ... 16 ... 15 ... 14 dB	0° ... 2° ... 4° ... 8° T 17 ... 16 ... 15 ... 14 dB	0° ... 2° ... 4° ... 8° T 20 ... 18 ... 17 ... 15 dB
Impedance	50 Ω		
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, pointing downwards		
Adjustment mechanism	1x, Position bottom, continuously adjustable		
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

806–960

X

65°

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XPoI Panel 806–960 65° 18dBi 0°T

Type No.	800 10215		
Frequency range	806 – 866 MHz	806–960 824 – 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
Sector	±60°	> 12 dB	> 12 dB
Vertical Pattern:			
Half-power beam width	7.4°	7.2°	6.8°
Sidelobe suppression for first sidelobe above main beam	≥ 15 dB	≥ 15 dB	≥ 15 dB
Null-fill	Typically: –25 dB		
Impedance	50 Ω		
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		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 460 / 300 / 1020 N		
Height/width/depth	2574 / 259 / 99 mm		

XPoI Panel 806–960 65° 18dBi 6°T

Type No.	800 10208		
Frequency range	806 – 866 MHz	806–960 824 – 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
Sector	±60°	> 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	≥ 15 dB	≥ 15 dB	≥ 15 dB
Null-fill	Typically: –25 dB		
Impedance	50 Ω		
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		
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

806–960

X

65°

KATHREIN

Antennen · Electronic

XPoI Panel 806–960 65° 18dBi 9°T

Type No.	739 637	
Frequency range	806–960 806 – 870 MHz 870 – 960 MHz	
Polarization	+45°, –45°	+45°, –45°
Gain	2 x 17.5 dBi	2 x 18 dBi
Half-power beam width Copolar +45°/–45°	Horizontal: 65° Vertical: 7.5°	
Electrical tilt	9°, fixed	
Sidelobe suppression for first sidelobe above horizon	better 18 dB below maximum gain	
Front-to-back ratio, copolar	> 30 dB	
Isolation	> 32 dB	
Impedance	50 Ω	
VSWR	< 1.5	< 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	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 470 / 280 / 1040 N	
Height/width/depth	2580 / 262 / 116 mm	



XPoI Panel 806–960 65° 17.5dBi 0°–10°T

Type No.	800 10306		
Frequency range	806 – 866 MHz	806–960 824 – 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		
Impedance	50 Ω		
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		
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

806–960

X

65°

KATHREIN

Antennen · Electronic

XPoI Panel 806–960 65° 18dBi 0°–10°T

Type No.	800 10307		
Frequency range	806 – 866 MHz	806–960 824 – 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 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
Impedance	50 Ω		
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		
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

806–960

X

88°

KATHREIN
Antennen · Electronic

XPoI Panel 806–960 88° 13.5dBi

Type No.	739 648	
Frequency range	806–960	
	806 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°
Gain	2 x 13 dBi	2 x 13.5 dBi
Half-power beam width Copolar +45°/–45°	Horizontal: 85° Vertical: 16°	Horizontal: 88° Vertical: 15°
Sidelobe suppression for first sidelobe above horizon	≥ 16 dB	
Front-to-back ratio, copolar	> 25 dB	
Isolation	> 30 dB	
Impedance	50 Ω	
VSWR	< 1.5	
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)	
Max. power per input	600 W (at 50 °C ambient temperature)	
Input	2 x 7-16 female	
Connector position	Bottom or top	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 230 / 130 / 500 N	
Height/width/depth	1296 / 262 / 116 mm	



XPoI Panel 806–960 88° 14dBi 6°T

Type No.	739 658		
Frequency range	806–960		
	806 – 866 MHz	824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 13.3 dBi	2 x 13.5 dBi	2 x 13.7 dBi
Horizontal Pattern:			
Half-power beam width	85°	85°	88°
Front-to-back ratio, copolar	> 25 dB	> 25 dB	> 25 dB
Cross polar ratio Maindirection 0° Sector ±60°	> 18 dB > 14 dB	> 20 dB > 14 dB	> 20 dB > 14 dB
Vertical Pattern:			
Half-power beam width	17°	16.5°	15.5°
Electrical tilt	6°, fixed		
Sidelobe suppression for sector 0°–30° above horizon	16 dB	16 dB	16 dB
Impedance	50 Ω	50 Ω	50 Ω
VSWR	< 1.5	< 1.5	< 1.3
Isolation	> 30 dB	> 30 dB	> 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		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 230 / 130 / 500 N		
Height/width/depth	1296 / 262 / 116 mm		



Panel Dual Polarization Half-power Beam Width

824–960

X

88°

KATHREIN

Antennen · Electronic

XPoI Panel 824–960 88° 13.5dBi 0°–14°T

Type No.	739 664	
Frequency range	824–960	
	824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°
Gain	13.5 dBi	13.5 dBi
Horizontal Pattern:		
Half-power beam width	85°	88°
Front-to-back ratio, copolar	> 23 dB	> 23 dB
Cross polar ratio		
Maindirection	Typically: 25 dB	Typically: 25 dB
Sector	> 10 dB	> 10 dB
Vertical Pattern:		
Half-power beam width	15.5°	15°
Electrical tilt	0°–14°, continuously adjustable	
Sidelobe suppression for first sidelobe above main beam	0° ... 4° ... 8° ... 14° T 16 ... 16 ... 16 ... 16 dB	0° ... 4° ... 8° ... 14° T 15 ... 16 ... 16 ... 16 dB
Impedance	50 Ω	
VSWR	< 1.5	
Isolation	> 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	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 230 / 130 / 500 N	
Height/width/depth	1296 / 262 / 116 mm	



Panel Dual Polarization Half-power Beam Width

806–960

X

88°

KATHREIN
Antennen · Electronic

XPoI Panel 806–960 88° 15.5dBi

Type No.	739 649	
Frequency range	806–960	
	806 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°
Gain	2 x 15 dBi	2 x 15.5 dBi
Half-power beam width Copolar +45°/–45°	Horizontal: 85° Vertical: 10.5°	Horizontal: 88° Vertical: 10°
Sidelobe suppression for first sidelobe above horizon	≥ 18 dB	
Front-to-back ratio, copolar	> 25 dB	
Isolation	> 30 dB	
Impedance	50 Ω	
VSWR	< 1.5	
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)	
Max. power per input	600 W (at 50 °C ambient temperature)	
Input	2 x 7-16 female	
Connector position	Bottom or top	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 330 / 200 / 770 N	
Height/width/depth	1936 / 262 / 116 mm	



XPoI Panel 806–960 88° 15.5dBi 6°T

Type No.	739 660	
Frequency range	806–960	
	806 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°
Gain	2 x 15 dBi	2 x 15.5 dBi
Half-power beam width Copolar +45°/–45°	Horizontal: 85° Vertical: 10.5°	Horizontal: 88° Vertical: 10°
Electrical tilt	6°, fixed	
Sidelobe suppression for first sidelobe above horizon	≥ 18 dB	
Front-to-back ratio, copolar	> 25 dB	
Isolation	> 30 dB	
Impedance	50 Ω	
VSWR	< 1.3	< 1.3
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)	
Max. power per input	600 W (at 50 °C ambient temperature)	
Input	2 x 7-16 female	
Connector position	Bottom	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 330 / 200 / 770 N	
Height/width/depth	1936 / 262 / 116 mm	



Panel Dual Polarization Half-power Beam Width

806–960

X

88°

KATHREIN

Antennen · Electronic

XPoI Panel 806–960 88° 15dBi 0°–10°T

Type No.	739 665		
Frequency range	806 – 866 MHz	824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45	+45°, –45°
Gain	2 x 15 dBi	2 x 15 dBi	2 x 15 dBi
Horizontal Pattern:			
Half-power beam width	85°	85°	88°
Front-to-back ratio, copolar	> 25 dB	> 25 dB	> 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	10.5°	10.2°	10°
Electrical tilt	0.5°–10°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 4° ... 8° ... 10° T 16 ... 16 ... 17 ... 17 dB	0° ... 4° ... 8° ... 10° T 16 ... 16 ... 17 ... 17 dB	0° ... 4° ... 8° ... 10° T 16 ... 16 ... 18 ... 18 dB
Isolation	> 30 dB		
Impedance	50 Ω		
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	Bottom		
Adjustment mechanism	1x, Position bottom, continuously adjustable		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 330 / 200 / 770 N		
Height/width/depth	1996 / 262 / 116 mm		



Panel

Dual Polarization

Half-power Beam Width

806–960

X

88°

KATHREIN
Antennen · Electronic

XPol Panel 806–960 88° 17dBi 0°T

Type No.	800 10213		
Frequency range	806 – 866 MHz	824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 16.5 dBi	2 x 16.6 dBi	2 x 16.8 dBi
Half-power beam width Copolar +45°/–45°	Horizontal: 85° Vertical: 8.7°	Horizontal: 85° Vertical: 8.5°	Horizontal: 88° Vertical: 8°
Electrical tilt	0°, fixed	0°, fixed	0°, fixed
Sidelobe suppression for first sidelobe above horizon	> 18 dB	> 18 dB	> 18 dB
Front-to-back ratio, copolar	> 28 dB	> 28 dB	> 27 dB
Isolation	> 30 dB	> 30 dB	> 30 dB
Cross polar ratio			
Maindirection	Typically: 20 dB	Typically: 20 dB	Typically: 20 dB
Sector ±30°	> 20 dB	> 20 dB	> 17 dB
Sector ±60°	> 15 dB	> 15 dB	> 14 dB
Impedance	50 Ω		
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	Rearside		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 400 / 260 / 890 N		
Height/width/depth	2254 / 259 / 99 mm		



XPol Panel 806–960 88° 17dBi 6°T

Type No.	739 662		
Frequency range	806 – 866 MHz	824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 16.3 dBi	2 x 16.5 dBi	2 x 16.7 dBi
Horizontal Pattern:			
Half-power beam width	85°	85°	88°
Front-to-back ratio, copolar	> 25 dB	> 25 dB	> 25 dB
Cross polar ratio			
Maindirection	> 23 dB	> 23 dB	> 23 dB
Sector ±60°	> 14 dB	> 14 dB	> 14 dB
Vertical Pattern:			
Half-power beam width	8.3°	7.9°	7.5°
Electrical tilt	6°, fixed		
Sidelobe suppression for first sidelobe above horizon	16 dB	16 dB	17 dB
Isolation	> 32 dB	> 32 dB	> 32 dB
Impedance	50 Ω	50 Ω	50 Ω
VSWR	< 1.5	< 1.5	< 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		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 470 / 280 / 1040 N		
Height/width/depth	2580 / 262 / 116 mm		



Panel Dual Polarization Half-power Beam Width

806–960

X

88°

KATHREIN

Antennen · Electronic

XPoI Panel 806–960 88° 16dBi 0°–7°T

Type No.	739 666		
Frequency range	806 – 866 MHz	806–960 824 – 894 MHz	880 – 960 MHz
Polarization	+45°, –45°	+45°, –45	+45°, –45°
Gain	2 x 16 dBi	2 x 16.1 dBi	2 x 16.2 dBi
Horizontal Pattern:			
Half-power beam width	85°	85°	88°
Front-to-back ratio, copolar (180°±30°)	> 25 dB	> 25 dB	> 25 dB
Cross polar ratio Sector 0° ±60°	Typically: 25 dB > 15 dB	Typically: 25 dB > 15 dB	Typically: 25 dB > 15 dB
Vertical Pattern:			
Half-power beam width	8.2°	8°	7.5°
Electrical tilt	0°–7°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 2° ... 4° ... 7° T 17 ... 17 ... 17 ... 17 dB	0° ... 2° ... 4° ... 7° T 17 ... 17 ... 17 ... 17 dB	0° ... 2° ... 4° ... 7° T 17 ... 17 ... 17 ... 17 dB
Impedance	50 Ω		
VSWR	< 1.5		
Isolation	> 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		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 470 / 280 / 1040 N		
Height/width/depth	2580 / 262 / 116 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	38
	824–960	60°	16dBi	0°–10°T				
XXPol Panel	824–960	65°	17dBi	0°–8°T	800 10517	2631	rearside	39
	824–960	65°	17dBi	0°–8°T				
XXPol Panel	824–960	88°	17dBi	0°–8°T	800 10518	2631	rearside	40
	824–960	88°	17dBi	0°–8°T				

New Products

When deploying
2-Broad-band Antennas,
please also consider using
special Hybrid Combiners
(see page 252)

2-Multi-band Panel

Dual Polarization

Half-power Beam Width

824–960

824–960

X

X

60°

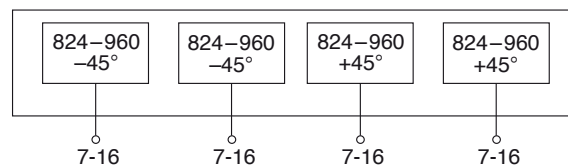
60°

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
Impedance	50 Ω	
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	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 900 / 410 / 1050 N	
Height/width/depth	2024 / 374 / 168 mm	



2-Multi-band Panel

Dual Polarization

Half-power Beam Width

824-960

824-960

X

X

65°

65°

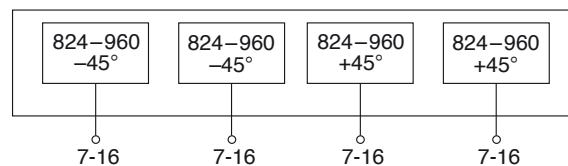
KATHREIN

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 17 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
Impedance	50 Ω	
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	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 1150 / 500 / 1300 N	
Height/width/depth	2631 / 374 / 168 mm	



2-Multi-band Panel

Dual Polarization

Half-power Beam Width

824-960

824-960

X

X

88°

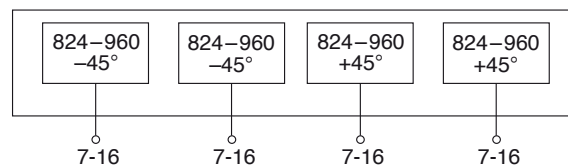
88°

KATHREIN

Antennen · Electronic

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

Type No.	800 10518		
Frequency range	<table border="1"><tr><td>824-960</td></tr></table>		824-960
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	
Impedance	50 Ω		
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		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 1150 / 500 / 1300 N		
Height/width/depth	2631 / 374 / 168 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	42
VPol LogPer	790–960 51° 12dBi 0°T	K 73 22 67	300	bottom	43
VPol Panel	860–960 65° 9dBi 0°T	730 677	264	bottom or top	44
VPol Panel	870–960 65° 15.5dBi 0°T	730 368	1294	bottom	44
VPol Panel	806–960 65° 15.5dBi 6°T	732 691	1294	bottom	45
VPol Panel	870–960 65° 17dBi 0°T	730 691	1934	rearside	45
VPol Panel	870–960 65° 17dBi 9°T	737 547	1934	rearside	46
VPol Panel	870–960 65° 18.5dBi 0°T	730 376	2574	rearside	46
VPol Panel	870–960 65° 18.5dBi 6°T	732 689	2574	rearside	47
VPol Panel	872–960 90° 7.5dBi 0°T	736 854	262	bottom or top	48
VPol Panel	870–960 90° 17dBi 0°T	730 378	2574	rearside	48
VPol Panel	870–960 120° 16dBi 0°T	730 382	2574	rearside	49

Additional versions on request

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

870–960

V

20°

KATHREIN
Antennen · Electronic

VPol 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
Impedance	50 Ω
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)
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

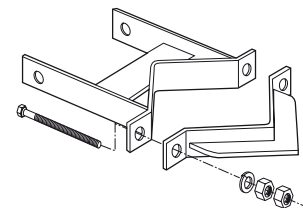
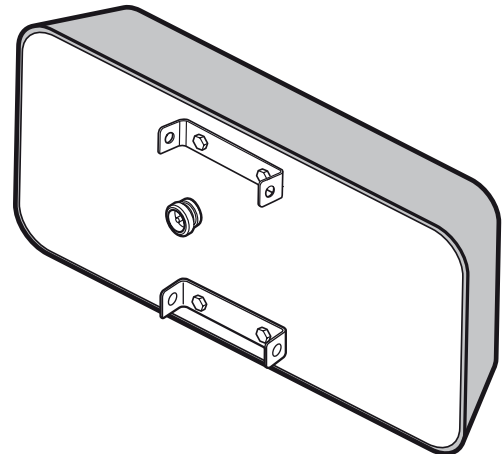
Material: Radiator: Aluminum.
Reflector screen: Weather-proof aluminum.
Radome: Fiberglass, colour: White.
All screws and nuts: Stainless steel.

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°

KATHREIN
Antennen · Electronic

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
Impedance	50 Ω
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)
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

860–960

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)
Impedance	50 Ω
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
Wind load (at 150 km/h)	Frontal / lateral / rearside: 40 / 25 / 90 N
Height/width/depth	264 / 258 / 103 mm



VPol Panel 870–960 65° 15.5dBi

Type No.	730 368
Frequency range	870 – 960 MHz
Polarization	Vertical
Gain	15.5 dBi
Half-power beam width	H-plane: 65° E-plane: 13°
Front-to-back ratio	> 25 dB
Impedance	50 Ω
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
Wind load (at 150 km/h)	Frontal / lateral / rearside: 220 / 140 / 490 N
Height/width/depth	1294 / 258 / 103 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
Impedance	50 Ω
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
Wind load (at 150 km/h)	Frontal / lateral / rearside: 220 / 140 / 490 N
Height/width/depth	1294 / 258 / 103 mm



800/900
VPol

VPol Panel 870–960 65° 17dBi

Type No.	730 691
Frequency range	870 – 960 MHz
Polarization	Vertical
Gain	17 dBi
Half-power beam width	H-plane: 65° E-plane: 8.5°
Front-to-back ratio	> 25 dB
Impedance	50 Ω
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
Wind load (at 150 km/h)	Frontal / lateral / rearside: 340 / 220 / 750 N
Height/width/depth	1934 / 258 / 103 mm



Panel
Vertical Polarization
Half-power Beam Width

870–960

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
Impedance	50 Ω
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
Wind load (at 150 km/h)	Frontal / lateral / rearside: 340 / 220 / 750 N
Height/width/depth	1934 / 258 / 103 mm



VPol Panel 870–960 65° 18.5dBi

Type No.	730 376
Frequency range	870 – 960 MHz
Polarization	Vertical
Gain	18.5 dBi
Half-power beam width	H-plane: 65° E-plane: 6.5°
Front-to-back ratio	> 25 dB
Impedance	50 Ω
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
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

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
Impedance	50 Ω
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
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
Impedance	50 Ω
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
Wind load (at 150 km/h)	Frontal / lateral / rearside: 45 / 20 / 60 N
Height/width/depth	262 / 155 / 49 mm



VPol Panel 870–960 90° 17dBi

Type No.	730 378
Frequency range	870 – 960 MHz
Polarization	Vertical
Gain	17 dBi
Half-power beam width	H-plane: 90° E-plane: 6.5°
Front-to-back ratio	> 23 dB
Impedance	50 Ω
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
Wind load (at 150 km/h)	Frontal / lateral / rearside: 460 / 300 / 1020 N
Height/width/depth	2574 / 258 / 103 mm



Panel
Vertical Polarization
Half-power Beam Width

870–960

V

90°

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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
Impedance	50 Ω
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
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

1800/1900/2000
XPol

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	52
XPol Panel 1710–2170 33° 21dBi 0°–8°T	742 351	1304	bottom	52
XPol Panel 1710–1880 33° 22dBi 2°T	741 623	1942	bottom	53
XPol Panel 1710–2170 45° 19.5dBi 0°–8°T	742 218	1306	bottom	54
XPol Panel 1710–2180 45° 21.5dBi 0°–6°T	742 219	1946	bottom	54
XPol Panel 1710–2170 65° 9dBi 0°T	742 210	155	bottom or top	55
XPol Panel 1710–2170 65° 12dBi 2°T	739 489	342	bottom	55
XPol Panel 1710–2170 65° 16dBi 0°T	742 196	735	bottom or top	56
XPol Panel 1710–2200 65° 15.5dBi 6°T	800 10424	735	bottom	56
XPol Panel 1710–2170 65° 15.5dBi 0°–10°T	742 211	662	bottom	57
XPol Panel 1710–2200 65° 15.5dBi 0°–12°T	800 10247	735	bottom	57
XPol Panel 1710–2200 65° 18.3dBi 0°T	800 10425	1302	bottom	58
XPol Panel 1710–2200 65° 18.3dBi 2°T	800 10426	1302	bottom	58
XPol Panel 1710–2200 65° 18dBi 6°T	800 10428	1302	bottom	59
XPol Panel 1710–2200 65° 18dBi 0°–10°T	742 215	1314	bottom	59
XPol Panel 1710–2200 65° 18dBi 0°–15°T	800 10504	1374	bottom	60
XPol Panel 1710–2690 65° 17.5dBi 2°T	800 10471	1302	bottom	123
XPol Panel 1710–2690 65° 18dBi 0°–12°T	800 10621	1398	bottom	124
XPol Panel 1710–1990 65° 19.5dBi 2°T	739 498	1942	bottom	61
XPol Panel 1710–2170 65° 19.5dBi 0°–6°T	742 213	1942	bottom	61
XPol Panel 1710–2200 65° 19dBi 0°–10°T	800 10505	1984	bottom	62
XPol Panel 1710–2170 65° 20.5dBi 0°T	742 186	2160	bottom	63
XPol Panel 1710–2200 65° 21dBi 0°T	800 10439	2172	bottom or top	63
XPol Panel 1710–1990 90° 8dBi 0°T	739 695	174	bottom or top	64
XPol Panel 1710–2170 88° 11.5dBi 0°T	741 984	342	bottom or top	65
XPol Panel 1710–2170 88° 14dBi 0°–10°T	741 988	662	bottom	65
XPol Panel 1710–2200 88° 17dBi 2°T	741 987	1302	bottom	66
XPol Panel 1710–2200 88° 17dBi 0°–8°T	741 989	1302	bottom	66
XPol Panel 1710–1880 90° 17.5dBi 2°T	739 710	1902	bottom	67
XPol Panel 1710–2170 88° 18dBi 0°–6°T	741 990	1942	bottom	68

Antennas with integrated RET

XPol Panel IRT 1710–2200 65° 18dBi 0°–10°T	800 10314	1302	bottom	69
XPol Panel IRT 1710–2200 65° 18dBi 0°–10°T	800 10618	1302	bottom	69
XPol Panel IRT+ISB 1710–2200 65° 18dBi 0°–10°T	800 10414	1358	bottom	70
XPol Panel IRT+ISB IA 12dB 1920–2170 65° 17.5dBi 0°–15°T	800 10519	1336	bottom	71

Tri-Sector Pipe Antenna

XPol Tri-Sector Pipe 1710–2170 65° 15.5dBi 0°–12°T	800 10375	1241	bottom	72
XPol Tri-Sector Pipe 1710–2170 65° 18dBi 0°–10°T	800 10360	1823	bottom	73
XPol Tri-Sector Pipe 1710–2170 65° 18dBi 0°–10°T	800 10270	2296	bottom	74
XPol Tri-Sector Pipe 1710–2170 65° 19.5dBi 0°–6°T	800 10271	2460	bottom	75
Tri-Sector Service Area	850 10012			76
Flexible Sealing Frame	850 10010			77

Multi-band Panel Dual Polarization Half-power Beam Width

1710–2170

X

33°

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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
Impedance	50 Ω		
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		
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
Impedance	50 Ω		
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		
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	
Impedance	50 Ω	
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	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 540 / 210 / 770 N	
Height/width/depth	1942 / 262 / 59 mm	



1800/1900/2000
 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
Impedance	50 Ω		
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		
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
Impedance	50 Ω		
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		
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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XPol 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
Impedance	50 Ω		
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		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 47 / 12 / 55 N		
Height/width/depth	155 / 155 / 69 mm		



1800/1900/2000
XPol

XPol 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
Impedance	50 Ω		
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		
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

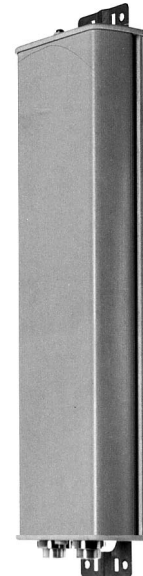
X

65°

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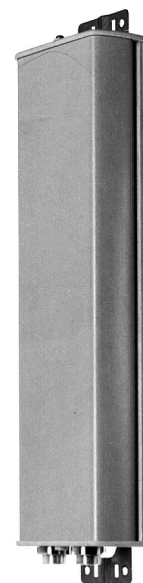
XPol Panel 1710–2170 65° 16dBi 0°T

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
Impedance	50 Ω		
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		
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
Impedance	50 Ω		
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		
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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XPoI Panel 1710–2170 65° 15.5dBi 0°–10°T

Type No.	742 211		
Frequency range	1710–2170		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 14.7 dBi	2 x 15 dBi	2 x 15.2 dBi
Horizontal Pattern:			
Half-power beam width	69°	67°	64°
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	14.5°	14°	13°
Electrical tilt	0°–10°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 4° ... 8° ... 10°T 18 ... 16 ... 15 ... 15 dB	0° ... 4° ... 8° ... 10°T 18 ... 18 ... 18 ... 18 dB	0° ... 4° ... 8° ... 10°T 18 ... 18 ... 18 ... 16 dB
Impedance	50 Ω		
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		
Adjustment mechanism	1x, Position bottom, continuously adjustable		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 180 / 55 / 210 N		
Height/width/depth	662 / 155 / 69 mm		



1800/1900/2000
XPoI

XPoI 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 Sector	0° ±60° Typically: 20 dB > 10 dB	Typically: 20 dB > 10 dB	Typically: 20 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		
Impedance	50 Ω		
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		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 200 / 65 / 240 N		
Height/width/depth	735 / 155 / 69 mm		



Multi-band Panel Dual Polarization Half-power Beam Width

1710–2200

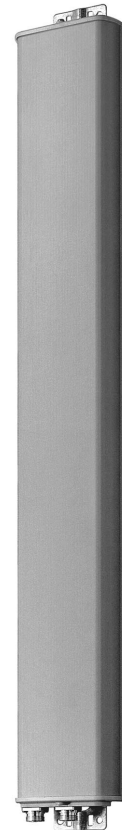
X

65°

KATHREIN
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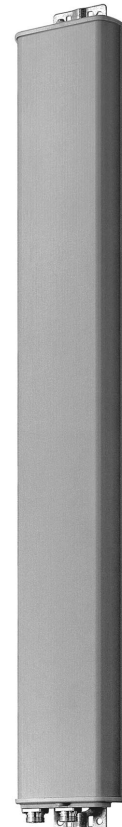
XPol Panel 1710–2200 65° 18.3dBi 0°T

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 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	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
Impedance	50 Ω		
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		
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° 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
Impedance	50 Ω		
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		
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

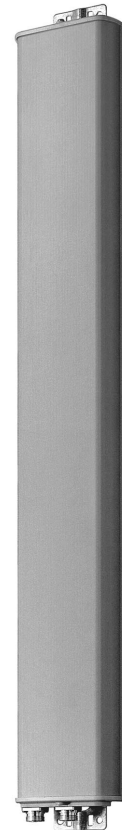
X

65°

KATHREIN
Antennen · Electronic

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
Impedance	50 Ω		
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		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 350 / 100 / 410 N		
Height/width/depth	1302 / 155 / 69 mm		



1800/1900/2000
XPol

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		
Impedance	50 Ω		
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		
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
Impedance	50 Ω			
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			
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**

1710–2170

X

65°

KATHREIN
Antennen · Electronic

XPol Panel 1710–1990 65° 19.5dBi 2°T

Type No.	739 498
Frequency range	1710 – 1990 MHz
Polarization	+45°, –45°
Gain	2 x 19.5 dBi (1880 – 1990 MHz) 2 x 19 dBi (1710 – 1880 MHz)
Half-power beam width Copolar +45°/–45°	Horizontal: 65° Vertical: 5°
Electrical tilt	2°, fixed
Sidelobe suppression for first sidelobe above horizon	≥ 14 dB
Front-to-back ratio, copolar	> 30 dB
Isolation, between ports	> 30 dB
Impedance	50 Ω
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
Wind load (at 150 km/h)	Frontal / lateral / rearside: 480 / 180 / 380 N
Height/width/depth	1942 / 155 / 49 mm



1800/1900/2000
XPol

XPol Panel 1710–2170 65° 19.5dBi 0°–6°T

Type No.	742 213		
Frequency range	1710 – 1880 MHz	1710–2170 1850 – 1990 MHz	1920 – 2170 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 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	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 ... 17 ... 15 ... 15 dB	0° ... 2° ... 4° ... 6° T 18 ... 18 ... 17 ... 15 dB	0° ... 2° ... 4° ... 6° T 18 ... 18 ... 17 ... 15 dB
Impedance	50 Ω		
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		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 550 / 160 / 630 N		
Height/width/depth	1942 / 155 / 69 mm		



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
Impedance	50 Ω			
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			
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 1710–2170 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 Mairdirection Sector	0° ±60° Typically: 25 dB > 14 dB	Typically: 25 dB > 14 dB	Typically: 25 dB > 14 dB
Vertical Pattern:			
Half-power beam width	4°	3.8°	3.5°
Impedance	50 Ω		
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		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 600 / 180 / 710 N		
Height/width/depth	2160 / 155 / 69 mm		



1800/1900/2000
XPol

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 Sector	0° ±60° 25 dB > 12 dB	23 dB > 12 dB	23 dB > 10 dB	23 dB > 10 dB
Vertical Pattern:				
Half-power beam width	4.2°	4°	3.7°	3.5°
Electrical tilt	0°, fixed			
Sidelobe suppression – for first sidelobe above main beam – within 0°–30° sector above horizon	> 15 dB > 15 dB			
First null-fill below main beam	< 20 dB			
Impedance	50 Ω			
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			
Wind load (at 150 km/h)	Frontal / lateral / rearside: 230 / 220 / 550 N			
Height/width/depth	2172 / 155 / 89 mm			



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

1710–1990

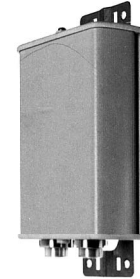
X

90°

KATHREIN
Antennen · Electronic

XPol Panel 1710–1990 90° 8dBi

Type No.	739 695
Frequency range	1710 – 1990 MHz
Polarization	+45°, –45°
Gain	2 x 8 dBi
Half-power beam width Copolar +45°/–45°	Horizontal: 90° Vertical: 55°
Front-to-back ratio, copolar	> 20 dB
Isolation, between ports	> 30 dB
Impedance	50 Ω
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 or top
Wind load (at 150 km/h)	Frontal / lateral / rearside: 20 / 15 / 30 N
Height/width/depth	174 / 155 / 69 mm



1800/1900/2000
XPol

Multi-band Panel Dual Polarization Half-power Beam Width

1710–2170

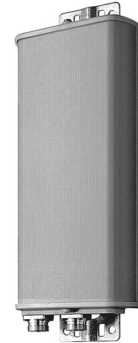
X

88°

KATHREIN
Antennen · Electronic

XPol Panel 1710–2170 88° 11.5dBi

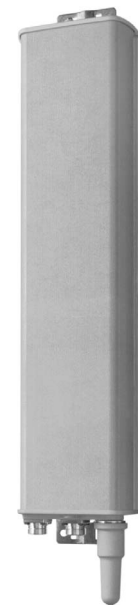
Type No.	741 984		
Frequency range	1710–2170		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 11.3 dBi	2 x 11.5 dBi	2 x 11.6 dBi
Horizontal Pattern:			
Half-power beam width	86°	87°	88°
Front-to-back ratio (180° ± 30°)	Copolar: > 23 dB Total power: > 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
Impedance	50 Ω		
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		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 95 / 24 / 110 N		
Height/width/depth	342 / 155 / 69 mm		



1800/1900/2000
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
Impedance	50 Ω		
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		
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°

KATHREIN
Antennen · Electronic

XPol Panel 1710–2200 88° 17dBi 2°T

Type No.	741 987		
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 17 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: > 25 dB Total power: > 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	6.9°	6.5°	6.2°
Electrical tilt	2°, fixed	2°, fixed	2°, fixed
Sidelobe suppression for first sidelobe above horizon	> 16 dB	> 16 dB	> 16 dB
Impedance	50 Ω		
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		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 350 / 100 / 410 N		
Height/width/depth	1302 / 155 / 69 mm		

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 Sector	0° ±60° Typically: 20 dB > 10 dB	Typically: 20 dB > 10 dB	Typically: 20 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
Impedance	50 Ω		
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		
Wind load (at 150 km/h)	Frontal / Lateral / Rearside: 360 / 110 / 420 N		
Height/width/depth	1302 / 155 / 69 mm		



Panel
Dual Polarization
Half-power Beam Width

1710–1880

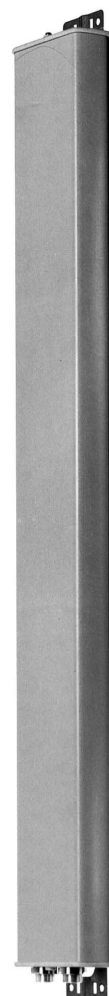
X

90°

KATHREIN
 Antennen · Electronic

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 Copolar +45°/-45°	Horizontal: 90° 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
Impedance	50 Ω
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
Wind load (at 150 km/h)	Frontal / lateral / rearside: 530 / 150 / 610 N
Height/width/depth	1902 / 155 / 69 mm



1800/1900/2000
 XPol

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			
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	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
Impedance	50 Ω		
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		
Wind load	Frontal / lateral / rearside: 550 / 160 / 630 N		
Height/width/depth	1942 / 155 / 69 mm		



1800/1900/2000
XPol

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

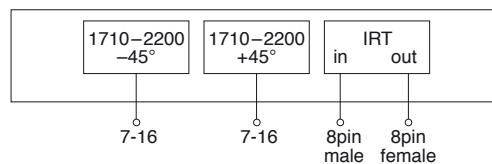


Type No.	800 10314 / 800 10618		
A) Antenna specifications			
Frequency range	1710–2200		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2200 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 17.7 dBi	2 x 17.9 dBi	2 x 18 dBi
Horizontal Pattern:			
Half-power beam width	67°	66°	65°
Front-to-back ratio	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
Impedance	50 Ω		
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		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 350 / 100 / 410 N		
Height/width/depth	1302 / 155 / 69 mm		



1800/1900/2000
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°

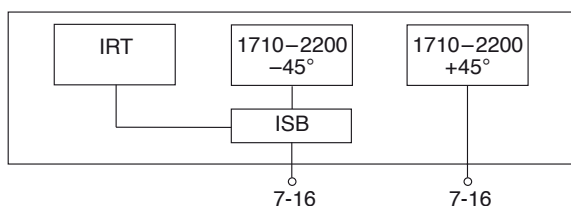
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Antennen · Electronic

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	0°		
Sector	±60°	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
Impedance	50 Ω		
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		
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

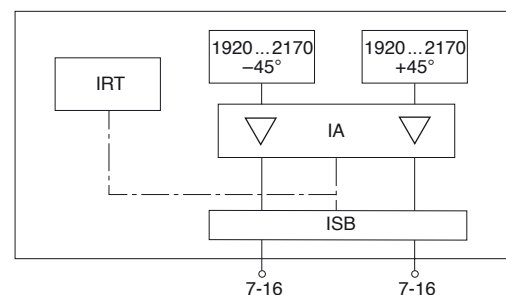
C) IRT Specifications	
Software interface ¹⁾	HEX coded commands based on HDLC protocol, according to AISG 2.0 / 3GPP
Adjustment time (full range)	40 sec.
Adjustment cycles	> 50,000

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
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°

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1710–2170

1710–2170

1710–2170

X

X

X

65°

65°

65°

0°–12°

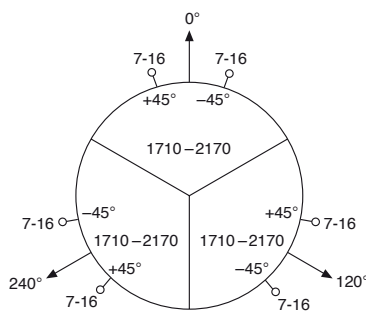
0°–12°

0°–12°

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)

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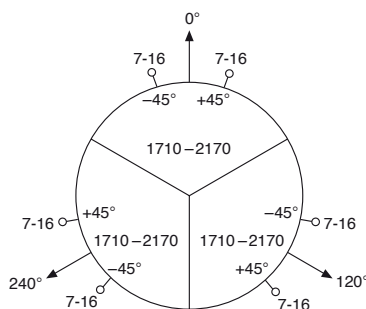
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XPol Tri-Sector Pipe 1710-2170 65° 18dBi 0°-10°T

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
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

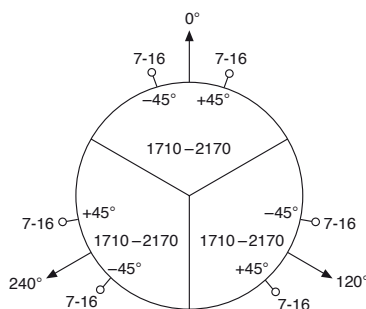
set by hand or by optional RCUs (Remote Control Units)

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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°			
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

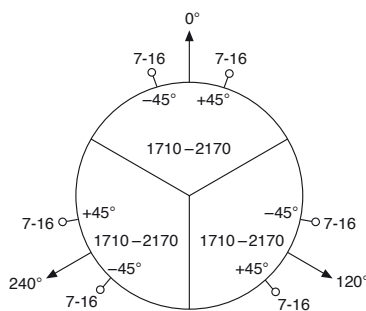
Half-power Beam Width

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	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	Horizontal: 67°	Horizontal: 66°	Horizontal: 64°	
Copolar +45°/-45°	Vertical: 4.7°	Vertical: 4.5°	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	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
XPol


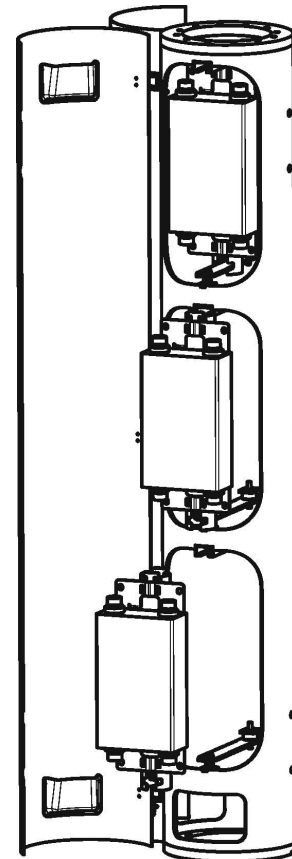
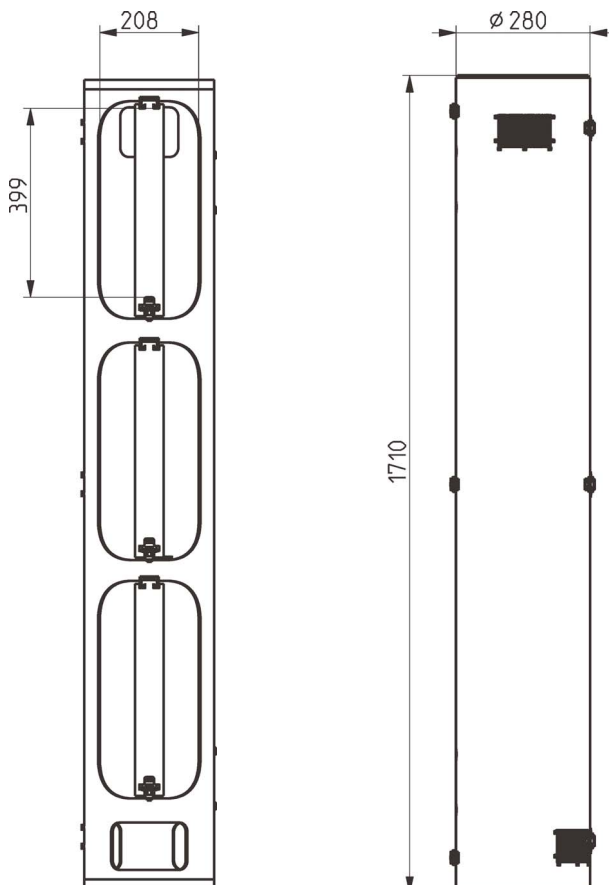
Mechanical specifications	
Input	3 x 2 x 7-16 female
Connector position	Bottom – inside service area
Adjustment mechanism	3 x 1, Position bottom continuously adjustable inside service area
Weight	64 kg
Wind load	445 N (at 150 km/h)
Max. wind velocity	200 km/h
Natural frequency	9.5 – 11 Hz
Damping ratio	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

Tri-Sector Pipe Antennas Mounting Hardware TMA Service Area

Cylindrical shaped TMA Service Area for installation of 3 DTMA's for use with a Kathrein tri-sector pipe antenna mounted on top of TMA Service Area

TMA Service Area

Type No.	850 10012
Height/Diameter	1710 / 280 mm
Wind load	325 N (at 150 km/h)
Max. wind velocity	200 km/h
Dynamic stiffness	$E \cdot I = 3.6 \cdot 10^{12} \text{ Nmm}^2$
Logarithmic decrement of structural damping	$\delta = 0.03$
Mechanical interface bottom and top	Flange connection 12 x M12 at a graduated diameter of 208 mm
Required assembly tools	wrench size 19 mm
Natural air ventilation	
Material	Hot-dip galvanized steel
Cover	Aluminum, powdercoated color RAL 7035
Material of screws	Stainless steel
Packing size (L x W x H)	1850 x 314 x 327 mm
Weight netto/brutto	77.3 / 84.0 kg



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 211
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 181)

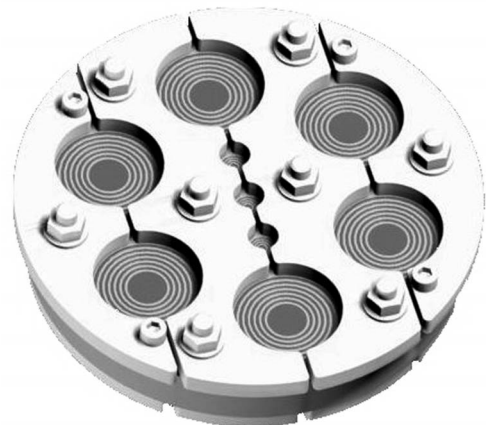


View inside service zone with MPTMA and Slimline RCUs

1800/1900/2000
XPoI

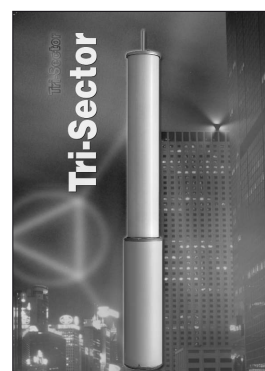
Flexible Sealing Frame

Type No.	850 10010
Outer diameter	180 mm
Cable diameter (6x)	15 – 42 mm
Cable diameter (3x)	3.5 – 10.5 mm
Frame-Material	Hot-dip galvanized steel
Sealing-Material	Halogen free cross linkable compound on ethylene-propylene rubber (EPDM)
Material of screws, washers and nuts	Stainless steel
Accessories	Mounting lubricant
Required assembly tools	Wrench size 13 mm, Socket wrench size 5 mm
Weight	2.7 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

Dual Polarization +45°/–45°

Type	Type No.	Height [mm]	Connector position	Page		
XXPol Panel 1710–2170 1710–2170	65° 65° 15dBi 15dBi	0°–10°T 0°–10°T	742 233	679	bottom	80
XXPol Panel 1710–2180 1710–2180	65° 65° 18dBi 18dBi	0°–10°T 0°–10°T	742 236	1319	bottom	80
XXPol Panel 1710–2200 1710–2200	65° 65° 18dBi 18dBi	0°–15°T 0°–15°T	800 10510	1389	bottom	81
XXPol Panel 1710–2170 1710–2170	65° 65° 19.5dBi 19.5dBi	0°–6°T 0°–6°T	742 235	1959	bottom	82
XXPol Panel 1710–2200 1710–2200	65° 65° 19dBi 19dBi	0°–10°T 0°–10°T	800 10511	1999	bottom	83
XXPol Panel 1710–2180 1710–2180	88° 88° 16.5dBi 16.5dBi	0°–10°T 0°–10°T	742 352	1319	bottom	84

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

2-Multi-band Panel

Dual Polarization

Half-power Beam Width

1710–2180

1710–2180

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
Impedance	50 Ω		
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		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 300 / 60 / 300 N		
Height/width/depth	679 / 323 / 71 mm		



XXPol Panel 1710–2180/1710–2180 65°/65° 18/18dBi 0°–10°/0°–10°T

Type No.	742 236		
Frequency range	1710–2180		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2180 MHz
Polarization	+45°, –45°; +45°, –45°	+45°, –45°; +45°, –45°	+45°, –45°; +45°, –45°
Gain	4 x 17.5 dBi	4 x 17.7 dBi	4 x 17.8 dBi
Horizontal Pattern:			
Half-power beam width	65°	64°	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: 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 17 ... 15 ... 15 dB	0° ... 5° ... 10° T 20 ... 18 ... 18 dB	0° ... 5° ... 10° T 20 ... 18 ... 16 dB
Impedance	50 Ω		
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		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 600 / 120 / 600 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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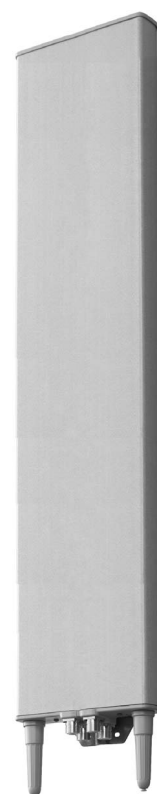
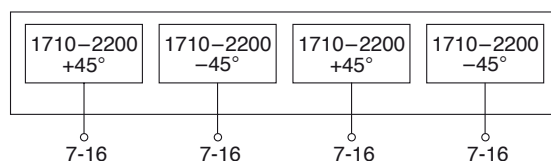
KATHREIN

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	0°	0°	0°	0°
Sector	±60°	±60°	±60°	±60°
	≥ 24 dB	≥ 24 dB	≥ 24 dB	≥ 26 dB
	≥ 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
Impedance	50 Ω			
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			
Wind load (at 150 km/h)	Frontal / Lateral / rearside: 600 / 120 / 650 N			
Height/width/depth	1389 / 323 / 71 mm			

1800/1900/2000
XXPol 2-Multi



2-Multi-band Panel

Dual Polarization

Half-power Beam Width

1710–2170

1710–2170

X

X

65°

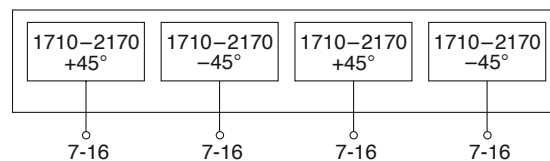
65°

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			
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	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
Impedance	50 Ω		
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		
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
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X	X
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65°	65°
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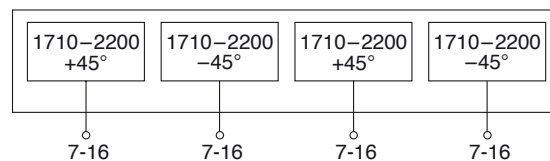
KATHREIN

Antennen · Electronic

XXPol Panel 1710–2200/1710–2200 65°/65° 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
Impedance	50 Ω			
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			
Wind load (at 150 km/h)	Frontal / lateral / rearside: 920 / 190 / 950 N			
Height/width/depth	1999 / 323 / 71 mm			

1800/1900/2000
XXPol 2-Multi



2-Multi-band Panel

Dual Polarization

Half-power Beam Width

1710–2180

1710–2180

X

X

88°

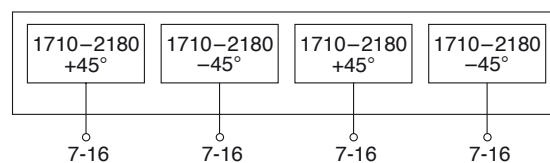
88°

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	1710–2180		
	1710 – 1880 MHz	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			
Main direction	0°		
Sector	±60°	Typically: 15 dB > 8 dB	Typically: 15 dB > 7.5 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
Impedance	50 Ω		
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		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 600 / 120 / 600 N		
Height/width/depth	1319 / 323 / 71 mm		



1800/1900/2000
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	86
VPol Panel 1710–1900 65° 10dBi 0°T	734 304	182	bottom or top	87
VPol BiDir 806–960 / 1710–2170 65° 5dBi 0°T	738 445	312		88
VPol BiDir 806–960 / 1710–2170 65° 5dBi 0°T	738 446	312		88
VPol LogPer 806–2170 65° 11dBi 0°T	742 192	300	bottom	89
VPol Panel 1710–2170 65° 18dBi 0°–10°T	742 445	1302	bottom	90

VVPol

VVPol Panel 824–960 1710–2170 C 90° 82° 7dBi 7dBi 0°T 0°T	742 290	328	bottom or top	91
VVPol Panel 824–960 1710–2170 C 90° 82° 10dBi 11dBi 0°T 0°T	800 10046	662	bottom or top	91

C = integrated Combiner

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

1710–2180

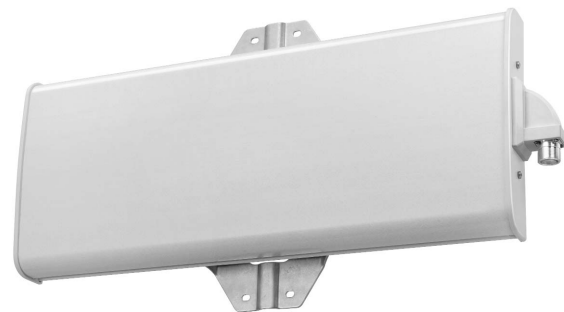
V

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
Impedance	50 Ω		
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)		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 400 / 25 / 400 N		
Height/width/depth	299 / 743 / 69 mm		



1800/1900/2000
VPol

Panel
Vertical Polarization
Half-power Beam Width

1710–1900

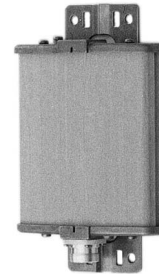
V

65°

KATHREIN
 Antennen · Electronic

VPol Panel 1710–1900 65° 10dBi

Type No.	734 304
Frequency range	1710 – 1900 MHz
Polarization	Vertical
Gain	10 dBi
Half-power beam width	H-plane: 65° E-plane: 55°
Front-to-back ratio	> 25 dB
Impedance	50 Ω
VSWR	< 1.3 (1710 – 1880 MHz) < 1.5 (1880 – 1900 MHz)
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)
Max. power	200 W (at 50 °C ambient temperature)
Input	7-16 female
Connector position	Bottom or top
Wind load (at 150 km/h)	Frontal / lateral / rearside: 30 / 5 / 40 N
Height/width/depth	182 / 155 / 36 mm



1800/1900/2000
 VPol

Multi-band Bidirectional Antenna Vertical Polarization Half-power Beam Width

806–960/1710–2170

KATHREIN

V

Antennen · Electronic

65°

VPol BiDir 806–960/1710–2170 65° 5dBi

Type No.	738 445	738 446
Input	1 x 7-16 female	1 x N female
Frequency range	806 – 960 MHz, 1710 – 2170 MHz	
VSWR	< 1.7 (806 – 824 MHz) < 1.5 (824 – 960 / 1710 – 2170 MHz)	
Gain	806 – 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)	
Wind load	Frontal: 25 N (at 150 km/h) Lateral: 65 N (at 150 km/h) Rearside: 35 N (at 150 km/h)	
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
Impedance	50 Ω	50 Ω	50 Ω
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)		
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.

Multi-band Panel
Vertical Polarization
Half-power Beam Width

1710–2170

V

65°

KATHREIN
 Antennen · Electronic

VPol Panel 1710–2170 65° 18dBi 0°–10°T

Type No.	742 445		
Frequency range	1710–2170		
	1710 – 1880 MHz	1850 – 1990 MHz	1920 – 2170 MHz
Polarization	Vertical	Vertical	Vertical
Gain	17.5 dBi	17.9 dBi	18.1 dBi
Horizontal Pattern:			
Half-power beam width	68°	65°	63°
Front-to-back ratio	> 25 dB	> 25 dB	> 25 dB
Vertical Pattern:			
Half-power beam width	7°	6.7°	6.5°
Electrical tilt	0°–10°, continuously adjustable		
Sidelobe suppression for first sidelobe above main beam	0° ... 5° ... 10° T 18 ... 16 ... 13 dB	0° ... 5° ... 10° T 18 ... 17 ... 14 dB	0° ... 5° ... 10° T 18 ... 17 ... 14 dB
Impedance	50 Ω		
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	Bottom		
Adjustmentmechanism	1x, Position bottom, continuously adjustable		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 360 / 105 / 420 N		
Height/width/depth	1302 / 155 / 69 mm		



1800/1900/2000
 VPol

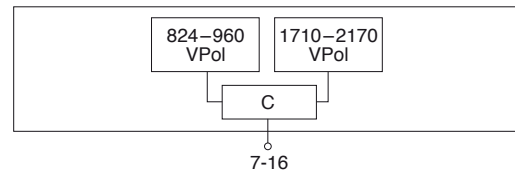
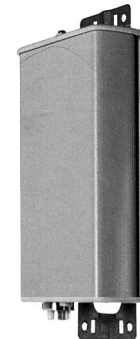
Dual-band Panel
Vertical Polarization
Half-power Beam Width

824–960	1710–2170
V	V
90°	82°

KATHREIN
 Antennen · Electronic

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

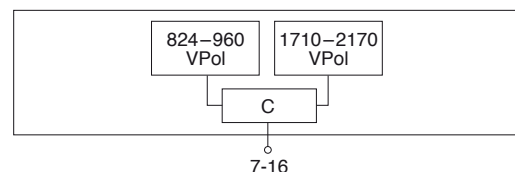
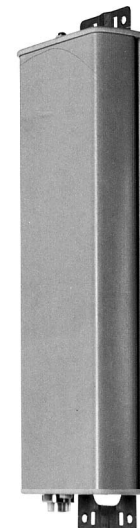
Type No.	742 290	
Frequency range	824 – 960 MHz	1710 – 2170 MHz
Polarization	Vertical	Vertical
Gain	7 dBi	7 dBi
Half-power beam width	Horizontal: 90° Vertical: 60°	Horizontal: 82° Vertical: 70°
Front-to-back ratio	> 18 dB	> 20 dB
Impedance	50 Ω	50 Ω
VSWR	< 1.7 (824 – 960 MHz) < 1.5 (870 – 960 MHz)	< 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	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 90 / 23 / 100 N	
Height/width/depth	328 / 155 / 69 mm	



1800/1900/2000 VPol

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
Impedance	50 Ω	50 Ω
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	
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	94
XXPol Panel 806-960 65° 12dBi 0°T 1710-2170 60° 14dBi 0°T	742 226	579	bottom or top	95
XXPol Panel 806-960 C 65° 12dBi 0°T 1710-2170 60° 14dBi 0°T	742 222	579	bottom or top	96
XXPol Panel 824-960 C 65° 14.5dBi 0°-10°T 1710-1880 63° 16.5dBi 2°T	742 151	1296	bottom	97
XXPol Panel 824-960 65° 14dBi 0°-14°T 1710-2180 65° 17dBi 0°-8°T	742 264	1316	bottom	98
XXPol Panel 824-960 C 65° 14dBi 0°-14°T 1710-2180 65° 17dBi 0°-8°T	742 223	1316	bottom	99
XXPol Panel 870-960 65° 17dBi 0°T 1710-1880 60° 18.5dBi 0°T	741 327	1936	bottom or top	100
XXPol Panel 870-960 C 65° 17dBi 0°T 1710-1880 60° 18dBi 0°T	741 322	1936	bottom or top	100
XXPol Panel 824-960 65° 16dBi 0°-10°T 1710-2180 65° 18.5dBi 0°-6°T	742 265	1916	bottom	101
XXPol Panel 806-960 65° 16.5dBi 2°-14°T 1710-2180 65° 18.5dBi 4°-14°T	800 10485	1998	bottom	102
XXPol Panel 824-960 C 65° 16dBi 0°-10°T 1710-2180 65° 18.5dBi 0°-6°T	742 224	1916	bottom	103
XXPol Panel 870-960 65° 17.5dBi 6°T 1710-1880 60° 18dBi 6°T	741 344	2580	bottom	104
XXPol Panel 870-960 C 65° 17.5dBi 6°T 1710-1880 60° 17.5dBi 6°T	741 336	2580	bottom	104
XXPol Panel 870-960 C 65° 17dBi 2°-8°T 1710-1880 60° 18dBi 2°T	742 047	2580	bottom	105
XXPol Panel 824-960 65° 17dBi 0°-7°T 1710-2180 65° 18.5dBi 0°-6°T	742 266	2516	bottom	106
XXPol Panel 806-960 65° 17.5dBi 4°-12°T 1710-2180 65° 18.5dBi 4°-14°T	800 10486	2516	bottom	107
XXPol Panel 824-960 C 65° 17dBi 0°-7°T 1710-2180 65° 18.5dBi 0°-6°T	742 225	2516	bottom	108
XXPol Panel 806-960 88° 13.5dBi 0°-12°T 1710-2180 88° 16.5dBi 0°-10°T	800 10121	1384	bottom	109
XXPol Panel 806-960 88° 15.2dBi 0°-10°T 1710-2180 88° 18dBi 0°-6°T	800 10122	1917	bottom	110
XXPol Panel 806-960 88° 16.5dBi 0°-7°T 1710-2180 88° 18dBi 0°-6°T	800 10123	2635	bottom	111

C = integrated Combiner

New Product

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

800/900 –
1800/2000
XXPol

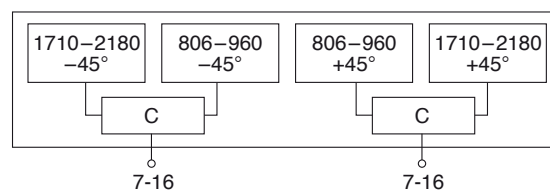
Dual-band Panel Dual Polarization Half-power Beam Width

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	> 10 dB	> 10 dB	> 10 dB	> 10 dB	> 10 dB	> 10 dB
Sector	±60°					
Vertical Pattern:						
Half-power beam width	68°	68°	69°	64°	62°	60°
Impedance	50 Ω					
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					
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.					

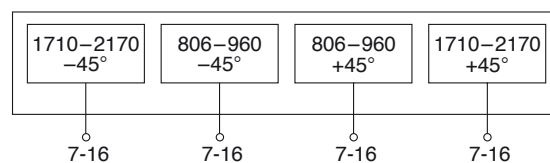


Dual-band Panel**806–960****1710–2170****Dual Polarization****X****X****Half-power Beam Width****65°****60°****KATHREIN**

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)					
Impedance	50 Ω	50 Ω	50 Ω	50 Ω	50 Ω	50 Ω
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	2 x 7-16 female					
Connector position	Bottom or top					
Wind load (at 150 km/h)	Frontal / lateral / rearside: 100 / 80 / 180 N					
Height/width/depth	579 / 262 / 139 mm					

800/900 –
1800/2000
XXPol

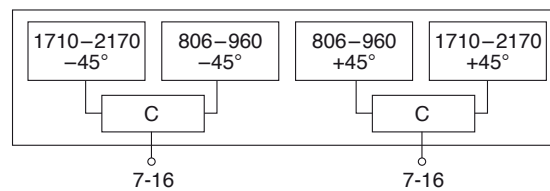
Dual-band Panel Dual Polarization Half-power Beam Width

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
Impedance		50 Ω	50 Ω	50 Ω	50 Ω	50 Ω
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				
Wind load (at 150 km/h)		Frontal / lateral / rearside: 100 / 80 / 180 N (at 150 km/h)				
Height/width/depth		579 / 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**

824–960	1710–1880
X	X
65°	63°

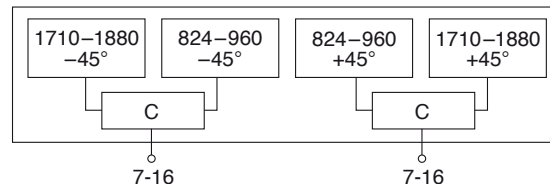
KATHREIN
Antennen · Electronic

XXPol Panel 824–960/1710–1880 C 65°/63° 14.5/16.5dBi 0°–10°T/2°T

Type No.	742 151		
Frequency range	824–960		1710–1880
	824 – 880 MHz	880 – 960 MHz	1710 – 1880 MHz
Polarization	+45°, –45°	+45°, –45°	+45°, –45°
Gain	2 x 14 dBi	2 x 14.5 dBi	2 x 16.5 dBi
Horizontal Pattern:			
Half-power beam width	69°	65°	63°
Front-to-back ratio, copolar	> 30 dB	> 30 dB	> 27 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	14.5°	14°	8.5°
Electrical tilt	0°–10°	0°–10°	2°
Sidelobe suppression for first sidelobe above horizon	0° ... 6° ... 10°T 16 ... 13 ... 12 dB	0° ... 6° ... 10°T 17 ... 15 ... 13 dB	16 dB
Impedance	50 Ω		50 Ω
VSWR	< 1.5		< 1.5
Isolation, between ports	> 30 dB		> 30 dB
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)		< –150 dBc
Max. power per input	250 W (at 50 °C ambient temperature)		150 W
Input	2 x 7-16 female		
Connector position	Bottom		
Adjustment mechanism	1x, Position bottom, continuously adjustable		
Wind load (at 150 km/h)	Frontal / lateral / rearside: 230 / 130 / 500 N		
Height/width/depth	1296 / 262 / 116 mm		
Integrated combiner	The insertion loss is included in the given antenna gain values.		



800/900 –
1800/2000
XXPol



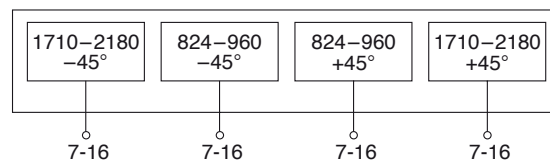
Dual-band Panel Dual Polarization Half-power Beam Width

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
Impedance	50 Ω	50 Ω	50 Ω	50 Ω	50 Ω
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				
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°

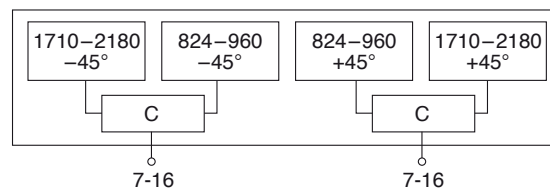
KATHREIN
Antennen · Electronic

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	Typically: 20 dB	Typically: 20 dB	Typically: 18 dB	Typically: 19 dB	Typically: 20 dB
Main direction	0°				
Sector	±60°	> 10 dB	> 10 dB	> 10 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
Impedance	50 Ω				
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				
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.				



800/900 –
1800/2000
XXPol



Dual-band Panel Dual Polarization Half-power Beam Width

870–960

1710–1880

X

X

65°

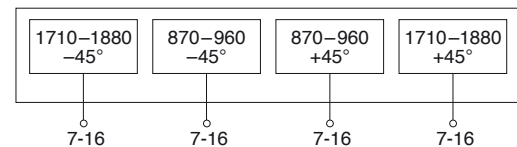
60°

KATHREIN

Antennen · Electronic

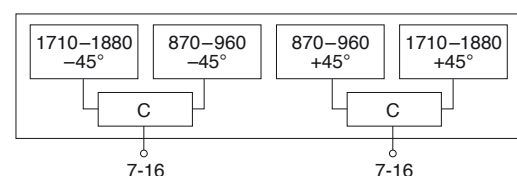
XXPol Panel 870–960/1710–1880 65°/60° 17/18.5dBi

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)	
Impedance	50 Ω	50 Ω
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	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 330 / 200 / 770 N	
Height/width/depth	1936 / 262 / 116 mm	



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
Impedance	50 Ω	50 Ω
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	
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.	



800/900 –
1800/2000
XXPol

Dual-band Panel Dual Polarization Half-power Beam Width

824–960	1710–2180
X	X
65°	65°

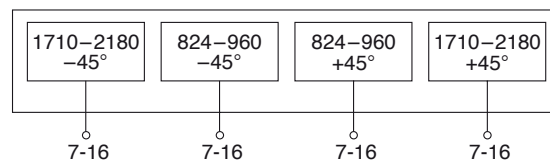
KATHREIN
Antennen · Electronic

XXPol Panel 824–960/1710–2180 65°/65° 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
Impedance	50 Ω	50 Ω	50 Ω	50 Ω	50 Ω
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				
Wind load (at 150 km/h)	Frontal / lateral / rearside: 340 / 280 / 640 N				
Height/width/depth	1916 / 262 / 139 mm				



800/900 –
1800/2000
XXPol



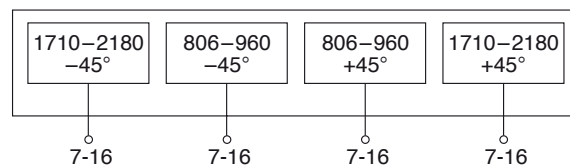
Dual-band Panel Dual Polarization Half-power Beam Width

806–960	1710–2180
X	X
65°	65°

KATHREIN
Antennen · Electronic

XXPol Panel 806–960/1710–2180 65°/65° 16.5/18.5dBi 2°–14°/4°–14°T

Type No.	800 10485					
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)	16.2 ... 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
Impedance	50 Ω					
VSWR	< 1.5					
Isolation: Intrasystem	> 30 dB					
Isolation: Intersystem	> 35 dB (806–960 // 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					
Wind load (at 150 km/h)	Frontal / lateral / rearside: 720 / 350 / 900 N					
Height/width/depth	2038 / 262 / 139 mm					



Dual-band Panel Dual Polarization Half-power Beam Width

824–960

1710–2180

X

X

65°

65°

KATHREIN

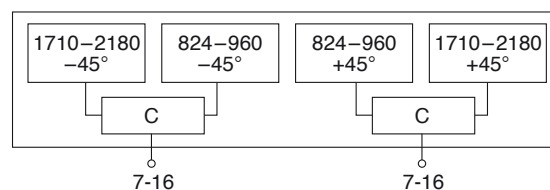
Antennen · Electronic

XXPol Panel 824–960/1710–2180 C 65°/65° 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 Maindirection 0° Sector ±60°	Typically: 20 dB > 10 dB	Typically: 20 dB > 10 dB	Typically: 17 dB > 10 dB	Typically: 18 dB > 10 dB	Typically: 19 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
Impedance	50 Ω				
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				
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



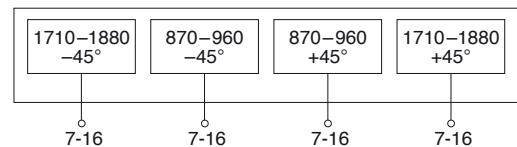
Dual-band Panel Dual Polarization Half-power Beam Width

870–960	1710–1880
X	X
65°	60°

KATHREIN
Antennen · Electronic

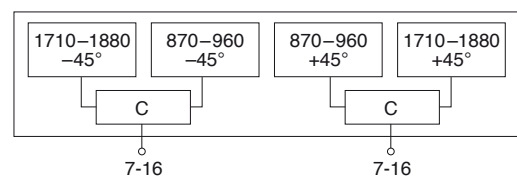
XXPol Panel 870–960/1710–1880 65°/60° 17.5/18dBi 6°T

Type No.	741 344	
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 18 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 (GSM 900 – GSM 900) > 30 dB (GSM 1800 – GSM 1800) > 30 dB (GSM 900 – GSM 1800)	
Impedance	50 Ω	50 Ω
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	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 470 / 280 / 1040 N	
Height/width/depth	2580 / 262 / 116 mm	



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
Impedance	50 Ω	50 Ω
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	
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

Dual-band Panel
Dual Polarization
Half-power Beam Width

870–960	1710–1880
X	X
65°	60°

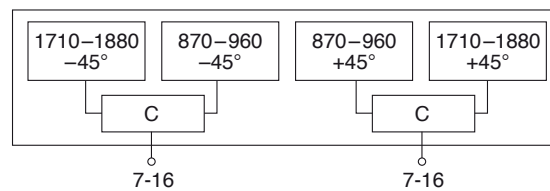
KATHREIN
 Antennen · Electronic

XXPol Panel 870–960/1710–1880 C 65°/60° 17/18dBi 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
Impedance	50 Ω	50 Ω
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	
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



Dual-band Panel

824–960**1710–2180**

Dual Polarization

X**X**

Half-power Beam Width

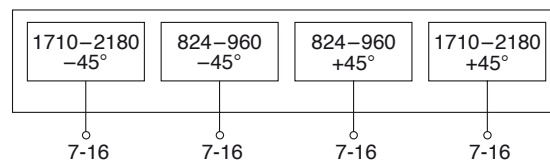
65°**65°**

KATHREIN

Antennen · Electronic

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

Type No.	742 266				
Frequency range	824–960 824–894 MHz 880–960 MHz		1710–2180 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 17 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°	62°
Front-to-back ratio, copolar	> 28 dB	> 28 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: 17 dB > 10 dB	Typically: 18 dB > 10 dB	Typically: 18 dB > 10 dB
Vertical Pattern:					
Half-power beam width	7.3°	7.0°	5.2°	5.0°	4.7°
Electrical tilt continuously adjustable	0.5°–7°	0.5°–7°	0°–6°	0°–6°	0°–6°
Sidelobe suppression for first sidelobe above main beam	0.5° ... 4° ... 7° T 14 ... 14 ... 14 dB	0.5° ... 4° ... 7° T 16 ... 16 ... 16 dB	0° ... 3° ... 6° T 13 ... 13 ... 13 dB	0° ... 3° ... 6° T 16 ... 15 ... 14 dB	0° ... 3° ... 6° T 15 ... 15 ... 15 dB
Impedance	50 Ω	50 Ω	50 Ω	50 Ω	50 Ω
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				
Wind load (at 150 km/h)	Frontal / lateral / rearside: 460 / 380 / 860 N				
Height/width/depth	2516 / 262 / 139 mm				

800/900 –
1800/2000
XXPol

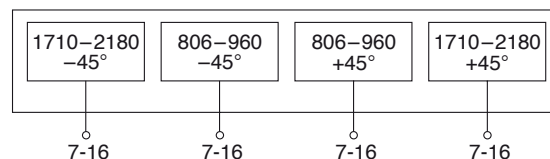
Dual-band Panel Dual Polarization Half-power Beam Width

806–960	1710–2180
X	X
65°	65°

KATHREIN
Antennen · Electronic

XXPol Panel 806–960/1710–2180 65°/65° 17.5/18.5dBi 4°–12°/4°–14°T

Type No.	800 10486					
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)	16.8 ... 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
Impedance	50 Ω					
VSWR	< 1.5					
Isolation: Intrasystem	> 30 dB					
Isolation: Intersystem	> 45 dB (806–960 // 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					
Wind load (at 150 km/h)	Frontal / lateral / rearside: 460 / 380 / 860 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

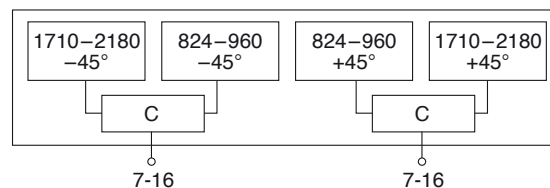
X X

65° 65°

KATHREIN
Antennen · Electronic

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 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: 19 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
Impedance	50 Ω				
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				
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.				



800/900 –
1800/2000
XXPol

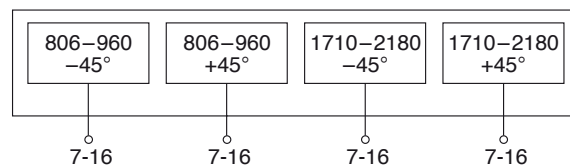
Dual-band Panel Dual Polarization Half-power Beam Width

806–960	1710–2180
X	X
88°	88°

KATHREIN
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:
Main direction	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
Impedance	50 Ω					
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					
Wind load (at 150 km/h)	Frontal / lateral / rearside: 260 / 210 / 580 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°

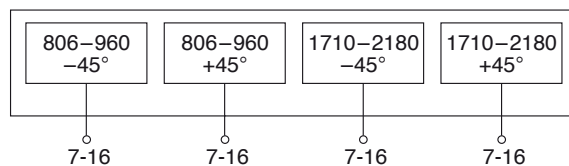
88°

KATHREIN

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
Impedance	50 Ω					
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					
Wind load (at 150 km/h)	Frontal / lateral / rearside: 340 / 280 / 640 N					
Height/width/depth	1917 / 262 / 149 mm					



Dual-band Panel Dual Polarization Half-power Beam Width

806–960

1710–2180

X

X

88°

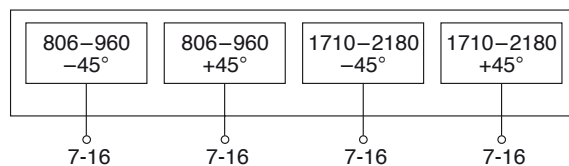
88°

KATHREIN

Antennen · Electronic

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:	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. 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 continuously adjustable	0.5°–7°			0°–6°		
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
Impedance	50 Ω					
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					
Wind load (at 150 km/h)	Frontal / lateral / rearside: 470 / 380 / 860 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 66° 15dBi 0°-12°T	742 270	1498	bottom	114
	1710-1880 66° 16.5dBi 0°-8°T				
	1920-2170 65° 17dBi 0°-8°T				
XXXPol Panel	806-960 66° 15dBi 0°-14°T	800 10290	1540	bottom	115
	1710-2180 66° 15dBi 0°-15°T				
	1710-2180 65° 15dBi 0°-14°T				
XXXPol Panel	806-960 67° 16.5dBi 0°-10°T	742 271	2058	bottom	116
	1710-1880 65° 17.5dBi 0°-6°T				
	1920-2170 65° 18dBi 0°-6°T				
XXXPol Panel	806-960 65° 16.5dBi 2°-14°T	800 10291	2058	bottom	117
	1710-2180 65° 16.5dBi 0°-14°T				
	1710-2180 65° 16.5dBi 0°-14°T				
XXXPol Panel	806-960 66° 17.5dBi 0°-7°T	742 272	2628	bottom	118
	1710-1880 65° 17.5dBi 0°-6°T				
	1920-2170 63° 18dBi 0°-6°T				
XXXPol Panel	806-960 65° 17.5dBi 2°-10°T	800 10292	2694	bottom	119
	1710-2180 65° 17.5dBi 0°-10°T				
	1710-2180 65° 17dBi 0°-10°T				
XXXPol Panel	806-960 65° 17.5dBi 4°-12°T	800 10492	2694	bottom	120
	1710-2180 65° 17dBi 0°-14°T				
	1710-2180 65° 17dBi 0°-14°T				

New 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

X X X

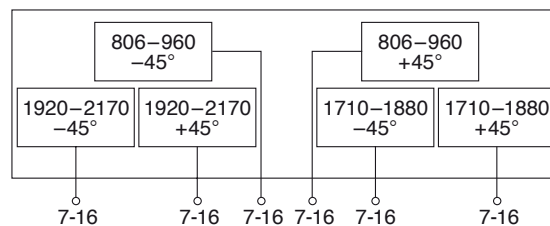
66° 66° 65°

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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
Impedance	50 Ω		50 Ω	50 Ω	
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				
Wind load (at 150 km/h)	Frontal / lateral / rearside: 260 / 210 / 580 N				
Height/width/depth	1498 / 262 / 149 mm				



800/900 - 1800/2000 XXXPol

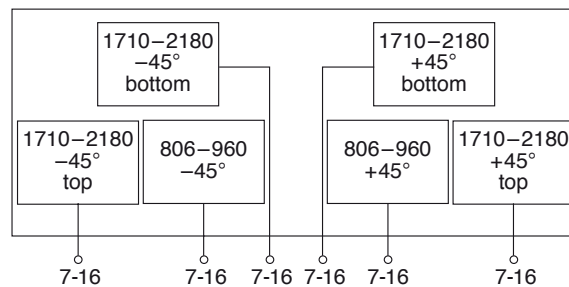
Triple-multiband Panel
Dual Polarization
Half-power Beam Width

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

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Preliminary Issue

XXXPol Panel 806–960/1710–2180/1710–2180 65°/65°/65° 15/15/15dBi 0°–14°/0°–15°/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)	14.6 ... 14.4 ... 14.2	14.8 ... 14.6 ... 14.4	15 ... 14.8 ... 14.5	14.5 ... 14.5 ... 14.2	14.8 ... 14.8 ... 14.5	15 ... 14.8 ... 14.4
1710–2180 MHz (Syst. bottom)				14 ... 14 ... 13.8	14.6 ... 14.5 ... 14	14.9 ... 14.8 ... 14.2
1710–2180 MHz (Syst. top)				0° ... 7° ... 14°/15°	0° ... 7° ... 14°/15°	0° ... 7° ... 14°/15°
Tilt	0° ... 7° ... 14°	0° ... 7° ... 14°	0° ... 7° ... 14°			
Horizontal Pattern:						
Half-power beam width	68°	67°	66°	67°	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	25 dB	25 dB	25 dB	20 dB	20 dB	20 dB
Sector	> 10 dB	> 10 dB	> 10 dB	> 10 dB	> 10 dB	> 10 dB
Vertical Pattern:						
Half-power beam width	14.3°	13.8°	13.5°	13.7°	12.7°	12.5°
Electrical tilt	0°–14°, continuously adjustable			Syst. bottom: 0°–15°, 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 ... 16 dB	18 ... 16 ... 16 dB	18 ... 16 ... 16 dB
Impedance	50 Ω					
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	< –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					
Wind load (at 150 km/h)	Frontal / lateral / rearside: 270 / 210 / 600 N					
Height/width/depth	1540 / 262 / 149 mm					



800/900 –
1800/2000
XXXPol

Triple-band Panel

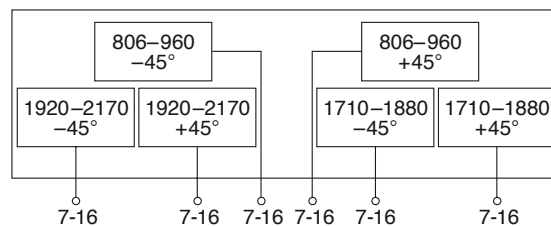
Dual Polarization

Half-power Beam Width

806–960	1710–1880	1920–2170	KATHREIN
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 1710–1880 MHz	1920–2170 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
Maindirection 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
Impedance	50 Ω				
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		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				
Wind load (at 150 km/h)	Frontal / lateral / rearside: 370 / 300 / 820 N				
Height/width/depth	2058 / 262 / 149 mm				



800/900 – 1800/2000 XXXPol

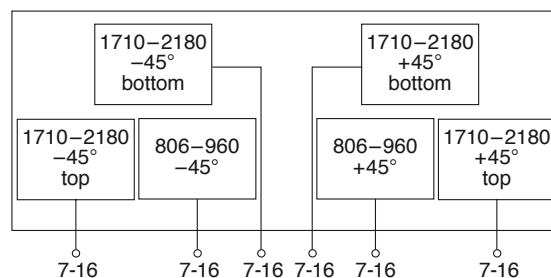
Triple-multiband Panel Dual Polarization Half-power Beam Width

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° 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: 25 dB	Typically: 25 dB	Typically: 25 dB	Typically: 18 dB	Typically: 19 dB	Typically: 20 dB
Maindirection	0°					
Sector	±60°	> 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
Impedance	50 Ω					
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					
Wind load (at 150 km/h)	Frontal / lateral / rearside: 370 / 300 / 820 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

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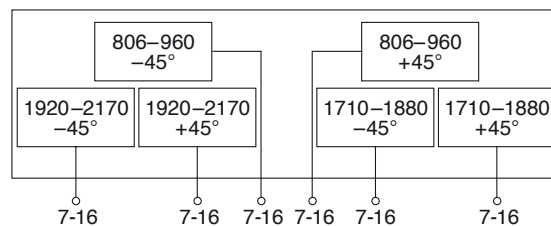
X X X

Antennen · Electronic

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
Impedance	50 Ω		50 Ω	50 Ω	
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				
Wind load (at 150 km/h)	Frontal / lateral / rearside: 480 / 390 / 1060 N				
Height/width/depth	2628 / 262 / 149 mm				



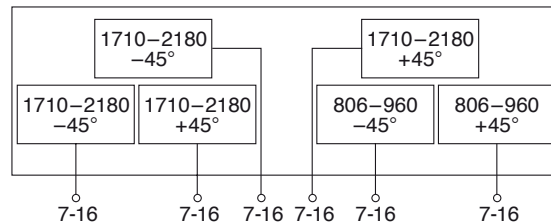
Triple-multiband Panel Dual Polarization Half-power Beam Width

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

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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
Impedance	50 Ω	50 Ω	50 Ω	50 Ω	50 Ω	50 Ω
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					
Wind load (at 150 km/h)	Frontal / lateral / rearside: 490 / 400 / 1090 N					
Height/width/depth	2694 / 262 / 149 mm					



800/900 –
1800/2000
XXXPol

Triple-multiband Panel Dual Polarization Half-power Beam Width

806–960 1710–2180 1710–2180

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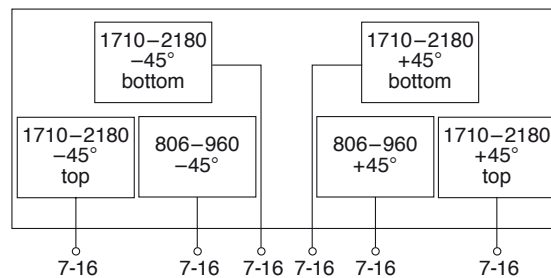
X X X

Antennen · Electronic

65° 65° 65°

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
Impedance	50 Ω					
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					
Wind load (at 150 km/h)	Frontal / lateral / rearside: 490 / 400 / 1090 N					
Height/width/depth	2694 / 262 / 149 mm					



Summary – Directional Antennas Omnidirectional Antennas 2300 ... 3800

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

Type	Type No.	Height [mm]	Connector position	Page
XPol Panel 2300–2690 60° 18dBi 0°–12°T	800 10541	1149	bottom	122
XPol Panel 2300–2690 60° 18dBi 0°–12°T	800 10551	1149	bottom (Type N)	122
XPol Panel 1710–2690 65° 17.5dBi 2°T	800 10471	1302	bottom	123
XPol Panel 1710–2690 65° 18dBi 0°–12°T ESLS	800 10621	1398	bottom	124
XXPol Panel 2300–2690 60° 18dBi 0°–12°T	800 10543	1220	bottom	125
XXPol Panel 2300–2690 60° 18dBi 0°–12°T	800 10553	1220	bottom (Type N)	125

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

XPol Panel 3300–3800 65° 17.5dBi 0°T	800 10390	736	bottom or top	126
XPol Panel 3300–3800 65° 17.5dBi 0°–10°T	800 10603	714	bottom (Type N)	126

Vertical Polarization – Omnidirectional

VPol Omni 1710–2700 360° 2dBi 0°T	800 10431	115	bottom or top	153
VPol Omni 2500–2700 360° 11dBi 0°T	800 10442	1132	bottom	139
VPol Omni 3400–3600 360° 11dBi 0°T	800 10528	860	bottom	140

New Products

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

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 / 800 10551	
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	0° Typically: 20 dB ±60° ≥ 8 dB	Typically: 20 dB ≥ 8 dB
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
Impedance	50 Ω	
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	2 x N connector female
Connector position	Bottom	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 330 / 100 / 370 N	
Height/width/depth	1149 / 155 / 69 mm	



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
Impedance	50 Ω				
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				
Wind load (at 150 km/h)	Frontal / lateral / rearside: 130 / 110 / 310 N				
Height/width/depth	1302 / 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° 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 at 0° tilt	2 x 17.5 dBi	2 x 18.0 dBi	2 x 18.5 dBi	2 x 18.3 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	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 ≥ 17 ... 18 ... 18 dB ≥ 16 ... 16 ... 16 dB	0° ... 6° ... 12° T ≥ 17 ... 18 ... 18 dB ≥ 17 ... 18 ... 18 dB	0° ... 6° ... 12° T ≥ 17 ... 17 ... 18 dB ≥ 16 ... 18 ... 17 dB	0° ... 6° ... 12° T ≥ 17 ... 18 ... 18 dB ≥ 16 ... 16 ... 16 dB
Impedance	50 Ω			
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			
Wind load (at 150 km/h)	Frontal / lateral / rearside: 142 / 112 / 335 N			
Height/width/depth	1398 / 155 / 69 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° 18/18dBi 0°–12°/0°–12°T

Type No.	800 10543 / 800 10553	
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 18 dBi	4 x 18 dBi
Horizontal Pattern:		
Half-power beam width	60°	58°
Front-to-back ratio (180°±30°)	≥ 25 dB	≥ 25 dB
Cross polar ratio	0°	20 dB
Sector	±60°	≥ 10 dB
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
Impedance	50 Ω	
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	4 x N connector female
Connector position	Bottom	
Adjustment mechanism	2x, Position bottom, continuously adjustable	
Wind load (at 150 km/h)	Frontal / lateral / rearside: 560 / 110 / 560 N	
Height/width/depth	Approx. 1220 / 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
Impedance	50 Ω
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
Wind load (at 150 km/h)	Frontal / lateral / rearside: 160 / 50 / 160 N
Height/width/depth	736 / 112 / 50 mm



XPol Panel 3300–3800 65° 17.5dBi 0°-10°T

Type No.	800 10603
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°–10°, continuously adjustable
Front-to-back ratio (180° ±30°)	> 30 dB
Isolation, between ports	> 25 dB
Impedance	50 Ω
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
Wind load (approx.) (at 150 km/h)	Frontal / lateral / rearside: 260 / 90 / 260 N
Height/width/depth	714 / 181 / 77 mm



2300 ... 3800
 XPol, VPol

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	128
VPol Omni	806–960 360° 2dBi 0°T	K 75 11 61	N	348		129
VPol Omni	890–960 360° 5dBi 0°T	K 75 15 64 1	N	715		130
VPol Omni	870–960 360° 8dBi 0°T	736 350	7-16	1543		131
VPol Omni	806–894 360° 11dBi 0°T	738 192	7-16	3237		132
VPol Omni	870–960 360° 11dBi 0°T	736 347	7-16	3033		133
VPol Omni	870–960 360° 10.5dBi 5°T	736 349	7-16	2954		134

Vertical Polarization – Dual-band

VPol Omni	870–960/1710–1880 360° 2dBi 0°T	738 449	N	216	indoor/outdoor	152
VPol Omni	824–960/1805–2170 360° 2dBi 0°T	800 10147	N	216	indoor/outdoor	154
VVPol Omni	870–960 360° 9dBi 0°T 1920–2170 360° 10dBi 0°T	800 10274	7-16	3033	separate inputs	135
VVPol Omni	870–960/1710–1880 360° 2dBi 0°T 1920–2170 360° 2dBi 0°T	800 10111	N	493	separate inputs	136

Vertical Polarization – 1800

VPol Omni	1710–1880 360° 11dBi 0°T	738 187	7-16	1568		137
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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	153
VPol Omni	1920–2170 360° 11 dBi 0°T	741 790	7-16	1387		138
VPol Omni	2500–2700 360° 11dBi 0°T	800 10442	7-16	1132		139
VPol Omni	3400–3600 360° 11dBi 0°T	800 10528	7-16	860		140

New Product

Omnidirectional Antenna Vertical Polarization Indoor and outdoor use

870–960

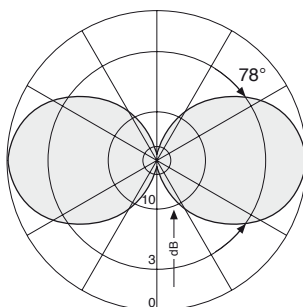
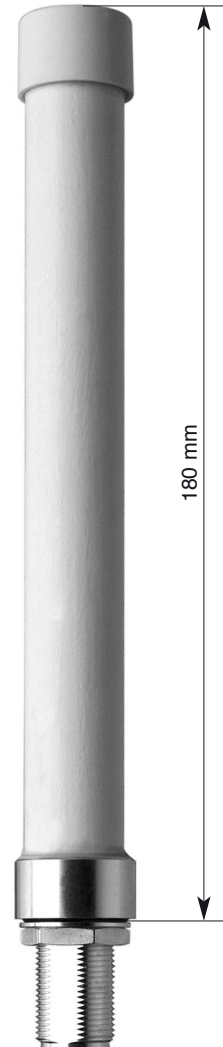
V

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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 (2 x 43 dBm carrier)	< -150 dBc
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

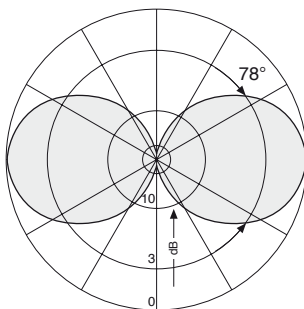
Type No.	K 75 11 61
Frequency range	806 – 960 MHz
Polarization	Vertical
Gain	2 dBi
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3 (2 x 37 dBm carrier)	< -150 dBc
Max. power	100 W (at 50 °C ambient temperature)

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

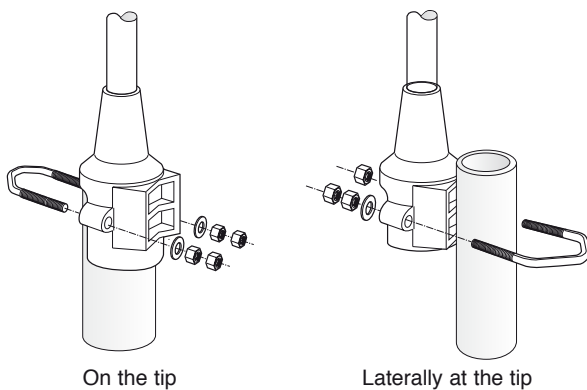
1. On the tip of a tubular mast of 40 – 54 mm diameter (connecting cable runs inside the mast).
2. Laterally at the tip of a tubular mast of 20 – 54 mm diameter (connecting cable runs outside the mast).

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

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Antennen · Electronic

VPol Omni 890–960 360° 5dBi

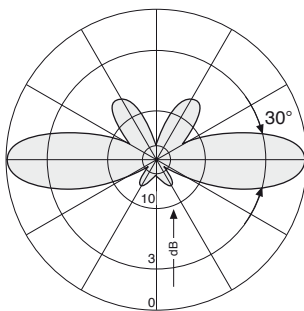
Type No.	K 75 15 64 1
Frequency range	890 – 960 MHz
Polarization	Vertical
Gain	5 dBi
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3 (2 x 37 dBm carrier)	< -150 dBc
Max. power	250 W (at 50 °C ambient temperature)

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

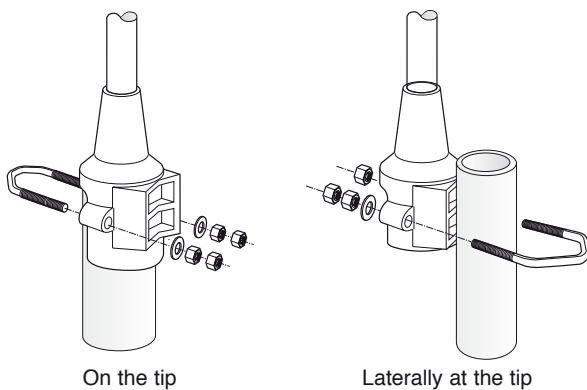
1. On the tip of a tubular mast of 40 – 54 mm diameter (connecting cable runs inside the mast).
2. Laterally at the tip of a tubular mast of 20 – 54 mm diameter (connecting cable runs outside the mast).

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



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

KATHREIN
Antennen · Electronic

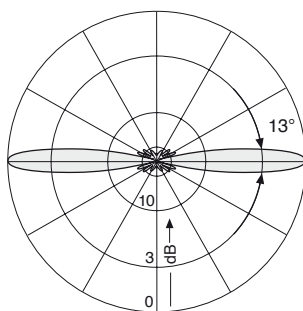
VPol Omni 870–960 360° 8dBi

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

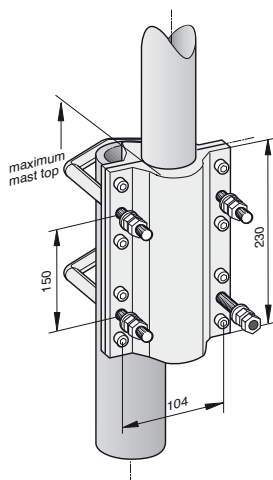
Mounting: The antenna can be attached laterally at the tip of a tubular mast of 50 – 94 mm diameter with two U-bolt brackets supplied with the antenna (connecting cable runs outside the mast).

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

Excellent grounding: From the solid metal tip right down to the base of the high gain antennas the grounding cross-section is 22 mm² copper or more, exceeding EN 50083-1.
The inner conductor is coupled capacitively.



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

KATHREIN
Antennen · Electronic

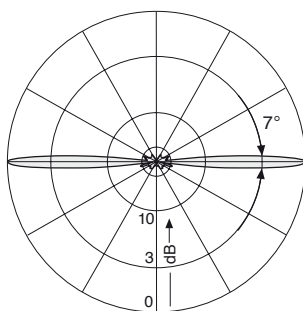
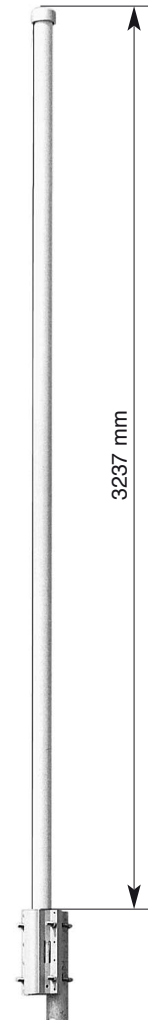
VPol Omni 806–894 360° 11dBi

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

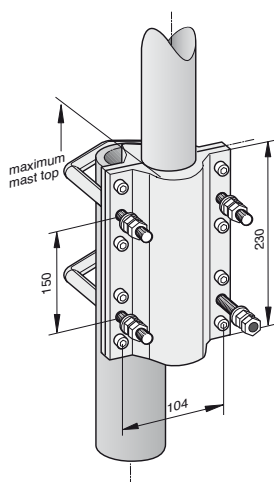
Mounting: The antenna can be attached laterally at the tip of a tubular mast of 50 – 94 mm diameter with two U-bolt brackets supplied with the antenna (connecting cable runs outside the mast).

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

Excellent grounding: From the solid metal tip right down to the base of the high gain antennas the grounding cross-section is 22 mm² copper or more, exceeding EN 50083-1.
The inner conductor is coupled capacitively.



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

KATHREIN
Antennen · Electronic

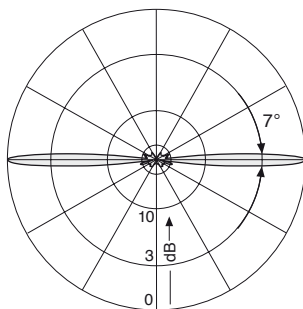
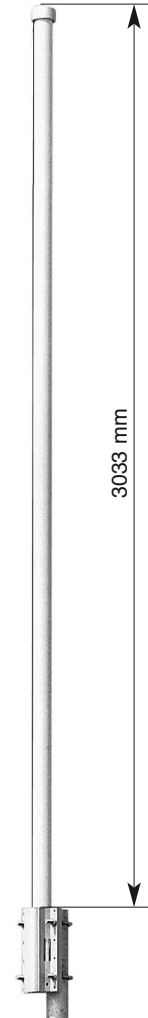
VPol Omni 870–960 360° 11dBi

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

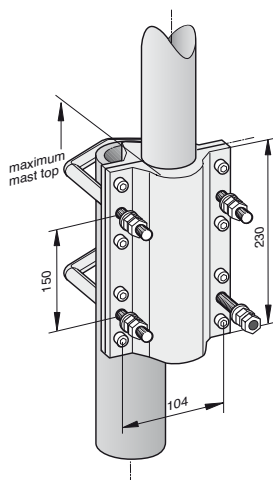
Mounting: The antenna can be attached laterally at the tip of a tubular mast of 50 – 94 mm diameter with two U-bolt brackets supplied with the antenna (connecting cable runs outside the mast).

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

Excellent grounding: From the solid metal tip right down to the base of the high gain antennas the grounding cross-section is 22 mm² copper or more, exceeding EN 50083-1.
The inner conductor is coupled capacitively.



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°

KATHREIN
Antennen · Electronic

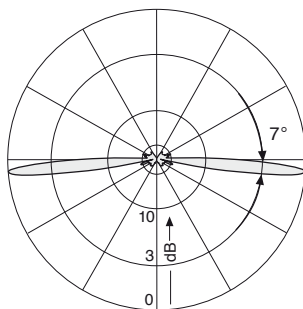
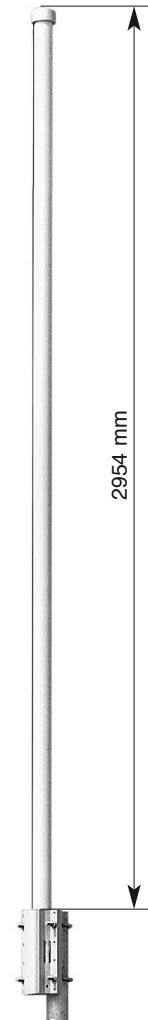
VPol Omni 870–960 360° 10.5dBi 5°T

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 (2 x 43 dBm carrier)	< -150 dBc
Max. power	500 W (at 50 °C ambient temperature)

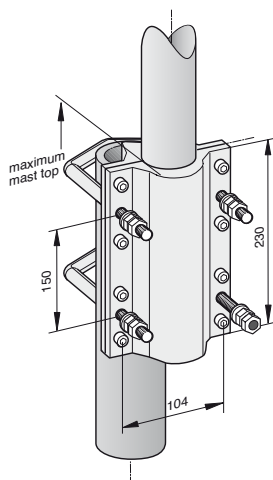
Mounting: The antenna can be attached laterally at the tip of a tubular mast of 50 – 94 mm diameter with two U-bolt brackets supplied with the antenna (connecting cable runs outside the mast).

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

Excellent grounding: From the solid metal tip right down to the base of the high gain antennas the grounding cross-section is 22 mm² copper or more, exceeding EN 50083-1.
The inner conductor is coupled capacitively.



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

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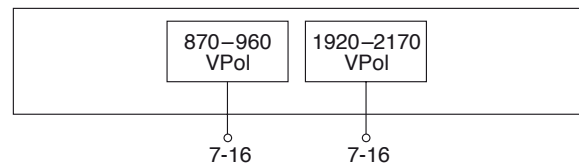
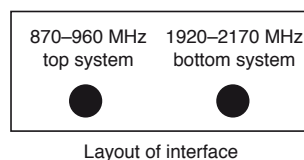
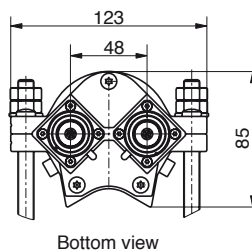
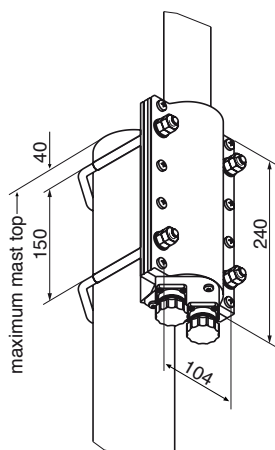
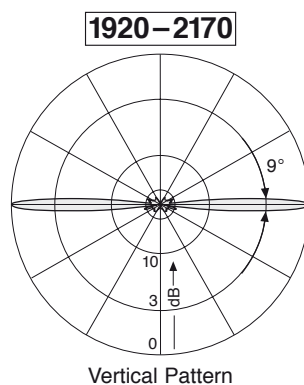
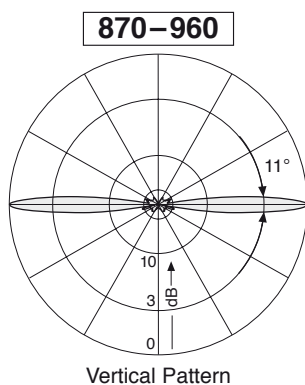
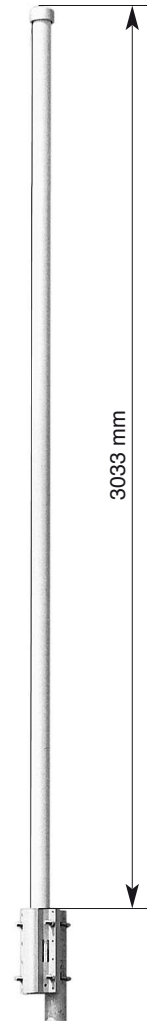
VVPol Omni 870–960/1920-2170 360°/360° 9/10dBi

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 (2 x 43 dBm carrier)	< -150 dBc	
Max. power per input	150 W (at 50 °C ambient temperature)	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.

Excellent grounding: From the solid metal tip right down to the base of the high gain antennas the grounding cross-section is 22 mm² copper or more, exceeding EN 50083-1.
The inner conductors of both systems are coupled capacitively.



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

KATHREIN

Antennen · Electronic

Vertical Polarization

V

V

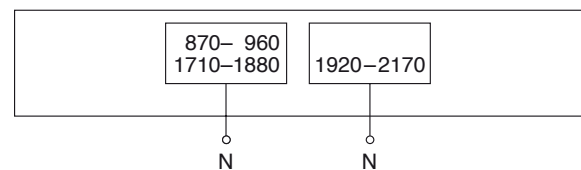
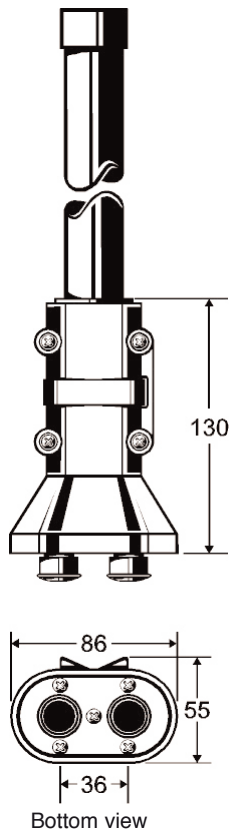
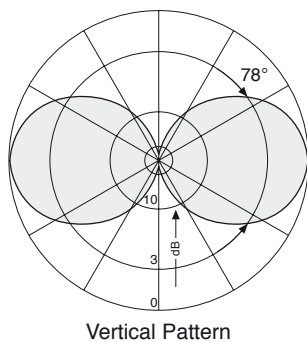
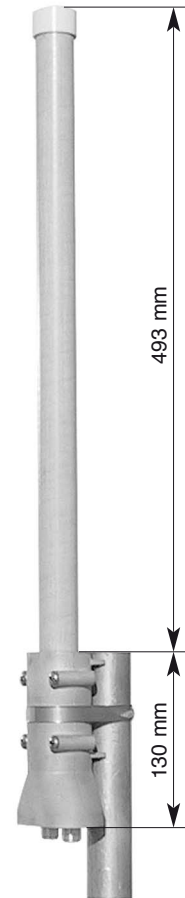
VVPol Omni 870–960/1710–1880/1920–2170 360°/360° 2/2dBi

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

KATHREIN
Antennen · Electronic

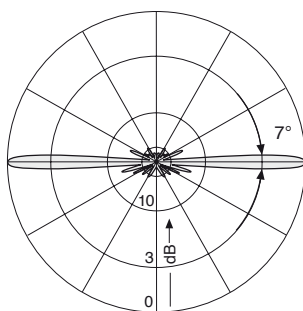
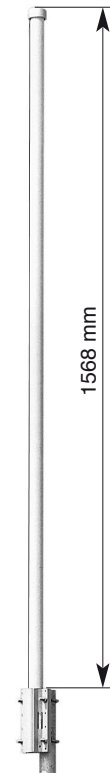
VPol Omni 1710–1880 360° 11dBi

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

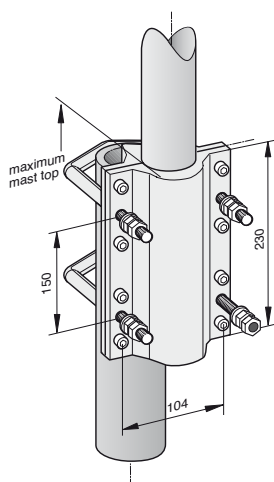
Mounting: The antenna can be attached laterally at the tip of a tubular mast of 50 – 94 mm diameter with two U-bolt brackets supplied with the antenna (connecting cable runs outside the mast).

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

Excellent grounding: From the solid metal tip right down to the base of the high gain antennas the grounding cross-section is 22 mm² copper or more, exceeding EN 50083-1.
The inner conductor is coupled capacitively.



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

Omnidirectional Antenna Vertical Polarization

1920–2170

V

KATHREIN
Antennen · Electronic

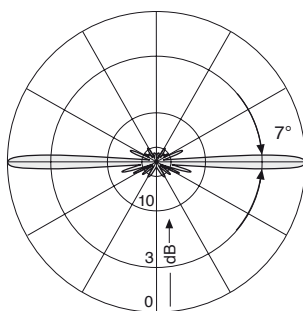
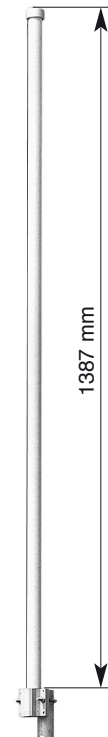
VPol Omni 1920–2170 360° 11dBi

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

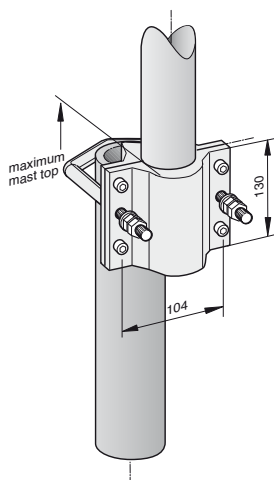
Mounting: The antenna can be attached laterally at the tip of a tubular mast of 50 – 94 mm diameter with one U-bolt bracket supplied with the antenna (connecting cable runs outside the mast).

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

Excellent grounding: From the solid metal tip right down to the base of the high gain antennas the grounding cross-section is 22 mm² copper or more, exceeding EN 50083-1.
The inner conductor is coupled capacitively.



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

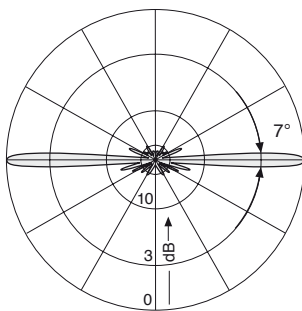
2500–2700

V

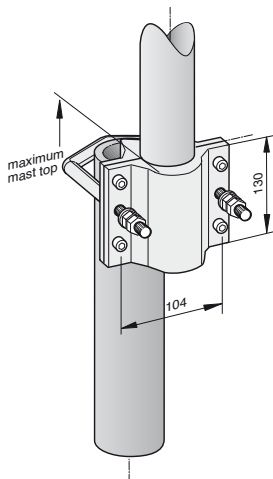
KATHREIN
Antennen · Electronic

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 (2 x 43 dBm carrier)	< -150 dBc
Max. power	200 W (at 50 °C ambient temperature)



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

Omni
VPol

Omnidirectional Antenna Vertical Polarization

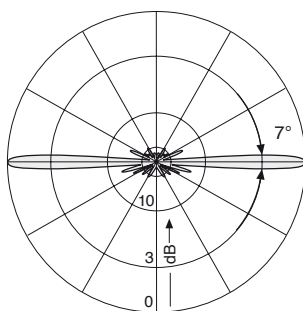
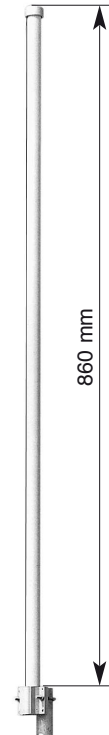
3400–3600

V

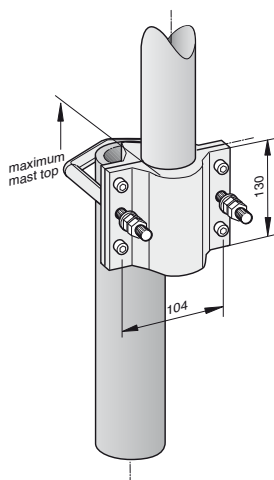
KATHREIN
Antennen · Electronic

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 (2 x 43 dBm carrier)	< -150 dBc
Max. power	150 W (at 50 °C ambient temperature)



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	806–960/1710–2170	N	142
VPol Indoor 90° 7dBi	800 10465	806–960/1710–2700	N	143
VPol Indoor 90° 7dBi	800 10433	3300–3800	SMA	144

Indoor – Multi-band Omnidirectional

VPol Indoor 360° 2dBi	800 10137	876–960/1710–2500	N	145
VPol Indoor 360° 2dBi	800 10173	876–960/1710–2500	N	146
VPol Indoor 360° 2dBi	800 10249	806–960/1425–3800/5150–6000	N	147
VPol Indoor 360° 2dBi	741 573	1710–2500	N	148
VPol Indoor 360° 2dBi	800 10430	1710–6000	N	149

Indoor / Outdoor – Single-band

VPol Omni 360° 2dBi	738 450	870–960	N	150
VPol Panel 90° 7.5dBi	736 854	872–960	N	151

Indoor / Outdoor – Dual-band / Multi-band

VPol Omni 360° 2dBi	738 449	870–960/1710–1880	N	152
VPol Omni 360° 2dBi	800 10431	1710–2700	N	153
VPol Omni 360° 2dBi	800 10147	824–960/1805–2170	N	154

New Product

Multi-band Bidirectional Antenna Vertical Polarization Half-power Beam Width

806–960/1710–2170

KATHREIN

V

Antennen · Electronic

65°

VPol BiDir 806–960/1710–2170 65° 5dBi

Type No.	738 446
Input	1 x N female
Frequency range	806 – 960 MHz, 1710 – 2170 MHz
VSWR	< 1.7 (806 – 824 MHz) < 1.5 (824 – 960 / 1710 – 2170 MHz)
Gain	806 – 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

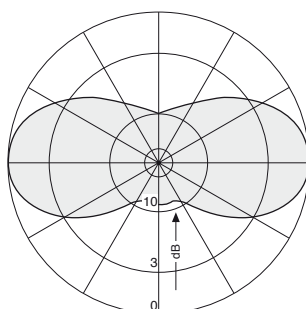


Material:
Radiator: Tin plated copper.
Reflector: Weather-proof aluminum.
Radome: High impact plastic, colour: Grey.
All screws and nuts: Stainless steel.

Mounting:
Wall mounting: No additional mounting kit needed.
For pipe mast mounting use clamps listed on the datasheet (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.



Typical Horizontal Pattern

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

806–960

1710–2700

V

V

90°

90°

C

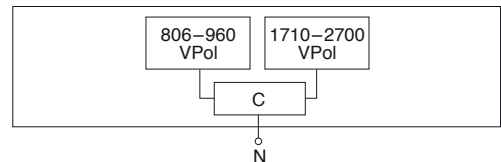
KATHREIN

Antennen · Electronic

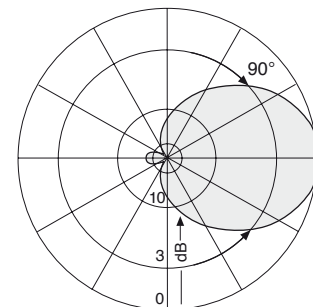
Preliminary Issue

VVPol Indoor 806–960/1710–2700 C 90° 7dBi

Type No.	800 10465
Frequency range	806 – 960 MHz / 1710 – 2700 MHz
Polarization	Vertical
Gain	Approx. 7 dBi
Half-power beam width	Horizontal: Approx. 90°
Impedance	50 Ω
VSWR	806 – 960 MHz: < 2.0 1710 – 2200 MHz: < 2.0 2200 – 2400 MHz: < 2.5 2400 – 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

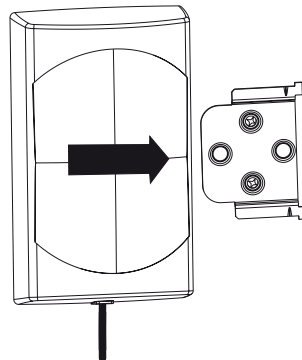
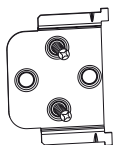


- Material:** Reflector: Aluminum.
Radome: High impact polystyrol, colour: White.
Additional painting is possible.
Mounting plates: Stainless steel.
- Mounting:** Two holes of 6 mm diameter in the mounting plate.
Screws are not supplied.
Avoid to stress the cable.
- Grounding:** All metal parts inclusive the inner conductor are DC grounded.
- Available accessories:** Broadband power splitters and tappers (800 – 2700 MHz).

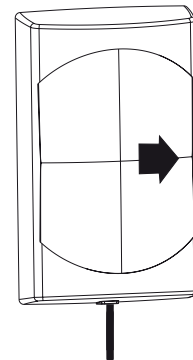


Horizontal Pattern

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 VPol

Indoor Directional Antenna Vertical Polarization Half-power Beam Width

3300–3800

V

90°

KATHREIN
Antennen · Electronic

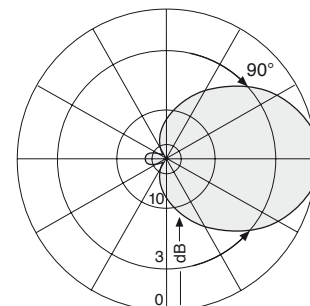
VPol Indoor 3300–3800 90° 7dBi

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.

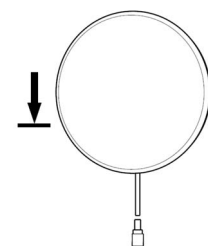
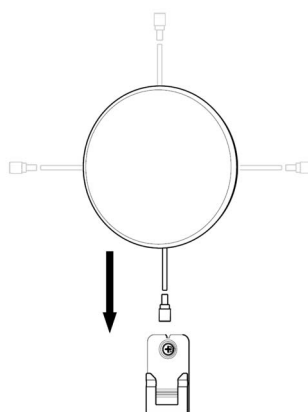
Mounting: One hole of 6 mm diameter in the mounting plate. Screws are not supplied. Avoid stressing the cable.

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 Omni Antenna Vertical Polarization

876–960 1710–2500

KATHREIN
Antennen · Electronic

V

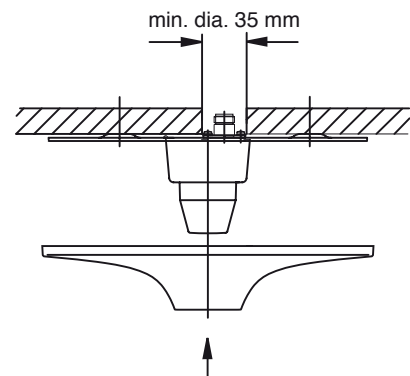
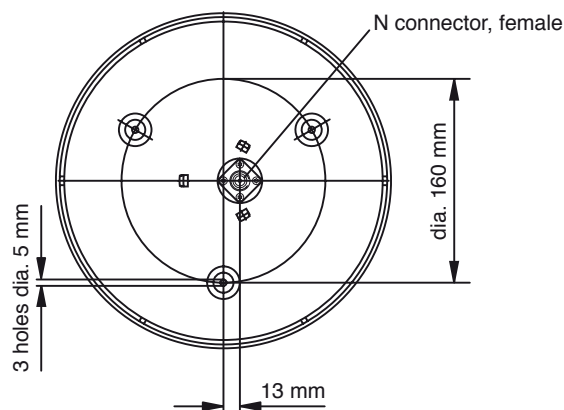
- The antenna can be operated in all frequency ranges simultaneously.
- The antennas need no additional groundplane.

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

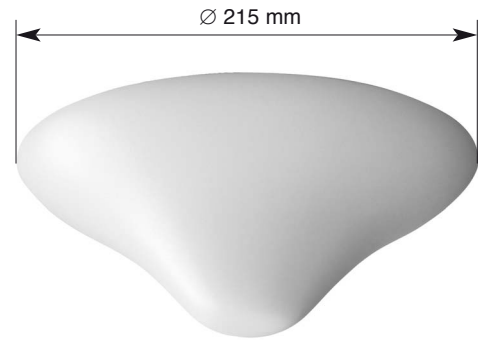
KATHREIN
Antennen · Electronic

V

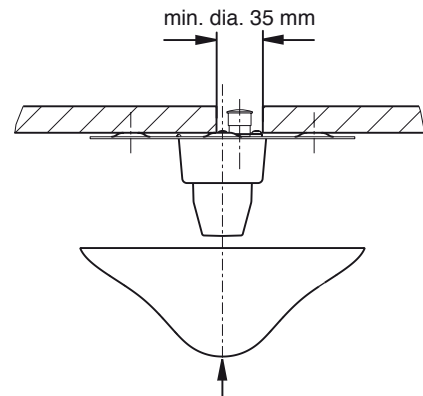
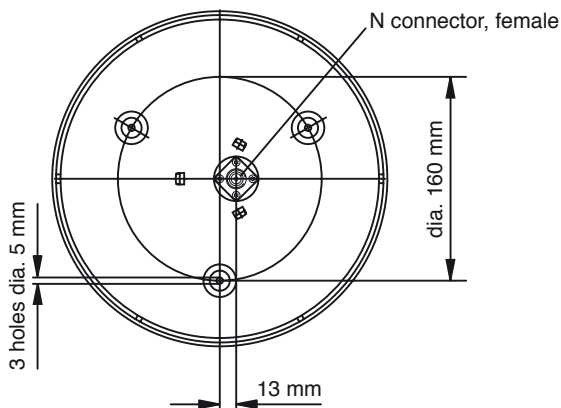
- The antenna needs no additional groundplane.

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

806–960

1425–3800

5150–6000

KATHREIN

Antennen · Electronic

V

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

VPol Indoor 806–960/1425–3800/5150–6000 360° 2dBi

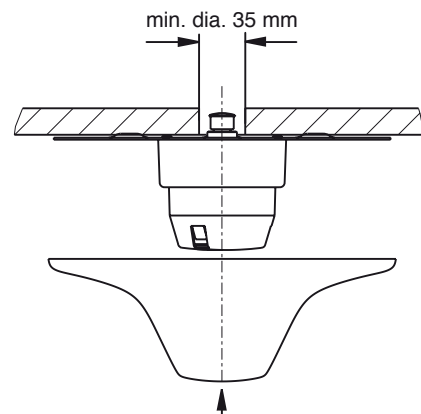
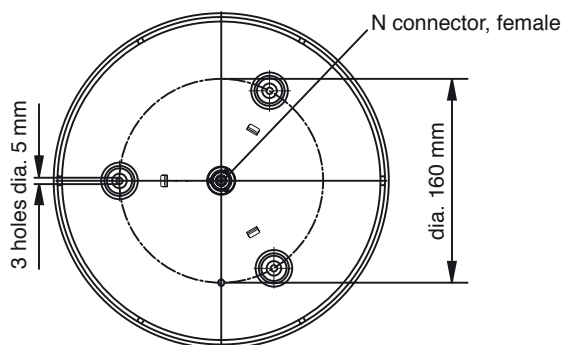
Type No.	800 10249
Frequency range	806 – 960 MHz 1425 – 3800 MHz 5150 – 6000 MHz
Polarization	Vertical
Gain	≈ 2 dBi
Impedance	50 Ω
VSWR	806 – 960 MHz: < 1.5 1425 – 1710 MHz: < 2.0 1710 – 2200 MHz: < 1.4 2200 – 3800 MHz: < 1.6 5150 – 6000 MHz: < 2.0
Max. power	50 W (at 50 °C ambient temperature)
Input	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 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 Omnidirectional Antenna Vertical Polarization Multi-band

1710–2500

V

KATHREIN

Antennen · Electronic

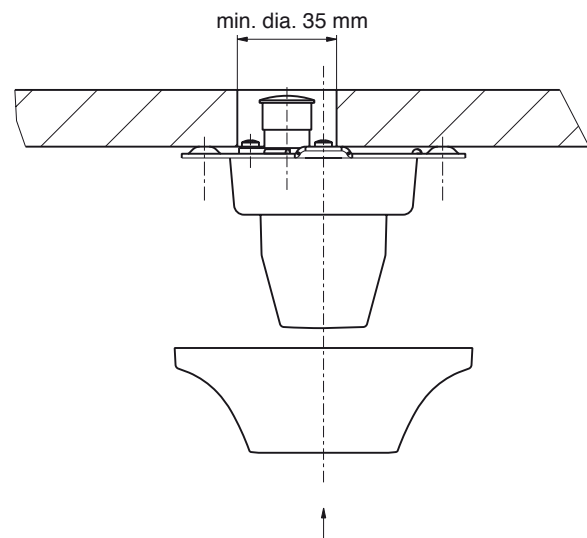
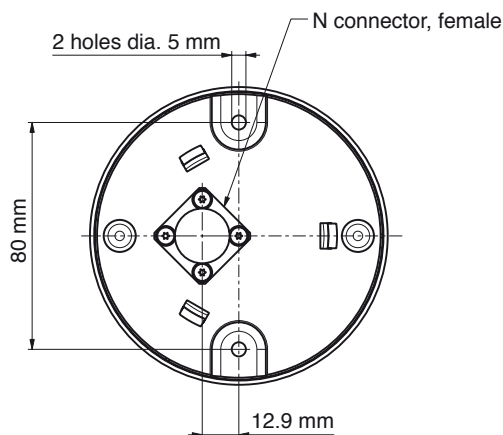
- The antenna can be operated in the total frequency range simultaneously.
- The antenna needs no additional groundplane.

VPol Indoor 1710–2500 360° 2dBi

Type No.	741 573
Frequency range	1710 – 2500 MHz
VSWR	1710 – 1880 MHz: < 1.6 1850 – 1990 MHz: < 1.6 1920 – 2170 MHz: < 1.6 2170 – 2500 MHz: < 2.0
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 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 Omnidirectional Antenna Vertical Polarization Multi-band

1710–6000

V

KATHREIN

Antennen · Electronic

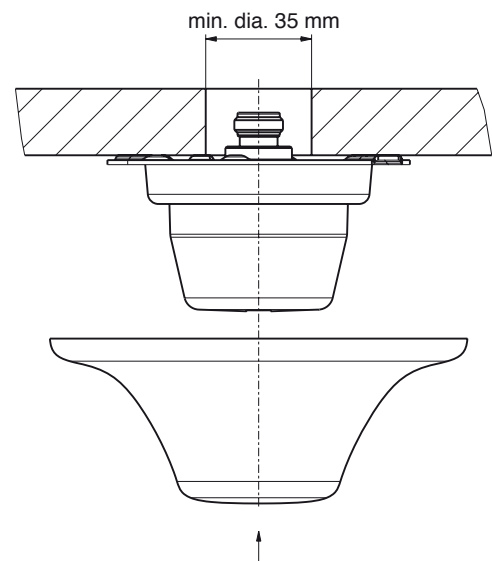
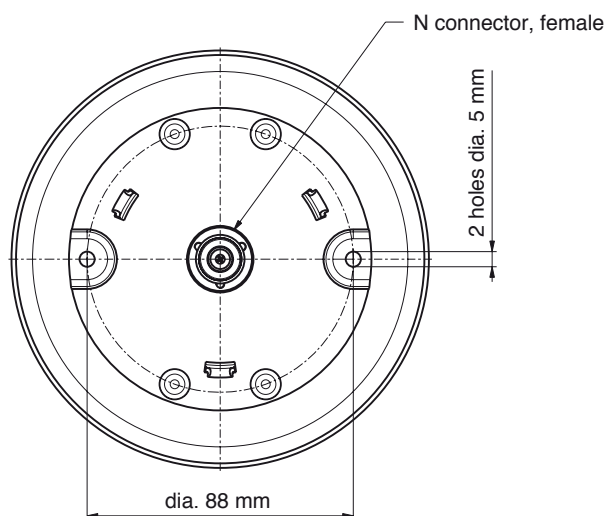
- The antenna can be operated in all frequency ranges simultaneously.
- The antenna needs no additional groundplane.

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.

Omnidirectional Antenna Vertical Polarization Indoor and outdoor use

870–960

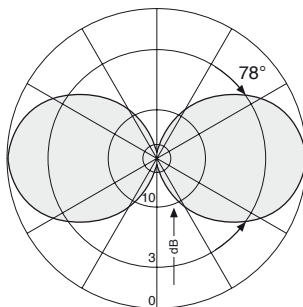
V

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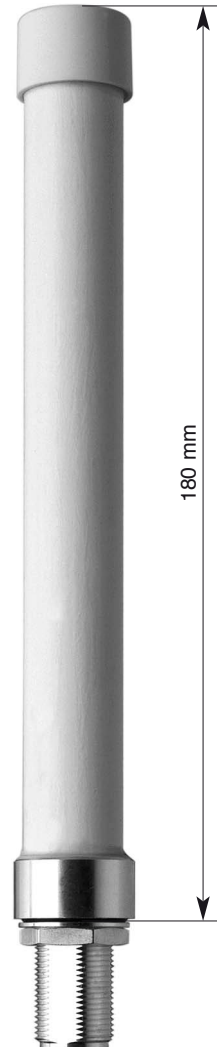
VPol Omni 870–960 360° 2dBi

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 (2 x 43 dBm carrier)	< -150 dBc
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

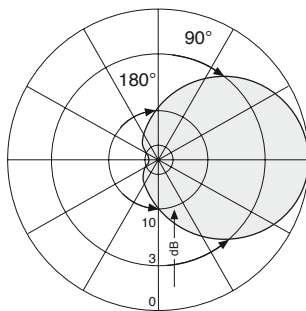
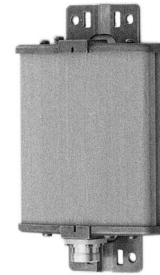


Panel
Vertical Polarization
Half-power Beam Width

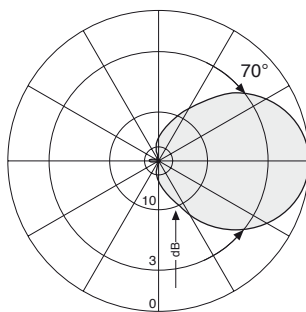
872–960
V
90°

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
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3	< -140 dBc (2 x 43 dBm carrier)
Max. power	350 W (at 50 °C ambient temperature)



Horizontal Pattern



Vertical Pattern

Mechanical specifications	
Input	N female
Connector position*	Bottom or top
Weight	1.5 kg
Wind load	Frontal: 45 N (at 150 km/h) Lateral: 20 N (at 150 km/h) Rearside: 60 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	369 x 172 x 72 mm
Height/width/depth	262 / 155 / 49 mm

* Inverted mounting:
 Connector position top: Change drain hole screw.

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

Vertical Polarization

Indoor and outdoor use

870–960/1710–1880

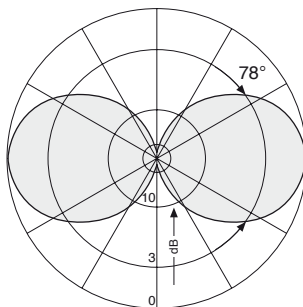
V

VPol Omni 870–960/1710–1880 360° 2dBi

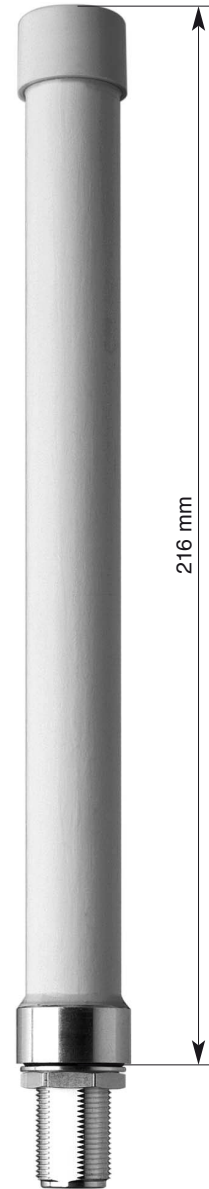
Type No.	738 449
Input	1 x N female
Connector position	Bottom or top
Frequency range	870 – 960 MHz / 1710 – 1880 MHz
VSWR	< 1.7
Gain	2 dBi
Impedance	50 Ω
Intermodulation IM3 (2 x 43 dBm carrier)	< -150 dBc
Polarization	Vertical
Max. power	50 W: 870 – 960 MHz 50 W: 1710 – 1880 MHz (at 50 °C ambient temperature)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

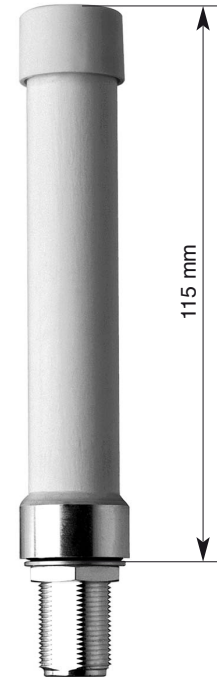
1710–2700

V

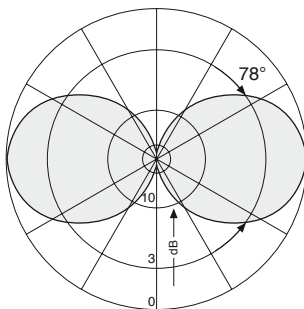
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VPol Omni 1710–2700 360° 2dBi

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.



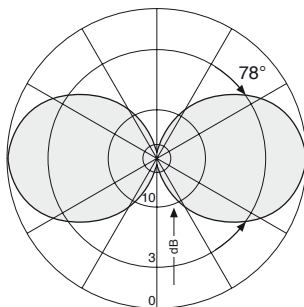
Vertical Pattern

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

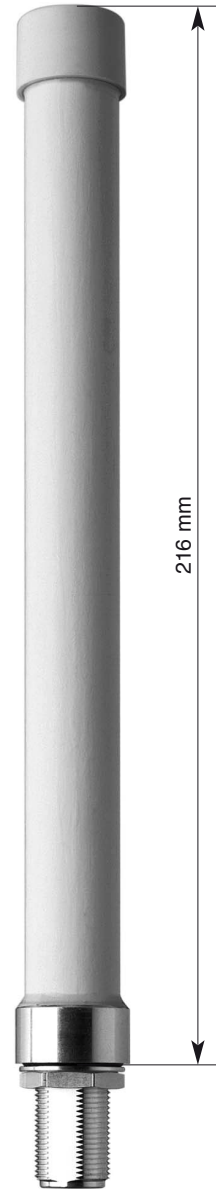
VPol Omni 824–960/1805–2170 360° 2dBi

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		156
Data sheets of RET components		
Slimline Remote Control Unit (RCU)	860 10025 / 860 10118	158
Central Control Unit (CCU) for indoor use	860 10006 / 860 10026	159
Central Control Unit with Layer-one Converter (CCU-LOC)	860 10068	160
Central Control Unit (CCU) for outdoor use	860 10113	162
Portable Control Adapter (PCA)	860 10046	163
Power Supply and Signal Cable	860 10007, ...	164
SMB Control Cable	860 10078 / ..79 / ..84 / ..90	165
DC Power and Signal Splitter	860 10002	166
Lightning Protection Device	860 10030	167
Earthing Clamp	860 10031	168
Smart Bias Tee	782 10253 / ..54 / ..55 / ..56	274
	782 10453 / ..54 / ..55 / ..56	
Bias Tee	782 10429	272

The answer to all current and future network demands

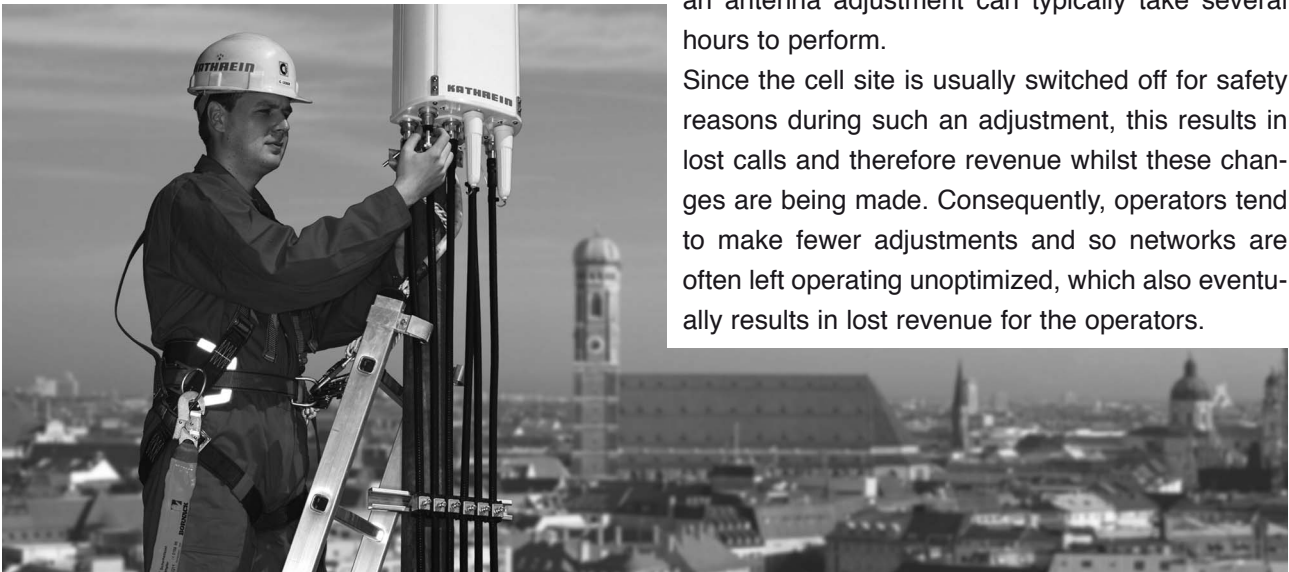
Network planning is becoming ever more complicated, especially with the advent of 3G.

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.

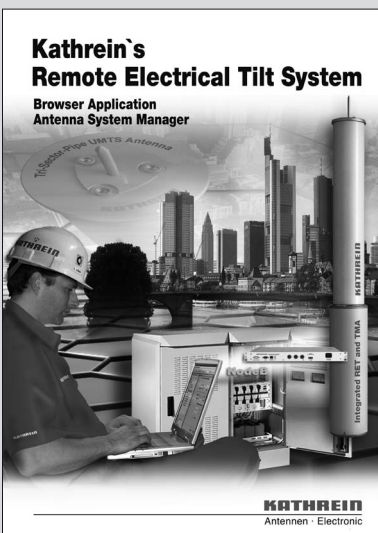


RET components



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



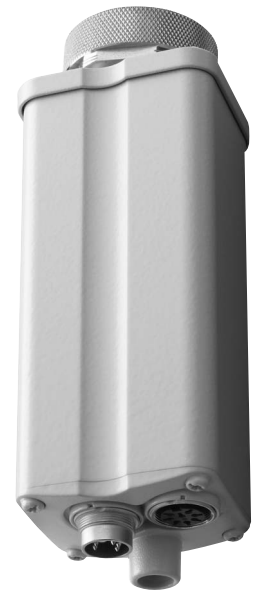
RET

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

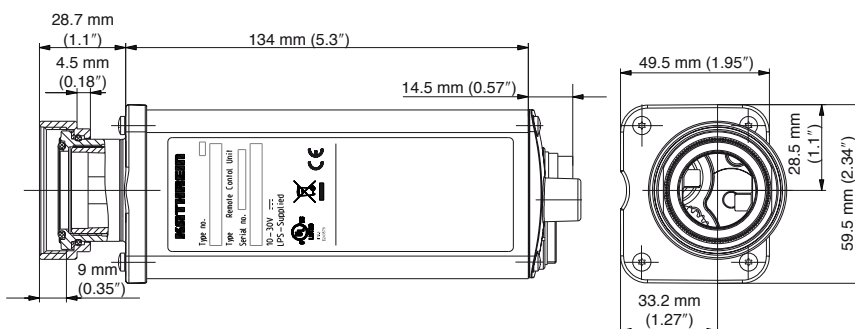
Certification: CE, UL, FCC15.107 class B

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.

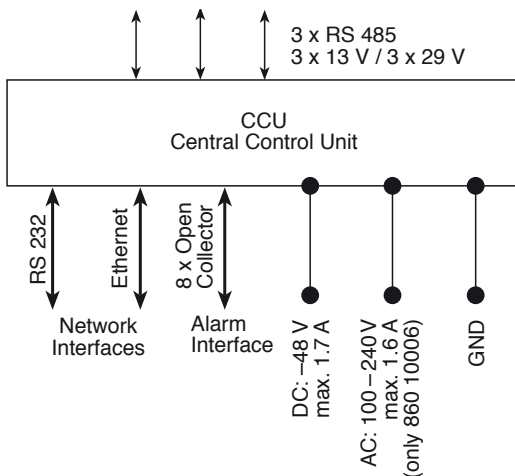
Standards: EN 60950-1
EN 55022
EN 55024
UL 60950-1, 1st edition

Certifications: CE, FCC part 15 class B; UL

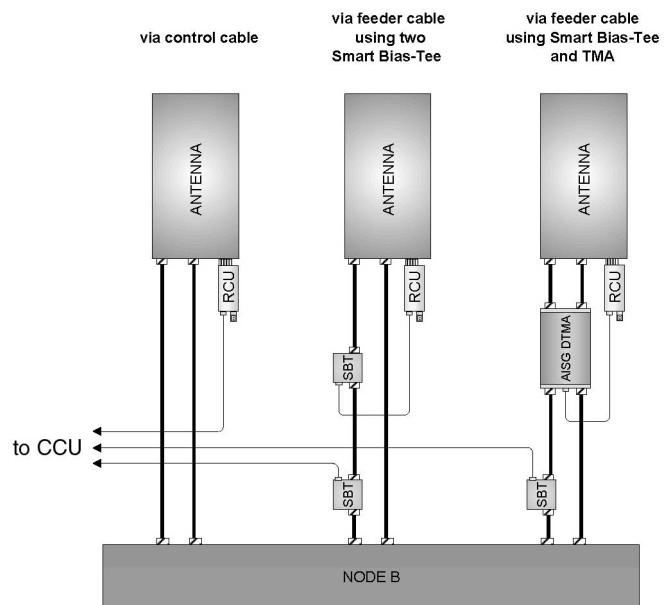
Scope of supply: CCU
RET Manual
DC Cable
AC Power Cords for USA, UK and Germany
Ethernet cable, crossed



CCU Interfaces



Examples of CCU – RCU connections



RET

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

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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.



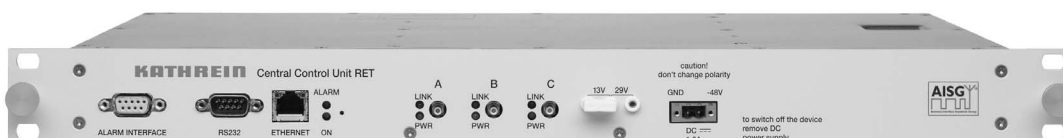
- AISG 1.1 compliant
- 13 VDC or 29 VDC output voltage - switchable with external jumper
- LED signalling for output power and alarming

CCU with Layer-one Converter

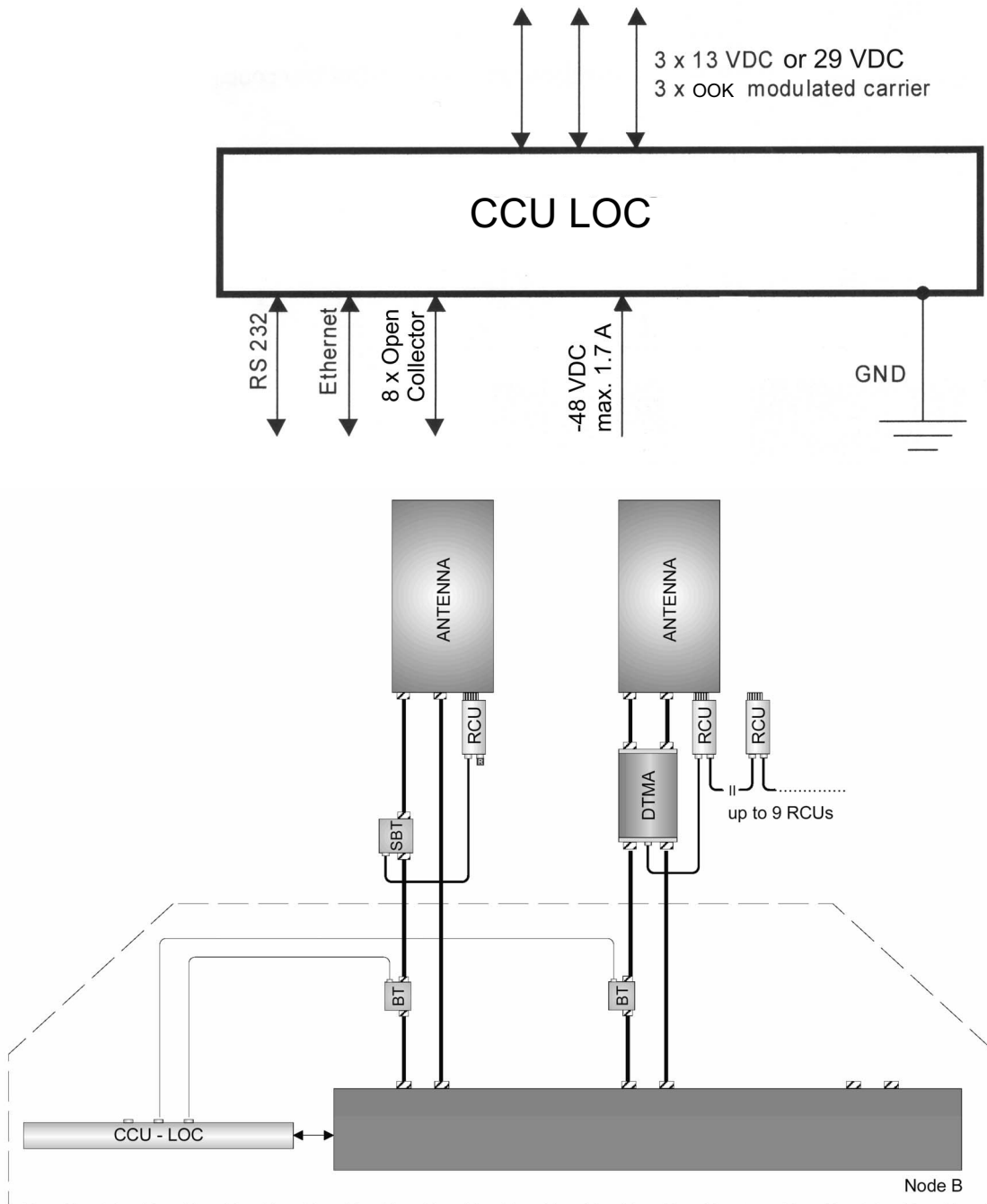
Type No.	86010068
RET-Interface	3 x Coaxial Interface 13 VDC or 29 VDC; OOK modulated carrier at 2.176 MHz
Connector of RET-Interface	3 x SMB; female acc. IEC 169-10
Power supply from BTS	DC: -48V / max. 1.7A
Power supply to RET	3 x +13 VDC (3.8 A in total) or 3 x +29 VDC (1.7 A in total) switchable 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



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

KATHREIN
Antennen · Electronic

for outdoor use

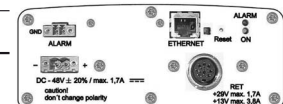


Central Control Unit, outdoor

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.

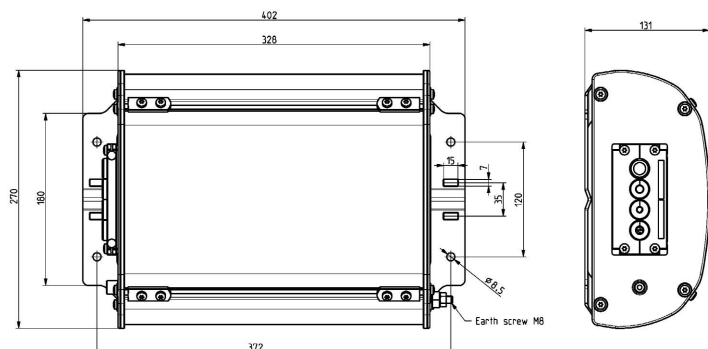
³⁾ **Please note:** The CCU 860 10113 is suitable for operation under outdoor conditions.
Cable feedthrough must point downward!
The cable installation must provide adequate strain relief!
The CCU should not be installed at locations with hazardous risks for the installation team!
Please follow the instructions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

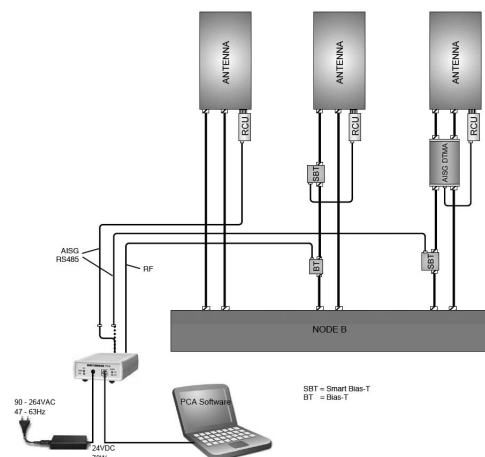
** If powered via AISG-interface, no external power supply is required.

*** 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

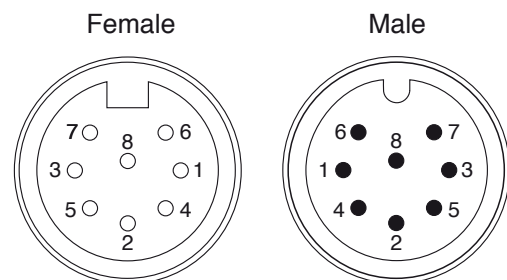


Minimum bending radius: One time 60 mm, several times 120 mm.

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!

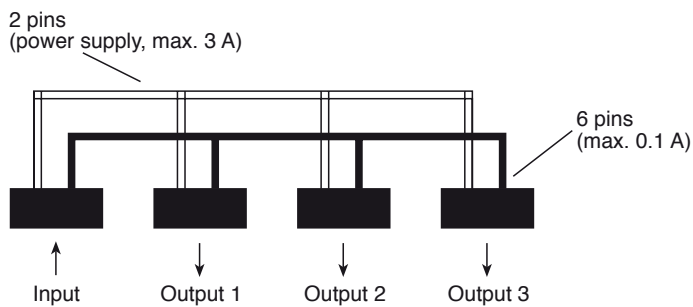


Material: Connector plate: Aluminum.
Cap: Plastic.

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).

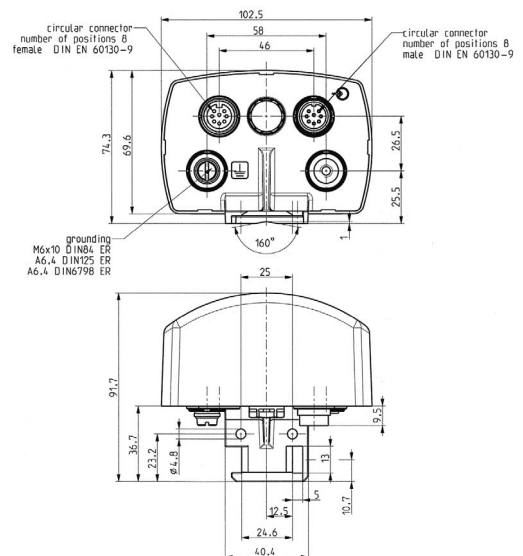
Note: **No decoupling elements are integrated. The coordination with additional LPD's (device input) should be checked according to IEC 61312.**

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

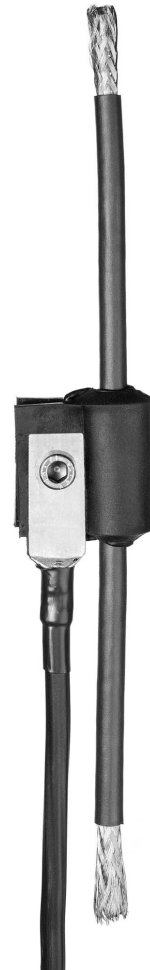
Earthing clamp for RCU power supply and signal cable

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

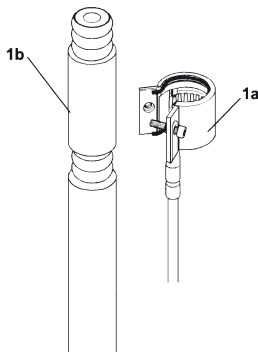
Please note:
 The earthing clamp is suitable only for the Kathrein Power Supply and Signal Cables, Type No. 860 10007 to 860 10015, 860 10029, 860 10032, 860 10033, 860 10054 to 860 10060 or shielded cables with
 – shield diameter 6.1 mm
 – jacket diameter 7.8 mm \pm 0.3 mm

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:

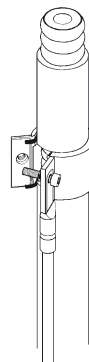
This instruction is written for qualified and experienced personnel. Please read it carefully before starting work. Any liability or responsibility for the result of improper or unsafe installation is disclaimed!



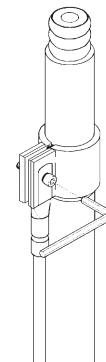
Attention!
 Install grounding kit only where the cable runs straight.

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	800 – 2500 MHz	Indoor	100 W	N	170
3-way-Splitter 800–2500	860 10018	800 – 2500 MHz	Indoor	100 W	N	170
4-way-Splitter 800–2500	860 10019	800 – 2500 MHz	Indoor	100 W	N	170
2-way-Splitter 800–3800	860 10100	800 – 3800 MHz	Indoor/Outdoor	200 W	N	171
2-way-Splitter 800–3800	860 10101	800 – 3800 MHz	Indoor/Outdoor	700 W	7-16	171
3-way-Splitter 800–3800	860 10102	800 – 3800 MHz	Indoor/Outdoor	200 W	N	171
3-way-Splitter 800–3800	860 10103	800 – 3800 MHz	Indoor/Outdoor	700 W	7-16	171
4-way-Splitter 800–3800	860 10104	800 – 3800 MHz	Indoor/Outdoor	200 W	N	171
4-way-Splitter 800–3800	860 10105	800 – 3800 MHz	Indoor/Outdoor	700 W	7-16	171
2-way-Splitter 380–3800	860 10131	380 – 3800 MHz	Indoor/Outdoor	700 W	7-16	172

Tappers

2-way-Tapper 800–2500 7.0/1.0 dB	860 10020	800 – 2500 MHz	Indoor	100 W	N	173
2-way-Tapper 800–2500 10.4/0.4 dB	860 10021	800 – 2500 MHz	Indoor	100 W	N	173
2-way-Tapper 800–2500 15.1/0.1 dB	860 10022	800 – 2500 MHz	Indoor	100 W	N	173
2-way-Tapper 800–2200 7.0/1.0 dB	K 63 23 60 67	800 – 2200 MHz	Indoor/Outdoor	500 W	7-16	174
2-way-Tapper 800–2200 10.4/0.4 dB	K 63 23 61 07	800 – 2200 MHz	Indoor/Outdoor	500 W	7-16	174
2-way-Tapper 800–2200 15.1/0.1 dB	K 63 23 61 57	800 – 2200 MHz	Indoor/Outdoor	500 W	7-16	174

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	175
2-way-Tapper 870–960/1710–2500 5.0–15.0dB	860 10023	870 – 960 MHz 1710 – 2500 MHz	Indoor	100 W	N	175

New Product

Antenna Measurement Tools (from Schomandl)

SWR Instrument FAT 2710	176
WLAN Power Meter (VSWR)	177

Power Meter

WLAN Power Meter (Power)	177
Broadcast RF Power Monitor	178
Safe One Resonal RF Safety Monitor	179

For indoor use.

2-way Splitter 800–2500

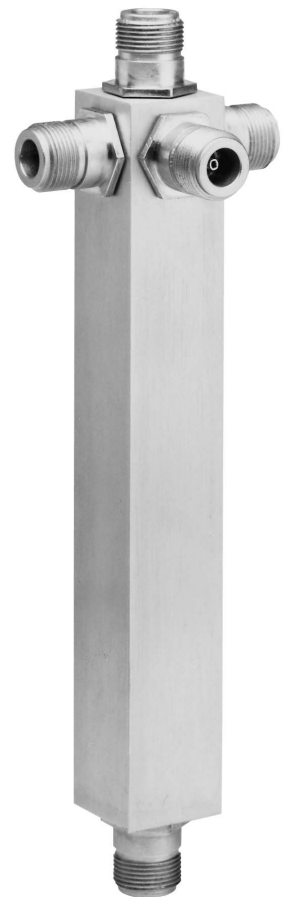
3-way Splitter 800–2500


4-way Splitter 800–2500

Type No.	860 10017	860 10018	860 10019
Frequency range	800 – 2500 MHz		
For connecting ... antennas	2	3	4
Insertion loss	< 0.05 dB		
Impedance	50 Ω		
VSWR	< 1.25	< 1.25	< 1.3
Intermodulation IM3 (2 x 43 dBm carrier)	< -150 dBc		
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).



Input 
860 10019

For indoor and outdoor use.

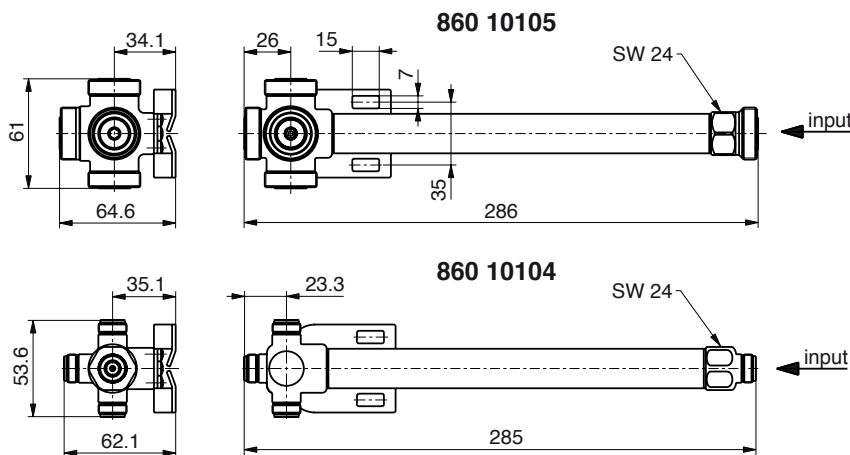
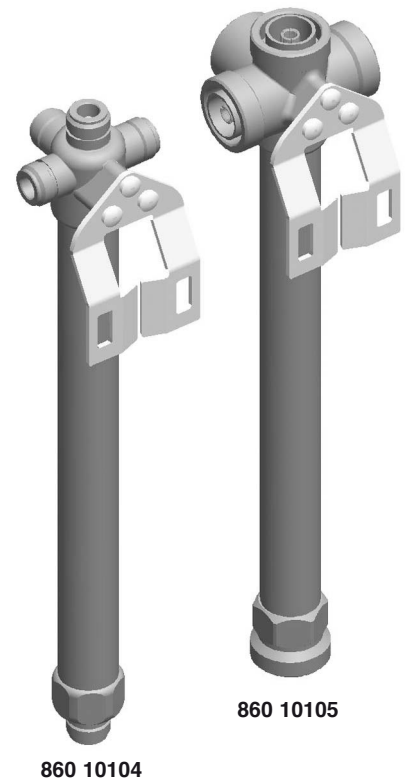
2-way-Splitter 800–3800

3-way-Splitter 800–3800

4-way-Splitter 800–3800

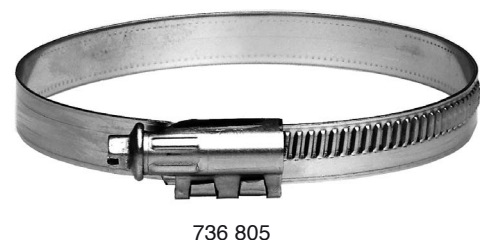
Type No.	860 10100	860 10101	860 10102	860 10103	860 10104	860 10105
Connector (female)	N	7-16	N	7-16	N	7-16
Max. power (at 50 °C ambient temperature)	200 W	700 W	200 W	700 W	200 W	700 W
For connecting ... antennas	2		3		4	
Frequency range	800 – 3800 MHz					
VSWR	< 1.15					
Intermodulation IM3	< -150 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



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



Low-loss Power Splitters Multi-band

380–3800

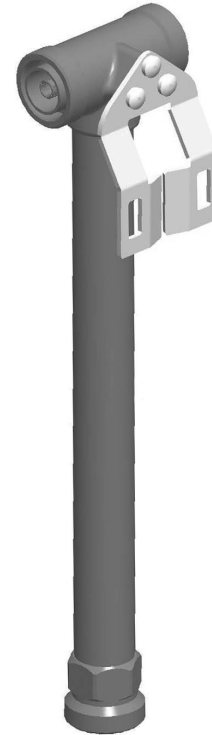
KATHREIN
Antennen · Electronic

For indoor and outdoor use.

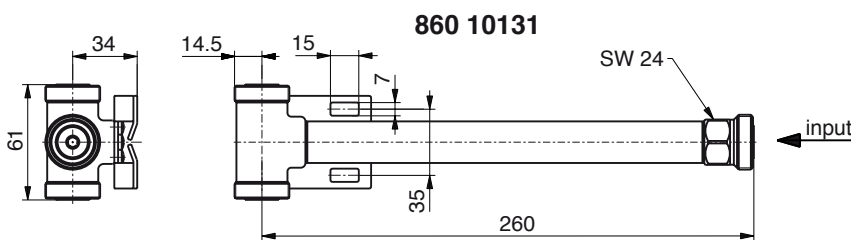
2-way-Splitter 380–3800

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



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

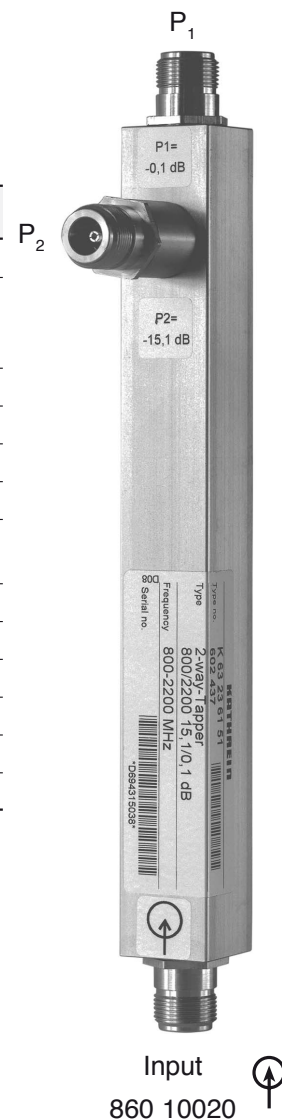
For indoor use.


2-way-Tapper 800–2500 7.0 /1.0dB
2-way-Tapper 800–2500 10.4/0.4dB
2-way-Tapper 800–2500 15.1/0.1dB

Type No.	860 10020	860 10021	860 10022
Frequency range	800 – 2500 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	100 W (at 50 °C ambient temperature)		
Connector	N female		
Weight	approx. 0.5 kg		
Profile cross-section	25 x 25 mm		
Packing size	267 x 95 x 111 mm		
Max. size	244 / 64 / 25 mm		

Material: Housing: Aluminum.
Inner conductor: Brass.

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

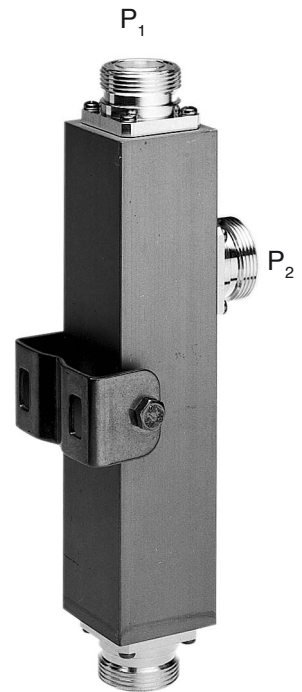


Input 
860 10020

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).

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

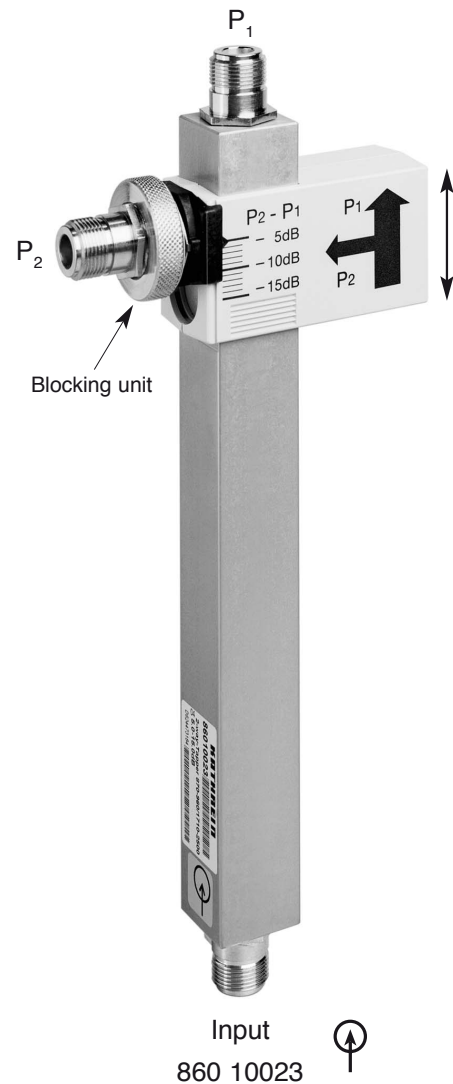
For indoor use.

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.



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

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>

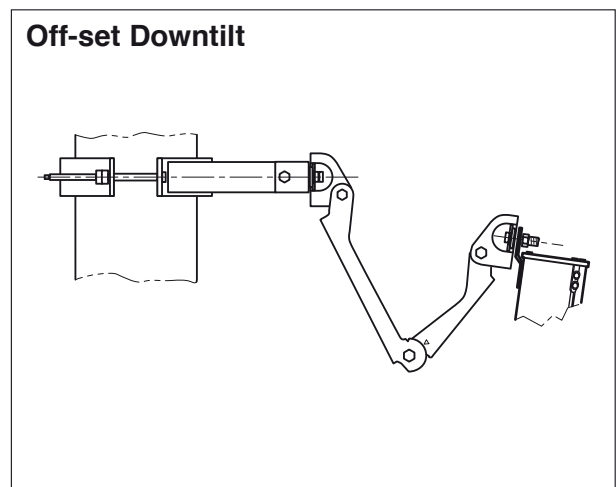
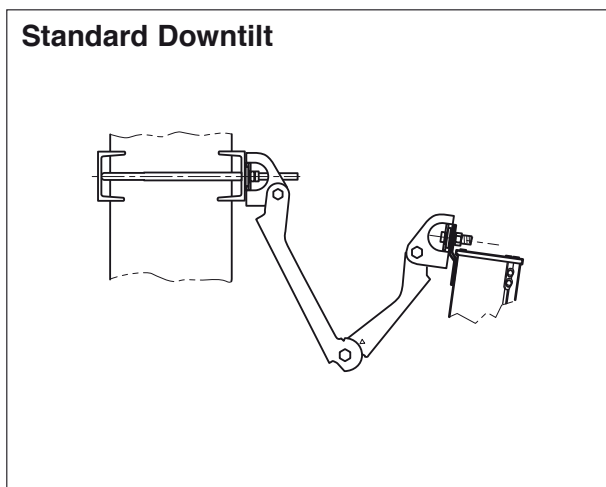
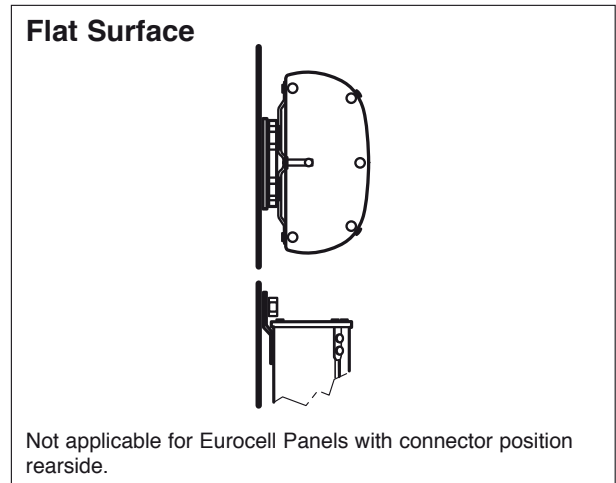
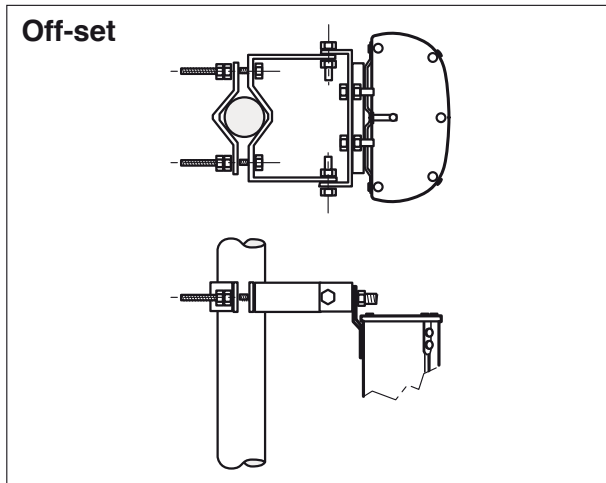
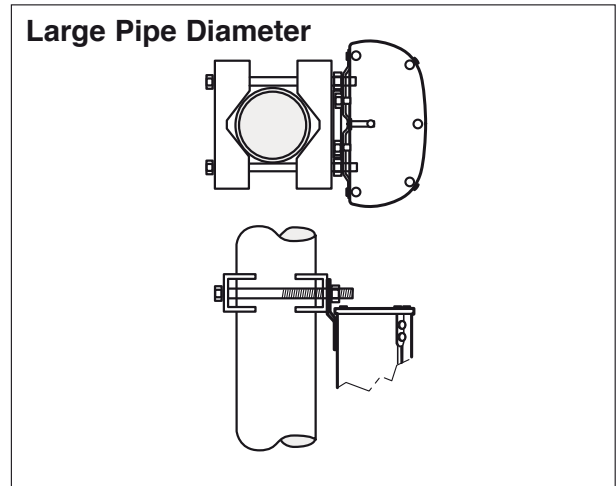
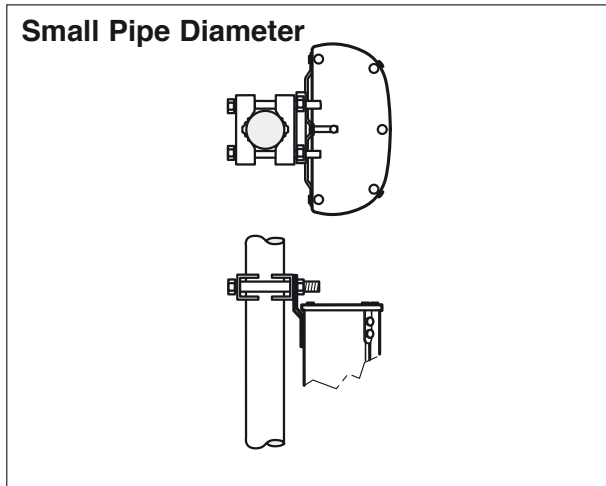
- Monitors RF fields
- Indicates RF pollution
- Alarm and Silent modes
- Broadband coverage
- General Safety According to WHO ICNIRP
- Alarm $2\text{W}/\text{m}^2$ or $10\text{W}/\text{m}^2$



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:	>30dB
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

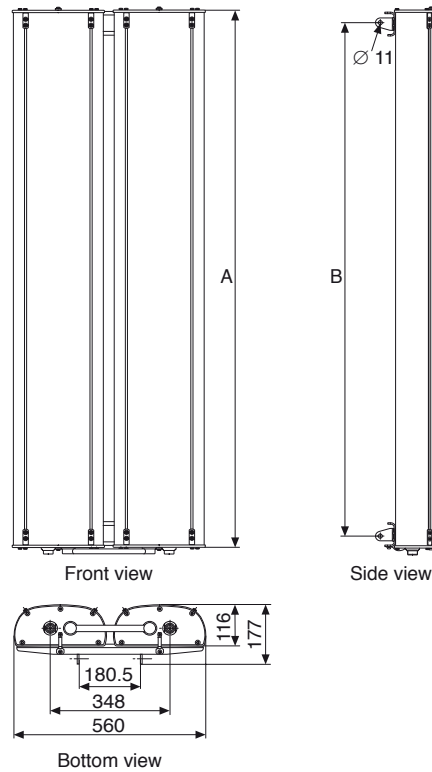
Antenna Dimensions

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

width 560 mm

A	656 mm	1296 mm	2580 mm
B	584 mm	1224 mm	2504 mm

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

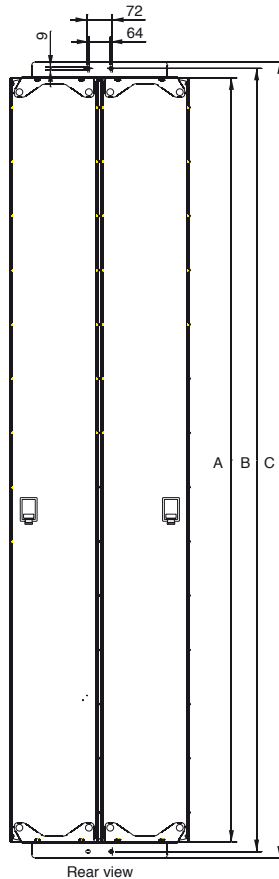
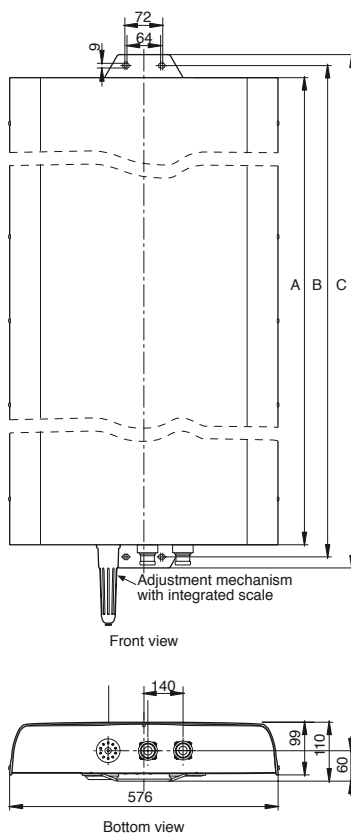


XPol Panels 800/900 with 30° Half-power Beam Width

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 / XXPol 800/900

60°/65°/88°/90° Half-power Beam Width

Antenna Dimensions

VPol Panel 800/900

width 258 mm

A	264 mm	654 mm	974 mm	1294 mm	1934 mm	2254 mm	2574 mm
B	—	710 mm	1030 mm	1350 mm	1990 mm	2310 mm	2630 mm
C	—	750 mm	1070 mm	1390 mm	2030 mm	2350 mm	2670 mm

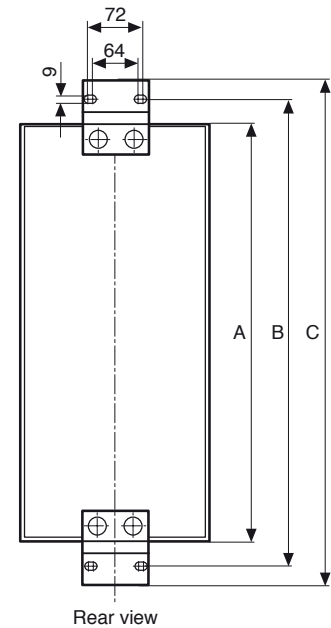
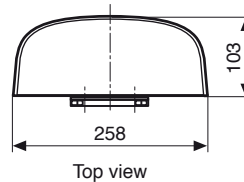
A Corresponds with the antenna height mentioned in the technical data.

XPol Panel 800/900

width 258 mm

A	1294 mm	1694 mm	1934 mm	2254 mm	2574 mm
B	1340 mm	1724 mm	1980 mm	2300 mm	2604 mm
C	1382 mm	1764 mm	2022 mm	2342 mm	2674 mm

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



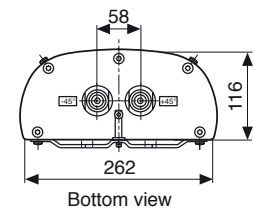
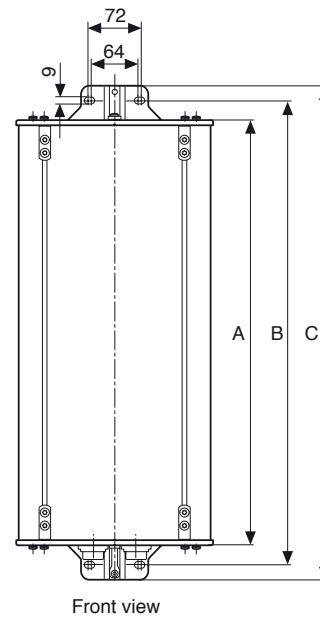
XPol Panel 800/900 XXPol Panel 900/1800

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.



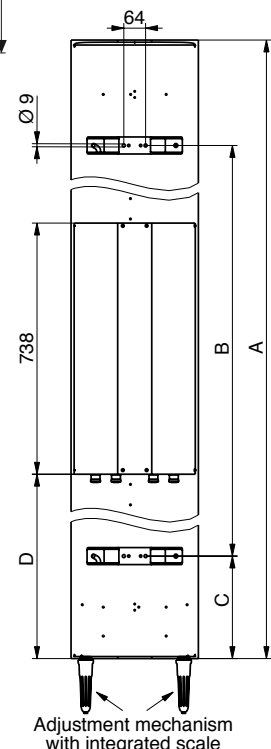
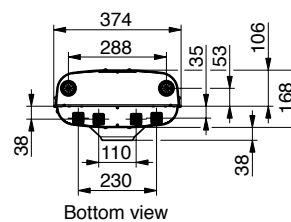
XXPol Panel 800/900

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.

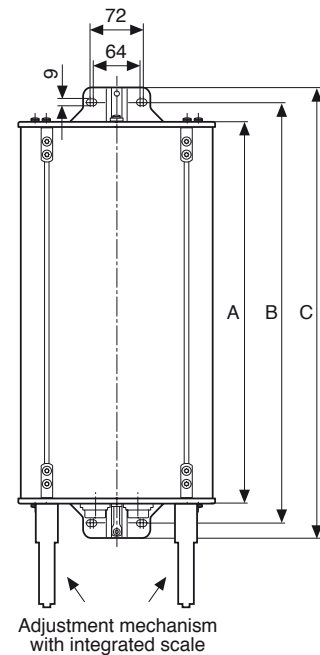
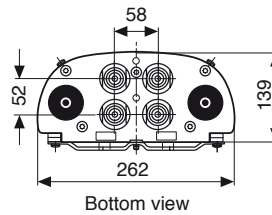


Panels Dual-band / Triple-band Antenna Dimensions

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

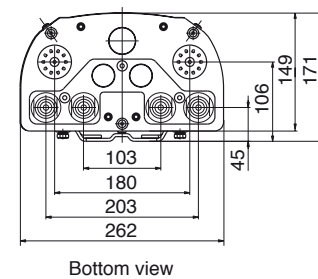
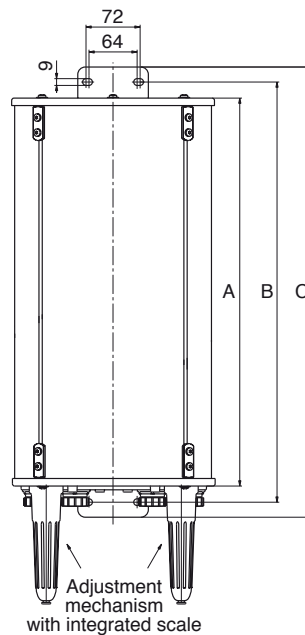
A Corresponds with the antenna height mentioned in the technical data.



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

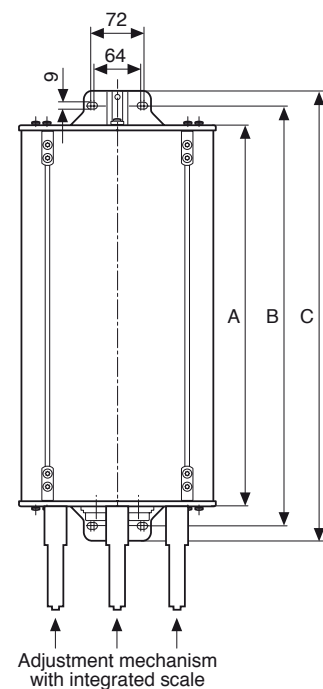
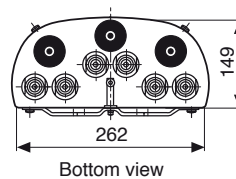
A Corresponds with the antenna height mentioned in the technical data.



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]

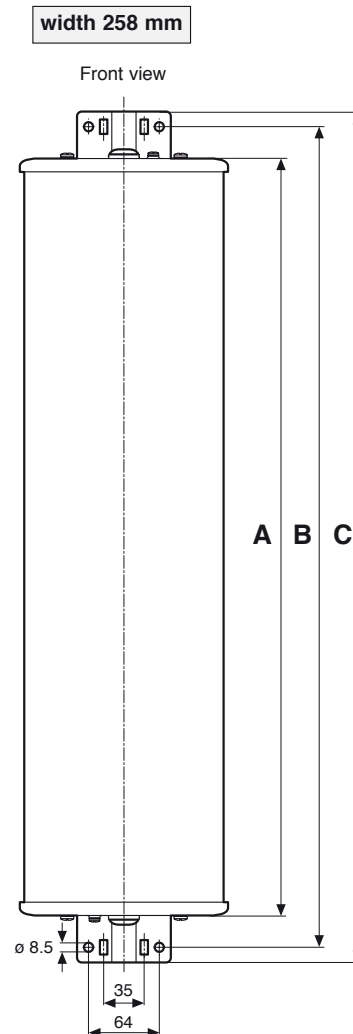
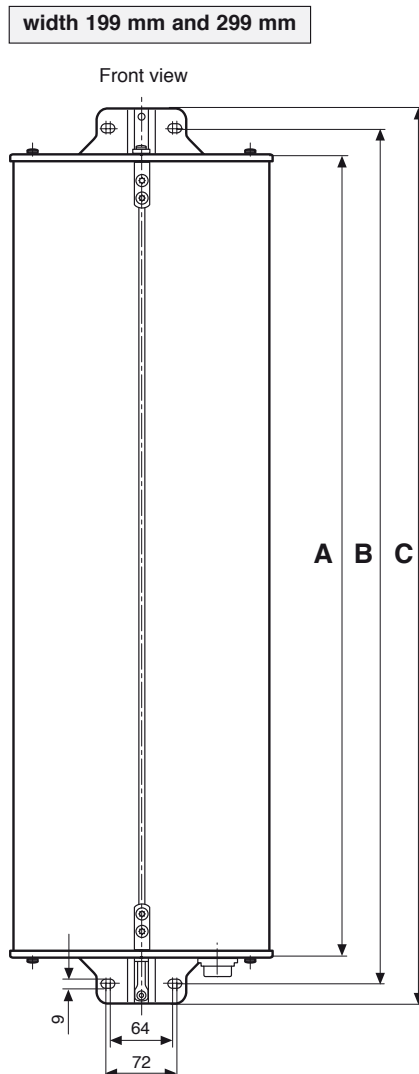
('A' corresponds to the antenna height given on the data sheet)

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

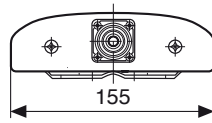


Panels 1800 – 2700 MHz

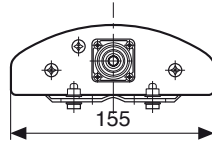
Detailed Connector Position

Antenna Dimensions

Vertical Polarization

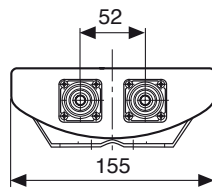


60° – 65° Half-power Beam Width

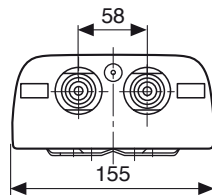


90° Half-power Beam Width

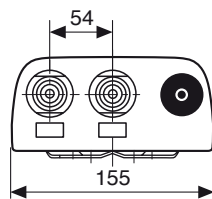
+45°/-45° Polarization



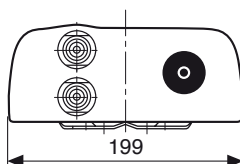
65° Half-power Beam Width



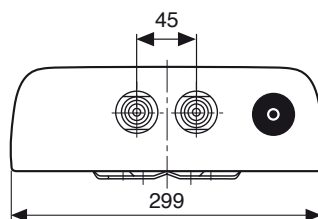
90° Half-power Beam Width



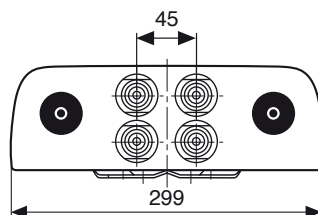
65° and 90° Half-power Beam Width
adjustable electrical downtilt



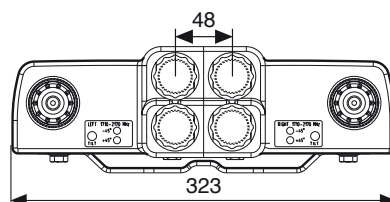
45° Half-power Beam Width
Multi-band
adjustable electrical downtilt



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



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



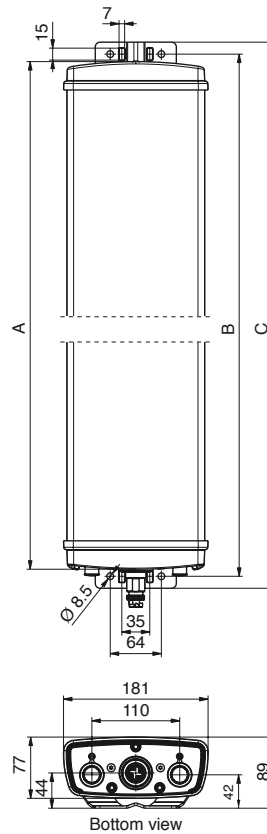
65° Half-power Beam Width
2-Multi-band
adjustable electrical downtilt

Panels XPol 3300 – 3800 MHz Antenna Dimensions

XPol 65° 3300 – 3800 MHz adjustable electrical downtilt

A	714 mm
B	733 mm
C	763 mm

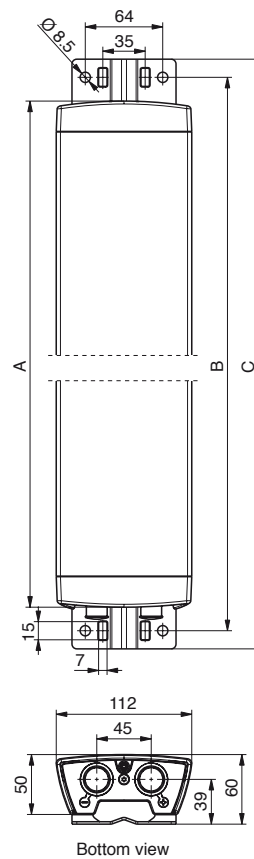
A Corresponds with the antenna height mentioned in the technical data.



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)	1 pc
738 546	50 – 115		X		X		X		(X)	1 pc
850 10002	110 – 220		X		X		X		(X)	1 pc
850 10003	210 – 380		X		X		X		(X)	1 pc
Clamp Off Set										
733 677	60 – 115			X	X		X		(X)	1 pc
733 678	115 – 210			X	X		X		(X)	1 pc
733 679	210 – 380			X	X		X		(X)	1 pc
733 680	380 – 521			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 190

Mounting Hardware

Amount of needed clamps

VPoI 800/900

Antenna height: 2574 mm

All other Panels

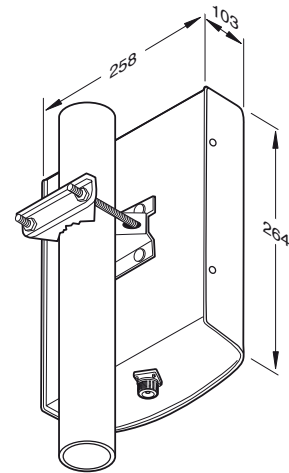
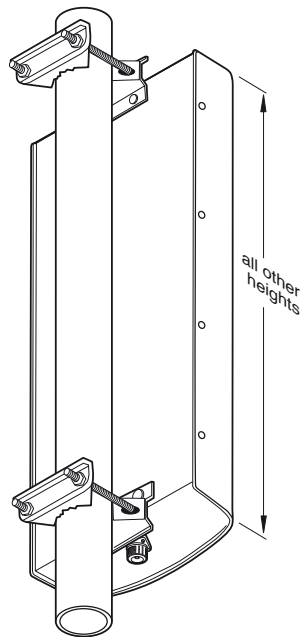
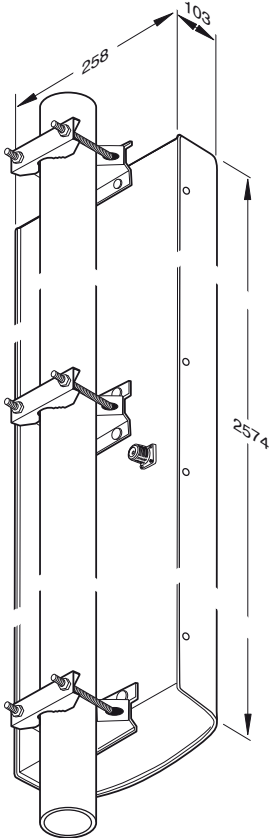
VPoI 800/900

Antenna height: 264 mm

Amount: 3 pcs

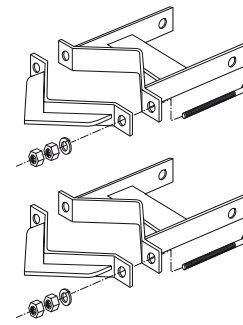
2 pcs

1 pc



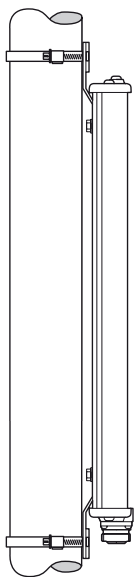
Clamp Types for XPol 800/900 with width 560 mm

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)

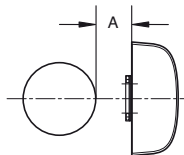
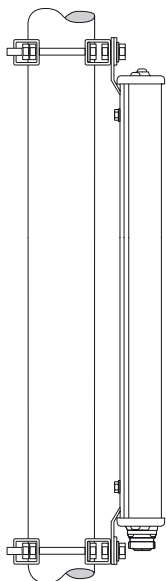


Type No.	Mast diameter	Antenna height	Weight approx.	pcs per antenna
734 360	34 – 60 mm	182 ... 1302 mm	60 g	1
734 361	60 – 80 mm	182 ... 1302 mm	70 g	1
734 362	80 – 100 mm	182 ... 1302 mm	80 g	1
734 363	100 – 120 mm	182 ... 1302 mm	90 g	1
734 364	120 – 140 mm	182 ... 1302 mm	110 g	1
734 365	45 – 125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

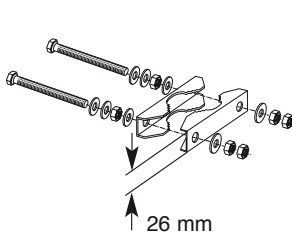
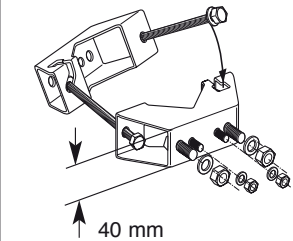
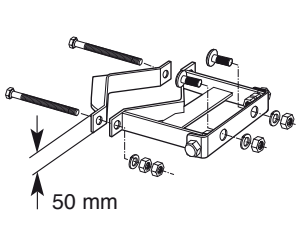
Type No. 734 362



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 190
Large Pipe	50 – 115 mm	738 546	18 – 26	1.0 kg	see page 190
	110 – 220 mm	850 10002	47 – 56	2.7 kg	see page 190
	210 – 380 mm	850 10003	48 – 69	4.8 kg	see page 190
Off-set	60 – 115 mm	733 677	117 – 124	2.0 kg	see page 190
	115 – 210 mm	733 678	146 – 160	2.6 kg	see page 190
	210 – 380 mm	733 679	148 – 168	4.0 kg	see page 190
	380 – 521 mm	733 680	150 – 175	5.3 kg	see page 190

731 651	738 546	733 678
		

3 Sector Panel Arrangement

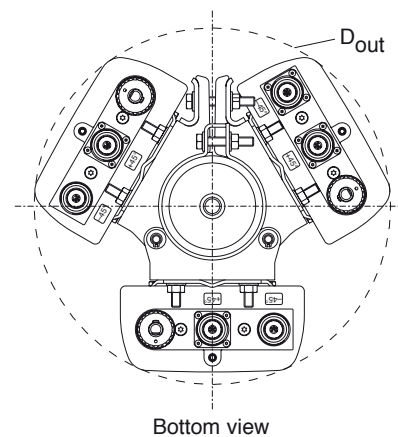
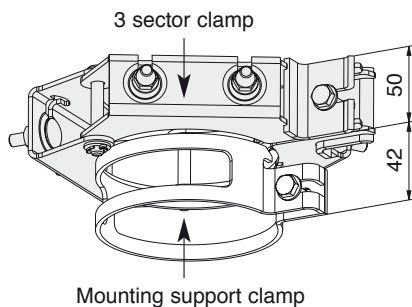
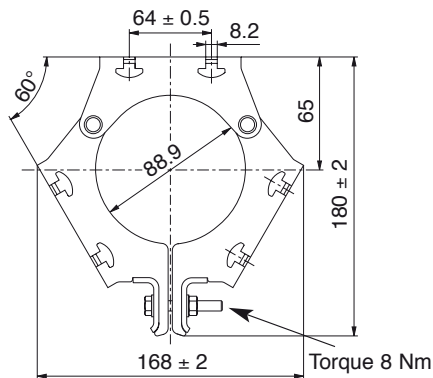
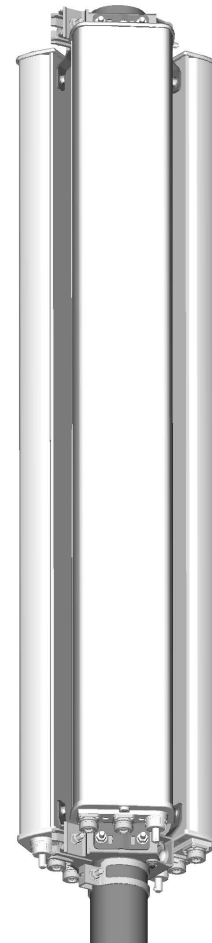
3 Sector Clamp Kit

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



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

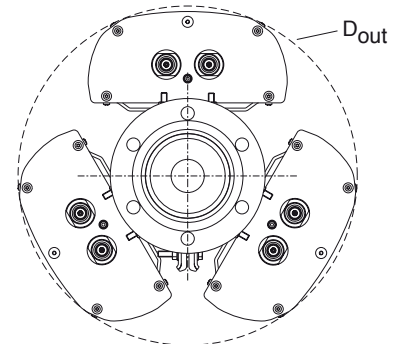
Please note:

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

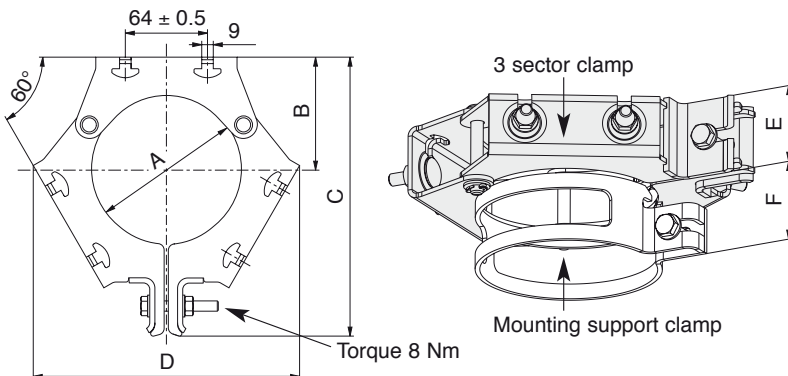
Does not fit for Panels with connector position “Rearside, pointing downwards”.

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		
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

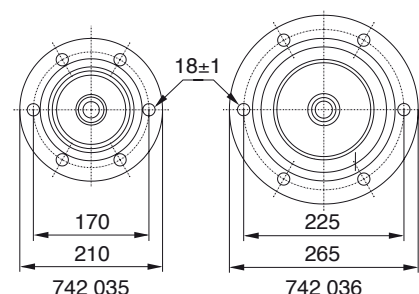
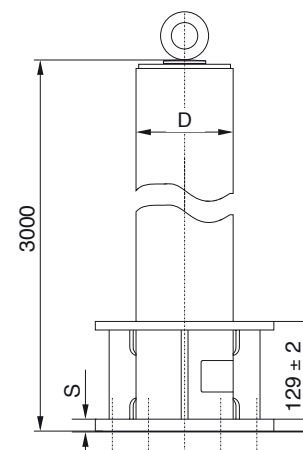


Type No.	A	B	C	D	E	F
742 033	114.3	88	217	207	49	45
742 034	139.7	100	236	228	49	45

all dimensions in mm

Pipe Mast with Flange Base

Type No.	742 035	742 036
Pipe diameter according DIN 2448	D 114.3 mm	139.7 mm
Wall thickness pipe	6.3 mm	4 mm
Pipe length	3000 mm	3000 mm
Flange diameter	210 mm	265 mm
Flange thickness	S 14 ±1 mm	19 ±1 mm
Hole circle diameter	170 mm	225 mm
Number of holes	6	6
Hole diameter	18 ±1 mm	18 ±1 mm
Enclosed bolts thread x length	M16 x 100 mm	M16 x 100 mm
Hot-dip galvanized steel	Quality min. 8.8	Quality min. 8.8
Weight	60 kg	55 kg
Material pipe mast	S355 J2H (St 52-3N) DIN EN 10210-1	
Material flange base	S235 JR G2 (RSt 37-2) DIN EN 10025	



Maximum permissible load: According DIN 4131 and DIN 4132
Fatigue class K2

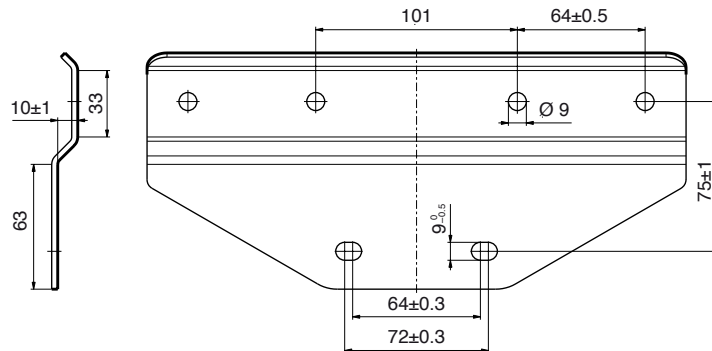
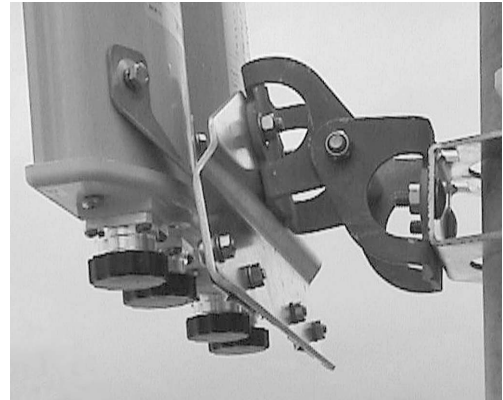
Panel Accessories

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

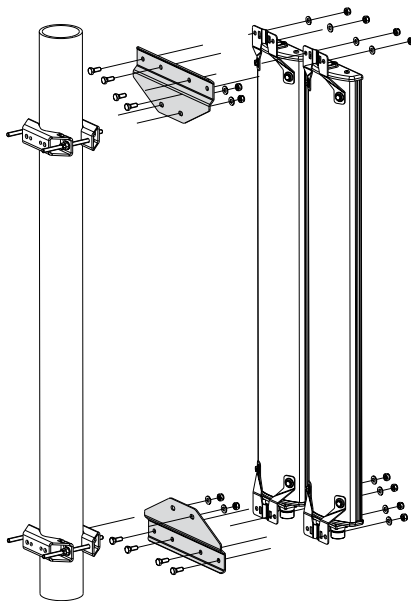
- For arranging two Panels 65°, 90° side by side.
- The mounting kit consists of two mounting plates.

2 x Panel Mounting Kit

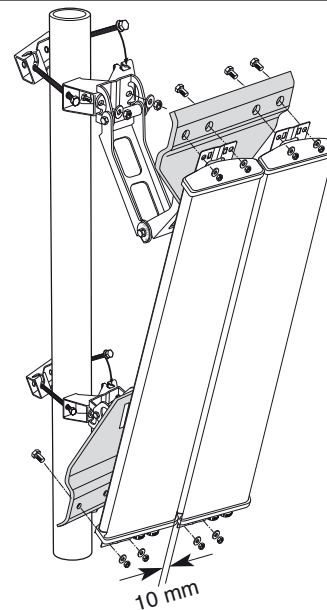
Type No.	742 113
No of units	2
Suitable for Panels 65°, 90° with max. height of	2 m
Material	Hot-dip galvanized steel
Weight	approx. 1.6 kg
Mounting	Screws are supplied



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 193). Three sector clamp 742 263 is not allowed.

Panels VPol / XPol 800/900

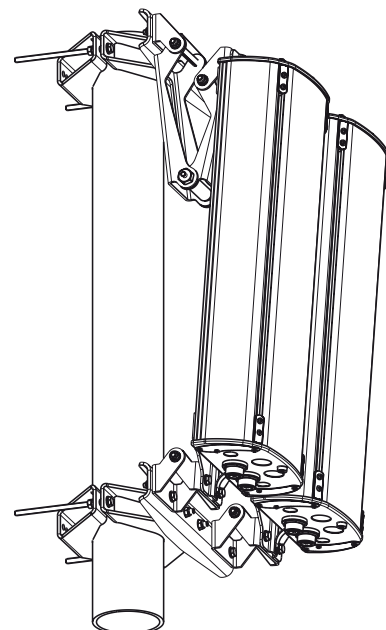
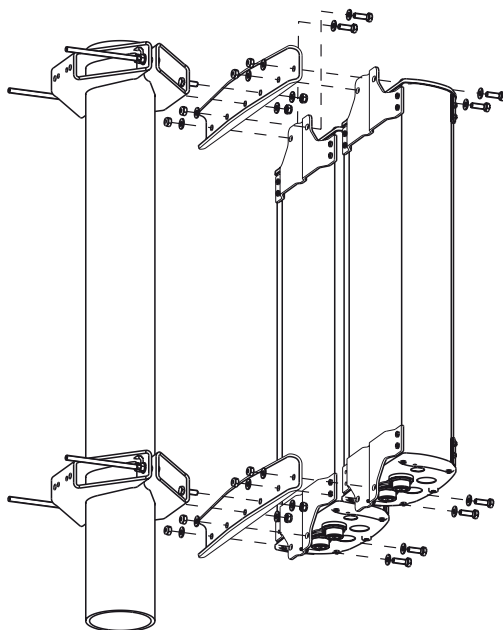
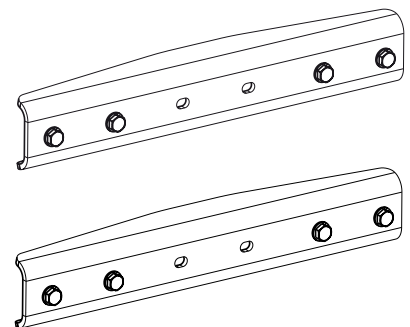
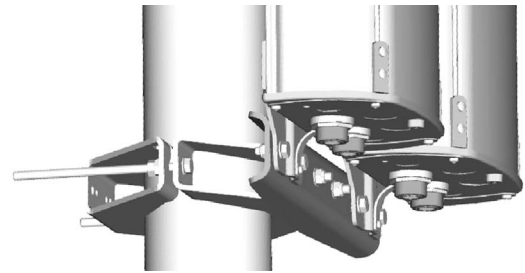
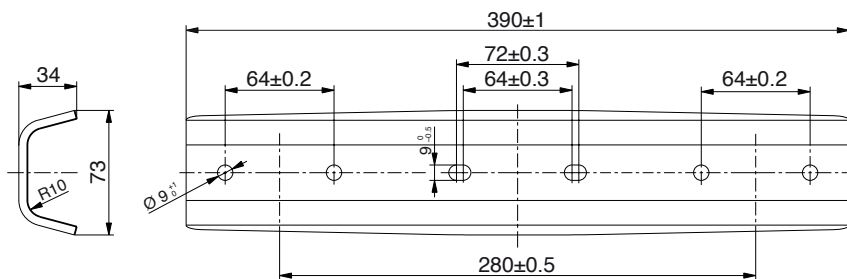
Panels XXPoI 800/900 / 1800/2000

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

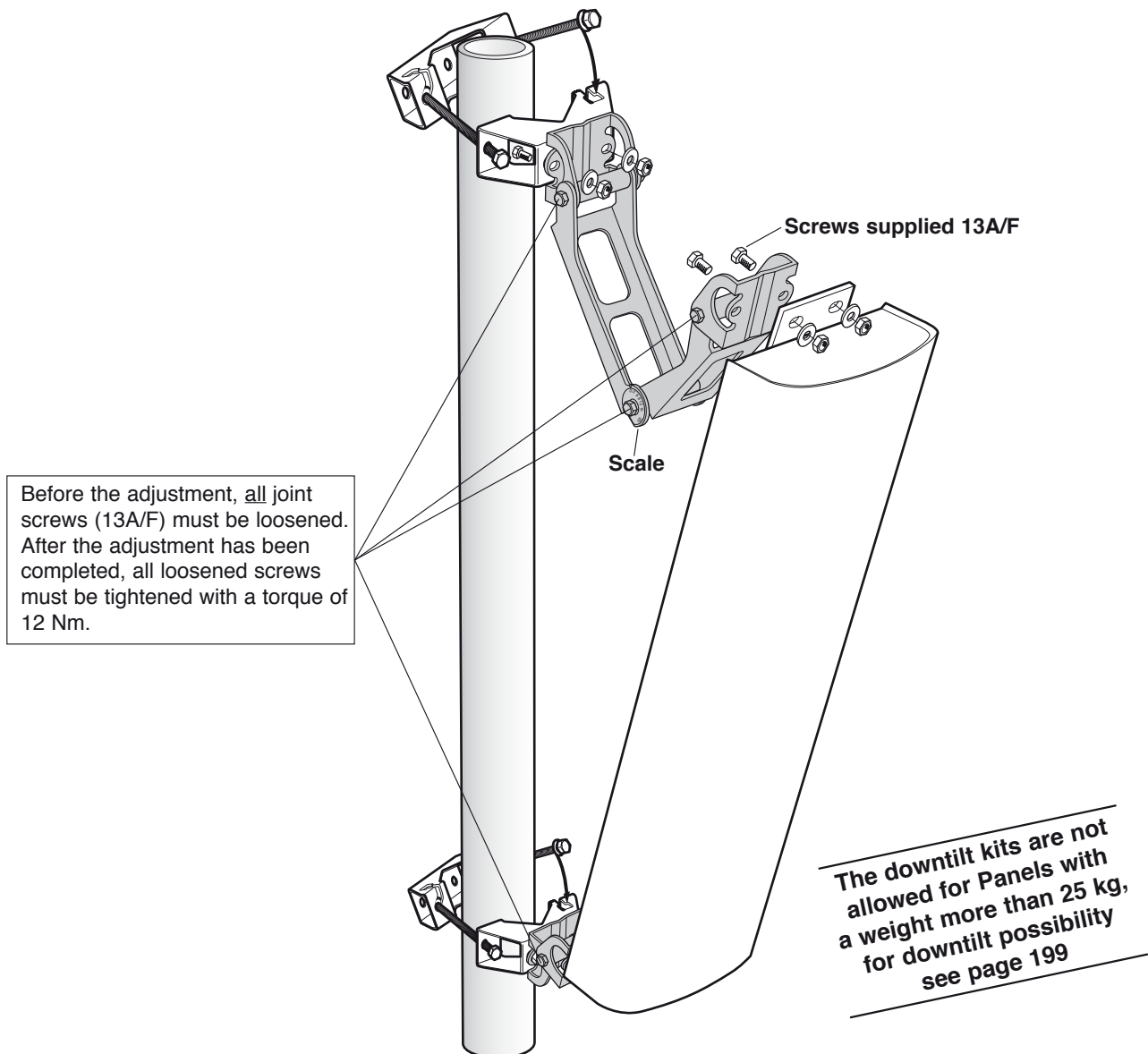
Please check usage per antenna type on the following pages!

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 196)



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 reverse side of the antenna.

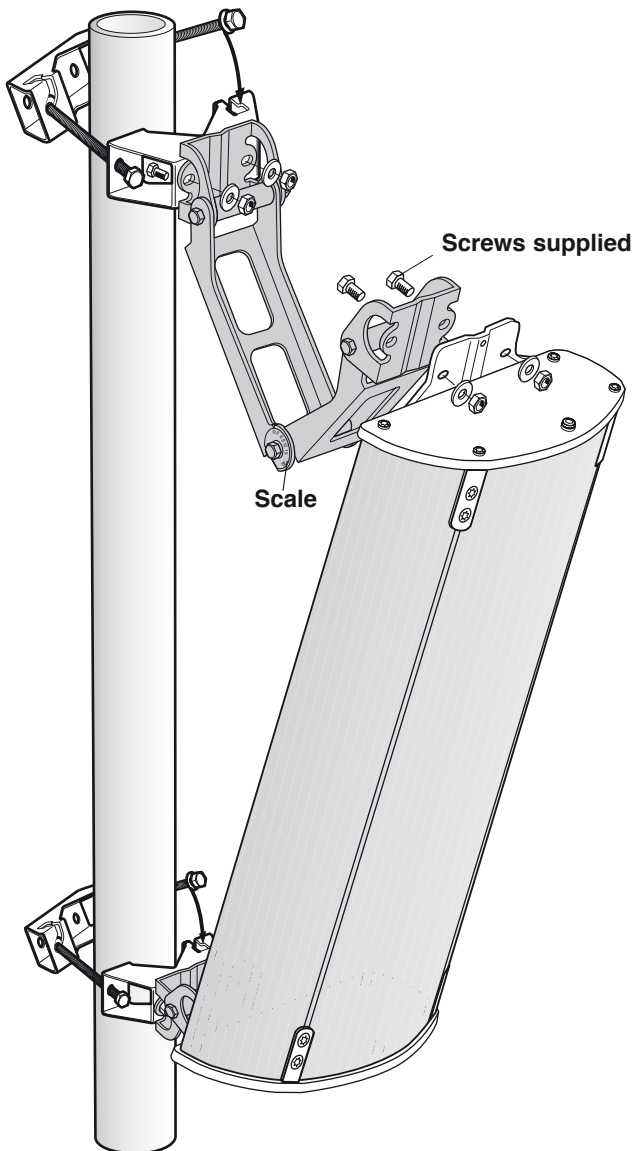
Mounting a downtilt kit enlarges the spacing between mast and antenna by 84 mm.

Panels VPol / XPol Downtilt kits for height 2574 – 2582 mm

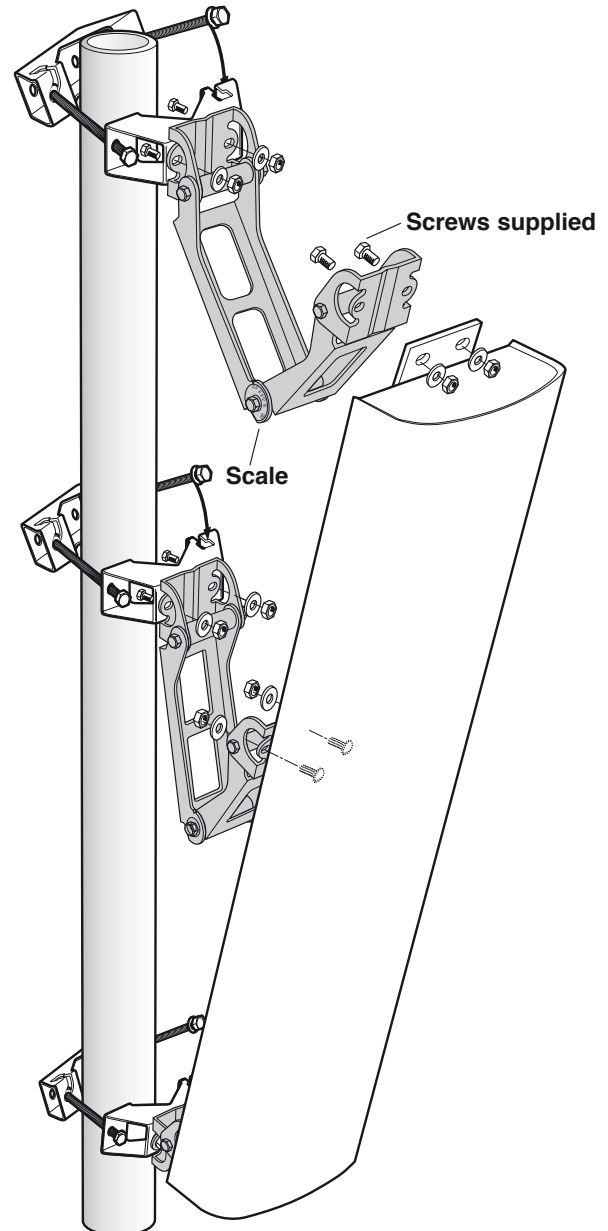
Suitable for:

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 199

**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

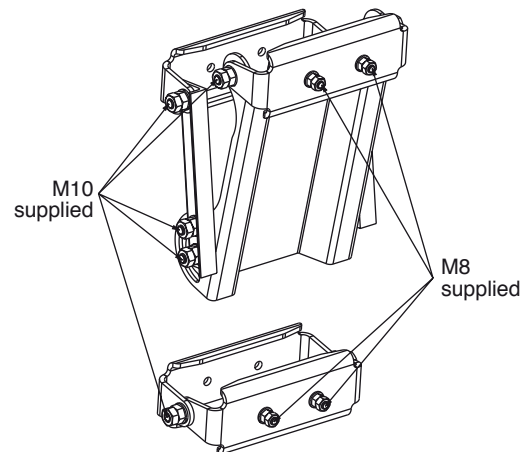
Downtilt Kit

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:

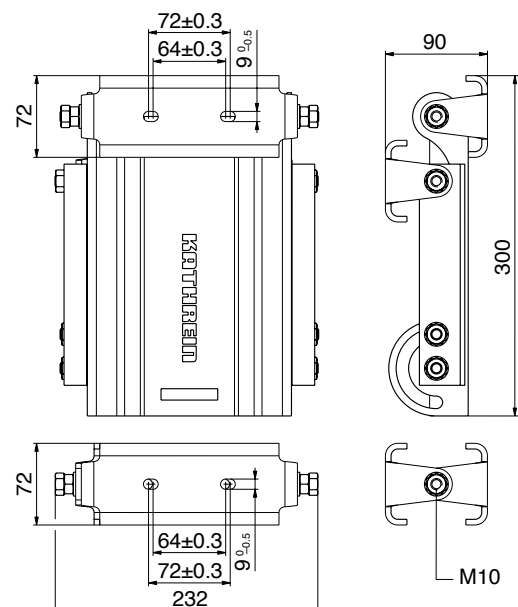
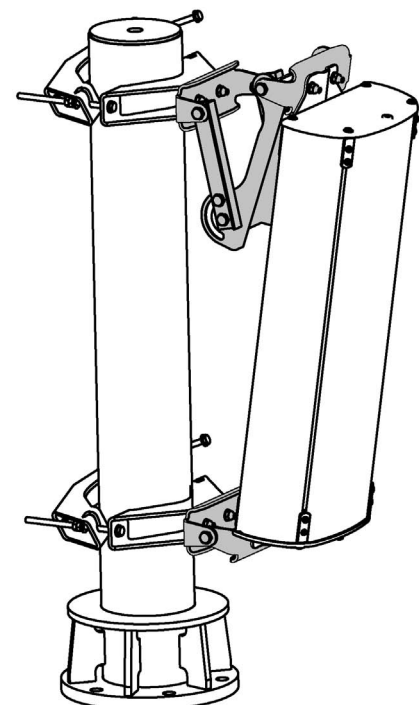
Screw size	Torque
M8	12 Nm
M10	26 Nm

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

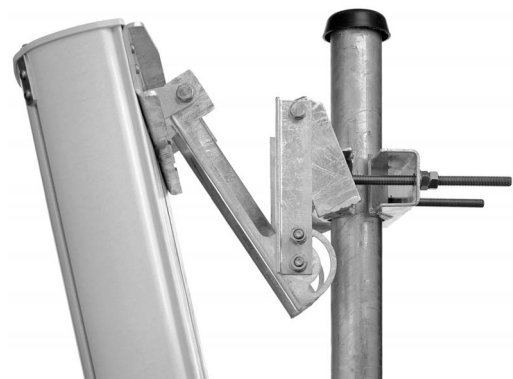
KATHREIN

Antennen · Electronic

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

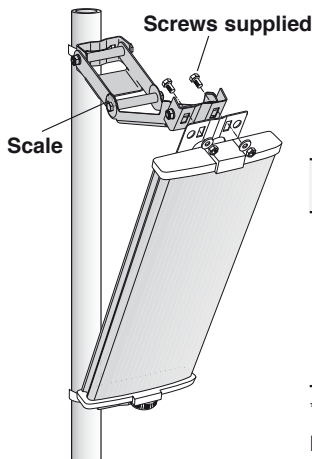
Downtilt kits for XPol 30° width 560 mm

Antenna height	Downtilt angle	Type No.	Weight
656 mm	0 – 33°	733 695	3.4 kg
1296 mm	0 – 16°		
2580 mm	0 – 8°		



Downtilt kit 733 695

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

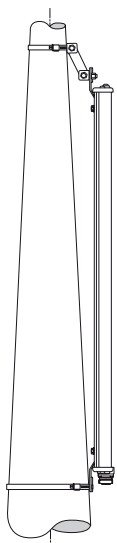


Use the downtilt kit together with the clamps (see page 189).

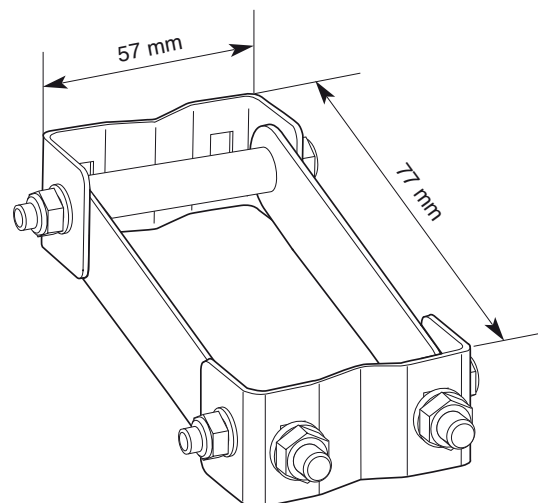
Antenna height	Downtilt angle	Downtilt kit with scale	Downtilt kit without scale*	Weight
		Type No.	Type No.	
342 mm	0° – 40°	–		approx. 1.0 kg
502 mm	0° – 25°	732 322		
662 mm	0° – 20°	732 321	732 327	
982 mm	0° – 14°	732 318		
1302 mm	0° – 10°	732 317		

* Instructions to adjust the required downtilt angle are given in the datasheet or on the reverse side 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

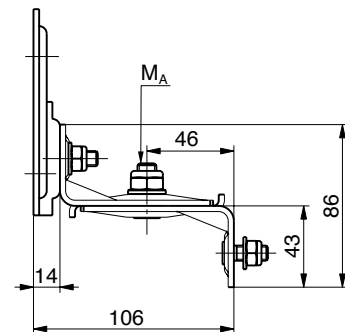
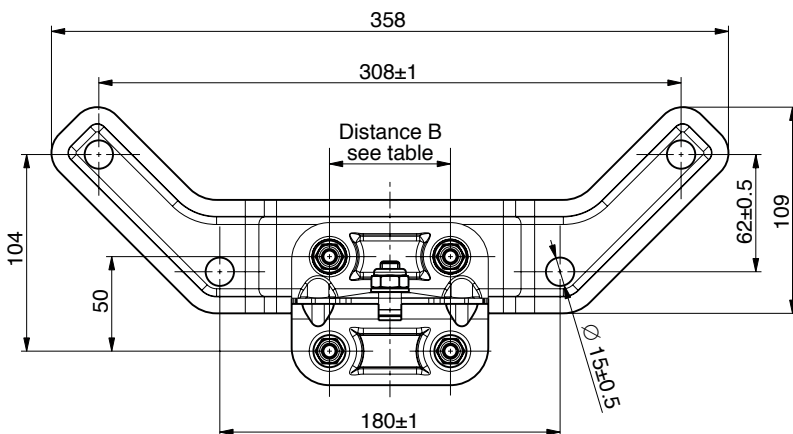
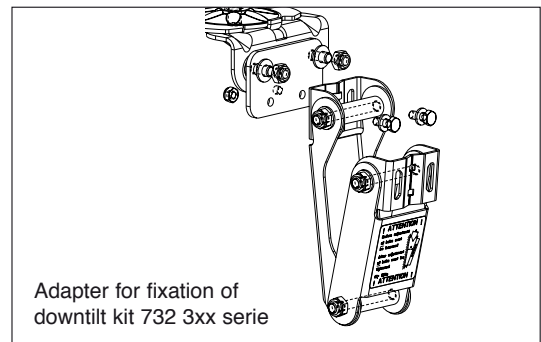
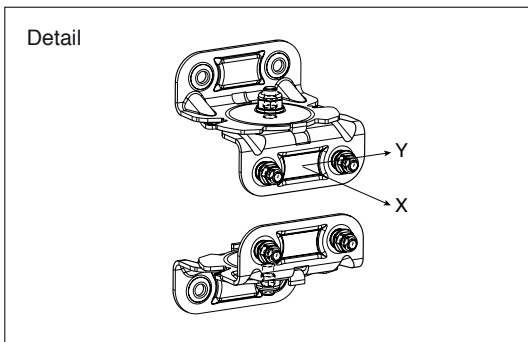
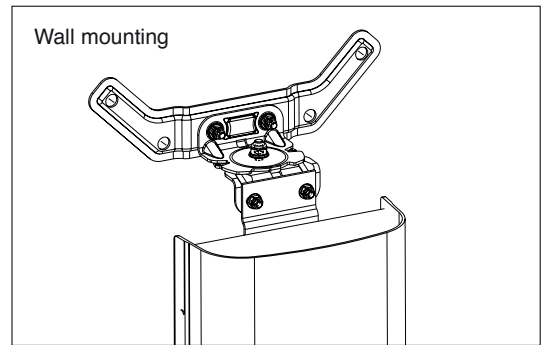
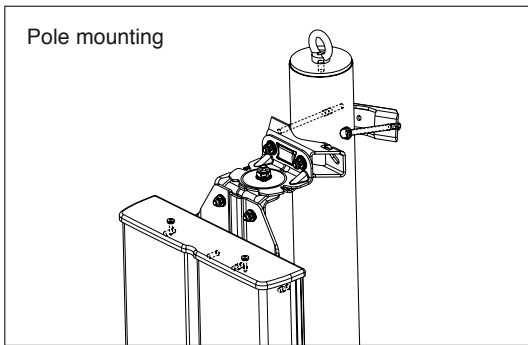


Use the slant compensation kit type no. 732 319 together with the clamps (see page 189).



Weight: appr. 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).

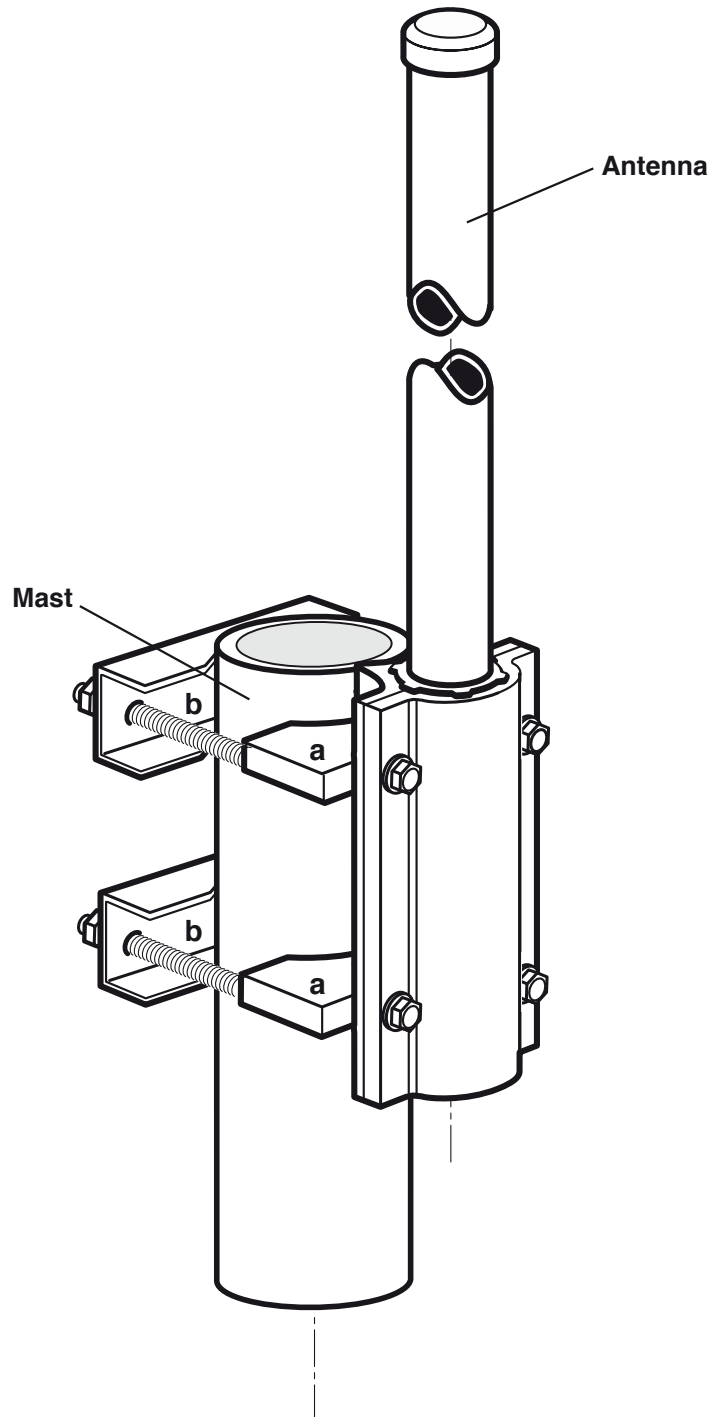
Type No.	850 10014	850 10015	850 10016	850 10017
Suitable for	pole mounting		wall mounting	
Number of pieces	2 brackets	2 brackets	2 brackets	2 brackets
Distance between screws [B]	64 mm	72 mm	64 mm	72 mm
Angular range	± 30°		± 30°	
Weight / kit	approx. 1260 g	approx. 1260 g	approx. 2500 g	approx. 2500 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

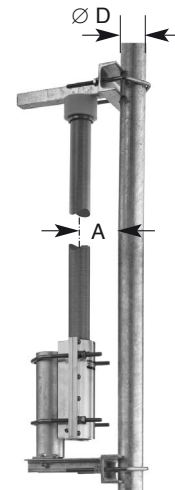
For mast diameters of 94 – 125 mm



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>		
Pipe D	Horizontal Radiation Pattern	Spacing A / Curve	Pipe D	Horizontal Radiation Pattern	Spacing A / Curve	Pipe D / Curve	Horizontal Radiation Pattern	Spacing A			
40 mm		100 mm	100 mm		100 mm	40 mm		80 mm			
		160 mm	100 mm		160 mm	100 mm					
		240 mm			240 mm						

Side-mounting Brackets Omnidirectional Antennas 900

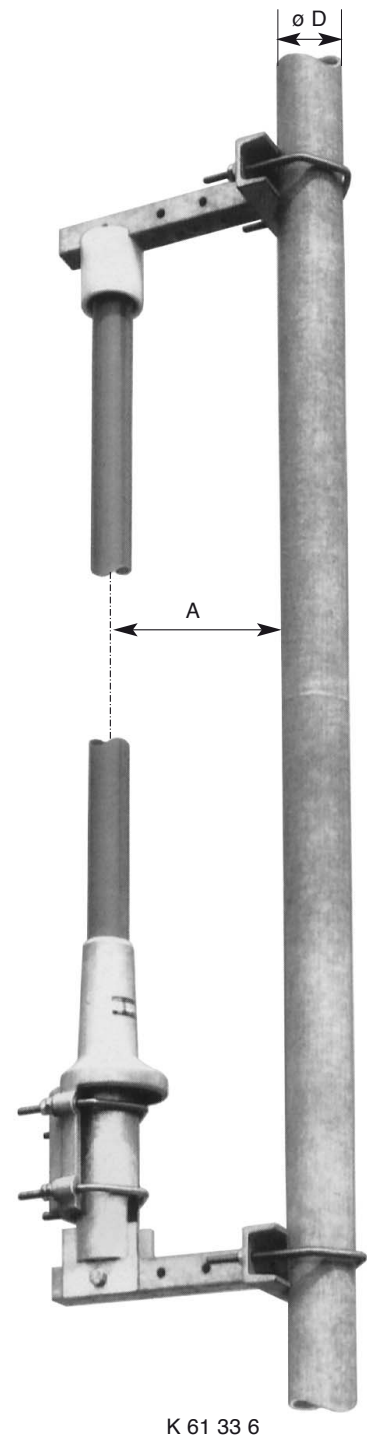
For mast diameters of 40 – 105 mm

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

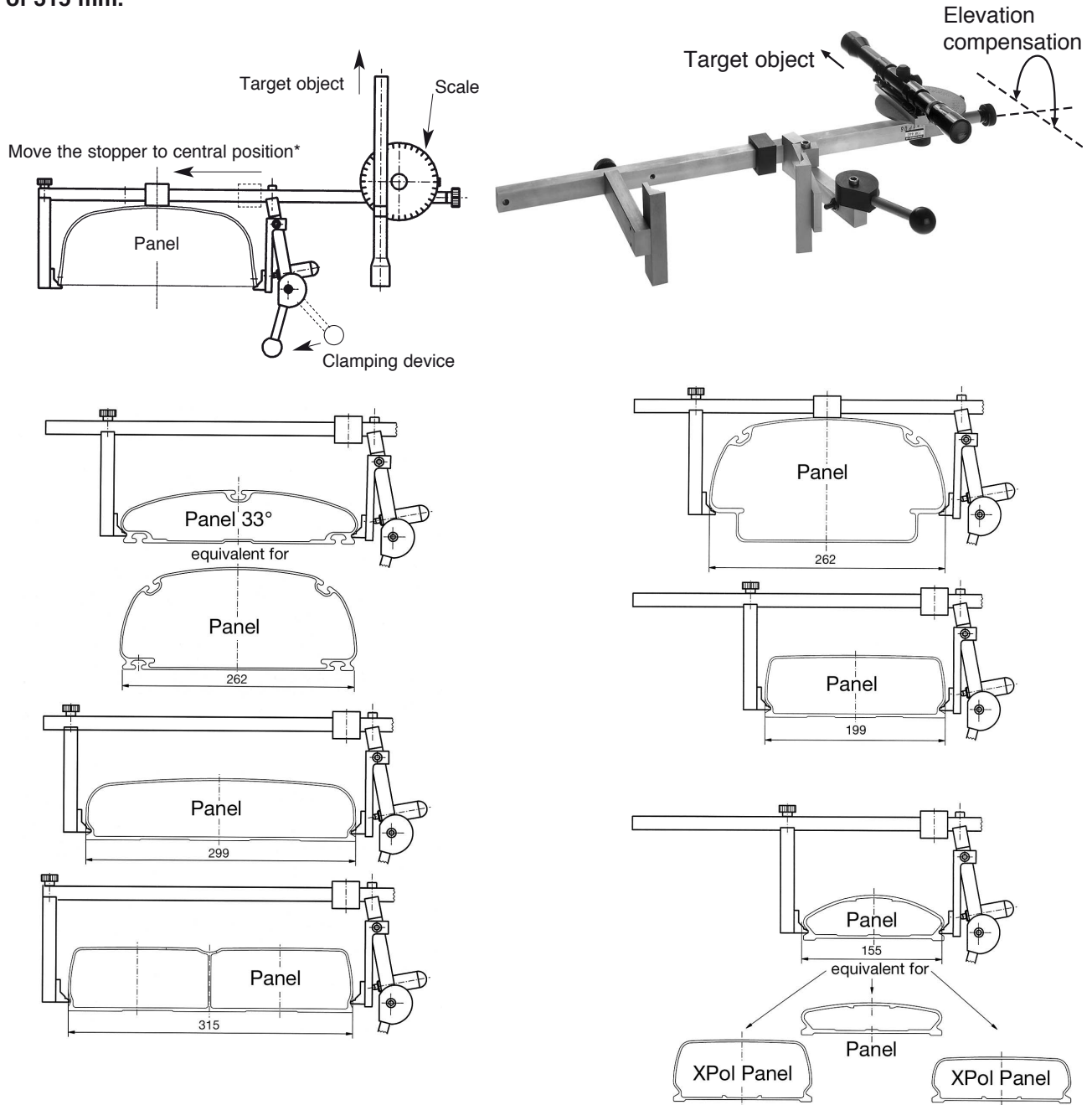


All Panels Accessories Azimuth Adjustment Tool

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.

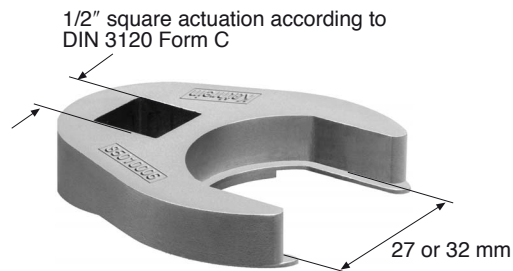
Kathrein Installation Tool for Triple-band Antennas Type No. 850 10005

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!

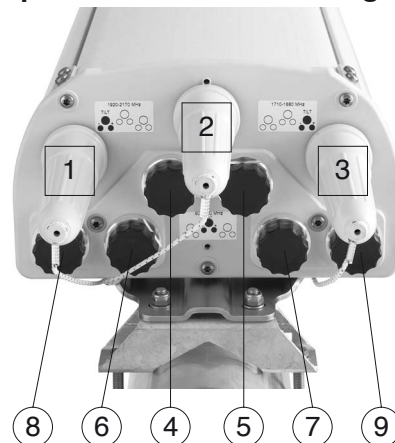
Set consists of two spanners of 27 and 32 mm width.



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

Hybrid Combiners

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

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	299	782 10390	211	782 10612	302	791 918	282
782 10154	299	782 10391	211	782 10613	303	791 919	282
782 10161	220	782 10400	291	782 10620	240, 241	791 920	282
782 10162	220	782 10401	292	782 10621	240, 241	791 921	282
782 10164	220	782 10403	293	782 10622	240, 241	792 542	222
782 10165	220	782 10404	294	782 10623	240, 241	792 544	223
782 10167	212	782 10406	295	782 10624	240, 241	792 699	253
782 10168	216, 217	782 10415	222	782 10625	240, 241	792 702	254
782 10169	216, 217	782 10418	225	782 10630	248, 249	792 972	269
782 10170	216, 217	782 10429	272	782 10631	248, 249	793 004	215
782 10171	216, 217	782 10440	285	782 10632	248, 249	793 005	215
782 10172	216, 217	782 10442	285	782 10633	248, 249	793 006	265
782 10192	224	782 10448	301	782 10652	304, 305	793 301	270
782 10193	224	782 10453	274 – 276	782 10653	304, 305	793 304	271
782 10203	259	782 10454	274 – 276	782 10711	309	793 506	264
782 10215	218, 219	782 10455	274 – 276	782 10717	310	793 532	235
782 10216	218, 219	782 10456	274 – 276	782 10731	311	793 533	235
782 10248	236, 237	782 10457	236	782 10736	312	793 539	212
782 10249	236, 237	782 10458	236	782 10751	313	793 540	213
782 10250	236, 237	782 10460	236	782 10800	244	793 554	266
782 10251	236, 237	782 10469	242	782 10801	226	793 555	255
782 10253	274 – 276	782 10474	277	782 10802	214		
782 10254	274 – 276	782 10500	256	782 10803	245	K 62 26 11 1	280
782 10255	274 – 276	782 10502	257	782 10804	246	K 62 26 20 1	279
782 10256	274 – 276	782 10532	258	782 10805	260, 261	K 62 26 20 7	279
782 10257	218, 219	782 10550	273	782 10808	242	K 62 26 21 1	279
782 10264	247	782 10555	290	782 10809	243	K 62 26 21 7	279
782 10265	218, 219	782 10561	290	782 10810	243	K 62 26 30 1	279
782 10278	238, 239	782 10562	290	782 10811	296	K 62 26 30 7	279
782 10279	238, 239	782 10563	290			K 62 26 31 1	279
782 10305	238, 239	782 10564	290	784 10235	282	K 62 26 31 7	279
782 10306	238, 239	782 10565	290	784 10236	282	K 62 26 40 1	279
782 10312	286	782 10566	290	784 10237	282	K 62 26 41 1	279
782 10313	287	782 10567	290	784 10238	282	K 62 26 50 1	279
782 10315	288	782 10568	290	784 10367	280	K 62 26 50 7	279
782 10316	289	782 10569	290	784 10470	280	K 62 26 51 1	279
782 10341	234	782 10570	290			K 62 26 61 1	280
782 10344	280, 281	782 10571	290	728 954	231	K 63 73 62 1	262, 263
782 10347	306	782 10579	290	790 881	262, 263		
782 10348	306	782 10601	297	791 145	232		
782 10349	306	782 10602	298	791 498	262, 263		

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	211
Band-pass Filter	782 10391	890 – 960 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
Duplexer	793 004	Low band: 876 – 880 MHz High band: 921 – 925 MHz	250 W	215
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

New Products

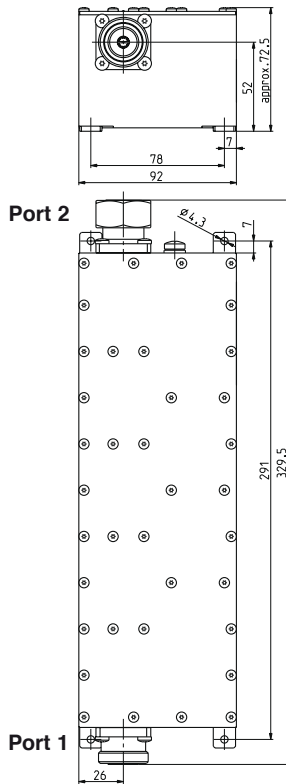
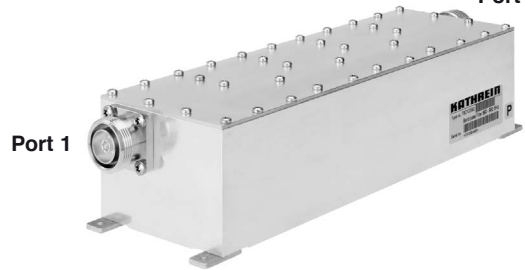
Band-pass Filter

Pass band 890 – 960 MHz

The Band-pass Filter is designed as a GSM Tx/Rx preselector filter in order to suppress interfering transmitting signals of an adjacent AMPS or CDMA frequency band.

- Suitable for indoor applications
- Built-in DC stop

Port 2



782 10390

Typical Attenuation Curves

Diagram I

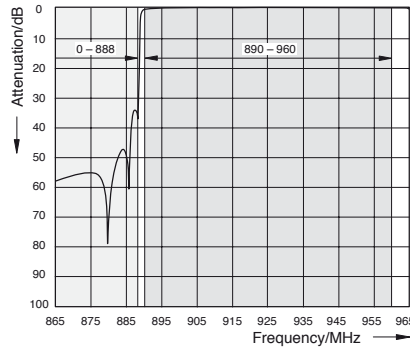
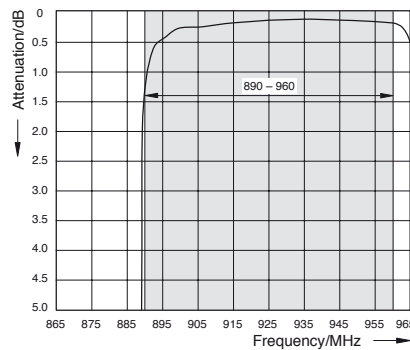


Diagram II



782 10391

Typical Attenuation Curves

Diagram I

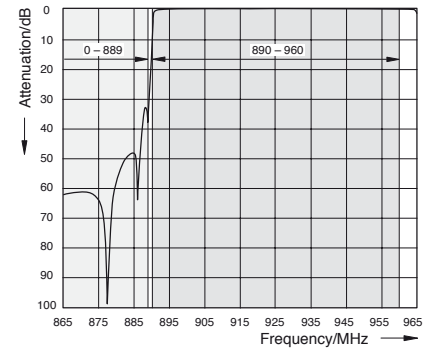
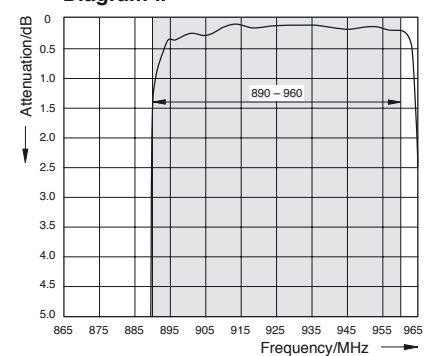


Diagram II



Technical Data

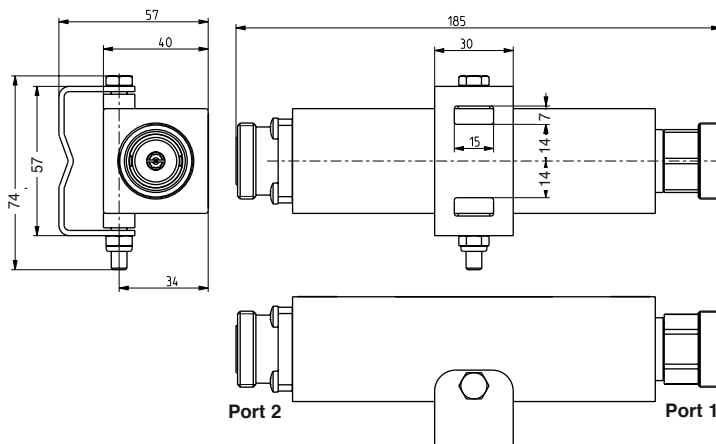
Type No.	782 10390	782 10391
Stop band	0 – 888 MHz	0 – 889 MHz
Frequency spacing	2 MHz	1 MHz
Pass band	890 – 960 MHz	890 – 960 MHz
Insertion loss	< 1.5 dB (890 – 892 MHz) < 0.8 dB (892 – 893 MHz) < 0.6 dB (893 – 905 MHz) < 0.3 dB (905 – 960 MHz)	< 4.0 dB (890 – 891 MHz) < 2.5 dB (891 – 892 MHz) < 1.0 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)	< 400 W (925 – 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 / Port 2: 7-16 male	
Application	Indoor	
Special features	Built-in DC stop	
Mounting	With 4 screws (max. 4 mm diameter)	
Weight	2 kg	
Packing size	387 mm x 137 mm x 130 mm	
Dimensions (w x h x d)	92 mm x 72.5 mm x 329.5 mm (including connectors and mounting feet)	

Low-pass Filter

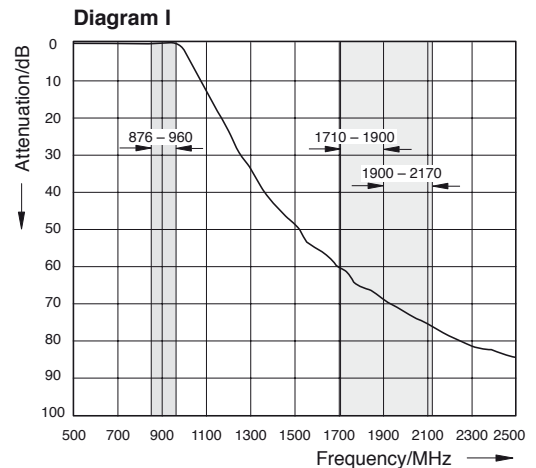
876 – 960 MHz (GSM 900)

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

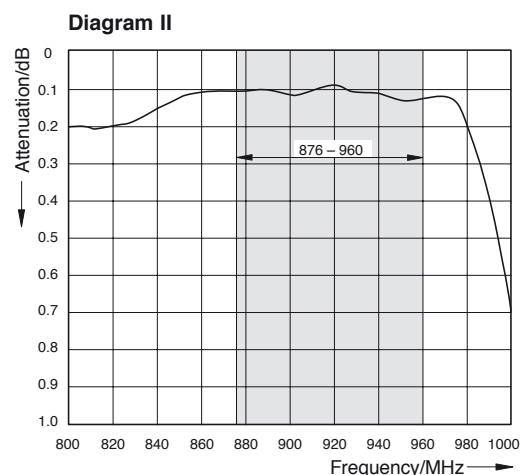


Typical Attenuation Curves



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 mm x 110 mm x 100 mm
Dimensions (w x h x d)	184 mm x 57 mm x 75 mm (including mounting bracket)

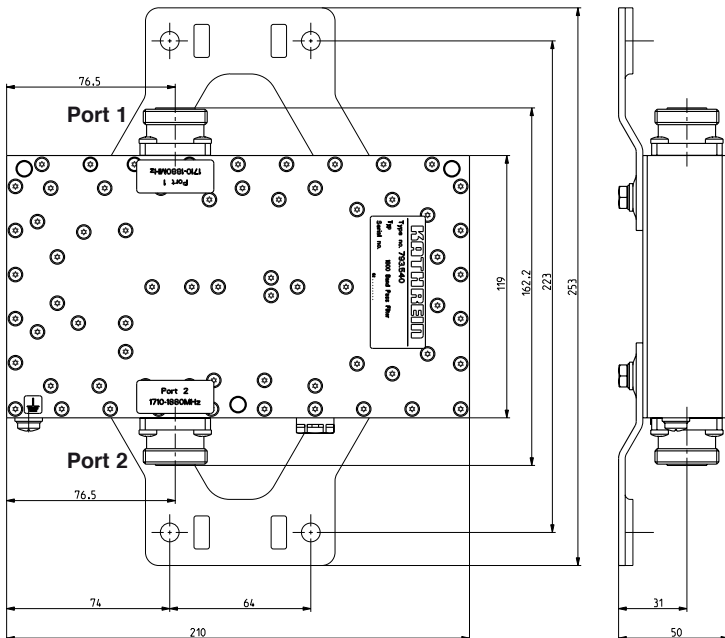
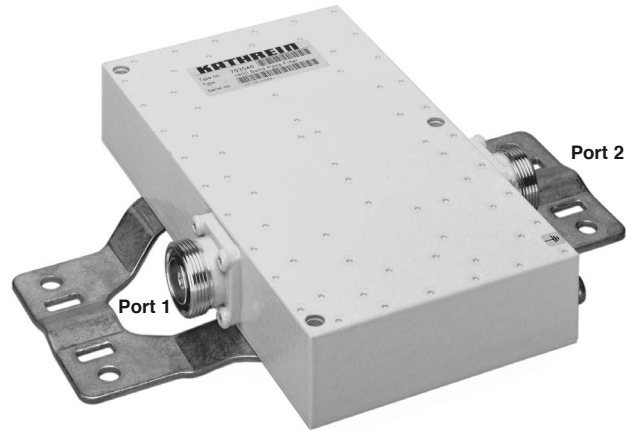


Band-pass Filter

1710 – 1880 MHz (GSM 1800)

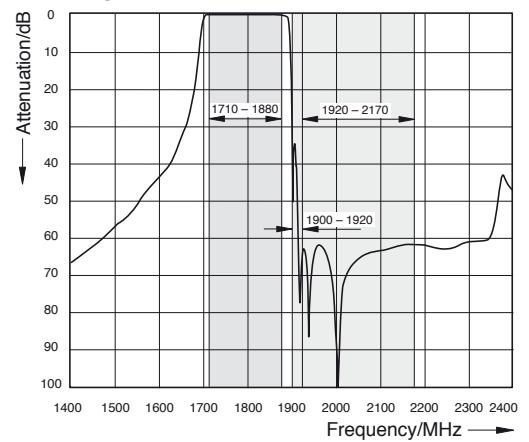
The Band-pass Filter is designed for use in GSM 1800 systems where UMTS or GSM 900 systems are co-sited.

- 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

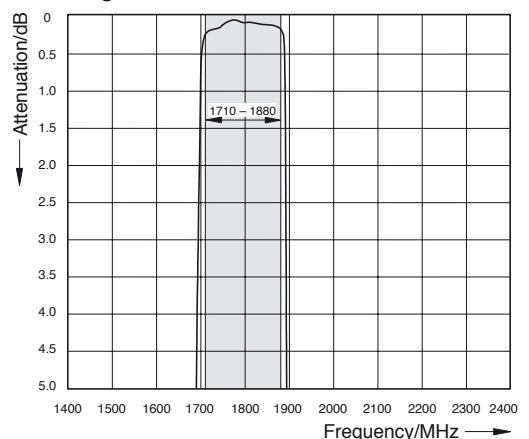
Diagram I



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 mm x 250 mm x 110 mm
Dimensions (w x h x d)	210 mm x 253 mm x 49 mm (including mounting brackets)

Diagram II



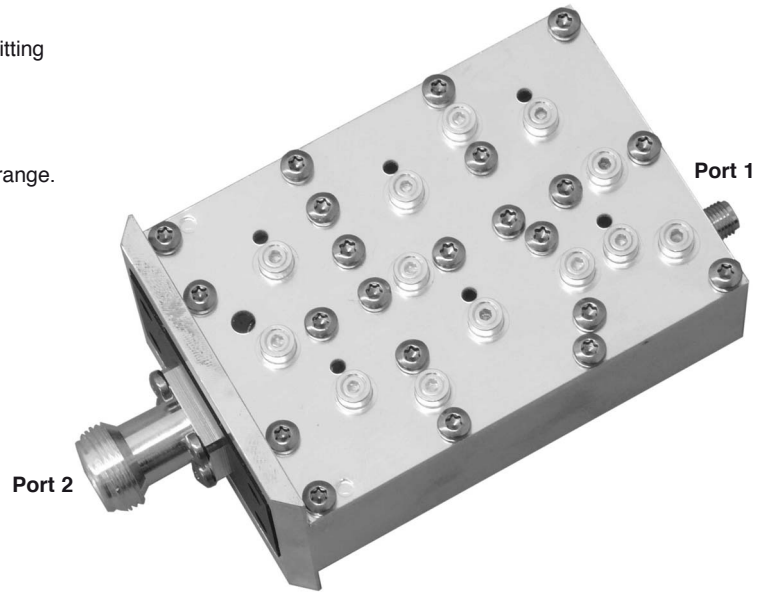
Band-pass Filter

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

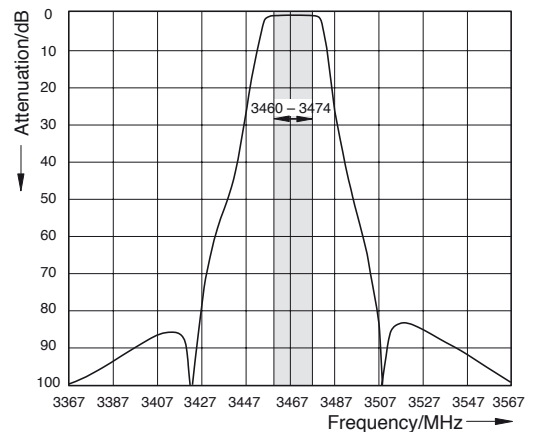
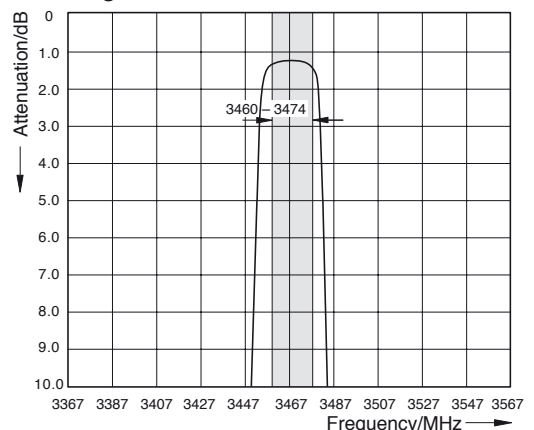


Diagram II



Technical Data

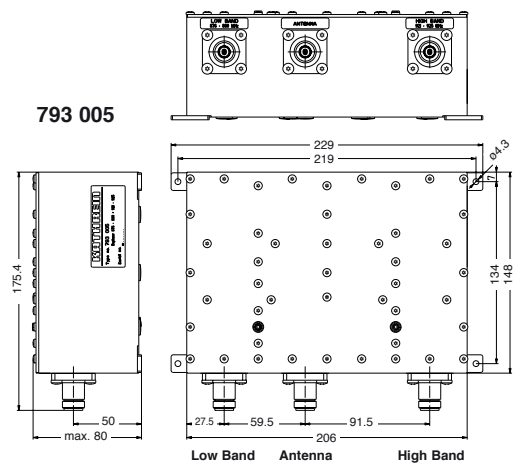
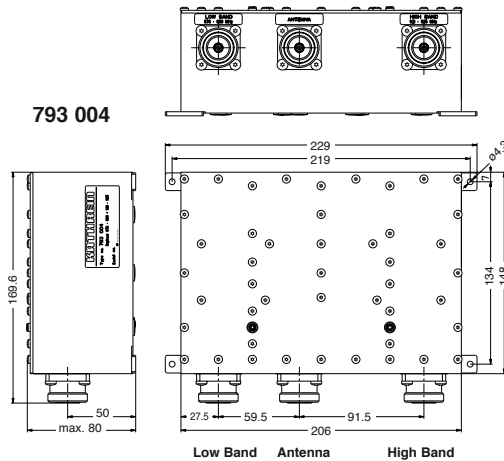
Type No.	782 10802
Pass band	3400 ... 3600 MHz
Bandwidth	14 MHz
Insertion loss	< 1.8 dB (1.3 typically)
Stop band attenuation at $f_0 \pm 43$ MHz	80 dB
VSWR	< 1.2
Impedance	50 Ω
Input power	< 50 W
Temperature range	-20 ... +60 °C
Connectors Port 1 Port 2	Tx/Rx input, SMA female Antenna output, N-female
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 mm x 137 mm x 130 mm
Dimensions (w x h x d)	60 mm x 50 mm 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.

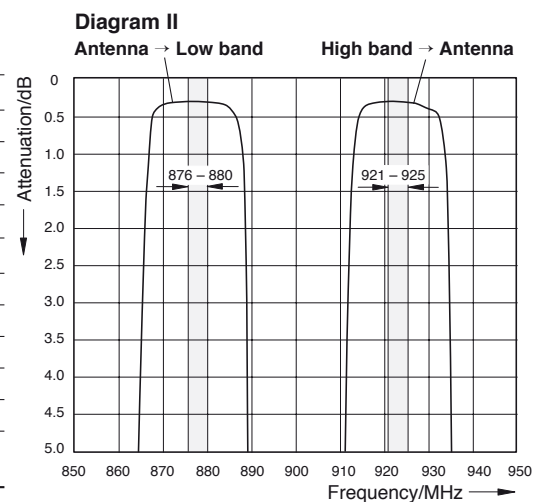
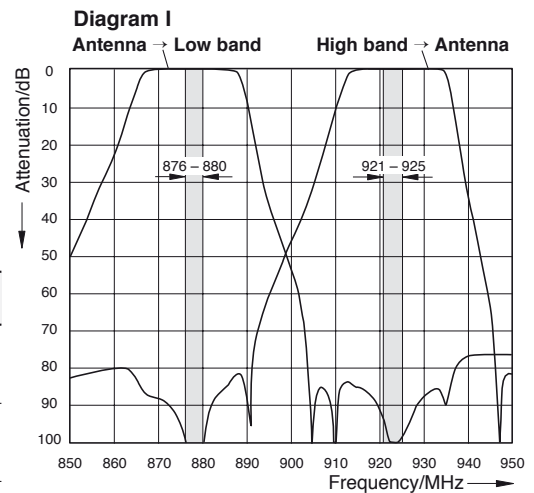
- Suitable for indoor applications
- Built-in DC stop



Technical Data

Type No.	793 004	793 005
Pass band Low band High band	876 – 880 MHz 921 – 925 MHz	
Insertion loss Antenna → Low band High band → Antenna	< 0.4 dB (876 – 880 MHz) < 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 mm x 162 mm 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)

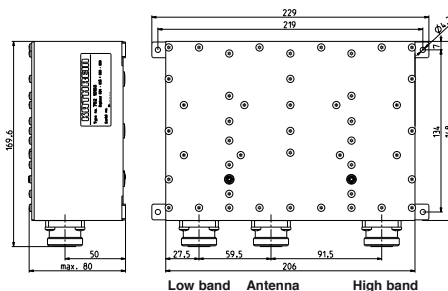
835 – 851 / 880 – 896 MHz (AMPS B-Band)

KATHREIN

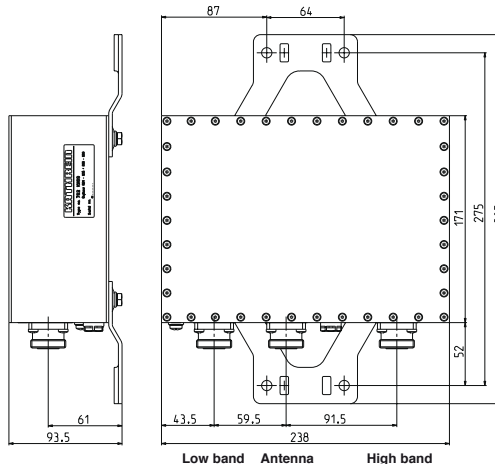
Antennen · Electronic

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.

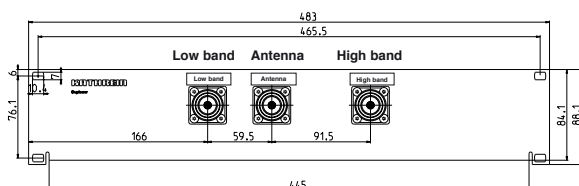
- **78210168**: AMPS A-Band, indoor version
- **78210169**: AMPS A-Band, outdoor version
- **78210170**: AMPS A-Band, indoor version mounted onto a 19" drawer
- **78210171**: AMPS B-Band, indoor version
- **78210172**: AMPS B-Band, outdoor version



782 10168
782 10171
(indoor)



782 10169
782 10172
(outdoor)



782 10170 (19" drawer)

Technical Data

Type No.	782 10168 782 10169 782 10170 AMPS A-Band			782 10171 782 10172 AMPS B-Band	
Pass band	824 – 835 MHz 869 – 880 MHz			835 – 851 MHz 880 – 896 MHz	
Insertion loss	< 0.5 dB (824 – 835 MHz) < 0.5 dB (869 – 880 MHz)			< 0.5 dB (835 – 851 MHz) < 0.5 dB (880 – 896 MHz)	
Isolation	> 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			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)

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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)

Diagram I

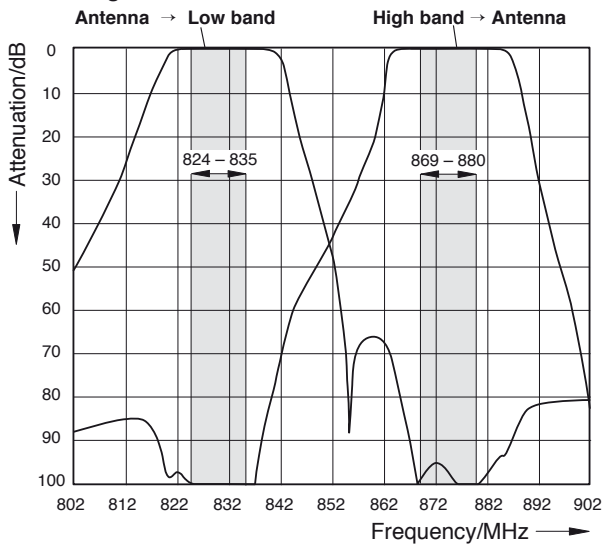
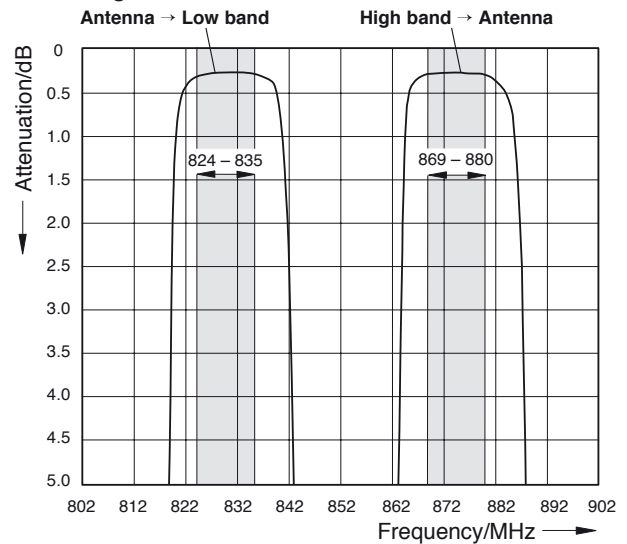


Diagram II



Typical Attenuation Curves (782 10171, 782 10172)

Diagram I

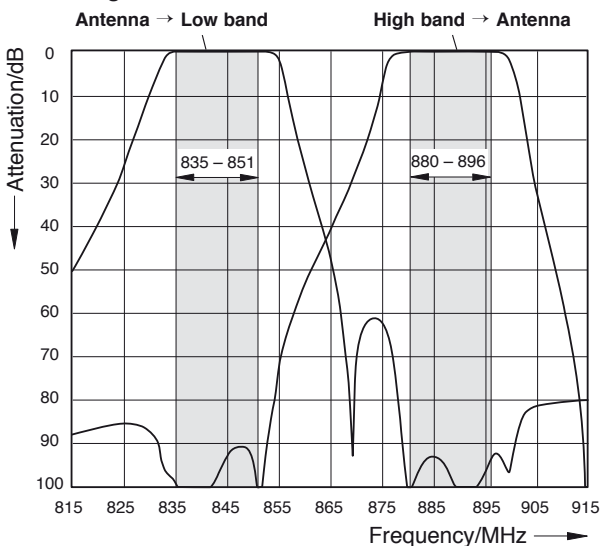
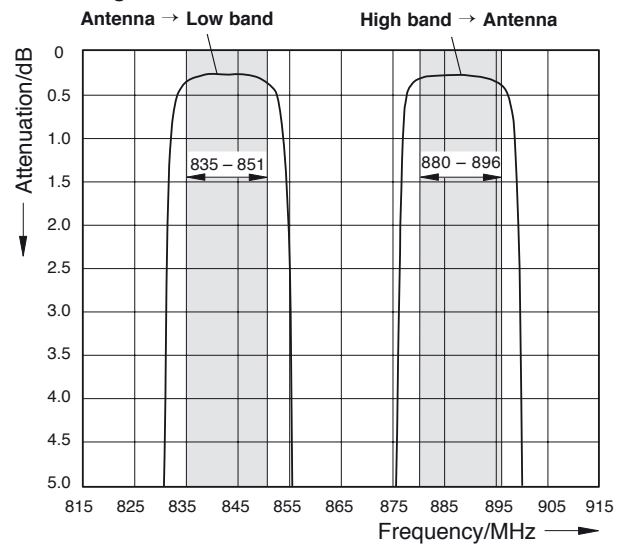


Diagram II



Duplexer

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

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

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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

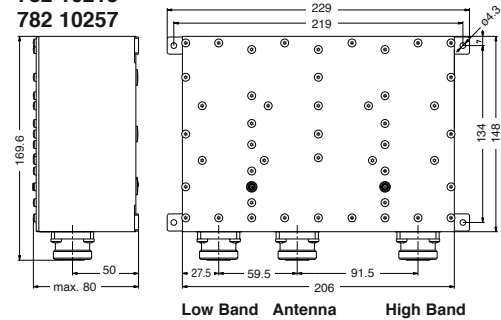


782 10215, 782 10257



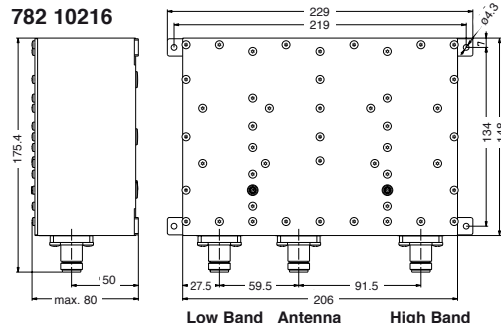
782 10216

782 10215
782 10257



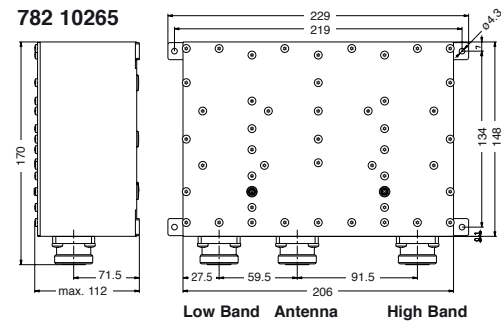
Low Band Antenna High Band

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 AMPS A/B-Band	782 10257 AMPS A/B-Band (reduced bandwidth)	782 10265 AMPS A/B-Band (reduced bandwidth)
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 (including connectors and mounting feet)	229 x 80 x 175.4 mm (including connectors and mounting feet)	229 x 80 x 170 mm (including connectors and mounting feet)	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)

Diagram I

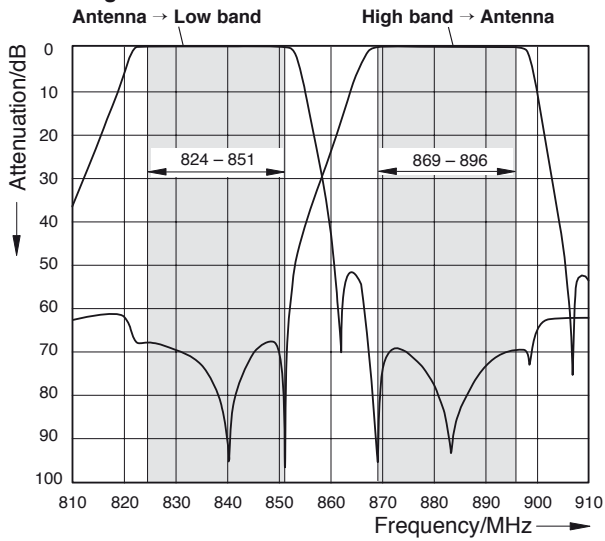
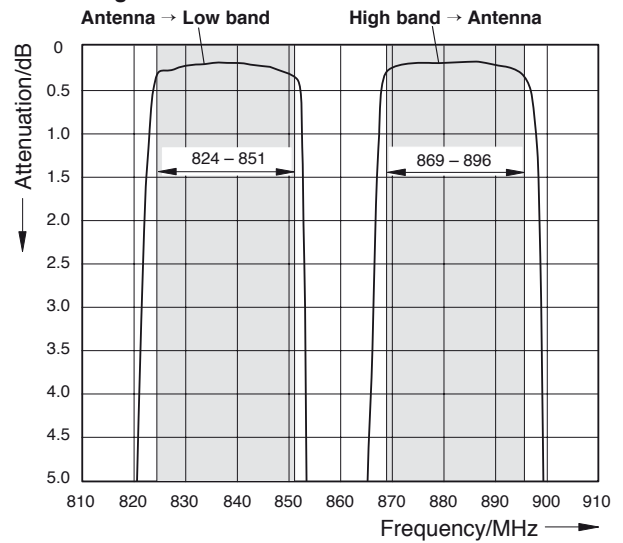


Diagram II



Typical Attenuation Curves (782 10257)

Diagram I

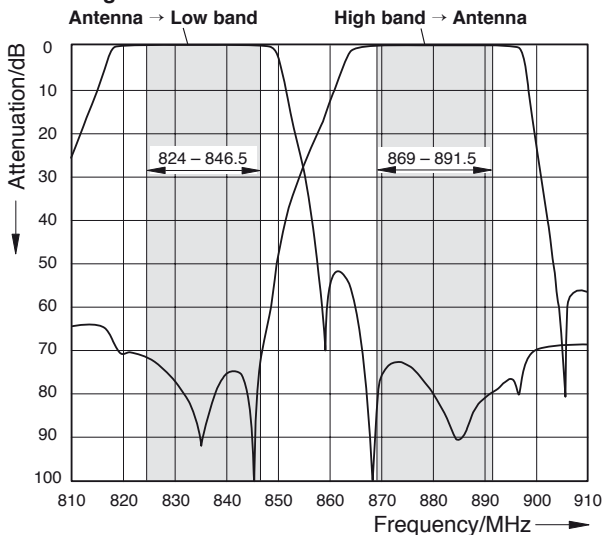
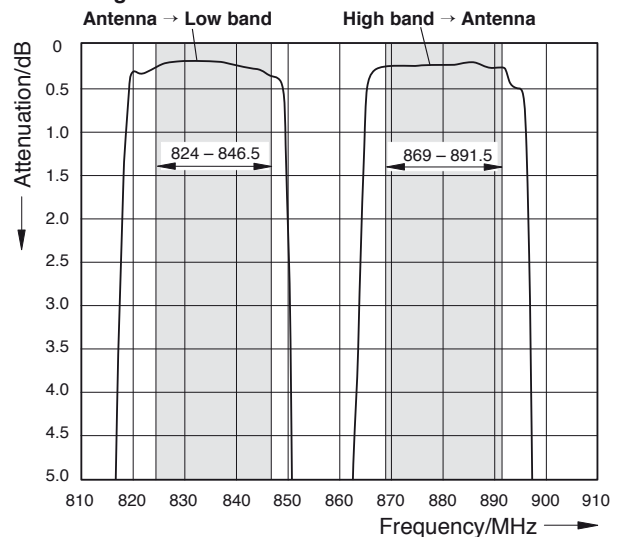


Diagram II



Typical Attenuation Curves (782 10265)

Diagram I

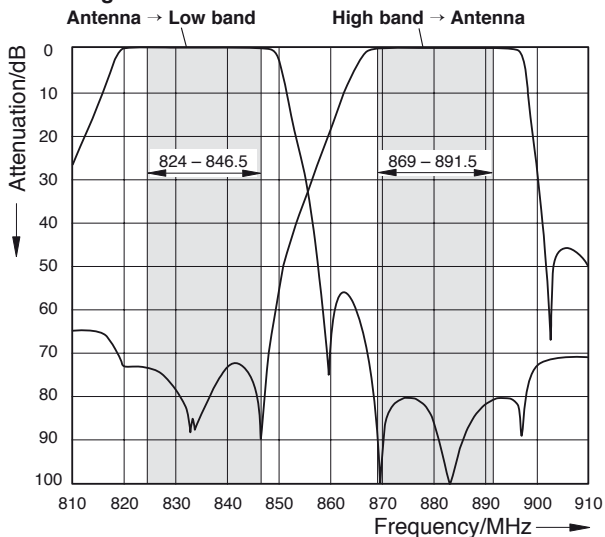
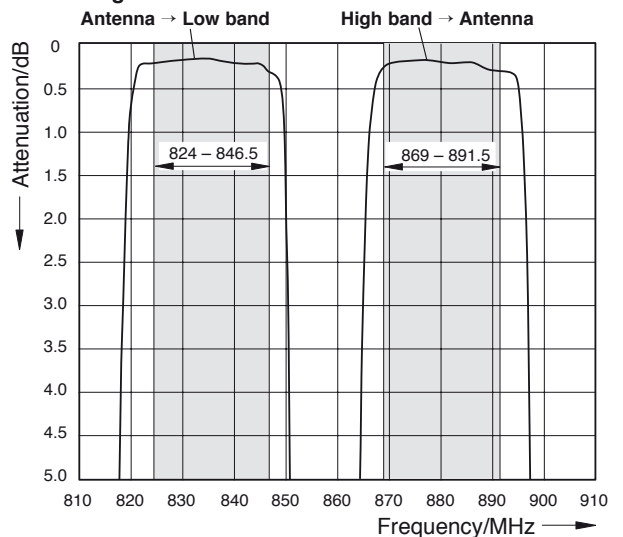


Diagram II



Duplexer

890 – 915 / 935 – 960 MHz (GSM)

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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

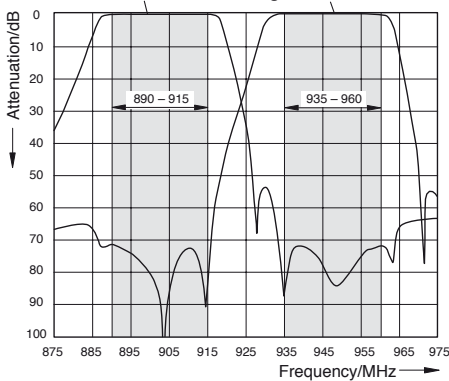
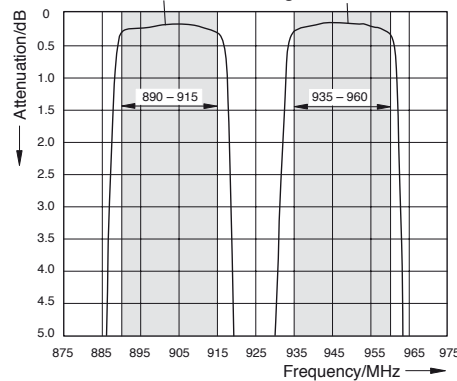


Diagram II

Antenna → Low band High band → Antenna



Technical Data

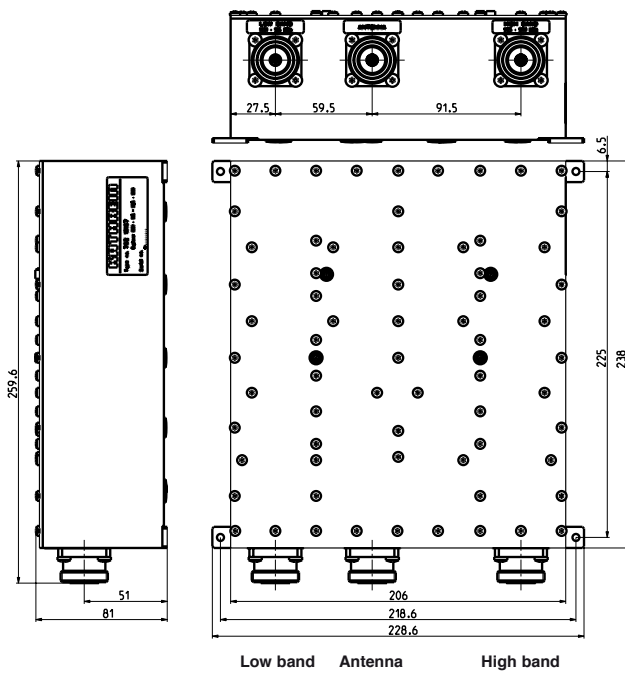
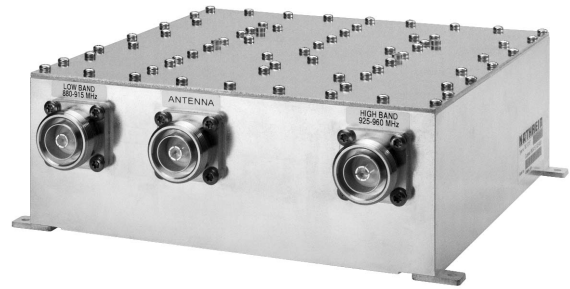
Type No.	782 10164	782 10165	782 10161	782 10162
Pass band				
Low band		890 – 915 MHz		
High band		935 – 960 MHz		
Insertion loss				
Antenna → Low band		< 0.5 dB (890 – 915 MHz)		
High band → Antenna		< 0.5 dB (935 – 960 MHz)		
Isolation				
Low band ↔ High band		> 70 dB (890 – 915 / 935 – 960 MHz)		
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	7-16 female	N female	7-16 female	7-16 female
High band	7-16 female	7-16 female	7-16 female	7-16 female
Antenna	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 mm x 162 mm x 252 mm		612 mm x 312 mm x 224 mm	347 mm x 294 mm x 174 mm
Dimensions (w x h x d)	228.6 mm x 80 mm x 169.6 mm (including connectors and mounting feet)		19" drawer, 2 height units, plug-in depth 172 mm	238 mm x 93.5 mm x 305 mm (including connectors and mounting brackets)

Duplexer

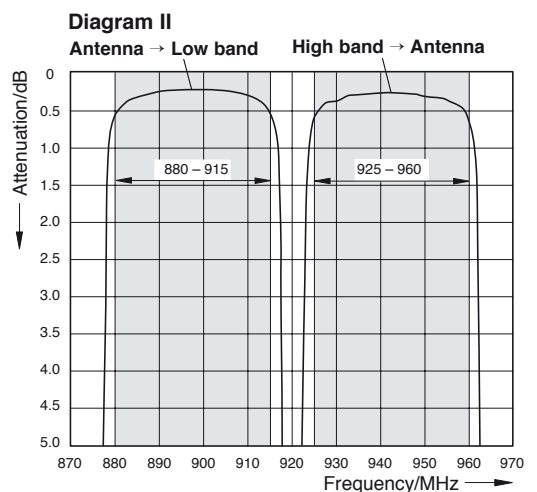
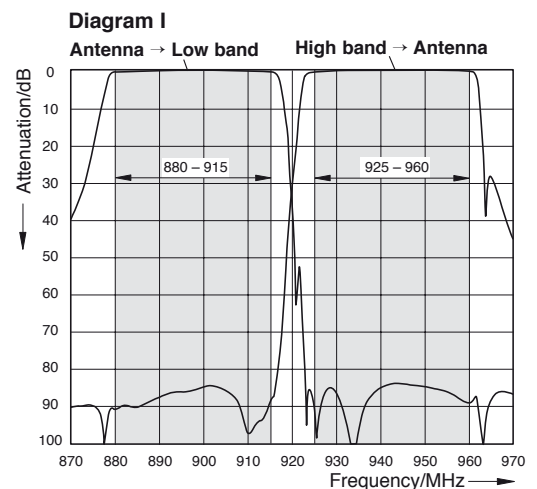
880 – 915 / 925 – 960 MHz (EGSM)

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

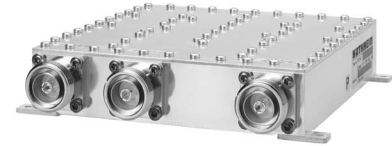
Type No.	782 10167
Pass band Low band High band	880 – 915 MHz 925 – 960 MHz
Insertion loss Antenna → Low band High band → Antenna	< 0.9 dB (880 – 915 MHz) < 0.9 dB (925 – 960 MHz)
Isolation Low band ↔ High band	> 75 dB (880 – 915 / 925 – 960 MHz)
VSWR	< 1.25 (880 – 915 / 925 – 960 MHz)
Impedance	50 Ω
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 mm x 297 mm x 174 mm
Dimensions (w x h x d)	229 mm x 81 mm x 260 mm (including connectors and mounting feet)

Duplexer

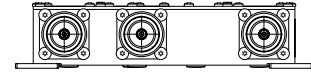
1710 – 1785 / 1805 – 1880 MHz (GSM 1800)

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.

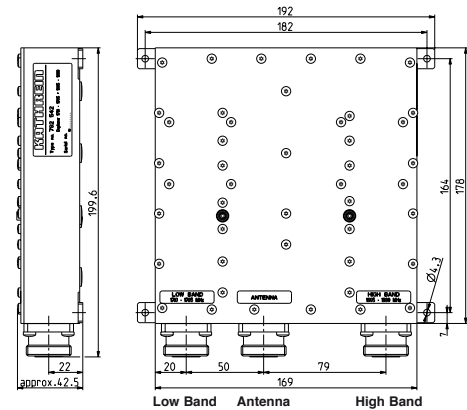
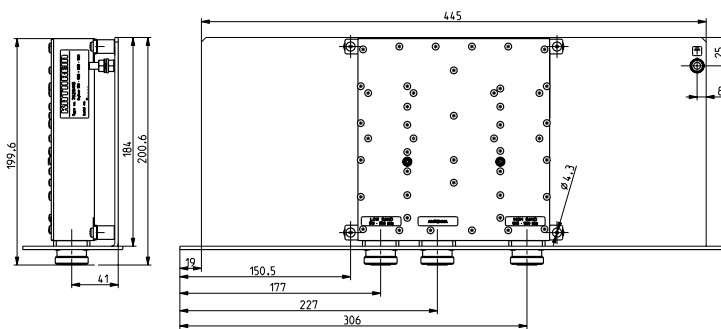
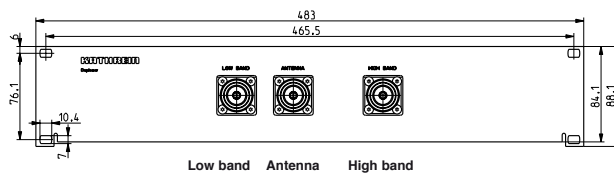
- Suitable for indoor applications
- Built-in DC stop between all ports



792 542



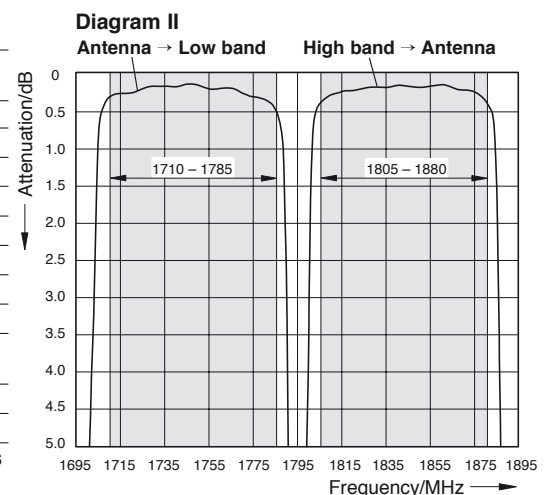
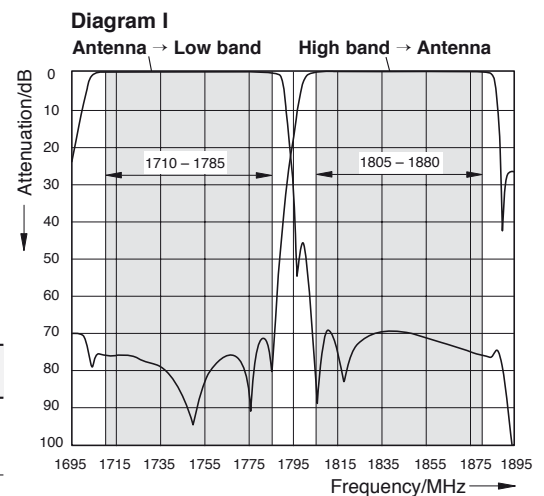
782 10415



Technical Data

Type No.	792 542	782 10415
Pass band		
Low band	1710 – 1785 MHz	
High band	1805 – 1880 MHz	
Insertion loss		
Antenna → Low band	< 0.7 dB (1710 – 1785 MHz)	
High band → Antenna	< 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

Typical Attenuation Curves

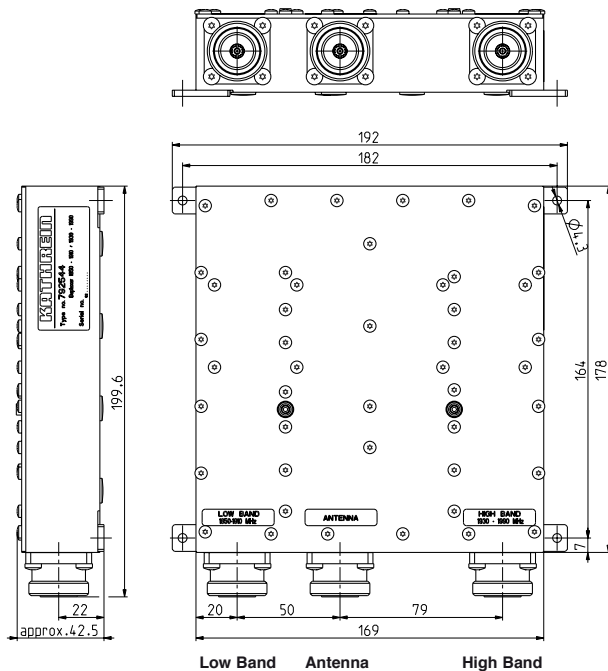


Duplexer

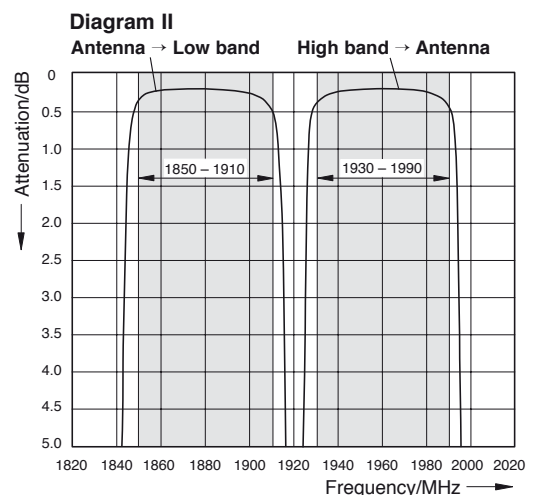
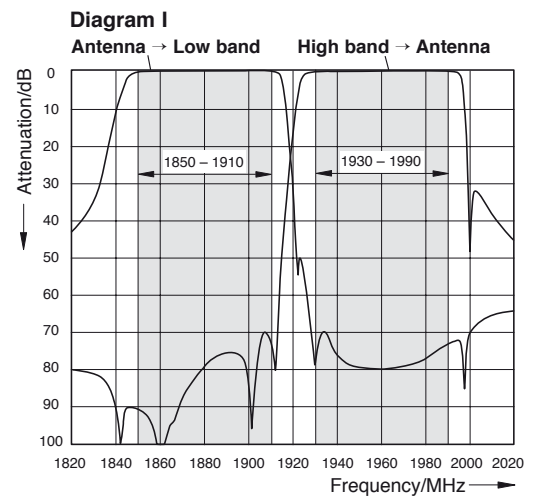
1850 – 1910 / 1930 – 1990 MHz (GSM 1900)

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	1850 – 1910 MHz
High band	1930 – 1990 MHz
Insertion loss	
Antenna → Low band	< 0.7 dB (1850 – 1910 MHz)
High band → Antenna	< 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 mm x 252 mm x 114 mm
Dimensions (w x h x d)	192 mm x 42.5 mm x 199.6 mm (including connectors and mounting feet)

Duplexer

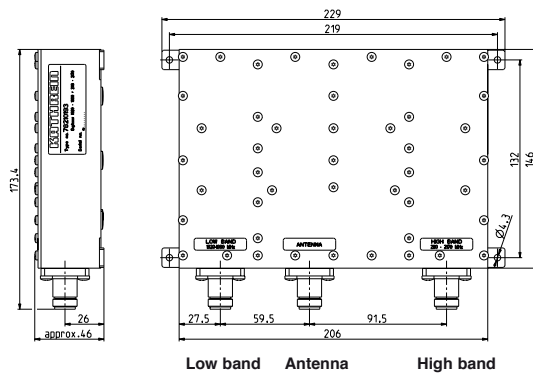
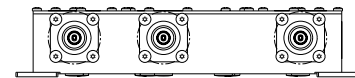
1920 – 1980 / 2110 – 2170 MHz (UMTS)

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.

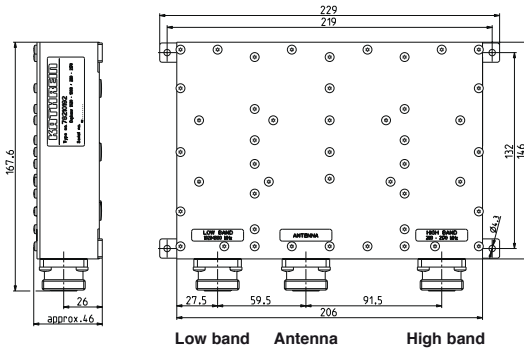
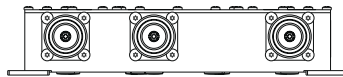
- Suitable for indoor applications
- Built-in DC stop



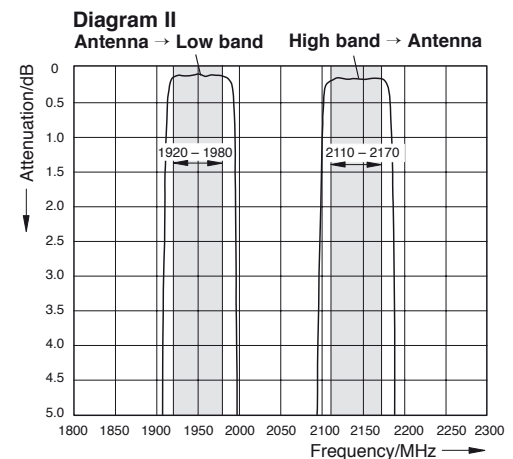
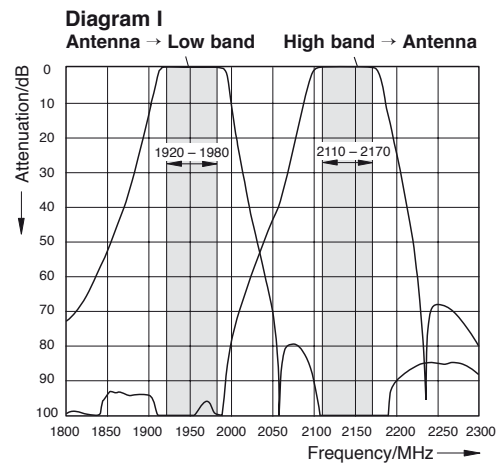
782 10193



782 10192



Typical Attenuation Curves



Technical Data

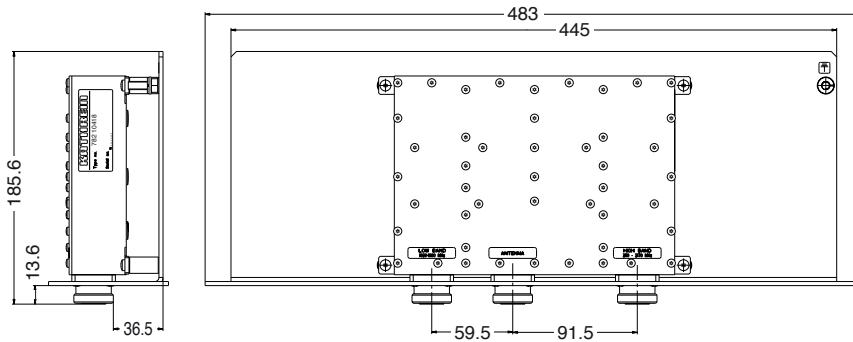
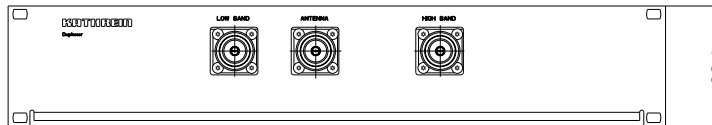
Type No.	782 10192	782 10193
Pass band Low band High band	1920 – 1980 MHz 2110 – 2170 MHz	
Insertion loss Antenna → Low band High band → Antenna	< 0.3 dB (1920 – 1980 MHz) < 0.3 dB (2110 – 2170 MHz)	
Isolation Low band ↔ High band	> 90 dB (1920 – 1980 / 2110 – 2170 MHz)	
VSWR	< 1.25 (1920 – 1980 / 2110 – 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 mm x 237 mm 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.

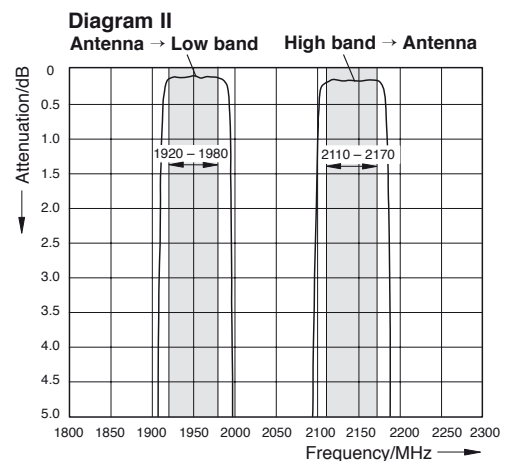
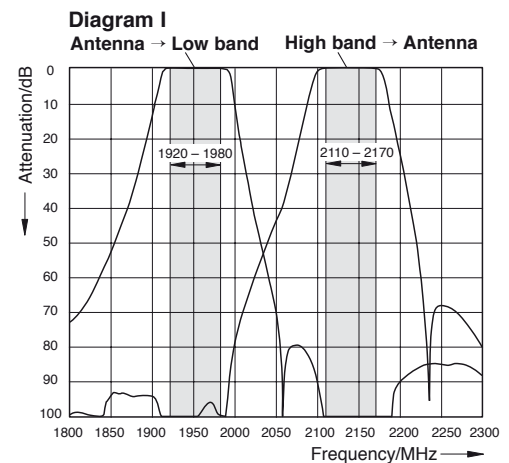
- Suitable for indoor applications
- Built-in DC stop



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

Typical Attenuation Curves



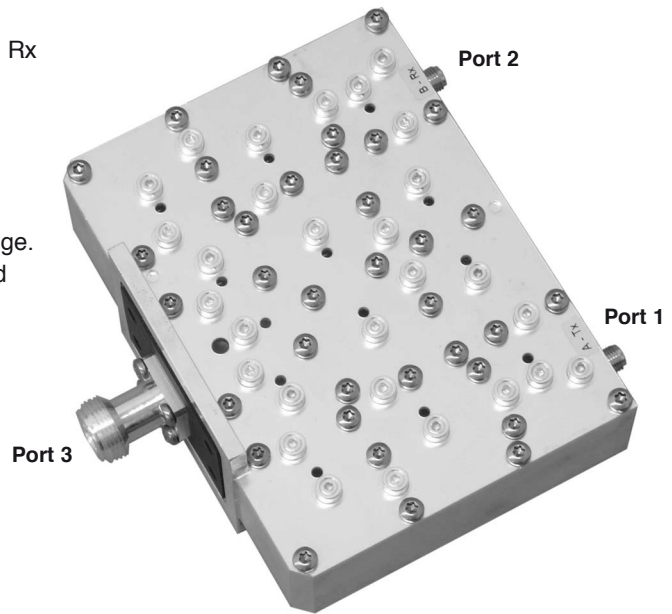
Duplexer

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.

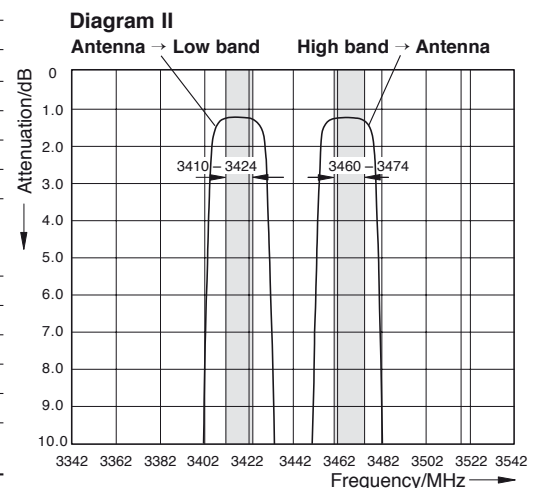
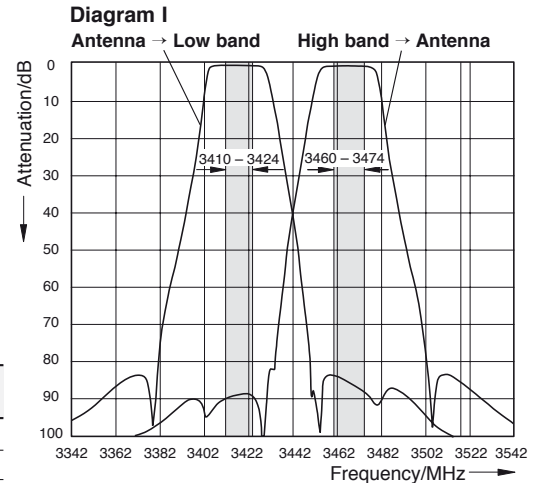
Tuning:

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 mm x 252 mm x 114 mm
Dimensions (w x h x d)	120 mm x 50 mm x 120 mm (including connectors)

Multiband 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	791 145	Band 1: 50 – 1000 MHz Band 2: 1600 – 2000 MHz	100 W 50 W	232
Dual-Band Combiner	782 10460	Band 1: 50 – 470 MHz Band 2: 806 – 2500 MHz	500 W 500 W	233
Dual-Band Combiner	782 10457	Band 1: 87.5 – 470 MHz Band 2: 806 – 2500 MHz	500 W 500 W	233
Dual-Band Combiner	782 10458	Band 1: 87.5 – 470 MHz Band 2: 806 – 2500 MHz	500 W 500 W	233
Dual-Band Combiner	782 10341	Band 1: 824 – 880 MHz Band 2: 890 – 960 MHz	400 W 400 W	234
Dual-Band Combiner	793 532	Band 1: 806 – 960 MHz Band 2: 1710 – 2170 MHz	250 W 200 W	235
Dual-Band Combiner	793 533	Band 1: 806 – 960 MHz Band 2: 1710 – 2170 MHz	250 W 200 W	235
Dual-Band Combiner	782 10248	Band 1: 470 – 960 MHz Band 2: 1710 – 2170 MHz	700 W 650 W	236, 237
Dual-Band Combiner	782 10249	Band 1: 470 – 960 MHz Band 2: 1710 – 2170 MHz	700 W 650 W	236, 237
Dual-Band Combiner	782 10250	Band 1: 470 – 960 MHz Band 2: 1710 – 2170 MHz	700 W 650 W	236, 237
Dual-Band Combiner	782 10251	Band 1: 470 – 960 MHz Band 2: 1710 – 2170 MHz	700 W 650 W	236, 237
Dual-Band Combiner	782 10278	Band 1: 806 – 1880 MHz Band 2: 1920 – 2170 MHz	500 W 500 W	238, 239
Dual-Band Combiner	782 10279	Band 1: 806 – 1880 MHz Band 2: 1920 – 2170 MHz	500 W 500 W	238, 239
Dual-Band Combiner	782 10305	Band 1: 806 – 1880 MHz Band 2: 1920 – 2170 MHz	500 W 500 W	238, 239
Dual-Band Combiner	782 10306	Band 1: 806 – 1880 MHz Band 2: 1920 – 2170 MHz	500 W 500 W	238, 239
Dual-Band Combiner	782 10620	Band 1: 1710 – 1880 MHz Band 2: 1920 – 2170 MHz	300 W 300 W	240, 241
Dual-Band Combiner	782 10621	Band 1: 1710 – 1880 MHz Band 2: 1920 – 2170 MHz	300 W 300 W	240, 241
Dual-Band Combiner	782 10622	Band 1: 1710 – 1880 MHz Band 2: 1920 – 2170 MHz	300 W 300 W	240, 241
Dual-Band Combiner	782 10623	Band 1: 1710 – 1880 MHz Band 2: 1920 – 2170 MHz	300 W 300 W	240, 241
Dual-Band Combiner	782 10624	Band 1: 1710 – 1880 MHz Band 2: 1920 – 2170 MHz	300 W 300 W	240, 241
Dual-Band Combiner	782 10625	Band 1: 1710 – 1880 MHz Band 2: 1920 – 2170 MHz	300 W 300 W	240, 241
Dual-Band Combiner	782 10469	PCS: 1850 – 1990 MHz AWS: 1710 – 2155 MHz	250 W 250 W	242
Dual-Band Combiner	782 10808	PCS: 1850 – 1990 MHz AWS: 1710 – 2155 MHz	250 W 250 W	242
Dual-Band Combiner	782 10809	PCS: 1850 – 1990 MHz AWS: 1710 – 2155 MHz	250 W 250 W	243

Multiband Combiners:

Description	Type No.	Frequency range	Max. input power	Page
Dual-Band Combiner	782 10810	PCS: 1850 – 1990 MHz AWS: 1710 – 2155 MHz	250 W 250 W	243
Dual-Band Combiner	782 10800	Band 1: 1710 – 2180 MHz Band 2: 2400 – 2700 MHz	275 W 150 W	244
Dual-Band Combiner	782 10803	Band 1: 806 – 960 MHz Band 2: 2400 – 2700 MHz	250 W 250 W	245
Dual-Band Combiner	782 10804	Band 1: 806 – 960 MHz Band 2: 3300 – 3800 MHz	250 W 250 W	246
Dual-Band Combiner	782 10264	Band 1: 50 – 2200 MHz Band 2: 2400 – 2500 MHz	200 W 200 W	247
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	248, 249
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	248, 249
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	248, 249
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	248, 249

New Products

Frequency / MHz	PMR		AMPS / CDMA		GSM/UMTS 900		GSM1800/PCS1900		UMTS		WLAN		LTE/WiMAX		WiMAX	
	50	68	470	806	880	960	1710	1880	1920	2170	2400	2500	2700	3300	3800	
Type No.																
728 954			68 - 470			870 - 970										
791 145					50 - 1000		1600 - 2000									
78210457, 78210458, 782 10460			50 - 470				806 - 2500									
78210341					824 - 880		890 - 960									
793 532, 793 533							806 - 960		1710 - 2170							
78210248, 78210249, 78210250, 78210251					470 - 960				1710 - 2170							
78210278, 78210279 78210305, 78210306							806 - 1880		1920 - 2170							
78210620, 78210621 78210622, 78210623, 78210624, 78210625								1710 - 1880	1920 - 2170							
78210630, 78210631, 78210632, 78210633					380 - 960		1710 - 1880		1920 - 2170							
78210264							50 - 2200				2400 - 2500					
78210803						806 - 960						2400 - 2700				
78210800									1710 - 2180			2400 - 2700				
78210804						806 - 960									3300-3800	
78210469, 78210808, 78210809, 78210810						1710 - 1755		1850-1910		2110 - 2155						

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Multiband Combiners

Dual-Band Combiner

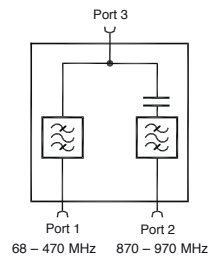
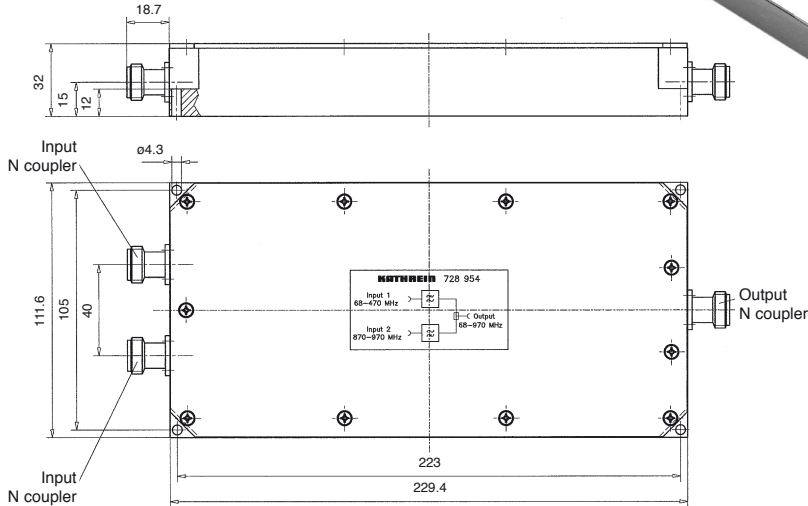
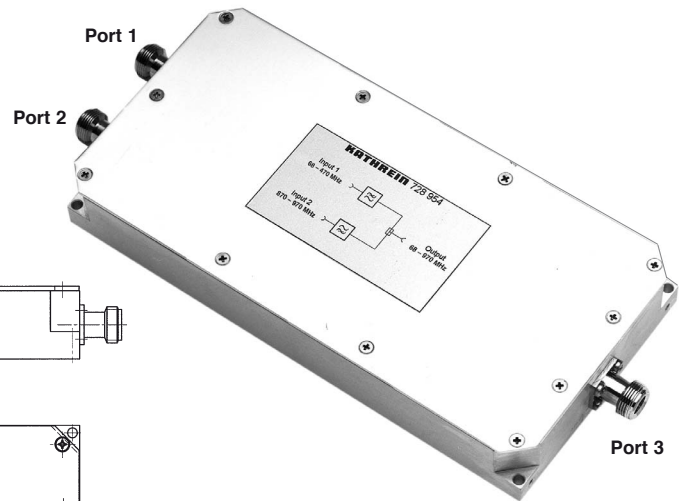
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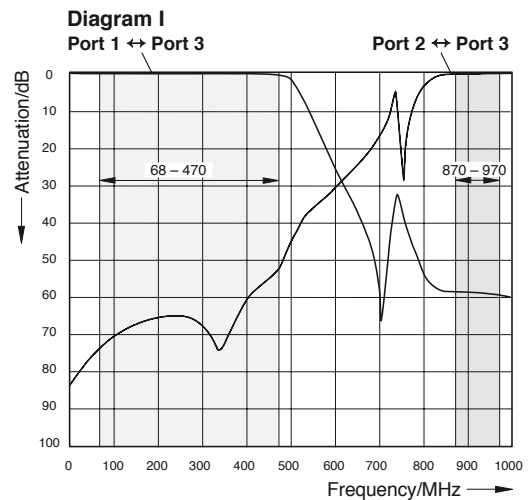
68 – 470 MHz
80 / 160 / 400 MHz

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

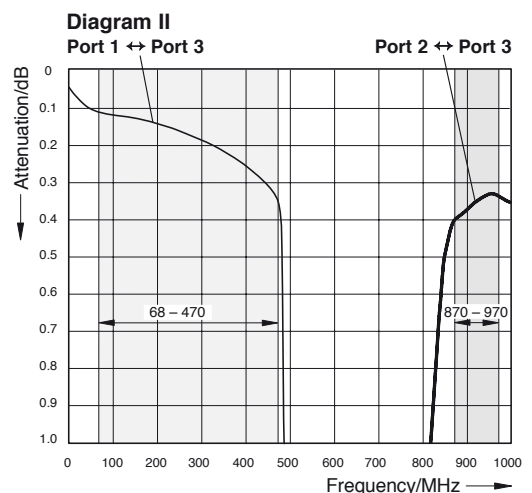


Typical Attenuation Curves



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 mm x 55 mm x 125 mm
Dimensions (w x h x d)	229.4 mm x 32 mm x 111.6 mm (without connectors)



Dual-Band Combiner

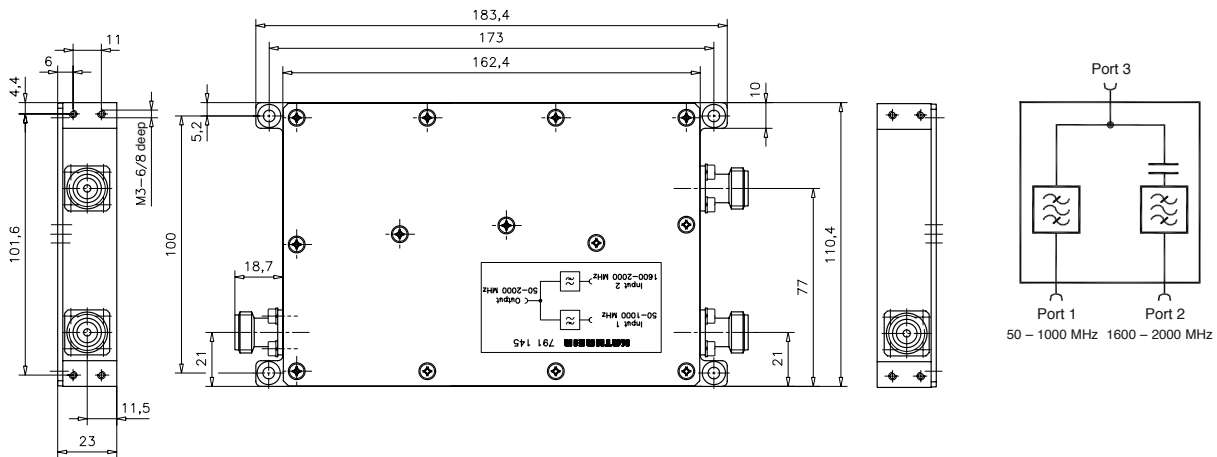
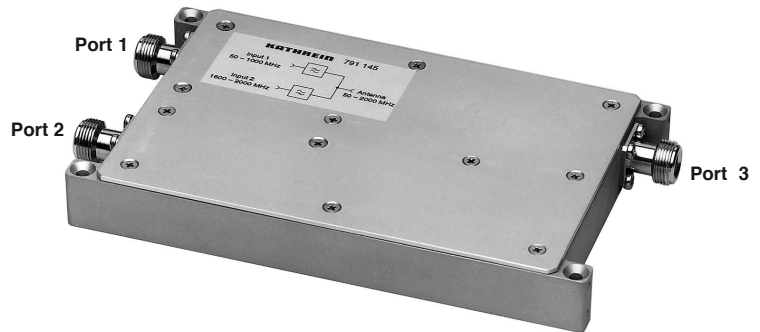
KATHREIN

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

Diagram I

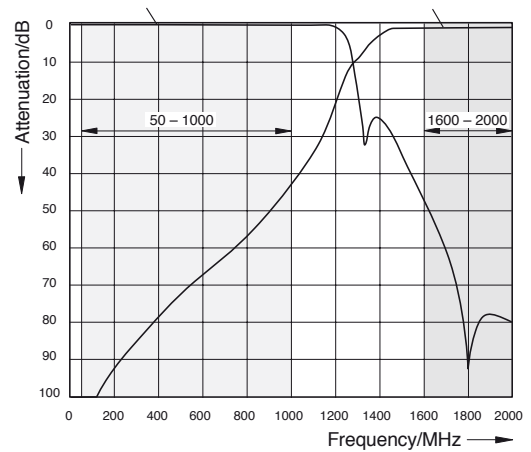
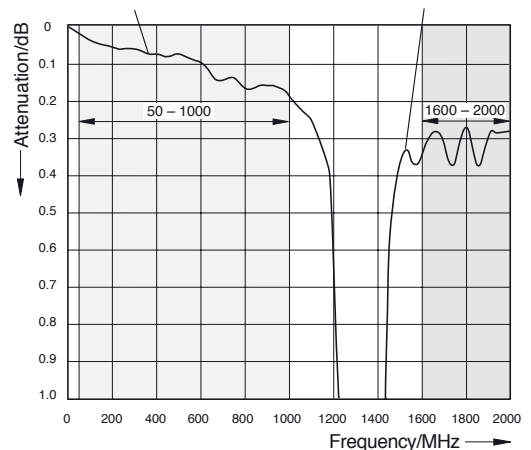


Diagram II



Technical Data

Type No.	791 145
Pass band Band 1 Band 2	50 – 1000 MHz 1600 – 2000 MHz
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	< 0.3 dB (50 – 1000 MHz) < 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 Band 2	< 100 W < 50 W
Temperature range	-30 ... +60 °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
Mounting	With 4 screws (max.4 mm diameter)
Weight	0.7 kg
Packing size	220 mm x 40 mm x 140 mm
Dimensions (w x h x d)	201 mm x 23 mm x 112 mm (incl. connectors)

Dual-Band Combiner

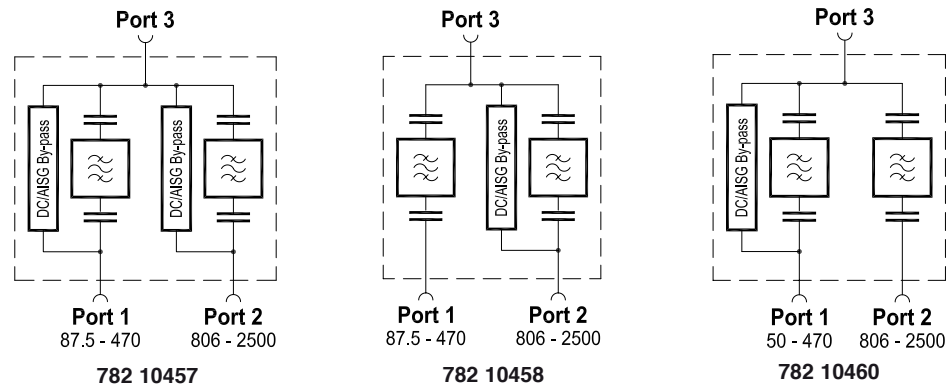
KATHREIN

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

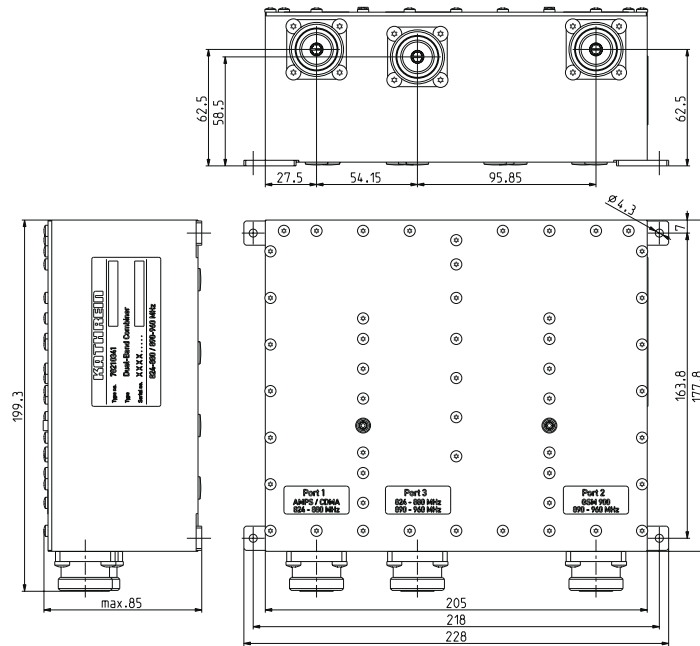
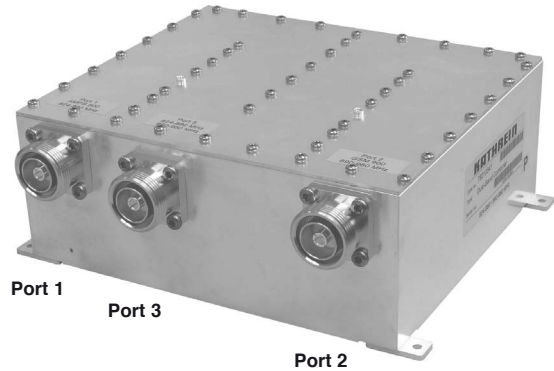
Type No.	782 10457	782 10458	782 10460
Pass band Band 1 Band 2	87.5 – 470 MHz 806 – 2500 MHz		50 – 470 MHz 806 – 2500 MHz
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	< 0.15 dB (87.5 – 470 MHz) < 0.15 dB (806 – 2500 MHz)		< 0.15 dB (50 – 470 MHz) < 0.15 dB (806 – 2500 MHz)
Isolation Port 1 ↔ Port 2	> 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)		

Dual-Band Combiner

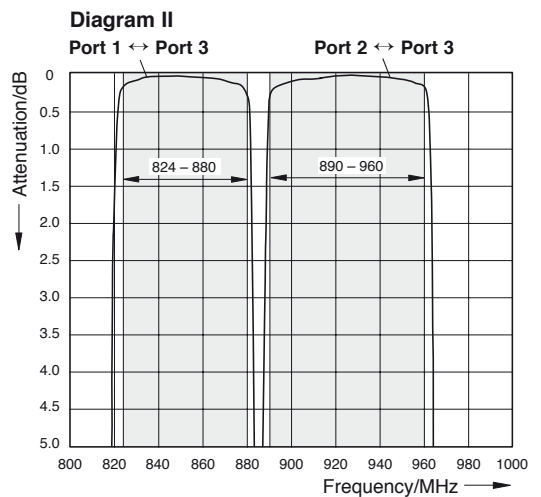
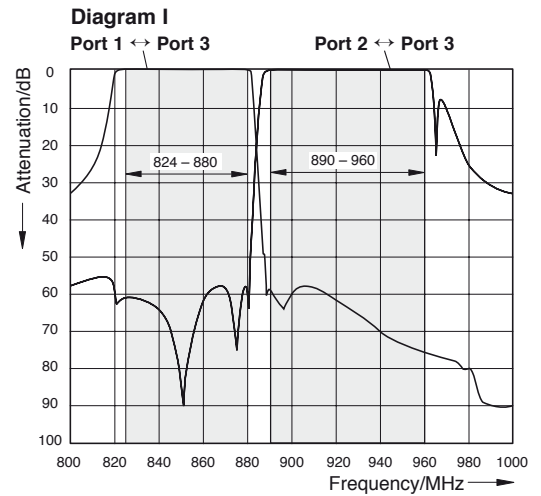
824 – 880 MHz
AMPS / CDMA 800

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

806 – 960 MHz
CDMA 800 / GSM 900

1710 – 2170 MHz
GSM 1800 / UMTS

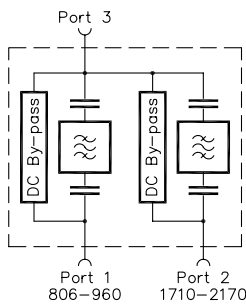
- Designed for co-siting purposes
- Enables feeder sharing
- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- Available as a single unit, or for XPol antennas as a double unit
- DC by-pass between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



793 532
Single Unit



793 533
Double Unit

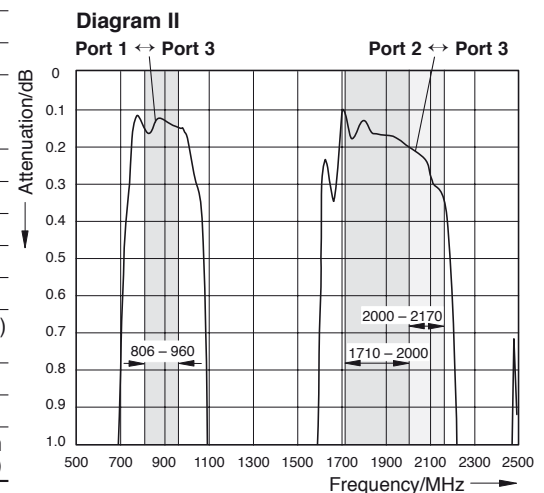
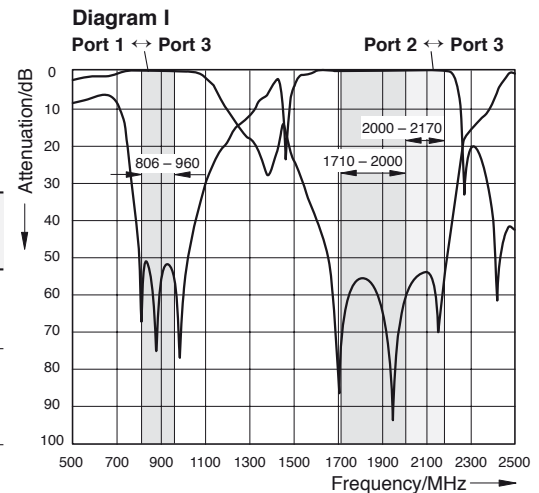


Single Unit **793 532**
Double Unit **793 533**
(only 1 unit shown)

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 61.2 mm 125 x 197.7 x 111.6 mm (without connectors, without mounting brackets)	

Typical Attenuation Curves



Dual-Band Combiner

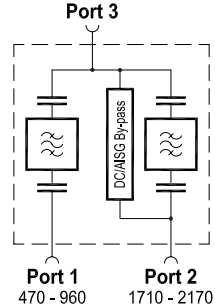
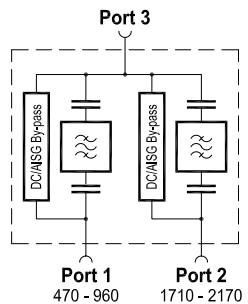
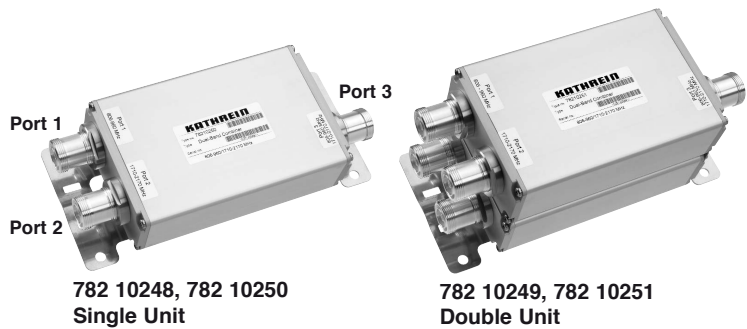
KATHREIN

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

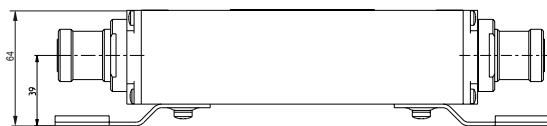
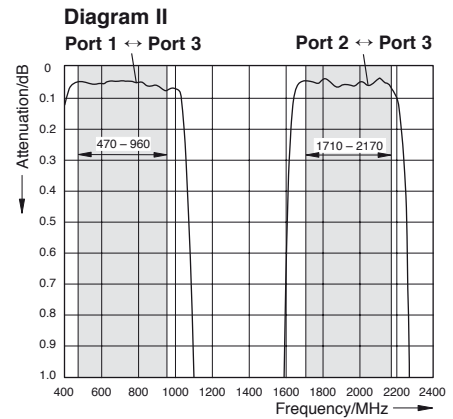
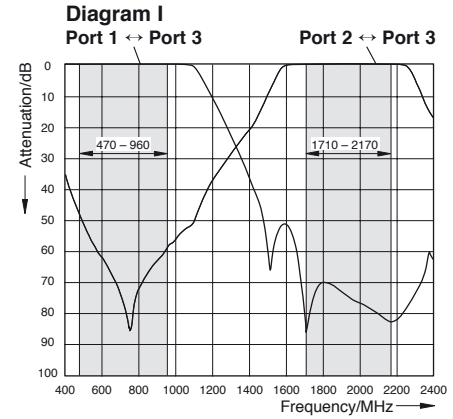
Accessories (order separately)

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

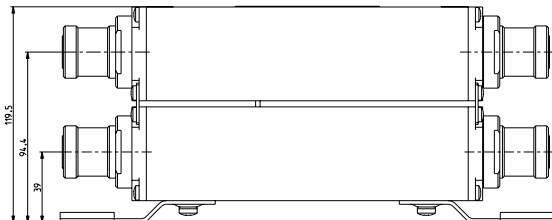


Type No.	Description
784 10367	50-Ω load 1.5 W / indoor or outdoor
793 301	DC stop

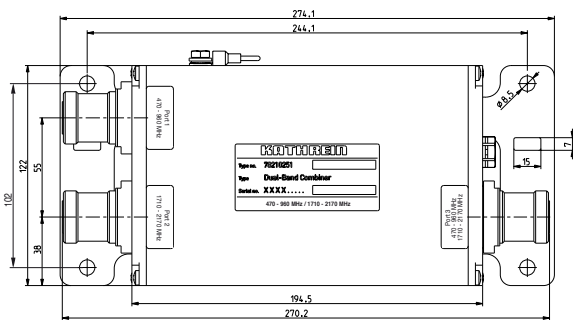
Typical Attenuation Curves



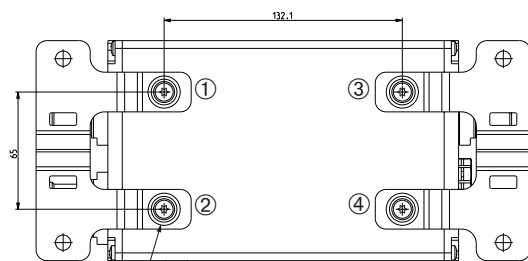
Side view
Single Unit



Side view
Double Unit



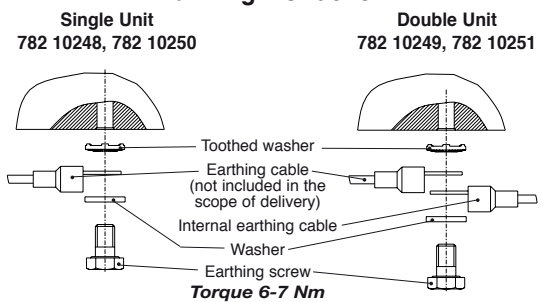
Top view
Single Unit,
Double Unit



Bottom view
Single Unit,
Double Unit

4 screws M5 x 10
4 spring washers
5.5 DIN 6095

Earthing Instruction



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

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

1920 – 2170 MHz
UMTS

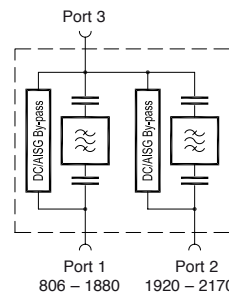
- Designed for co-siting purposes
- Enables feeder sharing
- Can be used as a combiner near the BTS or in a reciprocal function near the antenna
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- Available as a single unit, or for XPol antennas as a double unit
- Built-in lightning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



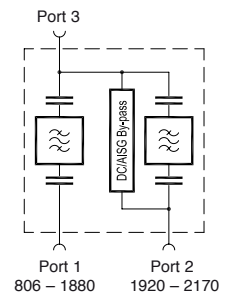
782 10278, 782 10305
Single Unit



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 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	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

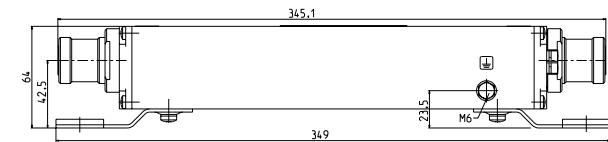
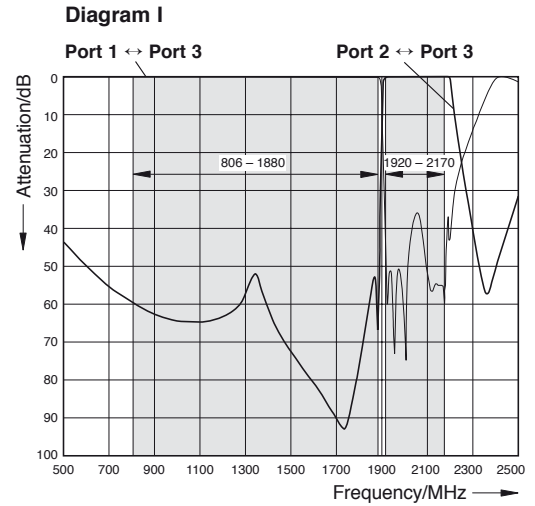
Accessories (order separately)

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

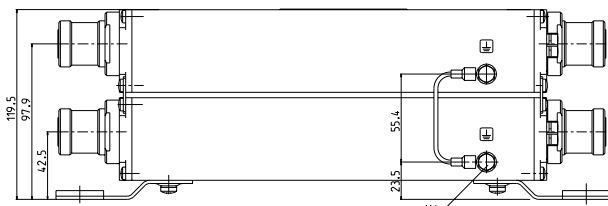


Type No.	Description
793 301	DC stop
784 10367	50-Ω load 1.5 W indoor or outdoor

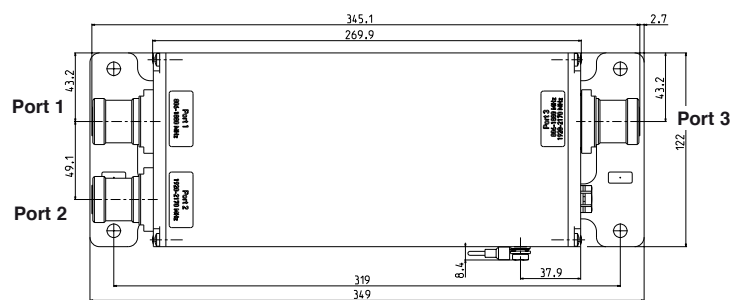
Typical Attenuation Curves



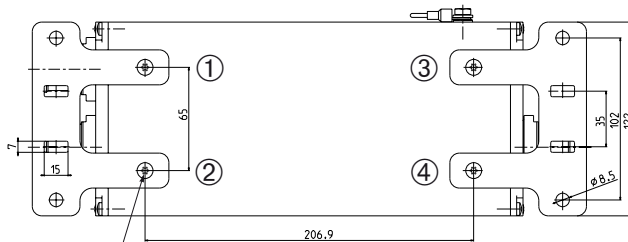
Side view, 782 10278, 782 10305 Single Unit



Side view, 782 10279, 782 10306 Double Unit

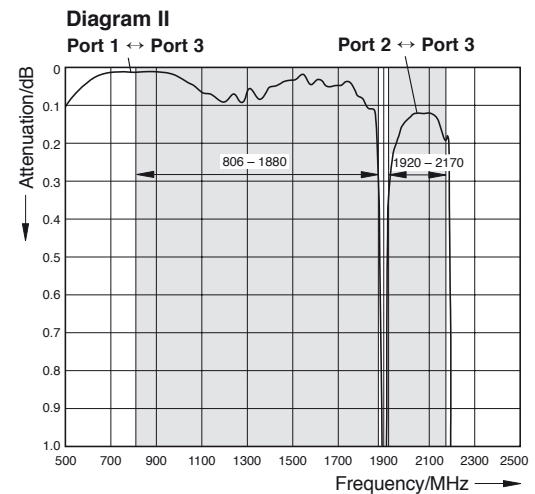


Top view, 782 10278, 782 10305 Single Unit,
782 10279, 782 10306 Double Unit

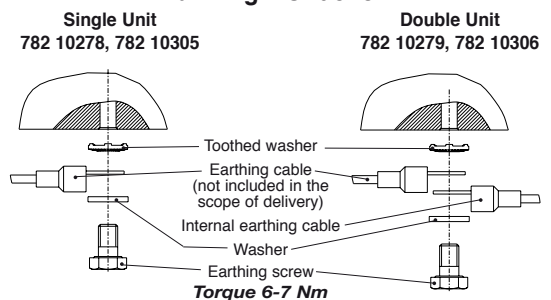


4 screws M5 x 10
4 spring washers
5.5 DIN 6095

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



Earthing Instruction



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

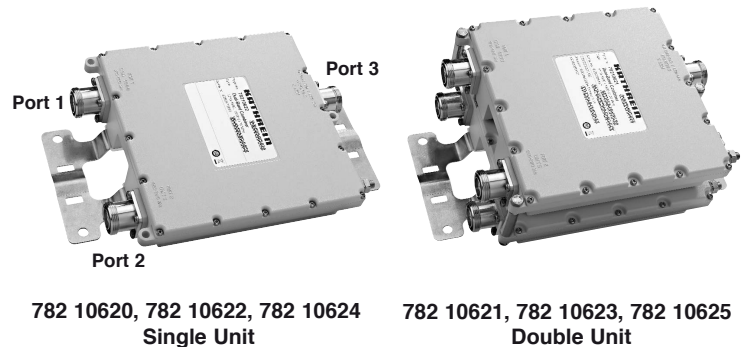
KATHREIN

Antennen · Electronic

1710 – 1880 MHz
GSM 1800

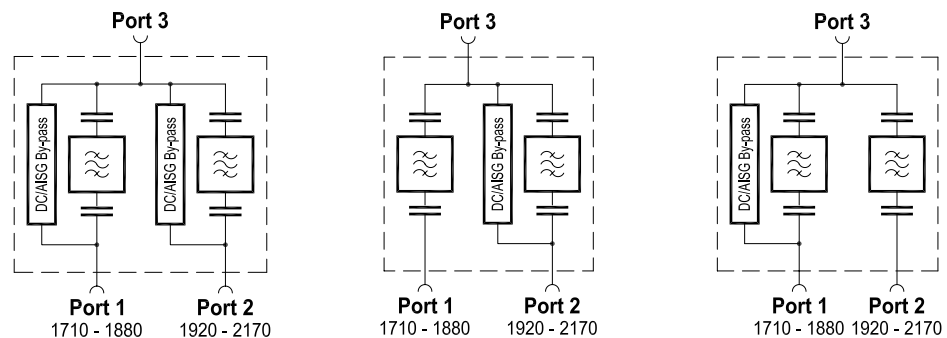
1920 – 2170 MHz
UMTS

- 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

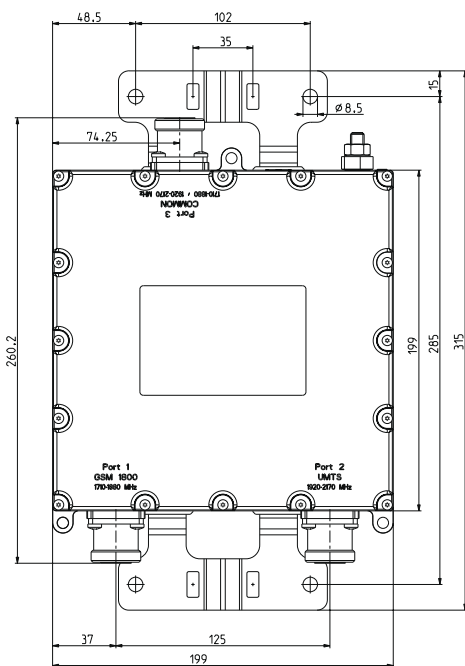
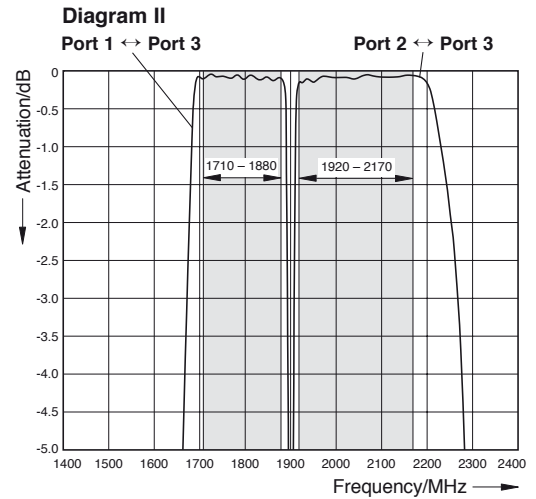
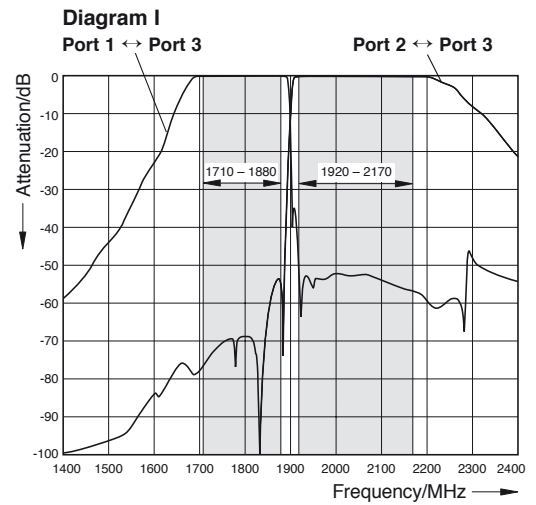
Accessories (order separately)

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



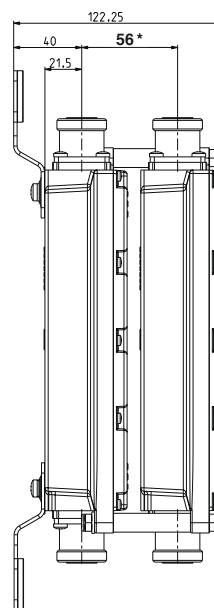
Typical Attenuation Curves



Top view Single Unit, Double Unit



Side view Single Unit



Side view Double Unit

* Type 782 10621 and 782 10623 with 51 mm spacing between connectors for production lots in 2008

Dual-Band Combiner

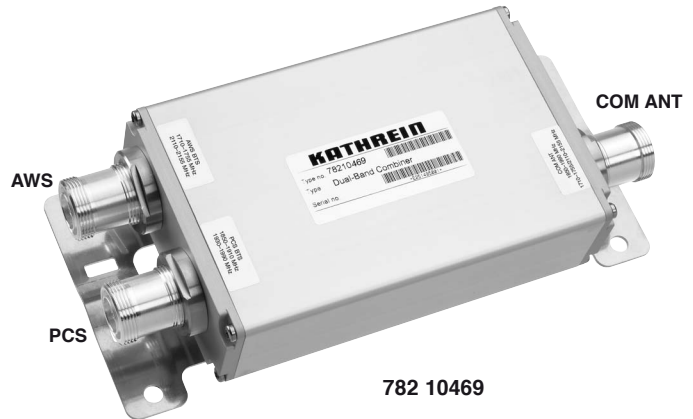
KATHREIN

Antennen · Electronic

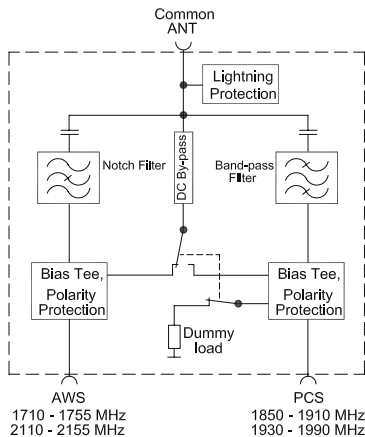
1850 – 1910 / 1930 – 1990 MHz
PCS

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



782 10469



Typical Attenuation Curves

Diagram I

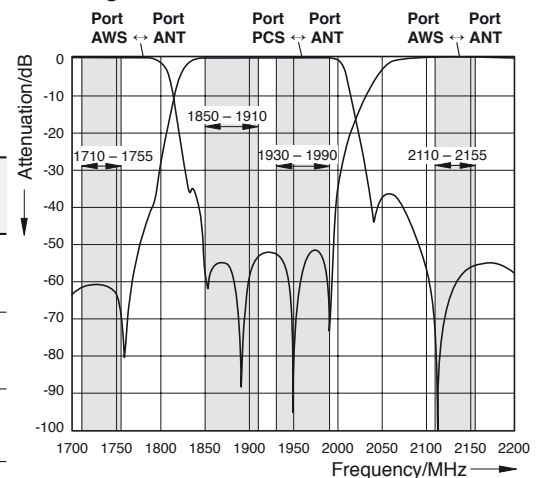
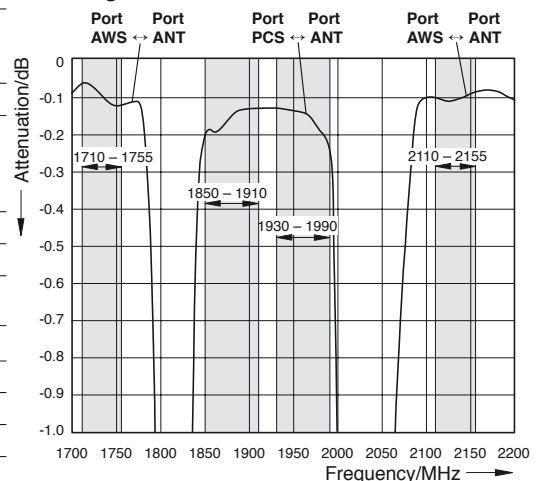


Diagram II



Technical Data

Type No.	782 10469 Single unit	782 10808 Double unit
Pass band	PCS 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	+10 ... +15 V DC (Port PCS) +10 ... +30 V DC (Port AWS) survival +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

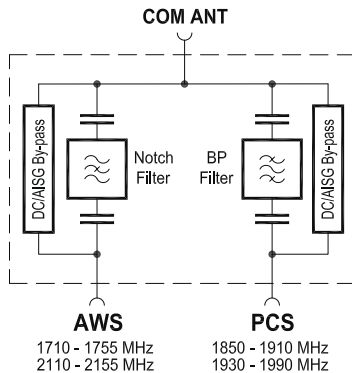
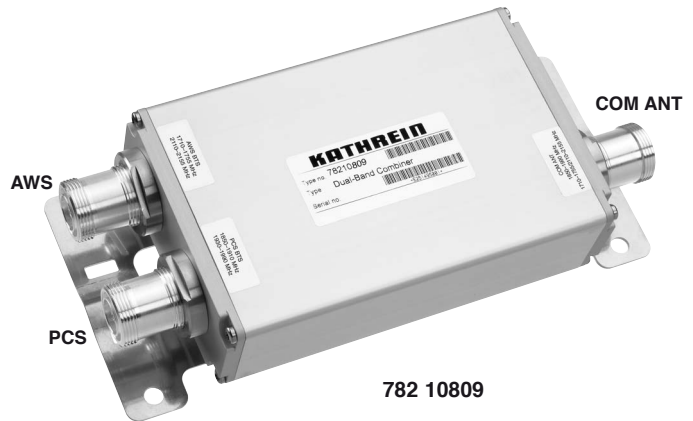
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1850 – 1910 / 1930 – 1990 MHz
PCS

1710 – 1755 / 2110 – 2155 MHz
AWS

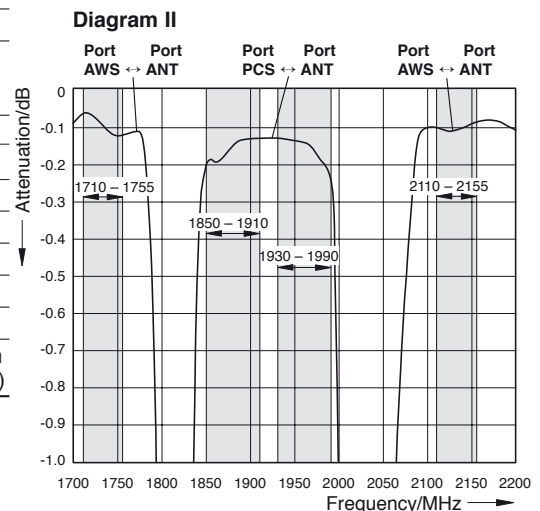
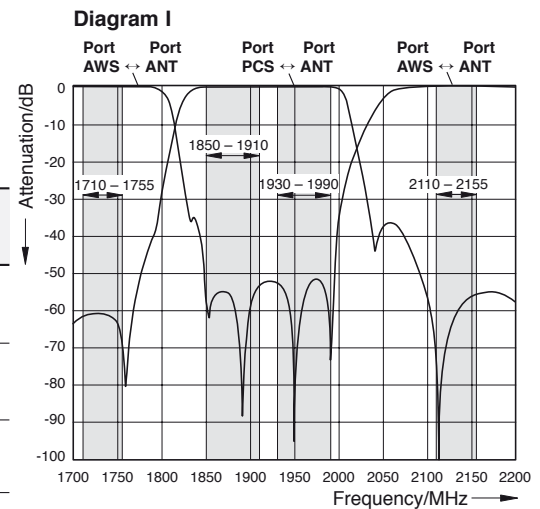
- Designed for co-siting purposes
- Enables feeder sharing
- Suitable for indoor or outdoor applications
- DC by-pass between all ports
- External DC stop available as an accessory



Technical Data

Type No.	782 10809 Single unit	782 10810 Double unit
Pass band	PCS AWS	
Insertion loss	Port PCS ↔ Port ANT Port AWS ↔ Port ANT	
Isolation	Port PCS ↔ Port AWS	
VSWR		
Impedance	50 Ω	
Input power	Port PCS Port AWS	
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)

Typical Attenuation Curves



Dual-Band Combiner

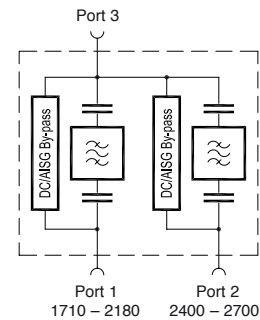
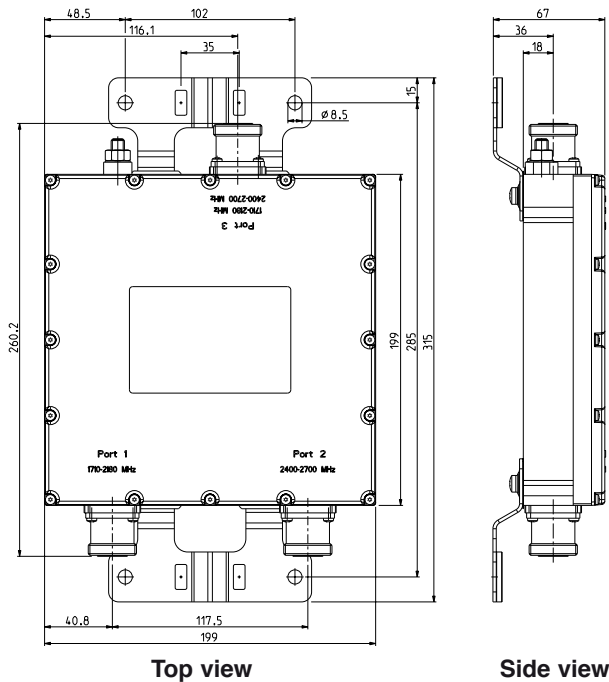
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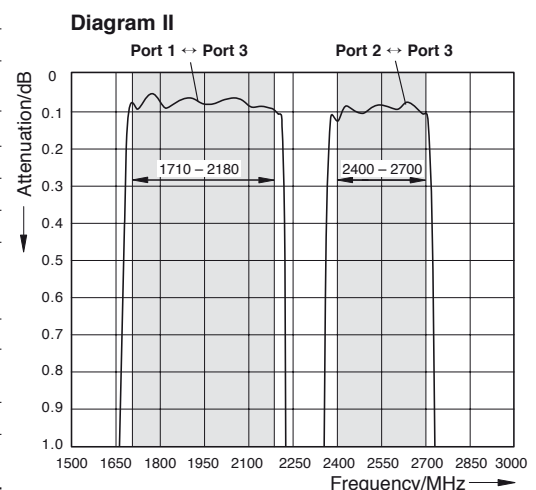
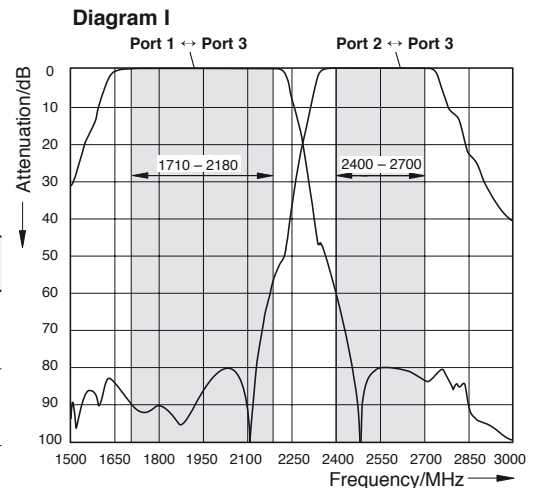
1710 – 2180 MHz
GSM 1800 / PCS 1900 / AWS / UMTS

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 Band 2	1710 – 2180 MHz 2400 – 2700 MHz
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	< 0.15 dB < 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/AISG transparency Port 1 ↔ Port 3 Port 2 ↔ Port 3	By-pass (max. 2500 mA) 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

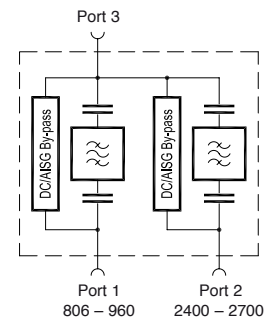
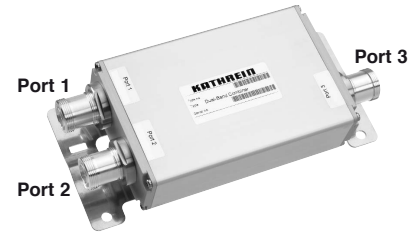
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Antennen · Electronic

806 – 960 MHz
CDMA 800 / GSM 900

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

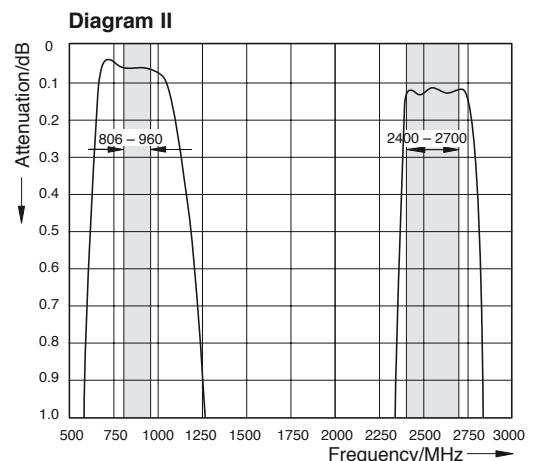
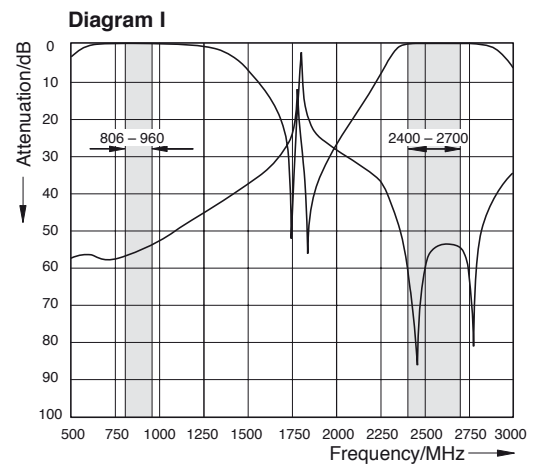


Technical Data

Type No.	782 10803
Pass band Band 1 Band 2	806 – 960 MHz 2400 – 2700 MHz
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	< 0.2 dB < 0.3 dB
Isolation Port 1 ↔ Port 2	> 50 dB
VSWR	< 1.25 (806 – 960 MHz / 2400 – 2700 MHz)
Impedance	50 Ω
Input power Band 1 / Band 2	< 250 W / < 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 2 ↔ Port 3	By-pass (max. 2500 mA) 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	Approx. 2.9 kg
Packing size	Approx. 365 mm x 207 mm x 150 mm
Dimensions (w x h x d)	Approx. 125 mm x 274 mm x 64 mm (including mounting brackets)

Tuning example:

Calculated Attenuation Curves



Dual-Band Combiner

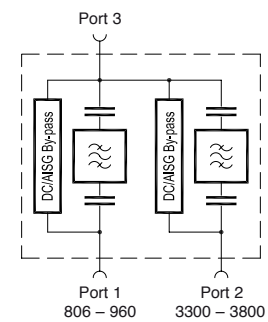
KATHREIN

Antennen · Electronic

806 – 960 MHz
CDMA 800 / GSM 900

3300 – 3800 MHz
WiMAX 3.5

- 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



Tuning example:

Calculated Attenuation Curves

Diagram I

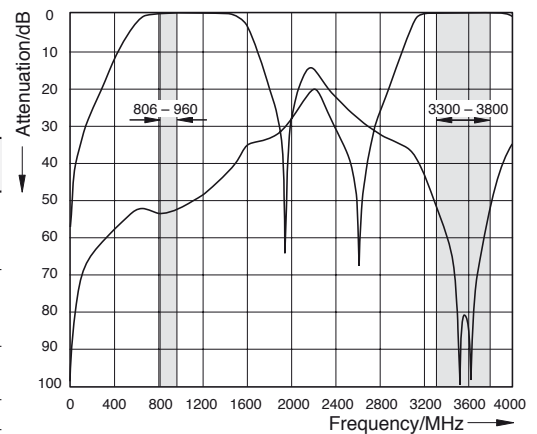
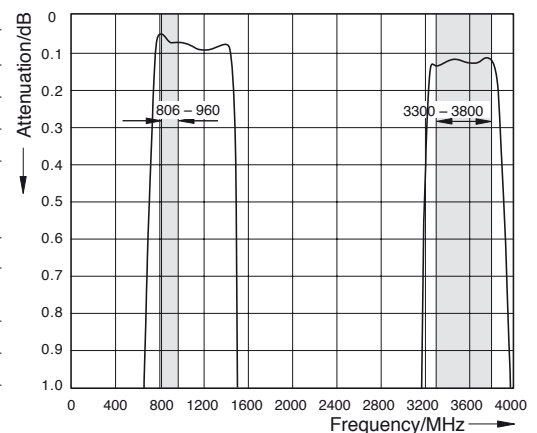


Diagram II



Technical Data

Type No.	782 10804
Pass band Band 1 Band 2	806 – 960 MHz 3300 – 3800 MHz
Insertion loss Port 1 ↔ Port 3 Port 2 ↔ Port 3	< 0.2 dB < 0.3 dB
Isolation Port 1 ↔ Port 2	> 50 dB
VSWR	< 1.25 (806 – 960 / 3300 – 3800 MHz)
Impedance	50 Ω
Input power Band 1 / Band 2	< 250 W / < 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 2 ↔ Port 3	By-pass (max. 2500 mA) 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	Approx. 2.9 kg
Packing size	Approx. 365 mm x 207 mm x 150 mm
Dimensions (w x h x d)	Approx. 125 mm x 274 mm x 64 mm (including mounting brackets)

Dual-Band Combiner

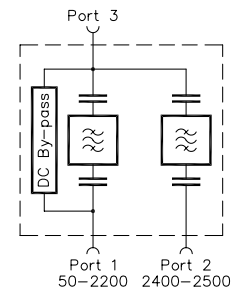
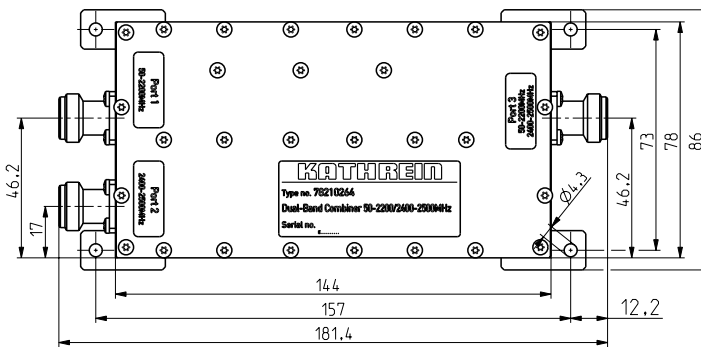
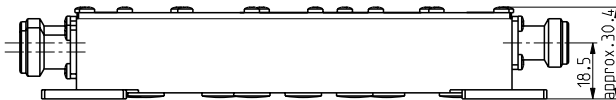
KATHREIN

Antennen · Electronic

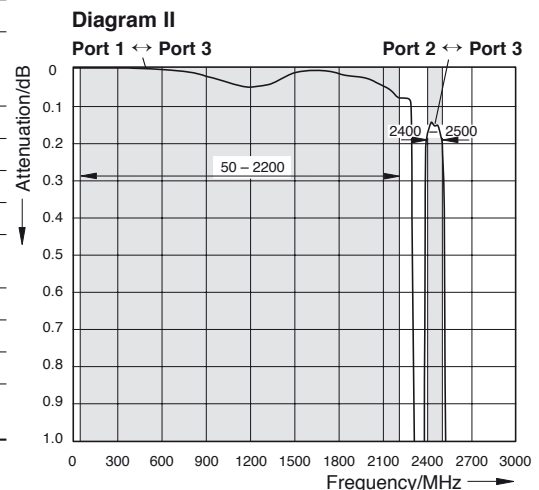
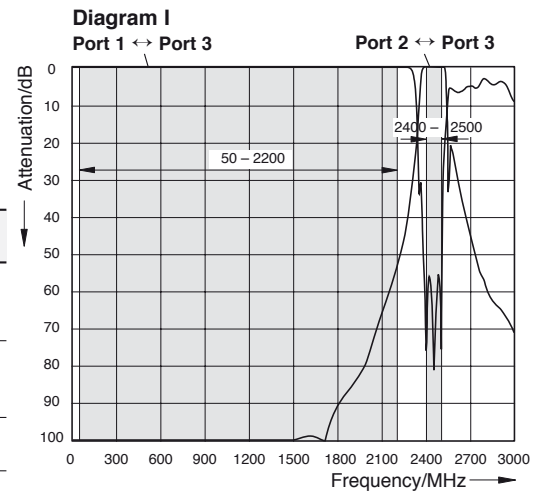
50 – 2200 MHz
80 / 160 / 400 / 900 / 1800 / UMTS

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



Typical Attenuation Curves



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 mm x 140 mm x 75 mm
Dimensions (w x h x d)	86 mm x 30.4 mm x 181.4 mm (including connectors and mounting feet)

Triple-Band Combiner

KATHREIN

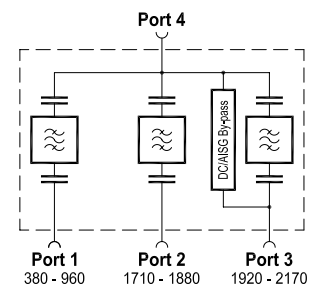
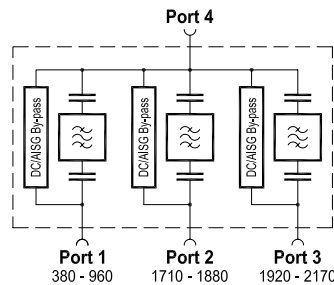
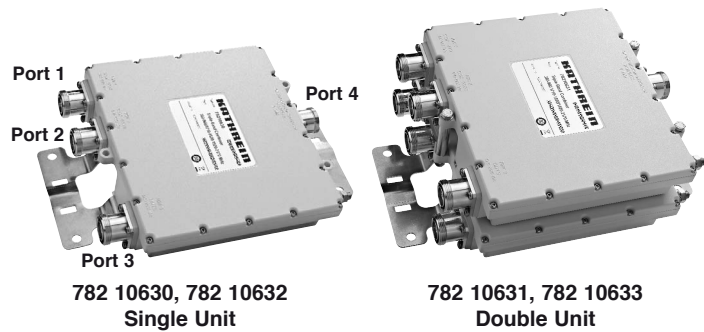
Antennen · Electronic

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



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



Typical Attenuation Curves

Diagram I

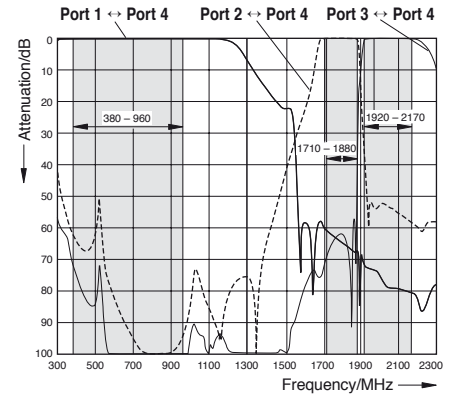
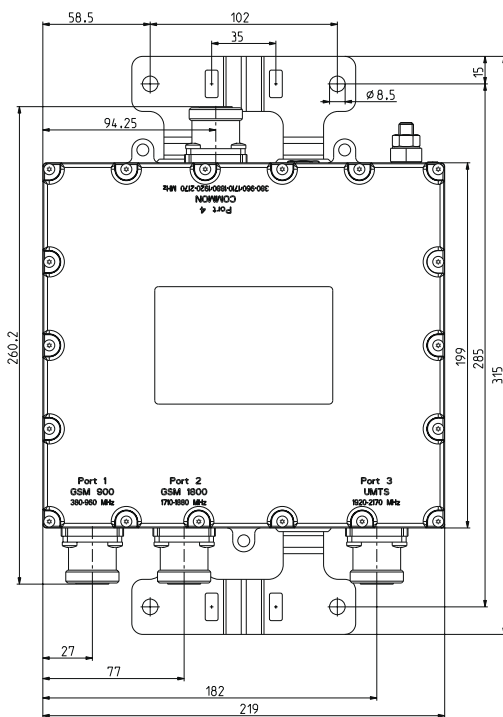
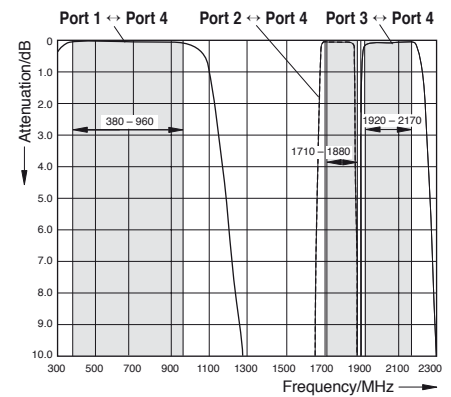
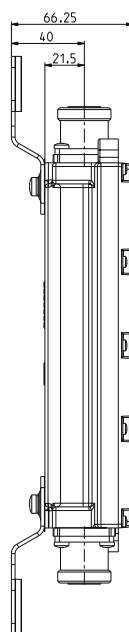


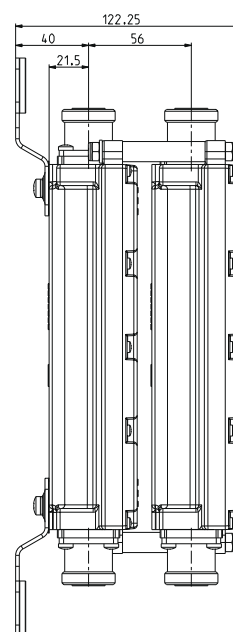
Diagram II



Top view Single Unit, Double Unit



Side view Single Unit



Side view Double Unit

Hybrid Combiners

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

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	253
Hybrid Combiner 2:1	792 702	1700 – 2200 MHz	150 W per Tx/Rx port	7-16	254
Hybrid Combiner 2:1	793 555	800 – 2200 MHz	150 W per Tx/Rx port	7-16	255
Hybrid Combiner 2:1	782 10500	806 – 960 MHz	60 W at each port	7-16	256
Hybrid Combiner 2:1	782 10502	1710 – 2170 MHz	60 W at each port	7-16	257
Hybrid Combiner 4:4	782 10532	1710 – 2170 MHz	60 W at each port	7-16	258
Hybrid Combiner 4:4	782 10203	800 – 2200 MHz	150 W at each port	7-16	259
Duplex Hybrid Combiner	78210805	Rx: 880 – 915 MHz Tx: 925 – 960 MHz	250 W	7-16	260, 261
Hybrid Ring Junction	K 63 73 621	806 – 960 MHz	100 W per input	N	262, 263
Hybrid Ring Junction	790 881	890 – 960 MHz	100 W per input	N	262, 263
Hybrid Ring Junction	791 498	1710 – 1880 MHz	50 W per input	N	262, 263
3-dB Coupler	793 506	806 – 960 MHz	500 W	7-16	264
3-dB Coupler	793 006	1700 – 2200 MHz	300 W	7-16	265
3-dB Coupler	793 554	800 – 2200 MHz	300 W	7-16	266

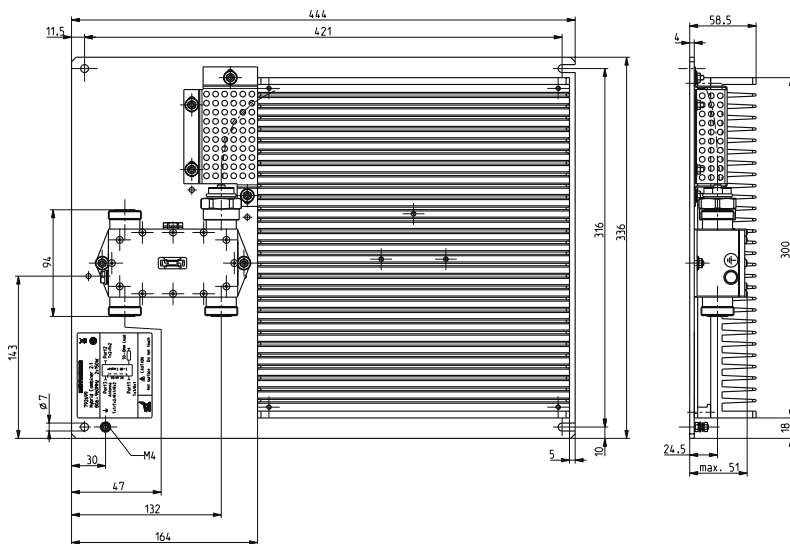
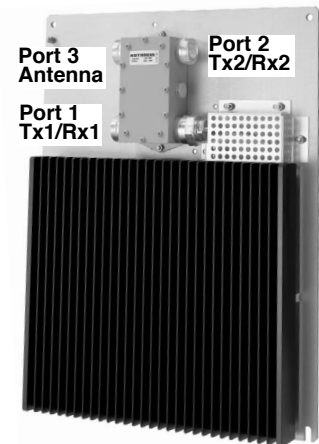
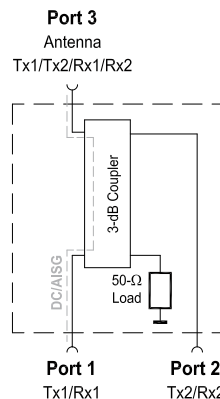
New Products

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

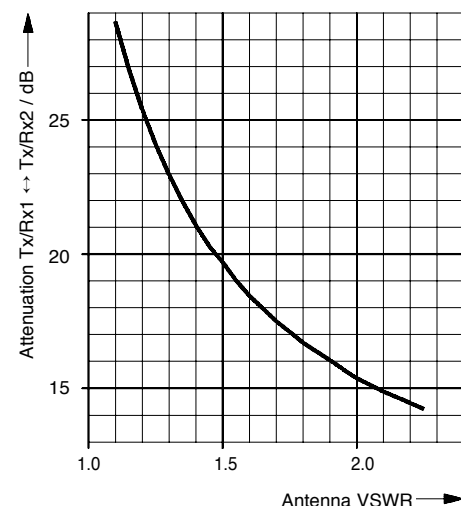


Technical Data

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).

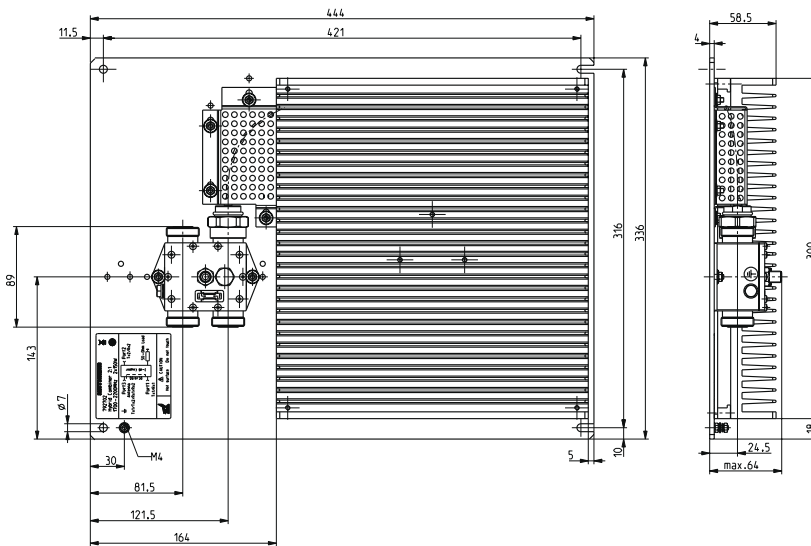
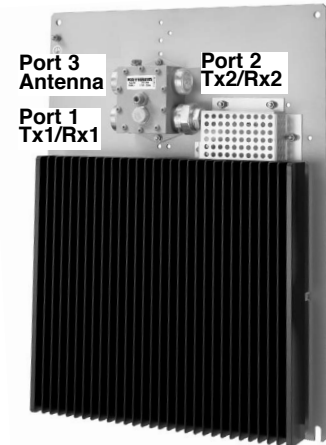
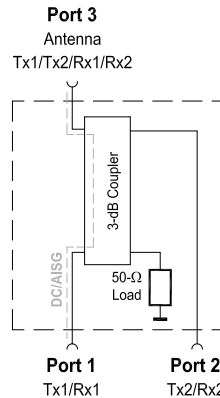
When installed in a 19" rack, it must be ensured that the max. power of 150 W is sufficiently dissipated, so that the ambient temperature does not rise above +50 °C. This can be achieved for example by the additional installation of a correspondingly dimensioned ventilator in the 19" rack or by reducing 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

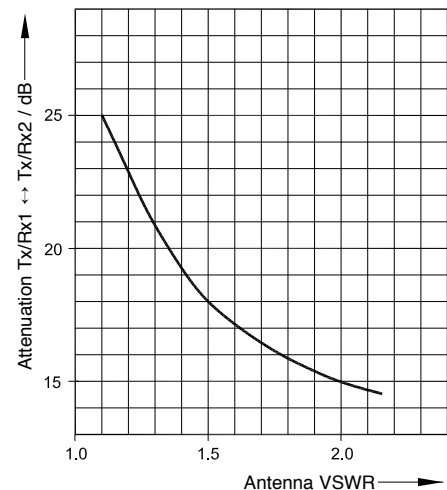


Technical Data

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).

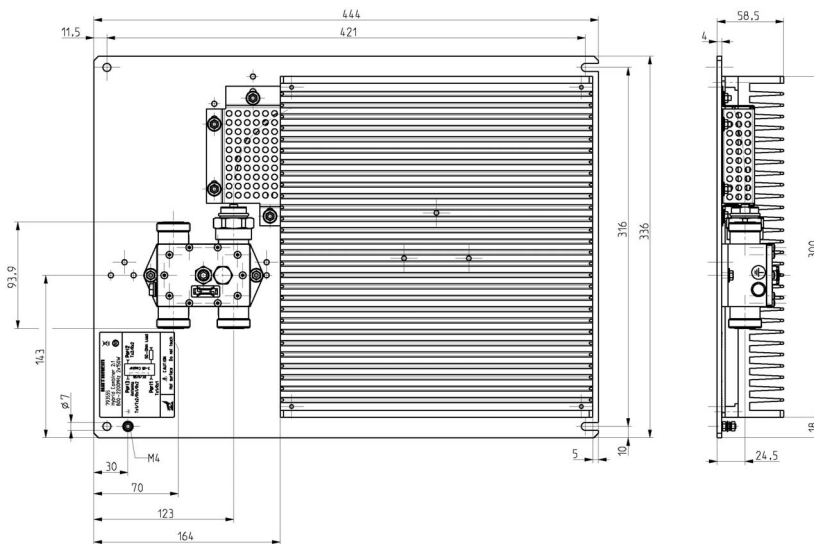
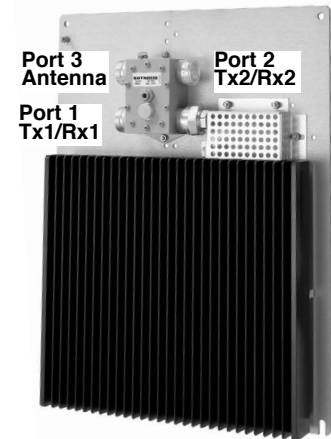
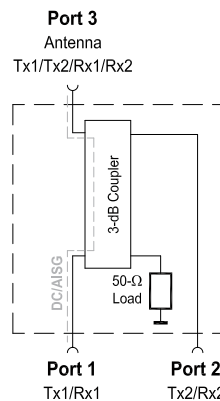
When installed in a 19" rack, it must be ensured that the max. power of 150 W is sufficiently dissipated, so that the ambient temperature does not rise above +50 °C. This can be achieved for example by the additional installation of a correspondingly dimensioned ventilator in the 19" rack or by reducing 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

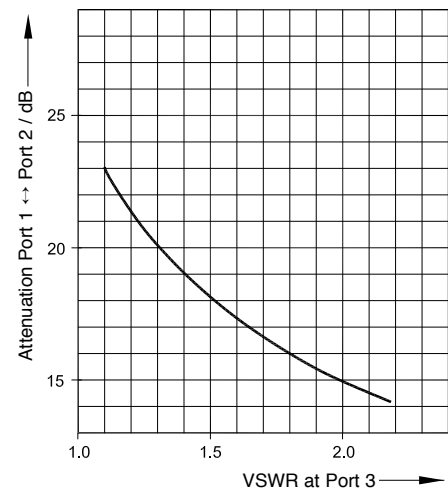


Technical Data

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).

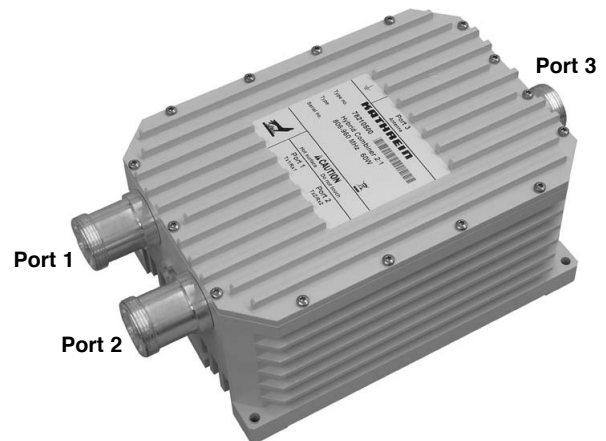
When installed in a 19" rack, it must be ensured that the max. power of 150 W is sufficiently dissipated, so that the ambient temperature does not rise above +50 °C. This can be achieved for example by the additional installation of a correspondingly dimensioned ventilator in the 19" rack or by reducing 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 next page)
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.

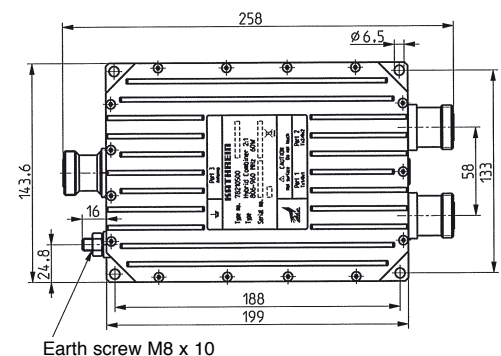
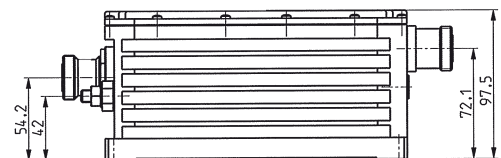
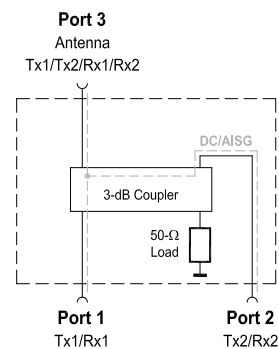
Note:

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

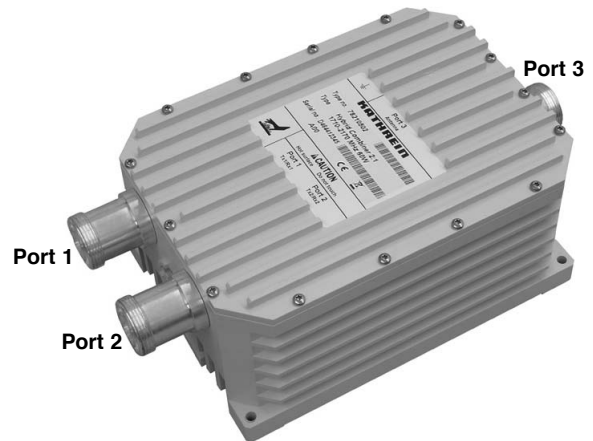


Hybrid Combiner 2:1

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.

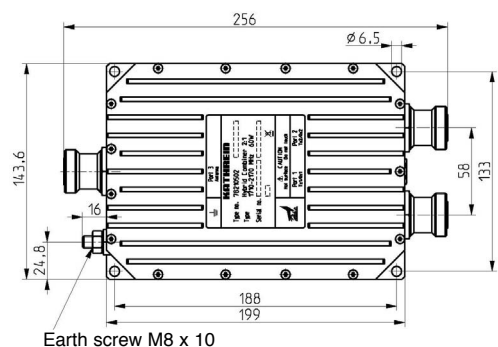
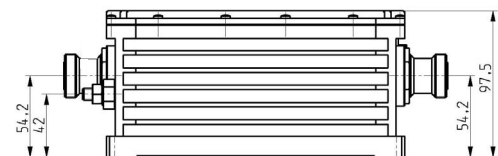
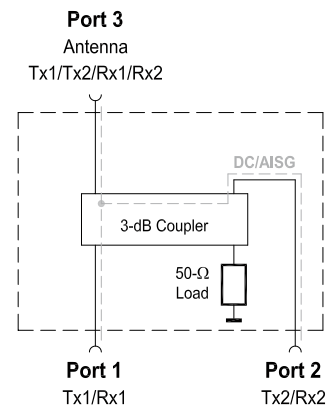
Note:

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

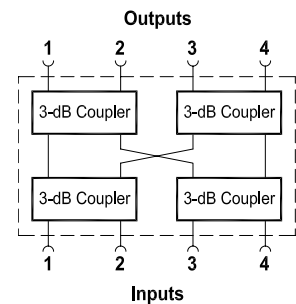
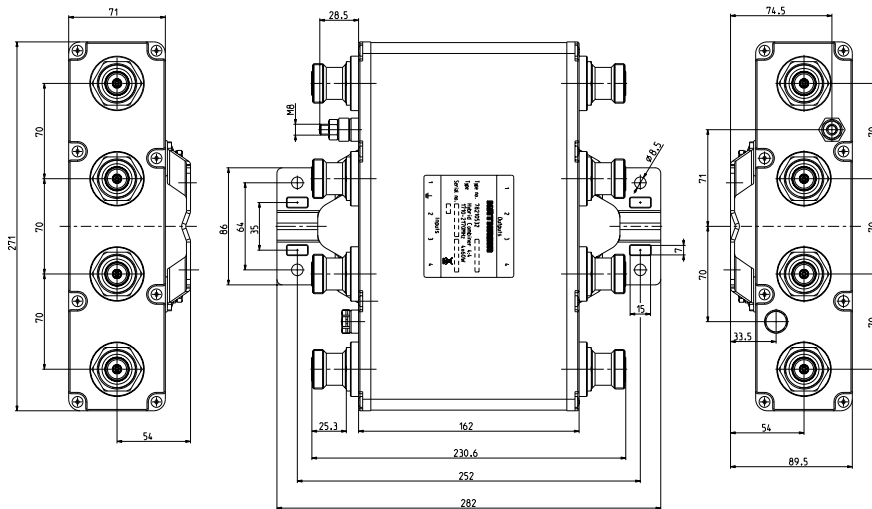
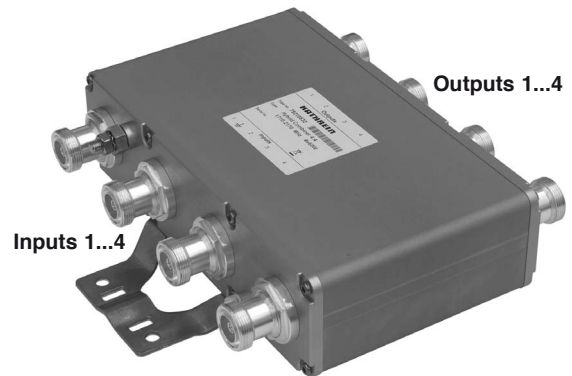


Hybrid Combiner 4:4

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:

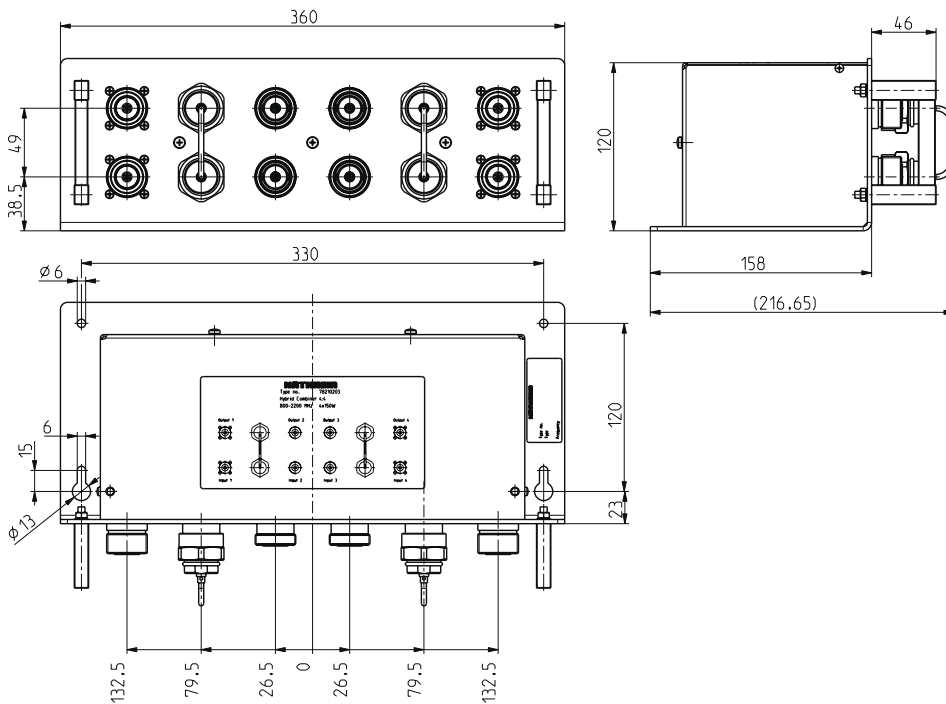
The use of fewer than 4 inputs or outputs is possible. Any unused input ports have to be terminated with low-power 50-Ohm loads (e.g. Kathrein type 784 10367), unused output ports have to be terminated with high-power 50-Ohm loads (e.g. Kathrein low-intermodulation type 782 10474).

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.



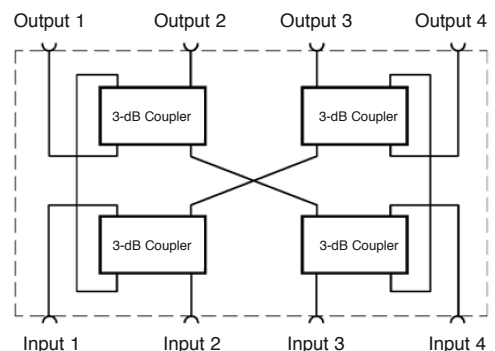
Technical Data

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 mm x 180 mm 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).



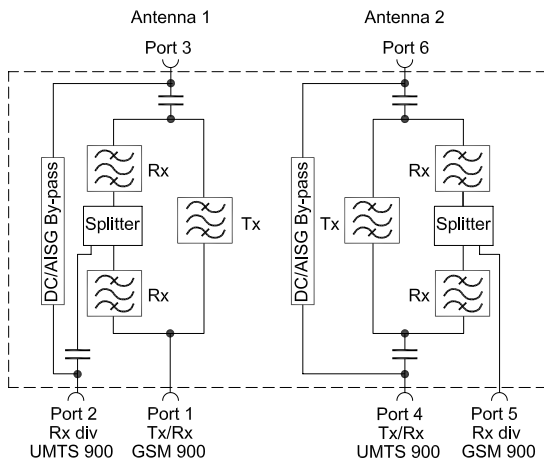
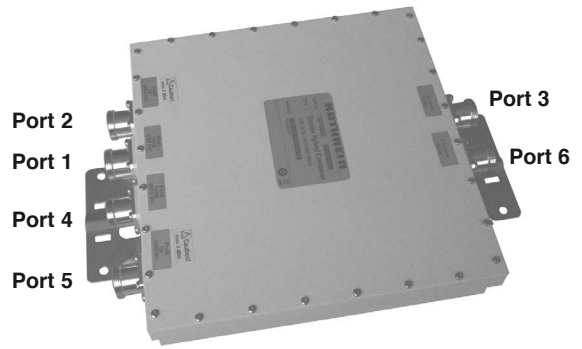
Duplex Hybrid Combiner

880 – 960 MHz
GSM 900

880 – 960 MHz
UMTS 900

KATHREIN
Antennen · Electronic

- Very low Tx insertion loss compared to standard hybrid combiners
- Designed for antenna sharing purposes
- Two GSM 900 base stations or one GSM 900 with one UMTS 900 base station
- Enables feeder sharing
- Suitable for indoor or outdoor applications
- Wall or mast mounting
- Designed for X-Pol antenna applications
- DC by-pass (only for UMTS paths)
- DC stop available as an accessory



Typical Attenuation Curves

Diagram I

Port 1 ↔ Port 3
Port 4 ↔ Port 6

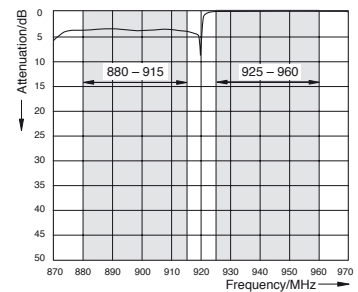


Diagram II

Port 1 ↔ Port 3
Port 4 ↔ Port 6

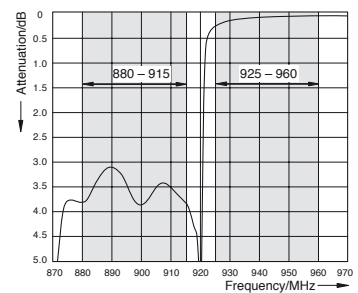


Diagram III

Port 2 ↔ Port 3
Port 5 ↔ Port 6

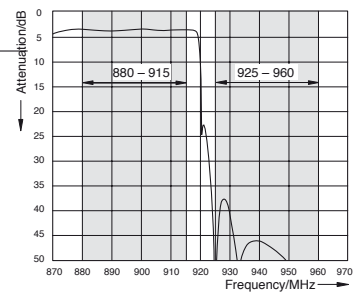
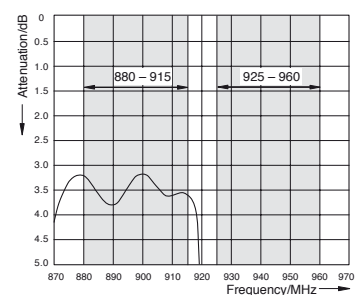


Diagram IV

Port 2 ↔ Port 3
Port 5 ↔ Port 6



Technical Data

Type No.	782 10805
Pass band Rx Tx	880 – 915 MHz 925 – 960 MHz
Insertion loss Port 1 ↔ Port 3 / Port 4 ↔ Port 6 Port 2 ↔ Port 3 / Port 5 ↔ Port 6	< 0.4 dB, typically 0.2 dB (925 – 960 MHz) – see Diagram I and II < 4.3 dB, typically 3.6 dB (880 – 915 MHz) – see Diagram I and II < 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 Port 2 ↔ Port 3 / Port 4 ↔ Port 6	Stop 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	8 kg
Packing size	410 x 380 x 155 mm
Dimensions (w x h x d)	289.5 x 278 x 68.5 mm (without connectors, without mounting brackets)

Duplex Hybrid Combiner

KATHREIN

Antennen · Electronic

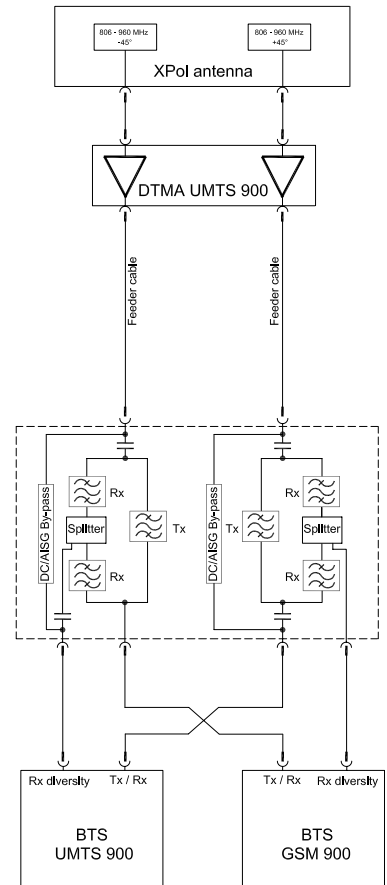
880 – 960 MHz
GSM 900

880 – 960 MHz
UMTS 900

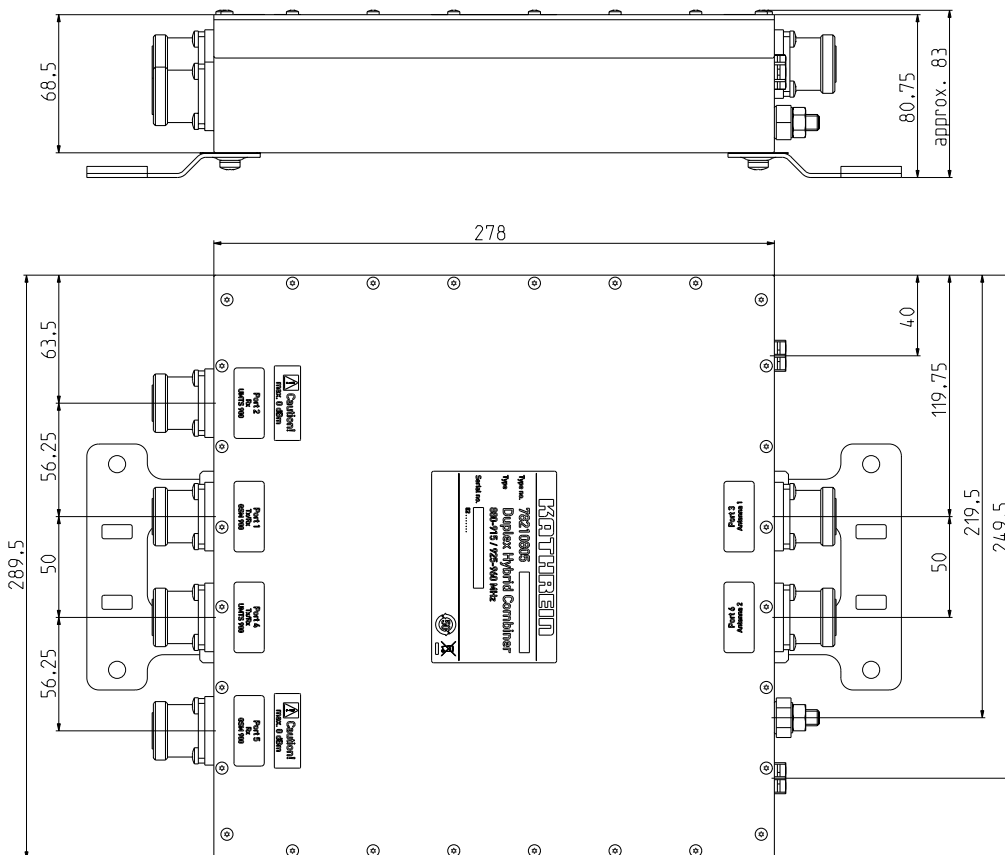
Accessories (order separately)

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



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.

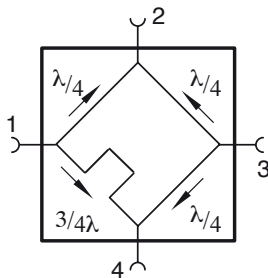
Decoupled combining can be made via ports 1 and 3 or 2 and 4.



K 63 73 621
790 881



791 498



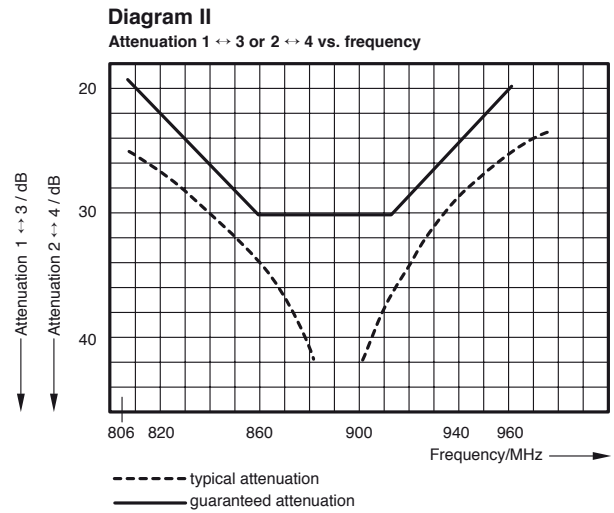
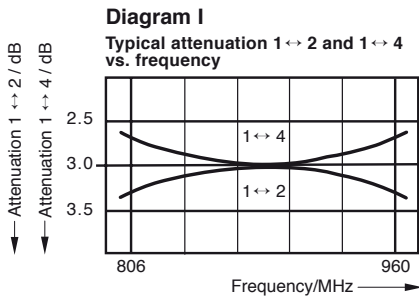
Technical Data

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 mm x 40 mm x 105 mm		90 mm x 40 mm x 110 mm
Dimensions (w x h x d)	150 mm x 30 mm x 87 mm (including connectors)		80 mm x 26 mm x 106 mm (including connectors)

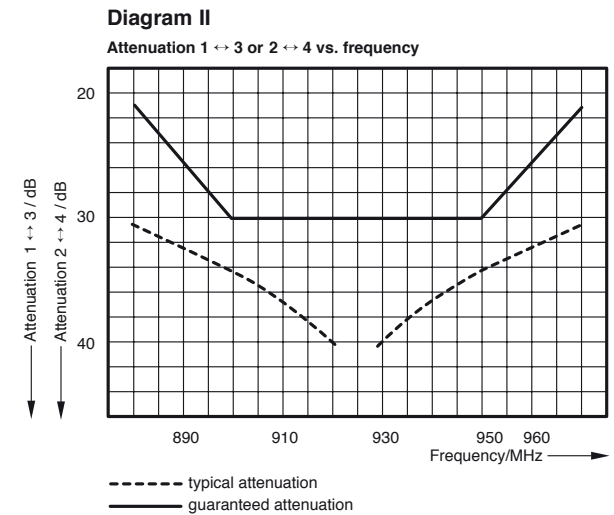
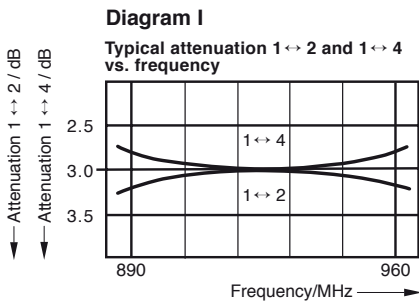
Note: VSWR and attenuation values are measured when the remaining ports are terminated with 50-Ω loads.

Typical Attenuation Curves

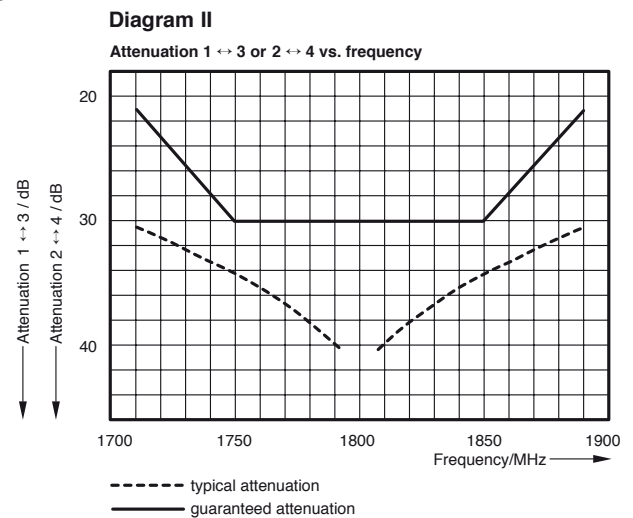
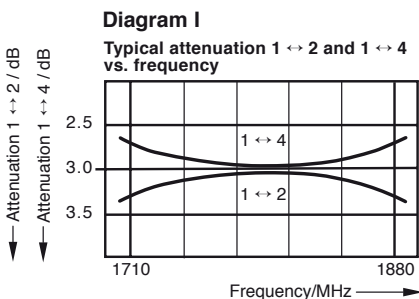
K 63 73 621



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.

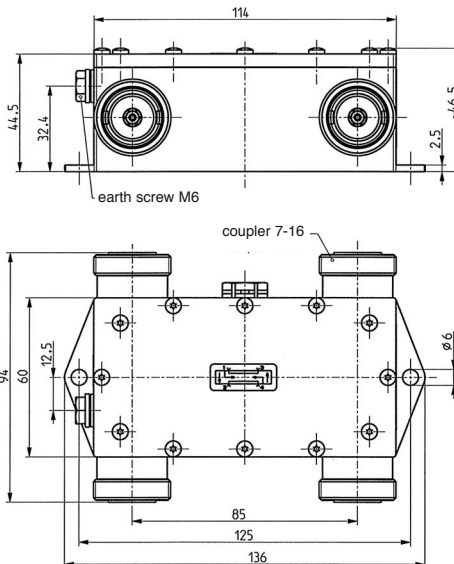
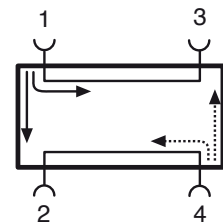
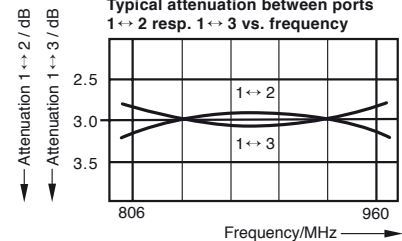


Diagram I

Typical attenuation between ports 1 ↔ 2 resp. 1 ↔ 3 vs. frequency

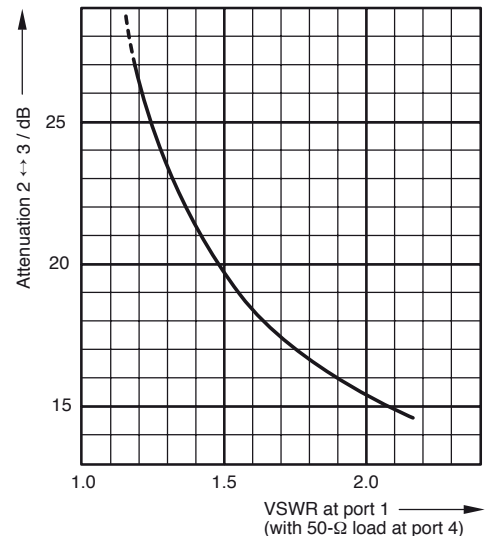


Technical Data

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 two inputs, with max. 350 W at one 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 mm x 95 mm x 65 mm
Dimensions (w x h x d)	136 x 46.5 x 94 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) 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.

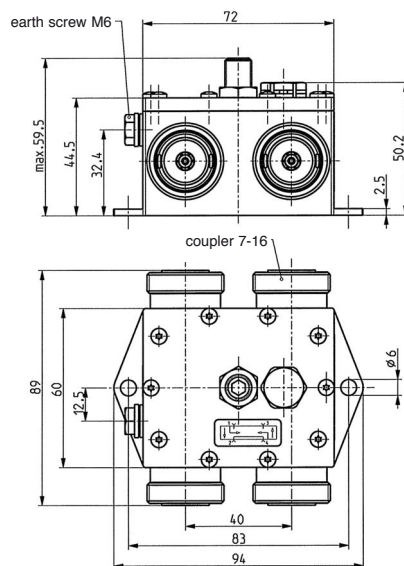
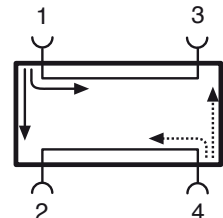
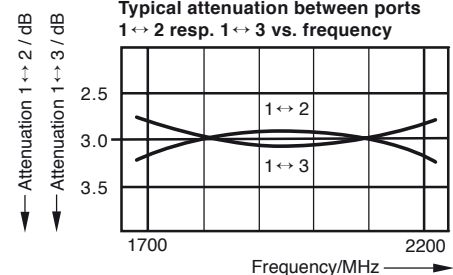


Diagram I

Typical attenuation between ports 1 ↔ 2 resp. 1 ↔ 3 vs. frequency



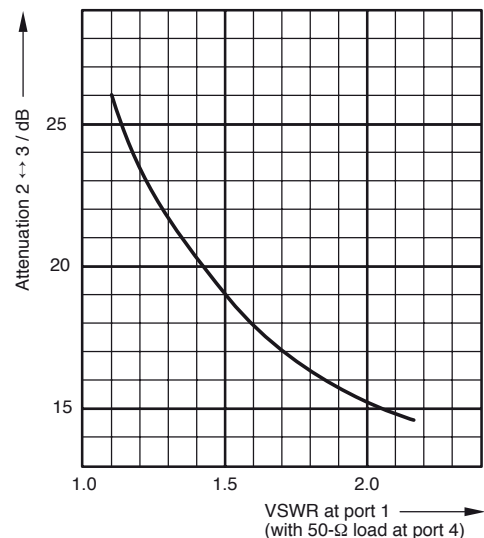
Technical Data

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 two inputs, with max. 200 W at one 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 mm x 95 mm x 65 mm
Dimensions (w x h x d)	94 x 59.5 x 89 mm (including connectors)

Note: VSWR and attenuation values are measured when the remaining ports are terminated with 50-Ω loads.

Diagram II

Typical attenuation 2 ↔ 3 vs. VSWR at port 1



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.

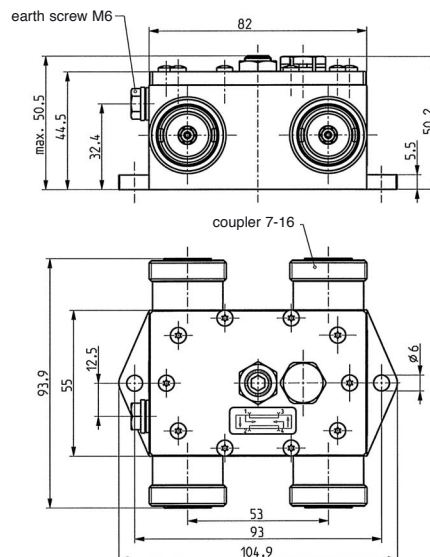
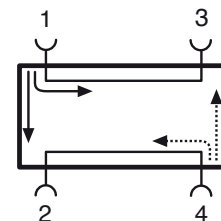
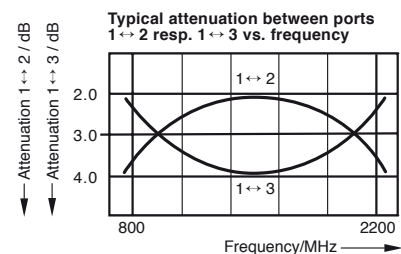


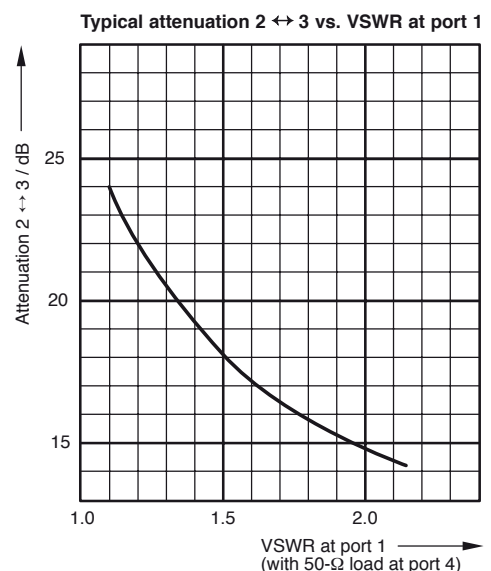
Diagram I



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 two inputs, with max. 200 W at one 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 mm x 95 mm x 65 mm
Dimensions (w x h x d)	104.9 x 50.2 x 93.9 mm (including connectors)

Diagram II



Note: VSWR and attenuation values are measured when the remaining ports are terminated with 50-Ω loads.

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
Measuring Directional Coupler	792 972	824 – 960 MHz 960 – 2500 MHz	800 W 200 W	269
DC Stop	793 301	800 – 2170 MHz	750 W	270
Bias Tee	793 304	800 – 2170 MHz	250 W	271
Bias Tee AISG	782 10429	800 – 2170 MHz	250 W	272
Bias Tee AISG/Bulkhead	782 10550	1710 – 2170 MHz	250 W	273
Smart Bias Tee 12 V / BTS	782 10253	800 – 2170 MHz	750 W	274 – 276
Smart Bias Tee 12 V / Antenna	782 10254	800 – 2170 MHz	750 W	274 – 276
Smart Bias Tee 24 V / BTS	782 10255	800 – 2170 MHz	750 W	274 – 276
Smart Bias Tee 24 V / Antenna	782 10256	800 – 2170 MHz	750 W	274 – 276
Smart Bias Tee 12 V / BTS	782 10453	800 – 2170 MHz	750 W	274 – 276
Smart Bias Tee 12 V / Antenna	782 10454	800 – 2170 MHz	750 W	274 – 276
Smart Bias Tee 24 V / BTS	782 10455	800 – 2170 MHz	750 W	274 – 276
Smart Bias Tee 24 V / Antenna	782 10456	800 – 2170 MHz	750 W	274 – 276
50-Ω Load (7-16 female) Low IM	782 10474	800 – 2700 MHz	80 W	277
50-Ω Load (N male)	K 62 26 61 1	0 – 2500 MHz	0.5 W	278
50-Ω Load (7-16 male)	784 10367	0 – 4000 MHz	1.5 W	278
50-Ω Load (7-16 female)	784 10470	0 – 4000 MHz	1.5 W	278
50-Ω Load (N male)	K 62 26 11 1	0 – 2500 MHz	2 W	278
50-Ω Load (N female)	K 62 26 40 1	0 – 2500 MHz	10 W	279
50-Ω Load (N male)	K 62 26 41 1	0 – 2500 MHz	10 W	279
50-Ω Load (N female)	K 62 26 20 1	0 – 2500 MHz	25 W	279
50-Ω Load (N male)	K 62 26 21 1	0 – 2500 MHz	25 W	279
50-Ω Load (7-16 female)	K 62 26 20 7	0 – 2500 MHz	25 W	279
50-Ω Load (7-16 male)	K 62 26 21 7	0 – 2500 MHz	25 W	279
50-Ω Load (N female)	K 62 26 30 1	0 – 2500 MHz	50 W	279
50-Ω Load (N male)	K 62 26 31 1	0 – 2500 MHz	50 W	279
50-Ω Load (7-16 female)	K 62 26 30 7	0 – 2500 MHz	50 W	279
50-Ω Load (7-16 male)	K 62 26 31 7	0 – 2500 MHz	50 W	279
50-Ω Load (N female)	K 62 26 50 1	0 – 1000 MHz	100 W	279
50-Ω Load (N male)	K 62 26 51 1	0 – 1000 MHz	100 W	279
50-Ω Load (7-16 female)	K 62 26 50 7	0 – 1000 MHz	100 W	279
Attenuator 3 dB	784 10235	0 – 4000 MHz	2 W	282
Attenuator 6 dB	784 10236	0 – 4000 MHz	2 W	282
Attenuator 10 dB	784 10237	0 – 4000 MHz	2 W	282
Attenuator 20 dB	784 10238	0 – 4000 MHz	2 W	282
Attenuator 3 dB	791 918	0 – 4000 MHz	15 W	282
Attenuator 6 dB	791 919	0 – 4000 MHz	12 W	282
Attenuator 10 dB	791 920	0 – 4000 MHz	10 W	282
Attenuator 20 dB	791 921	0 – 4000 MHz	10 W	282

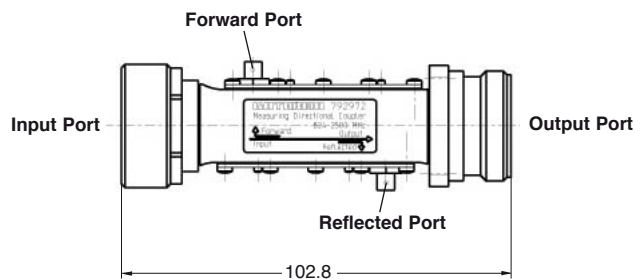
Description	Type No.	Power supply (DC input)	Page
Power Distribution Unit (PDU)	782 10344	38 ... 72 V DC	280, 281

New Products

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



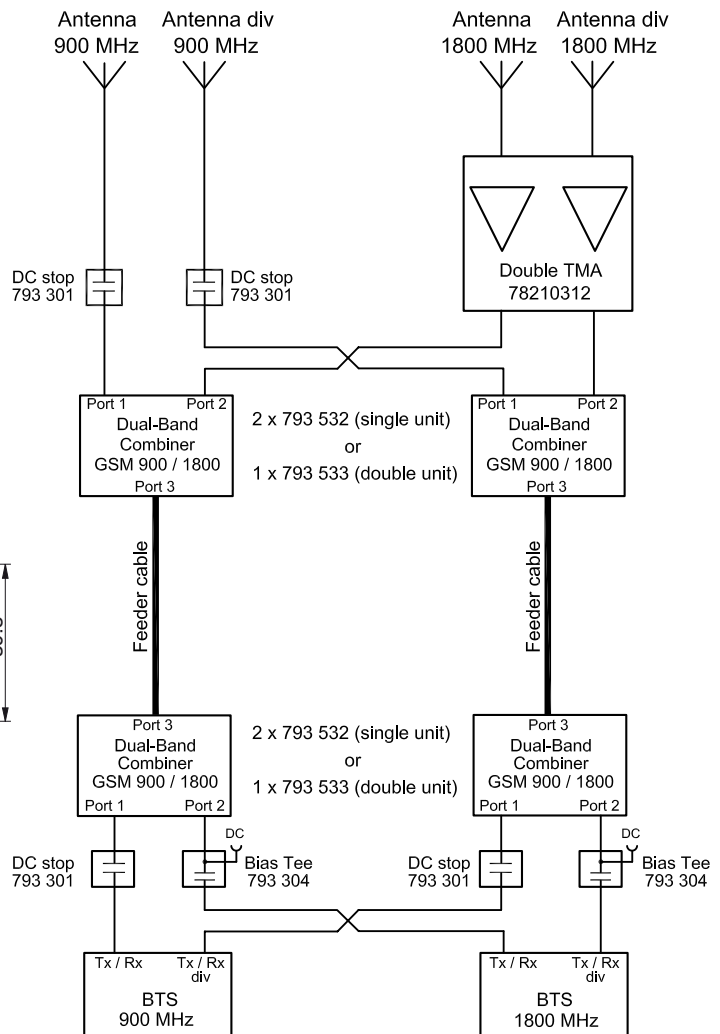
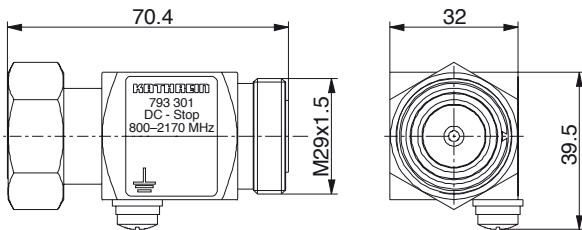
Technical Data

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 mm x 32 mm x 102.3 mm

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 66)
Weight	0.32 kg
Dimensions (w x h x d)	70.4 mm x 39.5 mm x 32 mm (including connectors and earthing screw of 6 mm diameter)

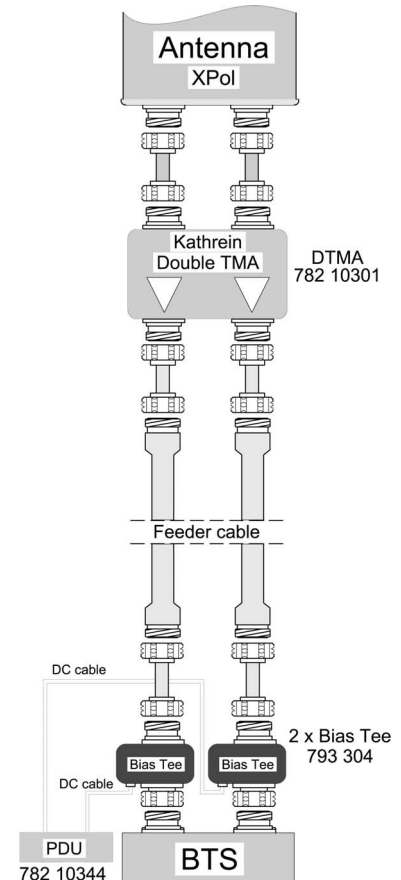
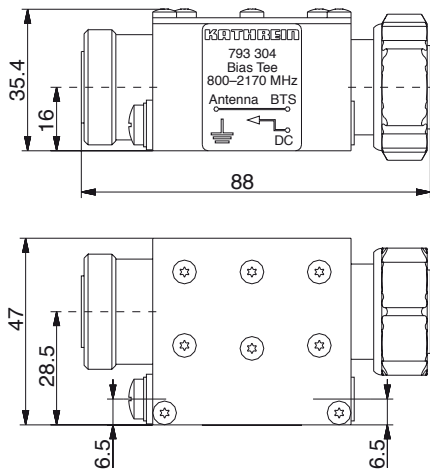


Bias Tee

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.

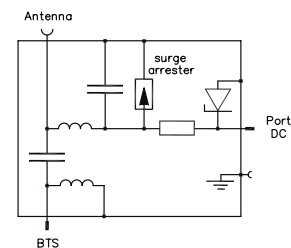
- The Bias Tee provides low RF signal insertion loss from the BTS to the antenna port and vice versa.
- The DC voltage is fed from the DC port to the antenna port while providing a high level of DC isolation from the DC to the BTS port and from the antenna to the BTS port.
- The measures taken to protect 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 mm x 145 mm x 50 mm
Dimensions (w x h x d)	88 mm x 47 mm x 35.4 mm (including connectors and earthing screw of 6 mm diameter)



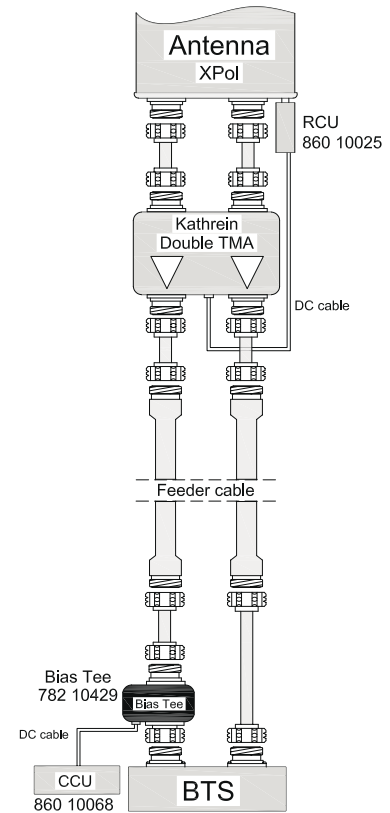
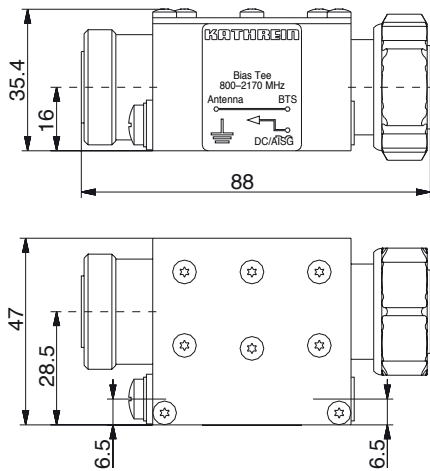
Bias Tee

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.



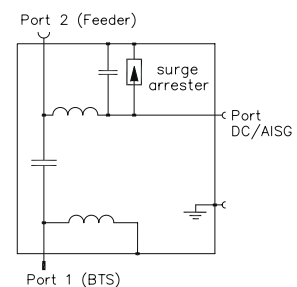
- The Bias Tee provides low RF signal insertion loss from the BTS to the antenna port and vice versa.
- The DC voltage and AISG control signal (2.176 MHz) is fed from the DC port to the antenna port while providing a high level of DC isolation from the DC to the BTS port and from the antenna to the BTS 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 mm x 145 mm x 50 mm
Dimensions (w x h x d)	88 mm x 47 mm x 35.4 mm (including connectors and earthing screw of 6 mm diameter)



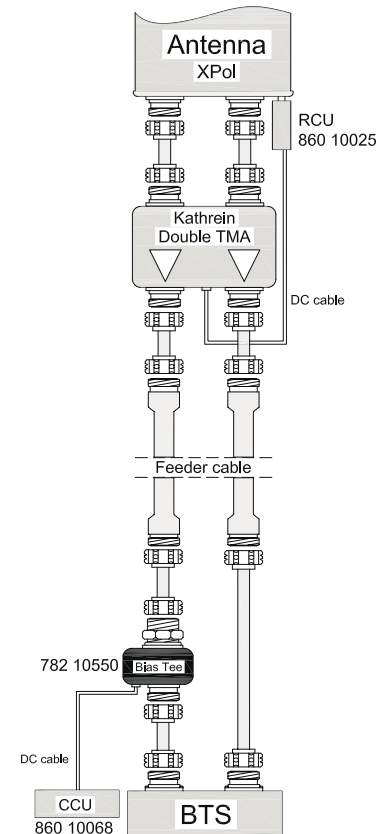
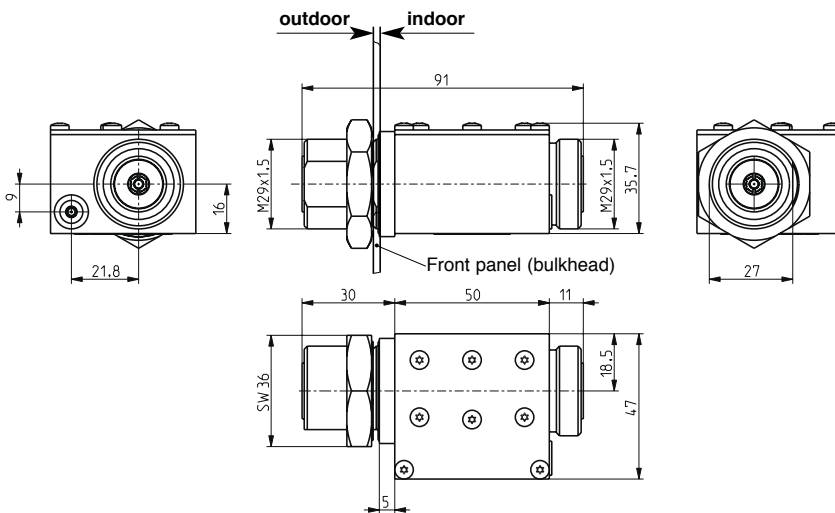
Bias Tee

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.

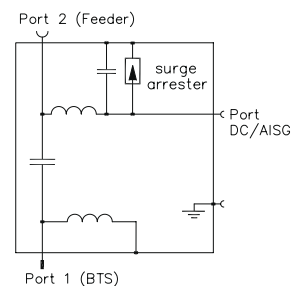
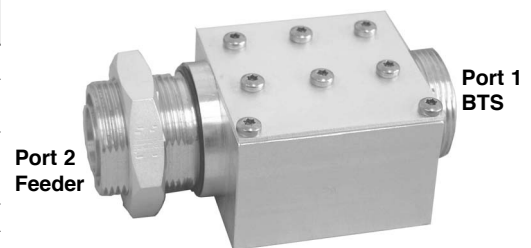
- The Bias Tee provides low RF signal insertion loss from the BTS to the antenna port and vice versa.
- The DC voltage and AISG control signal (2.176 MHz) is fed from the DC port to the antenna port while providing a high level of DC isolation from the DC to the BTS port and from the antenna to the BTS 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 mm x 145 mm x 50 mm
Dimensions (w x h x d)	91 mm x 47 mm 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

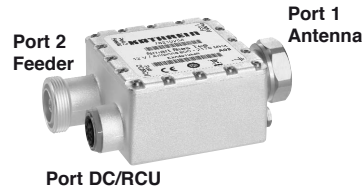
TMA = Tower Mounted Amplifier

AISG = Antenna Interface Standards Group

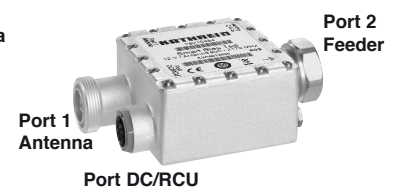
Port 1 = Port for BTS or for Antenna

Port 2 = Port for Feeder Cable

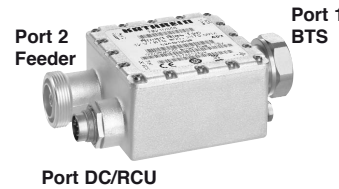
Port DC/RCU = Port for DC voltage and remote control unit signals



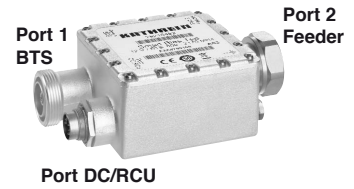
782 10254
782 10256



782 10454
782 10456



782 10253
782 10255



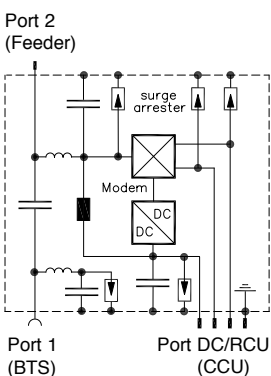
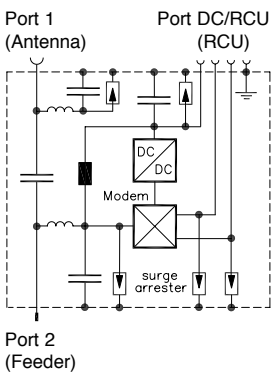
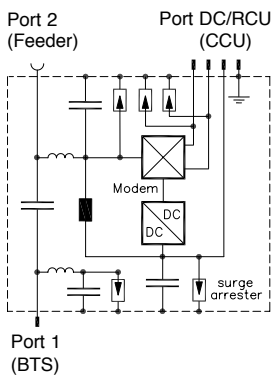
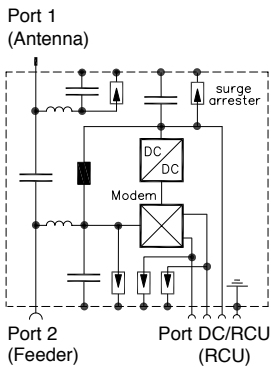
782 10453
782 10455

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 or 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 mm x 102 mm x 86 mm			
Dimensions (w x h x d)	79 x 79 x 43.5 mm (without connectors)			

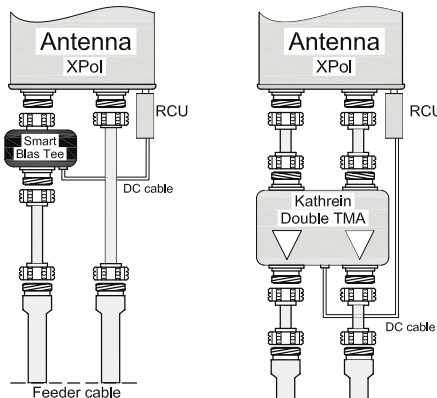


Block diagrams

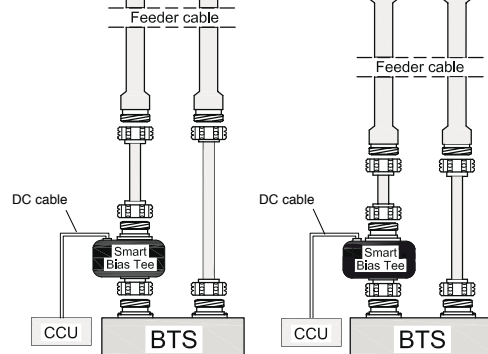


Application Examples

782 10254 (12V)
or
782 10256 (24V)



782 10253 (12V)
or
782 10255 (24V)

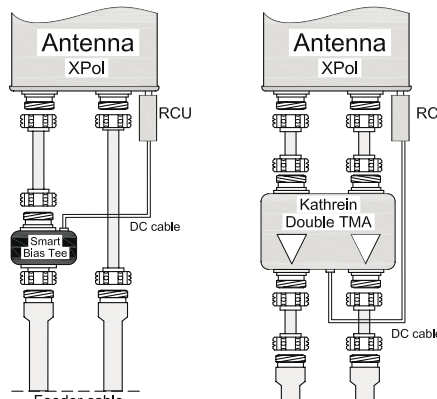


Antenna system (1 sector) without TMA

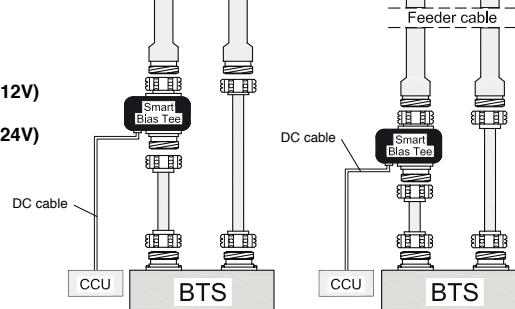
Antenna system (1 sector) with Kathrein TMA

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)



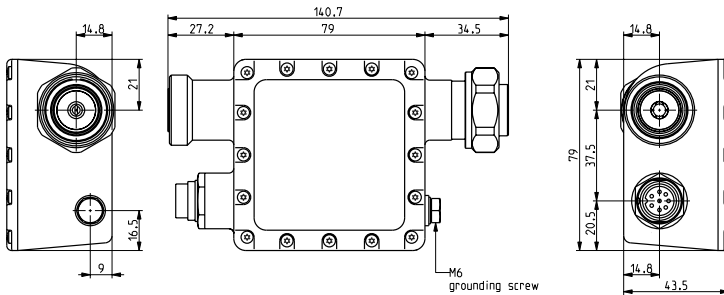
782 10453 (12V)
or
782 10455 (24V)



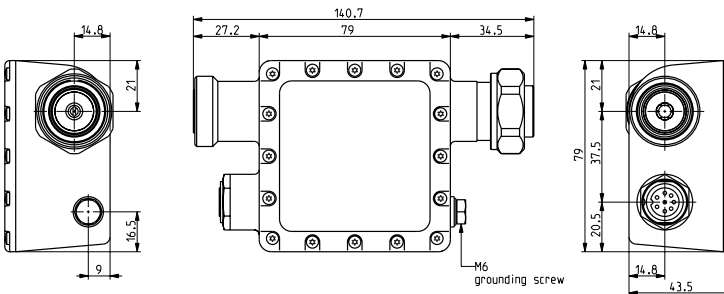
Antenna system (1 sector) without TMA

Antenna system (1 sector) with Kathrein TMA

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

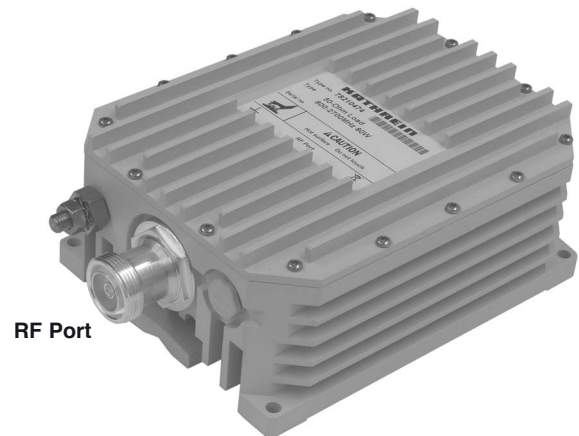
	782 10253	782 10254	782 10255	782 10256
	782 10453	782 10454	782 10455	782 10456
8-pin connector (IEC 60130-9)				
	male	female	male	female
Pin 1	12 VDC in	12 VDC out	Not connected	Not connected
Pin 2	Not connected	Not connected	Not connected	Not connected
Pin 3	RS485-B	RS485-B	RS485-B	RS485-B
Pin 4	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-Ω Load

800 – 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	800 – 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
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)

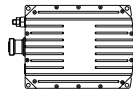
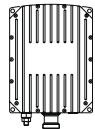
Note:

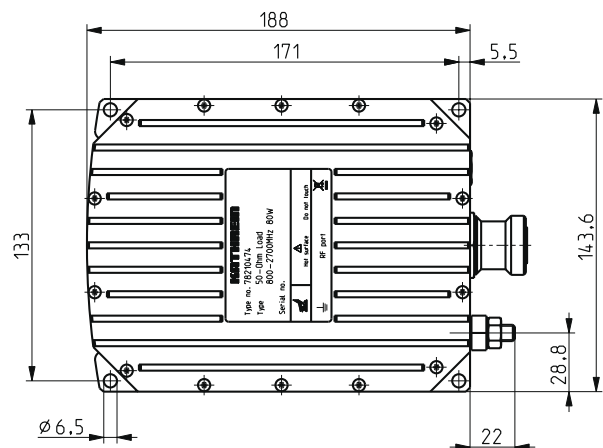
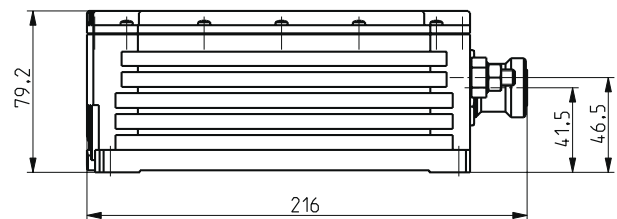
The RF port connector should always point downwards if mounted outdoors.

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



Load 50 Ω

50-Ω loads are suited as absorbers for small and medium power.

They are used:

- as termination for transmitters or amplifiers used for testing, measuring or tuning,
- as termination for circulators, directional couplers, hybrid ring junctions and decoupled power splitters.

Special features of the loads are:

- very low VSWR within a wide frequency range,
- high stability and RF shielding due to the closed aluminium construction,
- arbitrary installation position because of convectional cooling,
- 50 W and 100 W models can be installed on front or rear panels of electrical equipment for heat dissipation.

0.5 Watt *

Type No.	K 62 26 61 1
Connector	N male
Frequency range	0 – 2500 MHz
VSWR	0 – 1000 MHz < 1.08 1000 – 2000 MHz < 1.15 2000 – 2500 MHz < 1.20
Application	Indoor
Weight	40 g
Packing size	90 mm x 60 mm x 25 mm
Dimensions	33 mm / 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	
IP rating	IP65	
Application	Outdoor	
Weight	120 g	
Packing size	Approx. 50 mm x 90 mm x 100 mm	
Dimensions	40 mm / 32 mm diameter	42 mm / 29 mm diameter



784 10367

2 Watt *

Type No.	K 62 26 11 1
Connector	N male
Frequency range	0 – 2500 MHz
VSWR	0 – 1000 MHz < 1.08 1000 – 2000 MHz < 1.15 2000 – 2500 MHz < 1.20
Application	Indoor
Weight	40 g
Packing size	90 mm x 60 mm x 25 mm
Dimensions	30 mm / 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 – 2500 MHz	
VSWR	0 – 1000 MHz < 1.08 1000 – 2000 MHz < 1.15 2000 – 2200 MHz < 1.20 2200 – 2500 MHz < 1.25	
Application	Indoor	
Weight	Approx. 250 g	
Packing size	50 mm x 90 mm x 100 mm	
Dimensions by mm (w x h x d)	40 x 82 x 77 (incl. connector)	40 x 82 x 85 (incl. connector)



K 62 26 40 1

25 Watt *

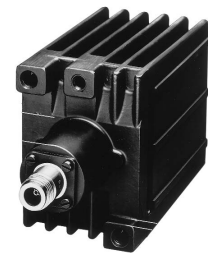
Type No.	K 62 26 20 1	K 62 26 21 1	K 62 26 20 7	K 62 26 21 7
Connector	N female	N male	7-16 female	7-16 male
Frequency range	0 – 2500 MHz			
VSWR	0 – 1000 MHz < 1.08 1000 – 2000 MHz < 1.15 2000 – 2500 MHz < 1.20			
Application	Indoor			
Weight	Approx. 500 g			
Packing size	50 mm x 100 mm x 135 mm			
Dimensions by mm (w x h x d)	35 x 94 x 113 (incl. connector)	35 x 94 x 121 (incl. connector)	35 x 94 x 125 (incl. connector)	35 x 94 x 124 (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 – 2500 MHz			
VSWR	0 – 1000 MHz < 1.08 1000 – 2000 MHz < 1.15 2000 – 2500 MHz < 1.20			
Application	Indoor			
Weight	Approx. 800 g			
Packing size	80 mm x 95 mm x 145 mm			
Dimensions by mm (w x h x d)	67 x 90 x 130 (incl. connector)	67 x 90 x 138 (incl. connector)	67 x 90 x 134 (incl. connector)	67 x 90 x 133 (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 mm x 195 mm x 180 mm		
Dimensions by mm (w x h x d)	114 x 153 x 156 (including connector)	114 x 161 x 156 (including connector)	114 x 170 x 156 (including connector)

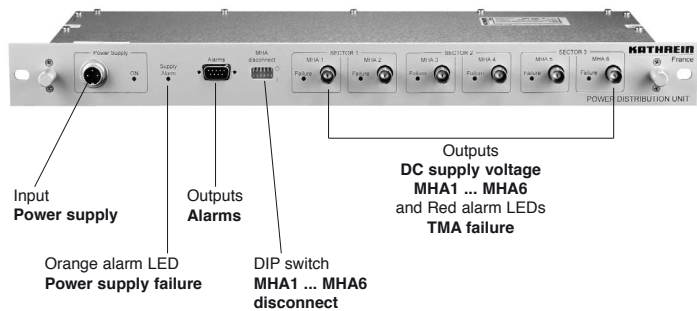


K 62 26 50 1

* Rated power at 40 °C ambient temperature. The max. power rating increases or decreases with falling or rising ambient temperature.

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.

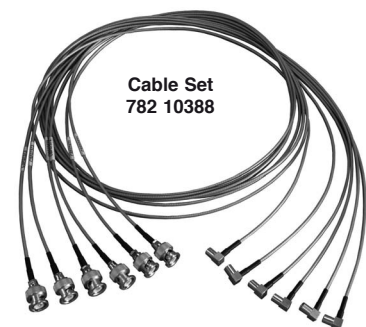
If required, the additional DIP switch can be used to override the individual alarm and turn off the respective TMA supply voltage (1 = supply voltage and red LED alarm OFF, 0 = supply voltage and red LED alarm ON).

Technical Data

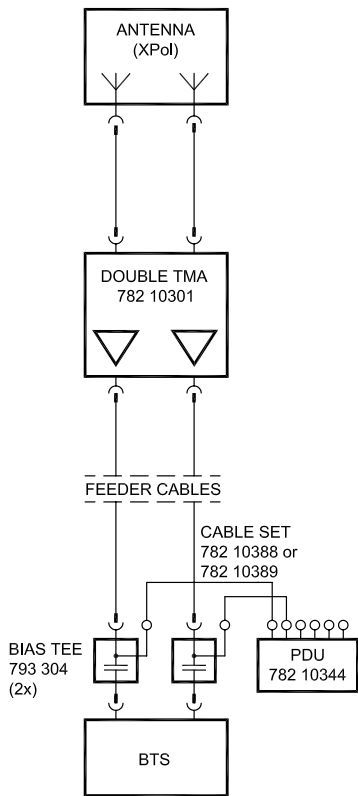
Type No.	782 10344
Power supply (DC input)	38 ... 72 V DC
DC supply voltage (DC outputs to MHA1 ... MHA6)	6x +12 ±0.3 V / nominal current: 110 mA ±20%
Failure detection threshold	> 230 mA ±10%
Alarms LED indicators	Red LED ON = TMA failure at indicated DC output Orange LED ON = power supply failure (back-up 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)

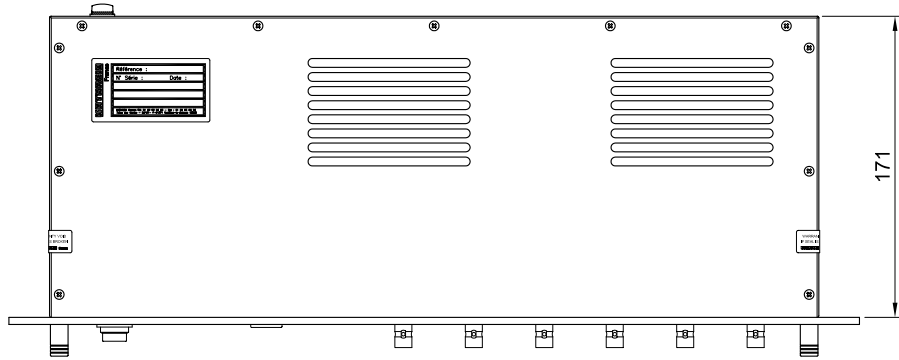
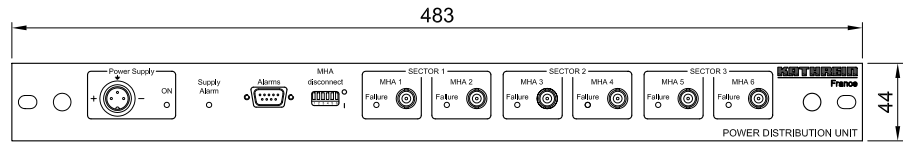
Type No.	Description	Technical data
782 10388	Cable set 2 m (6 cables)	Lenth: 2.0 m Cable type: RG 316 Connectors: BNC male / SMB female Voltage drop at 110 mA nominal current: < 0.2 V
782 10389	Cable set 5 m (6 cables)	Lenth: 5.0 m Cable type: RG 316 Connectors: BNC male / SMB female Voltage drop at 110 mA nominal current: < 0.2 V
793 304	Bias Tee	Please see separate data sheet



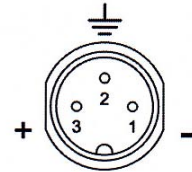
Bias Tee 793 304



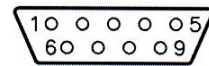
Application example
Antenna system (1 sector) with
Kathrein PDU 782 10344,
Bias Tees 793 304 and
UMTS Double TMA 782 10301



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	-	-	-		-	grd	-	grd	-	-	-	ON	-	-	-	-	ON
	no failure	-	-	-		-	open	-	grd	-	-	-	OFF	-	-	-	-	ON
MHA5	failure	-	-	-		contacts open if no 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 mm 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 mm x 26 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	286
DTMA-1800-24-CWA	782 10313	UL: 1710 – 1785 / DL: 1805 – 1880 MHz	24 dB	287
DTMA-1800-12-AISG	782 10315	UL: 1710 – 1785 / DL: 1805 – 1880 MHz	12 dB	288
DTMA-1800-24-AISG	782 10316	UL: 1710 – 1785 / DL: 1805 – 1880 MHz	24 dB	289
DTMA-1900-12-CWA	782 10400	UL: 1850 – 1910 / DL: 1930 – 1990 MHz	12 dB	291
DTMA-1900-24-CWA	782 10401	UL: 1850 – 1910 / DL: 1930 – 1990 MHz	24 dB	292
DTMA-1900-12-AISG	782 10403	UL: 1850 – 1910 / DL: 1930 – 1990 MHz	12 dB	293
DTMA-1900-24-AISG	782 10404	UL: 1850 – 1910 / DL: 1930 – 1990 MHz	24 dB	294
DTMA-1900-850 BYP-12-AISG	782 10406	UL: 1850 – 1910 / DL: 1930 – 1990 MHz Bypass: 806 – 896 MHz	12 dB	295
DTMA-UMTS-24-AISG	782 10448	UL: 1920 – 1980 / DL: 2110 – 2170 MHz	24 dB	301
Dual Mode AISG and CWA				
DTMA-900-12-32-AISG-CWA	782 10440	UL: 880 – 915 / DL: 925 – 960 MHz	12/32 dB	285
DTMA-900-12-32-AISG-CWA	782 10442	UL: 880 – 915 / DL: 925 – 960 MHz	12/32 dB	285
DTMA-UMTS-12-AISG-CWA	782 10153	UL: 1920 – 1980 / DL: 2110 – 2170 MHz	12 dB	299
DTMA-UMTS-12-AISG-CWA	782 10154	UL: 1920 – 1980 / DL: 2110 – 2170 MHz	12 dB	299
DTMA-UMTS-12-AISG-CWA-FB-BS	782 10561	UL: 1970 – 1985 / DL: 2110 – 2170 MHz	12 dB	300
DTMA-UMTS-12-AISG-CWA-FB-BS	782 10562	UL: 1970 – 1985 / DL: 2110 – 2170 MHz	12 dB	300
DTMA-UMTS-12-AISG-CWA-FB-BS	782 10563	UL: 1965 – 1980 / DL: 2110 – 2170 MHz	12 dB	300
DTMA-UMTS-12-AISG-CWA-FB-BS	782 10564	UL: 1965 – 1980 / DL: 2110 – 2170 MHz	12 dB	300
DTMA-UMTS-12-AISG-CWA-FB-BS	782 10565	UL: 1950 – 1965 / DL: 2110 – 2170 MHz	12 dB	300
DTMA-UMTS-12-AISG-CWA-FB-BS	782 10566	UL: 1920 – 1935 / DL: 2110 – 2170 MHz	12 dB	300
DTMA-UMTS-12-AISG-CWA-FB-BS	782 10567	UL: 1920 – 1935 / DL: 2110 – 2170 MHz	12 dB	300
DTMA-UMTS-12-AISG-CWA-FB-BS	782 10568	UL: 1950 – 1965 / DL: 2110 – 2170 MHz	12 dB	300
DTMA-UMTS-12-AISG-CWA-FB-BS	782 10569	UL: 1970 – 1985 / DL: 2110 – 2170 MHz	12 dB	300
DTMA-UMTS-12-AISG-CWA-FB-BS	782 10570	UL: 1920 – 1935 / DL: 2110 – 2170 MHz	12 dB	300
DTMA-UMTS-12-AISG-CWA-FB-BS	782 10571	UL: 1965 – 1980 / DL: 2110 – 2170 MHz	12 dB	300
DTMA-UMTS-12-AISG-CWA-FB-BS	782 10579	UL: 1965 – 1980 / DL: 2110 – 2170 MHz	12 dB	300
Dual Mode AISG and CWA, new releases				
DTMA-1800-12-AISG-CWA	782 10555	UL: 1710 – 1785 / DL: 1805 – 1880 MHz	12 dB	290
DTMA-1900-12-AISG-CWA	782 10811	UL: 1850 – 1910 / DL: 1930 – 1990 MHz	12 dB	296
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	297
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	298
DTMA-UMTS-12-AISG-CWA	782 10612	UL: 1920 – 1980 / DL: 2110 – 2170 MHz	12 dB	302
DTMA-UMTS-24-AISG-CWA	782 10613	UL: 1920 – 1980 / DL: 2110 – 2170 MHz	24 dB	303
DTMA-UMTS-BYP900/1800-12-AISG-CWA	782 10652	UL: 1920 – 1980 / DL: 2110 – 2170 MHz Bypass: 806 – 896 MHz	12 dB	304, 305
DTMA-UMTS-BYP900/1800-12-AISG-CWA	782 10653	UL: 1920 – 1980 / DL: 2110 – 2170 MHz Bypass: 806 – 896 MHz	12 dB	304, 305

UL = Up Link // DL = Down Link

DTMA Arrangement, Mounting Hardware:

Description	Type No.	for mast diameter	Page
3-sector clamp kit	782 10347	88.9 mm	306
3-sector clamp kit	782 10348	114.3 mm	306
3-sector clamp kit	782 10349	139.7 mm	306

New Products

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

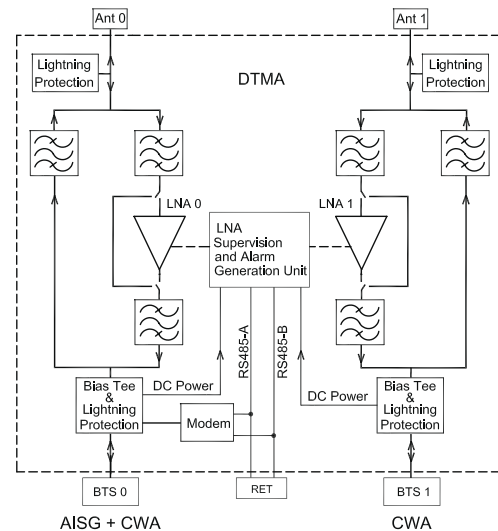
Operating temperature range	-40 ... +55 °C
IP rating	IP 67
MTBF	> 1 000 000 hours (per TMA)
EMC	According to ETS 300 342-3

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 32 dB gain: 800 – 900 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)
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)

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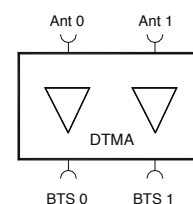
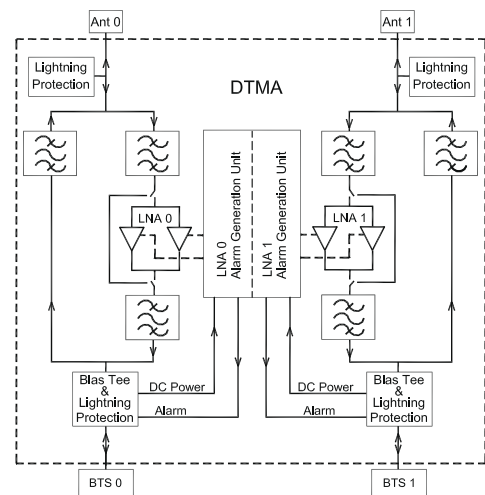
Antennen · Electronic

- 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 mm x 502 mm x 214 mm
Dimensions (w x h x d)	166 mm x 278 mm x 77.5 mm (without connectors, without mounting brackets)



DTMA-1800-24-CWA

Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

KATHREIN

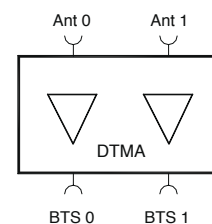
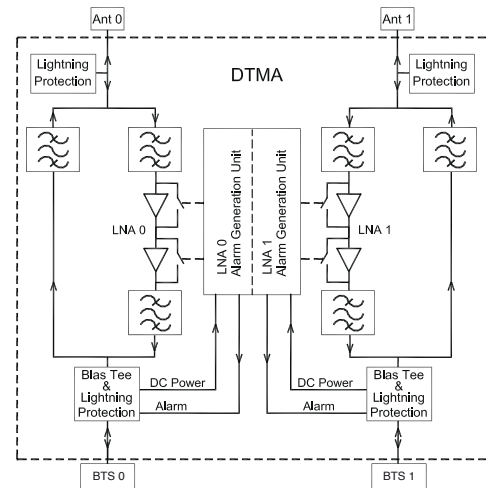
Antennen · Electronic

- 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 10313 DTMA-1800-24-CWA (24 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 24 ±0.6 dB 24 ±1.2 dB
Noise figure	+22 ... +28 °C -40 ... +65 °C < 1.6 dB over the middle 80% of BW, a further 0.3 dB over the remaining BW. < 2.1 dB over the middle 80% of BW, a further 0.3 dB over the remaining BW.
Output 1-dB compression point	> 19 dBm
3 rd order intercept point (OIP3)	> 28 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 230 mA per TMA
Alarm management	Current window alarm handling
Alarm current I _a	Alarm 1: I _a > 310 mA Alarm 2: I _a > 500 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 mm x 502 mm x 214 mm
Dimensions (w x h x d)	166 mm x 278 mm x 77.5 mm (without connectors, without mounting brackets)



DTMA-1800-12-AISG

Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

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Antennen · Electronic



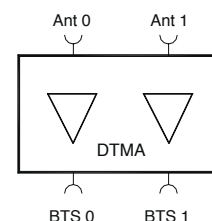
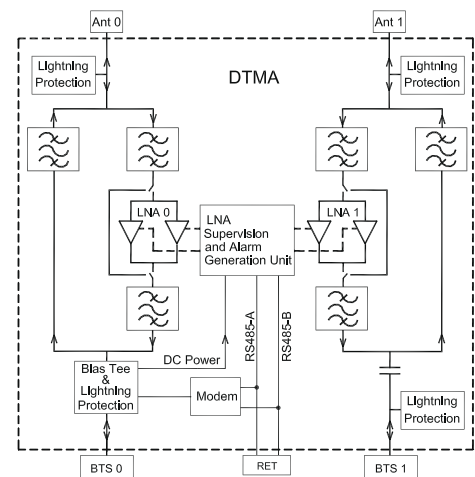
- Double unit for easy use with XPol antennas
- Kathrein redundancy amplifier design for improved system reliability
- By-pass mode to ensure cell operation in case of DC power down
- Built-in lightning protection
- Compact size
- Suitable for antenna RET control according to AISG standard
- **DTMA DC supply and AISG feed via BTS 0 port for both TMAs**

RET = Remote Electrical Tilt

AISG = Antenna Interface Standards Group

Technical Data

Type No.	782 10315 DTMA-1800-12-AISG (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 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.
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 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	
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 mm x 502 mm x 214 mm
Dimensions (w x h x d)	166 mm x 278 mm x 77.5 mm (without connectors, without mounting brackets)



DTMA-1800-24-AISG

Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

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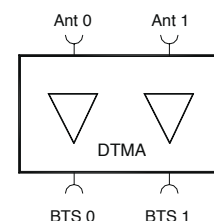
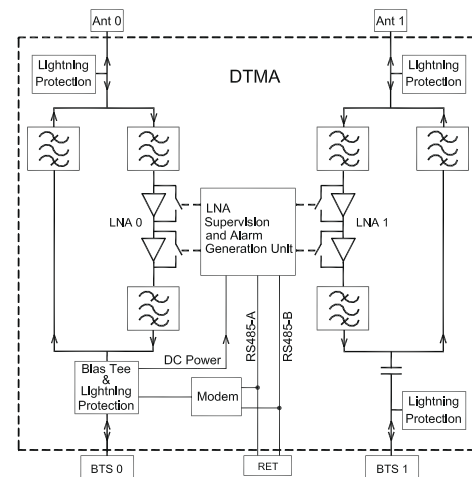
- Double unit for easy use with XPol antennas
- Kathrein redundancy amplifier design for improved system reliability
- By-pass mode to ensure cell operation in case of DC power down
- Built-in lightning protection
- Compact size
- Suitable for antenna RET control according to AISG standard
- **DTMA DC supply and AISG feed via BTS 0 port for both TMAs**

RET = Remote Electrical Tilt

AISG = Antenna Interface Standards Group

Technical Data

Type No.	782 10316 DTMA-1800-24-AISG (24 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 24 ±0.6 dB
	-40 ... +65 °C 24 ±1.2 dB
Noise figure	+22 ... +28 °C < 1.6 dB over the middle 80% of BW, a further 0.3 dB over the remaining BW.
	-40 ... +65 °C < 2.1 dB over the middle 80% of BW, a further 0.3 dB over the remaining BW.
Output 1-dB compression point	> 19 dBm
3 rd order intercept point (OIP3)	> 28 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 250 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 mm x 502 mm x 214 mm
Dimensions (w x h x d)	166 mm x 278 mm x 77.5 mm (without connectors, without mounting brackets)



DTMA-1800-12-AISG-CWA

Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

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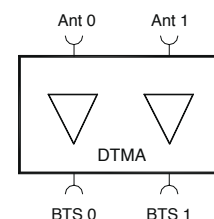
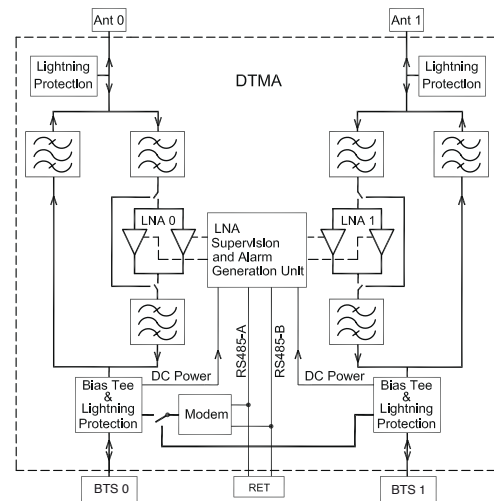
- Double unit for easy use with XPol antennas
- Supports AISG 1.1 or 2.0 (Default version AISG 1.1)*
- Kathrein redundancy amplifier design for improved system reliability
- By-pass mode to ensure cell operation in case of DC power down
- Built-in lightning protection
- Compact size
- Suitable for antenna RET control according to AISG/3GPP standard
- **DTMA AISG feed via BTS 0 port or BTS 1 port for both TMAs**
- AISG DC supply either through one of the ports BTS 0 or BTS 1, or simultaneously through both ports BTS 0 and BTS 1
- CWA DC supply feed via BTS 0 (TMA 0) and BTS1 (TMA 1)



RET = Remote Electrical Tilt
AISG = Antenna Interface Standards Group
CWA = Current Window Alarm

Technical Data

Type No.	782 10555 DTMA-1800-12-AISG-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	
Noise figure	+22 ... +28 °C -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		
	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 7-16 female, long neck AISG Connector 8-pin female, IEC 60130-9 (Compliance AISG) (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 mm x 502 mm x 214 mm	
Dimensions (w x h x d)	166 mm x 278 mm x 77.5 mm (without connectors, without mounting brackets)	



* The protocol of the software interface can be switched between AISG 2.0 / 3 GPP 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-1900-12-CWA

Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

KATHREIN

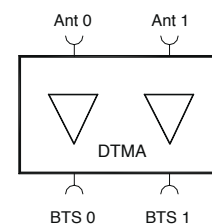
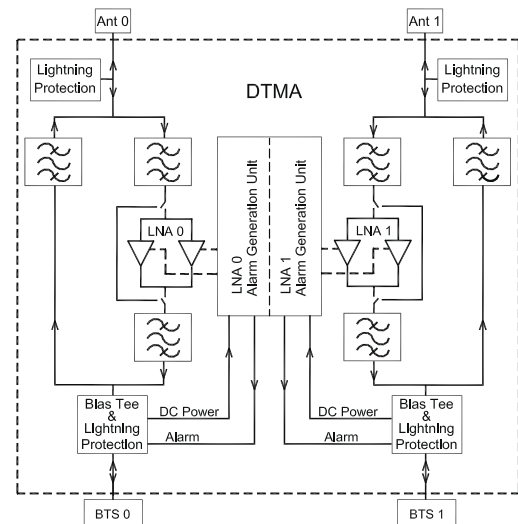
Antennen · Electronic

- 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 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 10400 DTMA-1900-12-CWA (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 -40 ... +65 °C 12 ±0.7 dB 12 ±1.3 dB
Noise figure	< 1.7 dB over the middle 80% of BW, a further 0.3 dB over the remaining BW. < 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 mm x 502 mm x 214 mm
Dimensions (w x h x d)	166 mm x 278 mm x 77.5 mm (without connectors, without mounting brackets)



DTMA-1900-24-CWA

Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

KATHREIN

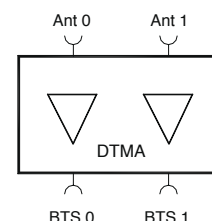
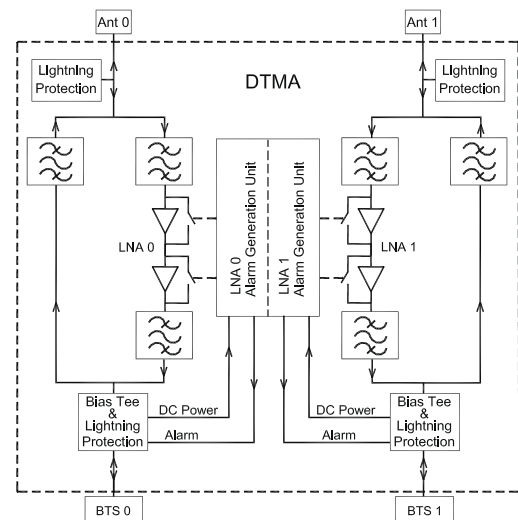
Antennen · Electronic

- 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 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 10401 DTMA-1900-24-CWA (24 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: 24 ±0.6 dB -40 ... +65 °C: 24 ±1.2 dB
Noise figure	< 1.6 dB over the middle 80% of BW, a further 0.3 dB over the remaining BW.
Noise figure	< 2.1 dB over the middle 80% of BW, a further 0.3 dB over the remaining BW.
Output 1-dB compression point	> 19 dBm
3 rd order intercept point (OIP3)	> 28 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 230 mA per TMA
Alarm management	Current window alarm handling
Alarm current Ia	Alarm 1: Ia > 310 mA Alarm 2: Ia > 500 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 mm x 502 mm x 214 mm
Dimensions (w x h x d)	166 mm x 278 mm x 77.5 mm (without connectors, without mounting brackets)



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**

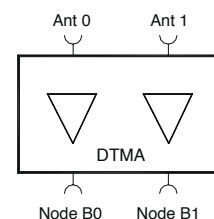
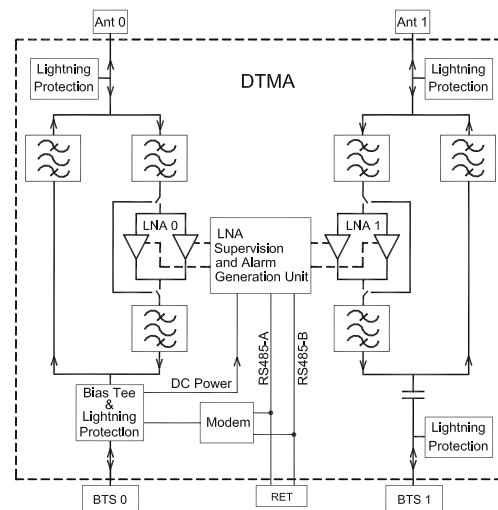
RET = Remote Electrical Tilt

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 mm x 502 mm x 214 mm
Dimensions (w x h x d)	166 mm x 278 mm x 77.5 mm (without connectors, without mounting brackets)



DTMA-1900-24-AISG

Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

KATHREIN

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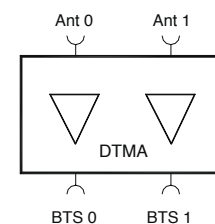
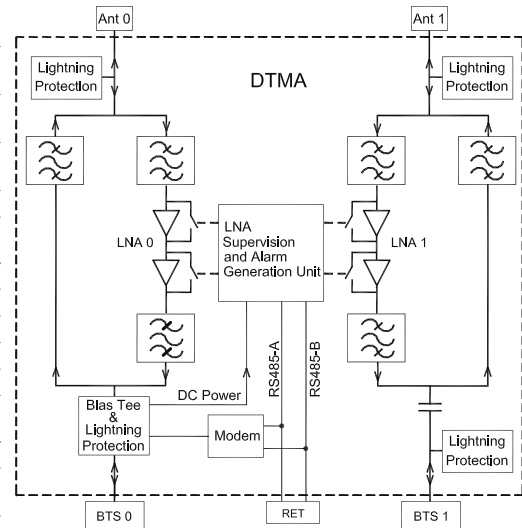
- Double unit for easy use with XPol antennas
- Kathrein redundancy amplifier design for improved system reliability
- By-pass mode to ensure cell operation in case of DC power down
- Built-in lightning protection
- Compact size
- Suitable for antenna RET control according to AISG standard
- **DTMA DC supply and AISG feed via BTS 0 port for both TMAs**

RET = Remote Electrical Tilt

AISG = Antenna Interface Standards Group

Technical Data

Type No.	782 10404 DTMA-1900-24-AISG (24 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 24 ±0.6 dB
	-40 ... +65 °C 24 ±1.2 dB
Noise figure	+22 ... +28 °C < 1.6 dB over the middle 80% of BW, a further 0.3 dB over the remaining BW.
	-40 ... +65 °C < 2.1 dB over the middle 80% of BW, a further 0.3 dB over the remaining BW.
Output 1-dB compression point	> 19 dBm
3rd order intercept point (OIP3)	> 28 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 250 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 mm x 502 mm x 214 mm
Dimensions (w x h x d)	166 mm x 278 mm x 77.5 mm (without connectors, without mounting brackets)



DTMA-1900-850 BYP-12-AISG

Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

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- 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

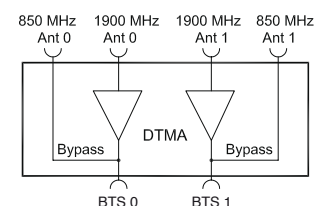
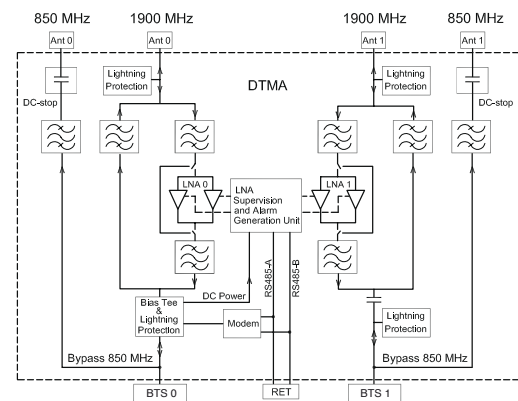
AISG = Antenna Interface Standards Group

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 (Pin 1: +12 V DC nominal, pin 3: RS485B, pin 5: RS485A, pin 7: DC return; other pins: Not connected)
AISG Connector (Compliance AISG 1.1)	
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 mm x 278 mm x 77.5 mm (without connectors, without mounting brackets)



DTMA-1900-12-AISG-CWA

Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

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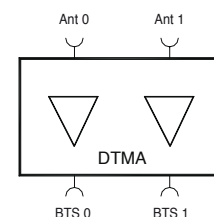
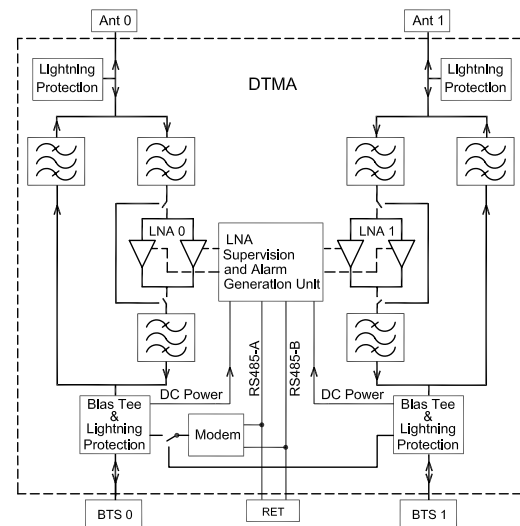
- Double unit for easy use with XPol antennas
- Supports AISG 1.1 or 2.0 (Default version 1.1) *
- Kathrein redundancy amplifier design for improved system reliability
- By-pass mode to ensure cell operation in case of DC power down
- Built-in lightning protection
- Compact size
- Suitable for antenna RET control according to AISG/3GPP standard
- **DTMA AISG feed via BTS 0 port or BTS 1 port for both TMAs**
- AISG DC supply either through one of the ports BTS 0 or BTS 1, or simultaneously through both ports BTS 0 and BTS 1
- CWA DC supply feed via BTS 0 (TMA 0) and BTS 1 (TMA 1)



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	
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 -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 RF connections and AISG port	
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	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 mm x 502 mm x 214 mm	
Dimensions (w x h x d)	166 mm x 278 mm x 77.5 mm (without connectors, without mounting brackets)	



* The protocol of the software interface can be switched between AISG 2.0 / 3 GPP 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

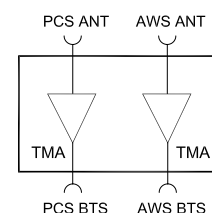
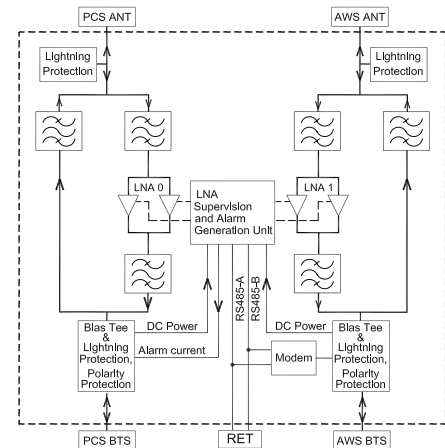
AISG = Antenna Interface Standards Group

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	7-16 female long neck 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 mm x 502 mm x 214 mm	
Dimensions (w x h x d)	166 mm x 278 mm x 77.5 mm	



TMA-PCS-AWS-12-AISG-CWA

Fullband Duplex Tower Mounted Amplifier (Masthead Amplifier)

KATHREIN

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- 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

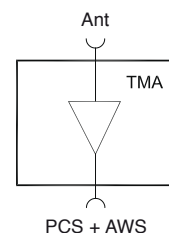
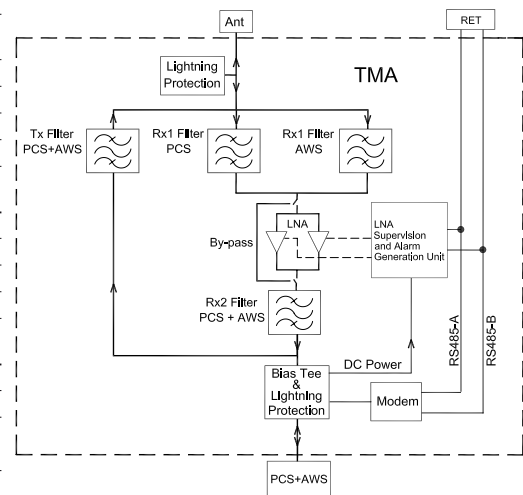
AISG = Antenna Interface Standards Group

CWA = Current Window Alarm



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	12 ±0.5 dB	
	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 mm x 502 mm x 214 mm	
Dimensions (w x h x d)	166 mm x 278 mm x 77.5 mm (without connectors, without mounting brackets)	



DTMA-UMTS-12-AISG-CWA

Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

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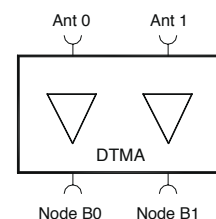
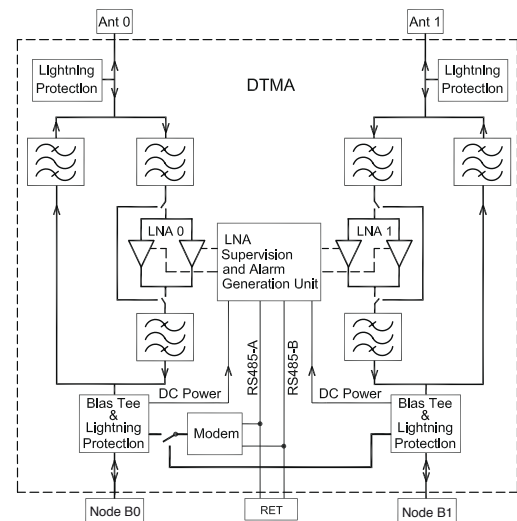
- Double units for easy use with XPol antennas
- Both versions support CWA, AISG 1.1 and AISG 2.0 *
782 10153 default setting: AISG 1.1
782 10154 default setting: AISG 2.0
- AISG setting switchable as described on data sheet
- CWA and AISG configurations as described on data sheet
- Suitable for antenna 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.	AISG 1.1 default setting	782 10153 DTMA-UMTS-12-AISG-CWA (12 dB gain)	
	AISG 2.0 default setting	782 10154 DTMA-UMTS-12-AISG-CWA (12 dB gain)	
Tx Characteristics			
Frequency range	2110 – 2170 MHz		
Bandwidth	60 MHz		
Insertion loss	Typ. 0.3 dB		
Ripple	< 0.1 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	< 2.5 dB (DC OFF)		
Gain ripple	< ±0.3 dB		
Return loss	> 18 dB (DC ON) > 12 dB (DC OFF)		
Gain	+22 ... +28 °C -40 ... +65 °C	12 ±0.5 dB 12 ±1.0 dB	
Noise figure	< 1.6 dB / 25 °C < 2.0 dB / 60 °C		
Output 1-dB compression point	> 15 dBm		
3rd 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		
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	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 / 3 GPP 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)

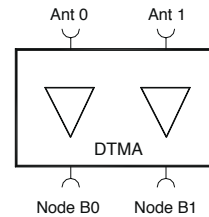
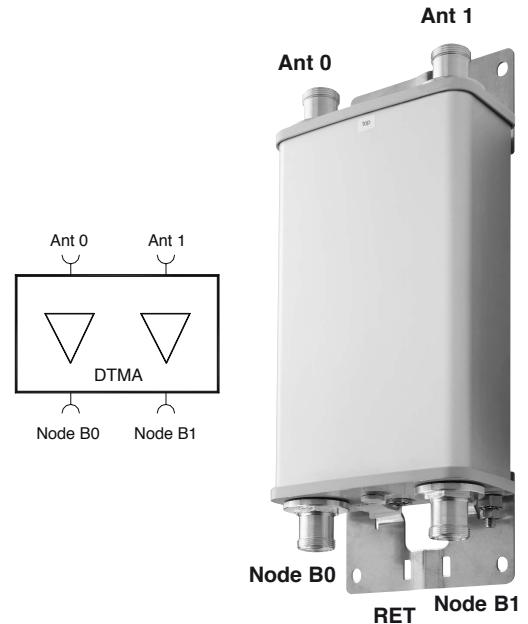
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- Double unit for easy use with XPol antennas
- Supports AISG 1.1 and 2.0 (default version see table) *
- Kathrein redundancy amplifier design for improved system reliability
- By-pass mode to ensure cell operation in case of DC power down
- Built-in 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**

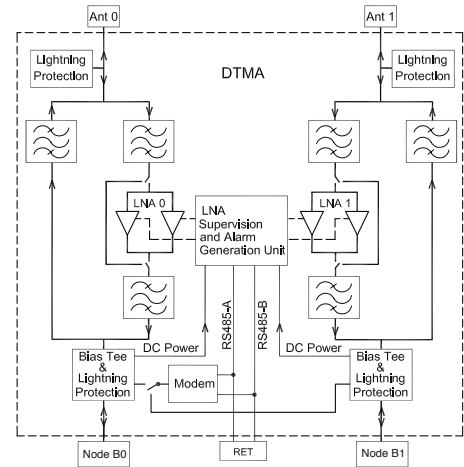


RET = Remote Electrical Tilt
AISG = Antenna Interface Standards Group
FB = Full Band in Tx-Band
BS = Band Selective in Rx-Band
CWA = Current Window Alarm



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 mm x 502 mm x 214 mm
Dimensions (w x h x d)	166 mm x 262 mm x 77.5 mm (without connectors, without mounting brackets)



Type no.	Rx-Frequency (MHz)	Current in CWA mode (mA) nominal	Current in CWA mode (mA) 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	Current in CWA mode (mA) 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 / 3 GPP 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**

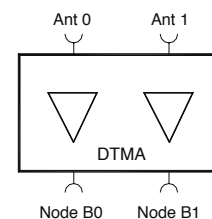
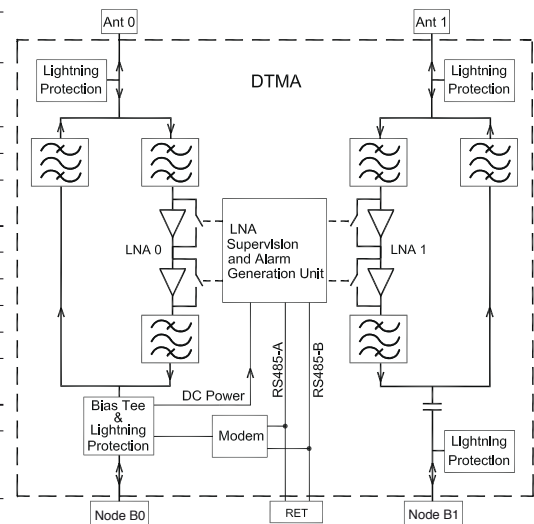
RET = Remote Electrical Tilt

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 mm x 502 mm x 214 mm
Dimensions (w x h x d)	166 mm x 262 mm x 77.5 mm (without connectors, without mounting brackets)



* The protocol of the software interface can be switched between AISG 2.0 / 3 GPP 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)

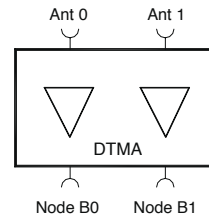
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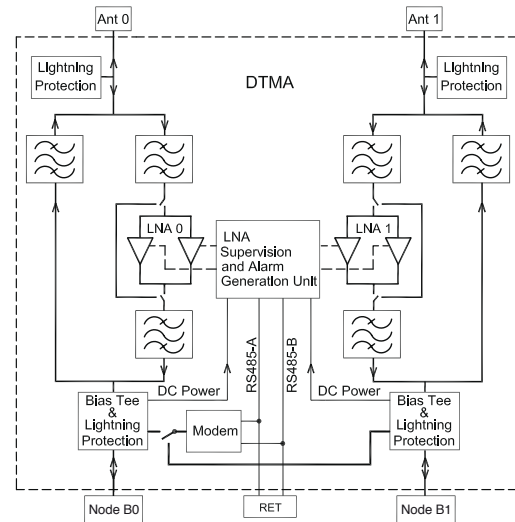
- Slimline design
- Double unit for easy use with XPol antennas
- Supports CWA, AISG 1.1 and AISG 2.0 (default)
- AISG setting switchable as described on data sheet
- CWA and AISG configurations as described on data sheet
- Suitable for antenna RET control according to AISG/3GPP standard
- By-pass mode 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 10612 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 (see note on page 2)	
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) 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



$$* \text{ Noise figure } \overline{NF} = \frac{NF_{1920 \text{ MHz}} + 2 \times NF_{1950 \text{ MHz}} + NF_{1980 \text{ MHz}}}{4}$$

(Additional variation at -40 ... +65 °C: $\Delta \overline{NF} < 0.3 \text{ dB}$)

** The protocol of the software interface can be switched between AISG 2.0 / 3 GPP 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-CWA

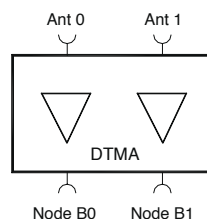
Fullband Double Dual Duplex Tower Mounted Amplifier (Masthead Amplifier)

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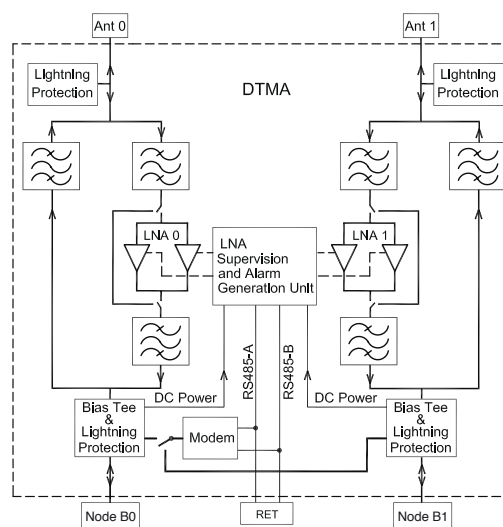
- Slimline design
- Double unit for easy use with XPol antennas
- Supports CWA, AISG 1.1 and AISG 2.0 (default)
- AISG setting switchable as described on data sheet
- CWA and AISG configurations as described on data sheet
- Suitable for antenna RET control according to AISG/3GPP standard
- By-pass mode 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



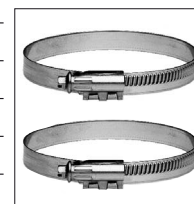
Technical Data

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 (see note on page 2)	
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)
	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



$$* \text{ Noise figure } \overline{NF} = \frac{NF_{1920 \text{ MHz}} + 2 \times NF_{1950 \text{ MHz}} + NF_{1980 \text{ MHz}}}{4}$$

(Additional variation at -40 ... +60 °C: $\Delta \overline{NF} < 0.4 \text{ dB}$)

** The protocol of the software interface can be switched between AISG 2.0 / 3 GPP 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-BYP900/1800-12-AISG-CWA

Fullband Double Dual Duplex Tower Mounted Amplifier with 900 MHz and 1800 MHz By-pass

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- 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 page 2
- CWA and AISG configurations as described on page 2
- 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)	< 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

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

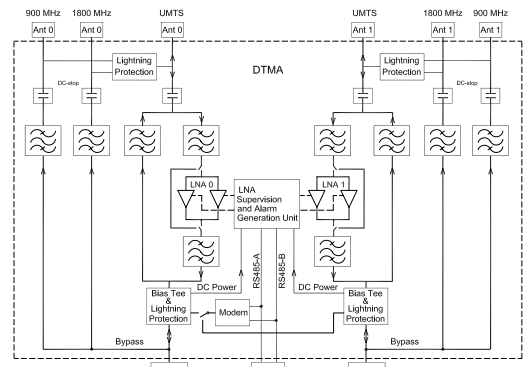
Operating temperature range	-40 ... +60 °C
IP rating	IP67 (see note on page 2)
MTBF	> 1 000 000 hours per TMA
EMC	According to ETS 300 342-3

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 (see page 2)

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 315 x 105 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



50-Ω load



* 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: $\Delta \overline{NF} < 0.3\text{ dB}$)

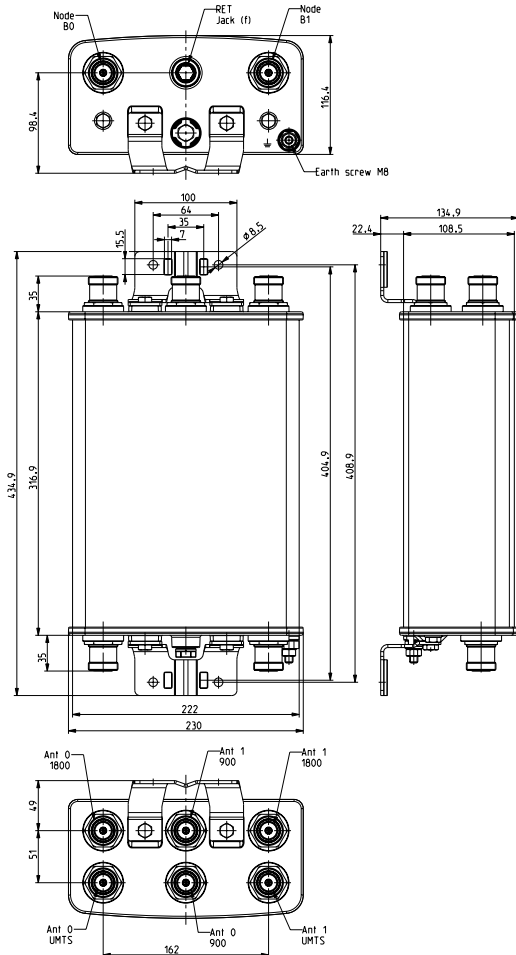
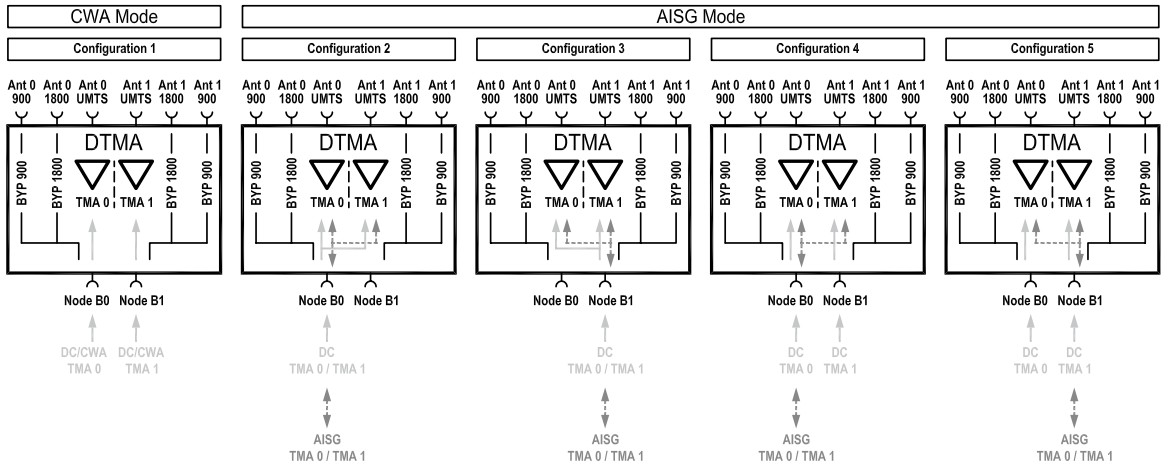
DTMA-UMTS-BYP900/1800-12-AISG-CWA

Fullband Double Dual Duplex Tower Mounted Amplifier with 900 MHz and 1800 MHz By-pass

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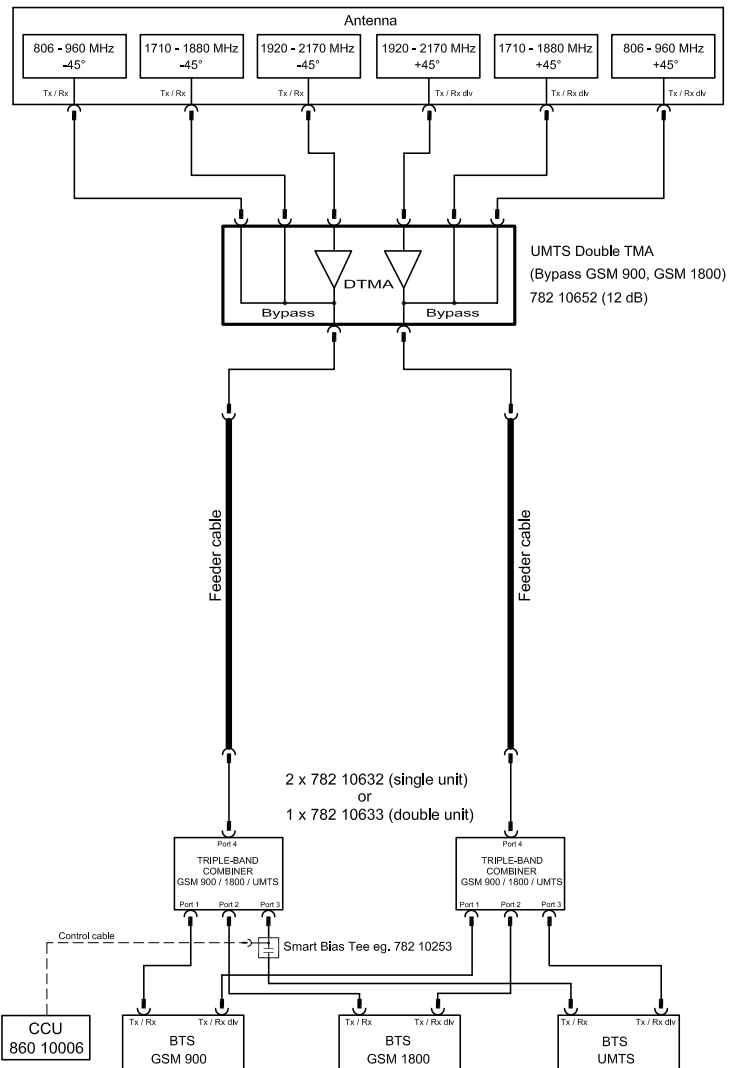
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DC Supply, Current Window Alarm and AISG Configuration (automatically chosen by the DTMA depending on incoming signals)



782 10652, 782 10653

Application Example



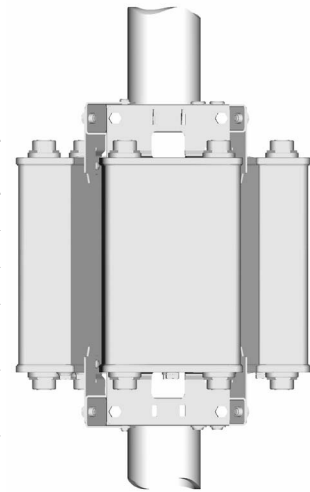
AISG Setting

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.

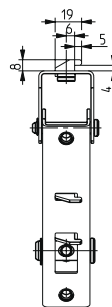
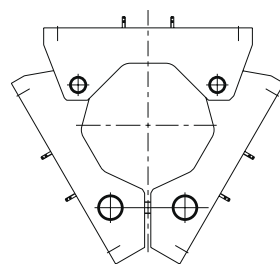
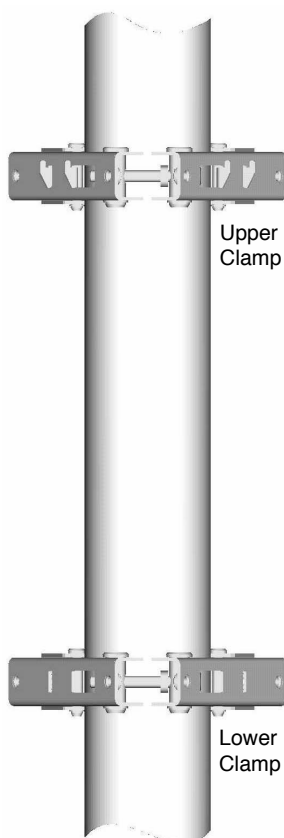
- Slim and unobstrusive design
- Nearly cylindrical optical appearance with small outer diameter

3 Sector Clamp Kit

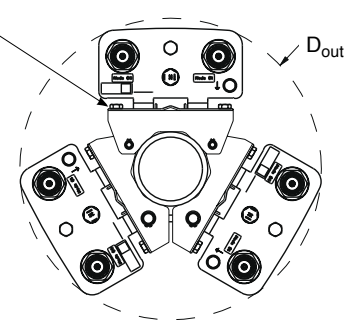
Type No.	782 10347	782 10348	782 10349
Angle between DTMS	120°	120°	120°
Suitable for mast diameter	88.9 mm ±1.5 mm	114.3 mm ±1.5 mm	139.7 mm ±1.5 mm
Number of pieces	2 x 3 sector clamp	2 x 3 sector clamp	2 x 3 sector clamp
Material	- 3 sector clamp - Screws	Stainless steel Stainless steel	Stainless steel Stainless steel
Outer diameter (D _{out}) of the 3 DTMA Arrangement	360 mm	390 mm	415 mm
Weight	- Clamp kit - 3 sector clamp	1.9 kg 0.88 kg	2.0 kg 0.95 kg
		2.4 kg 1.14 kg	



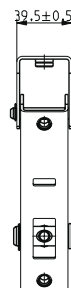
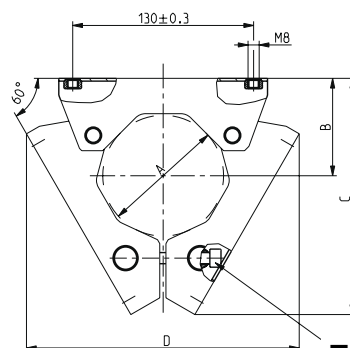
Please note: The installation team must be properly qualified and also be familiar with the relevant national safety regulations.



Torque 17 – 20 Nm



Bottom view



Torque 12 – 15 Nm

Type No.	A	B	C	D
782 10347	88.9	70	170	196
782 10348	114.3	83	190	219
782 10349	139.7	95	221	255

all dimensions by mm

Repeaters

Repeater:

Description	Type No.	Frequency range	Page
900 Band Selective Repeater	782 10711	880 ... 915 / 925 ... 960 MHz	309
900 Double-Band Selective Repeater	782 10717	Band 1: 880 ... 915 / 925 ... 960 MHz Band 2: 880 ... 915 / 925 ... 960 MHz	310
1800 Band Selective Repeater	782 10731	1710 ... 1785 / 1805 ... 1880 MHz	311
1800 Double-Band Selective Repeater	782 10736	Band 1: 1710 ... 1785 / 1805 ... 1880 MHz Band 2: 1710 ... 1785 / 1805 ... 1880 MHz	312
UMTS Band Selective Repeater	782 10751	1920 ... 1980 / 2110 ... 2170 MHz	313

New Products

900 Band Selective Repeater

880 ... 915 MHz / 925 ... 960 MHz

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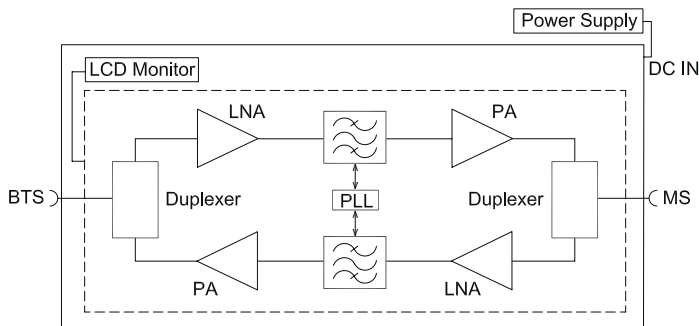
- Indoor repeater solution to easily improve coverage in designated areas
- Easy deployment
- Compact design
- Wall mounting, easy to install
- User-friendly operation
- Customized single band operation



Front View



Rear View



Technical Data

Type No.	782 10711 900 Band Selective Repeater	
Specification	Uplink	Downlink
Frequency range	890 ... 915 MHz	935 ... 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	≤ 4 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	≤ 6 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	
Environmental conditions	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	≤ 3.8 kg	
Operating temperature:		
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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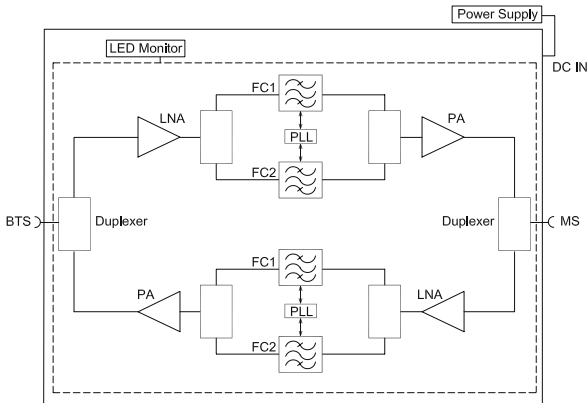
- Indoor repeater solution to easily improve coverage within designated areas
- Easy deployment
- Compact design
- Wall mounting, easy to install
- User-friendly operation
- Two independent customized bands within the operational frequency range



Front View



Rear View



Technical Data

Type No.		782 10717	
		900 Double-Band Selective Repeater	
Specification		Uplink	Downlink
Frequency range	Band 1	890 ... 915 MHz	935 ... 960 MHz
	Band 2	890 ... 915 MHz	935 ... 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		≤ 4 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		≤ 6 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	
Environmental conditions		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		≤ 3.8 kg	
Operating temperature:			
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

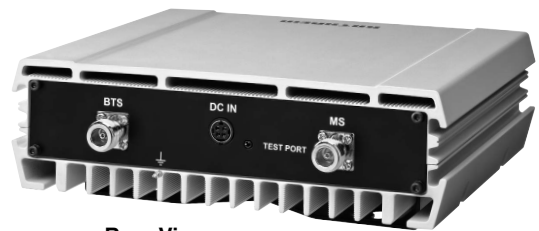
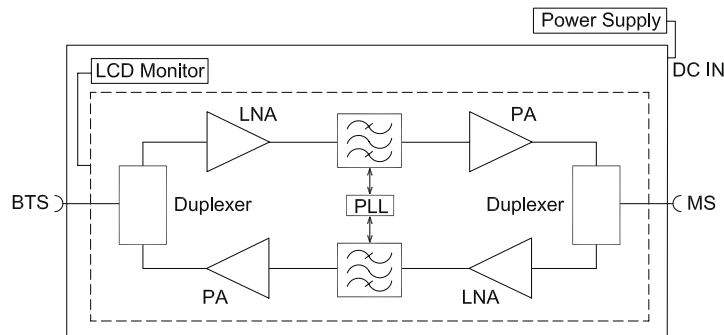
1800 Band Selective Repeater

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



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	≤ 4 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	≤ 6 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	
Environmental conditions	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	≤ 3.8 kg	
Operating temperature:		
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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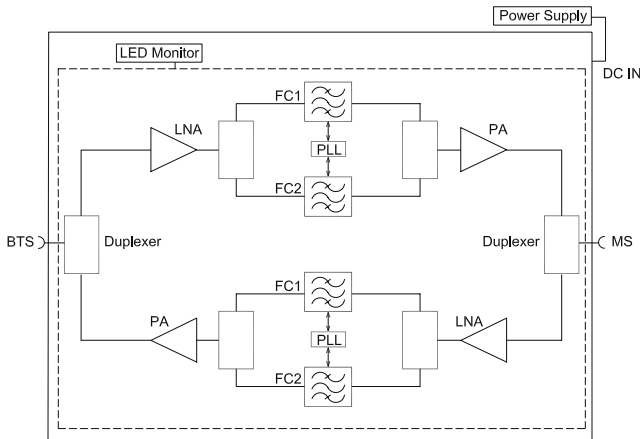
- Indoor repeater solution to easily improve coverage within designated areas
- Easy deployment
- Compact design
- Wall mounting, easy to install
- User-friendly operation
- Two independent customized bands within the operational frequency range



Front View



Rear View



Technical Data

Type No.	782 10736 1800 Double-Band Selective Repeater	
Specification	Uplink	Downlink
Frequency range	Band 1 1710 ... 1785 MHz	1805 ... 1880 MHz
	Band 2 1710 ... 1785 MHz	1805 ... 1880 MHz
Nominal bandwidth	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	≤ 4 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	≤ 6 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	
Environmental conditions	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	≤ 3.8 kg	
Operating temperature:		
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

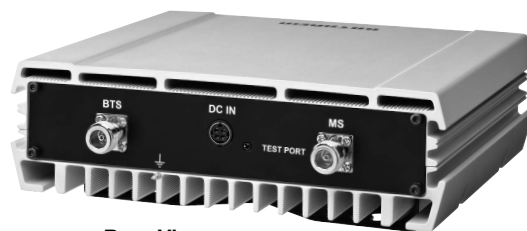
UMTS Band Selective Repeater

1920 ... 1980 MHz / 2110 ... 2170 MHz

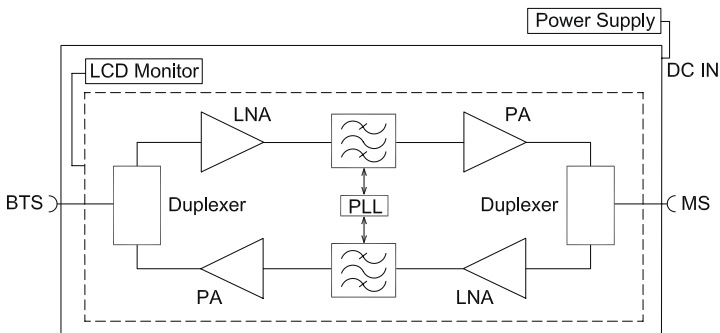
- Indoor repeater solution to easily improve coverage in designated areas
- Easy deployment
- Compact design
- Wall mounting, easy to install
- User-friendly operation
- Customized single band operation



Front View



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	≤ 4 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	
EMV	≤ 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	≤ 6 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	
Environmental conditions	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	≤ 3.8 kg	
Operating Temperature:		
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

A current list of Kathrein's International Representatives can be found on our homepage: www.kathrein.de



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1919 - 2009



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