

27 - 512 MHz KATHREIN-Antennas and Antenna Line Products

For Public Safety, Ports, Airports, Distribution, Public Transport, Utilities



KATHREIN

Antennen · Electronic

Photo on title page: Applications for TETRA.

Catalogue Issue 01/2011

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.

Calculation of Wind Loading on Kathrein Base Station Antennas

In 1998 the co-ordinating committee of the Standardisation Group for Building Standards decided that during the harmonisation process of European standards, the DIN-Standards shall be modified and republished based on the European Pre-Standards.

As a result of this harmonisation process the new edition of DIN 1055 Part 4 was finally published in 2005. This standard defines the worst case loading example created by natural wind forces on bearing structures and their individual elements. The standard thereby defines the principles for calculating the maximum loading and for confirming the bearing capacity of structures in general.

One of the major changes in the calculation of the wind load under DIN 1055-4 is the definition of the value c_f . Due to these changes in the calculation formula within the standard, the calculated wind load of some Base Station Antennas is higher than previously specified on earlier data sheets.

During 2009 Kathrein will migrate to calculating and specifying all wind loads in accordance with DIN 1055-4 (similar to the European Standard EN 1991-1-4) on the online data sheets. If the wind load has been calculated under the updated standard then this will be explicitly mentioned on the data sheet.

The physical dimensions of our products have not been modified unless otherwise specified, nor has the actual wind loading surface area of the antennas increased in any way.



“Quality leads the way”

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

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

The catalogue is splitted into two parts.

Part 1: Antennas

Part 2: Antenna Line Products

Pages

Antennas

7 – 97

Antenna Line Products

98 – 191

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 31 184-820

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Technical Information:

Fax: +49 80 31 184-973

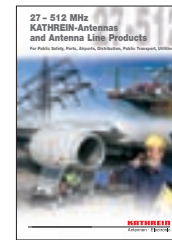
E-Mail: mobilcom@kathrein.de

List of available Catalogues for Mobile Communication Antennas and Accessories

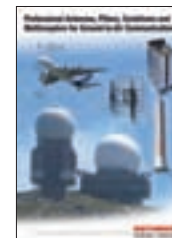
790 – 6000 MHz Base Station Antennas, Filters, Combiners and Amplifiers for Mobile Communications



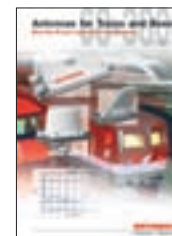
27 – 512 MHz KATHREIN-Antennas and Antenna Line Products



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



Antennas for Trains and Buses



The listed catalogues are also available on CD-ROM



Part 1:

Antennas

Directional Antennas

68 – 87.5 MHz:
Trunking system, Rescue services

146 – 174 MHz:
Trunking system, Rescue services

360 – 512 MHz:
e.g. **TETRA, TETRAPOL**, GSM 450,
CDMA 450, Trunking system

Omnidirectional Antennas

27 – 87.5 MHz:
Trunking system, Rescue services

146 – 174 MHz:
Trunking system, Rescue services

370 – 470 MHz:
e.g. **TETRA, TETRAPOL**, GSM 450,
CDMA 450, Trunking system

Indoor

370 – 450 MHz:
e.g. **TETRA, TETRAPOL**, GSM 450,
CDMA 450, Trunking system

Electrical Accessories

Splitters

Mechanical Accessories

Clamps, Downtilt Kits, ...

Technical Information

Antenna Designs:
Antenna Families
Harmony of Design and Technology



Antenna Designs: Antenna Families Distinguishing features

Design	Small size and elegant design are the distinguishing features of Kathrein's antenna families.
Radome	The radomes cover the internal antenna components. Fiberglass material guarantees optimum performance with regards to stability, stiffness, UV resistance, painting and best weather protection.
Environmental influences	The design of Kathrein antennas is based on fundamental engineering knowledge and also on 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
Large variety of half-power beam width, gain values	According to the antenna type selected, customer can choose from different half-power beam widths and different gain values.
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). Valid only where indicated in the catalogue!
Multi-functional installation hardware	Depending on the type, the antennas are equipped with up to 2 fixing 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).
Excellent grounding	The antennas are DC grounded according EN 50083-1.
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.
Omnidirectional Antennas: Anti-static protection	All metal parts of the antenna as well as the supplied clamp attachment are grounded. The inner conductor is capacitively coupled.
Lightning protection	The antenna is designed to withstand a lightning current of up to 150 KA (impulse: 10/350 μ s), according to IEC 62305 parts 1–4 and VDE 0855-300, and thereby fulfils the requirements of lightning protection class II. Grounding cross-section: 22 mm ² copper. Valid for Omnidirectional Antennas where indicated in the catalogue only.

The articles are listed by type number in numerical order.

Preferred types for TETRA/TETRAPOL

Type No.	Page	Type No.	Page	Type No.	Page	Type No.	Page
711...		738...		85010008	83	K61...	
711530	47	738546	81	85010014	84	K613311	87
				85010015	84	K613321	87
713...		739...		85010016	84	K61333	87
713 645	87	739504	31	85010017	84	K61334	87
		739506	32	85010058	85		
716 ...				85010059	85	K62...	
716 192	87	741...		85010060	86	K625521	74
		741515	22	85010061	86	K625541	74
720...		741516	24				
720880	57	741517	26	860...		K63...	
		741518	27	86010030	76	K6320221	75
721...				86010131	76	K6320227	75
721388	57	742...				K6320231	75
		742033	85			K6320237	75
728...		742034	85	K51...		K6320241	75
728888	57	742155	62	K512472	40	K6320247	75
		742242	25	K5125421	42 ...		
731...		742263	85	K51262	47	K72...	
731291	33	742317	85	K5126411	41	K722241	34
731651	81			K5126421	41	K722247	34
		800...					
736...		80010252	29	K52...		K73...	
736831	70	80010253	30	K520721	18	K731221	36
		80010277	67	K523221	19	K733621	28
737...		80010278	71			K735121	37
737003	52 ...	80010330	71	K53...			
737299	68	80010339	67	K531741	13	K75...	
737398	87	80010391	35	K531821	17	K751121	52 ...
737545	59	80010392	56	K531921	16	K7515211	55
737546	61	80010403	23	K5319411	12	K7515221	55
737971	82	80010434	60	K5319421	12	K751537	54
737972	82	80010448	53			K751637	58
737973	82	80010632	67	K55...		K752921	63
737974	82	80010633	71	K552626	48		
737975	82			K552627	48		
737976	82	850...		K552628	48		
737977	82	85010002	81	K552841	43		
737978	82	85010003	81	K552921	49		

Summary – Directional Antennas

68 – 87.5 MHz

Type	Type No.	Height [mm]	Input	Page			
Yagi	68–80	162°	3dB	K5319411	2100	N female	12
Yagi	74–87.5	162°	3dB	K5319421	2100	N female	12
Yagi	68–87.5	120°	6dB	K531741	2380	N female	13

Gain ref. $\lambda/2$ dipole

Directional Antennas

Polarization

68 ... 87.5

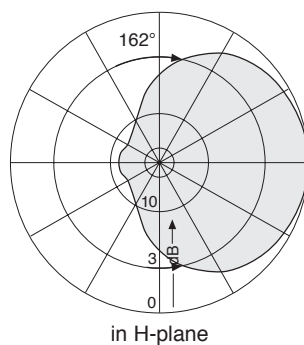
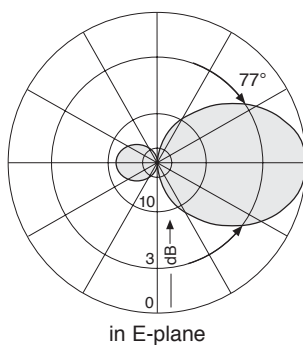
H or V

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K5319411: Yagi 68–80 162° 3dB
K5319421: Yagi 74–87.5 162° 3dB

Type No.	K5319411	K5319421
Frequency range	68 – 80 MHz	74 – 87.5 MHz
Polarization	Usable for horizontal or vertical polarization.	
Gain (ref. $\lambda/2$ dipole)	3 dB	
Impedance	50 Ω	
VSWR	< 1.5	
Max. power	1300 W (at 50 °C ambient temperature)	

- Material:** Hot-dip galvanized steel.
All screws and nuts: Stainless steel.
- Mounting:** On masts from 60 – 115 mm diameter, clamps supplied.
- Grounding:** All metal parts of the antenna including the mounting kit are DC grounded.
The inner conductor is coupled capacitively.
- Special features:** The antenna will be shipped dismounted.



Mechanical specifications

Input	N female
Weight	12 kg
Wind load	260 N (at 150 km/h)
Max. wind velocity	180 km/h
Packing size	2154 x 798 x 132 mm
Height	approx. 2100 mm
Distance dipole / mast	approx. 1200 mm

Directional Antenna Polarization

68–87.5

V

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Directional
68 – 87.5 MHz

- 4-element Yagi antenna, large bandwidth.
- Hot-dip galvanized steel.
- Gain 6 dB.

Yagi 68–87.5 120° 6dB

Type No.	K531741
Frequency range	68 – 87.5 MHz
Polarization	Vertical
Gain (ref. $\lambda/2$ dipole)	6 dB
Impedance	50 Ω
VSWR	< 1.5
Max. power	100 W (at 50 °C ambient temperature)

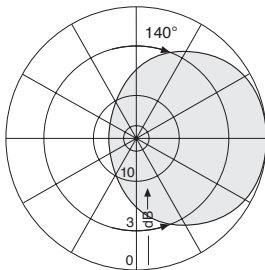
Material: Hot-dip galvanized steel.
All screws and nuts: Stainless steel.

Mounting: On masts from 60 – 115 mm diameter, clamps supplied.

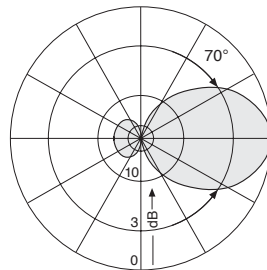
Grounding: All metal parts of the antenna including the mounting kit are DC grounded.
The inner conductor is coupled capacitively.



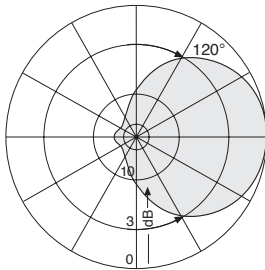
Radiation patterns at different frequencies:



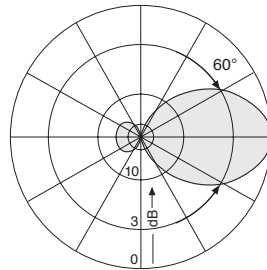
Horizontal 69 MHz



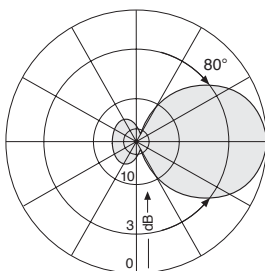
Vertical 69 MHz



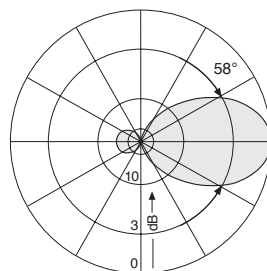
Horizontal 77 MHz



Vertical 77 MHz



Horizontal 86 MHz



Vertical 86 MHz

Mechanical specifications

Input	N female
Weight	22 kg
Wind load	520 N (at 150 km/h)
Max. wind velocity	180 km/h
Packing size	2424 x 2118 x 182 mm
Height	approx. 2380 mm
Yagi length	approx. 2030 mm

Summary – Directional Antennas

146 – 174 MHz

Type	Type No.	Height [mm]	Input	Page			
Yagi	146-174	170°	3dB	K531921	1060	N female	16
Yagi	146-174	118°	4dB	K531821	1100	N female	17
Yagi	146-174	63°	8.5dB	K520721	1022	N female	18
Panel	146-174	65°	8dB	K523221	1320	N female	19

Gain ref. $\lambda/2$ dipole

Directional Antenna Polarization

146–174

H or V

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Directional
146 – 174 MHz

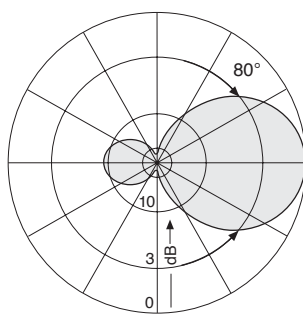
Yagi 146–174 170° 3dB

Type No.	K531921
Frequency range	146 – 174 MHz
Polarization	Usable for horizontal or vertical polarization.
Gain (ref. $\lambda/2$ dipole)	3 dB
Impedance	50 Ω
VSWR	< 1.4
Max. power	560 W (at 50 °C ambient temperature)

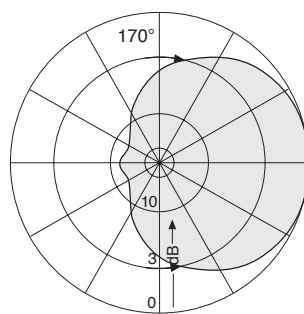
Material: Hot-dip galvanized steel.
All screws and nuts: Stainless steel.

Mounting: On masts from 60 – 125 mm diameter,
clamps supplied.

Grounding: All metal parts of the antenna including the
mounting kit are DC grounded.



in E-plane



in H-plane

Mechanical specifications

Input	N female
Weight	6.5 kg
Wind load	145 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	1124 x 816 x 92 mm
Height	approx. 1060 mm
Yagi length	approx. 650 mm

Directional Antenna Polarization

146–174

H or V

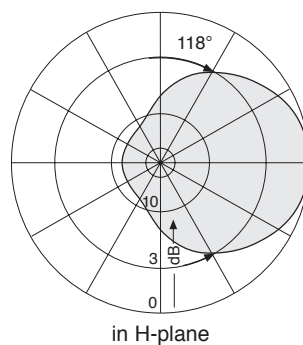
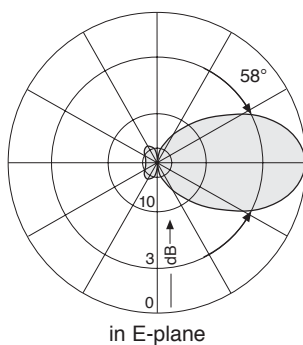
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Directional
146 – 174 MHz

Yagi 146–174 118° 4dB

Type No.	K531821
Frequency range	146 – 174 MHz
Polarization	Usable for horizontal or vertical polarization.
Gain (ref. $\lambda/2$ dipole)	4 dB
Impedance	50 Ω
VSWR	< 1.3
Max. power	380 W (at 50 °C ambient temperature)

- Material:** Hot-dip galvanized steel.
All screws and nuts: Stainless steel.
- Mounting:** On masts from 60 – 125 mm diameter, clamps supplied.
- Grounding:** All metal parts of the antenna including the mounting kit are DC grounded.



Mechanical specifications

Input	N female
Weight	7.5 kg
Wind load	170 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	1112 x 92 x 904 mm
Height	approx. 1100 mm
Yagi length	approx. 750 mm

Directional Antenna Polarization

146–174

H or V

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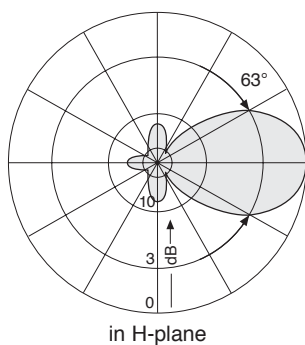
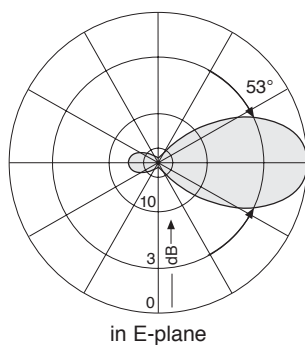
Directional
146 – 174 MHz

Yagi 146–174 63° 8.5dB

Type No.	K520721
Frequency range	146 – 174 MHz
Polarization	Usable for horizontal or vertical polarization.
Gain (ref. $\lambda/2$ dipole)	8.5 dB
Impedance	50 Ω
VSWR	< 1.5
Max. power	250 W (at 50 °C ambient temperature)



- Material:** Antenna: Weather-resistant aluminum.
All screws and nuts: Stainless steel.
- Mounting:** On masts from 60 – 105 mm diameter,
by means of supplied mounting kit.
- Grounding:** All metal parts of the antenna including the
mounting kit are DC grounded.
The inner conductor is coupled capacitively.
- Shipping:** The antenna will be shipped dismounted.



Mechanical specifications		
Input	N female	
Weight	10 kg	
Wind load (at 150 km/h)	Horizontal:	Vertical:
	lateral:	210 N
	frontal:	140 N
Max. wind velocity	210 km/h	220 km/h
Packing size	1954 x 186 x 162 mm	
Height	approx. 1022 mm	
Yagi length	approx. 1910 mm	

Directional Antenna Polarization

146–174

H or V

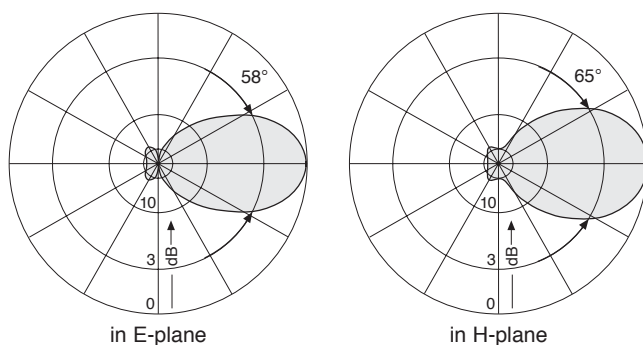
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Directional
146 – 174 MHz

Yagi 146–174 65° 8dB

Type No.	K523221
Frequency range	146 – 174 MHz
Polarization	Usable for horizontal or vertical polarization.
Gain (ref. $\lambda/2$ dipole)	8 dB
Impedance	50 Ω
VSWR	< 1.15
Max. power	1100 W (at 50 °C ambient temperature)

- Material:** Hot-dip galvanized steel.
All screws and nuts: Stainless steel.
- Mounting:** Via pair of clamps K 61 12 0 at masts from 60 – 115 mm dia. or via pair of clamps K 61 13 0 at masts from 115 – 210 mm dia. (not supplied).
- Combination:** The antenna is especially suitable as a component in arrays to achieve various radiation patterns.
- Grounding:** All metal parts of the antenna including the mounting kit are DC grounded.
- Ice protection:** Fiberglass enclosure of its critical points and the antenna's extremely sturdy construction keep it operational even during heavy icing.



Mechanical specifications	
Input	N female
Weight	25 kg
Wind load	660 N (at 150 km/h)
Max. wind velocity	220 km/h
Packing size	1400 x 1400 x 750 mm
Width/height/depth	1320 x 1320 x 510 mm

Summary – Directional Antennas

360 – 512 MHz

Type	Type No.	Height [mm]	Input	Page
XPol Panel 380–500 65° 12dBi	741515	992	2 x 7-16 female	22
XPol Panel 380–470 65° 14dBi 0°–14°	80010403	1999	2 x 7-16 female	23
XPol Panel 380–500 65° 15dBi	741516	2000	2 x 7-16 female	24
XPol Panel 380–470 68° 14.5dBi 6°T	742242	2000	2 x 7-16 female	25
XPol Panel 380–500 88° 10.5dBi	741517	1007	2 x 7-16 female	26
XPol Panel 380–500 88° 13.5dBi	741518	1997	2 x 7-16 female	27
VPol Panel 406–512 63° 9dBi	K733621	493	N female	28
VPol Panel 380–500 65° 12dBi	80010252	992	7-16 female	29
VPol Panel 380–500 65° 15dBi	80010253	2000	7-16 female	30
VPol Panel 380–430 115° 8.5dBi	739504	974	7-16 female	31
VPol Panel 380–430 115° 11.5dBi	739506	1934	7-16 female	32
VPol Panel 400–470 120° 9dBi	731291	992	7-16 female	33
LogPer 406–512 67° 10.5dBi	K722241	353	N female	34
LogPer 406–512 67° 10.5dBi	K722247	353	7-16 female	34
LogPer 380–520 87° 9dBi	80010391	785	7-16 female	35
Corner 360–490 44° 11dBi	K731221	500	N female	36
RHCPol Helix 400–470 33° 12dBi	K735121	718	N female	37
Remote Electrical Tilt (RET) System				38

Panel Dual Polarization Half-power Beam Width

380–500

X

65°

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TETRA/
TETRAPOL

XPol Panel 380–500 65° 12dBi

Type No.	741515	
Frequency range	380–500	
	380 – 430 MHz	430 – 500 MHz
Polarization	+45°, –45°	+45°, –45°
Gain	11.5 dBi	12 dBi
Half-power beam width Copolar +45°/–45°	Horizontal: 68° Vertical: 37°	Horizontal: 65° Vertical: 32°
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	500 W (at 50 °C ambient temperature)	

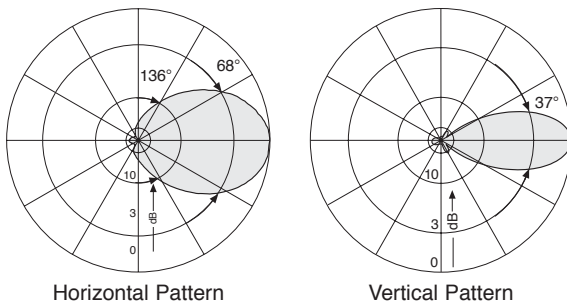


Material: Radiator: Tin-plated copper.
Reflector screen: Weather-proof aluminum.
Radome: Fiberglass, colour: Grey.
All screws and nuts: Stainless steel.

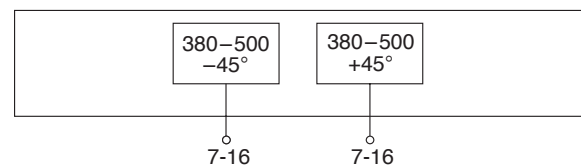
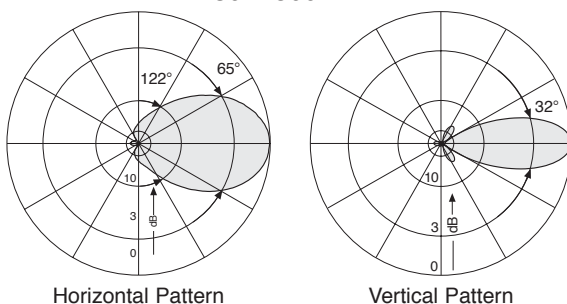
Ice protection: Due to the very sturdy antenna construction and the protection of the radiating system by the radome, the antenna remains operational even under icy conditions.

Grounding: The metal parts of the antenna including the mounting kit and the inner conductors are DC grounded.

380 – 430 MHz



430 – 500 MHz



Mechanical specifications

Input	2 x 7-16 female
Connector position	Rearside
Wind load	Frontal: 500 N (at 150 km/h) Lateral: 220 N (at 150 km/h) Rearside: 715 N (at 150 km/h)
Max. wind velocity	200 km/h
Height/width/depth	992 / 492 / 190 mm
Category of mounting hardware	M (Medium)
Weight	12 kg
Packing size	1062 x 562 x 274 mm

Panel 380 – 470
Dual Polarization X
Half-power Beam Width 65°
Adjust. Electr. Downtilt 0°–14°
 set by hand or by optional RCU (Remote Control Unit)

TETRA/
 TETRAPOL

XPoI Panel 380–470 65° 14dBi 0°–14°T

Type No.	80010403	
Frequency range	380–470	
	380 – 430 MHz	430 – 470 MHz
Polarization	+45°, –45°	+45°, –45°
Gain (dBi)	13.5 ... 13 ... 12.5	14 ... 13.5 ... 13
Tilt	0° ... 7° ... 14°	0° ... 7° ... 14°
Horizontal Pattern:		
Half-power beam width	66°	62°
Front-to-back ratio, copolar (180° ±30°)	> 25 dB	
Cross polar ratio	0°	Typically: 25 dB
Maindirection	±60°	> 10 dB
Vertical Pattern:		
Half-power beam width	22°	19°
Electrical tilt	0° – 14°, continuously adjustable	
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)	

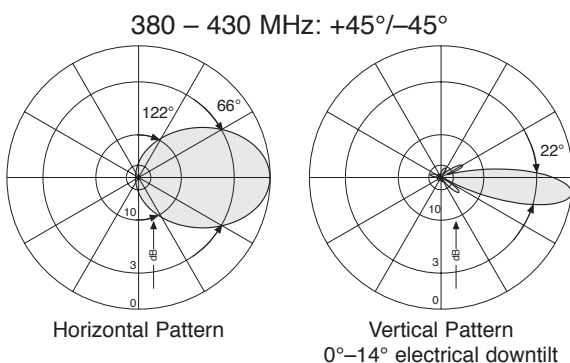
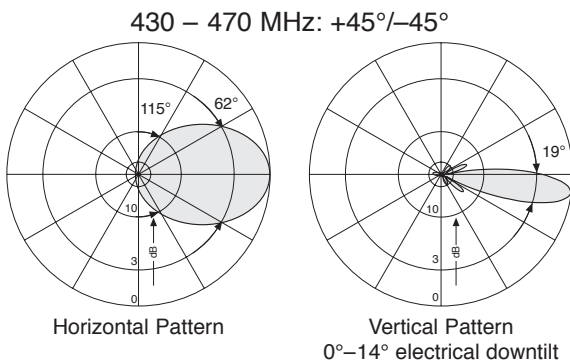
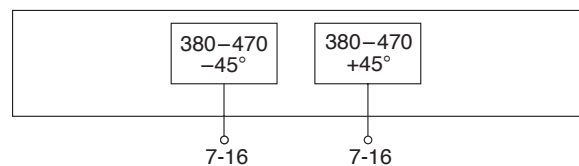


Directional
360 – 512 MHz

Material: Radiator: Tin-plated copper.
 Reflector screen: Weather-proof aluminum.
 Radome: Fiberglass, colour: Grey.
 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: The metal parts of the antenna including the mounting kit and the inner conductors are DC grounded.



Mechanical specifications	
Input	2x 7-16 female
Connector position	Bottom
Adjustment mechanism	1 x, Position bottom continuously adjustable
Wind load	Frontal: 1160 N (at 150 km/h) Lateral: 480 N (at 150 km/h) Rearside: 1870 N (at 150 km/h)
Max. wind velocity	200 km/h
Height/width/depth	1999 / 575 / 199 mm
Category of mounting hardware	H (Heavy)
Weight	22 kg
Packing size	2250 x 640 x 225 mm

Panel Dual Polarization Half-power Beam Width

380–500

X

65°

KATHREIN

Antennen · Electronic

TETRA/
TETRAPOL

XPoI Panel 380–500 65° 12dBi

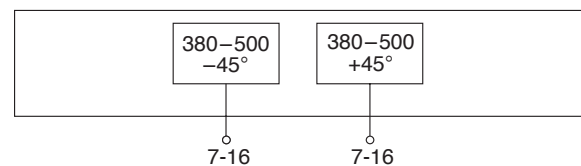
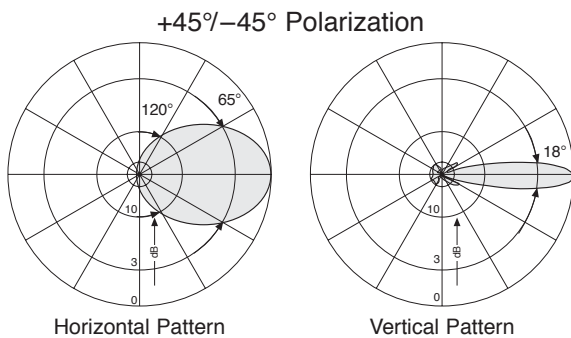
Type No.	741516	
Frequency range	380–500	
	380 – 430 MHz	430 – 500 MHz
Polarization	+45°, –45°	+45°, –45°
Gain	14.5 dBi	15 dBi
Half-power beam width Copolar +45°/–45°	Horizontal: 65° Vertical: 18°	
Front-to-back ratio, copolar	> 25 dB	
Isolation	> 30 dB	
Impedance	50 Ω	
VSWR	< 1.5	
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)	
Max. power per input	500 W (at 50 °C ambient temperature)	



Material: Radiator: Tin-plated copper.
Reflector screen: Weather-proof aluminum.
Radome: Fiberglass, colour: Grey.
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: The metal parts of the antenna including the mounting kit and the inner conductors are DC grounded.



Mechanical specifications	
Input	2 x 7-16 female
Connector position	Rearside
Wind load	Frontal: 1100 N (at 150 km/h) Lateral: 440 N (at 150 km/h) Rearside: 1540 N (at 150 km/h)
Max. wind velocity	200 km/h
Height/width/depth	2000 / 492 / 190 mm
Category of mounting hardware	H (Heavy)
Weight	19 kg
Packing size	2060 x 562 x 274 mm

Directional
360 – 512 MHz

**Panel
Dual Polarization
Half-power Beam Width
Fixed Electrical Downtilt**

380–470
X
65°
6°

KATHREIN
Antennen · Electronic

**TETRA/
TETRAPOL**

XPol Panel 380–470 65° 14.5dBi 6°T

Type No.	742242	
Frequency range	380–470	
	380 – 430 MHz	430 – 470 MHz
Polarization	+45°, –45°	+45°, –45°
Gain	2 x 14.5 dBi	2 x 14.7 dBi
Half-power beam width Copolar +45°/–45°	Horizontal: 68° Vertical: 18°	Horizontal: 65° Vertical: 17°
Electrical tilt	6°	6°
Front-to-back ratio, copolar	> 25 dB	> 24 dB
Isolation	> 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	500 W (at 50 °C ambient temperature)	

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

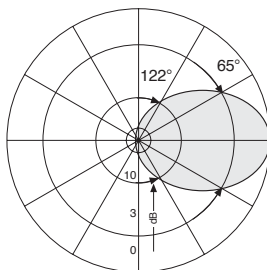
Ice protection: Due to the very sturdy antenna construction and the protection of the radiating system by the radome, the antenna remains operational even under icy conditions.

Grounding: The metal parts of the antenna including the mounting kit and the inner conductors are DC grounded.

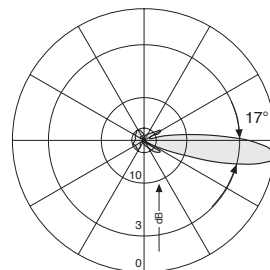


Directional
360 – 512 MHz

430 – 470 MHz: +45°/–45° Polarization

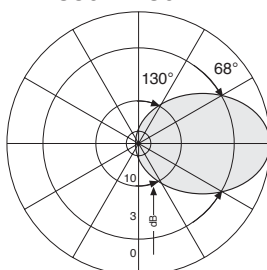


Horizontal Pattern

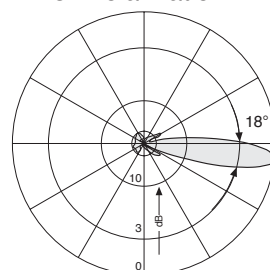


Vertical Pattern
6° electrical downtilt

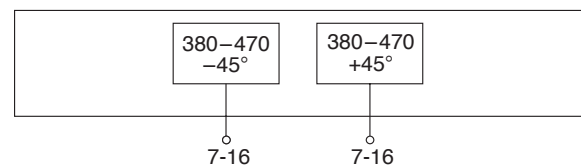
380 – 430 MHz: +45°/–45° Polarization



Horizontal Pattern



Vertical Pattern
6° electrical downtilt



Mechanical specifications	
Input	2 x 7-16 female
Connector position	Rearside
Wind load	Frontal: 1100 N (at 150 km/h) Lateral: 440 N (at 150 km/h) Rearside: 1540 N (at 150 km/h)
Max. wind velocity	200 km/h
Height/width/depth	2000 / 492 / 190 mm
Category of mounting hardware	H (Heavy)
Weight	19 kg
Packing size	2060 x 562 x 274 mm

Panel Dual Polarization Half-power Beam Width

380–500

X

88°

KATHREIN

Antennen · Electronic

TETRA/
TETRAPOL

XPoI Panel 380–500 88° 10.5dBi

Type No.	741517	
Frequency range	380–500	
	380 – 430 MHz	430 – 500 MHz
Polarization	+45°, –45°	+45°, –45°
Gain	2 x 10 dBi	2 x 10.5 dBi
Half-power beam width Copolar +45°/–45°	Horizontal: 88° Vertical: 40°	Horizontal: 86° Vertical: 35°
Front-to-back ratio, copolar	> 20 dB	> 20 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)	

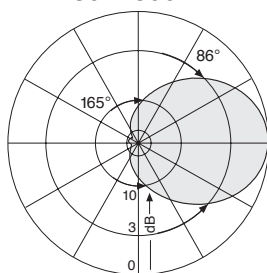


Material: Reflector screen: Weather-proof aluminum.
Radome: Fiberglass, colour: Grey.
All screws and nuts: Stainless steel.

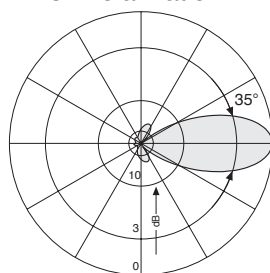
Ice protection: Due to the very sturdy antenna construction and the protection of the radiating system by the radome, the antenna remains operational even under icy conditions.

Grounding: The metal parts of the antenna including the mounting kit and the inner conductors are DC grounded.

430 – 500 MHz: +45°/–45° Polarization

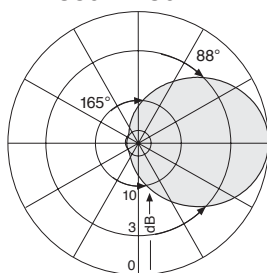


Horizontal Pattern

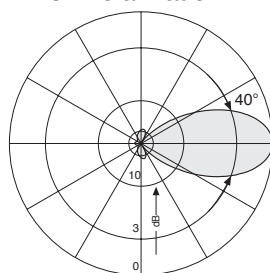


Vertical Pattern

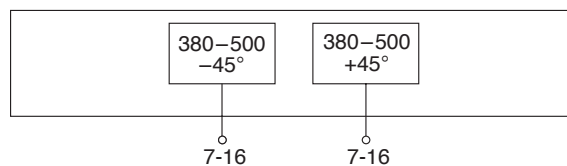
380 – 430 MHz: +45°/–45° Polarization



Horizontal Pattern



Vertical Pattern



Mechanical specifications

Input	2 x 7-16 female
Connector position	Bottom
Wind load	Frontal: 365 N (at 150 km/h) Lateral: 210 N (at 150 km/h) Rearside: 540 N (at 150 km/h)
Max. wind velocity	200 km/h
Height/width/depth	1007 / 317 / 193 mm
Category of mounting hardware	M (Medium)
Weight	10.5 kg
Packing size	1140 x 330 x 240 mm

Panel Dual Polarization Half-power Beam Width

380–500

X

88°

KATHREIN

Antennen · Electronic

TETRA/
TETRAPOL

XPol Panel 380–500 88° 13.5dBi

Type No.	741518	
Frequency range	380–500	
	380 – 430 MHz	430 – 500 MHz
Polarization	+45°, –45°	+45°, –45°
Gain	2 x 13 dBi	2 x 13.5 dBi
Half-power beam width Copolar +45°/–45°	Horizontal: 88° Vertical: 20°	Horizontal: 86° Vertical: 17°
Front-to-back ratio, copolar	> 20 dB	> 20 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)	

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

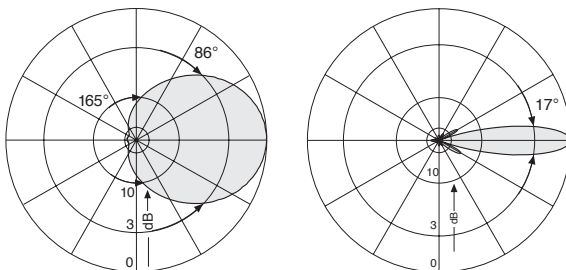
Ice protection: Due to the very sturdy antenna construction and the protection of the radiating system by the radome, the antenna remains operational even under icy conditions.

Grounding: The metal parts of the antenna including the mounting kit and the inner conductors are DC grounded.



Directional
360 – 512 MHz

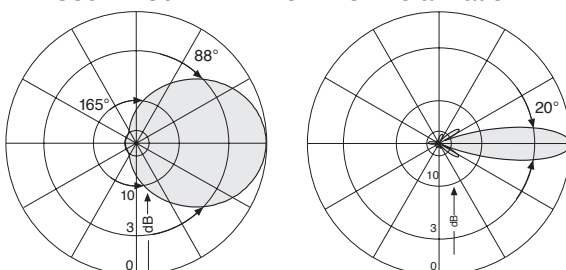
430 – 500 MHz: +45°/–45° Polarization



Horizontal Pattern

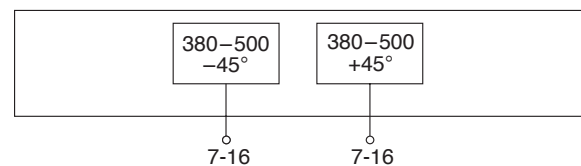
Vertical Pattern

380 – 430 MHz: +45°/–45° Polarization



Horizontal Pattern

Vertical Pattern



Mechanical specifications

Input	2 x 7-16 female
Connector position	Bottom
Wind load	Frontal: 800 N (at 150 km/h) Lateral: 480 N (at 150 km/h) Rearside: 1150 N (at 150 km/h)
Max. wind velocity	200 km/h
Height/width/depth	1997 / 317 / 193 mm
Category of mounting hardware	H (Heavy)
Weight	18.5 kg
Packing size	2130 x 330 x 240

Panel Vertical Polarization Half-power Beam Width

406–512

V

63°

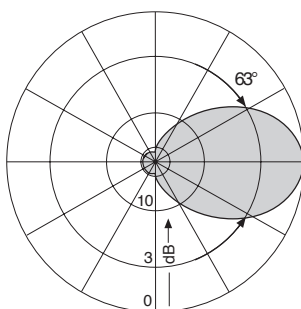
KATHREIN
Antennen · Electronic

VPol Panel 406–512 63° 9dBi

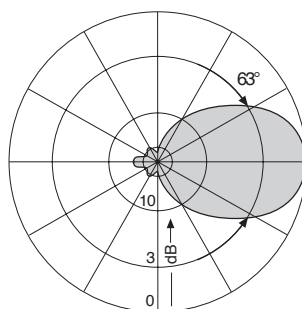
Type No.	K733621
Frequency range	406 – 5120 MHz
Polarization	Vertical
Gain	9 dBi
Half-power beam width	H-plane: 63° E-plane: 63°
Impedance	50 Ω
VSWR	< 1.4
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)
Max. power	500 W (at 50 °C ambient temperature)



- Arrays:** This antenna is especially suitable as a component in arrays to achieve various radiation patterns.
- Scope of supply:** Antenna including two weather-proof covers for straight and elbow connector, but without mounting hardware.
- Material:** Dipoles and reflector screen: Weather-resistant 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 including the mounting kit are DC grounded.
The inner conductor is capacitively coupled.



Horizontal Pattern



Vertical Pattern

Mechanical specifications

Input	N female
Connector position	Rearside
Wind load	Frontal: 220 N (at 150 km/h) Lateral: 110 N (at 150 km/h) Rearside: 330 N (at 150 km/h)
Max. wind velocity	200 km/h
Height/width/depth	493 / 493 / 209 mm
Category of mounting hardware	M (Medium)
Weight	6 kg
Packing size	603 x 567 x 282 mm

Panel Dual Polarization Half-power Beam Width

380–500

V

65°

KATHREIN

Antennen · Electronic

TETRA/
TETRAPOL

VPol Panel 380–500 65° 12dBi

Type No.	80010252	
Frequency range	380–500	
	380 – 430 MHz	430 – 500 MHz
Polarization	Vertical	Vertical
Gain	11.5 dBi	12 dBi
Half-power beam width	Horizontal: 68° Vertical: 37°	Horizontal: 63° Vertical: 32°
Front-to-back ratio, copolar	> 18 dB	> 20 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)	

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

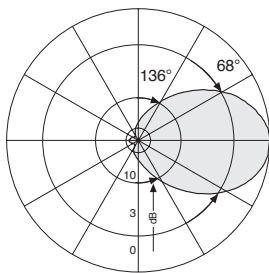
Ice protection: Due to the very sturdy antenna construction and the protection of the radiating system by the radome, the antenna remains operational even under icy conditions.

Grounding: The metal parts of the antenna including the mounting kit and the inner conductors are DC grounded.

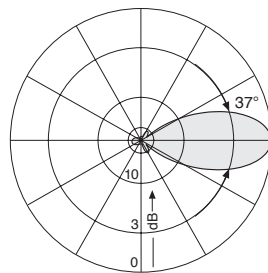


Directional
360 – 512 MHz

380 – 430 MHz

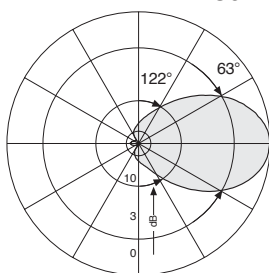


Horizontal Pattern

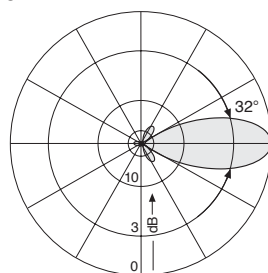


Vertical Pattern

430 – 500 MHz



Horizontal Pattern



Vertical Pattern

Mechanical specifications

Input	1 x 7-16 female
Connector position	Rearside
Wind load	Frontal: 500 N (at 150 km/h) Lateral: 220 N (at 150 km/h) Rearside: 715 N (at 150 km/h)
Max. wind velocity	200 km/h
Height/width/depth	992 / 492 / 190 mm
Category of mounting hardware	M (Medium)
Weight	12 kg
Packing size	1062 x 562 x 274 mm

Panel Dual Polarization Half-power Beam Width

380–500

V

65°

KATHREIN

Antennen · Electronic

TETRA/
TETRAPOL

VPol Panel 380–500 65° 12dBi

Type No.	80010253	
Frequency range	380–500	
	380 – 430 MHz	430 – 500 MHz
Polarization	Vertical	Vertical
Gain	14.5 dBi	15 dBi
Half-power beam width	Horizontal: 68° Vertical: 18°	Horizontal: 63° Vertical: 16°
Front-to-back ratio, copolar	> 20 dB	> 20 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)	

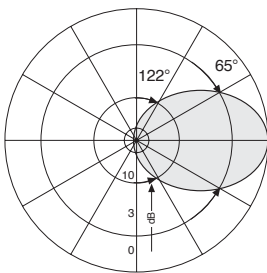
Material: Reflector screen: Weather-proof aluminum.
Radiator: Tin-plated copper.
Radome: Fiberglass, colour: Grey.
All screws and nuts: Stainless steel.

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.

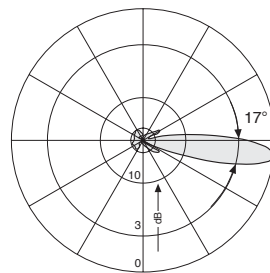
Grounding: The metal parts of the antenna including the mounting kit and the inner conductors are DC grounded.



430 – 470 MHz: +45°/–45° Polarization

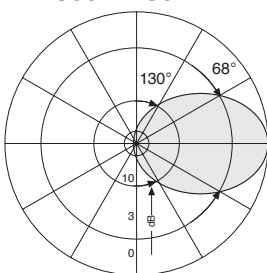


Horizontal Pattern

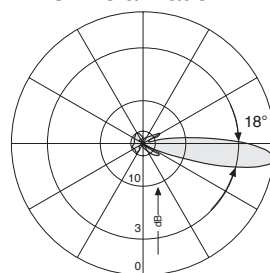


Vertical Pattern
6° electrical downtilt

380 – 430 MHz: +45°/–45° Polarization



Horizontal Pattern



Vertical Pattern
6° electrical downtilt

Mechanical specifications

Input	1 x 7-16 female
Connector position	Rearside
Wind load	Frontal: 1100 N (at 150 km/h) Lateral: 440 N (at 150 km/h) Rearside: 1540 N (at 150 km/h)
Max. wind velocity	200 km/h
Height/width/depth	2000 / 492 / 190 mm
Category of mounting hardware	H (Heavy)
Weight	20 kg
Packing size	2060 x 562 x 274 mm

Panel
Vertical Polarization
Half-power Beam Width

380–430

V

115°

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TETRAPOL

VPol Panel 380–430 115° 8.5dBi

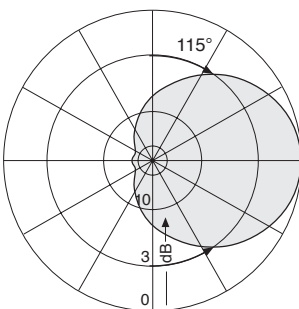
Type No.	739504
Frequency range	380 – 430 MHz
Polarization	Vertical
Gain	8.5 dBi
Half-power beam width	Horizontal: 115° Vertical: 38°
Front-to-back ratio	> 18 dB
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)
Max. power	500 W (at 50 °C ambient temperature)

Material: Reflector screen: Weather-resistant aluminum.
 Radome: Fiberglass, colour: Grey.
 All screws and nuts: Stainless steel.

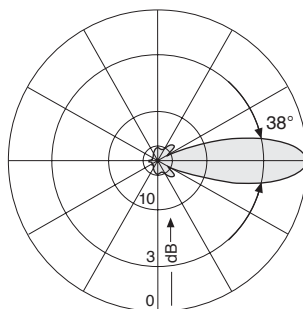
Attachment: See the “Mechanical Accessories” part of this catalogue.

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 including the mounting kit and the inner conductor are DC grounded.



Horizontal Pattern



Vertical Pattern

Mechanical specifications

Input	7-16 female
Connector position	Bottom
Wind load	Frontal: 260 N (at 150 km/h) Lateral: 120 N (at 150 km/h) Rearside: 420 N (at 150 km/h)
Max. wind velocity	200 km/h
Height/width/depth	974 / 258 / 103 mm
Category of mounting hardware	M (Medium)
Weight	4.5 kg
Packing size	1102 x 272 x 160 mm

Directional
360 – 512 MHz

Panel
Vertical Polarization
Half-power Beam Width

380–430

V

115°

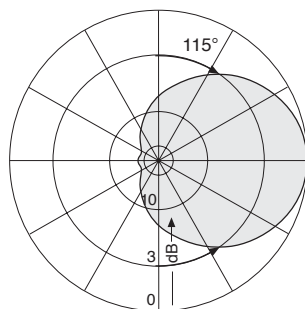
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 TETRAPOL

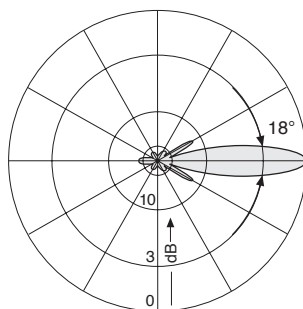
VPol Panel 380–430 115° 11.5dBi

Type No.	739506
Frequency range	380 – 430 MHz
Polarization	Vertical
Gain	11.5 dBi
Half-power beam width	H-plane: 115° E-plane: 18°
Front-to-back ratio	> 18 dB
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)
Max. power	500 W (at 50 °C ambient temperature)

- Material:** Reflector screen: Weather-resistant aluminum.
 Radome: Fiberglass, colour: Grey.
 All screws and nuts: Stainless steel.
- Attachment:** See the “Mechanical Accessories” part of this catalogue.
- 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 including the mounting kit and the inner conductor are DC grounded.



Horizontal Pattern



Vertical Pattern

Mechanical specifications

Input	7-16 female
Connector position	Rearside
Wind load	Frontal: 550 N (at 150 km/h) Lateral: 250 N (at 150 km/h) Rearside: 930 N (at 150 km/h)
Max. wind velocity	200 km/h
Height/width/depth	1934 / 258 / 103 mm
Category of mounting hardware	M (Medium)
Weight	9 kg
Packing size	2062 x 272 x 160 mm

Panel
Vertical Polarization
Half-power Beam Width

400–470

V

120°

KATHREIN
 Antennen · Electronic

VPol Panel 400–470 120° 9dBi

Type No.	731291
Frequency range	400 – 470 MHz
Polarization	Vertical
Gain	9 dBi
Half-power beam width	H-plane: 120° E-plane: 50°
Impedance	50 Ω
VSWR	< 1.5
Max. power	500 W (at 50 °C ambient temperature)

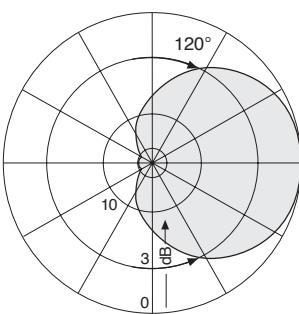
Scope of supply: Antenna including two weather-proof covers for straight and elbow connector, but without mounting hardware.

Material: Dipole system: Brass and copper.
 Reflector screen: Weather-resistant aluminum.
 Radome: Fiberglass, colour: White.
 All screws and nuts: Stainless steel.

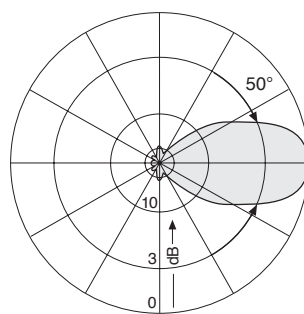
Attachment: See the “Mechanical Accessories” part of this catalogue.

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 including the mounting kit and the inner conductor are DC grounded.



Horizontal Pattern



Vertical Pattern

Mechanical specifications

Input	1 x 7-16 female
Connector position	Rearside
Wind load	Frontal: 500 N (at 150 km/h) Lateral: 220 N (at 150 km/h) Rearside: 715 N (at 150 km/h)
Max. wind velocity	200 km/h
Height/width/depth	992 / 492 / 190 mm
Category of mounting hardware	M (Medium)
Weight	9 kg
Packing size	1062 x 562 x 274 mm

Directional
360 – 512 MHz

Logarithmic-periodic Vertical/Horizontal Polarization Half-power Beam Width

406–512

V or H

67°

KATHREIN
Antennen · Electronic

LogPer 406–512 67° 10.5dBi

Type No.	K722241	K722247
Frequency range	406 – 512 MHz	
Polarization	Usable for horizontal or vertical polarization.	
Gain	10.5 dBi	
Half-power beam width	H-plane: 67° E-plane: 53°	
Side-lobe Suppression	> 25 dB at 440 – 512 MHz > 20 dB at 406 – 512 MHz	
Impedance	50 Ω	
VSWR	< 1.4	
Max. power	300 W (at 50 °C ambient temperature)	

Arrays: Several antennas can be combined to increase the gain and to produce radiation patterns with very high side-lobe suppressions.

Scope of supply: Antenna with weather protective casing for straight connectors.

Material: Radiator and mounting kit: Aluminum.
Radome: Fiberglass, colour: Grey.
All screws and nuts: Stainless steel.

Attachment: To tubular masts of 48 – 115 mm diameter using 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 including the mounting kit and the inner conductor are DC grounded.



For vertical polarization



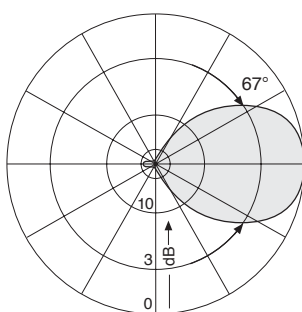
For horizontal polarization



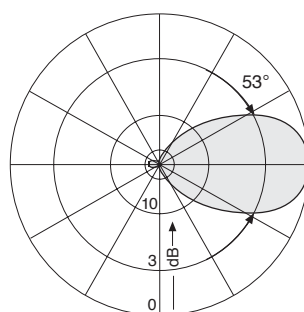
For vertical polarization



For horizontal polarization



Radiation Pattern
in H-Plane



Pariation Pattern
in E-Plane

Mechanical specifications	K 72 22 41	K 72 22 47
Input	N female	7-16 female
Weight	9 kg	
Wind load: Vertical:	Frontal: 55 N (at 150 km/h)	Lateral: 440 N (at 150 km/h)
Horizontal:	Frontal: 55 N (at 150 km/h)	Lateral: 90 N (at 150 km/h)
Max. wind velocity	180 km/h	
Packing size	1172 x 372 x 225 mm	
Height/width/depth	1153 / 353 / 180 mm	

Logarithmic-periodic Vertical Polarization Half-power Beam Width

380 – 520

V

87°

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TETRA/
TETRAPOL

VPol LogPer 380–520 87° 9dBi

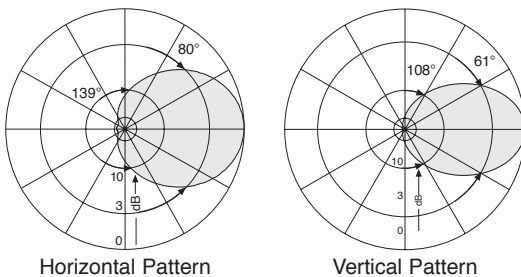
Type No.	80010391		
Frequency range	380 – 410 MHz	410 – 470 MHz	470 – 520 MHz
Polarization	Vertical		
Gain	9.2 dBi	9 dBi	8.7 dBi
Half-power beam width	Horizontal: 80° Vertical: 61°	Horizontal: 85° Vertical: 60°	Horizontal: 88° Vertical: 59°
Impedance	50 Ω		
VSWR	< 1.5		
Intermodulation IM3	< – 150 dBc (2 x 43 dBm carrier)		
Max. power	500 W (at 50 °C ambient temperature)		



Directional
360 – 512 MHz

- Scope of supply:** Antenna with weather protective casing for straight connectors.
- Material:** Radiator: Weather resistant aluminium.
Radome: Fiberglass, colour: White.
All screws and nuts: Stainless steel.
- Attachment:** To tubular masts of 50 – 380 mm diameter depending on the separate available 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 including the mounting kit and the inner conductor are DC grounded.

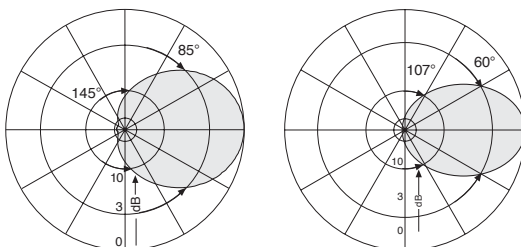
380–410 MHz



Horizontal Pattern

Vertical Pattern

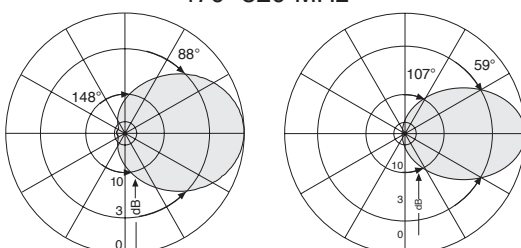
410–470 MHz



Horizontal Pattern

Vertical Pattern

470–520 MHz



Horizontal Pattern

Vertical Pattern

Mechanical specifications

Input	7-16 female
Connector position	Rearside, pointing downwards
Weight	6 kg
Wind load	Frontal: 54 N (at 150 km/h) Lateral: 150 N (at 150 km/h)
Max. wind velocity	180 km/h
Packing size	915 x 485 x 485 mm
Height/width/depth	785 / 400 / 400 mm

Corner-reflector Antenna
Vertical Polarization
Half-power Beam Width

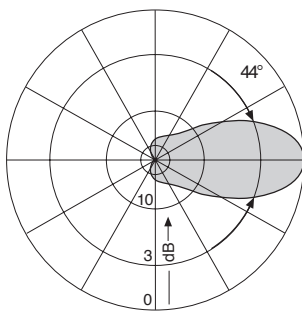
360–490
V
44°

VPol Corner 360–490 44° 11dBi

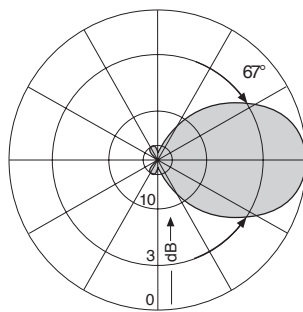
Type No.	K731221
Frequency range	360 – 490 MHz
Polarization	Vertical
Gain	11 dBi
Half-power beam width	H-plane: 44° E-plane: 67°
Impedance	50 Ω
VSWR	< 1.5 at 360 – 490 MHz < 1.3 at 400 – 470 MHz
Max. power	180 W (at 50 °C ambient temperature)



- Scope of supply:** Antenna with weather protective casing for straight connectors, mounting kit included.
- Material:** Radiator and reflector: Weather-resistant aluminum.
 Mounting U-bolt: Stainless steel.
 All screws and nuts: Stainless steel.
- Attachment:** To tubular masts of 30 – 54 mm diameter using supplied U-bolts.
- Special features:** The reflector screen folds together for transport.
- Grounding:** All metal parts of the antenna including the mounting kit and the inner conductor are DC grounded.



Horizontal Pattern



Vertical Pattern

Mechanical specifications	
Input	N female
Weight	2.8 kg
Wind load	140 N (at 150 km/h)
Max. wind velocity	150 km/h
Packing size	842 x 524 x 187 mm
Height/width/depth	500 / 1155 / 577 mm

Helix Antenna

Right Handed Circular Polarization

Half-power Beam Width

400–470

RHC

33°

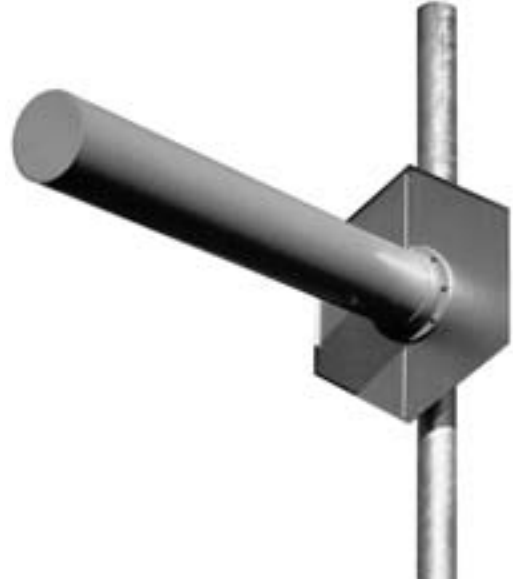
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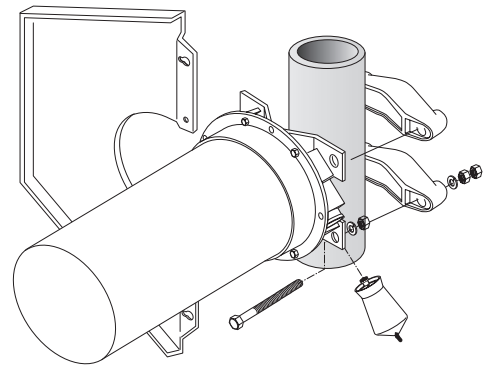
RHCPol Helix 400–470 33° 12dBi

Type No.	K735121
Frequency range	400 – 470 MHz
Polarization	Right handed circular
Gain	12 dBi (ref. to the circularly polarized isotropic antenna)
Half-power beam width	33°
Impedance	50 Ω
VSWR	< 1.2
Max. power	560 W (at 50 °C ambient temperature)

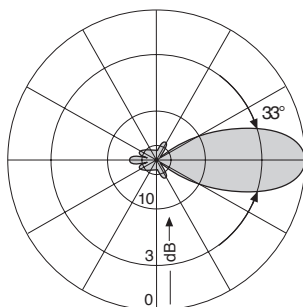
- Scope of supply:** Antenna with weather protective casing for straight connectors, mounting kit included.
- Material:** Antenna: Copper band helix in protective fiberglass tube, colour: Grey.
Reflector screen: Weather-resistant aluminum.
Attachment construction: Hot dip galvanized steel.
All screws and nuts: Stainless steel.
- Attachment:** To tubular masts of 60 – 125 mm diameter using supplied U-bolts.
- Special features:** The reflector screen is made of two parts and can be removed for transport.
- Grounding:** All metal parts of the antenna including the mounting kit and the inner conductor are DC grounded.



Directional
360 – 512 MHz



Mounting Instructions



Relative field strength in mid-band

Mechanical specifications

Input	N female
Weight	12 kg
Wind load	Frontal: 450 N (at 150 km/h) Lateral: 175 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	1684 x 388 x 277 mm
Reflector diameter	718 mm
Length / tube dia.	1540 / 204 mm

Network planning is becoming ever more complicated, even for TETRA/TETRAPOL systems. The challenge for wireless network operators is to balance coverage, capacity, call quality and costs, in order to gain maximum revenue from their network.

The possibility of coverage adjustment through the vertical antenna pattern is thus a very important aspect for mobile communication planners. Kathrein's Remote Electrical Tilt (RET) system represents the latest antenna system technology.

RET components:

- Remote Control Unit (RCU)
- Central Control Unit (CCU)
- Control cable
- DC power and signal splitter
- Lightning protection device
- Earthing clamp

Advantage of Kathrein's RET system:

- Easy network extension as no special installation teams are required

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

For further information please contact:
mobilcom@kathrein.de



Summary – Omnidirectional Antennas 27 – 87.5 MHz

Type				Type No.	Height [mm]	Input	Page
VPol Omni	27...61	360°	0dB	K512472	4330	UHF female	40
VPol Omni	68–80	360°	0dB	K5126411	1690	N female	41
VPol Omni	74–87.5	360°	0dB	K5126421	1570	N female	41
VPol Omni	74.2...87.5/167.5–174	360°/360°	0/0.5dB	K5125421	1880	2 x N female	42
VPol Omni	68–87.5	360°	2dB	K552841	1750	N female	43

Gain ref. $\lambda/2$ dipole

Omnidirectional Antenna Vertical Polarization

27...61

V

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VPol Omni 27...61 360° 0dB

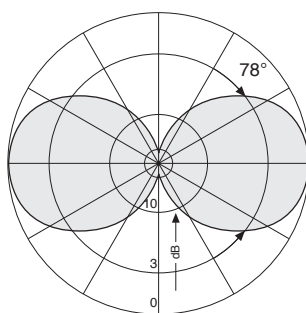
Type No.	Antenna Spare radials	K512472 K5124701
Frequency range		27 ... 61 MHz
Polarization		Vertical
Gain (ref. $\lambda/2$ dipole)		0 dB
Impedance		50 Ω
Max. power		500 W (at 50 °C ambient temperature)

Material: Radiator and radials: Fiberglass with imbedded stranded copper wire.
Base: Aluminum.
Mounting U-bolt and all screws and nuts: Stainless steel.

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).

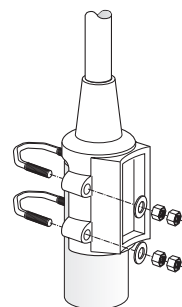
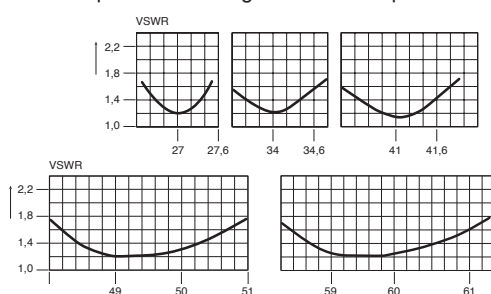
Tuning: By cutting radiator and radials to length in accordance to the mounting instructions.

Grounding: The metal parts of the antenna including the mounting kit are DC grounded.

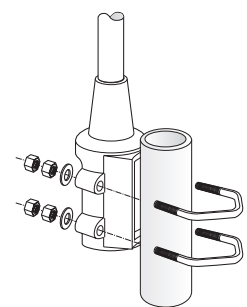


Vertical Pattern

Standing Wave Ratio (VSWR) Examples of matching at various frequencies



On the tip of a tubular mast



Laterally at the tip of a tubular mast

Mechanical specifications	
Input	UHF female
Weight *	1.6 kg
Wind load *	110 N (at 150 km/h)
Max. wind velocity	135 km/h
Packing size	2704 x 136 x 100 mm
Radiator length	max. 2510 mm
Length of radials	max. 2510 mm

* for max. antenna length

Omnidirectional Antennas Vertical Polarization

68...87.5

V

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K 51 26 41 1: VPol Omni 68–80 360° 0dB
K 51 26 42 1: VPol Omni 74–87.5 360° 0dB

Type No.	Antenna Spare radials	K5126411 K51264012	K5126421 K51264022
Frequency range		68 – 80 MHz	74 – 87.5 MHz
Polarization		Vertical	
Gain (ref. $\lambda/2$ dipole)		0 dB	
Impedance		50 Ω	
VSWR		< 1.5	
Max. power		75 W (at 50 °C ambient temperature)	

Material: Radiator: Stainless steel.
Radials: Fiberglass with imbedded stranded copper wire.
Base: Aluminum.
Mounting U-bolt and all screws and nuts: Stainless steel.

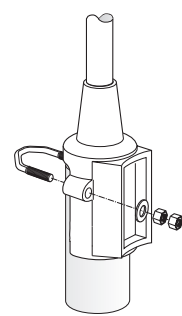
Mounting: The antenna can be attached in two ways with the supplied mounting kit:
1. On the tip of a tubular mast of 40 – 54 mm diameter (connecting cable runs inside the mast).
2. Laterally at the tip of a tubular mast of 20 – 40 mm diameter (connecting cable runs outside the mast).

Side mounting at a mast: See catalogue part "Technical Information".

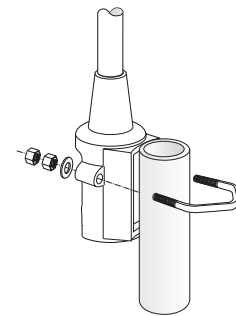
Grounding: All metal parts of the antenna including the mounting kit are DC grounded.



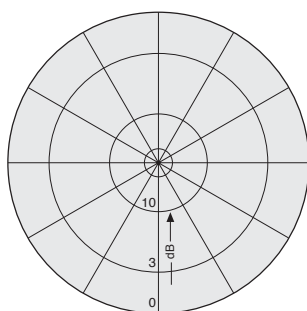
Omnidirectional
27 – 87.5 MHz



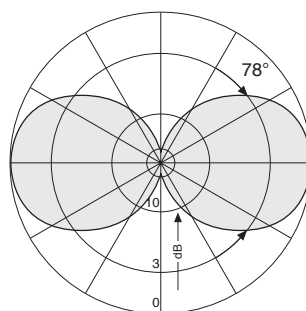
On the tip of a tubular mast



Laterally at the tip of a tubular mast



Horizontal Pattern



Vertical Pattern

Mechanical specifications	K5126411	K5126421
Input	N female	
Weight	1.8 kg	1.6 kg
Wind load (at 150 km/h)	70 N	65 N
Max. wind velocity	200 km/h	
Packing size	1114 x 132 x 112 mm	
Radiator length	747 mm	680 mm
Length of radials	1053 mm	970 mm

Dual-band Omnidirectional Antenna Vertical Polarization

74.2–77.7
84.0–87.5

167.5–174

V

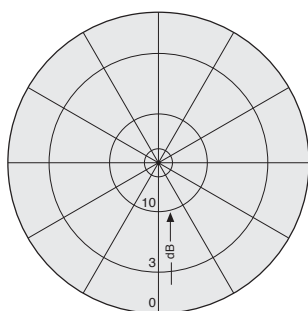
V

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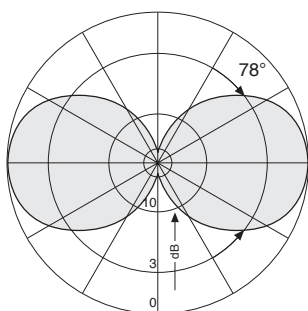
VPol Omni 74.2...87.5/167.5–174 360°/360° 0/0.5dB

Type No.	Antenna	K5125421	
	Spare radials	K5125402	
Frequency range		74.2 – 77.7 MHz and 84.0 – 87.5 MHz	167.5 – 174 MHz
Polarization		Vertical	
Gain (ref. $\lambda/2$ dipole)		0 dB	0.5 dB
Decoupling		< 30 dB between 2 m band and 4 m band	
Impedance		50 Ω	
VSWR		< 1.5	
Max. power		10 W (at 50 °C ambient temperature)	

- Material:** Radiator: Weather-resistant aluminum in fiberglass radome.
Radials: Fiberglass with imbedded stranded copper wire.
Base: Aluminum.
Mounting U-bolt and all screws and nuts: Stainless steel.
- Mounting:** To pipes of 30 – 54 mm diameter by means of mounting kit (supplied). The antenna must be mounted in such a manner, that the feeder cables runs outside the mast.
- Special features:** The radials can be fold up.
- Grounding:** All metal parts of the antenna including the mounting kit are DC grounded.



Horizontal Pattern



Vertical Pattern

Mechanical specifications	
Input	2 x N female
Weight	2.7 kg
Wind load	90 N (at 150 km/h)
Max. wind velocity	180 km/h
Packing size	1160 x 120 x 110 mm
Radiator length	1121 mm
Diameter	50 mm
Length of radials	1003 mm

Omnidirectional Off-set Antenna Vertical Polarization

68–87.5

V

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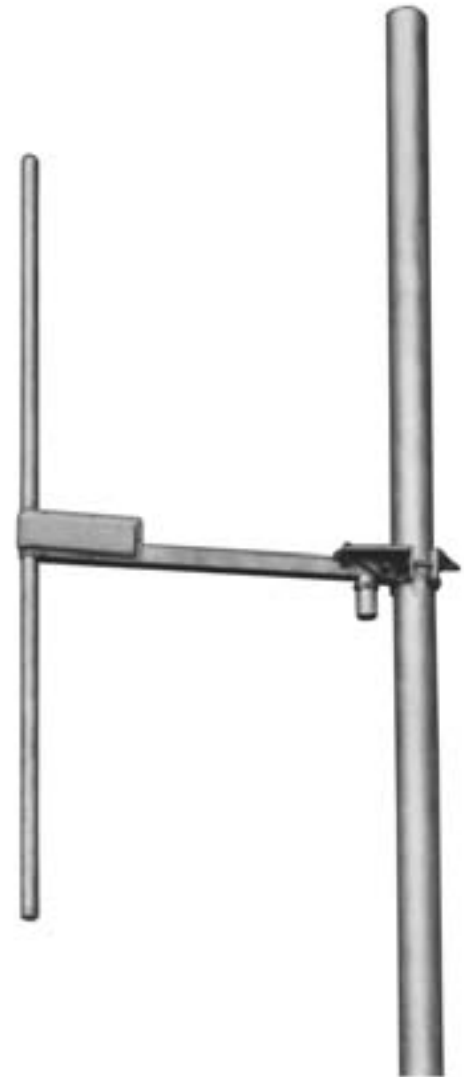
VPol Omni 68–87.5 360° 2dB

Type No.	K552841
Frequency range	68 – 87.5 MHz
Polarization	Vertical
Radiation pattern	Preferred direction: mast to radiator.
Gain (ref. $\lambda/2$ dipole)	2 dB
Impedance	50 Ω
VSWR	< 1.5
Max. power	230 W (at 50 °C ambient temperature)

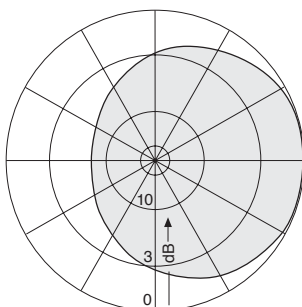
Material: Hot-dip galvanized steel.
Radome: Fiberglass.
All screws and nuts: Stainless steel.

Mounting: On masts from 60 – 115 mm diameter, clamps supplied.

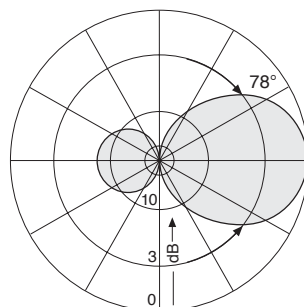
Grounding: All metal parts of the antenna including the mounting kit are DC grounded.
The inner conductor is coupled capacitively.



Omnidirectional
27 – 87.5 MHz



Horizontal Pattern



Vertical Pattern

Mechanical specifications	
Input	N female
Weight	9 kg
Wind load	165 N (at 150 km/h)
Max. wind velocity	200 km/h
Mast diameter	60 – 115 mm
Packing size	1800 x 948 x 107 mm
Dipole length	approx. 1750 mm
Distance dipole / mast	approx. 870 mm

Summary – Omnidirectional Antennas 146 – 174 MHz

Type	Type No.	Height [mm]	Input	Page
VPol Omni 74.2...87.5/167.5–174 360°/360° 0/0.5dB	K5125421	1880	2 x N female	46
VPol Omni 146–174 360° 0dB	K51262	905	cable termination	47
VPol Omni 146–174 360° 0dB	711530	905	N female	47
VPol Omni 146–156 360° 0dB	K552626	1085	cable termination	48
VPol Omni 155–165 360° 0dB	K552627	1042	cable termination	48
VPol Omni 164–174 360° 0dB	K552628	993	cable termination	48
VPol Omni 146–174 360° 2dB	K552921	840	N female	49

Gain ref. $\lambda/2$ dipole

Dual-band Omnidirectional Antenna Vertical Polarization

74.2–77.7
84.0–87.5

167.5–174

V

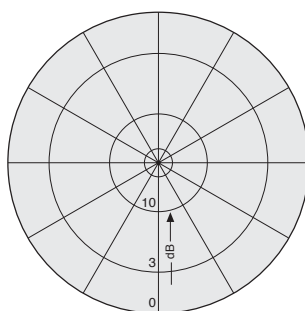
V

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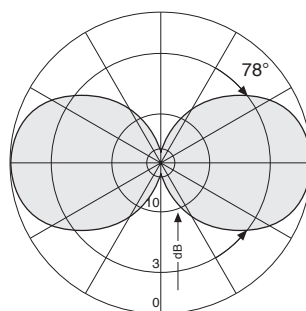
VPol Omni 74.2...87.5/167.5–174 360°/360° 0/0.5dB

Type No.	Antenna	K5125421	
	Spare radials	K5125402	
Frequency range	74.2 – 77.7 MHz and 84.0 – 87.5 MHz	167.5 – 174 MHz	
Polarization	Vertical		
Gain (ref. $\lambda/2$ dipole)	0 dB	0.5 dB	
Decoupling	< 30 dB between 2 m band and 4 m band		
Impedance	50 Ω		
VSWR	< 1.5		
Max. power	10 W (at 50 °C ambient temperature)		

- Material:** Radiator: Weather-resistant aluminum in fiberglass radome.
Radials: Fiberglass with imbedded stranded copper wire.
Base: Aluminum.
Mounting U-bolt and all screws and nuts: Stainless steel.
- Mounting:** To pipes of 30 – 54 mm diameter by means of mounting kit (supplied). The antenna must be mounted in such a manner, that the feeder cables runs outside the mast.
- Special features:** The radials can be fold up.
- Grounding:** All metal parts of the antenna including the mounting kit are DC grounded.



Horizontal Pattern



Vertical Pattern

Mechanical specifications	
Input	2 x N female
Weight	2.7 kg
Wind load	90 N (at 150 km/h)
Max. wind velocity	180 km/h
Packing size	1160 x 120 x 110 mm
Radiator length	1121 mm
Diameter	50 mm
Length of radials	1003 mm

Omnidirectional Antennas Vertical Polarization

146–174

V

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VPol Omni 146–174 360° 0dB

Type No.	Antenna Spare radials	K51262 K5126202	711530 K5126202
Frequency range		146 – 174 MHz	
Polarization		Vertical	
Gain (ref. $\lambda/2$ dipole)		0 dB	
Impedance		50 Ω	
VSWR		< 1.5	
Max. power		170 W	700 W (at 50 °C ambient temperature)

Material: Radiator and radials: Weather-resistant aluminum.
Mounting U-bolt and all screws and nuts: Stainless steel.

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

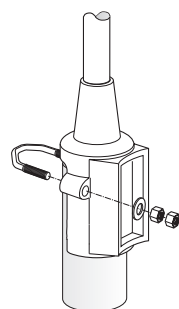
1. On the tip of a tubular mast of 40 – 54 mm diameter (connecting cable runs inside the mast).
2. Laterally at the tip of a tubular mast of 20 – 40 mm diameter (connecting cable runs outside the mast).

Side mounting at a mast: See catalogue part "Mechanical Accessories".

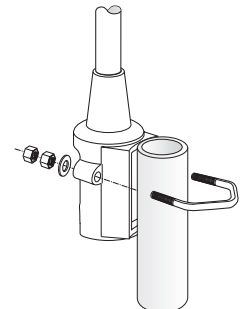
Grounding: All metal parts of the antenna including the mounting kit are DC grounded.
The inner conductor is capacitively coupled.



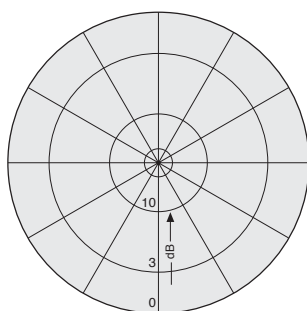
Omnidirectional
146 – 174 MHz



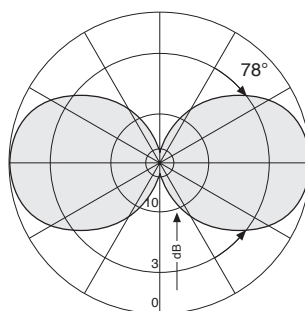
On the tip of a tubular mast



Laterally at the tip of a tubular mast



Horizontal Pattern



Vertical Pattern

Mechanical specifications	K 51 26 2	711 530
Input	By means of a cable RG-213/U with termination inside antenna.	N female
Weight	1.2 kg	
Wind load	25 N (at 150 km/h)	
Max. wind velocity	200 km/h	
Packing size	654 x 112 x 97 mm	
Radiator length	422 mm	
Length of radials	617 mm	

Omnidirectional Antennas Vertical Polarization

146...174

V

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K 55 26 26: VPol Omni 146–156 360° 0dB
K 55 26 27: VPol Omni 155–164 360° 0dB
K 55 26 28: VPol Omni 164–174 360° 0dB

Type No.	K552626	K 552627	K552628
Frequency range	146 – 156 MHz	155 – 165 MHz	164 – 174 MHz
Polarization	Vertical		
Gain (ref. $\lambda/2$ dipole)	0 dB		
Impedance	50 Ω		
VSWR	< 1.4		
Max. power	130 W (at 50 °C ambient temperature)		

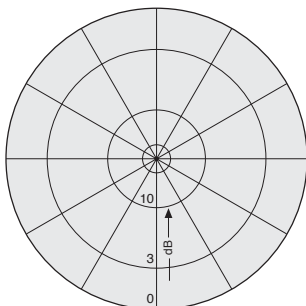
Material: Radiator and base: Weather-resistant aluminum.
 Mounting U-bolt and all screws and nuts: Stainless steel.

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

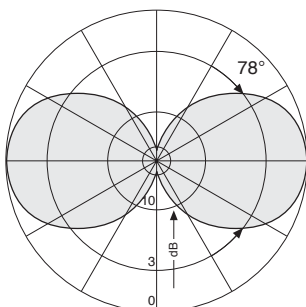
1. On the tip of a tubular mast of 40 – 54 mm diameter (connecting cable runs inside the mast).
2. Laterally at the tip of a tubular mast of 20 – 40 mm diameter (connecting cable runs outside the mast).

Side mounting at a mast: See catalogue part "Mechanical Accessories".

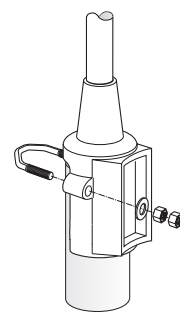
Grounding: All metal parts of the antenna including the mounting kit are DC grounded. The inner conductor is capacitively coupled.



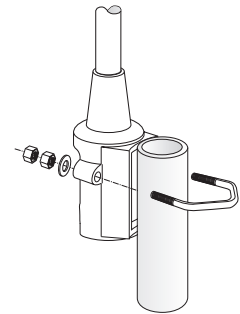
Horizontal Pattern



Vertical Pattern



On the tip of a tubular mast



Laterally at the tip of a tubular mast

Mechanical specifications	K 55 26 26	K 55 26 27	K 55 26 28
Input	Via terminals inside antenna.		
Cable needed	RG-213/U		
Weight	1.3 kg		
Wind load	50 N (at 150 km/h)		
Max. wind velocity	200 km/h		
Packing size	1254 x 112 x 97 mm		
Height	1085 mm	1042 mm	993 mm

Omnidirectional Off-set Antenna Vertical Polarization

146–174

V

KATHREIN
Antennen · Electronic

VPol Omni 146–174 360° 2dB

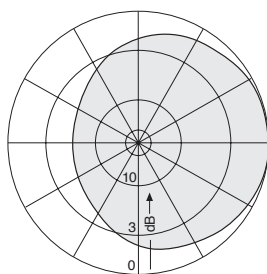
Type No.	K552921
Frequency range	146 – 174 MHz
Polarization	Vertical
Radiation Pattern	Preferred direction: Mast to radiator.
Gain (ref. $\lambda/2$ dipole)	2 dB
Impedance	50 Ω
VSWR	< 1.4
Max. power	440 W (at 50 °C ambient temperature)

- Material:** Hot-dip galvanized steel.
All screws and nuts: Stainless steel.
- Mounting:** On masts of 60 – 125 mm diameter, clamps supplied.
- Grounding:** All metal parts of the antenna including the mounting kit are DC grounded.

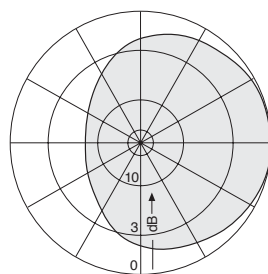


Omnidirectional
146 – 174 MHz

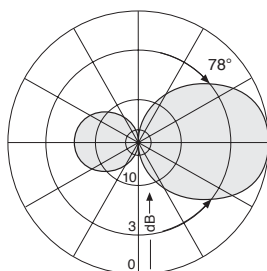
Radiation Pattern with different mast diameters:



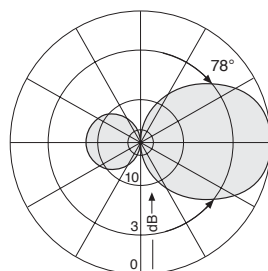
Horizontal Pattern
60 mm \varnothing



Horizontal Pattern
115 mm \varnothing



Vertical Pattern
60 mm \varnothing



Vertical Pattern
115 mm \varnothing

Mechanical specifications	
Input	N female
Weight	4.5 kg
Wind load	90 N (at 150 km/h)
Max. wind velocity	200 km/h
Mast diameter	60 – 125 mm
Packing size	864 x 598 x 87 mm
Dipole length	840 mm
Distance dipole / mast	500 mm

Summary – Omnidirectional Antennas 370 – 470 MHz

Type	Type No.	Height [mm]	Input	Page
VPol Omni 370–430 360° 2dBi	737003	555	N female	52
VPol Omni 406–470 360° 2dBi	K751121	510	N female	52
VPol Omni 380–406 360° 5dBi	80010448	1400	7-16 female	53
VPol Omni 380–400 360° 5dBi	K751537	1612	7-16 female	54
VPol Omni 406–430 360° 5dBi	K7515211	1273	N female	55
VPol Omni 440–470 360° 5dBi	K7515221	1144	N female	55
VPol Omni 380–400 360° 7dBi	80010392	2104	7-16 female	56
VPol Omni 406–430 360° 7dBi	728888	2016	7-16 female	57
VPol Omni 440–470 360° 7dBi	721388	2016	N female	57
VPol Omni 440–470 360° 7dBi	720880	2016	7-16 female	57
VPol Omni 380–400 360° 7.5dBi	K751637	2840	7-16 female	58
VPol Omni 380–400 360° 7.5dBi 8.5°T	737545	3282	7-16 female	59
VPol Omni 380–400 360° 8dBi 5°T	80010434	3282	7-16 female	60
VPol Omni 410–430 360° 8dBi 8.5°T	737546	3114	7-16 female	61
VPol Omni 450–470 360° 8.5dBi	742155	3113	7-16 female	62
VPol Omni 380–470 360° 4dBi	K752921	315	N female	63

Omnidirectional Antennas Vertical Polarization

370...470

V

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737003: VPol Omni 370–430 360° 2dBi

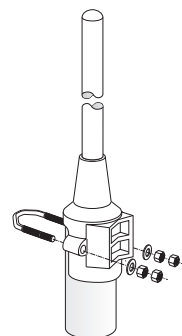
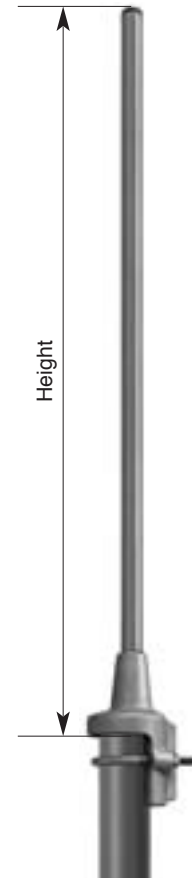
K751121: VPol Omni 406–470 360° 2dBi

Type No.	737003	K751121
Frequency range	370 – 430 MHz	406 – 470 MHz
Polarization	Vertical	
Gain	2 dBi	
Impedance	50 Ω	
VSWR	< 1.5	
Intermodulation IM3	< -150 dBc (2 x 37 dBm carrier)	
Max. power	100 W (at 50 °C ambient temperature)	

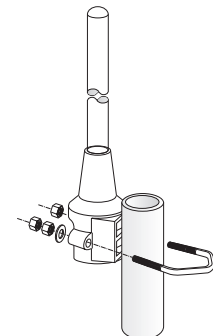
Material:
 Radiator: Brass.
 Radome: Fiberglass, dia. 21 mm, colour: Grey.
 Base: Aluminum.
 Mounting U-bolt and all screws and nuts:
 Stainless steel.

Mounting:
 The antenna can be attached in two ways with the supplied mounting kit:
 1. On the tip of any tubular mast of 40 – 54 mm dia. (connecting cable runs inside the mast).
 2. Laterally at the tip of any tubular mast of 20 – 54 mm dia. (connecting cable runs outside the mast).

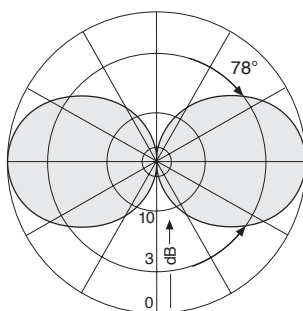
Grounding:
 All metal parts of the antenna including the inner conductor are DC grounded.



On the tip of a tubular mast



Laterally at the tip of a tubular mast



Vertical Pattern

Mechanical specifications	737 003	K 75 11 21
Input	N female	
Connector position	Bottom	
Weight	1.0 kg	0.8 kg
Radome diameter	21 mm	
Wind load	20 N (at 150 km/h)	
Max. wind velocity	200 km/h	
Packing size [mm]	112 x 97 x 654	112 x 97 x 614
Height [mm]	555	515

Omnidirectional Antenna Vertical Polarization

380–406

V

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TETRAPOL

VPol Omni 380–406 360° 5dBi

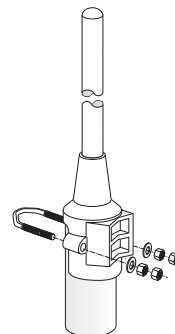
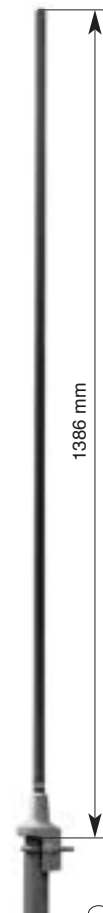
Type No.	80010448
Frequency range	380 – 406 MHz
Polarization	Vertical
Gain	5 dBi
Impedance	50 Ω
VSWR	< 1.5
Intermodulation (2 x 43 dBm carrier)	< -150 dBc
Max. power	500 W (at 50 °C ambient temperature)

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

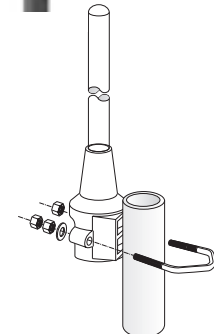
Mounting: The antenna can be attached in two ways with the supplied mounting kit:

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

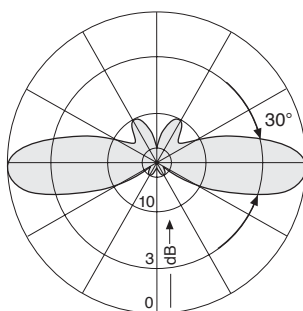
Grounding: All metal parts of the antenna as well as the inner conductor and the mounting kit are DC grounded.



On the tip of a tubular mast



Laterally at the tip of a tubular mast



Vertical Pattern

Mechanical specifications	
Input	7-16 female
Connector position	Bottom
Weight	1.5 kg
Radome diameter	21 mm
Wind load	43 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	112 x 97 x 1516 mm
Height	1386 mm

Omnidirectional Antenna Vertical Polarization

380–400

V

KATHREIN

Antennen · Electronic

TETRA/
TETRAPOL

VPol Omni 380–400 360° 5dBi

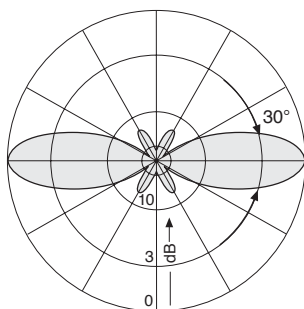
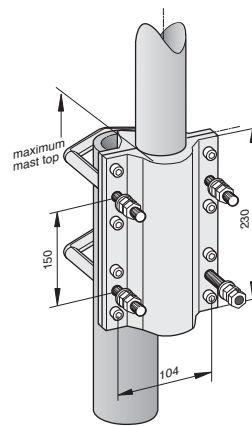
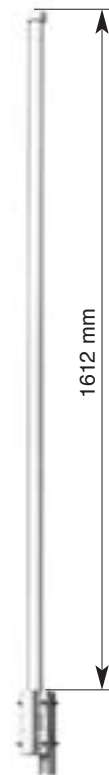
Type No.	K751537
Frequency range	380 – 400 MHz
Polarization	Vertical
Gain	5 dBi
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)
Max. power	500 W (at 50 °C ambient temperature)

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

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).

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

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



Vertical Pattern

Mechanical specifications	
Input	7-16 female
Connector position	Bottom
Weight	5.5 kg
Radome diameter	51 mm
Wind load	140 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	1878 x 206 x 152 mm
Height	1612 mm

Omnidirectional Antennas Vertical Polarization

406...470

V

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Antennen · Electronic

K 75 15 21 1: VPol Omni 406–430 360° 5dBi

K 75 15 22 1: VPol Omni 440–470 360° 5dBi

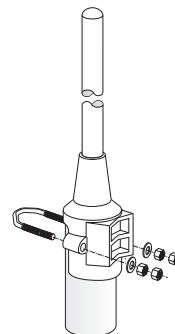
Type No.	K7515211	K7515221
Frequency range	406 – 430 MHz	440 – 470 MHz
Polarization	Vertical	
Gain	5 dBi	
Impedance	50 Ω	
VSWR	< 1.5	
Max. power	55 W (at 50 °C ambient temperature)	

Material: Radiator: Brass.
Radome: Fiberglass, dia. 21 mm, colour: Grey.
Base: Aluminum.
Mounting U-bolt and all screws and nuts: Stainless steel.

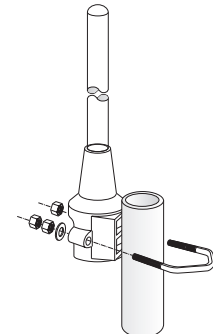
Mounting: The antenna can be attached in two ways with the supplied mounting kit:

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

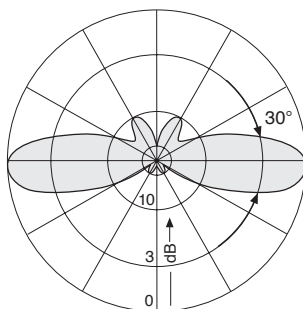
Grounding: All metal parts of the antenna including the inner conductor are DC grounded.



On the tip of a tubular mast



Laterally at the tip of a tubular mast



Vertical Pattern

Mechanical specifications	K7515212	K7515221
Input	N female	
Connector position	Bottom	
Weight	1.2 kg	
Wind load	40 N (at 150 km/h)	35 N (at 150 km/h)
Max. wind velocity	200 km/h	
Packing size [mm]	1350 x 110 x 100	1250 x 110 x 100
Height	1273 mm	1144 mm

Omnidirectional Antenna Vertical Polarization

380–400

V

KATHREIN

Antennen · Electronic

TETRA/
TETRAPOL

VPol Omni 380–400 360° 7dBi

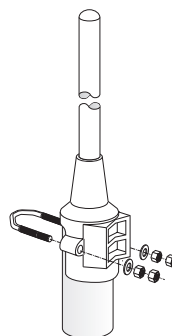
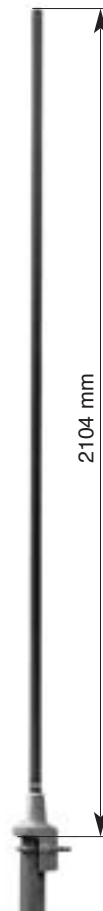
Type No.	80010392
Frequency range	380 – 400 MHz
Polarization	Vertical
Gain	7 dBi
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)
Max. power	200 W (at 50 °C ambient temperature)

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

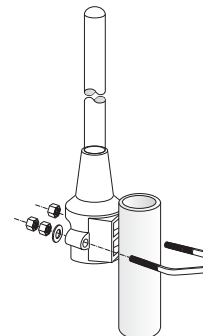
Mounting:
 The antenna can be attached in two ways with the supplied mounting kit:

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

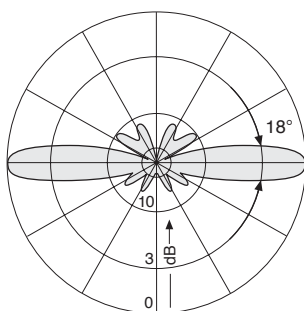
Grounding:
 All metal parts of the antenna as well as the inner conductor and the mounting kit are DC grounded.



On the tip of a tubular mast



Laterally at the tip of a tubular mast



Vertical Pattern

Mechanical specifications	
Input	7-16 female
Connector position	Bottom
Weight	1.9 kg
Radome diameter	21 mm
Wind load	60 N (at 150 km/h)
Max. wind velocity	180 km/h
Packing size	112 x 97 x 2226 mm
Height	2104 mm

Omnidirectional Antennas Vertical Polarization

406...470

V

KATHREIN
Antennen · Electronic

721388, 720880: VPol Omni 440–470 360° 7dBi
728888: VPol Omni 406–430 360° 7dBi

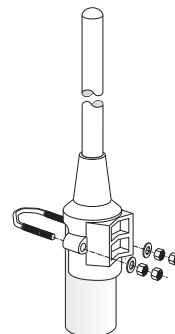
Type No.	721388	728888
	Frequency range	440 – 470 MHz
Polarization	Vertical	
Gain	7 dBi	
Impedance	50 Ω	
VSWR	< 1.5	
Intermodulation IM3 (2 x 43 dBm carrier)	< -150 dBc	
Max. power	500 W (at 50 °C ambient temperature)	

Material: Radiator: Brass.
Radome: Fiberglass, dia. 21 mm, colour: Grey.
Base: Aluminum.
Mounting U-bolt and all screws and nuts: Stainless steel.

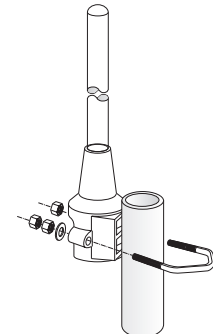
Mounting: The antenna can be attached in two ways with the supplied mounting kit:

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

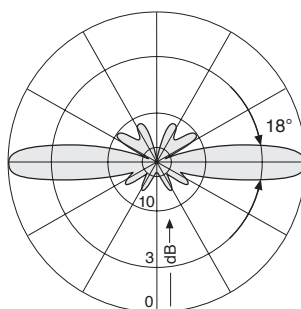
Grounding: All metal parts of the antenna including the inner conductor are DC grounded.



On the tip of a tubular mast



Laterally at the tip of a tubular mast



Vertical Pattern

Mechanical specifications

N female 7-16 female	721388 720880	728888
Connector position	Bottom	
Weight	1.6 kg	
Radome diameter	21 mm	
Wind load	60 N (at 150 km/h)	
Max. wind velocity	200 km/h	
Packing size	112 x 97 x 2124 mm	
Height	2016 mm	

Omnidirectional Antenna Vertical Polarization

380–400

V

KATHREIN

Antennen · Electronic

TETRA/
TETRAPOL

VPol Omni 380–400 360° 7.5dBi

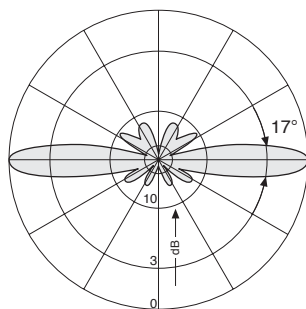
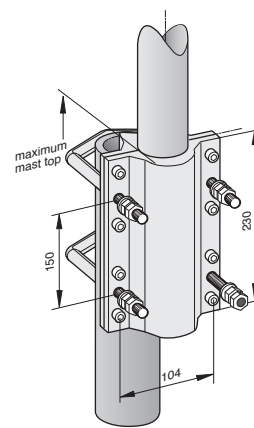
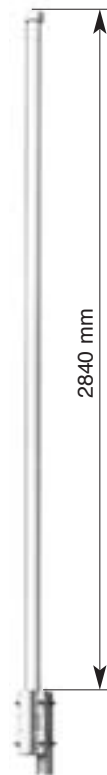
Type No.	K751637
Frequency range	380 – 400 MHz
Polarization	Vertical
Gain	7.5 dBi
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)
Max. power	500 W (at 50 °C ambient temperature)

Material:
Radiator: Copper and brass.
Radome: Fiberglass, dia. 51 mm, colour: Grey.
Base: Aluminum.
Mounting kit, screws and nuts: Stainless steel.

Mounting:
The antenna can be attached laterally at the tip of any tubular mast of 50 – 94 mm diameter (connecting cable runs outside the mast).

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

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



Vertical Pattern

Mechanical specifications	
Input	7-16 female
Connector position	Bottom
Weight	8.0 kg
Radome diameter	51 mm
Wind load	200 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	3316 x 148 x 112 mm
Height	2840 mm

Omnidirectional Antenna Vertical Polarization Fixed Electrical Downtilt

380–400

V

8.5°

KATHREIN

Antennen · Electronic

TETRA/
TETRAPOL

VPol Omni 380–400 360° 7.5dBi 8.5°T

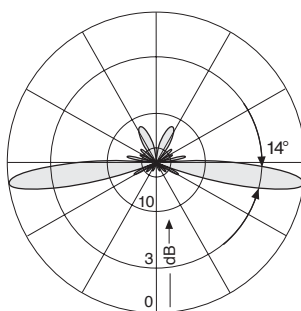
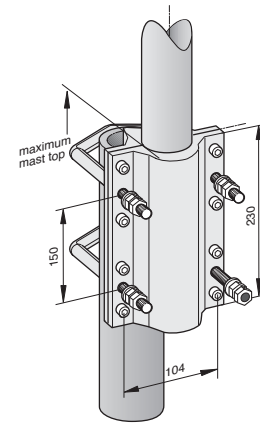
Type No.	737545
Frequency range	380 – 400 MHz
Polarization	Vertical
Gain	7.5 dBi
Electrical tilt	8.5°, fixed
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3 (2 x 43 dBm carrier)	< -150 dBc
Max. power	500 W (at 50 °C ambient temperature)

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

Mounting:
The antenna can be attached laterally at the tip of any tubular mast of 50 – 94 mm diameter (connecting cable runs outside the mast).

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

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



Vertical Pattern
8.5° electrical downtilt

Mechanical specifications	
Input	7-16 female
Connector position	Bottom
Weight	8.0 kg
Radome diameter	51 mm
Windload	230 N (at 150 km/h)
Max. wind velocity	180 km/h
Packing size	3550 x 148 x 112 mm
Height	3282 mm

**Omnidirectional Antenna
Vertical Polarization
Fixed Electrical Downtilt**

380–400
V
5°

KATHREIN
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**TETRA/
TETRAPOL**

VPol Omni 380–400 360° 8dBi 5°T

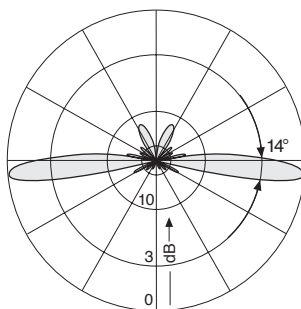
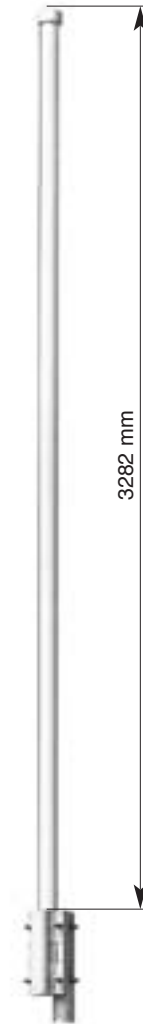
Type No.	80010434
Frequency range	380 – 400 MHz
Polarization	Vertical
Gain	8 dBi
Electrical tilt	5°, fixed
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)
Max. power	500 W (at 50 °C ambient temperature)

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

Mounting: The antenna can be attached laterally at the tip of any tubular mast of 50 – 94 mm diameter (connecting cable runs outside the mast).

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

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



Vertical Pattern
5° electrical downtilt

Mechanical specifications	
Input	7-16 female
Connector position	Bottom
Weight	8.5 kg
Radome diameter	51 mm
Wind load	230 N (at 150 km/h)
Max. wind velocity	180 km/h
Packing size	3550 x 148 x 112 mm
Height	3282 mm

Omnidirectional
370 – 470 MHz

Omnidirectional Antenna Vertical Polarization Fixed Electrical Downtilt

410–430

V

8.5°

KATHREIN

Antennen · Electronic

TETRA/
TETRAPOL

VPol Omni 410–430 360° 8dBi 8.5°T

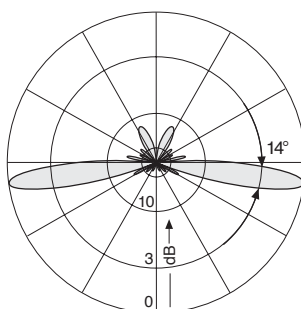
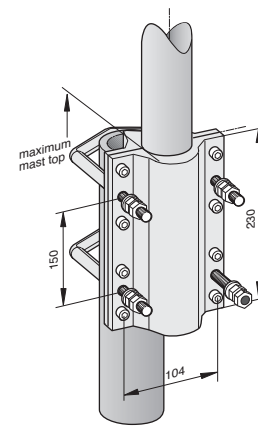
Type No.	737546
Frequency range	410 – 430 MHz
Polarization	Vertical
Gain	8 dBi
Electrical tilt	8.5°, fixed
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3 (2 x 43 dBm carrier)	< -150 dBc
Max. power	500 W (at 50 °C ambient temperature)

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

Mounting:
The antenna can be attached laterally at the tip of any tubular mast of 50 – 94 mm diameter (connecting cable runs outside the mast).

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

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



Vertical Pattern
8.5° electrical downtilt

Mechanical specifications

Input	7-16 female
Connector position	Bottom
Weight	8.0 kg
Radome diameter	51 mm
Wind load	220 N (at 150 km/h)
Max. wind velocity	180 km/h
Packing size	3376 x 196 x 102 mm
Height	3114 mm

Omnidirectional Antenna Vertical Polarization

450–470

V

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VPol Omni 450–470 360° 8.5dBi

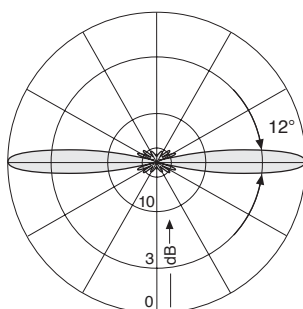
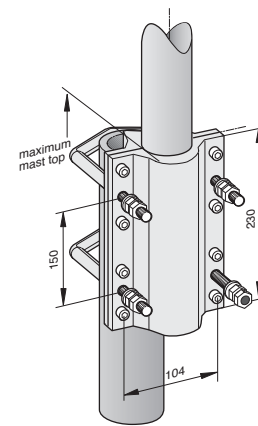
Type No.	742155
Frequency range	450 – 470 MHz
Polarization	Vertical
Gain	8.5 dBi
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3 (2 x 43 dBm carrier)	< -150 dBc
Max. power	500 W (at 50 °C ambient temperature)

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

Mounting: The antenna can be attached laterally at the tip of any tubular mast of 50 – 94 mm diameter (connecting cable runs outside the mast).

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

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



Vertical Pattern

Mechanical specifications

Input	7-16 female
Connector position	Bottom
Weight	8.0 kg
Radome diameter	51 mm
Wind load	220 N (at 150 km/h)
Max. wind velocity	180 km/h
Packing size	3379 x 206 x 152 mm
Height	3113 mm

Half-wave Dipole Side-mounted Vertical Polarization

380–470

V

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- Omnidirectional antenna with variable antenna-to-mast distance.
- Depending on the distance of the radiator from the mast edge and also on the mast diameter, various radiation patterns can be achieved.

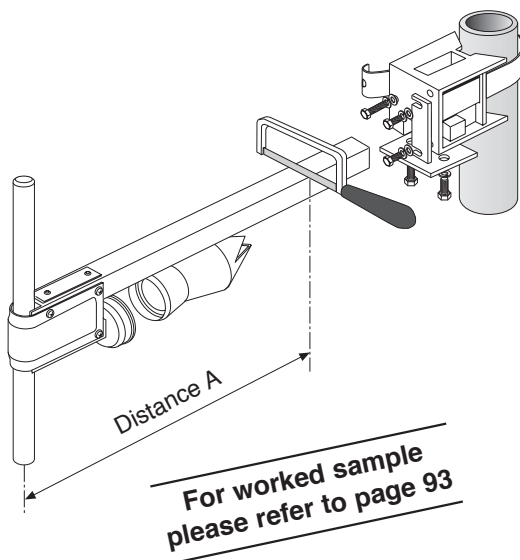
VPol Omni 380–470 360° 4dBi

Type No.	K752921
Frequency range	380 – 470 MHz
Polarization	Vertical
Gain	4 dBi
Impedance	50 Ω
VSWR	400 – 470 MHz: < 1.5 380 – 400 MHz: < 1.5; A = λ/4 380 – 400 MHz: < 2.0; A > λ/4
Max. power	450 W (at 50 °C ambient temperature)

- Material:** Radiator: Hot-dip galvanized steel.
Horizontal support pipe: Stainless steel.
Mount: Aluminum.
Tightening band and all screws and nuts: Stainless steel.
Feedpoint radome: Fiberglass.
- Attachment:** To tubular masts of 60 – 320 mm diameter using supplied stainless steel tightening band (20 mm wide, 0.8 mm gauge).
- Special features:** The distance from tubular mast to radiator is adjustable from 170 – 580 mm.
- Grounding:** All metal parts of the antenna including the inner conductor and the supplied mount are DC grounded.
- Horizontal radiation pattern:** Depending on the distance A (edge of pipe mast to dipole) – see sketch.



Omnidirectional
370 – 470 MHz



Mechanical specifications	
Input	N female
Weight	1.6 kg
Wind load	40 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	880 x 330 x 100 mm
Length	315 mm

Summary – Indoor Antennas Vertical Polarization

Indoor Omnidirectional Antennas – Single-band

Type	Type No.	Height [mm]	Input	Page	
VPol Omni	370–430 360° 2dBi	737003	552	N female	66
VPol Omni	380–405 360° 2dBi	80010277	77	N female	67
VPol Omni	405–430 360° 2dBi	80010339	77	N female	67
VPol Indoor	406–430 360° 2dBi	737299	400	cable termination	68
VPol Omni	406–470 360° 2dBi	K751121	510	N female	69
VPol Omni	450–470 360° 2dBi	80010632	77	N female	67
VPol Indoor	450–470 360° 2dBi	736831	360	cable termination	70

Indoor Directional Antennas – Single-band

Type	Type No.	Height [mm]	Input	Page	
VPol Indoor	380–405 90° 7dBi	80010278	302	N female	71
VPol Indoor	405–430 90° 7dBi	80010330	302	N female	71
VPol Indoor	440–470 90° 7dBi	80010633	302	N female	71

New Products

Omnidirectional Antenna Vertical Polarization

370–430

V

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TETRAPOL

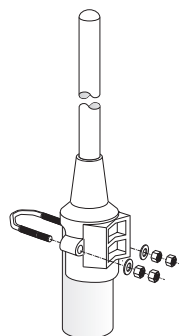
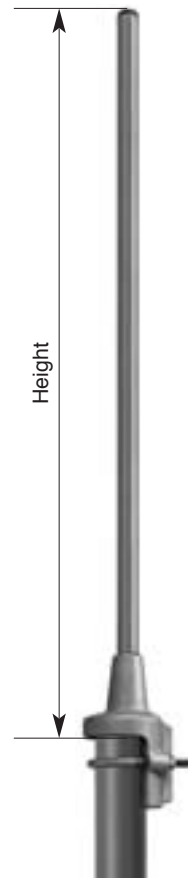
VPol Omni 370–430 360° 2dBi

Type No.	737003
Frequency range	370 – 430 MHz
Polarization	Vertical
Gain	2 dBi
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3	< -150 dBc (2 x 37 dBm carrier)
Max. power	100 W (at 50 °C ambient temperature)

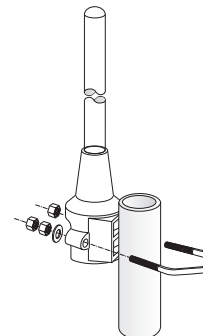
Material:
 Radiator: Brass.
 Radome: Fiberglass, dia. 21 mm, colour: Grey.
 Base: Aluminum.
 Mounting U-bolt and all screws and nuts:
 Stainless steel.

Mounting:
 The antenna can be attached in two ways with the supplied mounting kit:
 1. On the tip of any tubular mast of 40 – 54 mm dia. (connecting cable runs inside the mast).
 2. Laterally at the tip of any tubular mast of 20 – 54 mm dia. (connecting cable runs outside the mast).

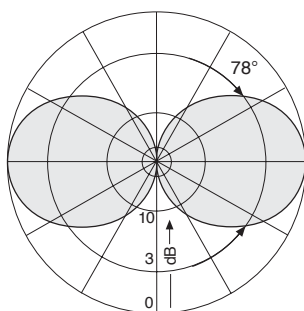
Grounding:
 All metal parts of the antenna including the inner conductor are DC grounded.



On the tip of a tubular mast



Laterally at the tip of a tubular mast



Vertical Pattern

Mechanical specifications	
Input	N female
Connector position	Bottom
Weight	1.0 kg
Radome diameter	21 mm
Wind load	20 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	112 x 97 x 654 mm
Height	555 mm

Indoor Omnidirectional Antennas Vertical Polarization

380...470

V

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- The antennas need no additional groundplane.

80010277: VPol Indoor 380–405 360° 2dBi

80010339: VPol Indoor 405–430 360° 2dBi

80010632: VPol Indoor 450–470 360° 2dBi

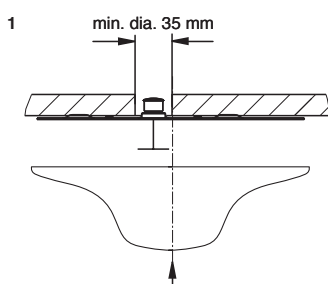
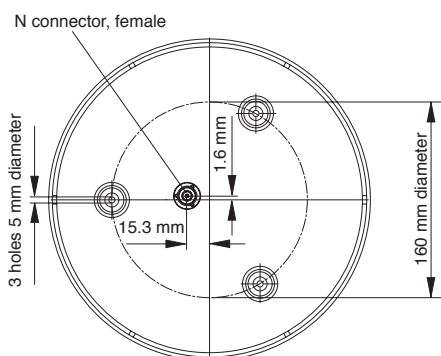
Type No.	80010277	80010339	80010632
Frequency range	380 – 405 MHz	405 – 430 MHz	450 – 470 MHz
Polarization	Vertical	Vertical	Vertical
Gain	Approx. 2 dBi	Approx. 2 dBi	Approx. 2 dBi
Impedance	50 Ω	50 Ω	50 Ω
VSWR	< 2.0	< 2.0	< 2.0
Max. power	50 W (at 50 °C ambient temperature)		
Input	1 x N female		
Protection class	IP 30		
Weight	429 g		
Packing size	267 x 267 x 114 mm		
Diameter	258 mm		
Height	77 mm (without connector)		

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

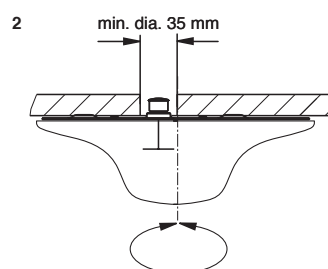
Mounting: Three holes in the base enable a mounting on the ceiling. Two types of screws are supplied. For the N connector a hole in the ceiling with a diameter of 35 mm is required.

Grounding: All metal parts including the inner conductor are DC grounded.

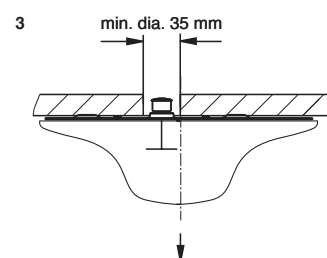
Available accessories: Power splitters (380 – 512 MHz)



1 Press radome against installed reflector.



2 Rotate radome until it locks in place.



3 Pull downwards to remove radome.

Indoor Omnidirectional Antenna Vertical Polarization

406–430

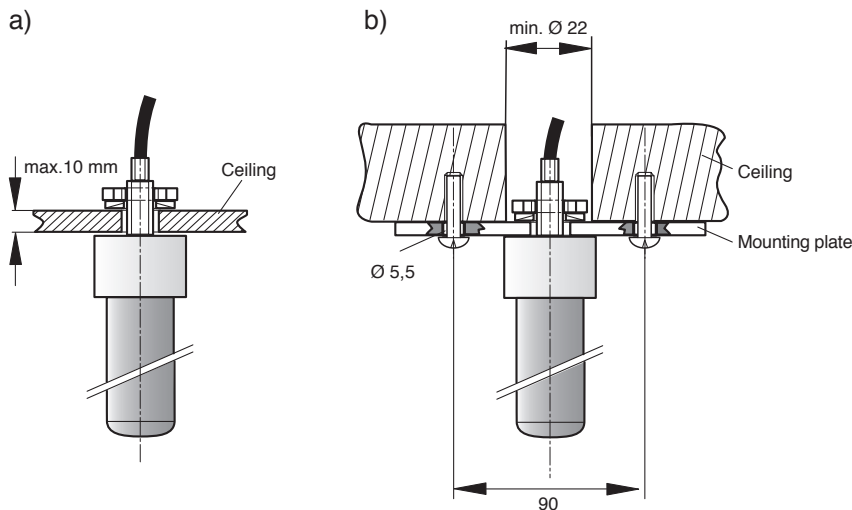
V

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VPol Indoor 406–430 360° 2dBi

Type No.	737299
Frequency range	406 – 430 MHz
Polarization	Vertical
Gain	2 dBi
Impedance	50 Ω
VSWR	< 1.5
Max. power	50 W (at 50 °C ambient temperature)

- Material:** Dipole: Brass.
Radome: Fiberglass, colour: White.
Additional mounting plate: Aluminum.
- Mounting:** a) Single-hole mounting (12 mm diameter) on surface of up to 10 mm thickness.
b) On surfaces of more than 10 mm thickness, by means of mounting plate included in the scope of delivery.
- Grounding:** All metal parts of the antenna including the inner conductor are DC grounded.



Mechanical specifications

Input	Cable RG 58/CU of 1 m length, grey, connector is not supplied
Weight	0.25 kg
Radome diameter	20 mm
Mounting plate	115 x 25 mm
Packing size	Foil: 650 x 130 mm
Height	400 mm

Omnidirectional Antennas Vertical Polarization

406–470

V

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TETRA/
TETRAPOL

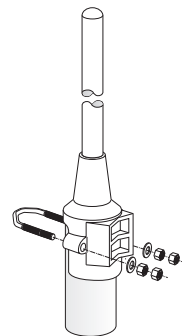
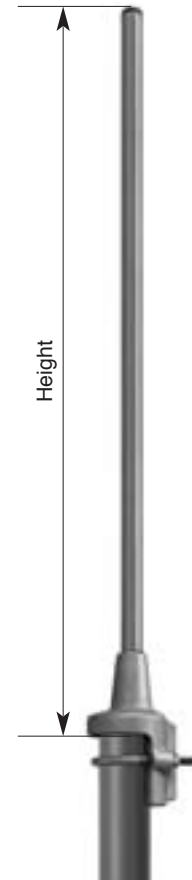
VPol Omni 406–470 360° 2dBi

Type No.	K751121
Frequency range	406 – 470 MHz
Polarization	Vertical
Gain	2 dBi
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3	< -150 dBc (2 x 37 dBm carrier)
Max. power	100 W (at 50 °C ambient temperature)

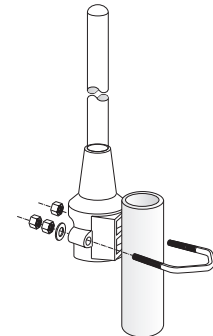
Material:
 Radiator: Brass.
 Radome: Fiberglass, dia. 21 mm, colour: Grey.
 Base: Aluminum.
 Mounting U-bolt and all screws and nuts:
 Stainless steel.

Mounting:
 The antenna can be attached in two ways with the supplied mounting kit:
 1. On the tip of any tubular mast of 40 – 54 mm dia. (connecting cable runs inside the mast).
 2. Laterally at the tip of any tubular mast of 20 – 54 mm dia. (connecting cable runs outside the mast).

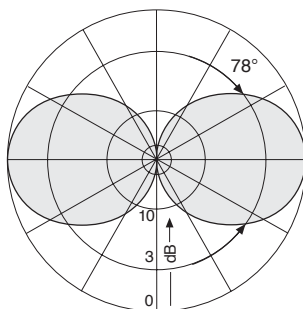
Grounding:
 All metal parts of the antenna including the inner conductor are DC grounded.



On the tip of a tubular mast



Laterally at the tip of a tubular mast



Vertical Pattern

Mechanical specifications	
Input	N female
Connector position	Bottom
Weight	0.8 kg
Radome diameter	21 mm
Wind load	20 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	112 x 97 x 614 mm
Height	515 mm

Indoor
370 – 470 MHz

Indoor Omnidirectional Antenna Vertical Polarization

450–470

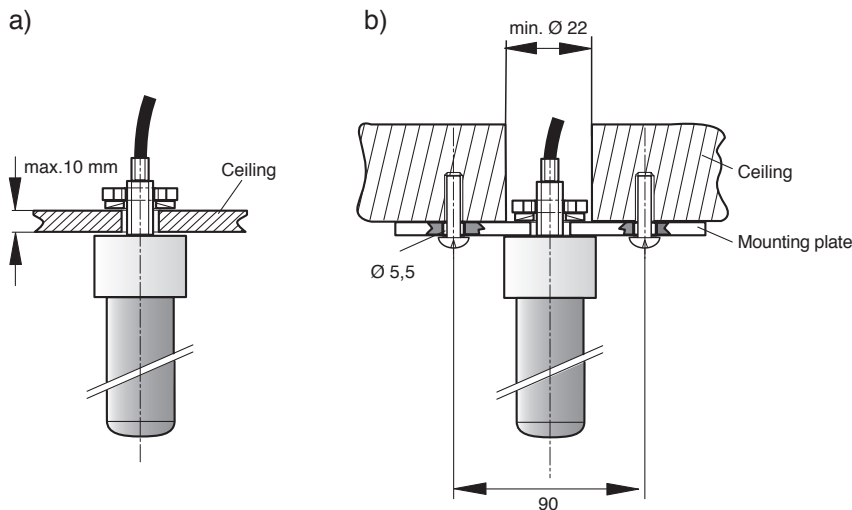
V

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VPol Indoor 450–470 360° 2dBi

Type No.	736831
Frequency range	450 – 470 MHz
Polarization	Vertical
Gain	2 dBi
Impedance	50 Ω
VSWR	< 1.5
Max. power	50 W (at 50 °C ambient temperature)

- Material:** Dipole: Brass.
Radome: Fiberglass, colour: White.
Additional mounting plate: Aluminum.
- Mounting:** a) Single-hole mounting (12 mm diameter) on surface of up to 10 mm thickness.
b) On surfaces of more than 10 mm thickness, by means of mounting plate included in the scope of delivery.
- Grounding:** All metal parts of the antenna including the inner conductor are DC grounded.



Mechanical specifications

Input	Cable RG 58/CU of 1 m length, grey, connector is not supplied
Weight	0.23 kg
Radome diameter	20 mm
Mounting plate	115 x 25 mm
Packing size	Foil: 650 x 130 mm
Height	360 mm

Indoor Directional Antenna
Vertical Polarization
Half-power Beam Width

380... 470

V

90°

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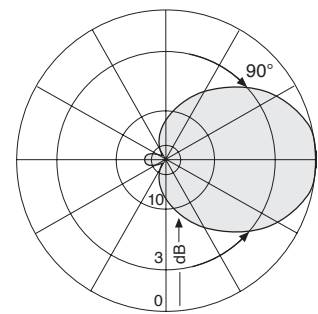
TETRA/
TETRAPOL

80010278: VPol Indoor 380–405 90° 7dBi
80010330: VPol Indoor 405–430 90° 7dBi
80010633: VPol Indoor 450–470 90° 7dBi

Type No.	80010278	80010330	80010633
Frequency range	380 – 405 MHz	405 – 430 MHz	450 – 470 MHz
Polarization	Vertical	Vertical	Vertical
Gain	Approx. 7 dBi	Approx. 7 dBi	Approx. 7 dBi
Half-power beam width	Horizontal: Approx. 90°	Horizontal: Approx. 90°	Horizontal: Approx. 90°
Impedance	50 Ω	50 Ω	50 Ω
VSWR	< 2.0	< 2.0	< 2.0
Max. power	50 W (at 50 °C ambient temperature)		
Input	N female connector		
Protection class	IP 30		
Weight	1390 g		
Packing size	315 x 252 x 62 mm		
Height/width/depth	302 x 243 x 50 mm		

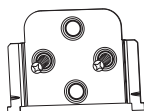


- Material:** Reflector: Copper.
 Radome: High impact polystyrol, colour: White.
 Additional painting is possible.
 Mounting plates: Stainless steel.
- Mounting:** Two holes of 6 mm diameter in the mounting plate.
 Screws are not supplied
- Grounding:** All metal parts inclusive the inner conductor are DC grounded.
- Available accessories:** Power splitters (380 – 512 MHz)

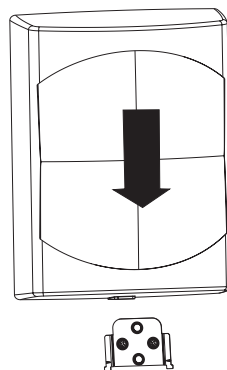


Horizontal Pattern

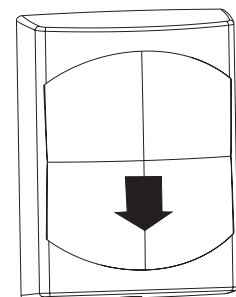
Mounting:



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



Align the antenna over the attachment plate.



Pull the antenna down to the stop.

Indoor
370 – 470 MHz

75 MHz

Type	Type No.	Frequency Range	Height	Input	Max. Power	Page	
2-way Splitter	75 MHz	K625541	68 – 88 MHz	950 mm	N female	960 Watt	74

150 MHz

Type	Type No.	Frequency Range	Height	Input	Max. Power	Page	
2-way Splitter	150 MHz	K625521	146 – 174 MHz	530 mm	N female	680 Watt	74

450 MHz

Type	Type No.	Frequency Range	Height	Input	Max. Power	Page	
2-way Splitter	450 MHz	K6320221	380 – 512 MHz	409 mm	N female	500 Watt	75
2-way Splitter	450 MHz	K6320227	380 – 512 MHz	409 mm	7-16 female	1000 Watt	75
3-way Splitter	450 MHz	K6320231	380 – 512 MHz	409 mm	N female	500 Watt	75
3-way Splitter	450 MHz	K6320237	380 – 512 MHz	409 mm	7-16 female	1000 Watt	75
4-way Splitter	450 MHz	K6320241	380 – 512 MHz	409 mm	N female	500 Watt	75
4-way Splitter	450 MHz	K6320247	380 – 512 MHz	409 mm	7-16 female	1000 Watt	75

380 – 3800 MHz

Type	Type No.	Frequency Range	Height	Input	Max. Power	Page	
2-way Splitter	380 MHz	86010130	380 – 3800 MHz	275 mm	N female	200 Watt	76
2-way Splitter	380 MHz	86010131	380 – 3800 MHz	275 mm	7-16 female	700 Watt	76

New Products

For outdoor and indoor use.

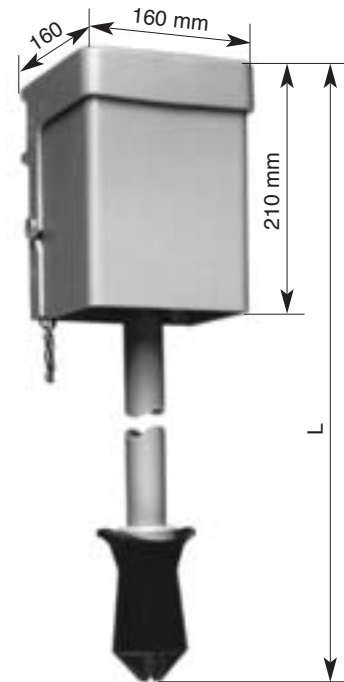
2-way Splitter 75

2-way Splitter 150

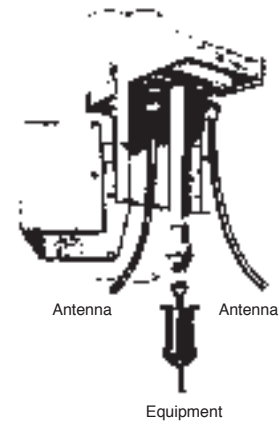
Type No.	K625541	K625521
Connector (female)	N	N
Max. power (at 50 °C ambient temperature)	960 W	680 W
For connecting ... antennas	2	2
Frequency range	68 – 88 MHz	146 – 174 MHz
VSWR	< 1.1	< 1.1
Impedance	50 Ω	50 Ω
Insertion loss	< 0.05 dB	< 0.05 dB
Length L	950 mm	530 mm

Material: Protective case on the antenna side: Aluminum.
Weather protection on the equipment side: UV-resistant Elastomere.
Transformation line: Aluminum and brass.
All parts with protection varnish.

Mounting: On tubular masts of 60 – 320 mm dia. OD by means of non-corrosive clamp-strap (1020 x 20 x 1 mm, supplied).
Transformers with a total length of over 700 mm are delivered with a supporting clamp.



Example for 2-way antenna splitter



For outdoor and indoor use.

2-way Splitter 390/420/450

3-way Splitter 390/420/450

4-way Splitter 390/420/450

Type No.	K6320221	K6320227	K6320231	K6320237	K6320241	K6320247
Connectors (female)	N	7-16	N	7-16	N	7-16
Max. power	500 W	1000 W	500 W	1000 W	500 W	1000 W
	(at 50 °C ambient temperature)					
For connecting ... antennas	2		3		4	
Frequency range	380 – 512 MHz					
VSWR	< 1.1					
Impedance	50 Ω					
Insertion loss	< 0.05 dB					
Packing size	425 x 93 x 107 mm					
Max. size	409 x 82 x 82 mm					

Material: Case: Aluminum.
Inner conductor: Brass.

Mounting: Bracket for wall mounting included in the scope of supply.
For mounting to tubular masts use clamps as listed below (order separately).



K6320247

Clamps

Type No.	Description	Mast Diameter
734360	2 clamps	30 – 55 mm
734361	2 clamps	55 – 75 mm
734362	2 clamps	75 – 95 mm
734363	2 clamps	95 – 115 mm
734364	2 clamps	115 – 135 mm



734364

Low-loss Power Splitters Multi-band

380–3800

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For indoor and outdoor use.

2-way Splitter 380–3800

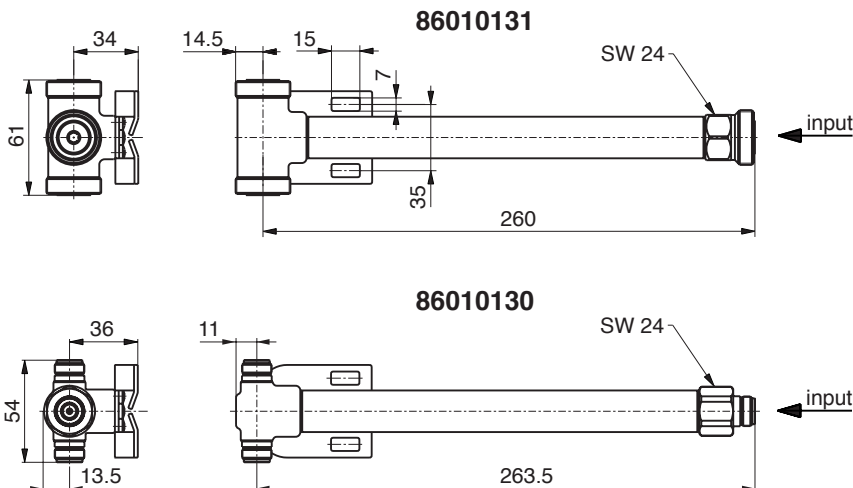
Type No.	86010130	86010131
Connector (female)	N	7-16
Max. power (at 50 °C ambient temperature)	200 W	700 W
For connecting ... antennas	2	
Frequency range	380 – 3800 MHz	
VSWR	< 1.5	
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)	
Impedance	50 Ω	
Insertion loss	< 0.05 dB	
Weight	750 g	870 g
Packing size	300 x 75 x 75 mm	

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



86010131

86010130



Clamps (order separately)

Type No.	Description	Remarks
736801	1 clamp	Mast: 34 – 60 mm diameter
736802	1 clamp	Mast: 60 – 80 mm diameter
736803	1 clamp	Mast: 80 – 100 mm diameter
736804	1 clamp	Mast: 100 – 120 mm diameter
736805	1 clamp	Mast: 120 – 140 mm diameter



736805

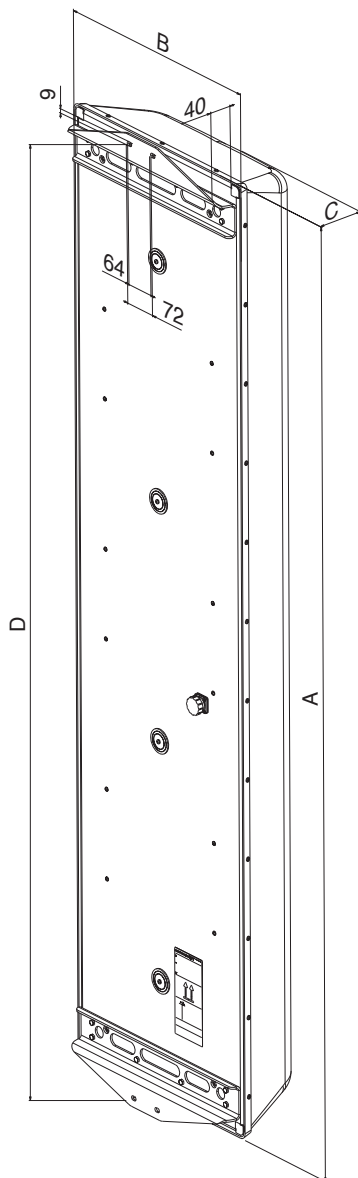
	Page
Dimensions of Panels	78
Modified Product Line of Mounting Parts	80
Clamps	81
Downtilt kit “L” and “M”	82
Downtilt kit “H”	83
Azimuth Adjustment Kits	84
3 Sector Clamps	85
Offset	86
Brackets	
Bracket with Fixed Spacing	87
Bracket with Adjustable Spacing	87

The hereinafter referred to “wind load category L - M - H” correspond to the defined “category of mounting hardware” given in the respective data sheets.

Directional Antennas Dimensions

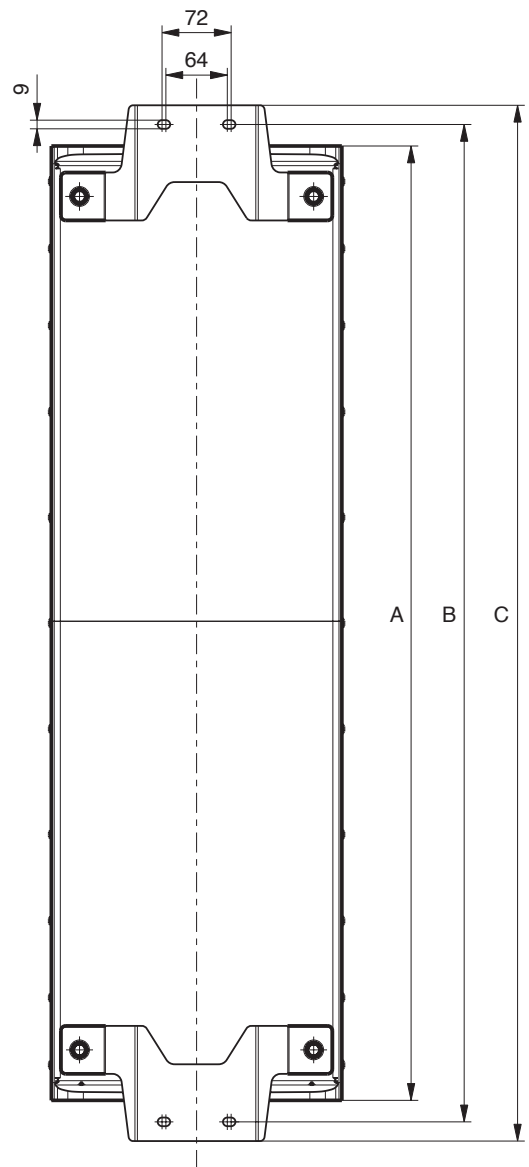
VPol Panel 63° / 65° / 180° XPol Panel 65°

A	493 mm	992 mm	1983 mm
B	493 mm	492 mm	485 mm
C	209 mm	190 mm	190 mm
D	550 mm	1048 mm	1988 mm

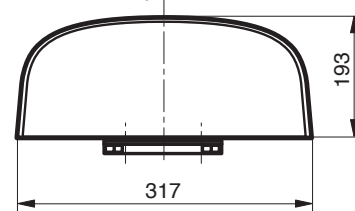


XPol Panel 88°

A	1007 mm	1997 mm
B	2040 mm	1050 mm
C	2080 mm	1090 mm

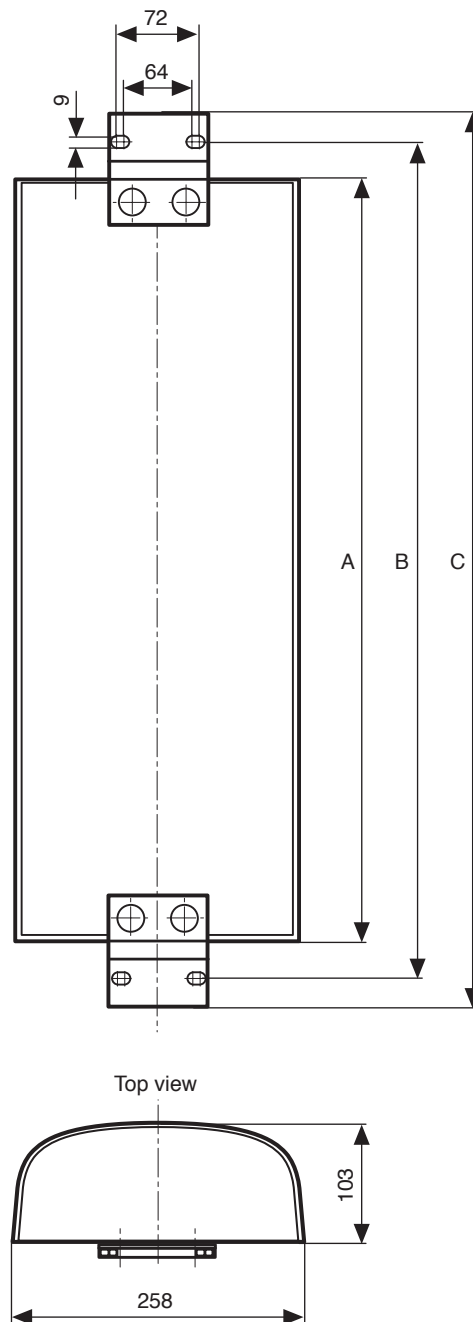


Top view



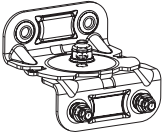

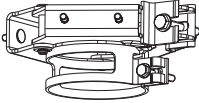
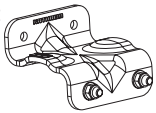


VPol Panel 115°

A	974 mm	1934 mm	2574 mm
B	1030 mm	1990 mm	2630 mm
C	1070 mm	2030 mm	2670 mm



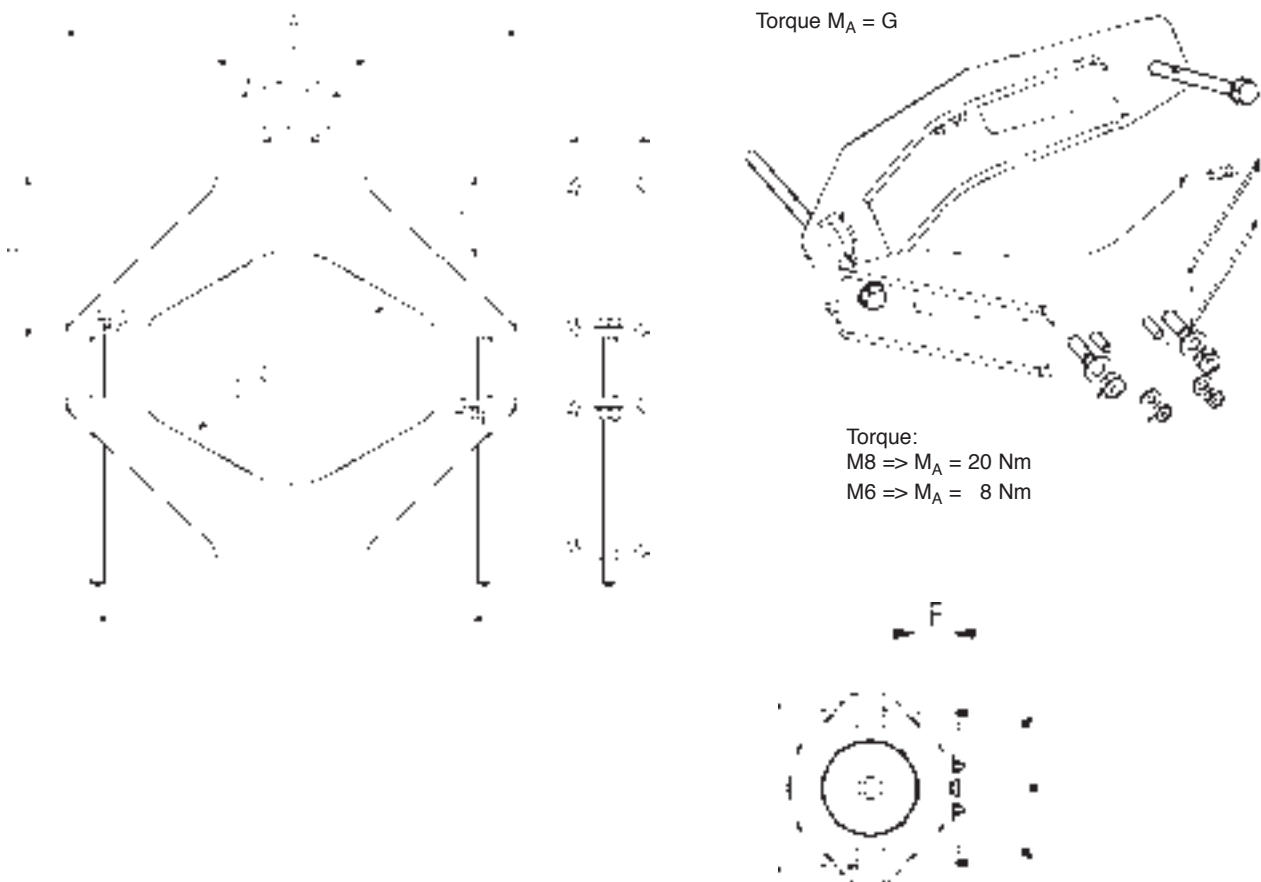
Modified Product Line of Mounting Parts

Type	Windload Classification	Pole Diameter in mm	Type No.	Remark
Clamp	light / medium	∅ 28 – 64	731651	Modified product
	light / medium / heavy	∅ 28 – 115	738546	
	light / medium / heavy	∅ 110 – 220	85010002	
		∅ 210 – 380	85010003	
Downtilt kit 	light / medium		737971	Modified product Available: 2nd half 2011
			737972	
			737973	
			737974	
			737975	
			737977	
			737978	
Downtilt kit 	heavy	New product	85010008	Replacement for 85010007 Available: 2nd half 2011
Azimuth Adjustment Kit 	light / medium		85010014	Pole mounting adjustment angle ±30° (additional clamp needed)
	heavy		85010015	
Azimuth Adjustment Kit 	light / medium		85010016	Wall mounting adjustment angle ±30°
	heavy		85010017	
3 Sector Clamp 	light / medium	∅ 88.9	742263	New product
		∅ 88.9	742317	
		∅ 114.3	742033	
		∅ 139.7	742034	
	heavy	∅ 114.3	85010058	New product
		∅ 139.7	85010059	New product
Offset 	light / medium	New product	85010060	Clearance between pole and antenna (additional clamp needed)
	heavy	New product	85010061	

Panel Accessories Mounting Hardware Clamps

Clamps

Type No.	731651	738546	85010002	85010003
Suitable for mast diameter	28 – 60 mm	42 – 115 mm	110 – 220 mm	210 – 380 mm
Antenna – mast distance F	40 – 44 mm	37 – 44 mm	47 – 56 mm	48 – 69 mm
Number of pieces	1 clamp	1 clamp	1 clamp	1 clamp
Material – Clamp	Hot-dip galvanized steel	Hot-dip galvanized steel	Hot-dip galvanized steel	Hot-dip galvanized steel
– Screws	Hot-dip galvanized steel/ Stainless steel	Hot-dip galvanized steel/ Stainless steel	Hot-dip galvanized steel/ Stainless steel	Stainless steel
– Nuts	Stainless steel	Stainless steel	Stainless steel	Stainless steel
Weight	0.8 kg	1.1 kg	2.7 kg	4.8 kg



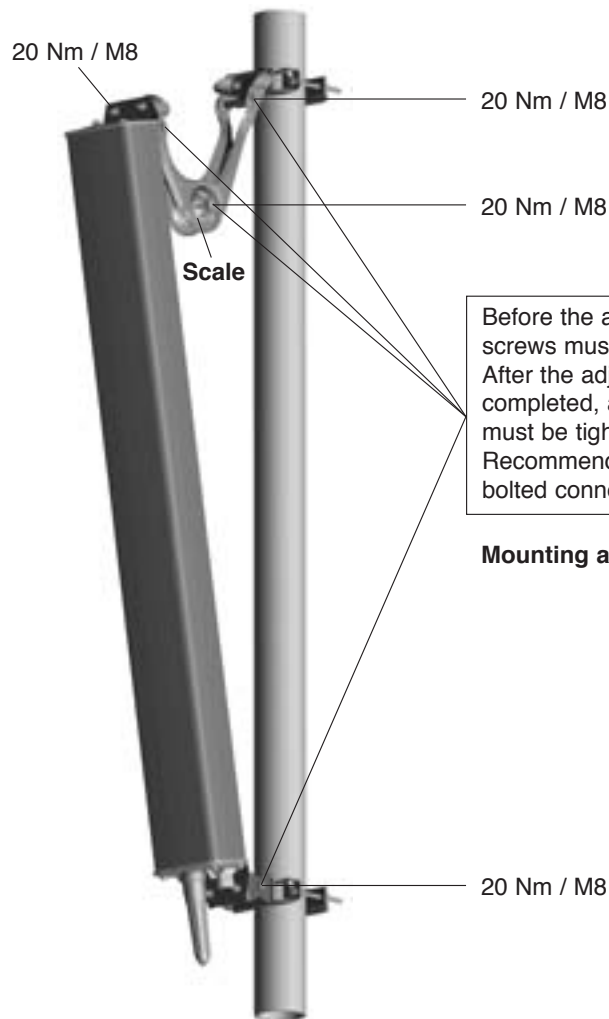
Type No.	A	B	C	D	E	F	G	H
731651	116 mm	40 mm	40 mm	28– 60 mm	93 mm	40–44 mm	20 Nm	84 mm
738546	152 mm	40 mm	40 mm	42–115 mm	93 mm	37–44 mm	25 Nm	125 mm
85010002	280 mm	100 mm	50 mm	110–220 mm	93 mm	47–56 mm	35 Nm	240 mm
85010003	442 mm	150 mm	50 mm	210–380 mm	150 mm	48–69 mm	35 Nm	392 mm

**Please note: Kathrein does not recommend to use counter nuts.
The additional nuts supplied are only meant as spares.**

Standard Downtilt kit for Panel Antennas (Wind load Category "L")

Modified product –
Available:
2nd half 2011

Antenna height: 502 mm
662 mm
982 mm
1302 mm



Before the adjustment, all joint screws must be loosened. After the adjustment has been completed, all loosened screws must be tightened. Recommended torque for M8 bolted connections: 20 Nm.

Mounting accessories included.

For heights not mentioned in this table please use downtilt kit 732327.

Downtilt angle		Downtilt kit with scale	Downtilt kit without scale*	Weight	Material
Antenna height	Downtilt angle	Type No.	Type No.		
502 mm	0° – 25°	732322	732327	Approx. 1.3 kg	All parts: Hot-dip galvanized steel Nuts / washers: Stainless steel
662 mm	0° – 19°	732321			
982 mm	0° – 13°	732318			
1302 mm	0° – 10°	732317			

* 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.

Standard Downtilt kit for Panel Antennas (Wind load Category “H”)

New product –
Available:
2nd half 2011

Special downtilt kit for Panel antennas with a higher wind load.

Downtilt kit

Type No.	85010008
Preferred range of use	– Panel antennas with a higher wind load – Panel antennas with attached mounting plates – Downtilt kit without scale for universal use
Weight	6.5 kg
Material	Hot-dip galvanized steel
Screws	Hot-dip galvanized steel / stainless steel
All nuts	Stainless steel

Recommended mast clamps:

Type No.	Description	Mast diameter	Weight approx.	Units per antenna
738546	1 clamp	42 – 115 mm	1.1 kg	2
85010002	1 clamp	110 – 220 mm	2.9 kg	2
85010003	1 clamp	210 – 380 mm	4.8 kg	2

Recommended torque for all bolted connections:

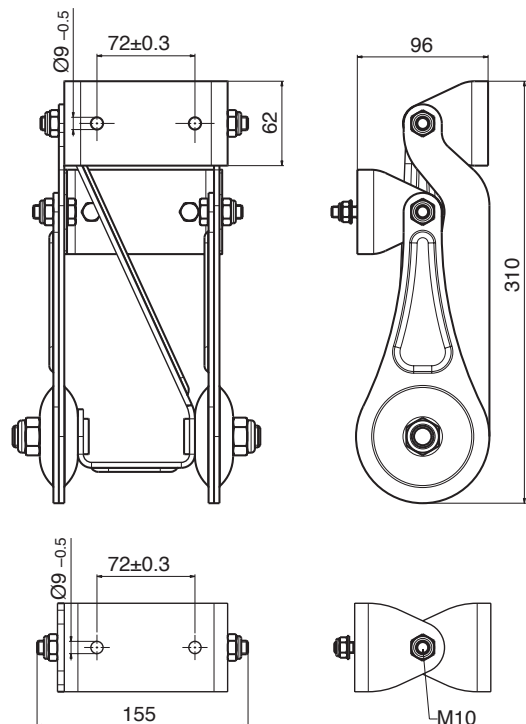
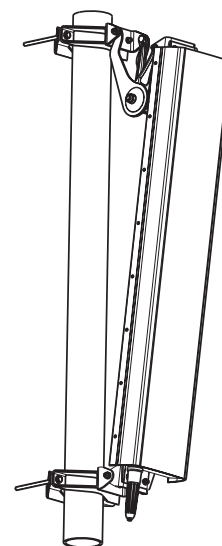
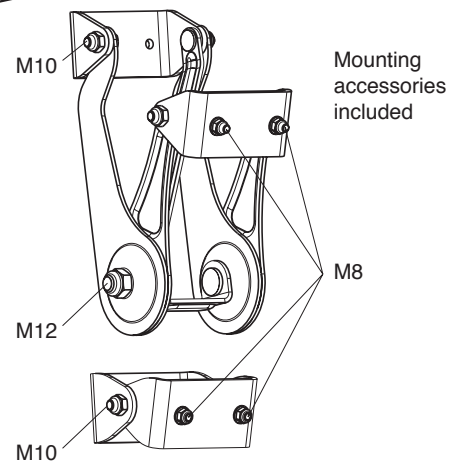
Screw size	Torque
M8	20 Nm
M10	50 Nm
M12	90 Nm

Maximum acceptable load:

Frontal wind load	< 5000 N
Lateral wind load	< 1300 N

Downtilt angle

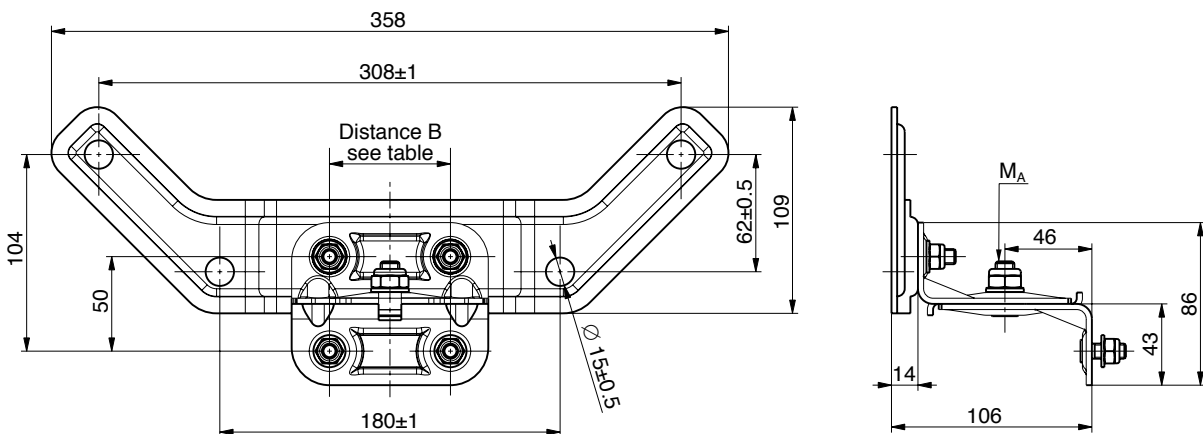
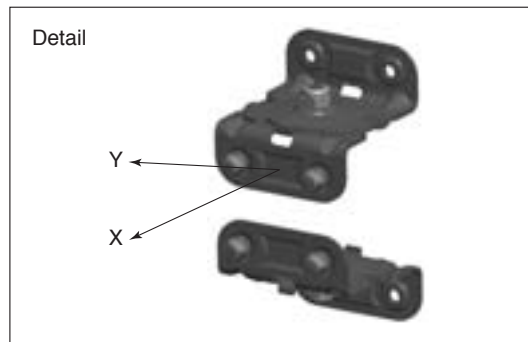
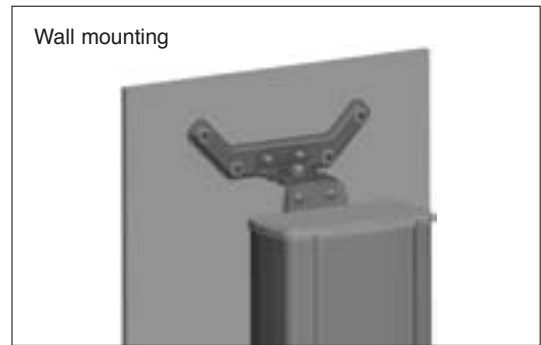
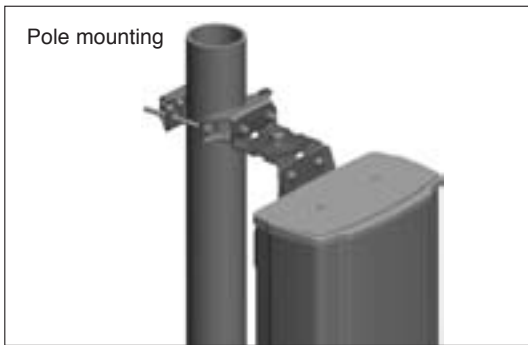
Antenna height	Downtilt angle
1498 mm	0° – 13°
2058 mm	0° – 10°
2516 mm	0° – 8°
2628 mm	0° – 8°



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 A-/C-/F-Panel mounting kits (with the latter only as an interface between mounting kit and antenna).

Type No.	85010014	85010015	85010016	85010017
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

3 Sector Panel Arrangement

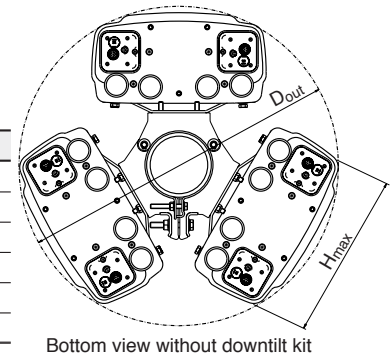
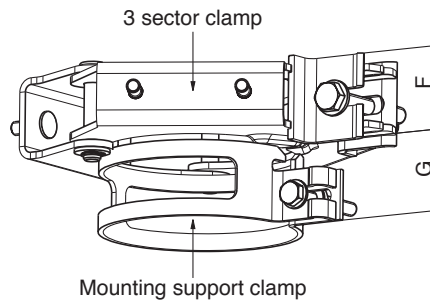
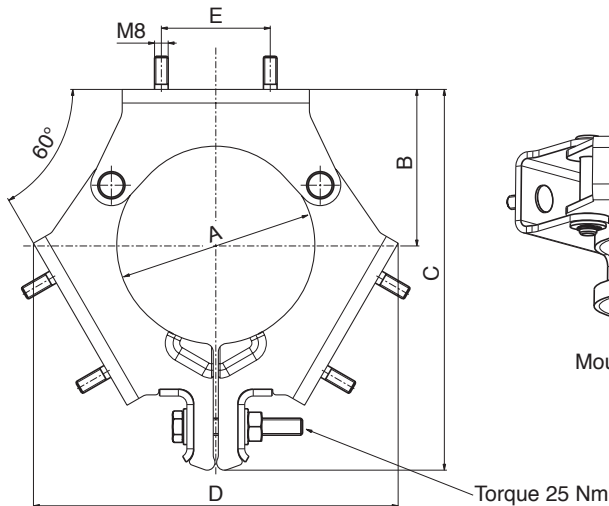
3 Sector Clamp Kit

Mounting Hardware

- Slim and unobstrusive design.
- Nearly cylindrical optical appearance with small outer diameter.
- Suitable for all Panels with an antenna housing width less than 400 mm (H_{max}).

Please note:

Panels with connector position “Rearside, pointing downwards” fit only with downtilt kit or offset mounted in-between.



Type No.	A	B	C	D	E	F	G	H_{max}	Weight
742263	88.9	65	180	168	64	50	45	280	4 kg
742317	88.9	88	213	199	64	50	45	361	4 kg
742033	114.3	88	217	207	64	49	45	375	4 kg
742034	139.7	100	236	228	64	49	45	400	4 kg
85010058	114.3	88	217	207	72	50	45	375	4 kg
85010059	139.7	100	236	228	72	50	45	400	4 kg

All dimensions in mm.

D_{out} is determined by mounted components.

3 Sector Clamp Kit (Antenna Wind load Category “L” and “M”)

Type No.	742263	742317	742033	742034
Angle between antennas	120°	120°	120°	120°
Suitable for mast diameter	88.9 mm	88.9 mm	114.3 mm	139.7 mm
Number of pieces	2 x 3 sector clamp 2 x mounting support clamp	2 x 3 sector clamp 2 x mounting support clamp	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	Hot-dip galvanized steel Aluminum	Hot-dip galvanized steel Aluminum
– 3 sector clamp	Hot-dip galvanized steel	Hot-dip galvanized steel	Hot-dip galvanized steel	Hot-dip galvanized steel
– Mounting support clamp	Aluminum	Aluminum	Aluminum	Aluminum
– Screws	Hot-dip galvanized steel	Hot-dip galvanized steel	Hot-dip galvanized steel	Hot-dip galvanized steel
– Nuts	Stainless steel	Stainless steel	Stainless steel	Stainless steel

3 Sector Clamp Kit (Antenna Wind load Category “H”)

Type No.	85010058	85010059
Angle between antennas	120°	120°
Suitable for mast diameter	114.3 mm	139.7 mm
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	Hot-dip galvanized steel	Hot-dip galvanized steel
– Mounting support clamp	Aluminum	Aluminum
– Screws	Hot-dip galvanized steel	Hot-dip galvanized steel
– Nuts	Stainless steel	Stainless steel

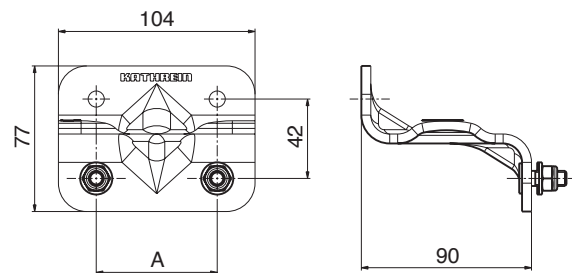
Mounting Hardware Offset for Panel Antennas

Type No.	85010060	85010061
Wind load category	"L" and "M"	"H"
No. of pieces	2x spacer	
Material: – spacer – nuts	Hot-dip galvanized steel Stainless steel	
Dimension "A"	64 mm	72 mm
Weight	1.3 kg	
Fitting accessories	Supplied	

Recommended torque for M8 bolted connections: 20 Nm



Please use the offset in combination with clamps corresponding to the pole diameter.



Mounting accessories (order separately)

Possible clamps in combination with:

85010060

Type No.	Description	Mast diameter	Weight approx.	Units per antenna
731651	1 clamp	28 – 64 mm	0.8 kg	2
738546	1 clamp	42 – 115 mm	1.1 kg	2
85010002	1 clamp	110 – 220 mm	2.9 kg	2
85010003	1 clamp	210 – 380 mm	4.8 kg	2

85010061

Type No.	Description	Mast diameter	Weight approx.	Units per antenna
738546	1 clamp	42 – 115 mm	1.1 kg	2
85010002	1 clamp	110 – 220 mm	2.9 kg	2
85010003	1 clamp	210 – 380 mm	4.8 kg	2

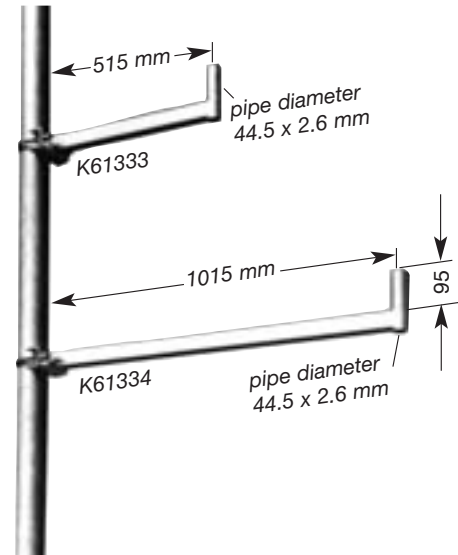
If a downtilt kit is used, please choose the fitting one from the antenna data sheet.

When mounted to the tip of a mast, the antennas described in this catalogue radiate horizontally in a circular fashion. However, they can also be mounted laterally to a mast by using an extension bracket. Depending on the spacing and the mast diameter, various types of radiation patterns can be achieved.

(For further information please see the "Technical Information" part of our catalogue on pages 93 and 94)

Bracket with fixed spacing

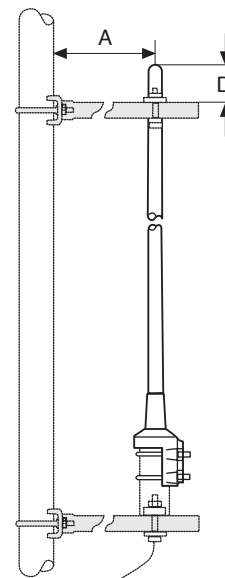
Type No.	K61333	716192	K61334	713645
Weight	2 kg	7 kg	3.2 kg	8.5 kg
Distance A:	500 mm		1000 mm	
Suitable for antennas with a maximum wind load of	215 N (at 150 km/h)		85 N (at 150 km/h)	
Suitable for antennas with	mounting kit to pipe masts of 20 – 54 mm diameter.			
Attachment	By means of mounting kit (supplied) to pipes of			
	55 mm – 105 mm	105 mm – 265 mm	55 mm – 105 mm	105 mm – 265 mm
	diameter			
Material	Hot-dip galvanized steel.			
Wind load	36 N (at 150 km/h)		60 N (at 150 km/h)	



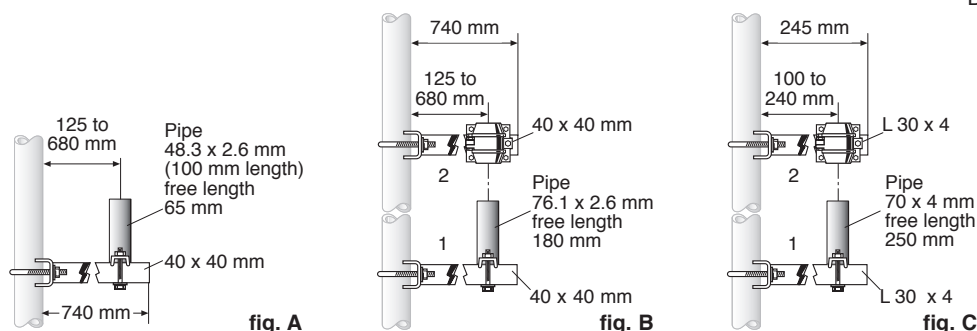
Bracket with adjustable spacing A

Implementation	Stand-off fig. A	Double stand-off	
		fig. B	fig. C
Type No.	K613311	K613321	737398
Weight	6.6 kg	13.7 kg	6 kg
Distance A:			
min.	125 mm		100 mm
max.	680 mm		240 mm
Suitable for	antennas with mounting kit to pipe masts of		
	20 – 54 mm diameter	30 – 90 mm diameter	50 – 94 mm diameter
Attachment	By means of mounting kit (supplied) to pipes of		
	55 mm – 105 mm diameter		40 – 105 mm diameter
Material	Hot-dip galvanized steel.		
Wind load	45 N (at 150 km/h)	100 N (at 150 km/h)	65 N (at 150 km/h)

A: 125 ... 680 mm
D: 450 mm



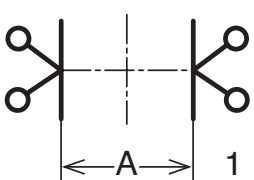
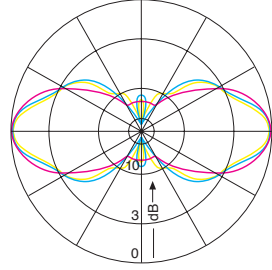
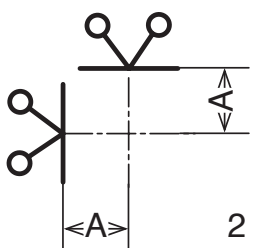
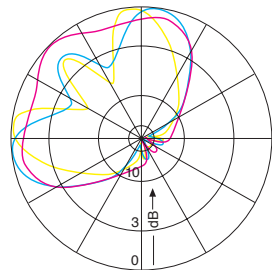
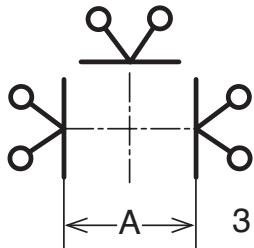
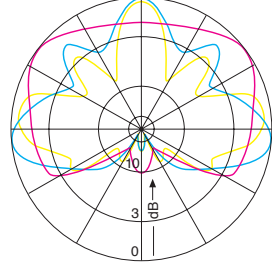
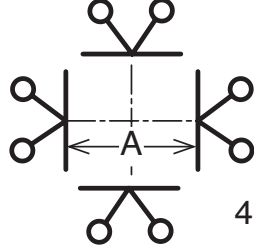
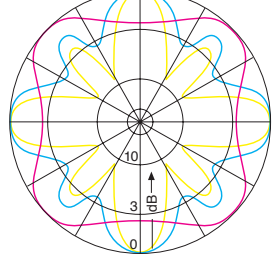
Double Bracket



Type	Page
Antenna Systems with Panels K52322..	90
Examples of Radiation Patterns at 390 MHz with Combinations of Panels 741517	91
Examples of Radiation Patterns at 390 MHz with Combinations of Panels 80010252	92
Radiation Patterns for Side-mounted Omnidirectional Antennas	93
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Antenna Systems with Panels K52322..

Examples for radiation patterns at 160 MHz

Arrangement	Horizontal Radiation Pattern	Technical Data									
 <p>1</p>		<p>Spacing A</p> <ul style="list-style-type: none"> — 0.5 m — 2.0 m — 4.0 m 	<p>100 % rel. field strength corresponds to a gain* of</p> <table border="1"> <thead> <tr> <th>1 bay</th> <th>2 bays</th> </tr> </thead> <tbody> <tr> <td>5.4 dB</td> <td>8.4 dB</td> </tr> <tr> <td>5.2 dB</td> <td>8.2 dB</td> </tr> <tr> <td>5.4 dB</td> <td>8.4 dB</td> </tr> </tbody> </table>	1 bay	2 bays	5.4 dB	8.4 dB	5.2 dB	8.2 dB	5.4 dB	8.4 dB
1 bay	2 bays										
5.4 dB	8.4 dB										
5.2 dB	8.2 dB										
5.4 dB	8.4 dB										
 <p>2</p>		<p>Spacing A</p> <ul style="list-style-type: none"> — 0.7 m — 1.4 m — 2.0 m 	<p>100 % rel. field strength corresponds to a gain* of</p> <table border="1"> <thead> <tr> <th>1 bay</th> <th>2 bays</th> </tr> </thead> <tbody> <tr> <td>4.8 dB</td> <td>7.8 dB</td> </tr> <tr> <td>5.5 dB</td> <td>8.5 dB</td> </tr> <tr> <td>6.1 dB</td> <td>9.1 dB</td> </tr> </tbody> </table>	1 bay	2 bays	4.8 dB	7.8 dB	5.5 dB	8.5 dB	6.1 dB	9.1 dB
1 bay	2 bays										
4.8 dB	7.8 dB										
5.5 dB	8.5 dB										
6.1 dB	9.1 dB										
 <p>3</p>		<p>Spacing A</p> <ul style="list-style-type: none"> — 1.4 m — 2.8 m — 4.0 m 	<p>100 % rel. field strength corresponds to a gain* of</p> <table border="1"> <thead> <tr> <th>1 bay</th> <th>2 bays</th> </tr> </thead> <tbody> <tr> <td>3.3 dB</td> <td>6.3 dB</td> </tr> <tr> <td>4.0 dB</td> <td>7.0 dB</td> </tr> <tr> <td>5.0 dB</td> <td>8.0 dB</td> </tr> </tbody> </table>	1 bay	2 bays	3.3 dB	6.3 dB	4.0 dB	7.0 dB	5.0 dB	8.0 dB
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 <p>4</p>		<p>Spacing A</p> <ul style="list-style-type: none"> — 1.4 m — 2.8 m — 4.0 m 	<p>100 % rel. field strength corresponds to a gain* of</p> <table border="1"> <thead> <tr> <th>1 bay</th> <th>2 bays</th> </tr> </thead> <tbody> <tr> <td>1.8 dB</td> <td>4.8 dB</td> </tr> <tr> <td>2.6 dB</td> <td>5.6 dB</td> </tr> <tr> <td>4.0 dB</td> <td>7.0 dB</td> </tr> </tbody> </table>	1 bay	2 bays	1.8 dB	4.8 dB	2.6 dB	5.6 dB	4.0 dB	7.0 dB
1 bay	2 bays										
1.8 dB	4.8 dB										
2.6 dB	5.6 dB										
4.0 dB	7.0 dB										

Required components with conn. N female (without mounting kits):
2 antennas K 52 32 21, 2 junction cables K 62 21 3,
1 antenna transformer K 62 55 21

Required components with conn. N female (without mounting kits):
2 antennas K 52 32 21, 2 junction cables K 62 21 3,
1 antenna transformer K 62 55 21

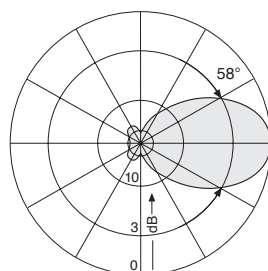
Required components with conn. N female (without mounting kits):
3 antennas K 52 32 21, 3 junction cables K 62 21 3,
1 antenna transformer K 62 56 21

Required components with conn. N female (without mounting kits):
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1 antenna transformer K 62 57 21

* ref. $\lambda/2$ dipole

Vertical Radiation Pattern of the Arrangements 1,2,3 and 4

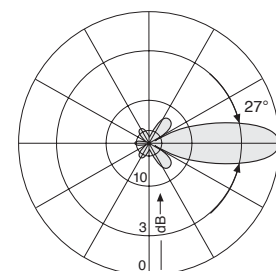
1 Bay



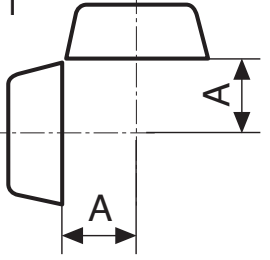
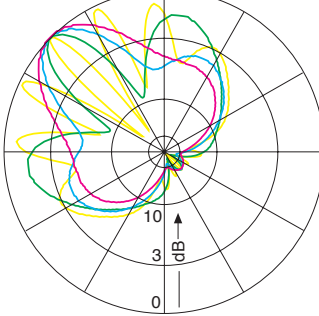
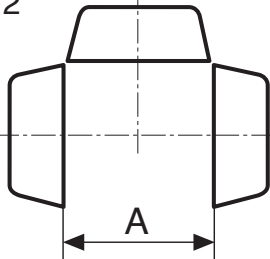
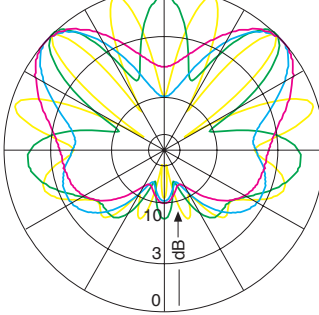
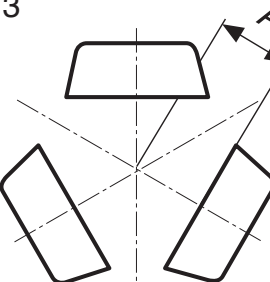
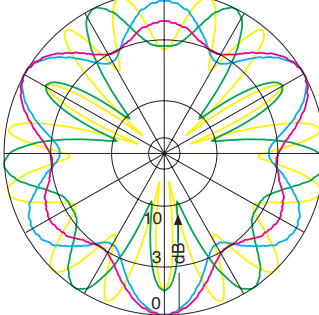
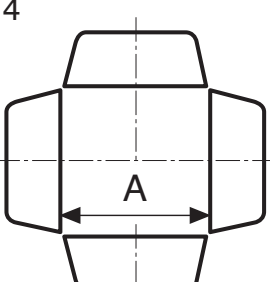
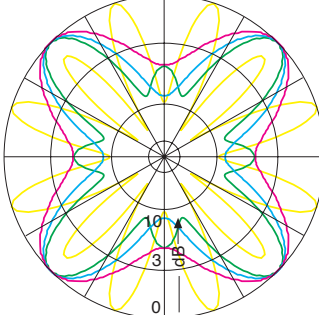
Vertical Radiation Pattern of the Arrangements 1,2,3 and 4

2 Bays

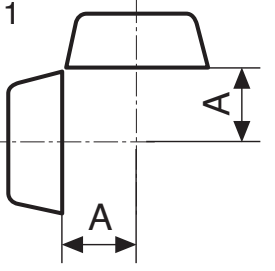
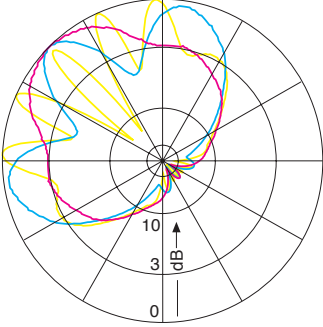
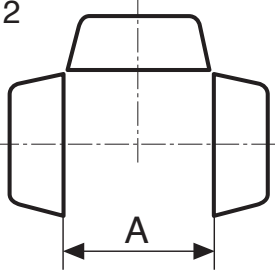
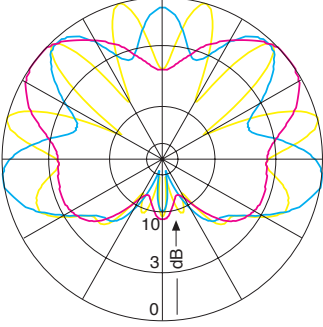
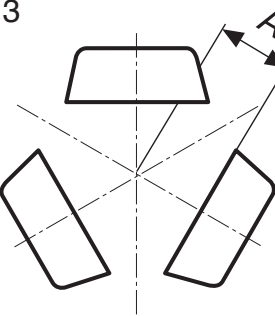
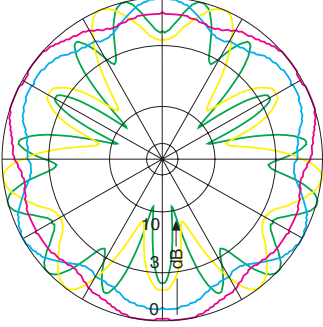
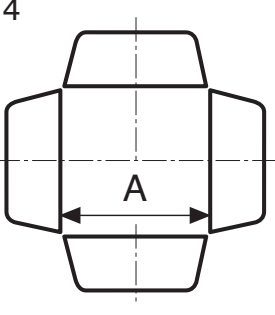
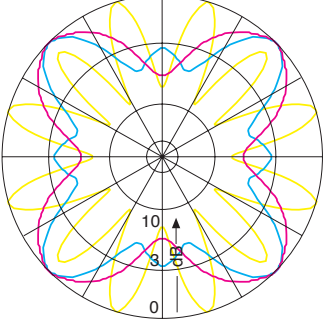
(Vertical spacing $0.96 \lambda = 1.8$ m)



Examples of Radiation Patterns at 390 MHz with Combinations of Panels 741517 (XPol)

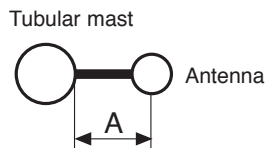
Array	Horizontal Radiation Pattern	Technical Data	
<p>1</p> 		<p>Distance A</p> <ul style="list-style-type: none"> — 0.16 m — 0.25 m — 0.5 m — 1.5 m 	<p>100% rel. field strength corresponds to a gain of</p> <ul style="list-style-type: none"> 9.85 dBi 9.95 dBi 9.45 dBi 9.55 dBi
<p>2</p> 		<p>Distance A</p> <ul style="list-style-type: none"> — 0.32 m — 0.5 m — 1.0 m — 2.0 m 	<p>100% rel. field strength corresponds to a gain of</p> <ul style="list-style-type: none"> 7.75 dBi 8.15 dBi 7.85 dBi 7.95 dBi
<p>3</p> 		<p>Distance A</p> <ul style="list-style-type: none"> — 0.16 m — 0.22 m — 0.65 m — 1.1 m 	<p>100% rel. field strength corresponds to a gain of</p> <ul style="list-style-type: none"> 5.85 dBi 5.75 dBi 6.55 dBi 6.35 dBi
<p>4</p> 		<p>Distance A</p> <ul style="list-style-type: none"> — 0.32 m — 0.5 m — 0.8 m — 2.1 m 	<p>100% rel. field strength corresponds to a gain of</p> <ul style="list-style-type: none"> 6.15 dBi 7.15 dBi 7.65 dBi 7.35 dBi

Examples of Radiation Patterns at 390 MHz with Combinations of Panels 80010252 (VPol)

Array	Horizontal Radiation Pattern	Technical Data	
<p>1</p> 		<p>Distance A</p> <ul style="list-style-type: none"> — 0.25 m — 0.5 m — 1.5 m 	<p>100% rel. field strength corresponds to a gain of</p> <ul style="list-style-type: none"> 9.55 dBi 9.35 dBi 9.85 dBi
<p>2</p> 		<p>Distance A</p> <ul style="list-style-type: none"> — 0.5 m — 1.0 m — 2.0 m 	<p>100% rel. field strength corresponds to a gain of</p> <ul style="list-style-type: none"> 8.05 dBi 7.75 dBi 8.35 dBi
<p>3</p> 		<p>Distance A</p> <ul style="list-style-type: none"> — 0.16 m — 0.22 m — 0.65 m — 1.1 m 	<p>100% rel. field strength corresponds to a gain of</p> <ul style="list-style-type: none"> 5.45 dBi 5.75 dBi 6.95 dBi 6.95 dBi
<p>4</p> 		<p>Distance A</p> <ul style="list-style-type: none"> — 0.5 m — 0.8 m — 2.1 m 	<p>100% rel. field strength corresponds to a gain of</p> <ul style="list-style-type: none"> 6.85 dBi 7.35 dBi 7.45 dBi

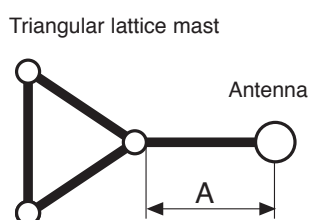
Examples of horizontal radiation patterns for different mast diameters where $A = 0.25 \lambda$; 0.5λ ; 0.75λ . Examples also apply for antenna K75292.

Distance A:

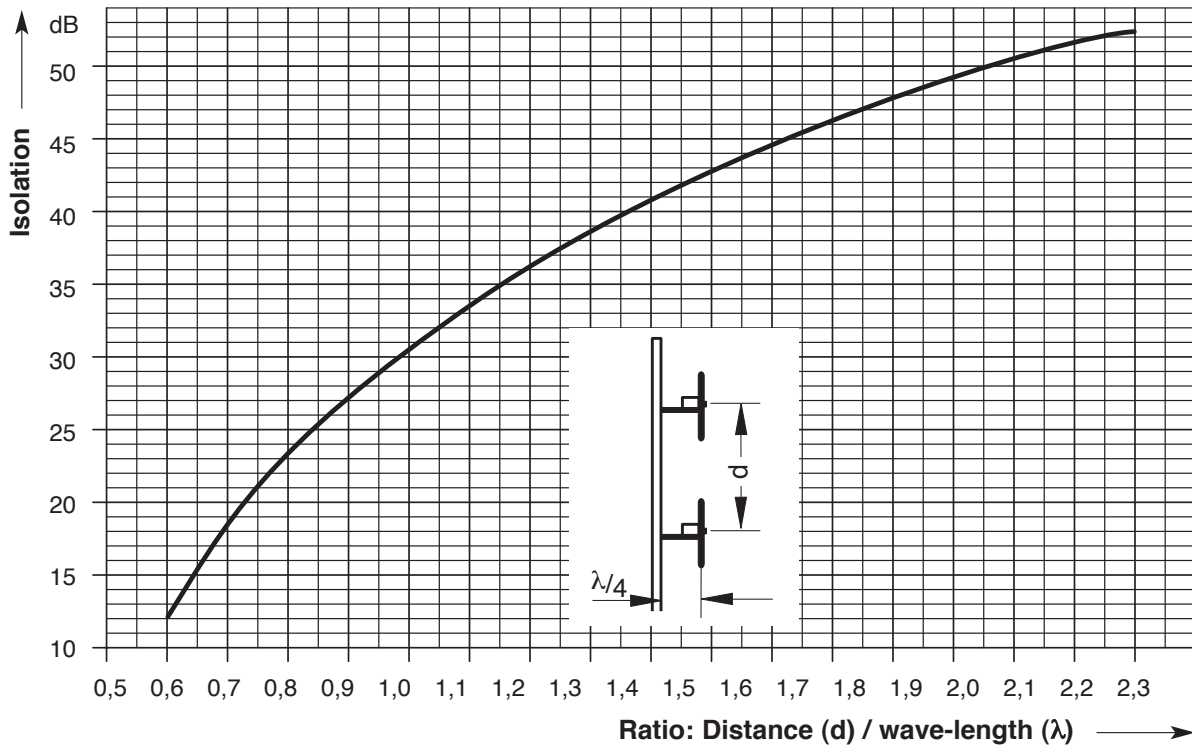


- $A = 0.25 \lambda$
- $A = 0.5 \lambda$
- $A = 0.75 \lambda$

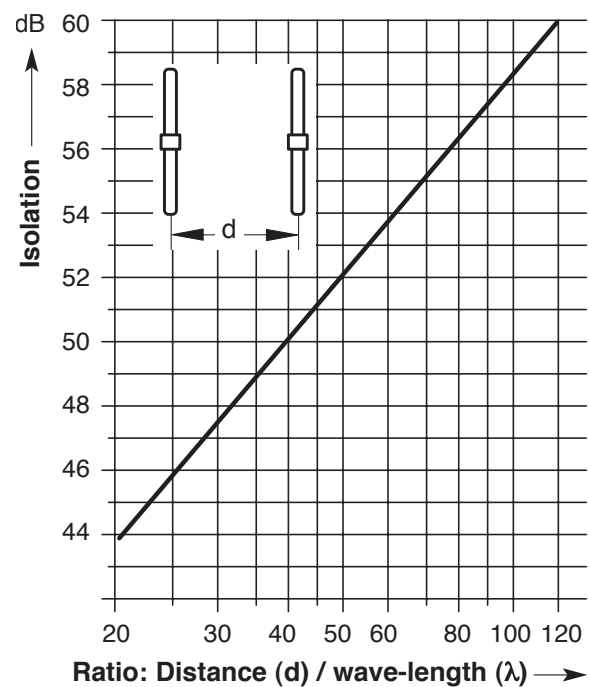
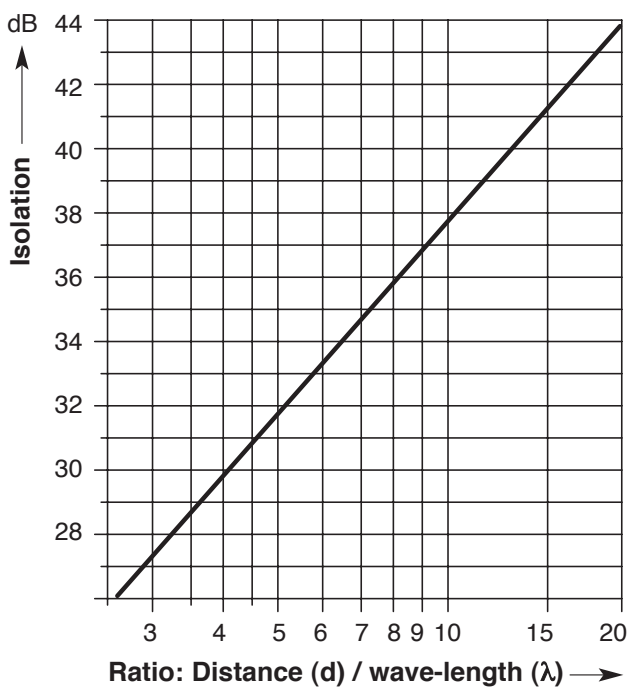
Mast diameter	Horizontal Radiation Pattern
60 mm	
160 mm	
250 mm	
600 mm	
Triangular lattice mast with side length of 500 mm	



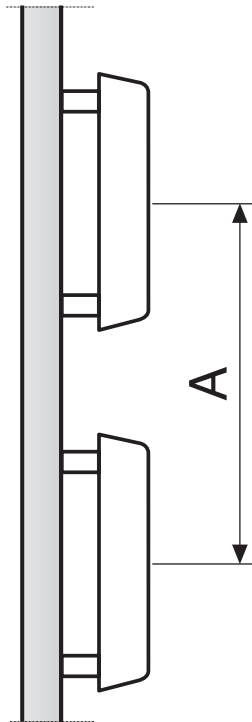
Isolation between two half-wave dipoles, vertically polarized and positioned vertically in line above each other on one common mast.



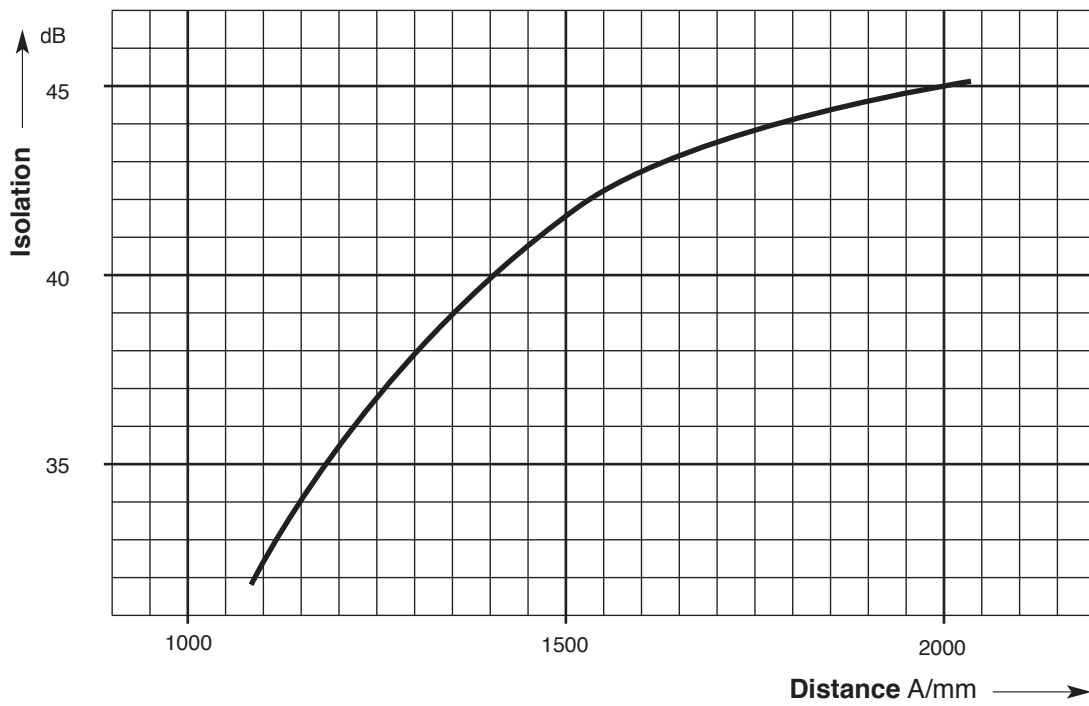
Isolation between two vertically polarized half-wave dipoles mounted laterally.



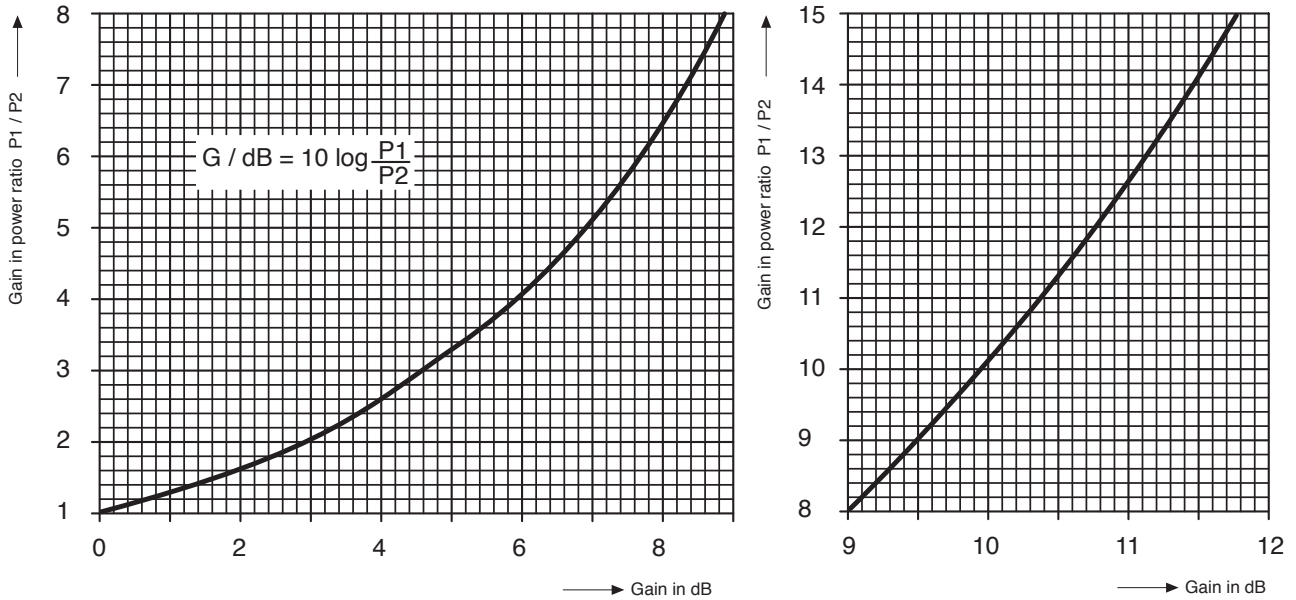
Isolation of Two Vertically Stacked Panels 80010252



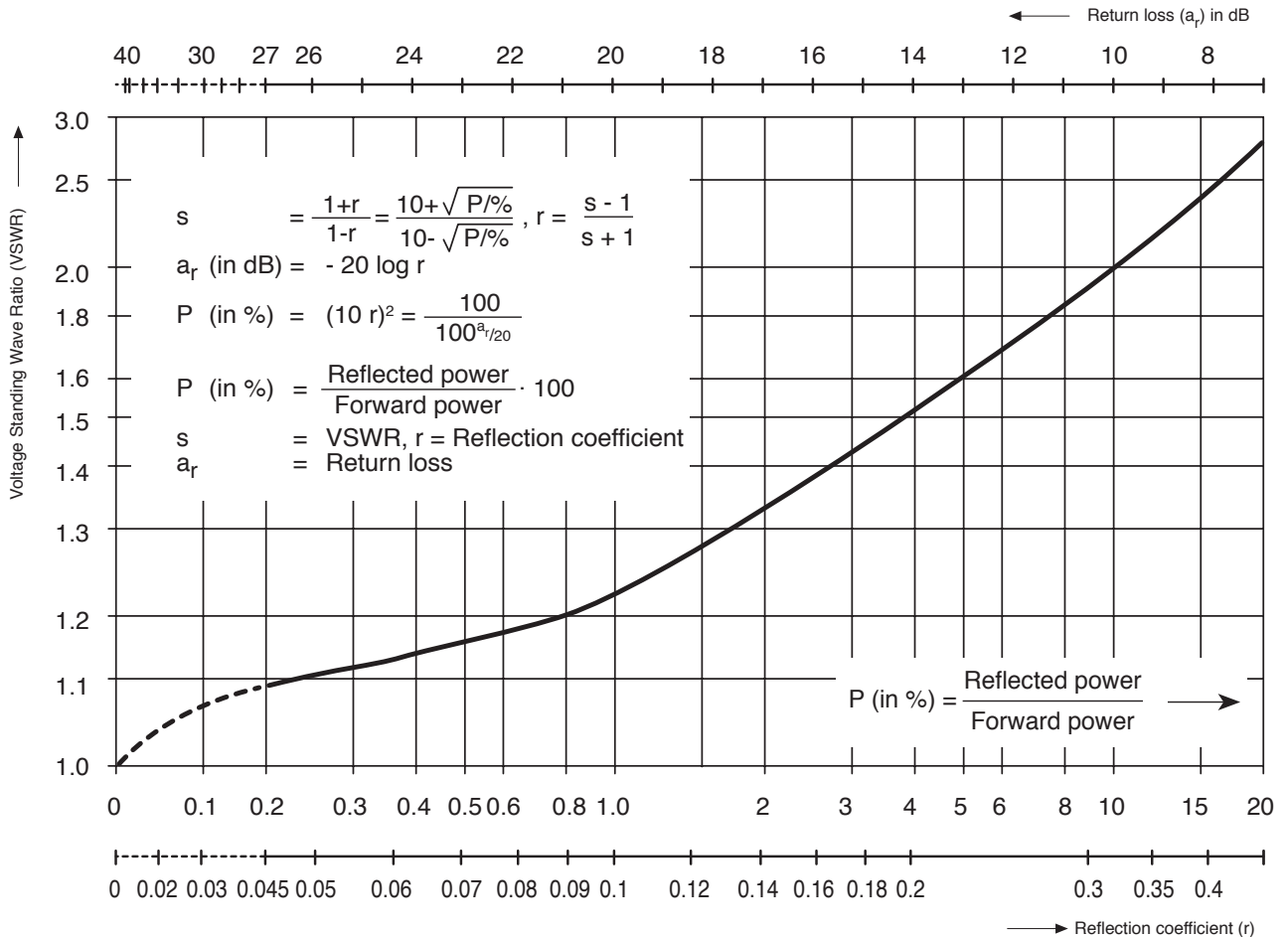
Isolation depends on vertical spacing A (at 450 MHz)



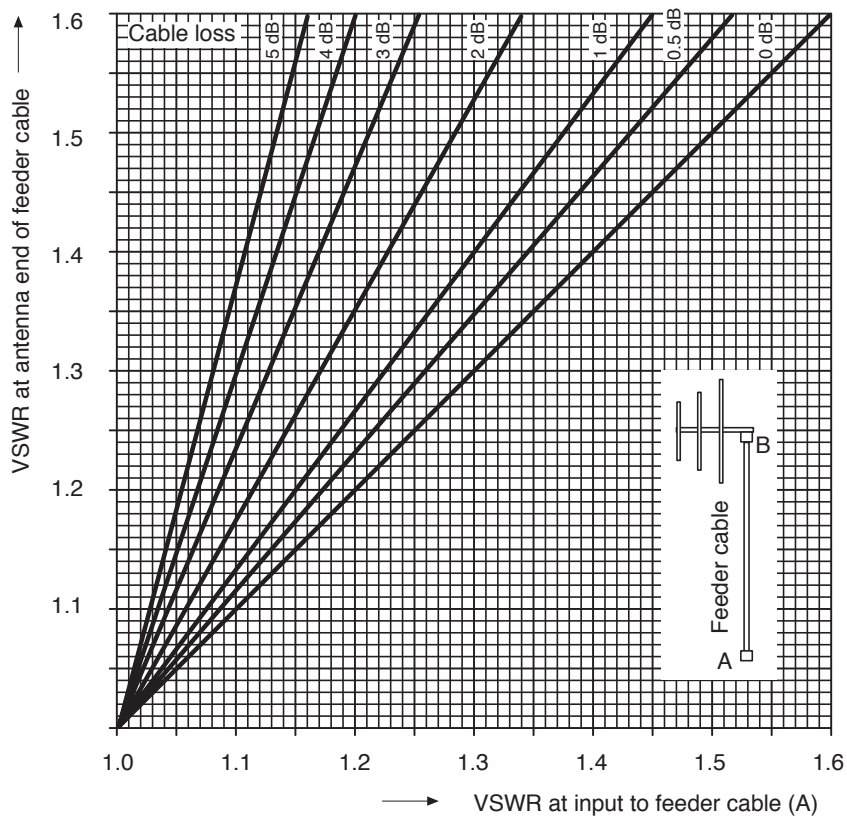
Antenna Gain in power ratio vs gain in dB



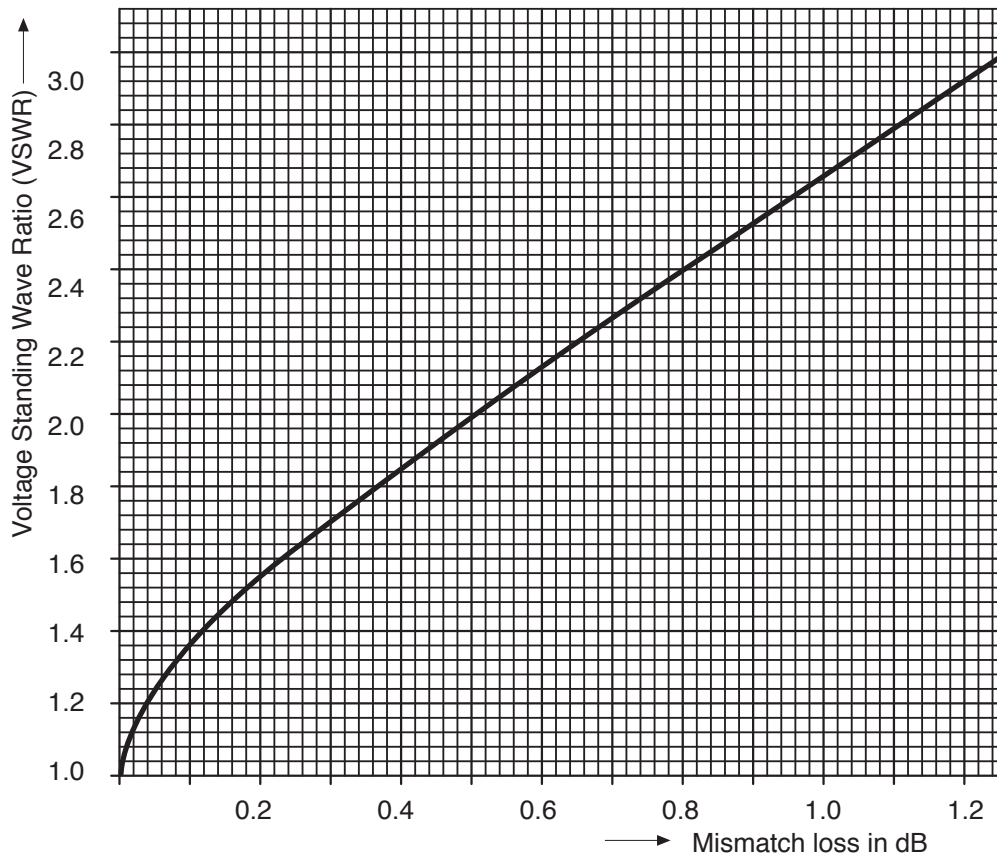
Voltage Standing Wave Ratio (VSWR) vs Reflected power



Reduction of VSWR as a result of feeder cable attenuation



Mismatch loss vs VSWR



Part 2:

Antenna Line Products

Filters

68 – 87.5 MHz
146 – 174 MHz
380 – 470 MHz

Duplexers

68 ... 87.5 MHz
146 ... 174 MHz
380 ... 470 MHz

Multiband Combiners and Transmitter Combiners

Filter Transmitter Combiners
Hybrid Transmitter Combiners
Multiband Combiners

System Components

3-dB Couplers
4.7-dB, 6-dB, 7-dB, 10-dB Couplers
Hybrid Ring Junctions
Decoupled Power Splitters
Circulators
DC-Stops
Attenuators
50-Ω Loads

Receiver Multicouplers

68 – 87.5 MHz
146 – 174 MHz
380 – 470 MHz

Combiner Systems

Summary of Types

The articles are listed by type number in numerical order

KATHREIN

Antennen · Electronic

Type No.	Page	Type No.	Page	Type No.	Page	Type No.	Page
718 290	132, 133	782 10369	153	790 965	110, 111	K 62 26 31 1	177
718 313	134, 135	782 10370	137, 139, 141	790 966	116, 117	K 62 26 31 7	177
718 388	130, 131	782 10371	136, 137	790 967	116, 117	K 62 26 40 1	176
718 987	126, 127	782 10372	136, 137	791 644	149	K 62 26 41 1	176
719 035	150	782 10373	136, 137	791 646	149	K 62 26 50 1	177
719 069	126, 127	782 10374	138, 139	791 649	149	K 62 26 50 7	177
719 237	134, 135	782 10375	138, 139	791 652	149	K 62 26 51 1	177
719 628	130, 131	782 10376	140, 141	791 918	175	K 62 26 61 1	176
719 782	169	782 10377	140, 141	791 919	175	K 62 70 21	164
719 785	132, 133	782 10379	153	791 920	175	K 62 70 41	159
719 792	150	782 10380	137, 140, 141	791 921	175	K 62 73 21	165
720 297	169	782 10457	154, 155	792 059	147	K 62 73 41	160
721 062	162	782 10458	154, 155	792 061	147	K 63 70 21	168
721 138	151	782 10460	154, 155	792 064	147	K 63 70 27	168
723 013	151	782 10850	163	792 067	147	K 63 73 21 1	171
724 348	173			792 100	146	K 64 12 41	104, 105
725 871	173	784 10063	149	792 101	146	K 64 13 41	104, 105
727 621	183	784 10140	148	792 102	146	K 64 21 25 1	112, 113
728 954	152	784 10165	148	792 119	114, 115	K 64 21 26 1	114, 115
730 092	170	784 10166	148	792 331	169	K 64 21 45 1	106, 107
780 060	167	784 10167	148	792 777	169	K 64 21 46 1	108, 109
780 232	182	784 10168	148	793 205	146	K 64 21 47 1	108, 109
780 234	181	784 10175	174	793 206	146	K 64 41 23	129
		784 10235	175	793 276	161	K 64 41 24	129
782 10189	172	784 10236	175	793 277	166	K 64 41 43	128
782 10231	172	784 10237	175			K 64 41 44	128
782 10361	136, 137	784 10238	175	K 62 26 11 1	176	K 64 50 4	150
782 10362	136, 137	784 10367	176	K 62 26 20 1	177	K 65 21 25 1	118, 119
782 10363	136, 137	784 10470	176	K 62 26 20 7	177	K 65 21 26 1	120, 121
782 10364	138, 139			K 62 26 21 1	177	K 65 41 25	142
782 10365	138, 139	790 215	174	K 62 26 21 7	177	K 65 41 26	142
782 10366	140, 141	790 244	151	K 62 26 30 1	177		
782 10367	140, 141	790 964	110, 111	K 62 26 30 7	177		

Filters

68 – 87.5 MHz
146 – 174 MHz
380 – 470 MHz

Filters:

Description	Type No.	Frequency range ... tunable bandwidth	Max. input power	Page
2-cavity Band-pass Filter	K 64 12 41	68 ... 87.5 MHz	50 W	104, 105
3-cavity Band-pass Filter	K 64 13 41	68 ... 87.5 MHz	50 W	104, 105
Band-pass Filter	K 64 21 45 1	68 ... 87.5 MHz	200 W	106, 107
S-P Filter	K 64 21 46 1	68 ... 87.5 MHz	200 W	108, 109
S-P Filter	K 64 21 47 1	68 ... 87.5 MHz	200 W	108, 109
2-cavity Band-pass Filter	790 965	146 ... 174 MHz	75 W	110, 101
3-cavity Band-pass Filter	790 964	146 ... 174 MHz	100 W	110, 101
Band-pass Filter	K 64 21 25 1	146 ... 174 MHz	200 W	112, 113
S-P Filter	792 119	146 ... 174 MHz	15 W	114, 115
S-P Filter	K 64 21 26 1	146 ... 174 MHz	200 W	114, 115
2-cavity Band-pass Filter	790 967	380 ... 470 MHz	50 W	116, 117
3-cavity Band-pass Filter	790 966	380 ... 470 MHz	50 W	116, 117
Band-pass Filter	K 65 21 25 1	380 ... 470 MHz	200 W	118, 119
S-P Filter	K 65 21 26 1	380 ... 470 MHz	200 W	120, 121

Band-pass Filter

68 ... 87.5 MHz

The band-pass filter is suitable for use as a receiving or transmitting filter for **one** receiver or transmitter.

It can be used:

- to improve the input selectivity of receivers and amplifiers,
- to increase the isolation of transmitters, whose respective antennas are mounted close together,
- to suppress noise side bands and inter-modulation products,
- as a combiner component.

Design and construction:

The band-pass filter consists of two or three high Q capacitively coupled resonators. The pass band frequency and the insertion loss are tunable.

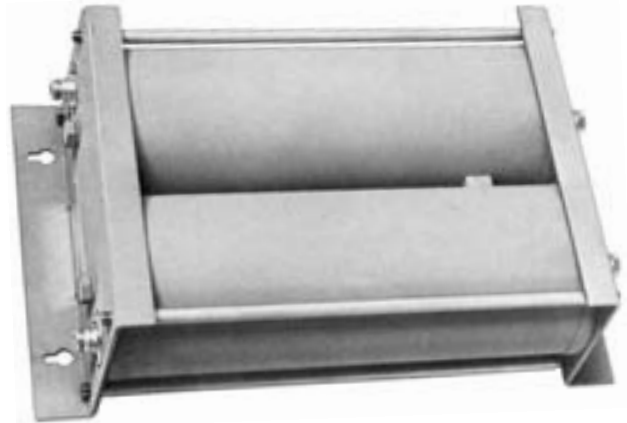
Filter characteristics:

Narrow pass band with low insertion loss, high stop band attenuation, variable filter response corresponding to the desired stop band attenuation.

Tuning:

The band-pass filter is tuned to the desired pass band frequency and insertion loss at the factory. Please specify desired pass band frequency **and** insertion loss (curve A, B) when ordering.

The band-pass filter can also be tuned on site using the supplied instructions.



K 64 12 41



K 64 13 41

Technical Data

Type No.	K 64 12 41 2-cavity band-pass filter		K 64 13 41 3-cavity band-pass filter	
Frequency range	68 ... 87.5 MHz			
Insertion loss at f_0	1 ... 2 dB, tunable			
	Tuning examples			
	1.0 dB curve A	2.0 dB curve B	1.5 dB curve A	2.0 dB curve B
VSWR	< 1.2 (at operating frequency)			
Impedance	50 Ω			
Input power	< 50 W	< 25 W	< 50 W	< 25 W
Temperature range	-30 ... +60 °C			
Temperature coefficient	< 18 x 10 ⁻⁶ / °C			
Connectors	N female			
Material	Brass, silver-plated			
Colour	Grey (RAL 7032)			
Installation	With 4 screws (max. 6 mm diameter)			
Weight	16 kg		24 kg	
Packing size	315 mm x 195 mm x 828 mm		435 mm x 195 mm x 828 mm	
Dimensions (w x h x d)	240 mm x 124 mm x 710 mm (with connectors)		360 mm x 124 mm x 710 mm (with connectors)	

Band-pass Filter

68 ... 87.5 MHz

Typical attenuation curves

Tuning examples:

2-cavity band-pass filter K 64 12 41

Diagram I:

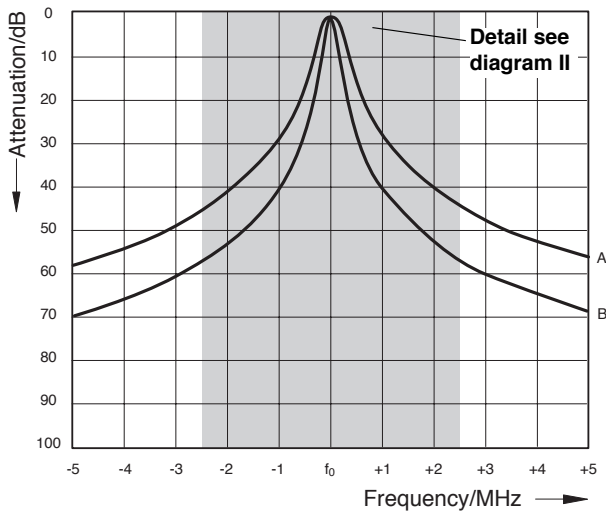


Diagram II:

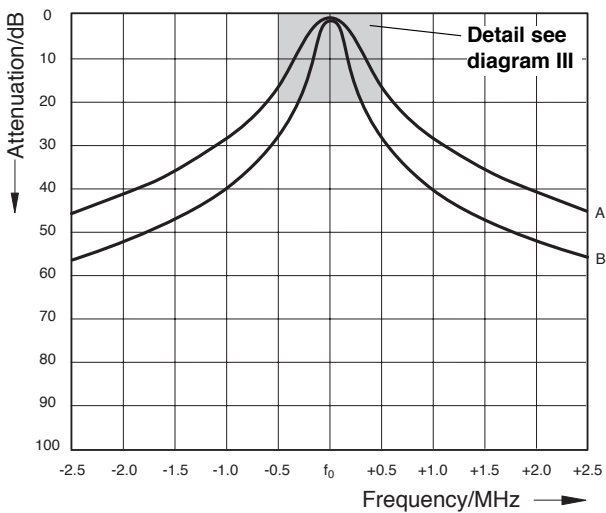
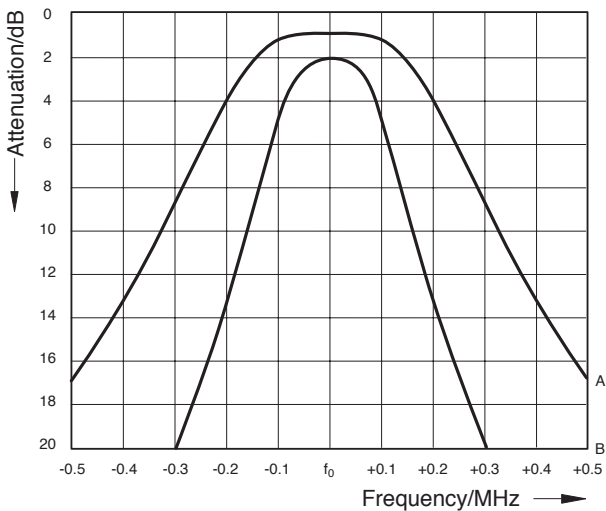


Diagram III:



3-cavity band-pass filter K 64 13 41

Diagram I:

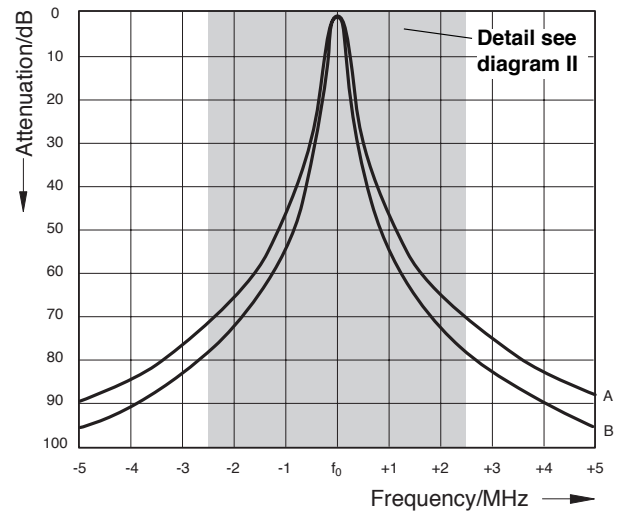


Diagram II:

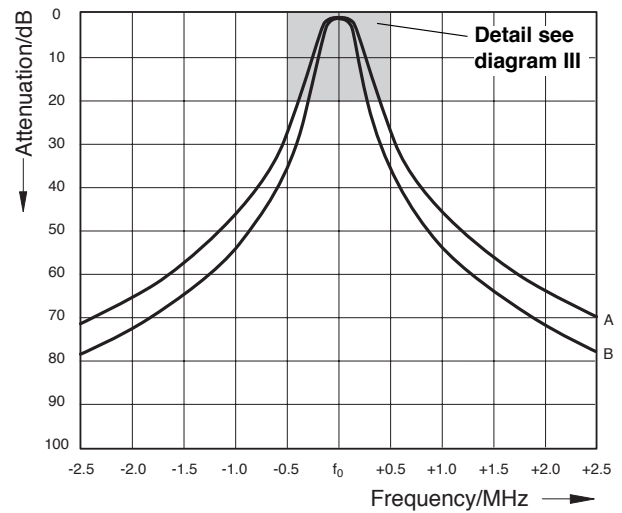
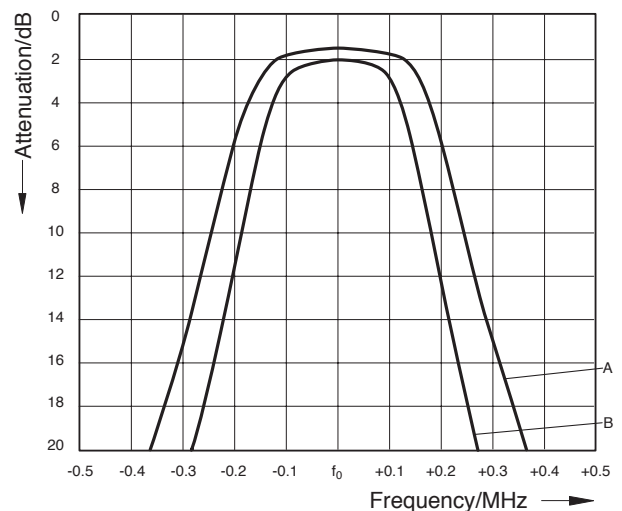


Diagram III:



Band-pass Filter

68 ... 87.5 MHz

The band-pass filter is suitable for use as a receiving or transmitting filter for **one** receiver or transmitter.

It can be used:

- to improve the input selectivity of receivers and amplifiers,
- to increase the isolation of transmitters, whose respective antennas are mounted close together,
- to suppress noise side bands and inter-modulation products,
- as a combiner component.

Design and construction:

The band-pass filter is designed as a temperature stabilized $\lambda/4$ coaxial resonator. The pass band frequency and the insertion loss are tunable.

Filter characteristics:

Narrow pass band with low insertion loss, high stop band attenuation, variable filter response corresponding to the desired stop band attenuation.

Combination of several band-pass filters:

Several band-pass filters can be interconnected using cables of an electrical length of $\lambda/4$. This causes an increase in the edge steepness of the filter curve as well as the bandwidth of the pass band. The individual filters are tuned to the center frequency of the complete filter.

Insertion loss of the filter combination =
Sum insertion loss of the individual filters +
cable attenuation of the interconnecting
cables (about 0.1 dB per cable).
Stop band attenuation of the filter combination = Sum stop band attenuation of individual filters + additional stop band attenuation.

If the stop band attenuation of the individual filters exceeds 10 dB, approximately the following applies:
additional stop band attenuation =
(n – 1) x 5 dB;
n = number of individual filters.
For special applications band-pass filters can also be interconnected with S-P filters.

Tuning:

The band-pass filter is tuned to the desired pass band frequency and insertion loss at the factory. Please specify desired pass band frequency **and** insertion loss (curve A, B, C, D) when ordering.

The band-pass filter can also be tuned on site using the supplied instructions.



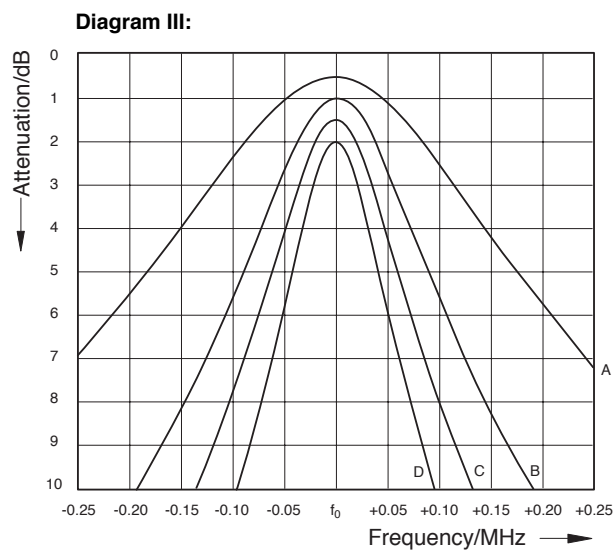
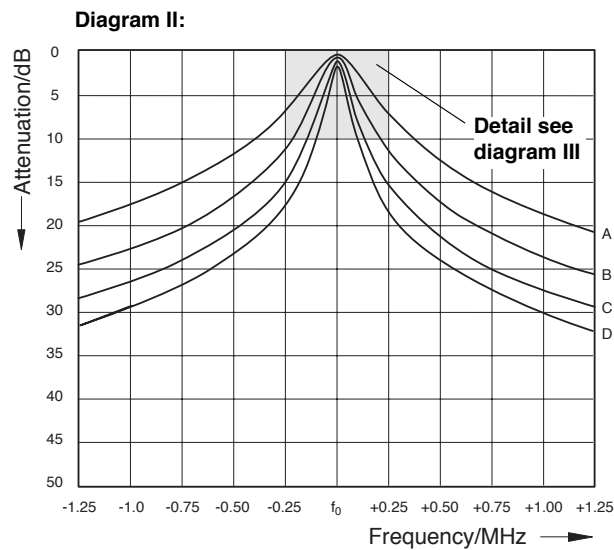
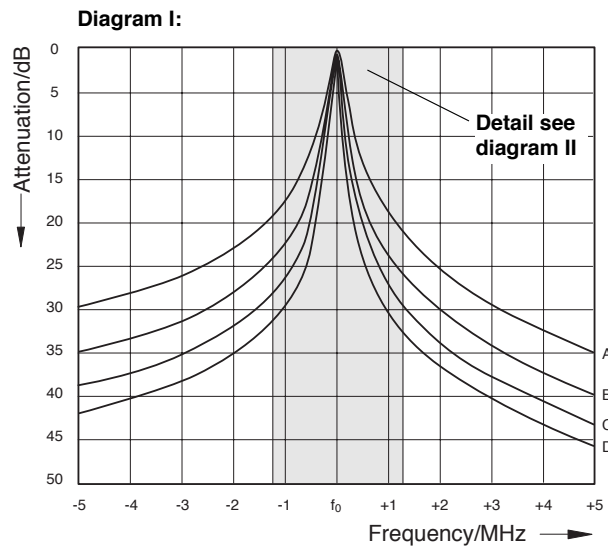
K 64 21 45 1

Technical Data

Type No.	K 64 21 45 1			
Frequency range	68 ... 87.5 MHz			
Insertion loss at f_0	0.5 ... 2 dB, tunable			
	Tuning examples			
	0.5 dB curve A	1.0 dB curve B	1.5 dB curve C	2.0 dB curve D
VSWR	< 1.5 (at operating frequency)			
Impedance	50 Ω			
Input power	< 200 W			
Temperature range	–30 ... +60 °C			
Effect of temperature	< 0.2 kHz / °C			
Connectors	N female			
Material	Outer conductor: Aluminium Inner conductor: Brass, silver-plated			
Installation	Free standing or wall mounting with mounting angles			
Attached hardware	Band-pass filter with 2 mounting angles and 2 connecting pieces			
Weight	16 kg			
Packing size	207 mm x 1660 mm x 207 mm			
Dimensions (w x h x d)	190 mm x max. 1500 mm x 190 mm (with tuning rod)			

Band-pass Filter 68 ... 87.5 MHz Typical attenuation curves

Tuning examples:



S-P Filter

68 ... 87.5 MHz

The S-P filter (Stop-Pass filter) is used to attenuate interfering signals located extremely close to the operational frequency.

It can be used:

- in the transmission path to suppress side band noise and to attenuate inter-modulation products at the receiving frequencies,
- in the receiving path to attenuate transmitting frequencies,
- as a component for combiners with very low frequency spacing.

Design and construction:

The S-P filter is designed as a high Q temperature stabilized $\lambda/4$ coaxial resonator. Using a special temperature stabilized coupling, high stop band attenuation can be adjusted very close to the pass band frequency.

Filter characteristics:

Narrow pass band with low insertion loss, high stop band attenuation at the stop band frequency. Even in case of very small spacing between the pass band and the stop band frequency a high stop band attenuation is achieved, which can not be achieved using standard band-pass filters of the same size.

Combination of several S-P filters:

Several S-P filters can be interconnected by cables with an electrical length of $\lambda/4$.

Insertion loss of the filter combination =
Sum insertion loss of the individual filters +
cable attenuation of the interconnecting
cables (about 0.1 dB per cable). Stop band
attenuation of the filter combination =
Sum stop band attenuation of the individual
filters + additional stop band attenuation.

If the stop band attenuation of the individual filters exceeds 10 dB, approximately the following applies:
additional stop band attenuation =
(n - 1) x 5 dB;
n = number of individual filters.
For special applications S-P filters can also be interconnected with band-pass filters.

Tuning:

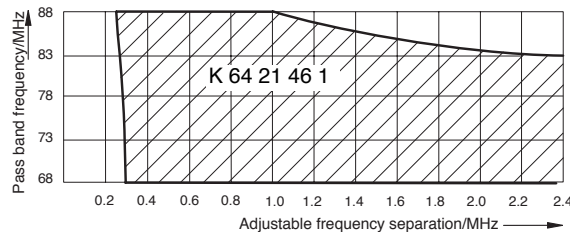
The S-P filter is tuned to the desired pass band and stop band frequency at the factory. Please specify desired pass band and stop band frequency when ordering.

The S-P filter can also be tuned on site using the supplied instructions.

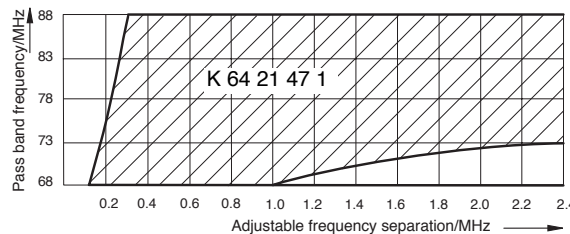
Customized versions

For special applications S-P filters for even lower frequency spacing or lower insertion loss are available.

Pass band frequency below the stop band frequency



Pass band frequency above the stop band frequency



K 64 21 46 1
K 64 21 47 1

Technical Data

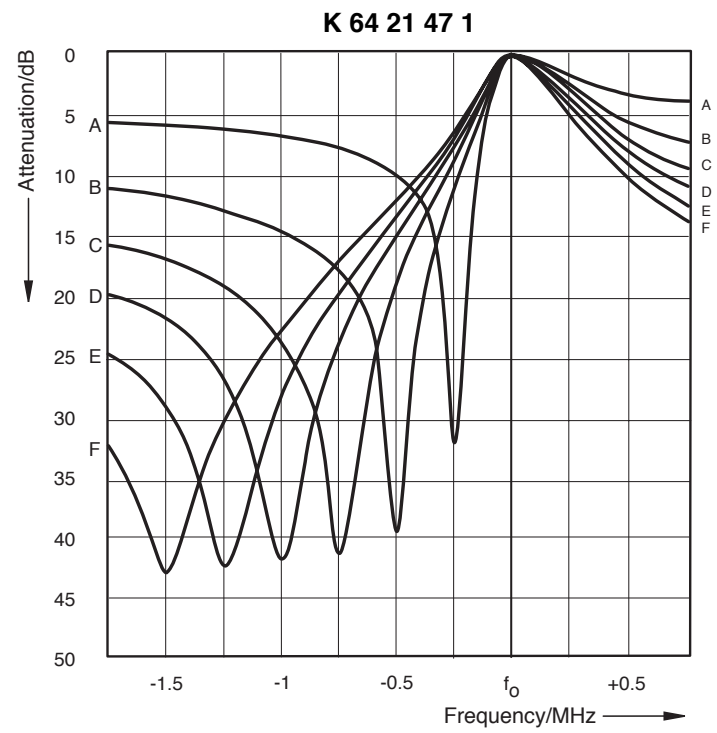
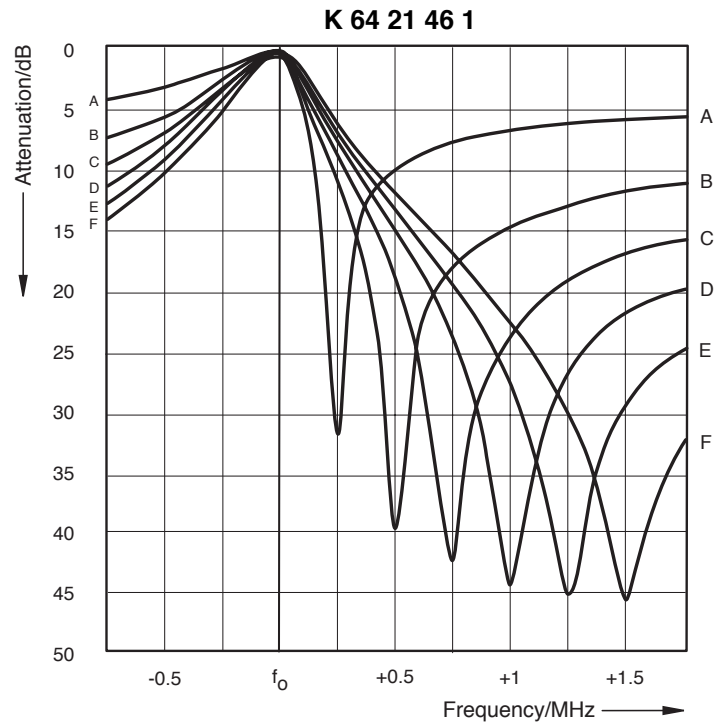
Type No.	K 64 21 46 1	K 64 21 47 1
Frequency range	68 ... 87.5 MHz	
Insertion loss	0.5 ±0.15 dB	
VSWR	< 1.5 (at operating frequency)	
Impedance	50 Ω	
Input power	< 200 W	
Temperature range	-20 ... +60 °C	
Effect of temperature	< 0.2 kHz / °C	
Connectors	N female	
Material	Outer conductor: Aluminium Inner conductor: Brass, silver-plated	
Installation	Free standing or wall mounting	
Attached hardware	S-P filter with 2 mounting angles and 2 connecting pieces	
Weight	16 kg	
Packing size	210 mm x 1660 mm x 210 mm	
Dimensions (w x h x d)	190 mm x max. 1500 mm x 190 mm (with tuning rod)	

S-P Filter

68 ... 87.5 MHz

Typical attenuation curves

Tuning examples:



Curve	Frequency spacing pass band frequency / stop band frequency
A	0.25 MHz
B	0.50 MHz
C	0.75 MHz
D	1.00 MHz
E	1.25 MHz
F	1.50 MHz

Band-pass Filter

146 ... 174 MHz

The band-pass filter is suitable for use as a receiving or transmitting filter, for **one or several** receivers or transmitters.

It can be used:

- to improve the input selectivity of receivers and amplifiers,
- to increase the isolation of transmitters, whose respective antennas are mounted close together,
- to suppress noise side bands and inter-modulation products,
- as a combiner component.

Design and construction:

The band-pass filter consists of two or three high Q inductively coupled resonators. The pass band frequency and the insertion loss are tunable.

Filter characteristics:

Narrow pass band with low insertion loss, high stop band attenuation, variable filter response corresponding to the desired stop band attenuation.

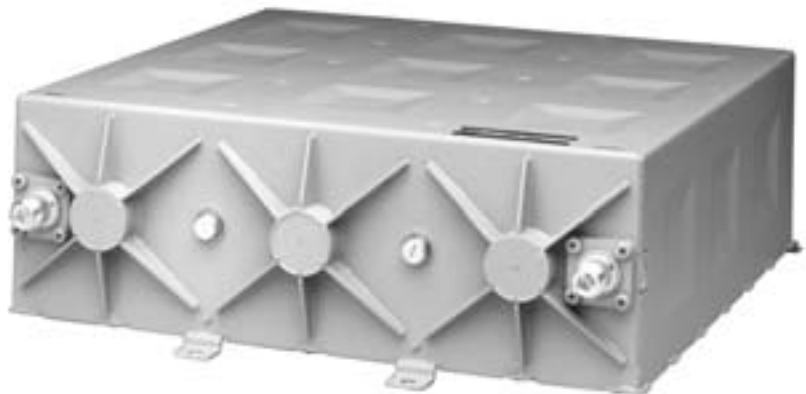
Tuning:

The band-pass filter is tuned to the desired pass band frequency and insertion loss at the factory. Please specify desired pass band frequency **and** insertion loss (curve A, B, C) when ordering.

The band-pass filter can also be tuned on site using the supplied instructions.



790 965



790 964

Technical Data

Type No.	790 965 2-cavity band-pass filter			790 964 3-cavity band-pass filter		
Frequency range	146 ... 174 MHz					
Insertion loss at f_0	1 ... 2 dB, tunable					
	Tuning examples					
	1.0 dB curve A	1.5 dB curve B	2.0 dB curve C	1.0 dB curve A	1.5 dB curve B	2.0 dB curve C
VSWR	< 1.3 (at operating frequency)					
Impedance	50 Ω					
Input power	< 75 W	< 50 W	< 25 W	< 100 W	< 75 W	< 50 W
Temperature range	-30 ... +60 °C					
Effect of temperature	-1.4 kHz / °C					
Connectors	N female, silver-plated					
Material	Brass, silver-plated					
Colour	Grey (RAL 7032)					
Installation	With 3 screws (max. 8 mm diameter)			With 4 screws (max. 8 mm diameter)		
Weight	5.7 kg			8.4 kg		
Packing size	500 mm x 190 mm x 320 mm			500 mm x 190 mm x 440 mm		
Dimensions (w x h x d)	419 mm x 121 mm x 232 mm (with connectors)			419 mm x 121 mm x 345 mm (with connectors)		

Band-pass Filter

146 ... 174 MHz

Typical attenuation curves

Tuning examples:

2-cavity band-pass filter 790 965

Diagram I:

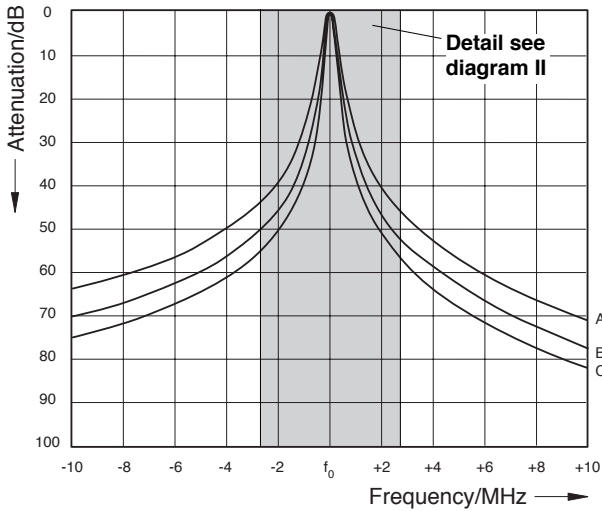


Diagram II:

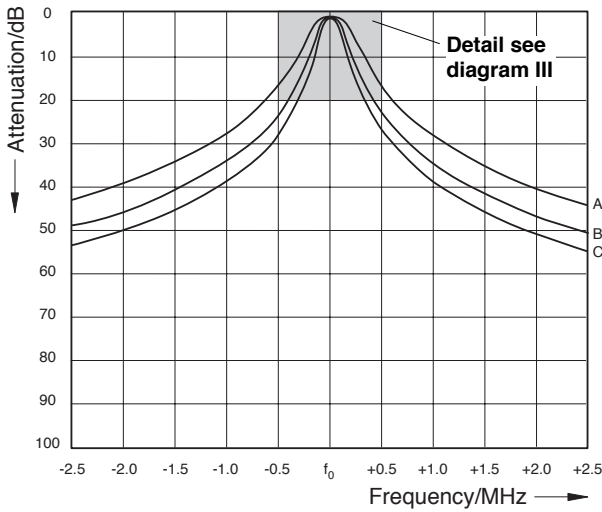
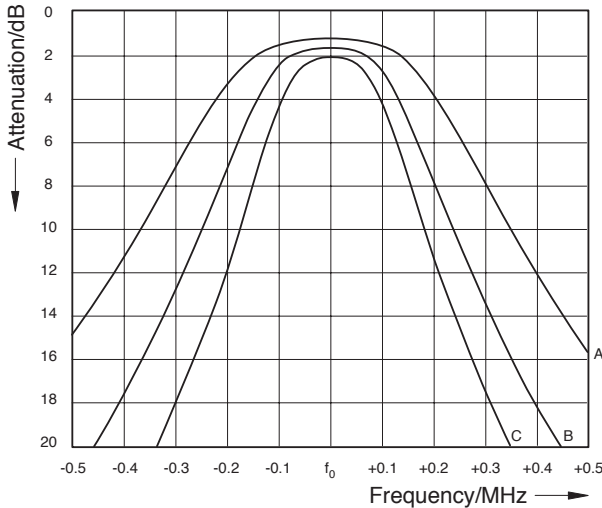


Diagram III:



3-cavity band-pass filter 790 964

Diagram I:

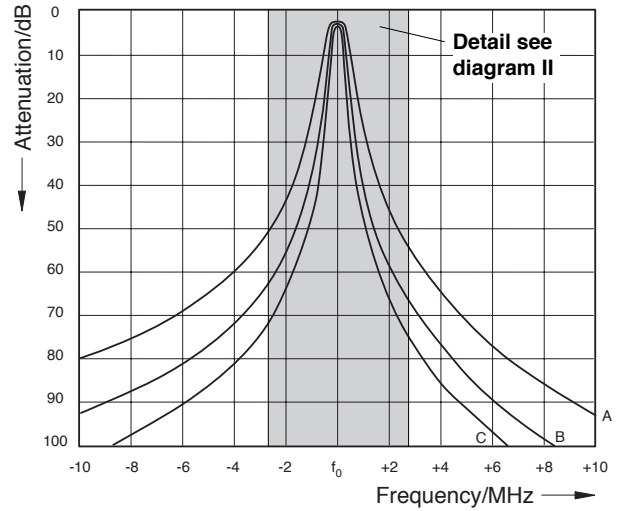


Diagram II:

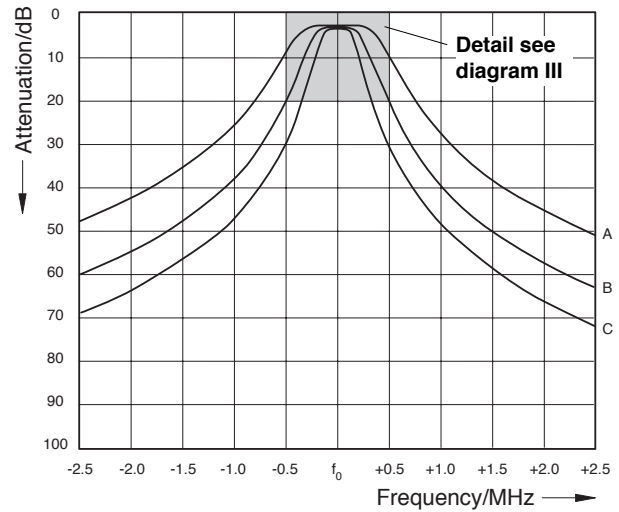
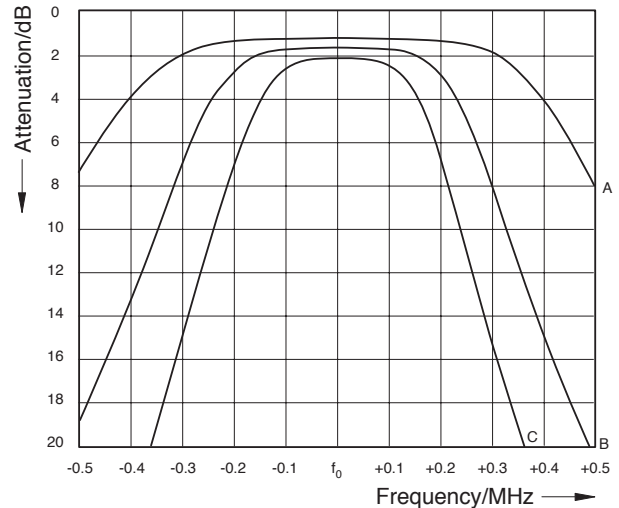


Diagram III:



Band-pass Filter

146 ... 174 MHz

The band-pass filter is suitable for use as a receiving or transmitting filter for **one** receiver or transmitter.

It can be used:

- to improve the input selectivity of receivers and amplifiers,
- to increase the isolation of transmitters, whose respective antennas are mounted close together,
- to suppress noise side bands and inter-modulation products,
- as a combiner component.

Design and construction:

The band-pass filter is designed as a temperature stabilized $\lambda/4$ coaxial resonator. The pass band frequency and the insertion loss are tunable.

Filter characteristics:

Narrow pass band with low insertion loss, high stop band attenuation, variable filter response corresponding to the desired stop band attenuation.

Combination of several band-pass filters:

Several band-pass filters can be interconnected using cables of an electrical length of $\lambda/4$. This causes an increase in the edge steepness of the filter curve as well as the bandwidth of the pass band. The individual filters are tuned to the center frequency of the complete filter.

Insertion loss of the filter combination =
Sum insertion loss of the individual filters +
cable attenuation of the interconnecting
cables (about 0.1 dB per cable).
Stop band attenuation of the filter combina-
tion = Sum stop band attenuation of indi-
vidual filters + additional stop band attenua-
tion.

If the stop band attenuation of the individual filters exceeds 10 dB, approximately the following applies:
additional stop band attenuation =
(n - 1) x 5 dB;
n = number of individual filters.
For special applications band-pass filters can also be interconnected with S-P filters.

Tuning:

The band-pass filter is tuned to the desired pass band frequency and insertion loss at the factory. Please specify desired pass band frequency **and** insertion loss (curve A, B, C, D) when ordering.

The band-pass filter can also be tuned on site using the supplied instructions.

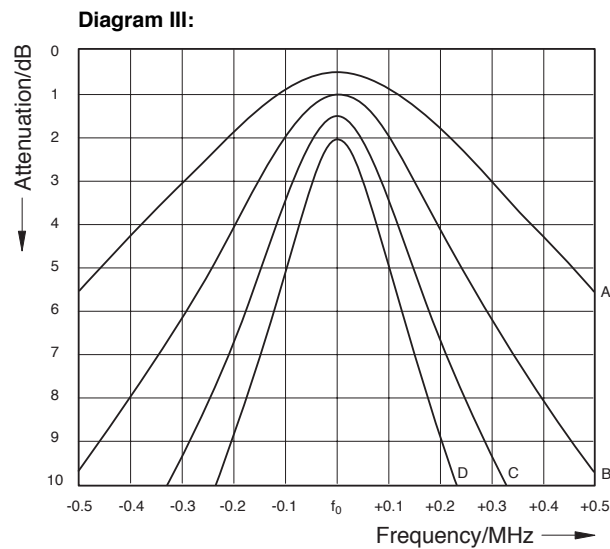
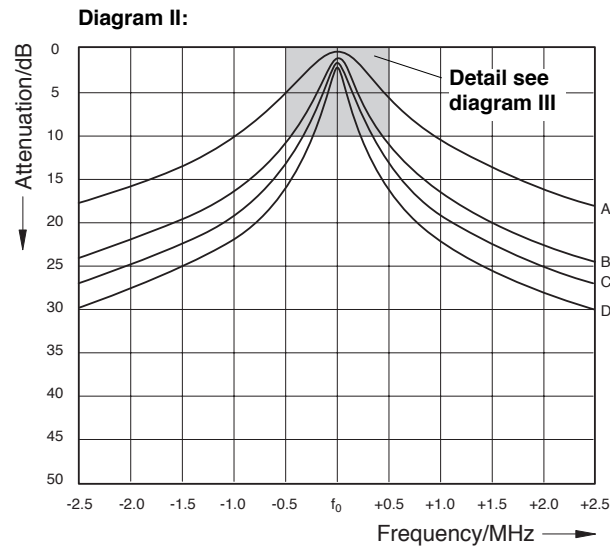
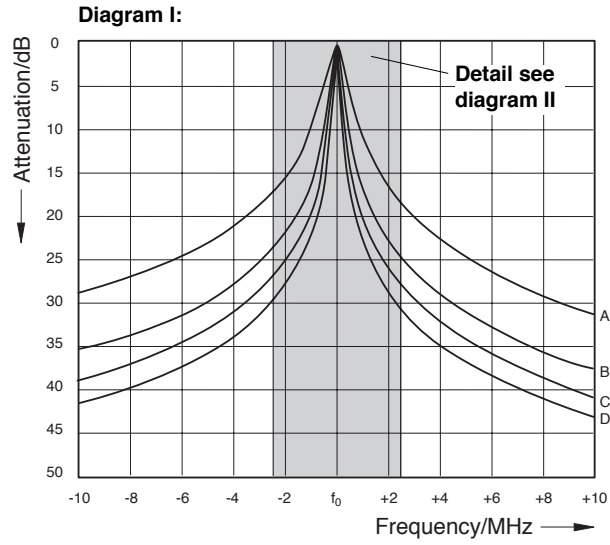


Technical Data

Type No.	K 64 21 25 1			
Frequency range	146 ... 174 MHz			
Insertion loss at f_0	0.5 ... 2 dB, tunable			
	Tuning examples			
	0.5 dB curve A	1.0 dB curve B	1.5 dB curve C	2.0 dB curve D
VSWR	< 1.5 (at operating frequency)			
Impedance	50 Ω			
Input power	< 200 W			
Temperature range	-30 ... +60 °C			
Effect of temperature	< 0.4 kHz / °C			
Connectors	N female			
Material	Outer conductor: Aluminium Inner conductor: Brass, silver-plated			
Installation	Free standing or wall mounting with mounting angles			
Attached hardware	Band-pass filter with 2 mounting angles and 2 connecting pieces			
Weight	9 kg			
Packing size	207 mm x 865 mm x 207 mm			
Dimensions (w x h x d)	190 mm x max. 770 mm x 190 mm (with tuning rod)			

Band-pass Filter 146 ... 174 MHz Typical attenuation curves

Tuning examples:



S-P Filter

146 ... 174 MHz

The S-P filter (Stop-Pass filter) is used to attenuate interfering signals located extremely close to the operational frequency.

It can be used:

- in the transmission path to suppress side band noise and to attenuate intermodulation products at the receiving frequencies,
- in the receiving path to attenuate transmitting frequencies,
- as a component for combiners with very low frequency spacing.

Design and construction:

The S-P filter is designed as a high Q temperature stabilized $\lambda/4$ coaxial resonator. Using a special temperature stabilized coupling, high stop band attenuation can be adjusted very close to the pass band frequency.

Filter characteristics:

Narrow pass band with low insertion loss, high stop band attenuation at the stop band frequency. Even in case of very small spacing between the pass band and the stop band frequency a high stop band attenuation is achieved, which can not be achieved using standard band-pass filters of the same size.

Combination of several S-P filters:

Several S-P filters can be interconnected by cables with an electrical length of $\lambda/4$.

Insertion loss of the filter combination =
Sum insertion loss of the individual filters + cable attenuation of the interconnecting cables (about 0.1 dB per cable). Stop band attenuation of the filter combination =
Sum stop band attenuation of the individual filters + additional stop band attenuation.

If the stop band attenuation of the individual filters exceeds 10 dB, approximately the following applies:

additional stop band attenuation =
(n – 1) x 5 dB;

n = number of individual filters.

For special applications S-P filters can also be interconnected with band-pass filters.

Tuning:

The S-P filter is tuned to the desired pass band and stop band frequency at the factory. Please specify desired pass band **and** stop band frequency when ordering.

The S-P filter can also be tuned on site using the supplied instructions.



K 64 21 26 1
792 119

Technical Data

Type No.	792 119	K 64 21 26 1
Frequency range	146 ... 174 MHz	
Frequency spacing:		
Pass band / stop band frequency	60 – 150 kHz ¹⁾ 150 – 300 kHz ²⁾ > 300 kHz ³⁾	> 300 kHz
Insertion loss	< 1.0 dB	0.5 ±0.15 dB
VSWR	< 1.5 (at operating frequency)	
Impedance	50 Ω	
Input power	< 15 W ¹⁾ < 100 W ²⁾ < 200 W ³⁾	< 200 W
Temperature range	0 ... +35 °C ¹⁾ 0 ... +50 °C ²⁾ –20 ... +60 °C ³⁾	–20 ... +60 °C
Effect of temperature	< 0.4 kHz / °C	
Connectors	N female	
Material	Outer conductor: Aluminium, Inner conductor: Brass, silver-plated	
Installation	Free standing or wall mounting	
Attached hardware	S-P filter with 2 mounting angles and 2 connecting pieces	
Weight	Approx. 9 kg	
Packing size	207 mm x 865 mm x 207 mm	
Dimensions (w x h x d)	190 mm x max. 770 mm x 190 mm (with tuning rod)	

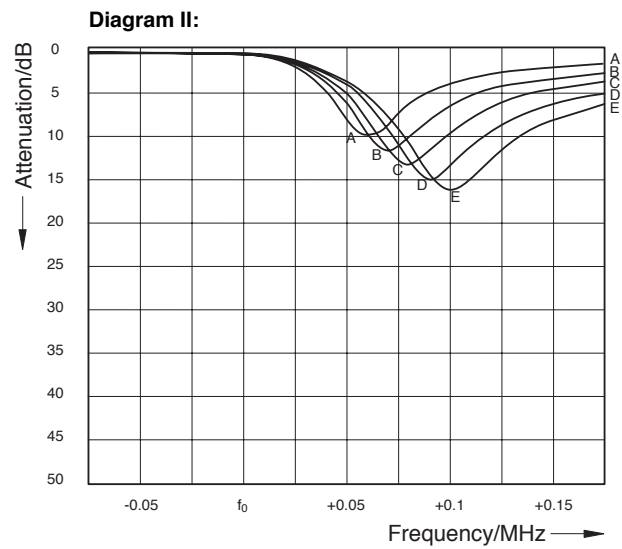
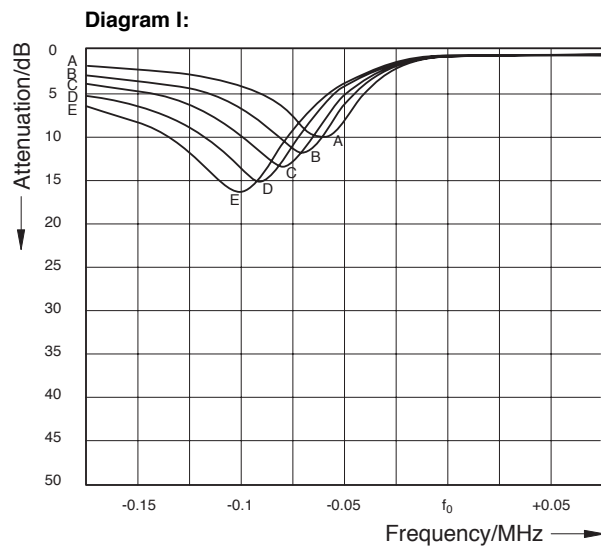
S-P Filter

146 ... 174 MHz

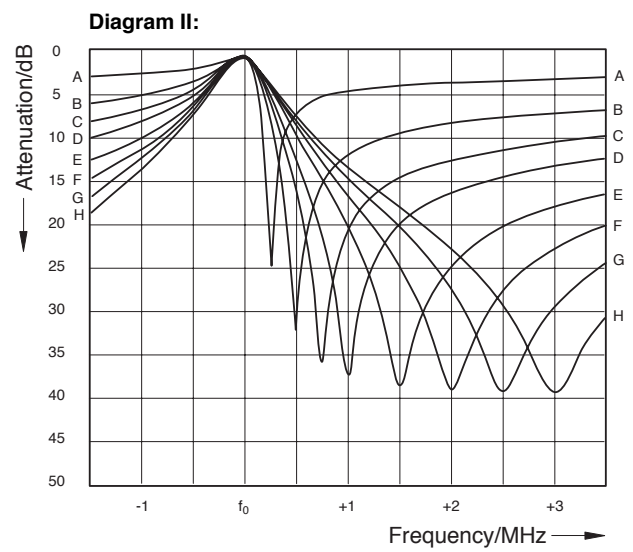
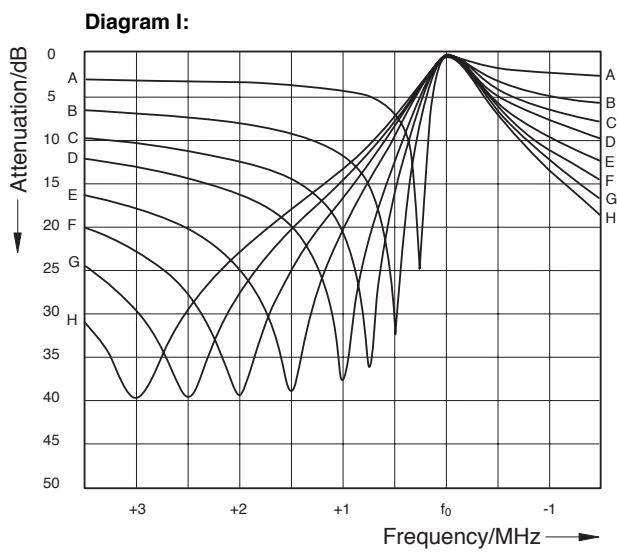
Typical attenuation curves

Tuning examples:

792 119



K 64 21 26 1



Band-pass Filter

380 ... 470 MHz

The band-pass filter is suitable as receiving or transmitting filter, for **one or more** transmitting or receiving channels.

It can be used:

- to improve the input selectivity of receivers and amplifiers,
- to increase the isolation of transmitters, whose respective antennas are mounted close together,
- to suppress noise sidebands and inter-modulation products,
- as a component to form combiners.

Design and construction:

The band-pass filter consists of two or three high Q inductively coupled resonators. The pass band frequency, the coupling between the resonators as well as the input and output coupling are adjustable.

Filter characteristics:

Narrow pass band range with low insertion loss, high stop band attenuation, variable filter response corresponding to the desired stop band attenuation.

Tuning:

The band-pass filter is tuned to the desired pass band frequency and insertion loss at the factory. Please specify desired pass band frequency and insertion loss (curve A, B, C) when ordering.

The band-pass filter can also be tuned on site using the supplied instructions.



790 967



790 966

Technical Data

Type No.	790 967 2-cavity band-pass filter			790 966 3-cavity band-pass filter		
Frequency range	380 ... 470 MHz					
Insertion loss	1 ... 2 dB, tunable					
	1.0 dB curve A	1.5 dB curve B	2.0 dB curve C	1.0 dB curve A	1.5 dB curve B	2.0 dB curve C
VSWR	< 1.3 (at pass band frequency)					
Impedance	50 Ω					
Input power	< 50 W	< 35 W	< 25 W	< 75 W	< 50 W	< 35 W
Temperature range	-30 ... +60 °C					
Effect of temperature	-2.5 kHz / °C					
Connectors	N female, silver-plated					
Material	Brass, silver-plated					
Colour	Grey (RAL 7032)					
Installation	With 3 screws (M6)			With 4 screws (M6)		
Weight	3.2 kg			4.5 kg		
Packing size	310 mm x 210 mm x 310 mm			410 mm x 215 mm x 255 mm		
Dimensions (w x h x d)	232 mm x 121 mm x 188 mm (with connectors)			345 mm x 121 mm x 188 mm (with connectors)		

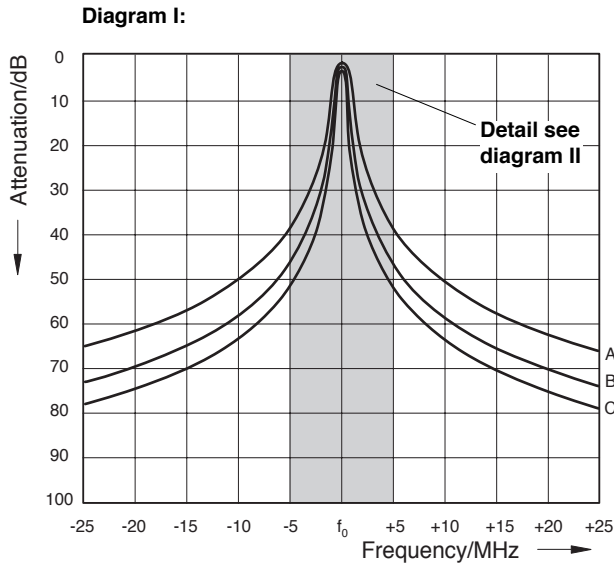
Band-pass Filter

380 ... 470 MHz

Typical attenuation curves

Tuning example:

2-cavity band-pass filter
790 967



3-cavity band-pass filter
790 966

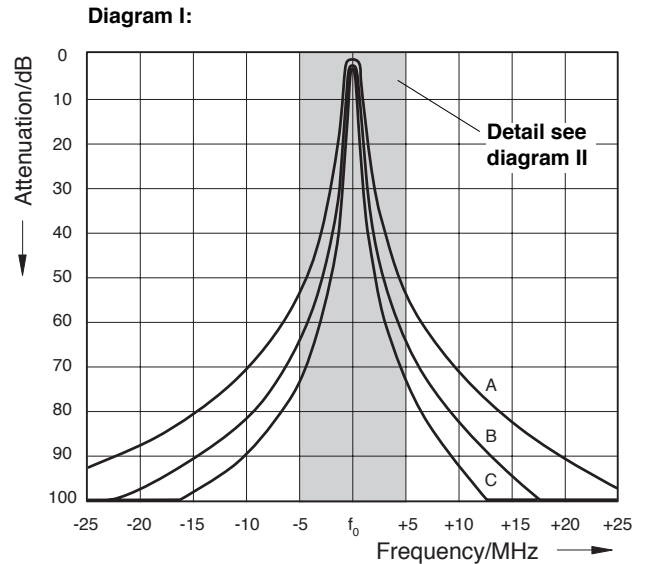


Diagram II:

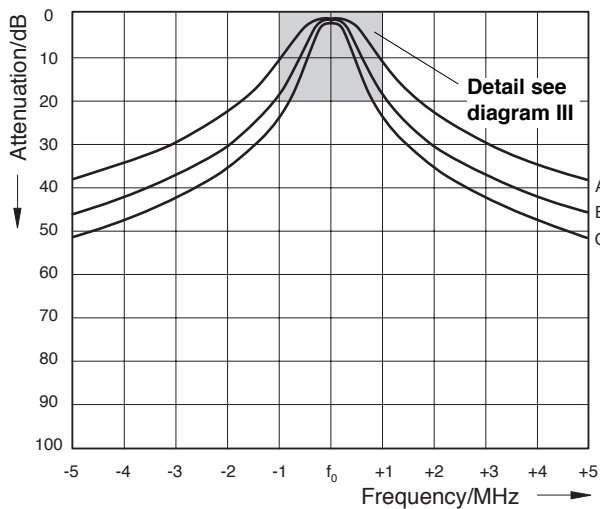


Diagram II:

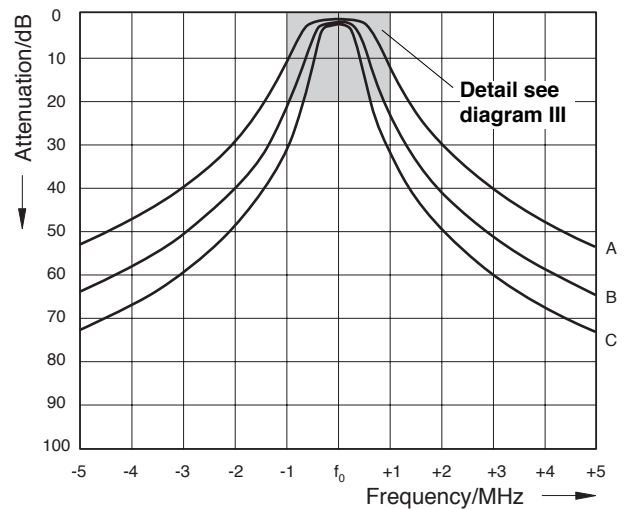


Diagram III:

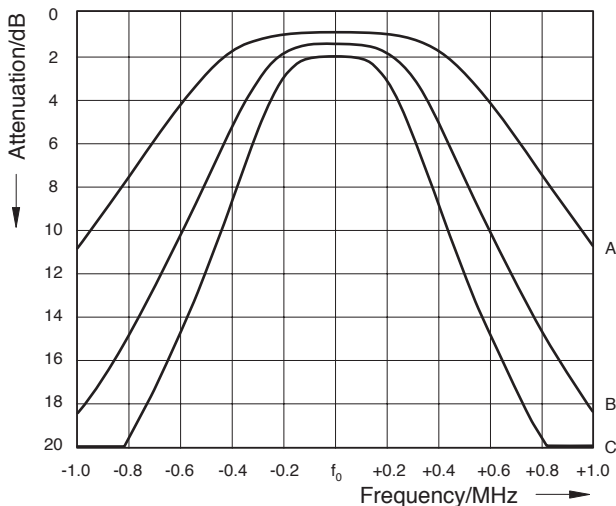
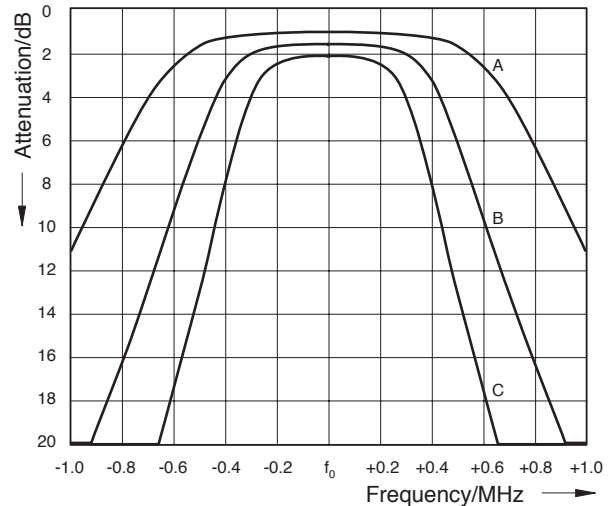


Diagram III:



Band-pass Filter

380 ... 470 MHz

The band-pass filter is suitable as receiving or transmitting filter, for **one** transmitting or receiving channel.

It can be used:

- to improve the input selectivity of receivers and amplifiers,
- to increase the isolation of transmitters, whose respective antennas are mounted close together,
- to suppress noise sidebands and inter-modulation products,
- as a component to form combiners.

Design and construction:

The band-pass filter is designed as a temperature stabilized $\lambda/4$ coaxial resonator. The pass band frequency as well as the input and output coupling are adjustable.

Filter characteristics:

Narrow pass band range with low insertion loss, high stop band attenuation, variable filter response corresponding to the desired stop band attenuation.

Combination of several band-pass filters:

Several band-pass filters can be interconnected using cables of an electrical length of $\lambda/4$. This causes an increase in the edge steepness of the filter curve as well as the bandwidth of the pass band. The individual filters are tuned to the center frequency of the complete filter.

Insertion loss of the filter combination =
Sum insertion loss of the individual filters
+ cable attenuation of the interconnecting cables (about 0.1 dB per cable).
Stop band attenuation of the filter combination = Sum stop band attenuation of individual filters + additional stop band attenuation.

If the stop band attenuation of the individual filters exceeds 10 dB, approximately the following applies:
additional stop band attenuation =
 $(n - 1) \times 5 \text{ dB}$;
 n = number of individual filters.

For special applications band-pass filters can also be interconnected with S-P filters.

Tuning:

The band-pass filter is tuned to the desired pass band frequency and insertion loss at the factory. Please specify desired pass band frequency **and** insertion loss (curve A, B, C, D) when ordering.

The pass band filter can also be tuned on site using the supplied instructions.



Technical Data

Type No.	K 65 21 25 1			
Frequency range	380 ... 470 MHz			
Insertion loss at f_0	0.5 ... 2 dB, tunable			
	Tuning examples			
	0.5 dB curve A	1.0 dB curve B	1.5 dB curve C	2.0 dB curve D
VSWR	< 1.5 (at pass band frequency)			
Impedance	50 Ω			
Input power	< 200 W			
Temperature range	-30 ... +60 °C			
Effect of temperature	< 1.2 kHz / °C			
Connectors	N female			
Material	Outer conductor: Aluminium Inner conductor: Brass, silver-plated			
Mounting	Free standing or wall mounting with mounting angles			
Attached hardware	Band-pass filter with 2 mounting angles and 2 connecting pieces			
Weight	5 kg			
Packing size	210 mm x 490 mm x 210 mm			
Dimensions (w x h x d)	190 mm x max. 380 mm x 190 mm (with tuning rod)			

Band-pass Filter 380 ... 470 MHz Typical attenuation curves

Tuning example:

Diagram I:

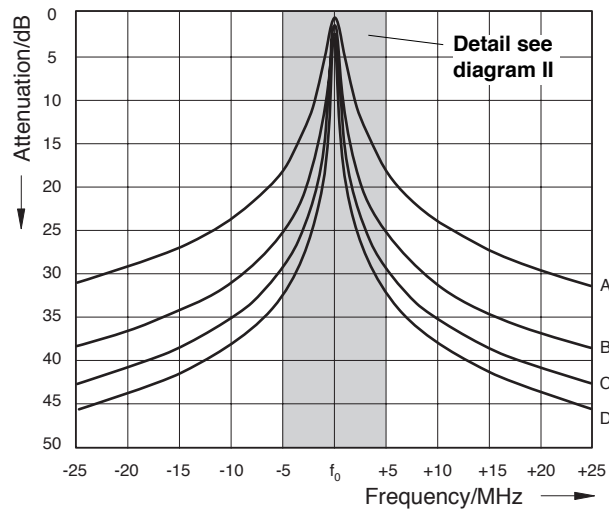


Diagram II:

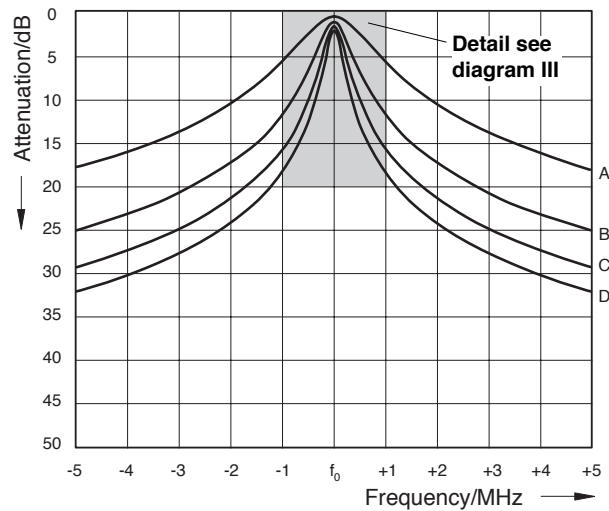
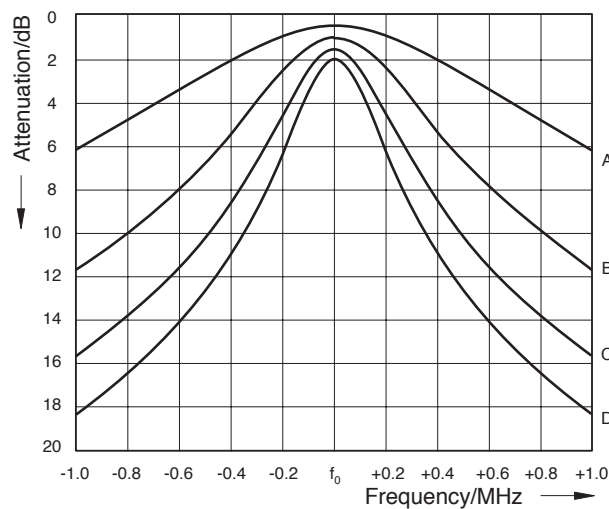


Diagram III:



S-P Filter

380 ... 470 MHz

The S-P filter (Stop-Pass filter) is used to attenuate interfering signals lying extremely close to the operating frequency.

It can be used:

- in the transmission path to suppress side band noise and to attenuate intermodulation products at the receiving frequencies,
- in the receiving path to attenuate transmitting frequencies,
- as a component for combiners with very narrow frequency spacing.

Design and construction:

The S-P filter is designed as a high Q temperature-stabilized $\lambda/4$ coaxial resonator. Using a special temperature-stabilized coupling, high stop band attenuation can be adjusted very close to the pass band frequency.

Filter characteristics:

Narrow pass band range with low insertion loss, high stop band attenuation at the stop band frequency. Even in case of very narrow spacing between the pass band and the stop band frequency, a high stop band attenuation is achieved, which cannot be achieved using standard band-pass filters of the same size.

Combination of several S-P filters:

Several S-P filters can be interconnected by using cables with an electrical length of $\lambda/4$.

Insertion loss of the filter combination = Sum of insertion loss of the individual filters + cable attenuation of the interconnecting cables (about 0.1 dB per cable). Stop band attenuation of the filter combination = Sum of stop band attenuation of the individual filters + additional stop band attenuation.

If the stop band attenuation of the individual filters exceeds 10 dB, the following approximately applies: additional stop band attenuation = $(n - 1) \times 5$ dB; n = number of individual filters.

For special applications S-P filters can also be interconnected by using band-pass filters.

Tuning:

The S-P filter is tuned to the desired pass band and stop band frequency at the factory. Please specify desired pass band **and** stop band frequency when ordering.

The S-P filter can also be tuned on site using the instructions supplied.

Customized versions

For special applications S-P filters for even narrower frequency spacing or lower insertion loss are available.



Technical Data

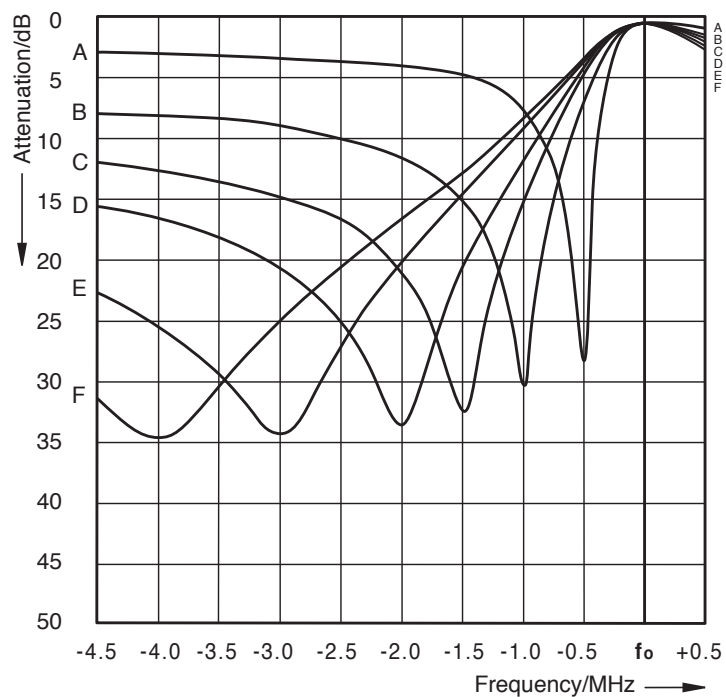
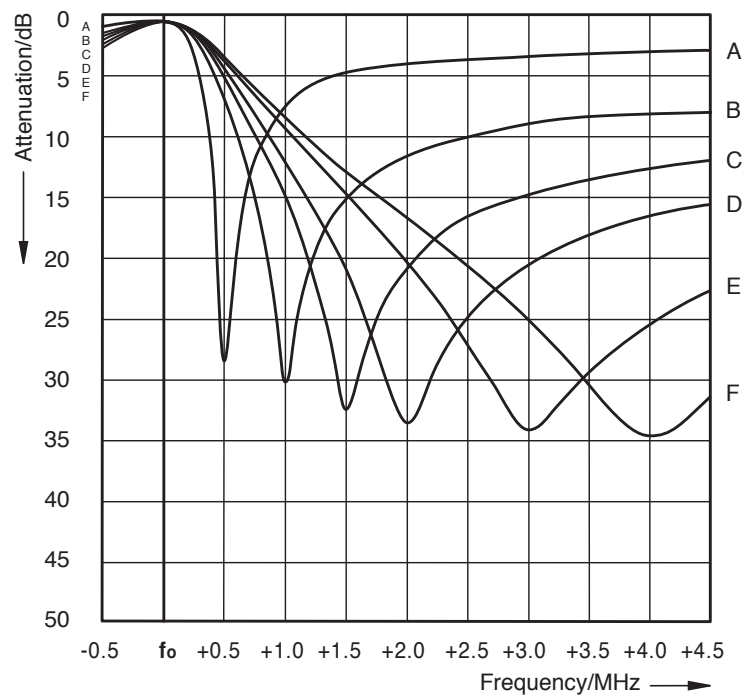
Type No.	K 65 21 26 1
Frequency range	380 ... 470 MHz
Insertion loss	0.5 ±0.15 dB
VSWR	< 1.5 (at pass band frequency)
Impedance	50 Ω
Input power	< 200 W
Temperature range	-20 ... +60 °C
Effect of temperature	< 1.2 kHz / °C
Connectors	N female
Material	Outer conductor: Aluminium Inner conductor: Brass, silver-plated
Installation	Free-standing or wall mounted
Supplied hardware	S-P filter with 2 mounting angles and 2 connecting pieces
Weight	5 kg
Packing size	210 mm x 490 mm x 210 mm
Dimensions (w x h x d)	190 mm x max. 350 mm x 190 mm (with tuning rod)

S-P Filter

380 ... 470 MHz

Typical attenuation curves

Tuning example:



Curve	Frequency spacing pass band frequency / stop band frequency
A	0.5 MHz
B	1.0 MHz
C	1.5 MHz
D	2.0 MHz
E	3.0 MHz
F	4.0 MHz

Duplexers

68 ... 87.5 MHz
146 ... 174 MHz
380 ... 470 MHz

Duplexers:

Description	Type No.	Frequency range ... tunable bandwidth – fixed bandwidth (not tunable)	Max. input power	Page
Duplexer	718 987	68 ... 87.5 MHz	100 W	126, 127
Duplexer	719 069	68 ... 87.5 MHz	100 W	126, 127
Duplexer	K 64 41 43	68 ... 87.5 MHz	200 W	128
Duplexer	K 64 41 44	68 ... 87.5 MHz	200 W	128
Duplexer	719 628	146 ... 174 MHz	100 W	130, 131
Duplexer	718 388	146 ... 174 MHz	100 W	130, 131
Duplexer	K 64 41 23	146 ... 174 MHz	200 W	129
Duplexer	K 64 41 24	146 ... 174 MHz	200 W	129
Duplexer	719 785	380 ... 470 MHz	100 W	132, 133
Duplexer	718 290	380 ... 470 MHz	100 W	132, 133
Duplexer	718 313	380 ... 470 MHz	100 W	134, 135
Duplexer	719 237	380 ... 470 MHz	100 W	134, 135
Duplexer (TETRA, TETRAPOL)	782 10361	380 – 385 / 390 – 395 MHz	200 W	136, 137
Duplexer (TETRA, TETRAPOL)	782 10362	382 – 387 / 392 – 397 MHz	200 W	136, 137
Duplexer (TETRA, TETRAPOL)	782 10363	385 – 390 / 395 – 400 MHz	200 W	136, 137
Duplexer (TETRA, TETRAPOL)	782 10371	380 – 385 / 390 – 395 MHz	200 W	136, 137
Duplexer (TETRA, TETRAPOL)	782 10372	382 – 387 / 392 – 397 MHz	200 W	136, 137
Duplexer (TETRA, TETRAPOL)	782 10373	385 – 390 / 395 – 400 MHz	200 W	136, 137
Duplexer (TETRA, TETRAPOL)	782 10364	410 – 415 / 420 – 425 MHz	200 W	138, 139
Duplexer (TETRA, TETRAPOL)	782 10365	415 – 420 / 425 – 430 MHz	200 W	138, 139
Duplexer (TETRA, TETRAPOL)	782 10374	410 – 415 / 420 – 425 MHz	200 W	138, 139
Duplexer (TETRA, TETRAPOL)	782 10375	415 – 420 / 425 – 430 MHz	200 W	138, 139
Duplexer (TETRA, TETRAPOL)	782 10366	450 – 455 / 460 – 465 MHz	200 W	140, 141
Duplexer (TETRA, TETRAPOL)	782 10367	455 – 460 / 465 – 470 MHz	200 W	140, 141
Duplexer (TETRA, TETRAPOL)	782 10376	450 – 455 / 460 – 465 MHz	200 W	140, 141
Duplexer (TETRA, TETRAPOL)	782 10377	455 – 460 / 465 – 470 MHz	200 W	140, 141
Duplexer (4 Resonators)	K 65 41 25	380 ... 470 MHz	200 W	142
Duplexer (6 Resonators)	K 65 41 26	380 ... 470 MHz	200 W	142

Duplexer

68 ... 87.5 MHz

The duplexer is suited to combine **one** transmitter with **one or several** receivers to a common antenna.

Design and construction:

The duplexer consists of a 3-cavity or 4-cavity S-P filter (Stop-Pass filter) for the low band and a 3-cavity or 4-cavity S-P filter for the high band. The two S-P filters are interconnected to a common antenna output using cables of defined electrical lengths.

The S-P filters are designed to allow the transmitter to operate in the low band or in the high band.

Tuning:

The duplexer, because of its special construction can only be tuned at the factory. Special requests like other duplex spacings, switching bandwidths or attenuation values can be taken into account.

When ordering please specify the desired high **and** low band frequencies.



718 987



719 069

Technical Data

Type No.	718 987					719 069				
Number of resonators	3 + 3					4 + 4				
Frequency range	68 ... 87.5 MHz									
	Tuning examples									
Duplex spacing	3 MHz	6 MHz	9.8 MHz			2 MHz	6 MHz	9.8 MHz		
Switching bandwidth	0.1 MHz	0.5 MHz	1.0 MHz	1.5 MHz	2.5 MHz	0.1 MHz *	1.0 MHz	2.5 MHz	3.3 MHz	4.0 MHz
Insertion loss ¹⁾	< 1.5 dB	< 0.8 dB	< 0.8 dB	< 0.8 dB	< 1.0 dB	< 1.8 dB	< 1.0 dB	< 1.0 dB	< 1.0 dB	< 1.2 dB
Isolation ²⁾	> 65 dB	> 70 dB	> 75 dB	> 70 dB	> 65 dB	> 65 dB	> 75 dB	> 80 dB	> 70 dB	> 65 dB
VSWR	< 1.4 (at operating frequency)									
Impedance	50 Ω									
Input power ³⁾	< 100 W (-30 ... +55 °C) / < 50 W (+55 ... +70 °C) * < 50 W (-30 ... +55 °C) / < 30 W (+55 ... +70 °C)									
Temperature range	-30 ... +70 °C									
Connectors	N female									
Material	S-P resonators: Aluminium / copper, silver-plated; cable: RG 223/U									
Installation	With 4 screws (max. 4 mm diameter)									
Weight	2.15 kg					2.75 kg				
Packing size	275 mm x 60 mm x 245 mm					362 mm x 60 mm x 245 mm				
Dimensions (w x h x d)	263 mm x 50 mm x 190 mm (with connectors)					350 mm x 50 mm x 190 mm (with connectors)				

¹⁾ Low band ↔ Antenna / High band ↔ Antenna

²⁾ Low band ↔ High band

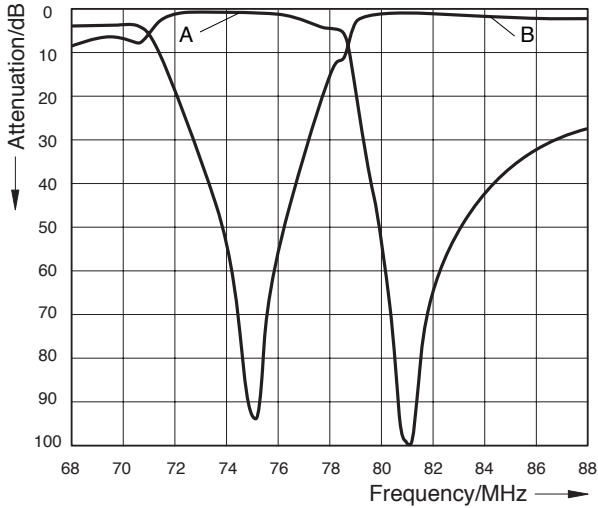
³⁾ Low band or High band

Duplexer 68 ... 87.5 MHz Typical attenuation curves

Tuning examples:

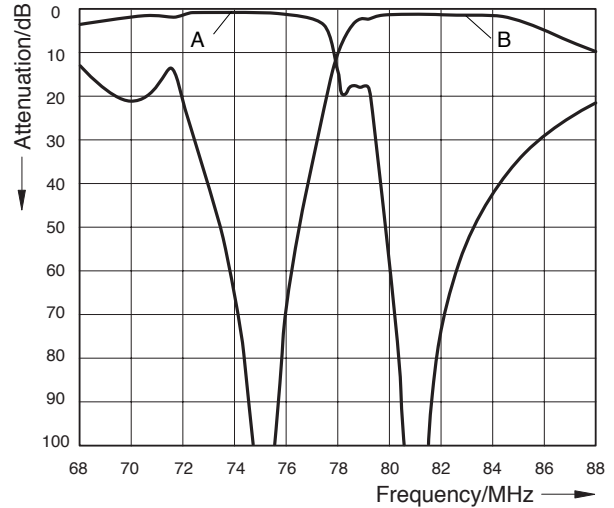
Duplexer 718 987

Duplex spacing: 6.0 MHz
Switching bandwidth: 0.5 MHz

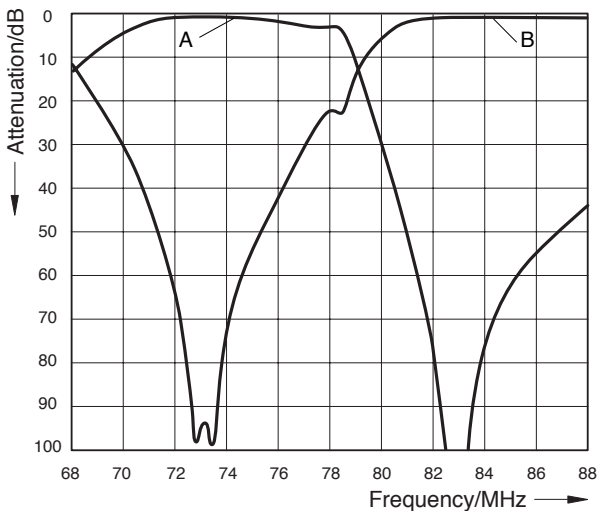


Duplexer 719 069

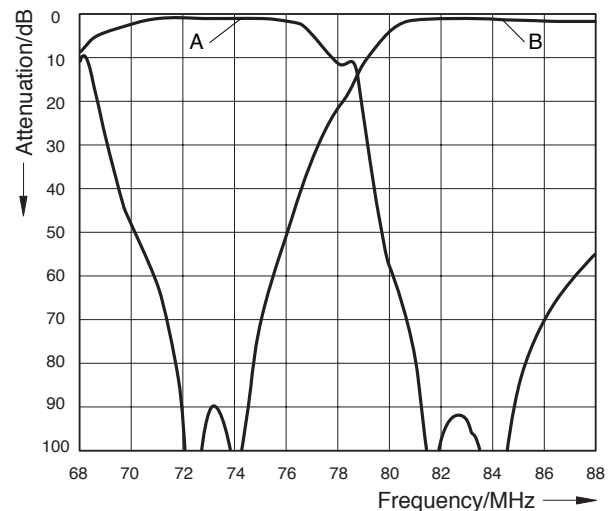
Duplex spacing: 6.0 MHz
Switching bandwidth: 1.0 MHz



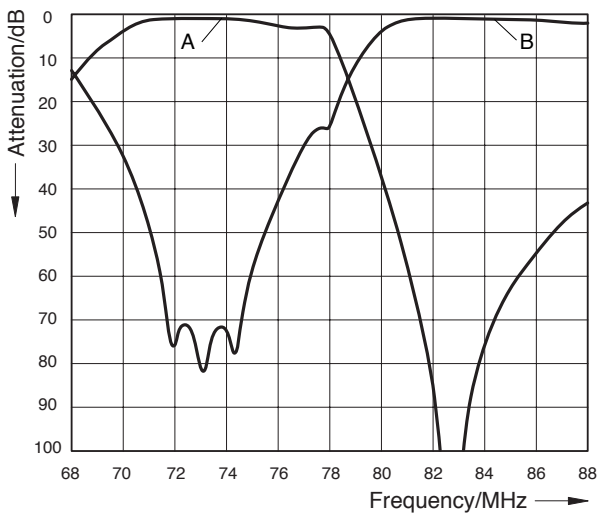
Duplex spacing: 9.8 MHz
Switching bandwidth: 1.0 MHz



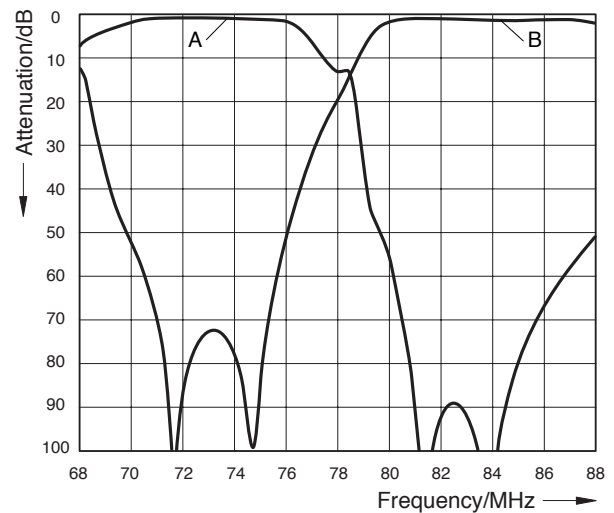
Duplex spacing: 9.8 MHz
Switching bandwidth: 2.5 MHz



Duplex spacing: 9.8 MHz
Switching bandwidth: 2.5 MHz



Duplex spacing: 9.8 MHz
Switching bandwidth: 4.0 MHz



A: Low band ↔ antenna
B: High band ↔ antenna

Duplexer

68 ... 87.5 MHz

The duplexer is suited to combine transmitters and receivers (or transmitter and transmitter or receiver and receiver) to a common antenna.

It can be used :

- for very small frequency spacing,
- to obtain very high stop band attenuation (more than 100 dB) at very low insertion loss.

Design and construction:

The duplexer consists of four or six S-P filters K 64 21 46 1 / K 64 21 47 1 and interconnecting cables of defined length, depending on the operating frequencies. The S-P filters consist of temperature stabilized $\lambda/4$ coaxial resonators. Using a specially temperature stabilized coupling a high stop band attenuation can be adjusted very close to the pass band frequency.

Tuning:

The stop band attenuation is dependent on the frequency spacing and the number of S-P filters. The stop band attenuation for four or six S-P filters can be read from the diagram.

The duplexer is tuned to the desired pass band frequencies at the factory. When ordering please specify the pass band frequencies.

The duplexer can also be tuned on site using the supplied instructions.

Installation:

The duplexer can be used as a stand alone unit or wall mounted using the supplied brackets. The individual S-P filters can be connected to each other using the supplied straps.

Custom versions:

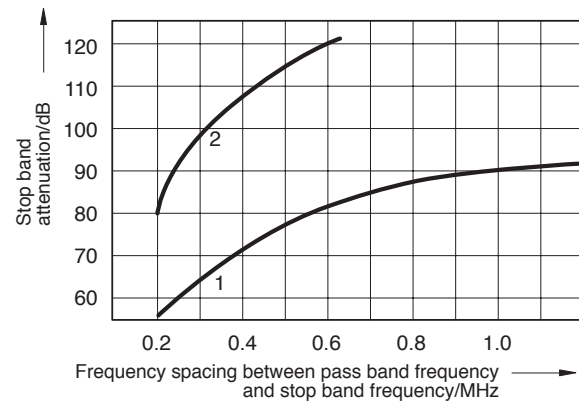
For special applications more than six S-P filters can be combined.



K 64 41 43

Typical attenuation curves

Tuning examples:



Technical Data

Type No.	K 64 41 43	K 64 41 44
Number of resonators	4	6
Frequency range	68 ... 87.5 MHz	
Insertion loss	1.0 ±0.2 dB	1.5 ±0.3 dB
VSWR	< 1.4 (at operating frequency)	
Impedance	50 Ω	
Input power	< 200 W	
Effect of temperature	< 0.2 kHz / °C	
Temperature range	-30 ... +60 °C	
Material	Outer conductor: Aluminium Inner conductor: Brass, silver-plated	
Connectors	N female	
Weight	65 kg	97 kg
Packing size by mm	4x 210 x 1660 x 210	6x 210 x 1660 x 210
Dimensions w x h x d, by mm	190 x max. 1500 x 760 (with tuning rods)	190 x max. 1500 x 1140 (with tuning rods)
Attached hardware	S-P filter with interconnecting cables, 2 brackets and 2 straps for each resonator	

Number of resonators	Curve	Insertion loss	Type No.
4	1	1.0 dB	K 64 41 43
6	2	1.5 dB	K 64 41 44

Duplexer

146 ... 174 MHz

The duplexer is suited to combine transmitters and receivers (or transmitter and transmitter or receiver and receiver) to a common antenna.

It can be used :

- for very small frequency spacing,
- to obtain very high stop band attenuation (more than 100 dB) at very low insertion loss.

Design and construction:

The duplexer consists of four or six S-P filters K 64 21 26 1 and interconnecting cables of defined length, depending on the operating frequencies. The S-P filters consist of temperature stabilized $\lambda/4$ coaxial resonators. Using a specially temperature stabilized coupling a high stop band attenuation can be adjusted very close to the pass band frequency.

Tuning:

The stop band attenuation is dependent on the frequency spacing and the number of S-P filters. The stop band attenuation for four or six S-P filters can be read from the diagram.

The duplexer is tuned to the desired pass band frequencies at the factory. When ordering please specify the pass band frequencies.

The duplexer can also be tuned on site using the supplied instructions.

Installation:

The duplexer can be used as a stand alone unit or wall mounted using the supplied brackets. The individual S-P filters can be connected to each other using the supplied straps.

Custom versions:

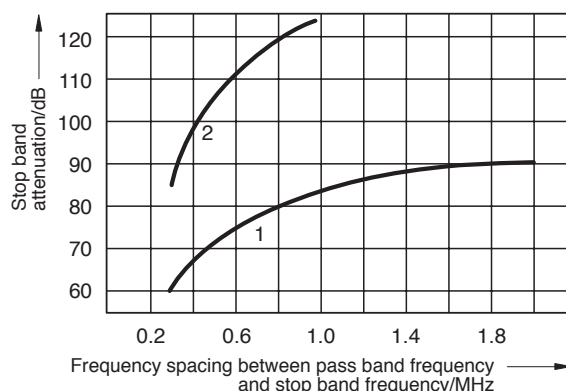
For special applications more than six S-P filters can be combined.



K 64 41 23

Typical attenuation curves

Tuning examples:



Number of resonators	Curve	Insertion loss	Type No.
4	1	1.0 dB	K 64 41 23
6	2	1.5 dB	K 64 41 24

Technical Data

Type No.	K 64 41 23	K 64 41 24
Number of resonators	4	6
Frequency range	146 ... 174 MHz	
Insertion loss	1.0 ±0.2 dB	1.5 dB ±0.3 dB
VSWR	< 1.4 (at operating frequency)	
Impedance	50 Ω	
Input power	< 200 W	
Effect of temperature	< 0.4 kHz / °C	
Temperature range	-30 ... +60 °C	
Material	Outer conductor: Aluminium Inner conductor: Brass, silver-plated	
Connectors	N female	
Weight	36.5 kg	54.5 kg
Packing size	4x 210 mm x 865 mm x 210 mm	6x 210 mm x 865 mm x 210 mm
Dimensions (w x h x d)	190 mm x max. 770 mm x 760 mm (with tuning rods)	190 mm x max. 770 mm x 1140 mm (with tuning rods)
Attached hardware	S-P filter with interconnecting cables, 2 brackets and 2 straps for each resonator	

Duplexer

146 ... 174 MHz

The duplexer is suited to combine **one** transmitter with **one or several** receivers to a common antenna.

Design and construction:

The duplexer consists of a 3-cavity or 4-cavity S-P filter (Stop-Pass filter) for the low band and a 3-cavity or 4-cavity S-P filter for the high band. The two S-P filters are interconnected to a common antenna output using cables of defined electrical lengths.

The S-P filters are designed to allow the transmitter to operate in the low band or in the high band.

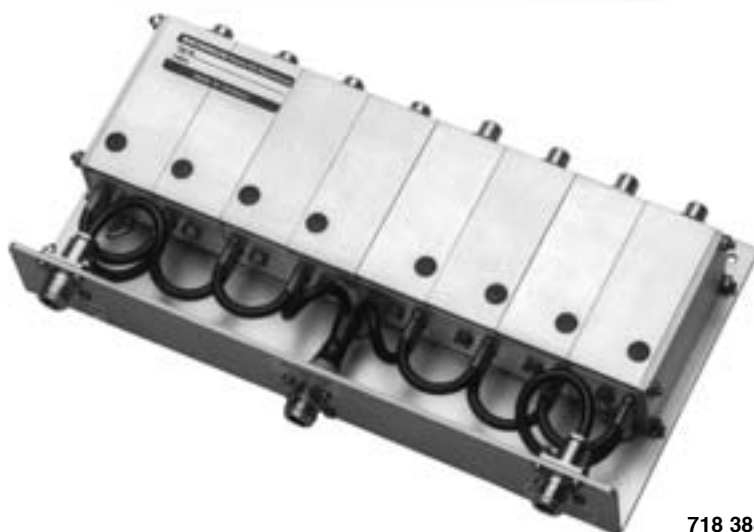
Tuning:

The duplexer, because of its special construction can only be tuned at the factory. Special requests like other duplex spacings, switching bandwidths or attenuation values can be taken into account.

When ordering please specify the desired high **and** low band frequencies.



719 628



718 388

Technical Data

Type No.	719 628					718 388				
Number of resonators	3 + 3					4 + 4				
Frequency range	146 ... 174 MHz									
	Tuning examples									
Duplex spacing	3.5 MHz	4.6 MHz			6 MHz	3 MHz	4.6 MHz			6 MHz
Switching bandwidth	0.1 MHz	0.1 MHz	0.5 MHz	1.0 MHz	1.0 MHz	0.1 MHz *	0.5 MHz	1.0 MHz *	1.9 MHz *	2.0 MHz
Insertion loss ¹⁾	< 1.5 dB	< 1.0 dB	< 1.2 dB	< 1.3 dB	< 1.2 dB	< 1.6 dB	< 1.5 dB	< 1.6 dB	< 2.3 dB	< 1.5 dB
Isolation ²⁾	> 65 dB	> 75 dB	> 65 dB	> 60 dB	> 65 dB	> 70 dB	> 75 dB	> 65 dB	> 60 dB	> 65 dB
VSWR	< 1.4 (at operating frequency)									
Impedance	50 Ω									
Input power ³⁾	< 100 W (-30 ... +55 °C) / < 50 W (+55 ... +70 °C) * < 50 W (-30 ... +55 °C) / < 30 W (+55 ... +70 °C)									
Temperature range	-30 ... +70 °C									
Connectors	N female									
Material	S-P resonators: Aluminium / copper, silver-plated; cable: RG 223/U									
Installation	With 4 screws (max. 4 mm diameter)									
Weight	2.1 kg					2.75 kg				
Packing size	275 mm x 60 mm x 245 mm					360 mm x 60 mm x 245 mm				
Dimensions (w x h x d)	263 mm x 50 mm x 170 mm (with connectors)					350 mm x 50 mm x 170 mm (with connectors)				

¹⁾ Low band ↔ Antenna / High band ↔ Antenna

²⁾ Low band ↔ High band

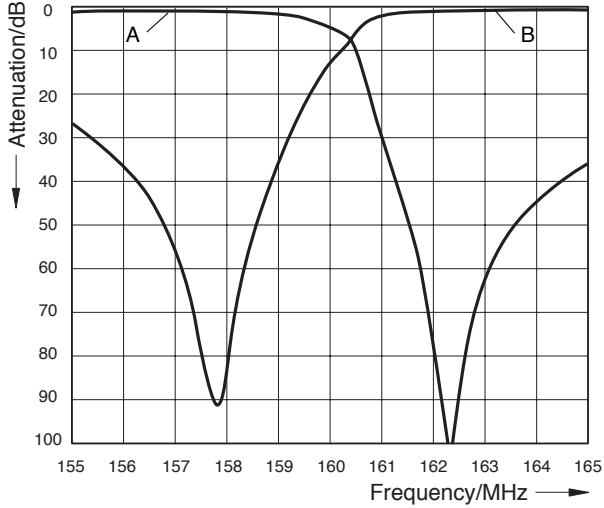
³⁾ Low band or High band

Duplexer 146 ... 174 MHz Typical attenuation curves

Tuning examples:

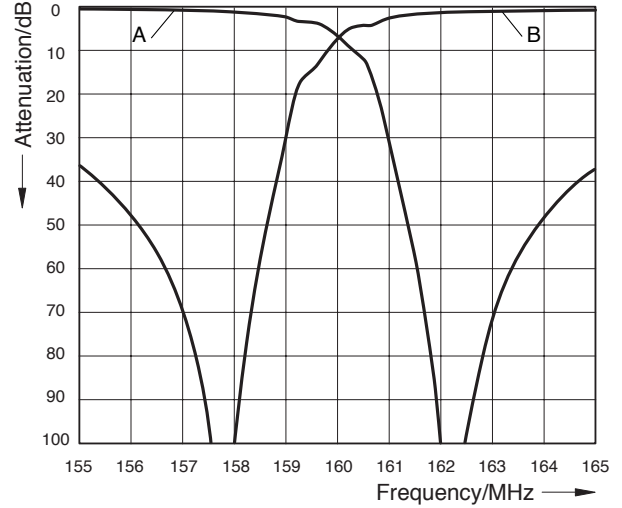
Duplexer 719 628

Duplex spacing: 4.6 MHz
Switching bandwidth: 0.1 MHz

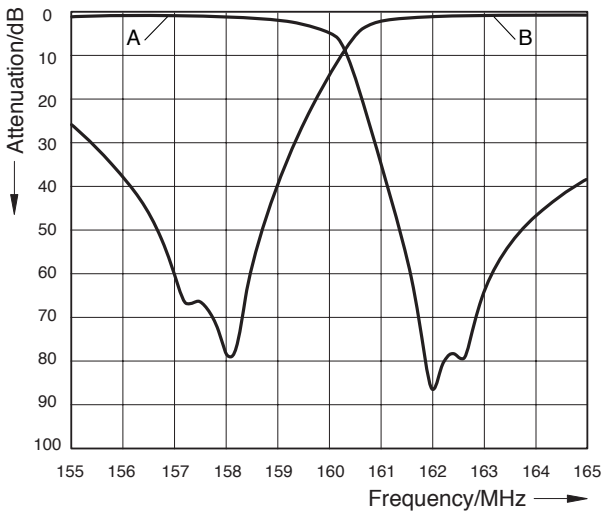


Duplexer 718 388

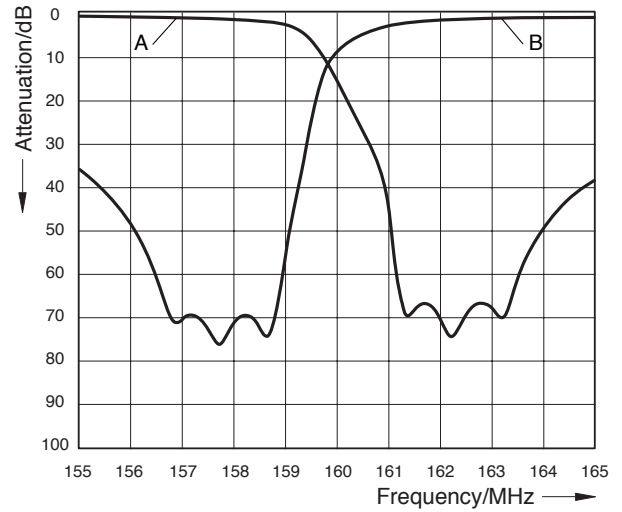
Duplex spacing: 4.6 MHz
Switching bandwidth: 0.5 MHz



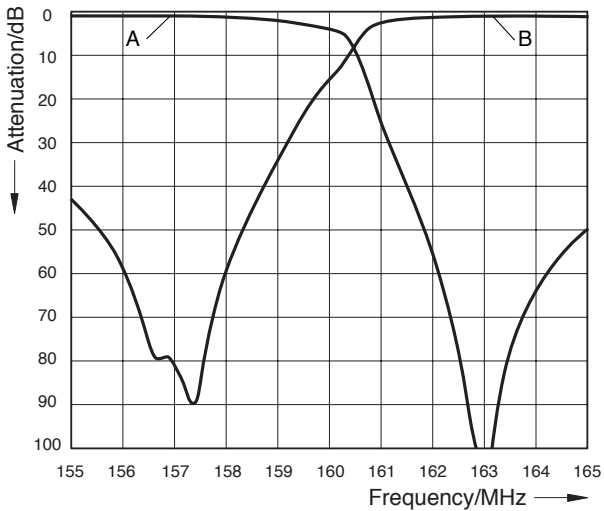
Duplex spacing: 4.6 MHz
Switching bandwidth: 1.0 MHz



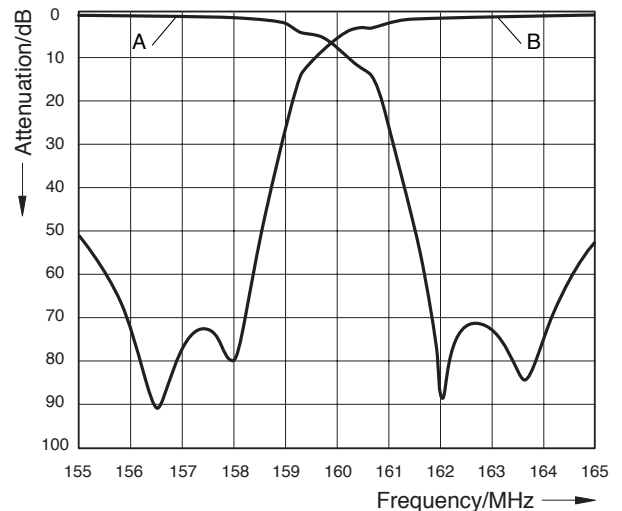
Duplex spacing: 4.6 MHz
Switching bandwidth: 1.9 MHz



Duplex spacing: 6.0 MHz
Switching bandwidth: 1.0 MHz



Duplex spacing: 6.0 MHz
Switching bandwidth: 2.0 MHz



A: Low band ↔ antenna
B: High band ↔ antenna

Duplexer

380 ... 470 MHz

The duplexer is suited to combine **one** transmitter with **one or more** receivers to a common antenna.

Design and construction:

The duplexer consists of a 3-cavity or 4-cavity S-P filter (Stop-Pass filter) for the low band and a 3-cavity or 4-cavity S-P filter for the high band. The two S-P filters are interconnected to a common antenna output using cables of defined electrical lengths.

The S-P filters are designed to allow the transmitter to operate in the low band as well as the high band.

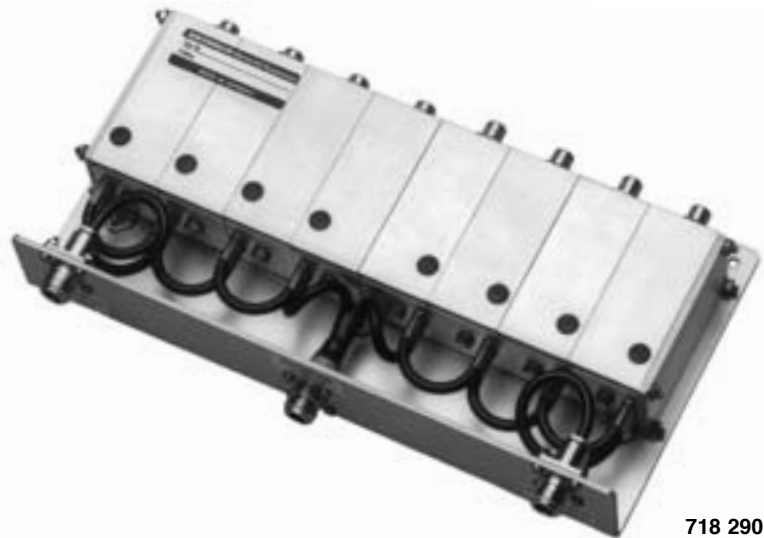
Tuning:

The duplexer, because of its special construction can only be tuned at the factory. Special requests like other duplex spacings, switching bandwidths or attenuation values can be taken into account.

When ordering please specify the desired high **and** low band frequencies.



719 785



718 290

Technical Data

Type No.	719 785						718 290				
Number of resonators	3 + 3						4 + 4				
Frequency range	380 ... 470 MHz										
Duplex spacing	5 MHz			10 MHz			5 MHz		10 MHz		
Switching bandwidth	0.2 MHz	0.5 MHz	0.5 MHz	1.0 MHz	2.0 MHz	0.5 MHz *	1.0 MHz *	2.0 MHz	3.0 MHz	4.0 MHz	5.0 MHz *
Insertion loss ¹⁾	< 1.2 dB	< 1.5 dB	< 0.7 dB	< 0.8 dB	< 1.0 dB	< 1.6 dB	< 1.8 dB	< 1.0 dB	< 1.2 dB	< 1.5 dB	< 1.8 dB
Isolation ²⁾	> 65 dB	> 60 dB	> 75 dB	> 70 dB	> 65 dB	> 70 dB	> 60 dB	> 80 dB	> 75 dB	> 70 dB	> 60 dB
VSWR	< 1.4										
Impedance	50 Ω										
Input power ³⁾	< 100 W (-30 ... +55 °C) / < 50 W (+55 ... +70 °C) * < 50 W (-30 ... +55 °C) / < 30 W (+55 ... +70 °C)										
Temperature range	-30 ... +70 °C										
Connectors	N female										
Material	S-P resonators: Aluminium / brass										
Cable	RG 223/U										
Installation	With 4 screws (M4)										
Weight	1.9 kg						2.5 kg				
Packing size	280 mm x 60 mm x 250 mm						410 mm x 85 mm x 205 mm				
Dimensions (w x h x d)	230 mm x 50 mm x 170 mm (with connectors)						300 mm x 50 mm x 170 mm (with connectors)				

¹⁾ Low band ↔ Antenna / High band ↔ Antenna

²⁾ Low band ↔ High band

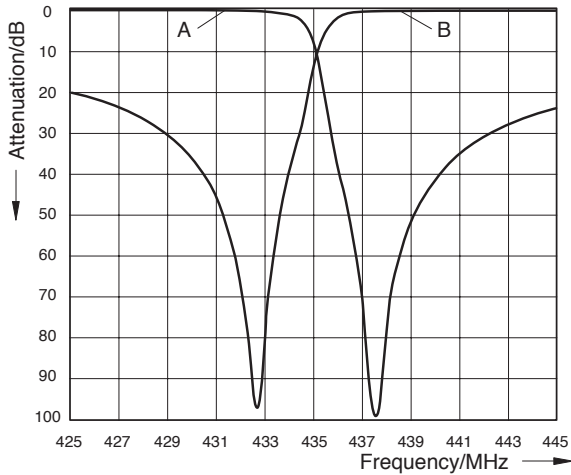
³⁾ Low band or High band

Duplexer 380 ... 470 MHz Typical attenuation curves

Tuning examples:

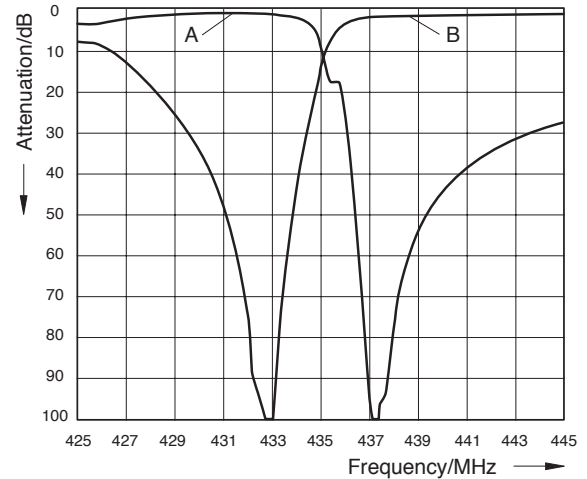
Duplexer 719 785

Duplex spacing : 5 MHz
Switching bandwidth: 0.5 MHz

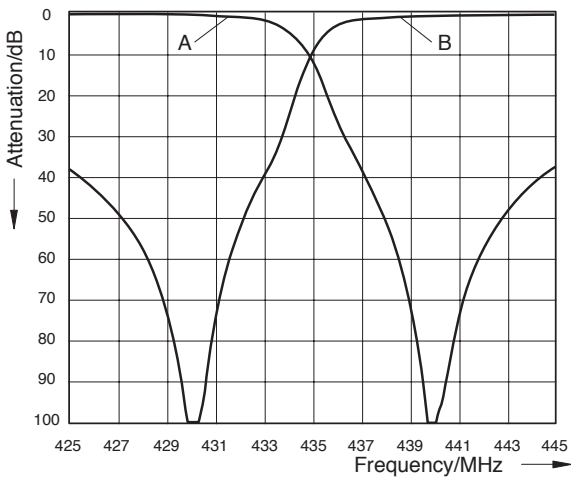


Duplexer 718 290

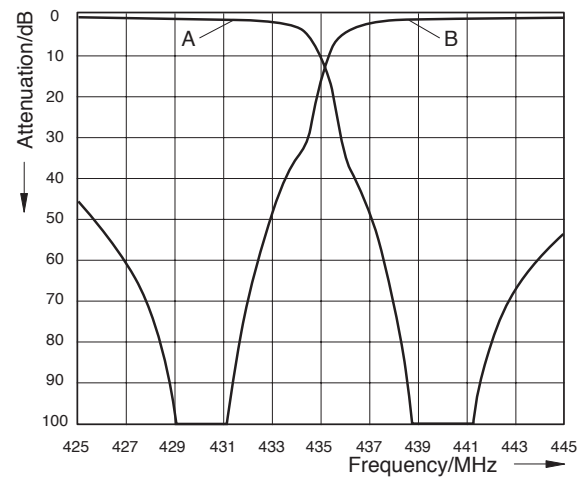
Duplex spacing : 5 MHz
Switching bandwidth: 1.0 MHz



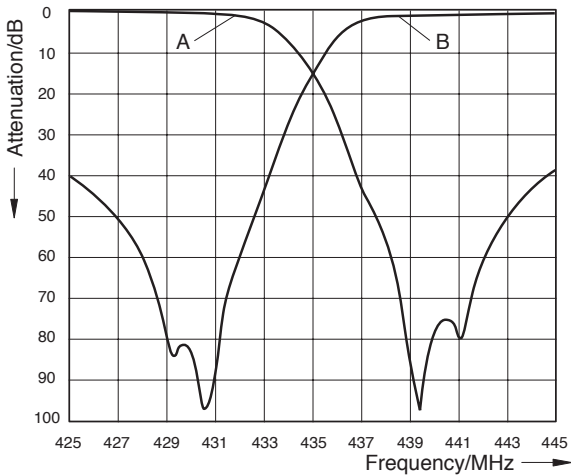
Duplex spacing : 10 MHz
Switching bandwidth: 1.0 MHz



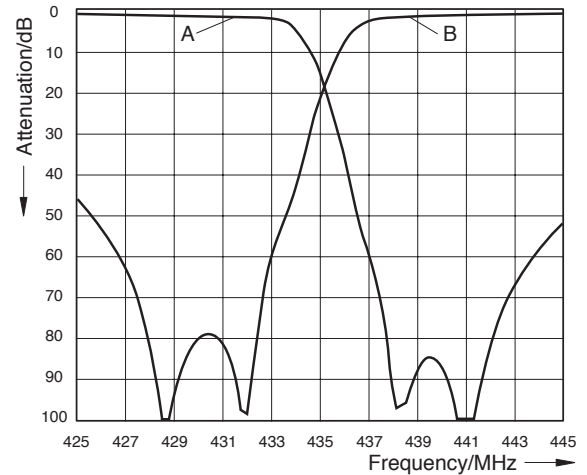
Duplex spacing : 10 MHz
Switching bandwidth: 2.0 MHz



Duplex spacing : 10 MHz
Switching bandwidth: 2.0 MHz



Duplex spacing : 10 MHz
Switching bandwidth: 4.0 MHz



A: Low band ↔ Antenna
B: High band ↔ Antenna

Duplexer

380 ... 470 MHz

The duplexer is suited to combine **one or more** transmitters with **one or more** receivers to a common antenna.

It can also be used to combine two transmitters to a common antenna.

Design and construction:

The duplexer consists of a 3-cavity or 4-cavity S-P filter (Stop-Pass filter) for the low band and a 3-cavity or 4-cavity S-P filter for the high band. The two S-P filters are interconnected to a common antenna output using cables of defined electrical lengths.

The S-P filters are designed to allow the transmitter to be operated in the low band or the high band.

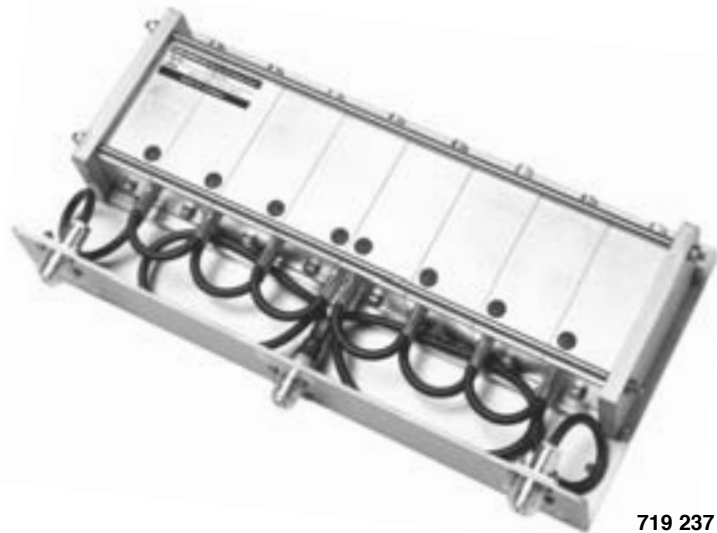
Tuning:

The duplexer, because of its special construction can only be tuned at the factory. Special requests like other duplex spacings, switching bandwidths or attenuation values can be taken into account.

When ordering please specify the desired high **and** low band frequencies.



718 313



719 237

Technical Data

Type No.	718 313					719 237					
Number of resonators	3 + 3					4 + 4					
Frequency range	380 ... 470 MHz										
Duplex spacing	5 MHz		10 MHz			5 MHz		10 MHz			
Switching bandwidth	0.2 MHz	0.5 MHz	0.5 MHz	1.0 MHz	2.0 MHz	0.5 MHz *	1.0 MHz *	2.0 MHz	3.0 MHz	4.0 MHz	5.0 MHz *
Insertion loss ¹⁾	< 1.2 dB	< 1.5 dB	< 0.7 dB	< 0.8 dB	< 1.0 dB	< 1.6 dB	< 1.8 dB	< 1.0 dB	< 1.2 dB	< 1.5 dB	< 1.8 dB
Isolation ²⁾	> 65 dB	> 60 dB	> 75 dB	> 70 dB	> 65 dB	> 70 dB	> 60 dB	> 80 dB	> 75 dB	> 70 dB	> 60 dB
VSWR	< 1.4										
Impedance	50 Ω										
Input power ³⁾	< 100 W (-30 ... +55 °C) / < 50 W (+55 ... +70 °C) * < 50 W (-30 ... +55 °C) / < 30 W (+55 ... +70 °C)										
Temperature range	-30 ... +70 °C										
Connectors	N female, silver-plated										
Material	S-P resonators: Brass, silver-plated										
Cable	RG 223/U										
Installation	With 4 screws (M5)										
Weight	2.9 kg					3.8 kg					
Packing size	410 mm x 85 mm x 205 mm					410 mm x 85 mm x 205 mm					
Dimensions (w x h x d)	270 mm x 58 mm x 190 mm (with connectors)					350 mm x 58 mm x 190 mm (with connectors)					

¹⁾ Low band ↔ Antenna / High band ↔ Antenna

²⁾ Low band ↔ High band

³⁾ Input power of the low band or the high band or total sum of the input power of the low band and the high band.

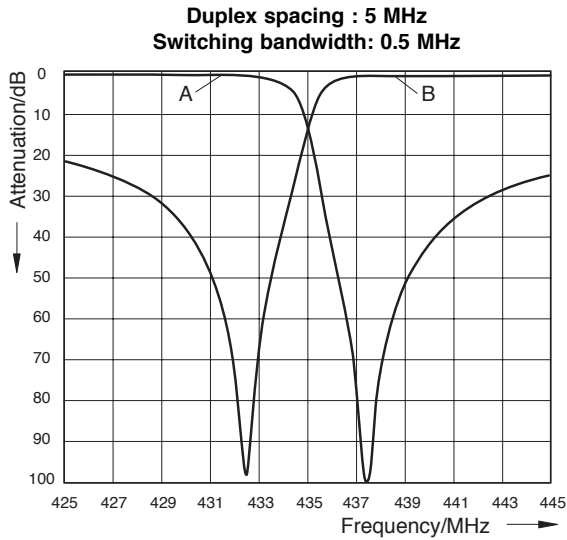
Duplexer

380 ... 470 MHz

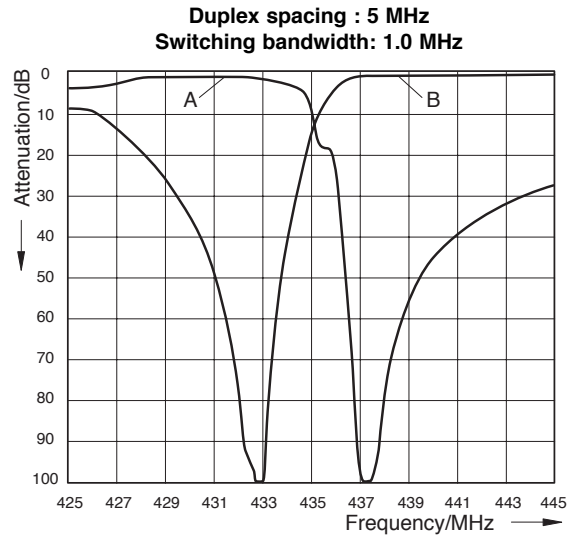
Typical attenuation curves

Tuning examples:

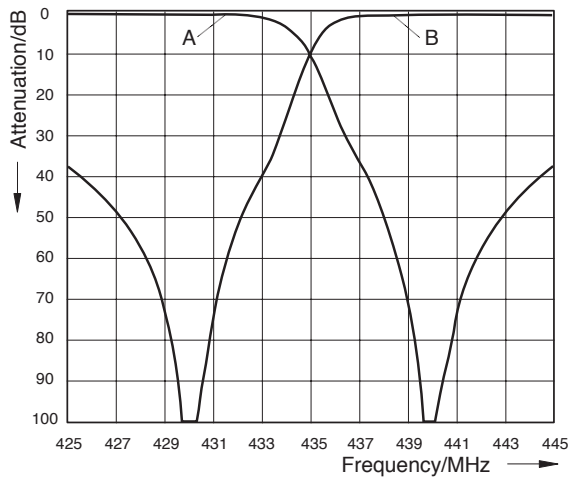
Duplexer 718 313



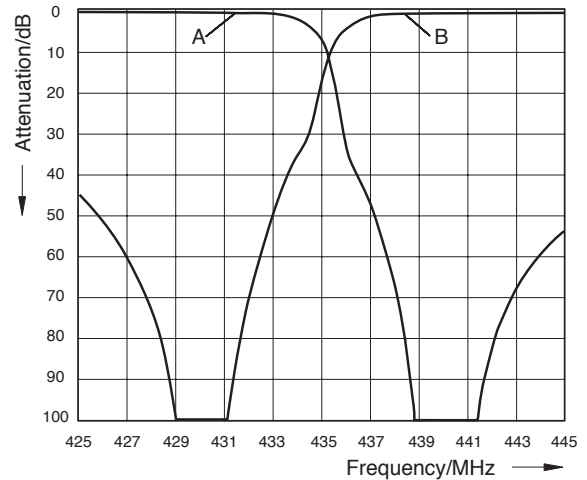
Duplexer 719 237



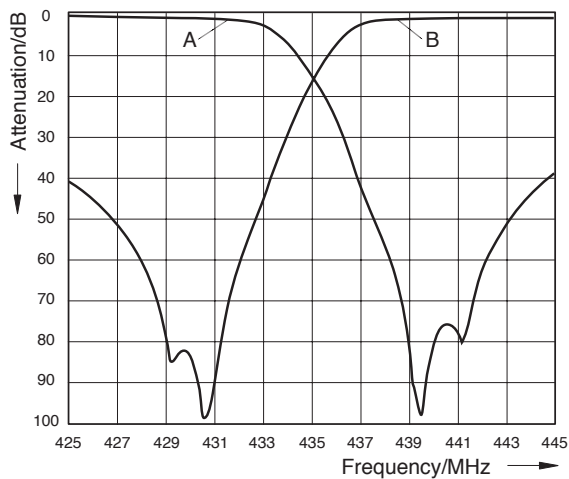
Duplex spacing : 10 MHz
Switching bandwidth: 1.0 MHz



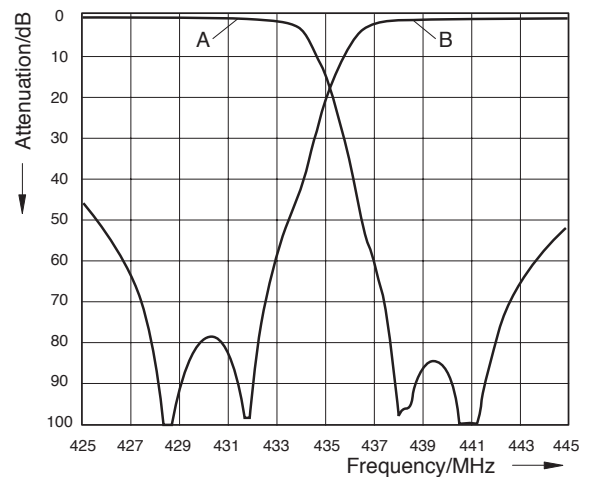
Duplex spacing : 10 MHz
Switching bandwidth: 2.0 MHz



Duplex spacing : 10 MHz
Switching bandwidth: 2.0 MHz



Duplex spacing : 10 MHz
Switching bandwidth: 4.0 MHz



A: Low band ↔ Antenna
B: High band ↔ Antenna

Duplexer

380 – 385 / 390 – 395 MHz (TETRA, TETRAPOL)

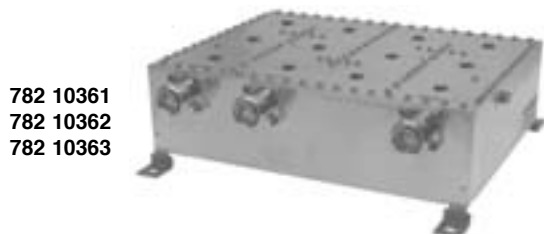
382 – 387 / 392 – 397 MHz (TETRA, TETRAPOL)

385 – 390 / 395 – 400 MHz (TETRA, TETRAPOL)

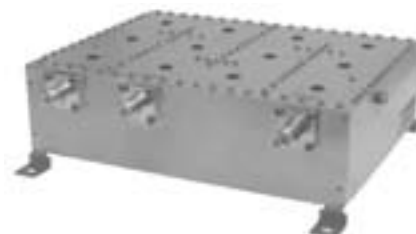
KATHREIN

Antennen · Electronic

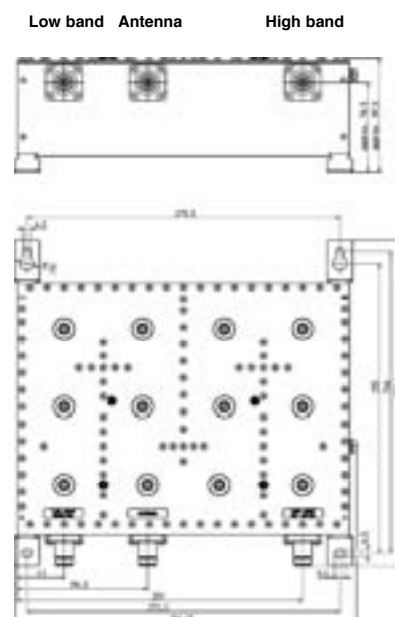
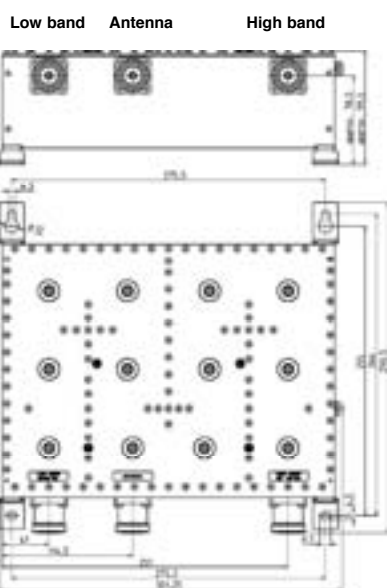
- Designed to combine/split TETRA or TETRAPOL Tx and Rx signals onto/from one common Tx/Rx antenna in order to save feeder cable and antenna costs
- Suitable for indoor applications
- Built-in DC stop between all ports
- 19" drawers available as accessories



782 10361
782 10362
782 10363



782 10371
782 10372
782 10373



Technical Data

Type No.	7-16 female N female	782 10361 782 10371	782 10362 782 10372	782 10363 782 10373
Pass band				
Low band		380 – 385 MHz	382 – 387 MHz	385 – 390 MHz
High band		390 – 395 MHz	392 – 397 MHz	395 – 400 MHz
Insertion loss				
Antenna → Low band		< 0.8 dB (380 – 385 MHz)	< 0.8 dB (382 – 387 MHz)	< 0.8 dB (385 – 390 MHz)
High band → Antenna		< 0.8 dB (390 – 395 MHz)	< 0.8 dB (392 – 397 MHz)	< 0.8 dB (395 – 400 MHz)
Isolation				
Low band ↔ High band		> 65 dB (380 – 385 / 390 – 395 MHz)	> 65 dB (382 – 387 / 392 – 397 MHz)	> 65 dB (385 – 390 / 395 – 400 MHz)
VSWR		< 1.25 (380 – 385 / 390 – 395 MHz)	< 1.25 (382 – 387 / 392 – 397 MHz)	< 1.25 (385 – 390 / 395 – 400 MHz)
Phase tracking		± 3.5° (pass bands)		
Impedance		50 Ω		
Input power		< 200 W (low band or high band, with max 8 carriers)		
Intermodulation products		< -150 dBc (3 rd order; with 2 x 20 W)		
Temperature range		-20 ... +60 °C		
Application		Indoor		
Special features		Built-in DC stop between all ports		
Mounting		With 4 screws (max. 6 mm diameter)		
Weight		5.4 kg		
Packing size		409 x 378 x 152 mm		
Dimensions (w x h x d)		782 10361, 782 10362, 782 10363: 301.3 x 99.5 x 290.5 mm (including connectors and mounting feet) 782 10371, 782 10372, 782 10373: 301.3 x 99.5 x 287.4 mm (including connectors and mounting feet)		

Duplexer

380 – 385 / 390 – 395 MHz (TETRA, TETRAPOL)

382 – 387 / 392 – 397 MHz (TETRA, TETRAPOL)

385 – 390 / 395 – 400 MHz (TETRA, TETRAPOL)

KATHREIN

Antennen · Electronic

Accessories (order separately)

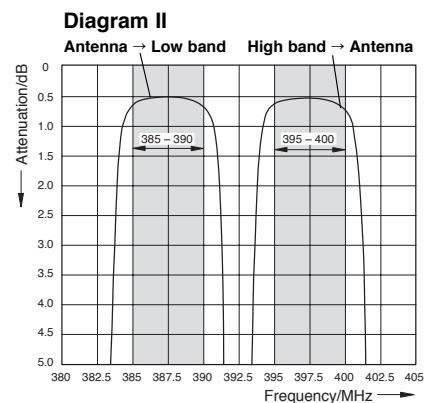
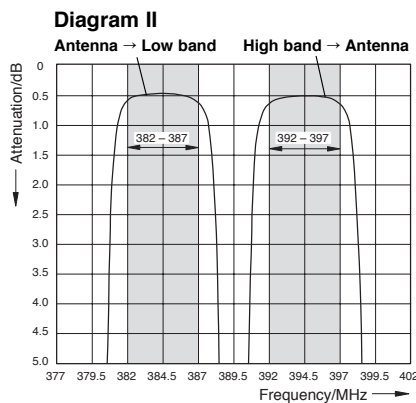
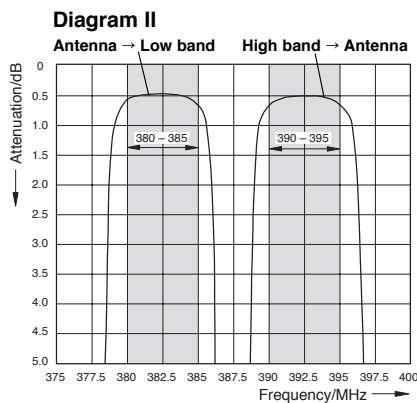
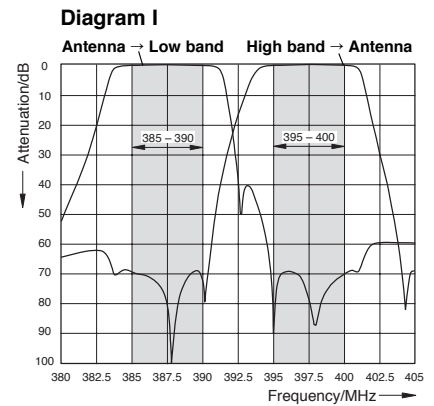
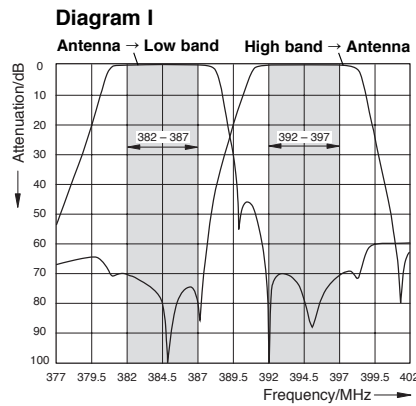
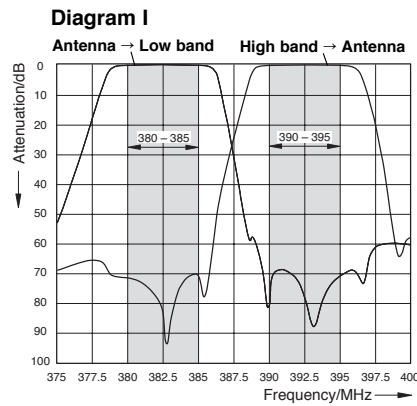
Type No.	782 10370 19" drawer	782 10380 19" drawer
Application	Suitable for duplexers 782 10361, 782 10362, 782 10363, 782 10371, 782 10372, 782 10373 to be mounted with connectors pointing to front	782 10363, 782 10373 to be mounted with connectors pointing to rear
Dimensions	19" drawer, 2 height units, plug-in depth max. 253 mm	
Weight	Approx. 1 kg	
Mounting note	Remove mounting feet from duplexer and reuse 4 of 8 screws (M3 x 8 countersunk screw) for mounting the duplexer on the 19" drawer	
Mounting example		

Typical Attenuation Curves

782 10361 / 782 10371

782 10362 / 782 10372

782 10363 / 782 10373



Duplexer

410 – 415 / 420 – 425 MHz (TETRA, TETRAPOL)

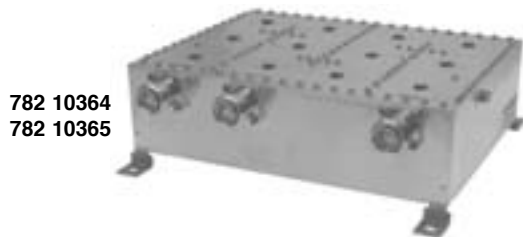
415 – 420 / 425 – 430 MHz (TETRA, TETRAPOL)

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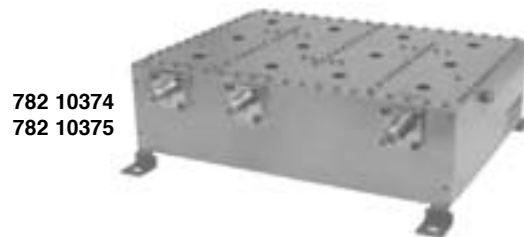
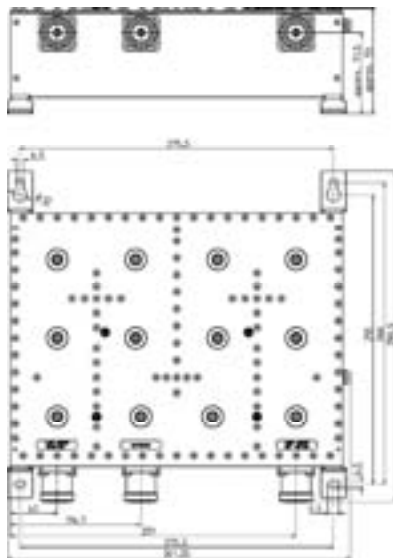
The Duplexer is designed to combine/split TETRA or TETRAPOL Tx and Rx signals onto/from one common Tx/Rx antenna in order to save feeder cable and antenna costs.

- Suitable for indoor applications
- Built-in DC stop between all ports
- 19" drawers available as accessories



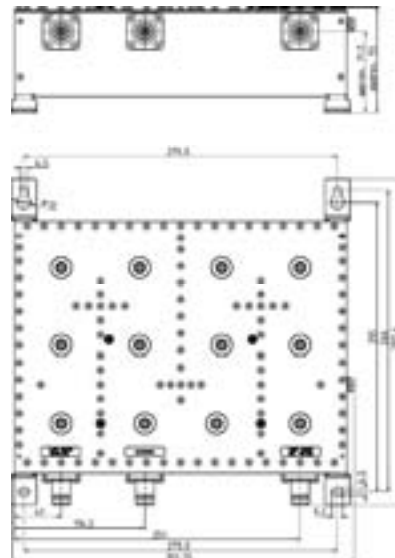
782 10364
782 10365

Low band Antenna High band



782 10374
782 10375

Low band Antenna High band



Technical Data

Type No.	7-16 female N female	782 10364 782 10374	782 10365 782 10375
Pass band		410 – 415 MHz 420 – 425 MHz	415 – 420 MHz 425 – 430 MHz
Low band			
High band			
Insertion loss		< 0.8 dB (410 – 415 MHz) < 0.8 dB (420 – 425 MHz)	< 0.8 dB (415 – 420 MHz) < 0.8 dB (425 – 430 MHz)
Antenna → Low band			
High band → Antenna			
Isolation		> 65 dB (410 – 415 / 420 – 425 MHz)	> 65 dB (415 – 420 / 425 – 430 MHz)
Low band ↔ High band			
VSWR		< 1.25 (410 – 415 / 420 – 425 MHz)	< 1.25 (415 – 420 / 425 – 430 MHz)
Impedance		50 Ω	
Input power		< 200 W (low band or high band, with max. 8 carriers)	
Intermodulation products		< -150 dBc (3 rd order; with 2 x 20 W)	
Temperature range		-20 ... +60 °C	
Application		Indoor	
Special features		Built-in DC stop between all ports	
Mounting		With 4 screws (max. 6 mm diameter)	
Weight		5.2 kg	
Packing size		409 x 378 x 152 mm	
Dimensions (w x h x d)		782 10364, 782 10365: 301.3 x 93 x 290.5 mm (including connectors and mounting feet) 782 10374, 782 10375: 301.3 x 93 x 287.5 mm (including connectors and mounting feet)	

Duplexer

410 – 415 / 420 – 425 MHz (TETRA, TETRAPOL)

415 – 420 / 425 – 430 MHz (TETRA, TETRAPOL)

KATHREIN

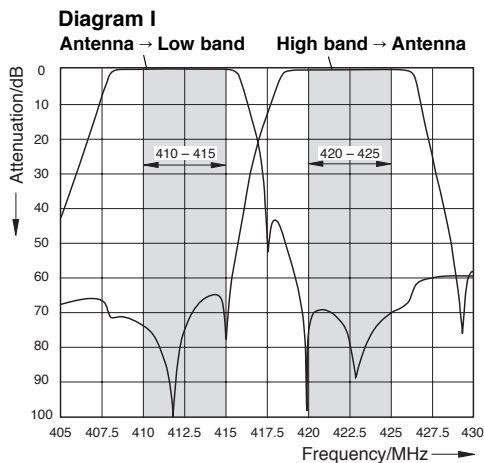
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Accessories (order separately)

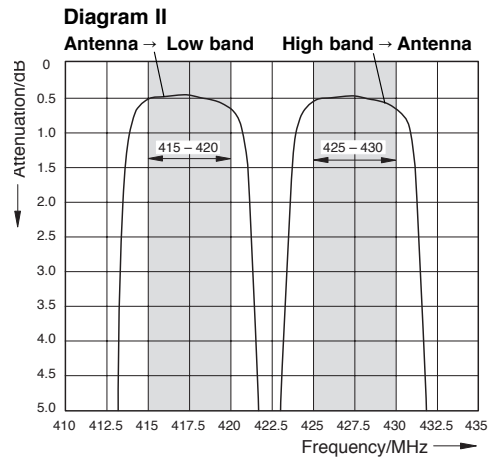
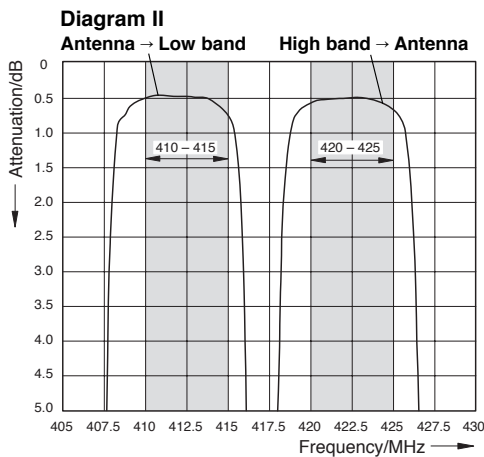
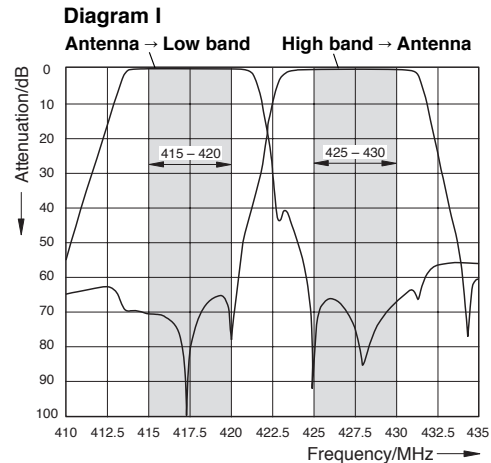
Type No.	782 10370 19" drawer	782 10380 19" drawer
Application	Suitable for duplexers 782 10364, 782 10365, 782 10374, 782 10375 to be mounted with connectors pointing to front	Suitable for duplexers 782 10364, 782 10365, 782 10374, 782 10375 to be mounted with connectors pointing to rear
Dimensions	19" drawer, 2 height units, plug-in depth max. 253 mm	
Weight	Approx. 1 kg	
Mounting note	Remove mounting feet from duplexer and reuse 4 of 8 screws (M3 x 8 countersunk screw) for mounting the duplexer on the 19" drawer	
Mounting example		

Typical Attenuation Curves

782 10364 / 782 10374



782 10365 / 782 10375



Duplexer

450 – 455 / 460 – 465 MHz (TETRA, TETRAPOL)

455 – 460 / 465 – 470 MHz (TETRA, TETRAPOL)

KATHREIN

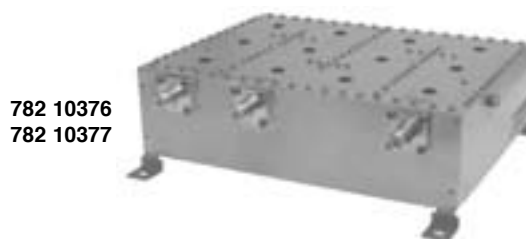
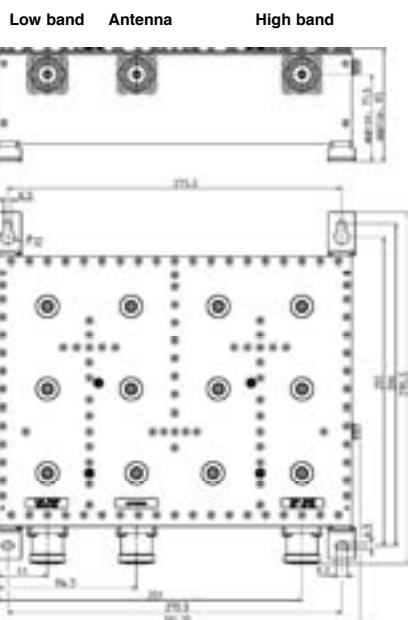
Antennen · Electronic

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

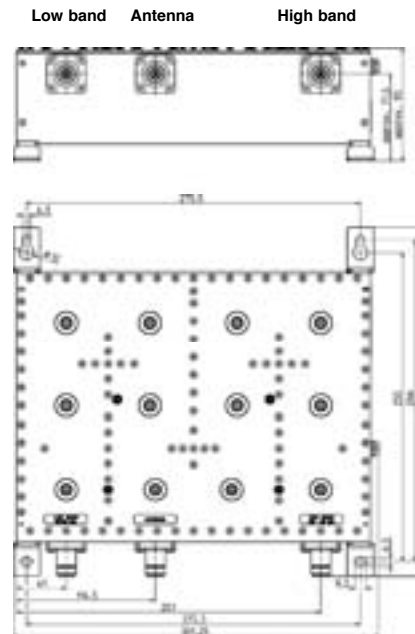
- Suitable for indoor applications
- Built-in DC stop between all ports
- 19" drawers available as accessories



782 10366
782 10367



782 10376
782 10377



Technical Data

Type No.	7-16 female N female	782 10366 782 10376	782 10367 782 10377
Pass band		450 – 455 MHz 460 – 465 MHz	455 – 460 MHz 465 – 470 MHz
Low band			
High band			
Insertion loss		< 0.8 dB (450 – 455 MHz) < 0.8 dB (460 – 465 MHz)	< 0.8 dB (455 – 460 MHz) < 0.8 dB (465 – 470 MHz)
Antenna → Low band			
High band → Antenna			
Isolation		> 65 dB (450 – 455 / 460 – 465 MHz)	> 65 dB (455 – 460 / 465 – 470 MHz)
Low band ↔ High band			
VSWR		< 1.25 (450 – 455 / 460 – 465 MHz)	< 1.25 (455 – 460 / 465 – 470 MHz)
Impedance		50 Ω	
Input power		< 200 W (low band or high band, with max. 8 carriers)	
Intermodulation products		< -150 dBc (3 rd order; with 2 x 20 W)	
Temperature range		-20 ... +60 °C	
Application		Indoor	
Special features		Built-in DC stop between all ports	
Mounting		With 4 screws (max. 6 mm diameter)	
Weight		5.2 kg	
Packing size		409 x 378 x 152 mm	
Dimensions (w x h x d)		782 10366, 782 10367: 301.3 x 93 x 290.5 mm (including connectors and mounting feet) 782 10376, 782 10377: 301.3 x 93 x 287.5 mm (including connectors and mounting feet)	

Duplexer

450 – 455 / 460 – 465 MHz (TETRA, TETRAPOL)

455 – 460 / 465 – 470 MHz (TETRA, TETRAPOL)

KATHREIN

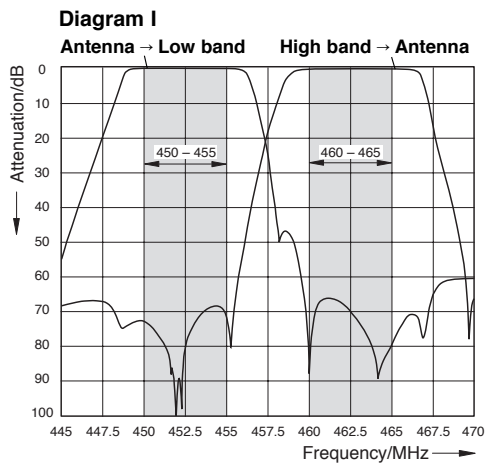
Antennen · Electronic

Accessories (order separately)

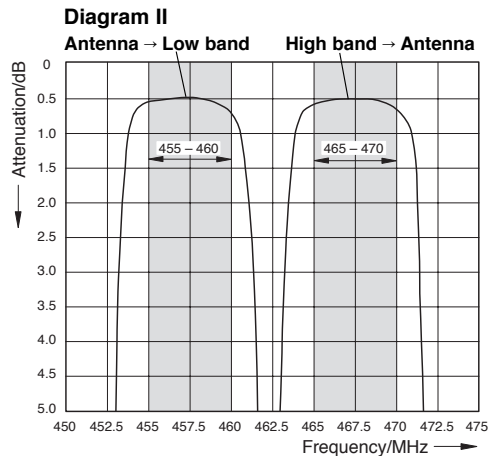
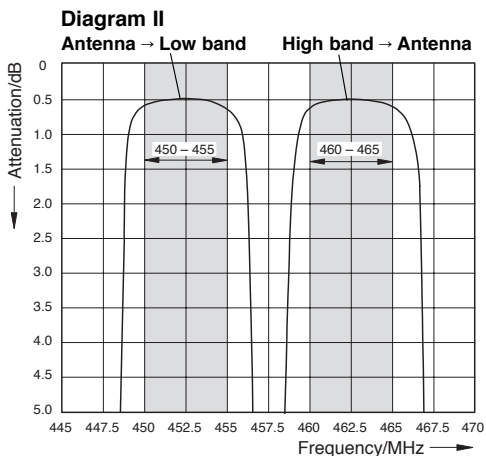
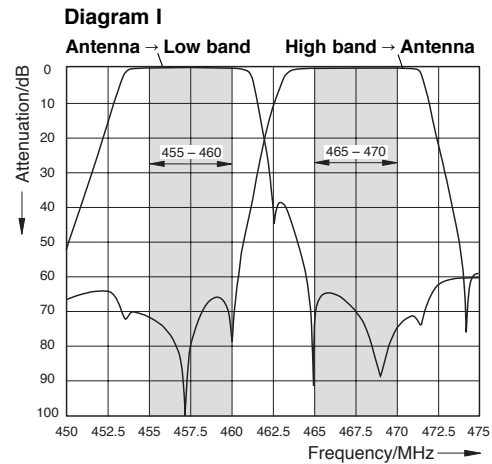
Type No.	782 10370 19" drawer	782 10380 19" drawer
Application	Suitable for duplexers 782 10366, 782 10367, 782 10376, 782 10377 to be mounted with connectors pointing to front	782 10367, 782 10377 to be mounted with connectors pointing to rear
Dimensions	19" drawer, 2 height units, plug-in depth max. 253 mm	
Weight	Approx. 1 kg	
Mounting note	Remove mounting feet from duplexer and reuse 4 of 8 screws (M3 x 8 countersunk screw) for mounting the duplexer on the 19" drawer	
Mounting example		

Typical Attenuation Curves

782 10366 / 782 10376



782 10367 / 782 10377



Duplexer

380 ... 470 MHz

The duplexer is suited to combine transmitters and receivers (or transmitter and transmitter or receiver and receiver) to a common antenna.

It can be used:

- for very small frequency spacing,
- to obtain very high stop band attenuation (more than 100 dB) at very low insertion loss.

Design and construction:

The duplexer consists of four or six S-P filters K 65 21 26 1 and interconnecting cables of defined length, depending on the operating frequencies. The S-P filters consist of temperature stabilized $\lambda/4$ coaxial resonators. Using a specially temperature stabilized coupling a high stop band attenuation can be adjusted very close to the pass band frequency.

Tuning:

The stop band attenuation is dependent on the frequency spacing and the number of S-P filters. The stop band attenuation for four or six S-P filters can be read from the diagram.

The duplexer is tuned to the desired pass band frequencies at the factory. When ordering please specify the pass band frequencies.

The duplexer can also be tuned on site using the supplied instructions.

Installation:

The duplexer can be used as a stand alone unit or wall mounted using the supplied brackets. The individual S-P filters can be connected to each other using the supplied straps.

Custom versions:

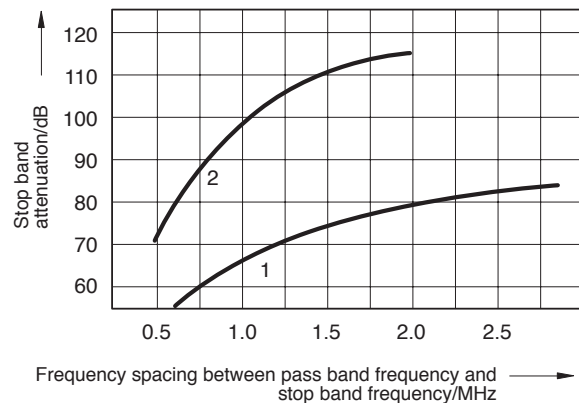
For special applications more than six S-P filters can be combined.



similar to K 65 41 25

Typical attenuation curves

Tuning examples:



Number of resonators	Curve	Insertion loss	Type No.
4	1	1.0 dB	K 65 41 25
6	2	1.5 dB	K 65 41 26

Technical Data

Type No.	K 65 41 25	K 65 41 26
Number of resonators	4	6
Frequency range	380 ... 470 MHz	
Insertion loss	1.0 dB	1.5 dB
VSWR	< 1.4	
Impedance	50 Ω	
Input power	< 200 W	
Effect of temperature	< 1.5 kHz / °C	
Temperature range	-30 ... +60 °C	
Material	Outer conductor: Aluminium Inner conductor: Copper, silver-plated	
Connectors	N female	
Weight	20.5 kg	30.5 kg
Packing size	420 mm x 490 mm x 420 mm	420 mm x 490 mm x 630 mm
Dimensions (w x h x d)	190 mm x max. 350 mm x 760 mm (with tuning rods)	190 mm x max. 350 mm x 1140 mm (with tuning rods)
Attached hardware	S-P filter with interconnecting cables, 2 brackets and 2 straps for each resonator	

Multiband Combiners and Transmitter Combiners

Filter Transmitter Combiners
Hybrid Transmitter Combiners
Multiband Combiners

Multiband Combiners and Transmitter Combiners:

Description	Type No.	Frequency range ... tunable bandwidth – fixed bandwidth (not tunable)	Max. input power	Page
Filter Transmitter Combiner	792 100	146 ... 174 MHz	100 W	146
Filter Transmitter Combiner	792 101	146 ... 174 MHz	100 W	146
Filter Transmitter Combiner	792 102	146 ... 174 MHz	100 W	146
Filter Transmitter Combiner	793 205	146 ... 174 MHz	100 W	146
Filter Transmitter Combiner	793 206	146 ... 174 MHz	100 W	146
Hybrid Transmitter Combiner, 2 inputs	792 059	146 – 174 MHz	25 W	147
Hybrid Transmitter Combiner, 2 inputs	792 061	146 – 174 MHz	100 W	147
Hybrid Transmitter Combiner, 3 inputs	792 064	146 – 174 MHz	100 W	147
Hybrid Transmitter Combiner, 4 inputs	792 067	146 – 174 MHz	100 W	147
Hybrid Transmitter Combiner, 2 inputs	784 10168	380 – 430 MHz	25 W	148
Hybrid Transmitter Combiner, 2 inputs	784 10167	380 – 430 MHz	100 W	148
Hybrid Transmitter Combiner, 3 inputs	784 10166	380 – 430 MHz	100 W	148
Hybrid Transmitter Combiner, 4 inputs	784 10140	380 – 430 MHz	100 W	148
Hybrid Transmitter Combiner, 5 inputs	784 10165	380 – 430 MHz	100 W	148
Hybrid Transmitter Combiner, 2 inputs	791 644	400 – 470 MHz	25 W	149
Hybrid Transmitter Combiner, 2 inputs	791 646	400 – 470 MHz	100 W	149
Hybrid Transmitter Combiner, 3 inputs	791 649	400 – 470 MHz	100 W	149
Hybrid Transmitter Combiner, 4 inputs	791 652	400 – 470 MHz	100 W	149
Hybrid Transmitter Combiner, 5 inputs	784 10063	400 – 470 MHz	100 W	149
Dual-Band Combiner	K 64 50 4	68 – 87.5 / 146 – 174 MHz	50 W	150
Dual-Band Combiner	719 035	68 – 87.5 / 146 – 174 MHz	50 W	150
Dual-Band Combiner	719 792	68 – 108 / 146 – 174 MHz	50 W	150
Dual-Band Combiner	721 138	68 – 174 / 380 – 470 MHz	50 W	151
Dual-Band Combiner	723 013	68 – 174 / 380 – 470 MHz	50 W	151
Dual-Band Combiner	790 244	68 – 174 / 400 – 470 MHz	50 W	151
Dual-Band Combiner	728 954	68 – 470 / 870 – 970 MHz	50 W	152
Dual-Band Combiner	782 10369	380 – 400 / 410 – 430 MHz	200 W	153
Dual-Band Combiner	782 10379	380 – 400 / 410 – 430 MHz	200 W	153
Dual-Band Combiner	782 10460	50 – 470 / 806 – 2500 MHz	500 W	154, 155
Dual-Band Combiner	782 10457	87.5 – 470 / 806 – 2500 MHz	500 W	154, 155
Dual-Band Combiner	782 10458	87.5 – 470 / 806 – 2500 MHz	500 W	154, 155

Multiband Combiner – Frequency combinations

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

Type No.	Frequency / MHz														
	200	400	600	800	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000
Dual-band Combiners															
719035, K64504	68 - 87.5 / 146 - 174														
719792	68 - 108 / 146 - 174														
721138, 723013	68 - 174	380 - 470													
790244	68 - 174	400 - 470													
78210369, 78210379	380 - 400	410 - 430													
728954	68 - 470				870 - 970										
791145	50 - 470	50 - 1000							1600 - 2000						
78210457, ..458 ..460	50 - 470							806 - 2500							
78210341				824 - 880	890 - 960										
78210970, ..971 ..972 ..973				790 - 862	880 - 960										
78210660, ..1 ..2 ..3 ..4 ..5 ..9				470 - 960						1710 - 2700					
78210680, ..681 ..682 ..683				380 - 960						1710 - 2700					
78210900, 78210901				380 - 960						1710 - 2690					
78210278, ..279 ..305 ..306							790 - 1880			1920 - 2170					
78210620, ..1 ..2 ..3 ..4 ..5							1710 - 1880			1920 - 2170					
78210264							50 - 2200					2400 - 2500			
78210800, 78211091, ..2 ..3 ..4 ..5										1710 - 2180		2400 - 2700			
78210469, ..808 ..809 ..810									1710-1755	1850 - 1910	2110-2155				
Triple-band Combiners															
78210630, ..1 ..2 ..3 ..4 ..5					380 - 960										
Quad-band Combiners															
78210640, ..641 ..642 ..643					380 - 960					1710 - 1880					
										1920 - 2200					
											2500 - 2690				

See KATHREIN catalogue 790 - 6000 MHz

Filter Transmitter Combiner with 2, 3, 4, 5 or 6 Inputs 146 ... 174 MHz

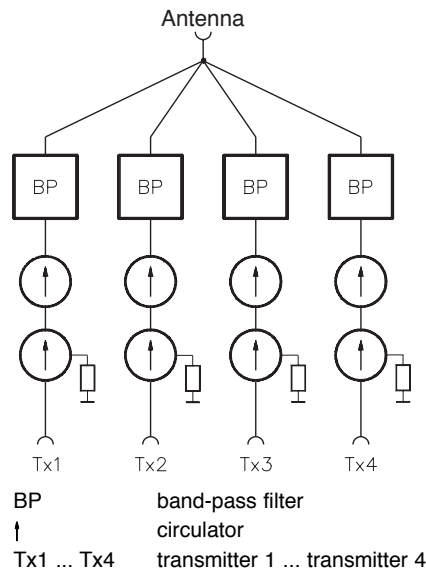
This filter transmitter combiner allows several transmitters to be combined to one common antenna.

Design and construction:

Each filter transmitter combiner consists of one 1-cavity band-pass filter and one double circulator per channel. The filter outputs are combined via defined cable lengths to one common point (star-point).

Tuning:

The band-passes must be tuned to the individual operating channels concerned. This tuning process can either be performed at our factory (in this case, please specify the relevant operating channels when ordering) or it can be carried out on site.



793 205

Filter Transmitter Combiner 792 102

Technical Data

Type No.	792 100	792 101	792 102	793 205	793 206
Frequency range	146 ... 174 MHz				
Number of inputs	2	3	4	5	6
Frequency spacing	> 300 kHz				
Insertion loss at f_0	< 3.5 dB				
Isolation Tx – Tx	> 60 dB				
VSWR	< 1.25 (at operating frequency)				
Impedance	50 Ω				
Input power	100 W of each input				
Temperature range	0 ... +50 °C				
Connectors	N female				
Material band-pass filter	Outer conductor: Aluminium Inner conductor: Brass, silver-plated				
Colour	Front panel: Grey (RAL 7032)				
Packing size	620 mm x 950 mm x 820 mm				
Dimensions (w x h)	19" drawer, 18 hu* (800 mm)				
Plug-in depth	190 mm	380 mm	380 mm	570 mm	570 mm
Weight	33 kg	46 kg	62 kg	83 kg	101 kg

* hu = height unit

Hybrid Transmitter Combiner with 2, 3 or 4 Inputs 146 – 174 MHz

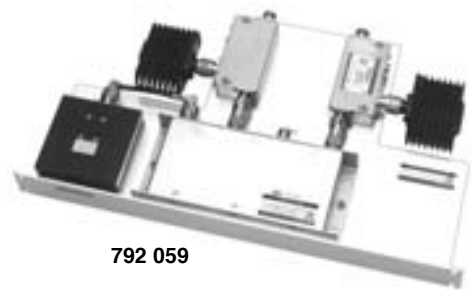
The hybrid transmitter combiner allows two or several transmitters to be combined to a common output.

Special features:

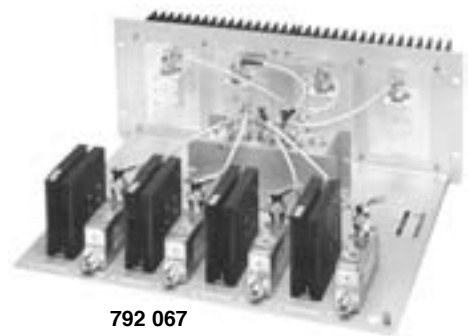
- very small spacing of the transmitting frequencies, down to adjacent channel spacing,
- variable transmitter frequencies,
- small dimensions.

Design and construction:

The hybrid transmitter combiner has two, three or four inputs and one output. For combining transmitters a hybrid ring junction or a decoupled power splitter is used as hybrid, depending on the number of inputs. In every transmitting path a wide band dual circulator is inserted, which causes very high isolation. This effectively suppresses intermodulation products. The absorbers are dimensioned for a possible total reflection occurring at the output.

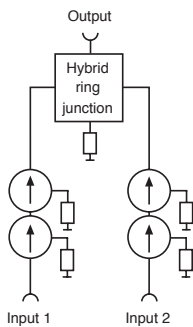


792 059

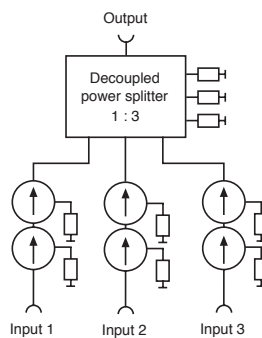


792 067

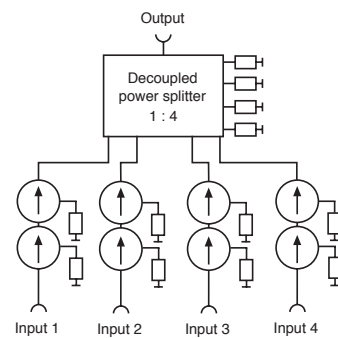
792 059, 792 061



792 064



792 067



Technical Data

Type No.	Inputs	Insertion loss	Dimensions 19" drawer		Input power of each input	Packing size
			height	plug-in depth		
792 059	2	< 4.1 dB	1 hu* = 45 mm	350 mm	25 W	535 mm x 120 mm x 435 mm
792 061	2	< 4.1 dB	4 hu* = 177 mm	350 mm	100 W	535 mm x 260 mm x 490 mm
792 064	3	< 6.3 dB	4 hu* = 177 mm	350 mm	100 W	540 mm x 192 mm x 520 mm
792 067	4	< 7.5 dB	4 hu* = 177 mm	350 mm	100 W	540 mm x 192 mm x 520 mm

Frequency range	146 – 174 MHz
Min. frequency spacing	0 MHz
Isolation	> 65 dB
Impedance	50 Ω
VSWR	< 1.25
Connectors	N female
Colour	Front panel: Grey (RAL 7032)

* hu = height unit

Hybrid Transmitter Combiner

380 – 430 MHz

(TETRA, TETRAPOL)

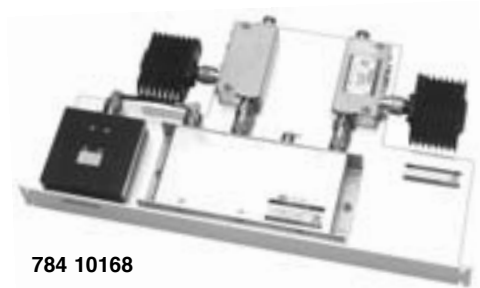
The hybrid transmitter combiner allows two or more transmitters to be combined to a common output.

Special features:

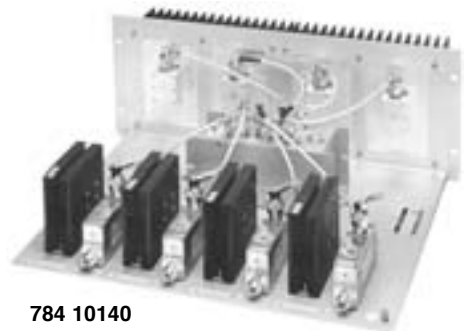
- very small spacing of the transmitting frequencies, down to adjacent channel spacing,
- variable transmitter frequencies,
- small dimensions.

Design:

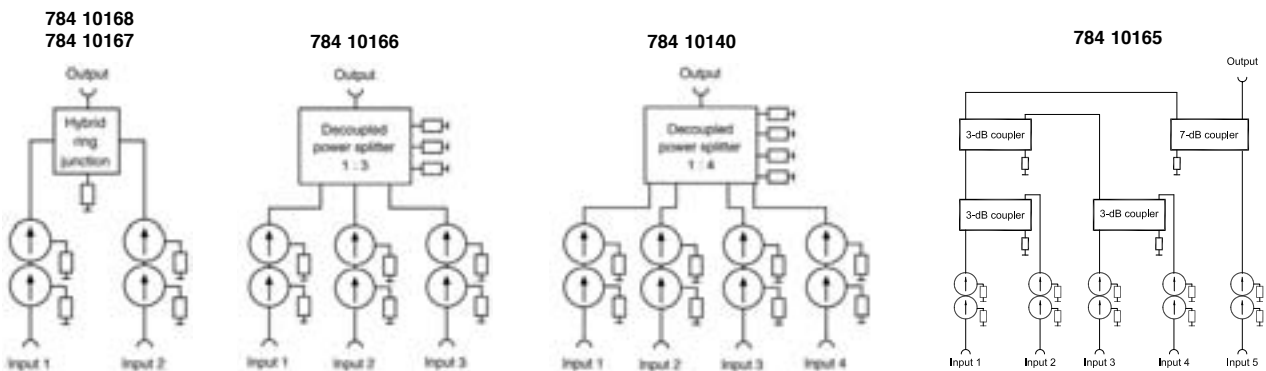
The hybrid transmitter combiner has two, three, four or five inputs and one output. For combining transmitters a hybrid ring junction a decoupled power splitter is used as hybrid or couplers depending on the number of inputs. In every transmitting path a wide band dual circulator is inserted, which causes very high isolation. This effectively suppresses intermodulation products. The absorbers are dimensioned for a possibly occurring total reflection at the output.



784 10168



784 10140



Technical Data

Type No.	Inputs	Insertion loss	Dimensions 19" drawer		Input power per input	Packing size
			height	plug-in depth		
784 10168	2	< 3.9 dB	1 hu* = 44 mm	300 mm	25 W	535 mm x 120 mm x 435 mm
784 10167	2	< 3.9 dB	4 hu* = 177 mm	350 mm	100 W	535 mm x 260 mm x 490 mm
784 10166	3	< 6.3 dB	4 hu* = 177 mm	350 mm	100 W	535 mm x 260 mm x 490 mm
784 10140	4	< 7.3 dB	4 hu* = 177 mm	350 mm	100 W	535 mm x 260 mm x 490 mm
784 10165	5	< 8.3 dB	4 hu* = 177 mm	350 mm	100 W	535 mm x 260 mm x 490 mm

Frequency range 380 – 430 MHz

Min. frequency spacing 0 MHz

Isolation > 70 dB

Impedance 50 Ω

VSWR < 1.2

Connectors N female

Colour Front panel: Grey (RAL 7032)

* hu = height unit

Hybrid Transmitter Combiner 400 – 470 MHz

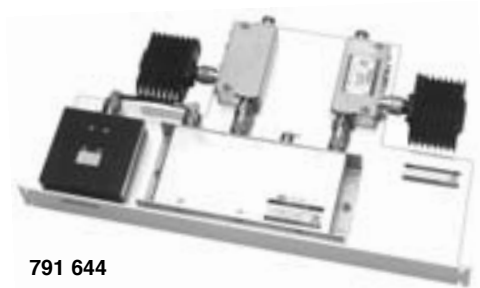
The hybrid transmitter combiner allows two or more transmitters to be combined to a common output.

Special features:

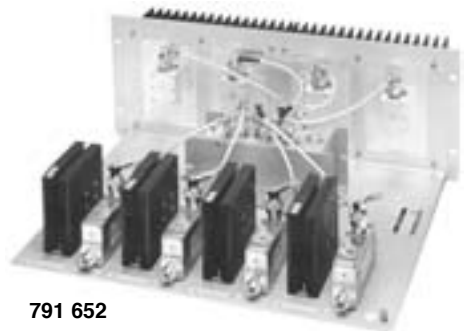
- very small spacing of the transmitting frequencies, down to adjacent channel spacing,
- variable transmitter frequencies,
- small dimensions.

Design:

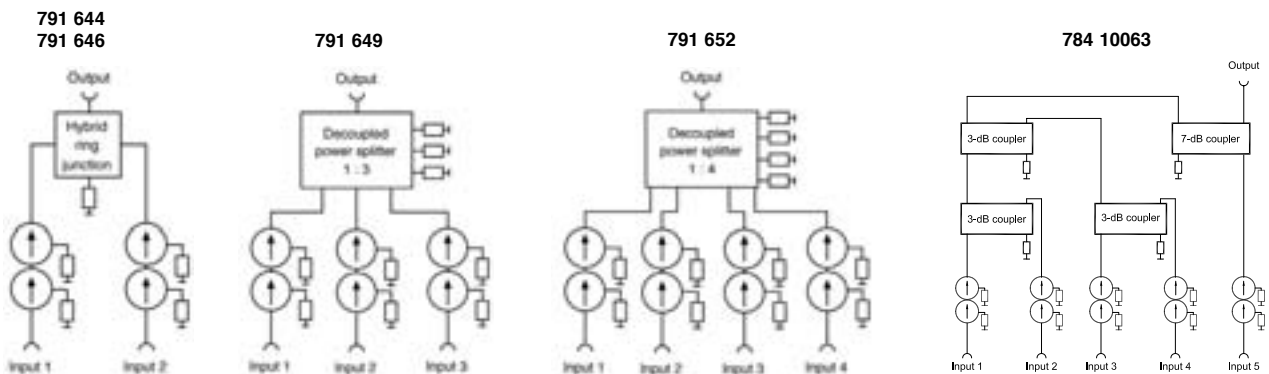
The hybrid transmitter combiner has two, three, four or five inputs and one output. For combining transmitters a hybrid ring junction a decoupled power splitter is used as hybrid or couplers depending on the number of inputs. In every transmitting path a wide band dual circulator is inserted, which causes very high isolation. This effectively suppresses intermodulation products. The absorbers are dimensioned for a possibly occurring total reflection at the output.



791 644



791 652



Technical Data

Type No.	Inputs	Insertion loss	Dimensions		Input power per input	Packing size
			19" drawer height	plug-in depth		
791 644	2	< 3.9 dB	1 hu* = 44 mm	300 mm	25 W	535 mm x 120 mm x 435 mm
791 646	2	< 3.9 dB	4 hu* = 177 mm	350 mm	100 W	535 mm x 260 mm x 490 mm
791 649	3	< 6.3 dB	4 hu* = 177 mm	350 mm	100 W	535 mm x 260 mm x 490 mm
791 652	4	< 7.3 dB	4 hu* = 177 mm	350 mm	100 W	535 mm x 260 mm x 490 mm
784 10063	5	< 8.3 dB	4 hu* = 177 mm	350 mm	100 W	535 mm x 260 mm x 490 mm

Frequency range	400 – 470 MHz
Min. frequency spacing	0 MHz
Isolation	> 70 dB
Impedance	50 Ω
VSWR	< 1.2
Connectors	N female
Colour	Front panel: Grey (RAL 7032)

* hu = height unit

Dual-Band Combiner

68 – 87.5 MHz / 146 – 174 MHz

The dual-band combiner allows several transmitters or receivers of different frequency ranges to be combined to one common antenna.

It can be used:

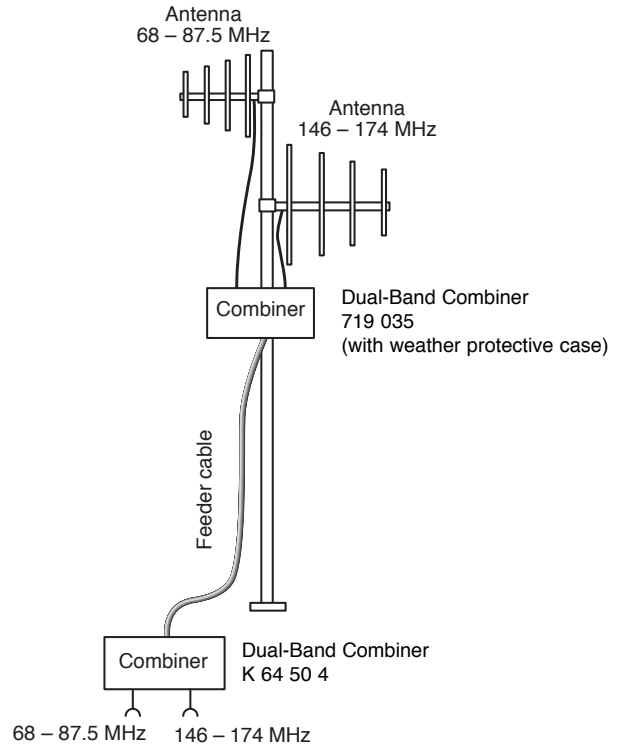
- to combine transmitters or receivers of different frequency bands to a common feeder cable, to a broad band antenna or a broad band radiating cable,
- to separate a broad band signal to individual frequency bands.

Design and construction:

The dual-band combiners consist of low-pass and high-pass filters with lumped L-C elements.



K 64 50 4



Example for the combining of 80 MHz and 160 MHz transmitters/receivers to a common feeder cable

Technical Data

Type No.	K 64 50 4	719 035	719 792
Frequency range Band 1 Band 2	68 – 87.5 MHz 146 – 174 MHz		68 – 108 MHz 146 – 174 MHz
Insertion loss Band 1 Band 2	< 0.5 dB < 0.5 dB		< 0.5 dB < 0.5 dB
Isolation	> 35 dB		> 25 dB
VSWR	< 1.4		< 1.4
Impedance	50 Ω		50 Ω
Input power	< 50 W of each input		< 50 W of each input
Temperature range	–20 ... +50 °C		–20 ... +50 °C
Connectors	N female		N female
Application	Indoor	With weather protective case	Indoor
Mounting	With 2 screws (max. 4 mm diameter)	To tubular masts, 60 ... 320 mm dia. with supplied noncorrosive clamp strap	With 2 screws (max. 4 mm diameter)
Weight	1 kg	3 kg	1 kg
Packing size	190 x 95 x 100 mm	300 x 200 x 200 mm	190 x 95 x 100 mm
Dimensions (w x h x d)	175 x 70 x 80 mm (with connectors)	210 x 160 x 160 mm	175 x 70 x 80 mm (with connectors)

Dual-Band Combiner

68 – 174 / 380 – 470 MHz

It can be used:

- to combine several transmitters and receivers in two or three different frequency bands to a common feeder cable, to a broad-band antenna, or to a broad-band radiating cable,
- and, in the reverse operating mode, to separate several transmission or receiving frequencies into two or three frequency bands.

Design and construction:

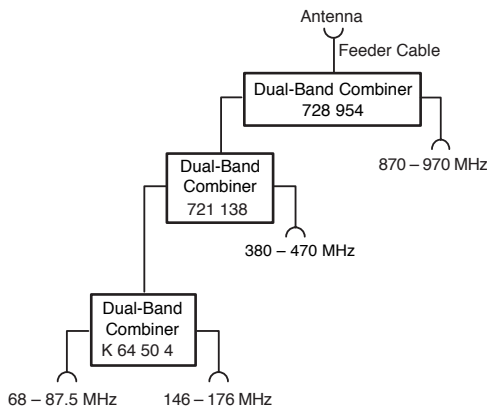
The dual-band combiners consist of low pass and high pass filters with lumped L-C elements.



721 138



790 244



Example for dual-band combiners in cascade

Technical Data

Type No.	721 138	723 013	790 244
Frequency range			
Band 1	68 – 174 MHz		68 – 174 MHz
Band 2	380 – 470 MHz		400 – 470 MHz
Insertion loss			
Band 1	< 0.5 dB		< 0.5 dB
Band 2	< 0.5 dB		< 0.5 dB
Isolation	> 35 dB		> 45 dB
VSWR	< 1.4		< 1.25
Impedance	50 Ω		50 Ω
Input power	< 50 W of each input		< 50 W of each input
Temperature range	–20 ... +50 °C		–20 ... +50 °C
Connectors	N female, silver-plated		N female
Application	Indoor	With weather protective case	Indoor
Mounting	With 2 screws (max. 4 mm diameter)	To tubular masts, 60 ... 320 mm dia. with supplied noncorrosive clamp strap	With 2 screws (max. 4 mm diameter)
Weight	1 kg	3 kg	1 kg
Packing size	190 x 95 x 100 mm	300 x 200 x 200 mm	190 x 95 x 100 mm
Dimensions (w x h x d)	175 x 70 x 80 mm (with connectors)	210 x 160 x 160 mm	175 x 70 x 80 mm (with connectors)

Dual-Band Combiner

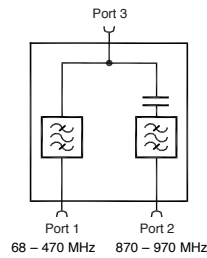
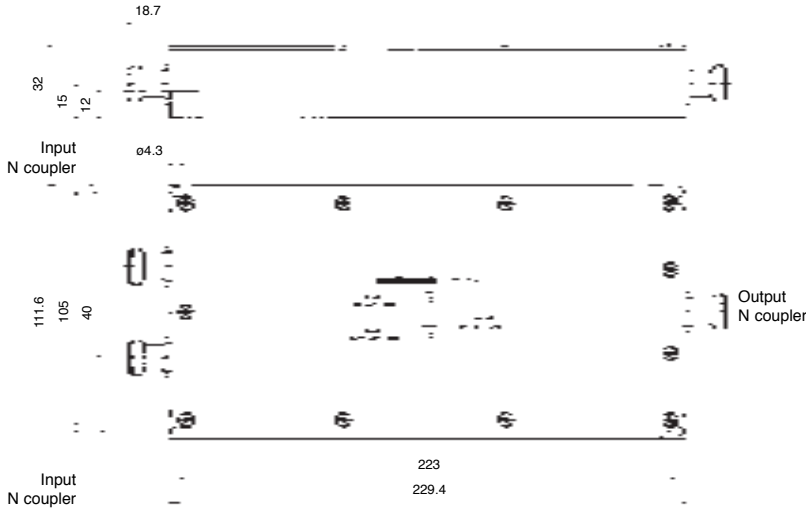
KATHREIN

Antennen · Electronic

68 – 470 MHz
80 / 160 / 400 MHz

870 – 970 MHz
GSM 900

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



Typical Attenuation Curves

Diagram I

Port 1 ↔ Port 3

Port 2 ↔ Port 3

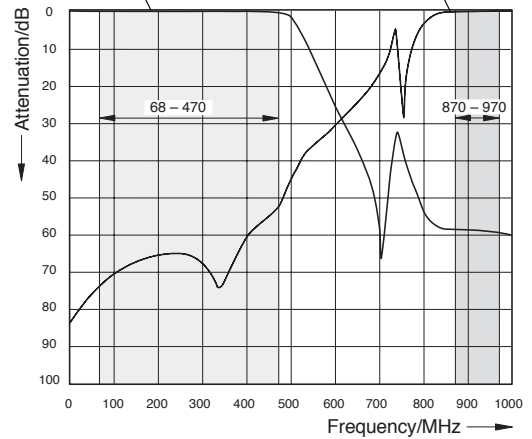
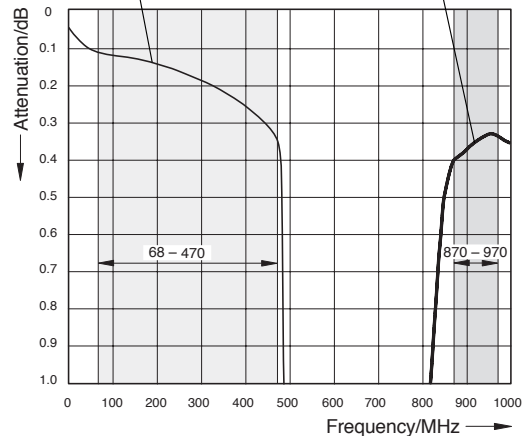


Diagram II

Port 1 ↔ Port 3

Port 2 ↔ Port 3



Technical Data

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

Dual-Band Combiner

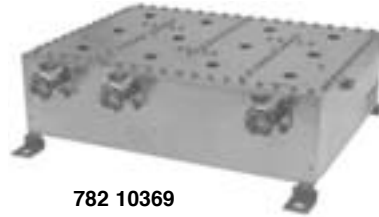
KATHREIN

Antennen · Electronic

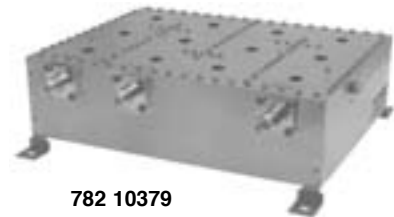
380 – 400 MHz
TETRA / TETRAPOL

410 – 430 MHz
TETRA / TETRAPOL

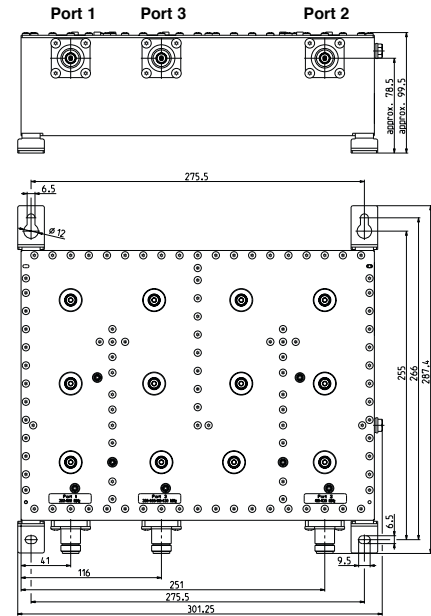
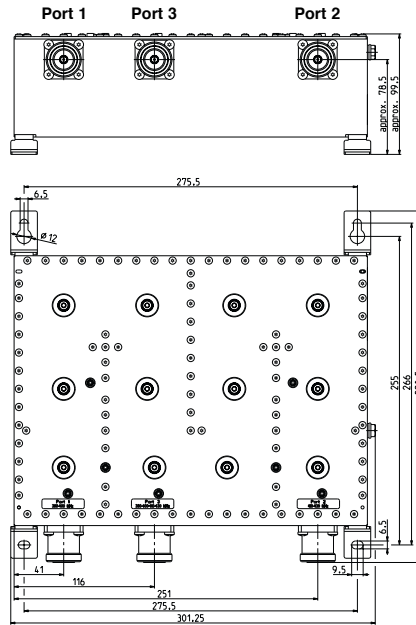
- Designed for co-siting purposes
- Enables feeder sharing
- Suitable for indoor applications
- Built-in DC stop between all ports
- 19" drawers available as accessories



782 10369



782 10379



Technical Data

Type No.	782 10369	782 10379
Pass band		
Band 1	380 – 400 MHz	
Band 2	410 – 430 MHz	
Insertion loss		
Port 1 ↔ Port 3	< 0.5 dB, typically 0.2 dB (380 – 400 MHz)	
Port 2 ↔ Port 3	< 0.5 dB, typically 0.2 dB (410 – 430 MHz)	
Isolation		
Port 1 ↔ Port 2	> 60 dB (380 – 400 MHz) > 60 dB (410 – 430 MHz)	
VSWR	< 1.25 (380 – 400 / 410 – 430 MHz)	
Impedance	50 Ω	
Input power		
Band 1	< 200 W (with max. 8 carriers)	
Band 2	< 200 W (with max. 8 carriers)	
Intermodulation products	< -150 dBc (3 rd order; with 2 x 20 W)	
Temperature range	-20 ... +60 °C	
Connectors	7-16 female	N female
Application	Indoor	
Special features	Built-in DC stop between all ports	
Mounting	With 4 screws (max. 6 mm diameter)	
Weight	5.4 kg	
Packing size	409 x 378 x 152 mm	
Dimensions (w x h x d)	301.3 x 99.5 x 290.5 mm 301.3 x 99.5 x 287.4 mm (including connectors and mounting feet)	

Typical Attenuation Curves 782 10369 / 782 10379

Diagram I

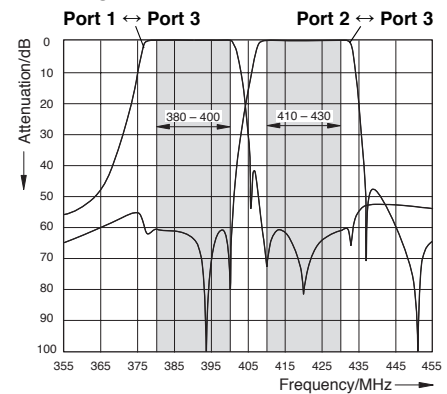
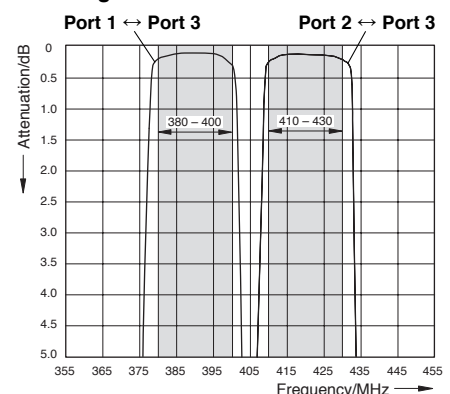


Diagram II



Dual-Band Combiner

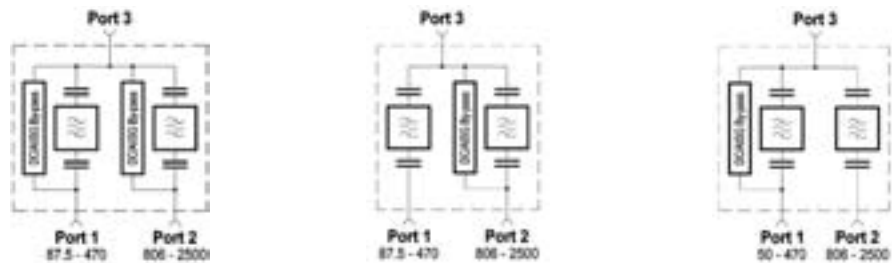
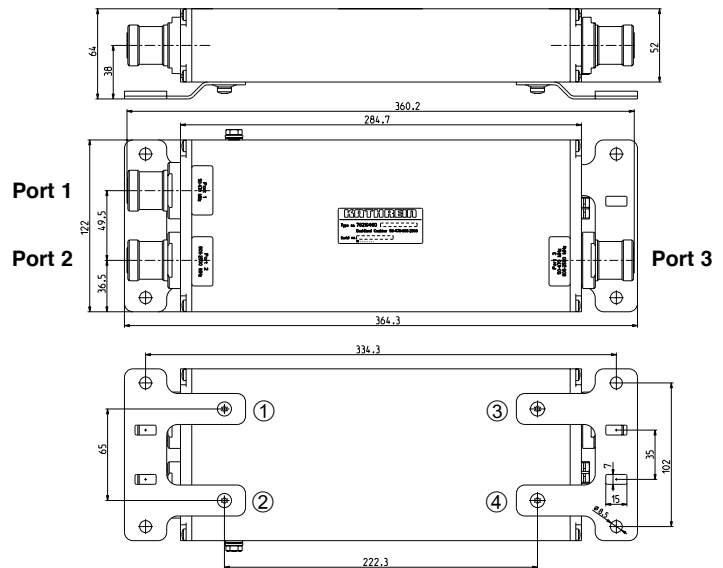
KATHREIN

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 < 500 W / Band 2 < 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 64 x 364.3 mm (including mounting brackets)		

Dual-Band Combiner

KATHREIN

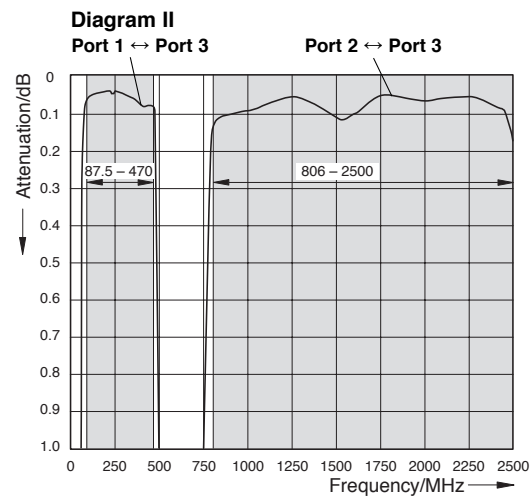
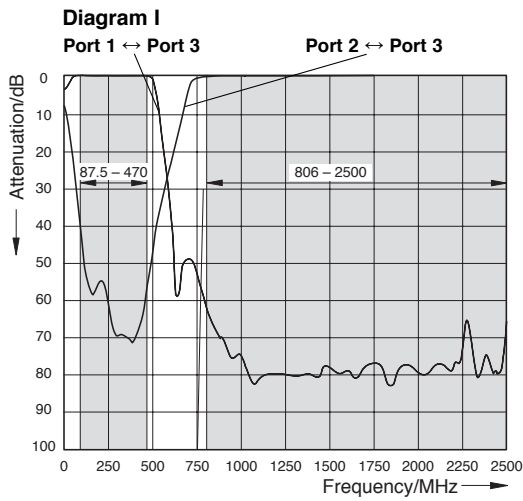
Antennen · Electronic

50 – 470 MHz
PMR / TETRA / TETRAPOL

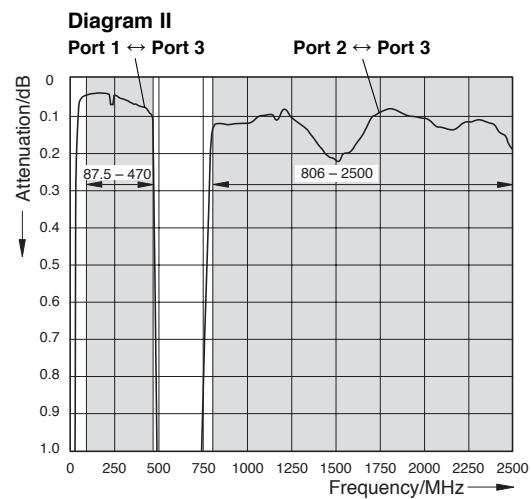
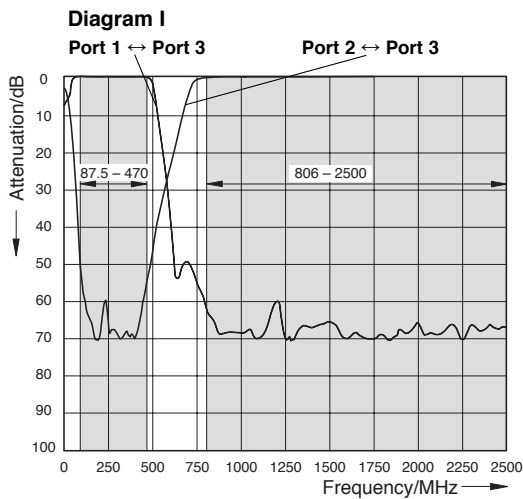
806 – 2500 MHz
CDMA 800 / GSM 900 / GSM 1800 / UMTS / WLAN

Typical Attenuation Curves

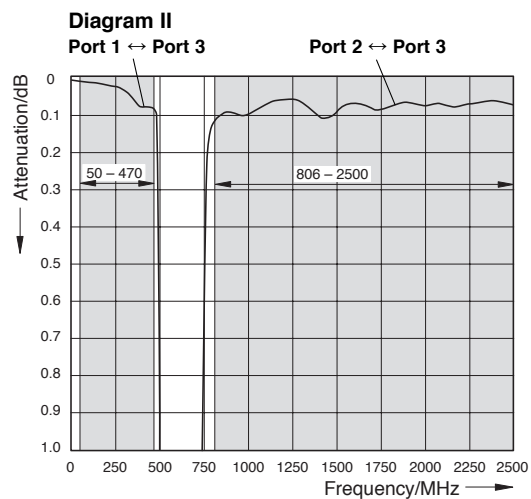
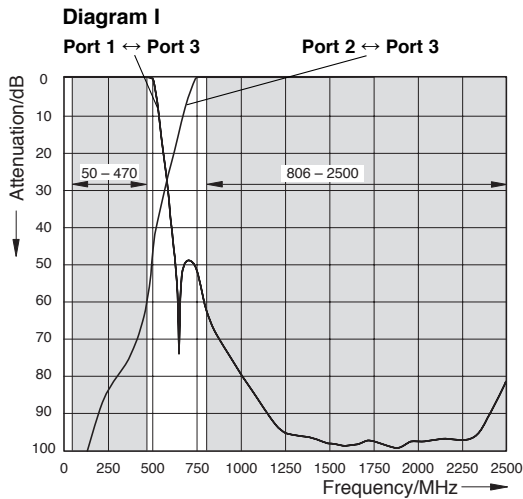
782 10457



782 10458



782 10460



System Components

3-dB Couplers
4.7-dB, 6-dB, 7-dB, 10-dB Couplers
Hybrid Ring Junctions
Decoupled Power Splitters
Circulators
DC-Stops
Attenuators
50- Ω Loads

System Components:

Description	Type No.	Frequency range	Max. input power	Page
3-dB Coupler	K 62 70 41	68 – 108 MHz	1000 W	159
Hybrid Ring Junction	K 62 73 41	68 – 87.5 MHz	100 W	160
Circulator	793 276	68 – 88 MHz	50 W	161
3-dB Coupler	K 62 70 21	140 – 180 MHz	800 W	164
Hybrid Ring Junction	K 62 73 21	146 – 174 MHz	100 W	165
Circulator	793 277	146 – 174 MHz	100 W	166
Circulator	780 060	146 – 174 MHz	100 W	167
3-dB Coupler	K 63 70 21	340 – 512 MHz	500 W	168
3-dB Coupler	K 63 70 27	340 – 512 MHz	500 W	168
4.7-dB Coupler	719 782	380 – 470 MHz	500 W	169
6-dB Coupler	792 777	380 – 470 MHz	500 W	169
7-dB Coupler	792 331	380 – 470 MHz	500 W	169
10-dB Coupler	720 297	380 – 470 MHz	500 W	169
Hybrid Ring Junction, TETRA, TETRAPOL	730 092	380 – 430 MHz	100 W	170
Hybrid Ring Junction	K 63 73 211	400 – 470 MHz	100 W	171
Decoupled Power Splitter 1 : 3	782 10231	380 – 430 MHz	100 W	172
Decoupled Power Splitter 1 : 4	782 10189	380 – 430 MHz	100 W	172
Decoupled Power Splitter 1 : 3	724 348	400 – 470 MHz	100 W	173
Decoupled Power Splitter 1 : 4	725 871	400 – 470 MHz	100 W	173
Circulator	784 10175	380 – 430 MHz	200 W	174
Circulator	790 215	400 – 470 MHz	100 W	174
DC-Stop	721 062	68 – 87.5 / 146 – 174 / 380 – 470 MHz	10 W	162
DC-Stop	782 10850	250 – 2700 MHz	750 W	163
Attenuator 3 dB	784 10235	0 – 4000 MHz	2 W	175
Attenuator 6 dB	784 10236	0 – 4000 MHz	2 W	175
Attenuator 10 dB	784 10237	0 – 4000 MHz	2 W	175
Attenuator 20 dB	784 10238	0 – 4000 MHz	2 W	175
Attenuator 3 dB	791 918	0 – 4000 MHz	15 W	175
Attenuator 6 dB	791 919	0 – 4000 MHz	12 W	175
Attenuator 10 dB	791 920	0 – 4000 MHz	10 W	175
Attenuator 20 dB	791 921	0 – 4000 MHz	10 W	175
50-Ω Load (N male)	K 62 26 61 1	0 – 2700 MHz	0.5 W	176
50-Ω Load (7-16 male)	784 10367	0 – 4000 MHz	1.5 W	176
50-Ω Load (7-16 female)	784 10470	0 – 4000 MHz	1.5 W	176
50-Ω Load (N male)	K 62 26 11 1	0 – 2700 MHz	2 W	176
50-Ω Load (N female)	K 62 26 40 1	0 – 2700 MHz	10 W	176
50-Ω Load (N male)	K 62 26 41 1	0 – 2700 MHz	10 W	176
50-Ω Load (N female)	K 62 26 20 1	0 – 2700 MHz	25 W	177
50-Ω Load (N male)	K 62 26 21 1	0 – 2700 MHz	25 W	177
50-Ω Load (7-16 female)	K 62 26 20 7	0 – 2700 MHz	25 W	177
50-Ω Load (7-16 male)	K 62 26 21 7	0 – 2700 MHz	25 W	177
50-Ω Load (N female)	K 62 26 30 1	0 – 2700 MHz	50 W	177
50-Ω Load (N male)	K 62 26 31 1	0 – 2700 MHz	50 W	177
50-Ω Load (7-16 female)	K 62 26 30 7	0 – 2700 MHz	50 W	177
50-Ω Load (7-16 male)	K 62 26 31 7	0 – 2700 MHz	50 W	177
50-Ω Load (N female)	K 62 26 50 1	0 – 1000 MHz	100 W	177
50-Ω Load (N male)	K 62 26 51 1	0 – 1000 MHz	100 W	177
50-Ω Load (7-16 female)	K 62 26 50 7	0 – 1000 MHz	100 W	177

3-dB Coupler (90° Hybrid)

68 – 108 MHz

The 3-dB coupler can be used:

- as decoupled 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 a frequency independent 90° phase shifter,
- as a component to form combiners.



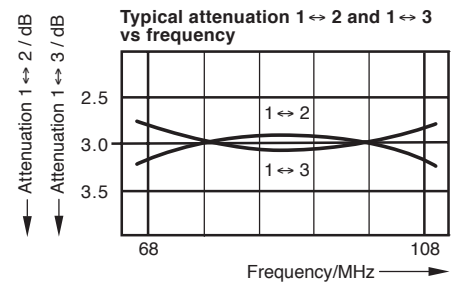
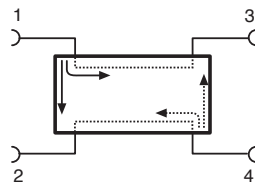
K 62 70 41

Design and 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 is to be planned for according to the mismatch of ports 2 and 3.

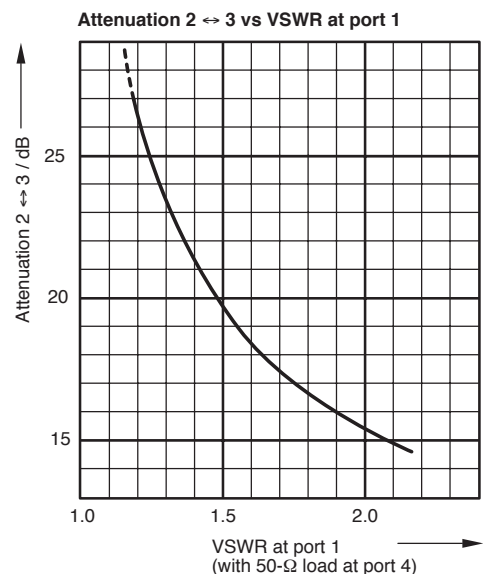
Decoupled combining can be achieved via the diagonally opposite ports 2 and 3 respectively 1 and 4.

Any open ports must be terminated with suitable loads.



Technical Data

Type No.	K 62 70 41
Frequency range	68 – 108 MHz
Attenuation 1 ↔ 2 / 1 ↔ 3	3 ±0.4 dB
Attenuation 2 ↔ 3	See diagram
Directivity	> 32 dB
VSWR	< 1.06
Impedance	50 Ω
Max. power	1 kW
Connectors	N female silver-plated
Material	Brass, silver-plated
Colour	Grey (RAL 7032)
Installation	With 2 screws (max. 6 mm diameter)
Weight	2.3 kg
Packing size	931 mm x 126 mm x 54 mm
Dimensions (w x h x d)	886 mm x 40 mm x 95 mm (incl. connectors)

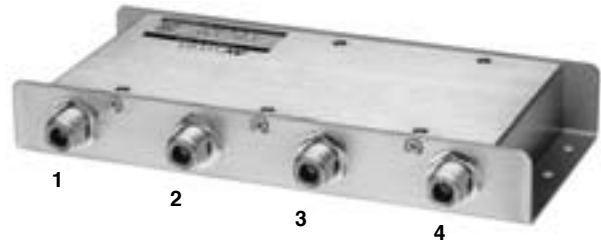


Note: VSWR and attenuation are measured when the remaining ports are terminated with 50-Ω loads.

Hybrid Ring Junction (180° Hybrid) 68 – 87.5 MHz

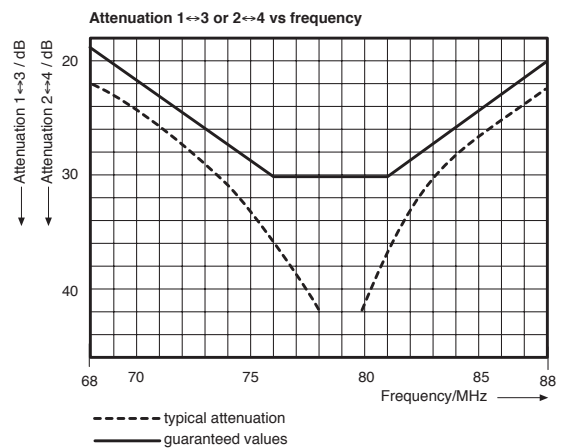
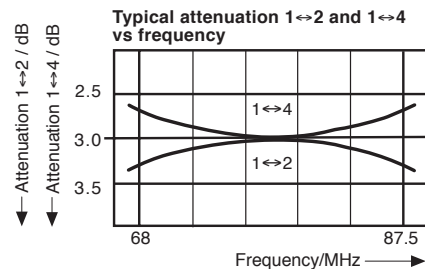
The hybrid ring junction can be used:

- 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:

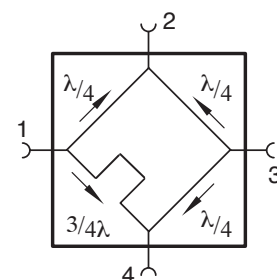
The hybrid ring junction has four ports, two of which are decoupled from each other. For example effective power entering into port 1 is distributed into ports 2 and 4, port 3 is decoupled and without power if ports 2 and 4 are ideally matched. In practice an absorber of suitable power at port 3 is to be planned for according to the mismatch of ports 2 and 4. Decoupled combining can be made via port 1 and 3 or 2 and 4.



The remaining ports are terminated with 50-Ω loads.

Technical Data

Type No.	K 62 73 41
Frequency range	68 – 87.5 MHz
Attenuation 1 ↔ 2 bzw. 1 ↔ 4	3.2 ±0.4 dB
Attenuation 1 ↔ 3 bzw. 2 ↔ 4	See diagrams
VSWR*	< 1.3
Impedance	50 Ω
Input power	< 100 W per Input
Connector	N female
Material	Housing: Aluminium
Installation	With 2 screws (M4)
Weight	650 g
Packing size	230 mm x 35 mm x 130 mm
Dimensions (w x h x d)	225 mm x 32 mm x 117 mm (with connectors)



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

Circulator

68 – 88 MHz

The circulator can be used:

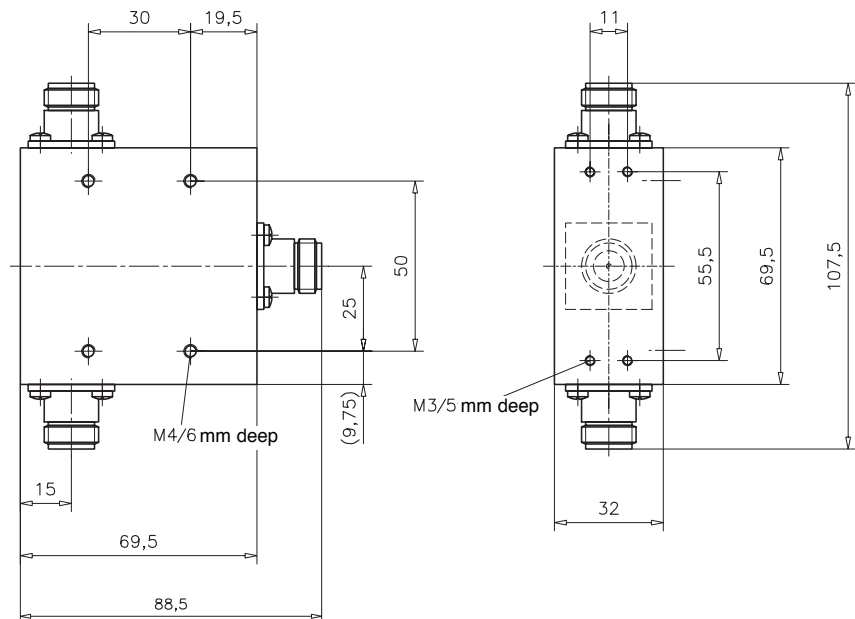
- to increase the coupling attenuation between transmitters, to reduce intermodulation products,
- to prevent adverse effects of unmatched load impedance on amplifier performance.

Function:

The circulator is a non-reciprocal component with low insertion loss in the forward direction (1 → 2) and high attenuation in the reverse direction (2 → 1). The impedance at the input (1) of the circulator is constant and independent of the impedance of the components following. The reflected power at output (2) is passed to the absorber port (3), which must be terminated with an absorber.

Dimensioning of the absorber:

The absorber at port (3) must be dimensioned to be able to absorb the maximum power reflected at output (2).



Technical Data

Type No.	793 276
Frequency range	68 – 88 MHz
Insertion loss 1 → 2	< 0.45 dB
Isolation 2 → 1	> 20 dB
VSWR 1, 2, 3	< 1.22
Impedance	50 Ω
Input power	< 50 W
Temperature range	-10 ... +55 °C
Connectors	N female
Weight	660 g
Packing size	150 mm x 115 mm x 105 mm
Dimensions (w x h x d)	105 mm x 87 mm x 32 mm (with connectors)

DC-Stop

68 ... 470 MHz

The DC-Stop is used to block DC voltage in coaxial cables where the specified RF frequencies are passed.

Special features:

- galvanic DC isolation of the inner and outer conductors of a coaxial cable,
- at the input and output of the DC-Stop the inner and outer conductor is DC connected. This avoids DC voltage differences between inner and outer conductors,
- protection against electric shock hazard because of plastic housing construction.

Design and construction:

The DC-Stop consists of broad band transformers and high voltage capacitors.



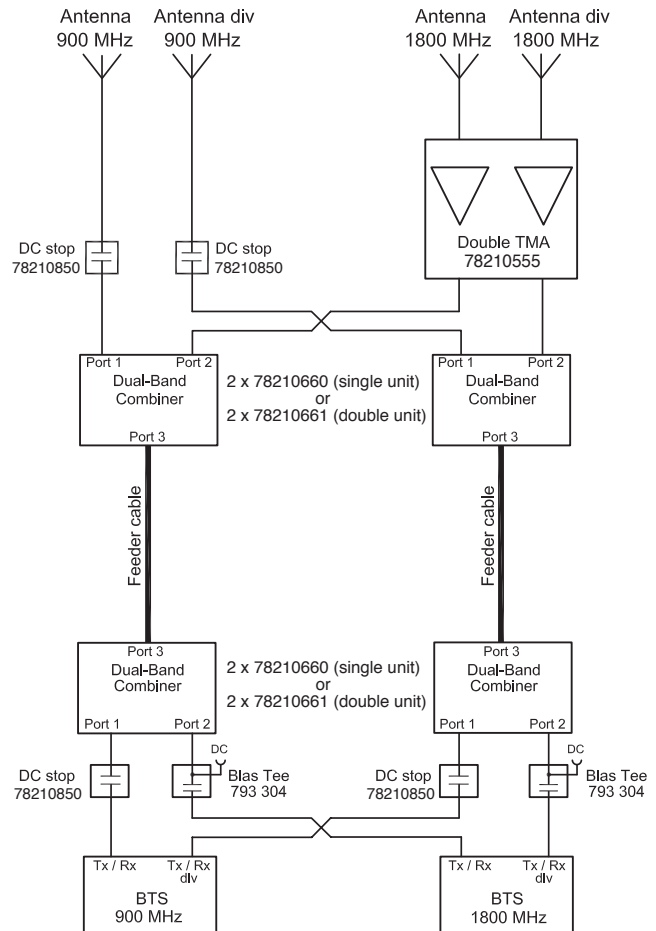
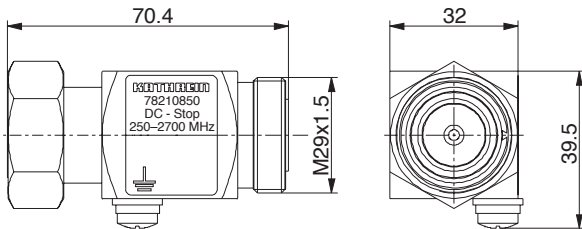
Technical Data

Type No.	721 062
Frequency range	68 – 87.5 MHz 146 – 174 MHz 380 – 470 MHz
Insertion loss	< 0.8 dB (68 – 87.5 MHz) < 1.0 dB (146 – 174 MHz) < 1.5 dB (380 – 470 MHz)
VSWR	< 1.4
Impedance	50 Ω
Input power	< 10 W
DC test voltage	4 kV
Connectors	Mounting clamps for coaxial cable RG 213/U, RG 214U
Material	Housing: Polyester
Installation	With 4 screws (max. 4 mm diameter)
Weight	350 g
Packing size	190 mm x 100 mm x 65 mm
Dimensions (w x h x d)	180 mm x 75 mm x 55 mm

DC Stop 250 – 2700 MHz

DC Stop is used in dual- or multi-band antenna systems where one or more antenna systems require a DC supply for an installed mast head amplifier. The DC Stop prevents DC voltage from being shorted within the non-biased antenna system(s) and isolates the corresponding base station output(s) from DC voltage.

- Low RF signal insertion loss
- High DC signal isolation from port 1 to port 2 and vice versa
- Suitable for indoor or outdoor applications



Application Example

Technical Data

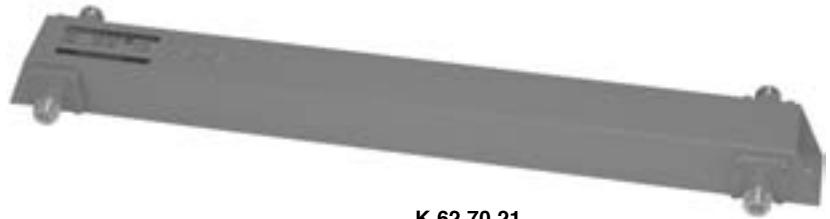
Type No.	782 10850
Frequency range	250 – 2700 MHz
Insertion loss Port 1 ↔ Port 2	< 0.1 dB (250 – 2700 MHz)
Isolation Port 1 ↔ Port 2	> 70 dB (DC)
VSWR	< 1.1 (380 – 2700 MHz) < 1.2 (250 – 380 MHz)
Impedance	50 Ω
Input power	< 750 W (250 – 2700 MHz)
Intermodulation products	< -160 dBc (3 rd order; with 2 x 20 W)
Temperature range	-40 ... +70 °C
Connectors Port 1 Port 2	7-16 male 7-16 female
Application	Indoor or outdoor (IP 67)
Weight	0.32 kg
Dimensions (w x h x d)	70.4 mm x 39.5 mm x 32 mm (including connectors and earthing screw of 6 mm diameter)



3-dB Coupler (90° Hybrid) 140 – 180 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.



K 62 70 21

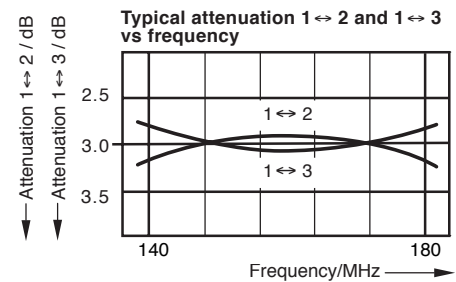
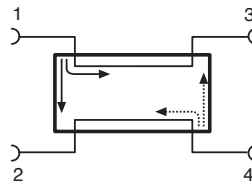
Function:

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.

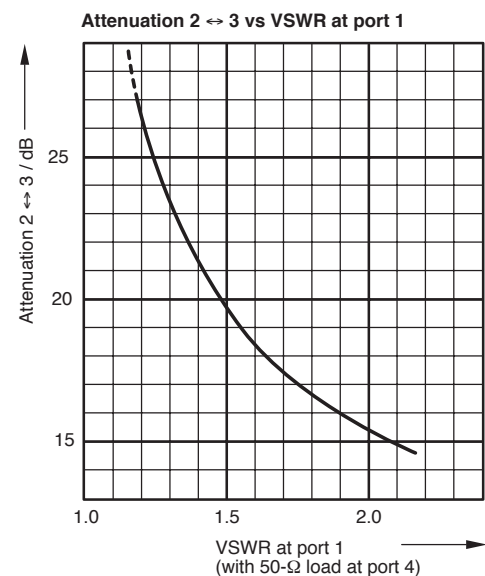
Customized versions:

On request couplers with a coupling attenuation of between 3 dB and 10 dB are available.



Technical Data

Type No.	K 62 70 21
Frequency range	140 – 180 MHz
Attenuation 1 ↔ 2 / 1 ↔ 3	3 ±0.4 dB
Attenuation 2 ↔ 3	See diagram
Directivity	> 35 dB
VSWR	< 1.06
Impedance	50 Ω
Input power	< 800 W total power
Connectors	N female silver-plated
Material	Brass, silver-plated
Colour	Grey (RAL 7032)
Installation	With 2 screws (max. 5 mm dia.)
Weight	1.4 kg
Packing size	520 x 47 x 115mm
Dimensions (w x h x d)	496 x 40 x 95 mm (with connectors)



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

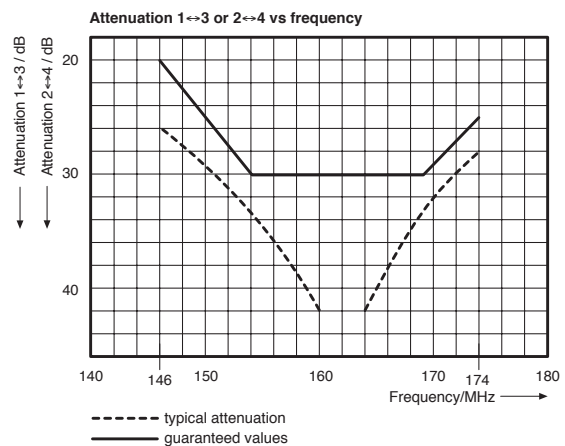
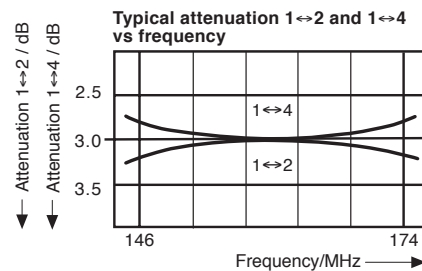
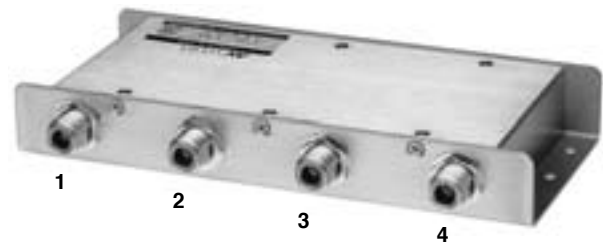
Hybrid Ring Junction (180° Hybrid) 146 – 174 MHz

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:

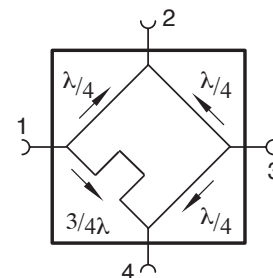
The hybrid ring junction has four ports, two of which are decoupled from each other. For example effective power entering into port 1 is distributed into ports 2 and 4, port 3 is decoupled and without power if ports 2 and 4 are ideally matched. In practice an absorber of suitable power at port 3 is to be planned for according to the mismatch of ports 2 and 4. Decoupled combining can be made via port 1 and 3 or 2 and 4.



The remaining ports are terminated with 50-Ω loads.

Technical Data

Type No.	K 62 73 21
Frequency range	146 – 174 MHz
Attenuation 1 ↔ 2 bzw. 1 ↔ 4	3 ±0.4 dB
Attenuation 1 ↔ 3 bzw. 2 ↔ 4	See diagrams
VSWR*	< 1.2
Impedance	50 Ω
Input power	< 100 W per Input
Connector	N female
Material	Housing: Aluminium
Installation	With 2 screws (M4)
Weight	550 g
Packing size	230 mm x 35 mm x 130 mm
Dimensions (w x h x d)	225 mm x 32 mm x 117 mm (with connectors)



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

Circulator

146 – 174 MHz

The circulator can be used:

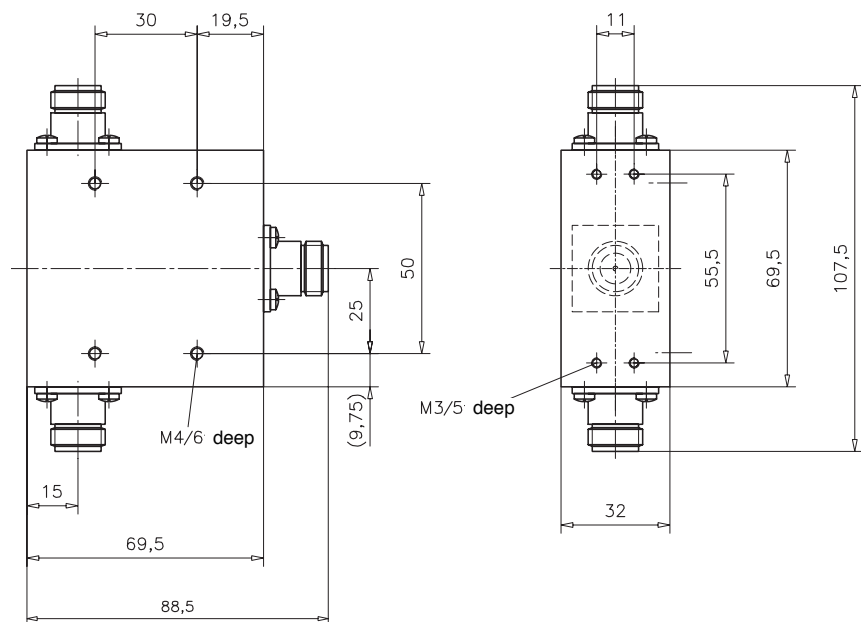
- to increase the coupling attenuation between transmitters, to reduce inter-modulation products,
- to prevent adverse effects of unmatched load impedance on amplifier performance.

Function:

The circulator is a nonreciprocal component with low insertion loss in the forward direction (1 → 2) and high attenuation in the reverse direction (2 → 1). The impedance at the input (1) of the circulator is constant and independent of the impedance of the components following. The reflected power at output (2) is passed to the absorber port (3), which must be terminated with an absorber.

Dimensioning of the absorber:

The absorber at port (3) must be dimensioned to be able to absorb the maximum power reflected at output (2).



Technical Data

Type No.	793 277
Frequency range	146 – 174 MHz
Insertion loss 1 → 2	< 0.5
Isolation 2 → 1	> 20 dB
VSWR 1, 2, 3	< 1.22
Impedance	50 Ω
Input power	< 100 W
Temperature range	–10 ... +55 °C
Connectors	N female
Weight	660 g
Packing size	150 mm x 115 mm x 105 mm
Dimensions (w x h x d)	105 mm x 87 mm x 32 mm (with connectors)

Circulator

146 – 174 MHz

The circulator can be used:

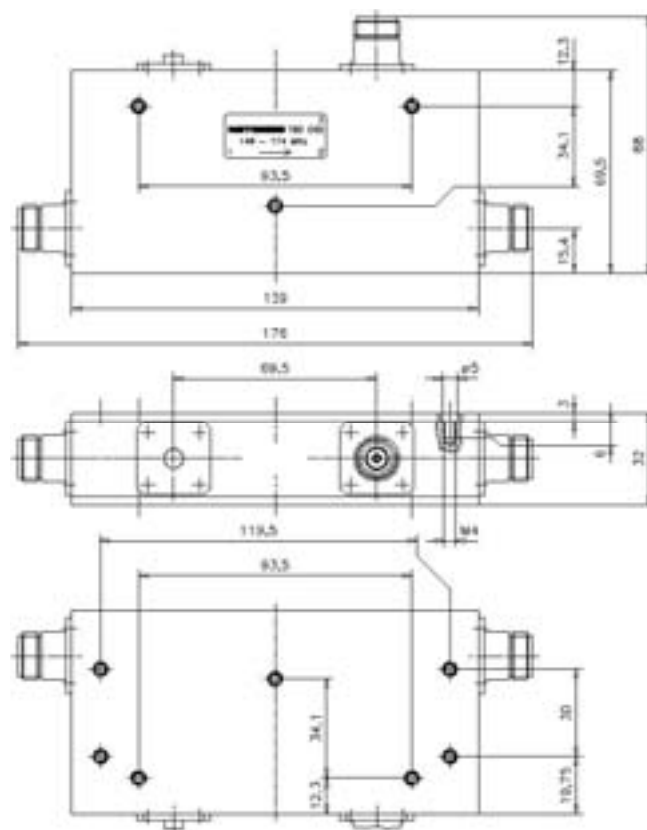
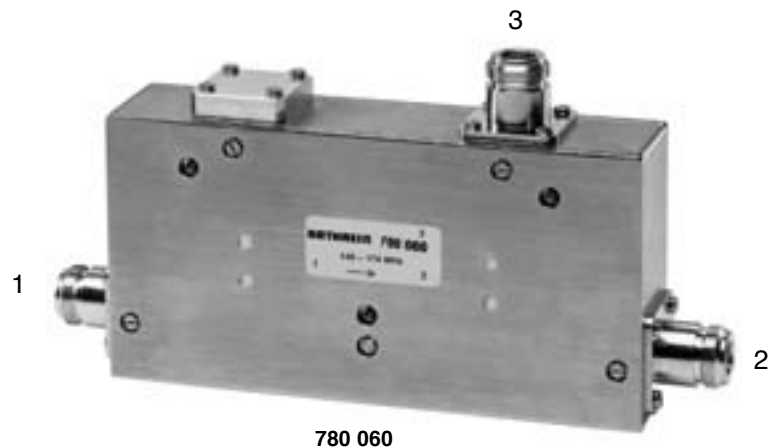
- to increase the coupling attenuation between transmitters, to reduce inter-modulation products,
- to prevent adverse effects of unmatched load impedance on amplifier performance.

Function:

The circulator is a nonreciprocal component with low insertion loss in the forward direction (1 → 2) and high attenuation in the reverse direction (2 → 1). The impedance at the input (1) of the circulator is constant and independent of the impedance of the components following. The reflected power at output (2) is passed to the absorber port (3), which must be terminated with an absorber.

Dimensioning of the absorber:

The absorber at port (3) must be dimensioned to be able to absorb the maximum power reflected at output (2).



Technical Data

Type No.	780 060
Frequency range	146 – 174 MHz
Insertion loss 1 → 2	< 1.0 dB (typ. 0.6 dB)
Isolation 2 → 1	> 40 dB
VSWR 1, 2, 3	< 1.25
Impedance	50 Ω
Input power	< 100 W
Temperature range	0 ... +60 °C
Connectors	N female
Weight	1.3 kg
Packing size	205 mm x 115 mm x 105 mm
Dimensions (w x h x d)	175 mm x 87 mm x 32 mm (with connectors)

3-dB Coupler (90° Hybrid) 340 – 512 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.

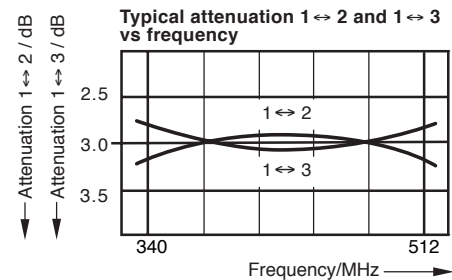
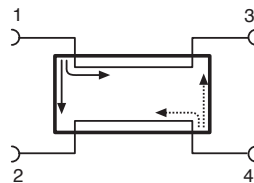


K 63 70 21

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.



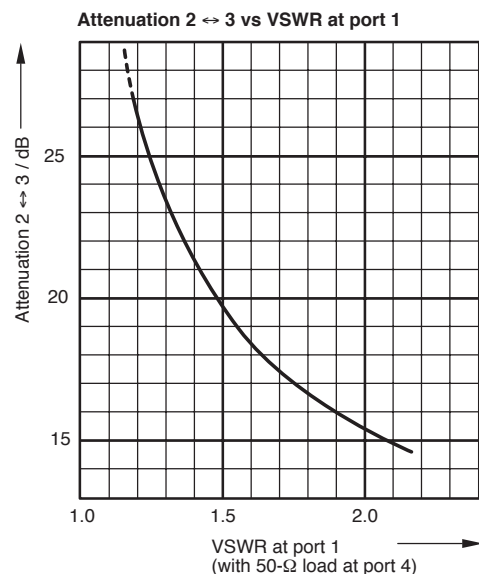
Customized versions:

On request couplers with a coupling attenuation of between 3 dB and 10 dB are available.

Technical Data

Type No.	K 63 70 21	K 63 70 27
Connectors	N female silver-plated	7-16 female silver-plated
Frequency range	340 – 512 MHz	
Attenuation 1 ↔ 2 / 1 ↔ 3	3 ± 0.4 dB	
Attenuation 2 ↔ 3	See diagram	
Directivity	> 34 dB	
VSWR	< 1.06	
Impedance	50 Ω	
Input power	< 500 W total power	
Material	Brass, silver-plated	
Colour	Grey (RAL 7032)	
Installation	With 2 screws (max. 5 mm diameter)	
Weight	0.9 kg	
Packing size	275 mm x 47 mm x 115 mm	
Dimensions (w x h x d)	252 mm x 40 mm x 95 mm (with connectors)	252 mm x 40 mm x 84 mm (with connectors)

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



4.7-dB, 6-dB, 7-dB, 10-dB Coupler (90° Hybrid)

380 – 470 MHz

The **4.7-dB coupler** is used as a decoupled splitter for power splitting purposes at a 1 : 2 ratio. An effective power entering into e.g. port 1 is divided between the ports 2 and 3 at a ratio of 1 : 2. Thus 1/3 of the input power (attenuation: 4.7 dB) is available at port 2 and 2/3 of the input power is available at port 3.

The **6-dB coupler** is used as a decoupled splitter for power splitting purposes at a 1 : 3 ratio. An effective power entering into e.g. port 1 is divided between the ports 2 and 3 at a ratio of 1 : 3. Thus 1/4 of the input power (attenuation: 6 dB) is available at port 2 and 3/4 of the input power is available at port 3.

The **7-dB coupler** is used as a decoupled splitter for power splitting purposes at a 1 : 4 ratio. An effective power entering into e.g. port 1 is divided between the ports 2 and 3 at a ratio of 1 : 4. Thus 1/5 of the input power (attenuation: 7 dB) is available at port 2 and 4/5 of the input power is available at port 3.

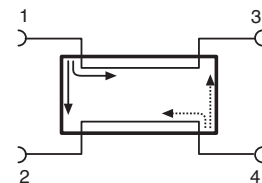
The **10-dB coupler** is used as a decoupled splitter for power splitting purposes at a 1 : 9 ratio. An effective power entering at e.g. port 1 is divided between the ports 2 and 3 at a ratio of 1 : 9. Thus 1/10 of the input power (attenuation: 10 dB) is available at port 2 and 9/10 of the input power is available at port 3.

Port 4 is decoupled and remains free of power if the 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 respectively 1 and 4.



719 782
792 777
792 331
720 297



Technical Data

Type No.	719 782	792 777	792 331	720 297
Version	4.7-dB coupler	6-dB coupler	7-dB coupler	10-dB coupler
Frequency range	380 – 470 MHz			
Attenuation 1 ↔ 3 (4 ↔ 2)	1.8 ±0.3 dB	1.25 ±0.2 dB	1.0 ±0.2 dB	0.5 ±0.2 dB
Attenuation 1 ↔ 2 (4 ↔ 3)	4.7 ±0.5 dB	6.0 ±0.5 dB	7.0 ±0.5 dB	10 ±0.5 dB
Directivity	> 30 dB	> 30 dB	> 30 dB	> 27 dB
VSWR	< 1.1			
Impedance	50 Ω			
Input power	< 500 W			
Connectors	N female, silver-plated			
Material	Brass, silver-plated			
Colour	Grey (RAL 7032)			
Installation	With 2 screws (max. 5 mm diameter)			
Weight	1.0 kg			
Packing size	275 mm x 47 mm x 115 mm			
Dimensions N female (w x h x d)	252 mm x 40 mm x 95 mm (with connectors)			

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

Hybrid Ring Junction (180° Hybrid)

380 – 430 MHz

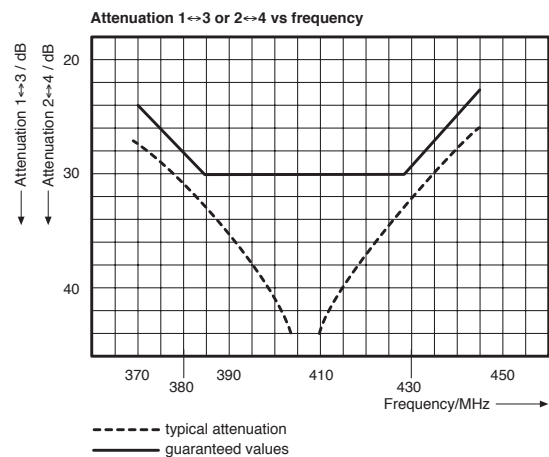
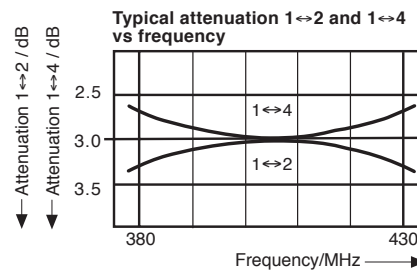
TETRA, TETRAPOL

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:

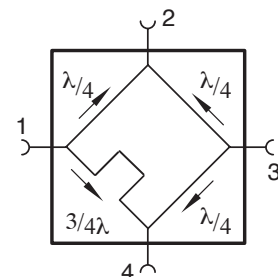
The hybrid ring junction has four ports, two of which are decoupled from each other. For example effective power entering into port 1 is distributed into ports 2 and 4, port 3 is decoupled and without power if ports 2 and 4 are ideally matched. In practice an absorber of suitable power at port 3 is to be planned for according to the mismatch of ports 2 and 4. Decoupled combining can be made via port 1 and 3 or 2 and 4.



The remaining ports are terminated with 50-Ω loads.

Technical Data

Type No.	730 092
Frequency range	380 – 430 MHz
Attenuation 1 ↔ 2 bzw. 1 ↔ 4	3 ±0.4 dB
Attenuation 1 ↔ 3 bzw. 2 ↔ 4	See diagrams
VSWR*	< 1.2
Impedance	50 Ω
Input power	< 100 W per Input
Connector	N female
Material	Housing: Aluminium
Installation	With 2 screws (M4)
Weight	500 g
Packing size	230 mm x 35 mm x 130 mm
Dimensions (w x h x d)	225 mm x 32 mm x 117 mm (with connectors)



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

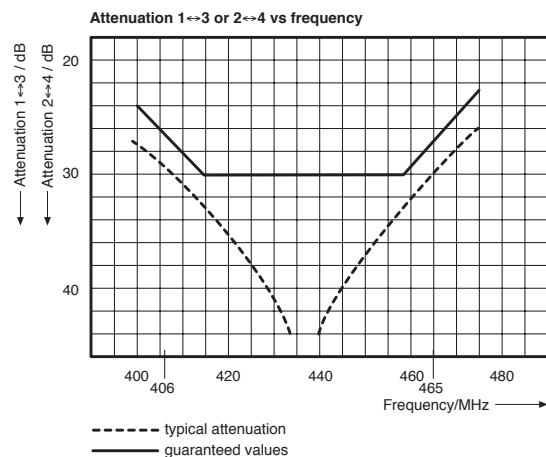
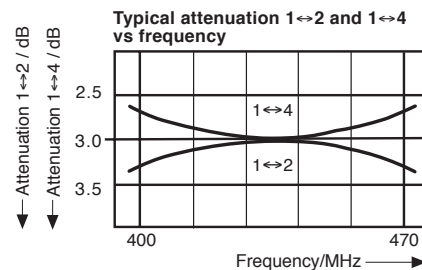
Hybrid Ring Junction (180° Hybrid) 400 – 470 MHz

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:

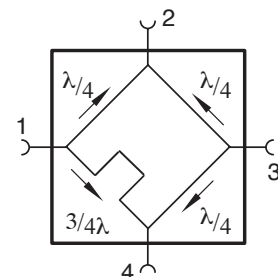
The hybrid ring junction has four ports, two of which are decoupled from each other. For example effective power entering into port 1 is distributed into ports 2 and 4, port 3 is decoupled and without power if ports 2 and 4 are ideally matched. In practice an absorber of suitable power at port 3 is to be planned for according to the mismatch of ports 2 and 4. Decoupled combining can be made via port 1 and 3 or 2 and 4.



The remaining ports are terminated with 50-Ω loads.

Technical Data

Type No.	K 63 73 211
Frequency range	400 – 470 MHz
Attenuation 1 ↔ 2 bzw. 1 ↔ 4	3 ±0.4 dB
Attenuation 1 ↔ 3 bzw. 2 ↔ 4	See diagrams
VSWR*	< 1.2
Impedance	50 Ω
Input power	< 100 W per Input
Connector	N female
Material	Housing: Aluminium
Installation	With 2 screws (M4)
Weight	500 g
Packing size	230 mm x 35 mm x 130 mm
Dimensions (w x h x d)	225 mm x 32 mm x 117 mm (with connectors)



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

Decoupled Power Splitter

380 – 430 MHz

TETRA, TETRAPOL

The decoupled power splitter can be used:

- for power distribution. For example: From one common antenna to several receivers of arbitrarily low frequency spacing,
- for power distribution. For example: From one transmitter to several outputs,
- for decoupled combining of several transmitters with arbitrarily low frequency spacing (loss: 4.7 dB resp. 6 dB),
- for decoupled combining of several transmitting/receiving units, whose integrated duplexers are within the same frequency range.

Function:

The decoupled power splitter has 3 or 4 inputs, one output, as well as 3 or 4 absorber ports. The inputs are only decoupled when the absorber ports are terminated with 50-Ω loads of suitable power.

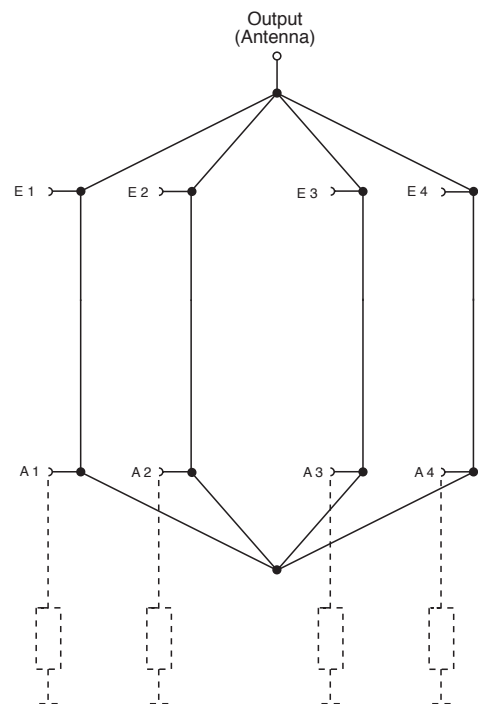
The absorbers of the 3:1-power splitter have to be dimensioned so that at least 2/3 of the power fed into the inputs can be absorbed. Example: If a power of 50 W is fed into every input, the absorbers have to absorb 33 W each.

The absorbers of the 4:1 power splitter have to be dimensioned so that at least 3/4 of the power fed into the inputs can be absorbed. Example: If a power of 50 W is fed into every input, the absorbers have to absorb 37 W each.



782 10189

1 : 4 power splitter 782 10189



Connectors E 1 ... E 4: Inputs, decoupled
Connectors A 1 ... A 4: External 50-Ω absorbers

Technical Data

Type No.	782 10231 1 : 3 Power splitter	782 10189 1 : 4 Power splitter
Power ratio	1 : 3	1 : 4
Frequency range	380 – 430 MHz	
Power dividing loss (incl. insertion loss)	< 5.5 dB	< 6.5 dB
Isolation between inputs	> 25 dB	> 30 dB
Impedance	50 Ω	
VSWR	< 1.2	
Input power	< 100 W per input	
Connectors	N female	
Material	Housing: Aluminium	
Installation	With 2 screws (max. 4 mm diameter)	
Weight	1.0 kg	1.5 kg
Packing size	220 mm x 90 mm x 110 mm	
Dimensions (w x h x d)	190 mm x 80 mm x 94 mm (with connectors)	

Decoupled Power Splitter 400 – 470 MHz

The decoupled power splitter can be used:

- for power distribution. For example: From one common antenna to several receivers of arbitrarily low frequency spacing,
- for power distribution. For example: From one transmitter to several outputs,
- for decoupled combining of several transmitters with arbitrarily low frequency spacing (loss: 4.7 dB resp. 6 dB),
- for decoupled combining of several transmitting/receiving units, whose integrated duplexers are within the same frequency range.

Function:

The decoupled power splitter has 3 or 4 inputs, one output, as well as 3 or 4 absorber ports. The inputs are only decoupled when the absorber ports are terminated with 50-Ω loads of suitable power.

The absorbers of the 3:1-power splitter have to be dimensioned so that at least 2/3 of the power fed into the inputs can be absorbed. Example: If a power of 50 W is fed into every input, the absorbers have to absorb 33 W each.

The absorbers of the 4:1 power splitter have to be dimensioned so that at least 3/4 of the power fed into the inputs can be absorbed. Example: If a power of 50 W is fed into every input, the absorbers have to absorb 37 W each.

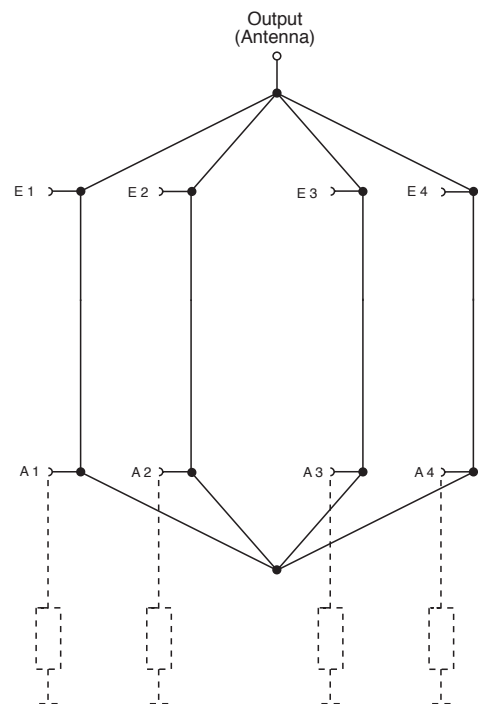


725 871

Technical Data

Type No.	724 348 1 : 3 Power splitter	725 871 1 : 4 Power splitter
Power ratio	1 : 3	1 : 4
Frequency range	400 – 470 MHz	
Power dividing loss (incl. insertion loss)	< 5.5 dB	< 6.5 dB
Isolation between inputs	> 25 dB	> 30 dB
Impedance	50 Ω	
VSWR	< 1.2	
Input power	< 100 W per input	
Connectors	N female	
Material	Housing: Aluminium	
Installation	With 2 screws (max. 4 mm diameter)	
Weight	1.0 kg	1.5 kg
Packing size	220 mm x 90 mm x 110 mm	
Dimensions (w x h x d)	190 mm x 80 mm x 94 mm (with connectors)	

1 : 4 power splitter 725 871



Connectors E 1 ... E 4: Inputs, decoupled
Connectors A 1 ... A 4: External 50-Ω absorbers

Circulator

380 – 430 MHz (TETRA, TETRAPOL)

400 – 470 MHz

The circulator can be used:

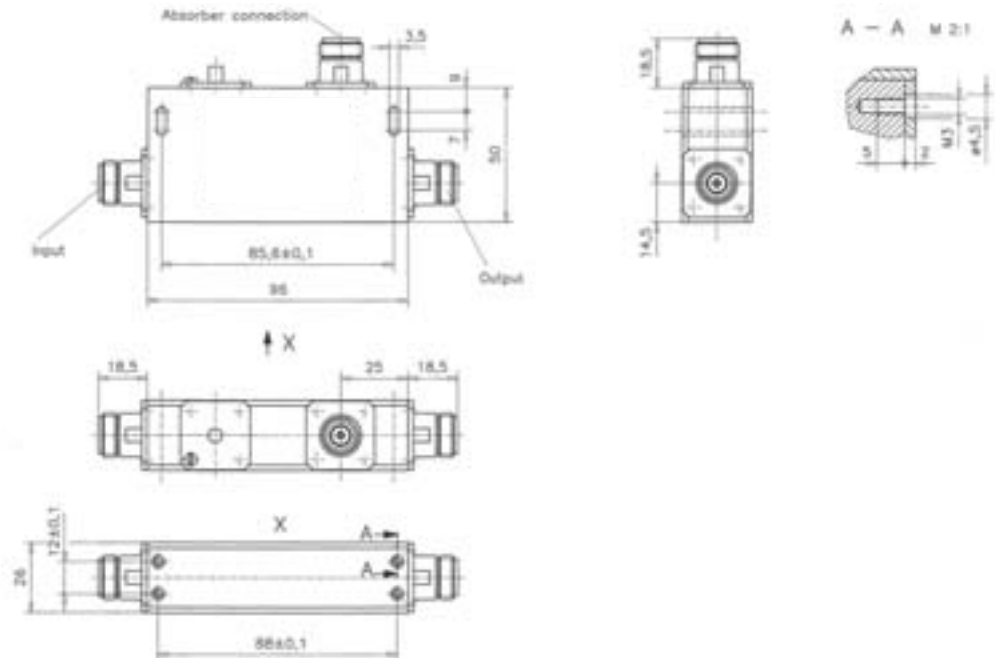
- to increase the coupling attenuation between transmitters, to reduce inter-modulation products,
- to prevent adverse effects of unmatched load impedance on amplifier performance.

Function:

Circulators are nonreciprocal components with low insertion loss in the forward direction (1 → 2) and high attenuation in the reverse direction (2 → 1). The impedance at the input (1) of the circulator is constant and independent of the impedance of the components following, since the reflected power is passed to the absorber port (3).



784 10175
790 215



Technical Data

Type No.	784 10175	790 215
Frequency range	380 – 430 MHz	400 – 470 MHz
Insertion loss 1 → 2	< 0.5 dB (typ. 0.4 dB)	< 0.5 dB (typ. 0.3 dB)
Isolation 2 → 1	> 45 dB	> 50 dB
VSWR 1, 2, 3	< 1.19	< 1.22
Impedance	50 Ω	50 Ω
Input power	< 200 W	< 100 W
Temperature range	–10 ... +55 °C	
Connectors	N female	
Mounting	With 2 screws (M3)	
Weight	635 g	
Packing size	160 mm x 90 mm x 40 mm	
Dimensions (w x h x d)	96 mm x 50 mm x 26 mm (without connectors)	

Attenuator

2 – 15 W

0 – 4000 MHz

Air-cooled attenuator for low power rating

- Signal attenuation for test, measuring or tuning purposes
- Good matching over large frequency range
- Closed metal housing, very stable and RF proof
- Free choice of mounting position due to convection-cooling



Technical Data

Type No.	784 10235	784 10236	784 10237	784 10238
Attenuation	3 ±0.3 dB	6 ±0.3 dB	10 ±0.3 dB	20 ±0.5 dB
Frequency range	0 – 4000 MHz			
VSWR	< 1.12			
Impedance	50 Ω			
Max. power	2 W			
Connectors	N			
IP rating	IP65			
Application	Outdoor			
Weight	60 g			
Dimensions (L x diameter)	49 x 21 mm			

Air-cooled attenuator for medium power rating

- Signal attenuation for test, measuring or tuning purposes
- Good matching over large frequency range
- Closed metal housing, very stable and RF proof
- Free choice of mounting position due to convection-cooling



Technical Data

Type No.	791 918	791 919	791 920	791 921
Attenuation	3 ±0.3 dB	6 ±0.3 dB	10 ±0.3 dB	20 ±0.5 dB
Max. power	15 W	12 W	10 W	10 W
Frequency range	0 – 4000 MHz			
VSWR	< 1.15			
Impedance	50 Ω			
Connectors	N			
IP rating	IP65			
Application	Outdoor			
Weight	70 g			
Dimensions (L x diameter)	50 x 26 mm			

50-Ohm Load

0 ... 4000 MHz

0.5 ... 100 W

- Standard 50-Ohm terminations for small and medium power
- Suitable for terminating open ports on RF equipment for indoor and /or outdoor applications

0.5 Watt *

Type No.	K 62 26 61 1
Connector	N male
Frequency range	0 – 2700 MHz
VSWR	
0 – 1000 MHz	< 1.08
1000 – 2000 MHz	< 1.15
2000 – 2700 MHz	< 1.20
Application	Indoor
Weight	40 g
Packing size	90 x 60 x 25 mm
Dimensions	33 / 21 mm diameter



K 62 26 61 1

1.5 Watt *

Type No.	784 10367	784 10470
Connector	7-16 male	7-16 female
Frequency range	0 – 4000 MHz	
VSWR		
0 – 2000 MHz	< 1.30	< 1.10
2000 – 4000 MHz	< 1.30	< 1.10
Application	Indoor or outdoor (IP65)	
Weight	120 g	
Packing size	Approx. 50 x 90 x 100 mm	
Dimensions	40 / 32 mm diameter	42 / 29 mm diameter



784 10367

2 Watt *

Type No.	K 62 26 11 1
Connector	N male
Frequency range	0 – 2700 MHz
VSWR	
0 – 1000 MHz	< 1.08
1000 – 2000 MHz	< 1.15
2000 – 2700 MHz	< 1.20
Application	Indoor
Weight	40 g
Packing size	90 x 60 x 25 mm
Dimensions	30 / 21 mm diameter



K 62 26 11 1

10 Watt *

Type No.	K 62 26 40 1	K 62 26 41 1
Connector	N female	N male
Frequency range	0 – 2700 MHz	
VSWR		
0 – 1000 MHz	< 1.08	< 1.08
1000 – 2000 MHz	< 1.15	< 1.15
2000 – 2700 MHz	< 1.20	< 1.20
Application	Indoor	
Weight	Approx. 250 g	
Packing size	50 x 90 x 100 mm	
Dimensions (w x h x d)	40 x 82 x 77 mm (including connector)	40 x 82 x 85 mm (including connector)



K 62 26 40 1

50-Ohm Load
0 ... 4000 MHz
0.5 ... 100 W

25 Watt *

Type No.	K 62 26 20 1	K 62 26 21 1	K 62 26 20 7	K 62 26 21 7
Connector	N female	N male	7-16 female	7-16 male
Frequency range	0 – 2700 MHz			
VSWR	0 – 1000 MHz < 1.08 1000 – 2000 MHz < 1.15 2000 – 2700 MHz < 1.20			
Application	Indoor			
Weight	Approx. 0.5 kg			
Packing size	50 x 100 x 135 mm			
Dimensions (w x h x d)	35 x 94 x 113 mm (incl. connector)	35 x 94 x 121 mm (incl. connector)	35 x 94 x 125 mm (incl. connector)	35 x 94 x 124 mm (incl. connector)



K 62 26 20 1

50 Watt *

Type No.	K 62 26 30 1	K 62 26 31 1	K 62 26 30 7	K 62 26 31 7
Connector	N female	N male	7-16 female	7-16 male
Frequency range	0 – 2700 MHz			
VSWR	0 – 1000 MHz < 1.08 1000 – 2000 MHz < 1.15 2000 – 2700 MHz < 1.20			
Application	Indoor			
Weight	Approx. 0.8 kg			
Packing size	80 x 95 x 145 mm			
Dimensions (w x h x d)	67 x 90 x 130 mm (incl. connector)	67 x 90 x 138 mm (incl. connector)	67 x 90 x 134 mm (incl. connector)	67 x 90 x 133 mm (incl. connector)



K 62 26 30 1

100 Watt *

Type No.	K 62 26 50 1	K 62 26 51 1	K 62 26 50 7
Connector	N female	N male	7-16 female
Frequency range	0 – 1000 MHz		
VSWR	0 – 1000 MHz < 1.08		
Application	Indoor		
Weight	Approx. 2.4 kg		
Packing size	130 x 195 x 180 mm		
Dimensions (w x h x d)	114 x 153 x 156 mm (including connector)	114 x 161 x 156 mm (including connector)	114 x 170 x 156 mm (including connector)



K 62 26 50 1

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

Note: The 50-Ohm load, type 782 10474, should be used if intermodulation requirements are of high priority.

Receiver Multicouplers

68 – 87.5 MHz
146 – 174 MHz
380 – 470 MHz

Receiver Multicouplers:

Description	Type No.	Frequency range	Gain	Outputs	Page
Receiver Multicoupler	780 234	68 – 87.5 MHz	3 dB	8	181
Receiver Multicoupler	780 232	146 – 174 MHz	3 dB	8	182
Receiver Multicoupler	727 621	380 – 470 MHz	3 dB	8	183

Receiver Multicoupler 68 – 87.5 MHz

This receiver multicoupler makes it possible to operate up to 8 receivers simultaneously on one common antenna. It is especially suitable for use at base stations where there is only limited mast space for the receiving antennas.

The low noise level and the excellent inter-modulation characteristics of the receiver multicoupler ensure a high dynamic range.

The receiver multicoupler consists of:

- a low noise amplifier,
- a power splitter,
- a voltage supply.

The RF signals are amplified at the input of the receiver multicoupler by an actively redundant low noise amplifier. This means that the receiver multicoupler will still remain operational even if one of the parallel connected amplifier modules fails. In this case, however, the gain will decrease by about 6 dB.

Each amplifier module has its own voltage supply which is so designed that the modules can be operated simultaneously with both alternating current (230 V ~) and direct current (11 ... 48 V =).



Front side



Rear side

Technical Data

Type No.	780 234
Number of inputs	1
Number of outputs	8
Frequency range	68 – 87.5 MHz
Gain	3.0 dB (+1.5 / –1.5 dB)
Noise figure	< 4.0 dB (+0.5 dB)
3 rd order intercept point	> 23 dBm (typ. 25 dBm)
Isolation	> 25 dB (typ. 30 dB) between any two outputs
VSWR Input	< 1.4
Output	< 1.4
Impedance	50 Ω
Power supply	230 V ~ (+10 / –15 %), 50 ... 60 Hz and/or 11 ... 48 V =, floating
Power consumption	< 9 W (230 V ~, 50 Hz) < 20 W (11 ... 48 V =)
Temperature range	–20 ... +55 °C
Connectors	N female
Colour	Front panel: Grey (RAL 7032)
Attached hardware	Power cable and 4 pin DC connector
Weight	3.9 kg
Packing size	560 mm x 105 mm x 385 mm
Dimensions (w x h x d)	483 mm x 44 mm x 280 mm, 19" drawer

Note: Not used outputs have to be terminated using a 50-Ω load in order to comply with the specifications.

Receiver Multicoupler 146 – 174 MHz

This receiver multicoupler makes it possible to operate up to 8 receivers simultaneously on one common antenna. It is especially suitable for use at base stations where there is only limited mast space for the receiving antennas.

The low noise level and the excellent intermodulation characteristics of the receiver multicoupler ensure a high dynamic range.

The receiver multicoupler consists of:

- a low noise amplifier,
- a power splitter,
- a voltage supply.

The RF signals are amplified at the input of the receiver multicoupler by an actively redundant low noise amplifier. This means that the receiver multicoupler will still remain operational even if one of the parallel connected amplifier modules fails. In this case, however, the gain will decrease by about 6 dB.

Each amplifier module has its own voltage supply which is so designed that the modules can be operated simultaneously with both alternating current (230 V ~) and direct current (11 ... 48 V =).



Front side



Rear side

Technical Data

Type No.	780 232
Number of inputs	1
Number of outputs	8
Frequency range	146 – 174 MHz
Gain	3.0 dB (+1.5 / -1.5 dB)
Noise figure	< 4.0 dB (+0.5 dB)
3 rd order intercept point	> 23 dBm (typ. 25 dBm)
Isolation	> 25 dB (typ. 30 dB) between any two outputs
VSWR Input	< 1.4
Output	< 1.4
Impedance	50 Ω
Power supply	230 V ~ (+10 / -15 %), 50 ... 60 Hz and/or 11 ... 48 V =, floating
Power consumption	< 9 W (230 V ~, 50 Hz) < 20 W (11 ... 48 V =)
Temperature range	-20 ... +55 °C
Connectors	N female
Colour	Front panel: Grey (RAL 7032)
Attached hardware	Power cable and 4 pin DC connector
Weight	3.9 kg
Packing size	560 mm x 105 mm x 385 mm
Dimensions (w x h x d)	483 mm x 44 mm x 280 mm, 19" drawer

Note: Not used outputs have to be terminated using a 50-Ω load in order to comply with the specifications.

Receiver Multicoupler 380 – 470 MHz

This receiver multicoupler makes it possible to operate up to 8 receivers simultaneously on one common antenna. It is especially suitable for use at base stations where there is only limited mast space for the receiving antennas. The low noise level and the excellent intermodulation characteristics of the receiver multicoupler ensure a high dynamic range.

The receiver multicoupler consists of:

- a low-noise amplifier,
- a power splitter,
- a voltage supply.

The HF signals are amplified at the input of the receiver multicoupler by an actively redundant low-noise amplifier. This means that the receiver multicoupler will still remain operational even if one of the parallel connected amplifier modules fails. In this case, however, the amplification will decrease by about 6 dB.

Each amplifier module has its own voltage supply which is so designed that the modules can be operated simultaneously with both alternating current (230 V) and direct current (+11 ... +48 DC).



Front side



Rear side

Technical Data

Type No.	727 621
Number of inputs	1
Number of outputs	8
Frequency range	380 – 470 MHz Special tuning is possible in the range of 350 to 550 MHz
Gain	3 dB +1.5 / –1.5 dB
Noise figure	< 3.5 dB +0.5 / –1 dB
3 rd order intercept point	> 16 dBm (typ. 19 dBm)
Isolation	> 25 dB (typ. 30 dB) between any two outputs
VSWR	
Input	< 1.4
Output	< 1.4
Impedance	50 Ω
Power Supply	230 V +10 / –15 %, 50 ... 60 Hz and/or +11 ... +48 V DC, minus grounded
Power Consumption	< 9 W (230 V, 50 Hz) < 20 W (+11 ... +48 V DC)
Temperature range	–20 ... +50 °C
Connectors	N female
Colour	Front panel: Grey (RAL 7032)
Attached hardware	Power cable and 4 pin DC connector
Weight	4.0 kg
Packing size	560 mm x 105 mm x 385 mm
Dimensions (w x h x d)	483 mm x 44 mm x 280 mm, 19" drawer

Note: Not used outputs have to be terminated using a 50-Ω load in order to comply with the specifications.

Combiner Systems

Besides our standard versions we also manufacture many custom versions and combiner systems, which we adapt to your requirements or special operating conditions.

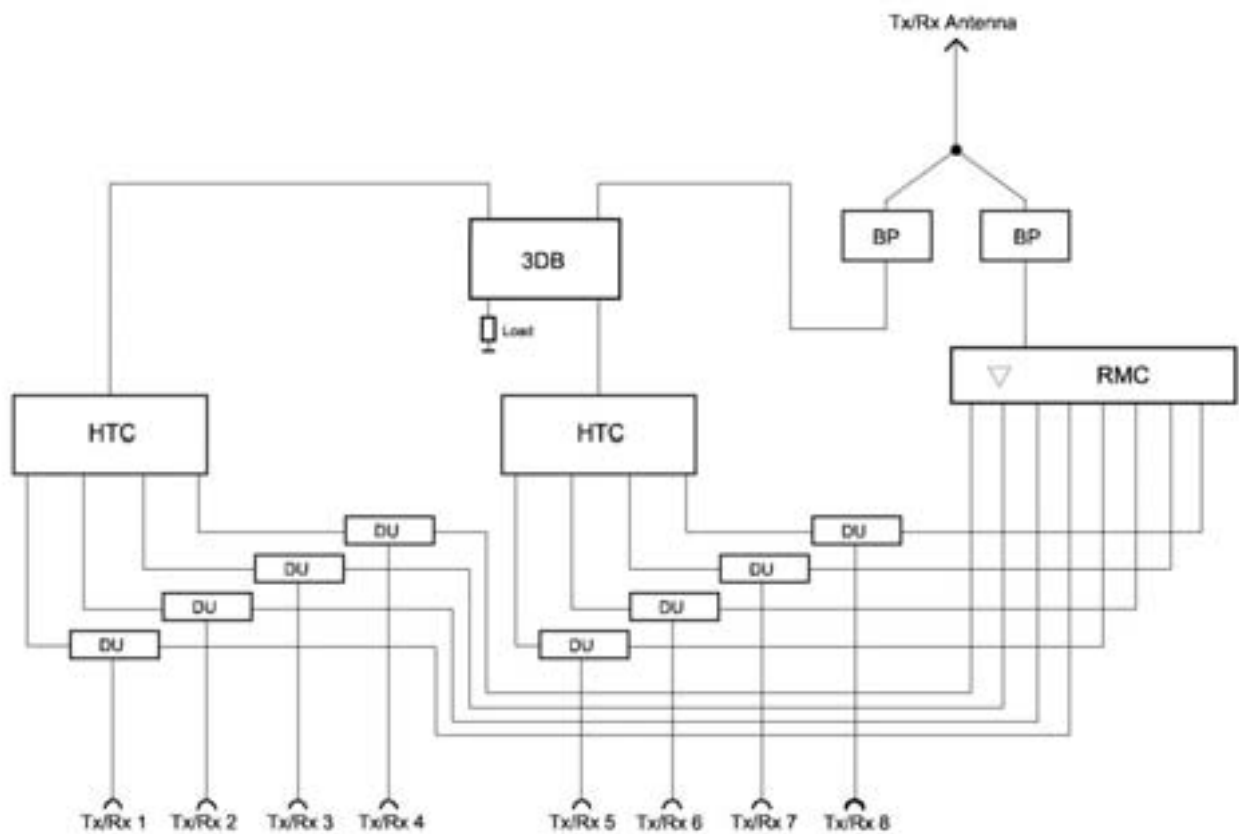
Combiner Systems Example

Combiner system for a police mobile communication TETRA network

Frequency range 380 – 385 / 390 – 395 MHz

For combining eight transceivers with TETRA frequencies onto one common antenna.

- 3DB = 3-dB coupler
- BP = Band-pass filter
- HTC = Hybrid transmitter combiner
- RMC = Receiver multicoupler
- DU = Duplexer
- Tx/Rx = Transceiver unit



Combiner Systems

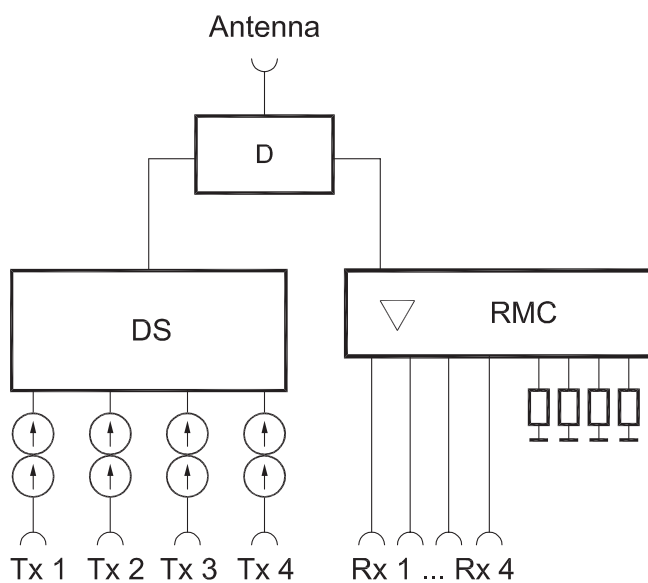
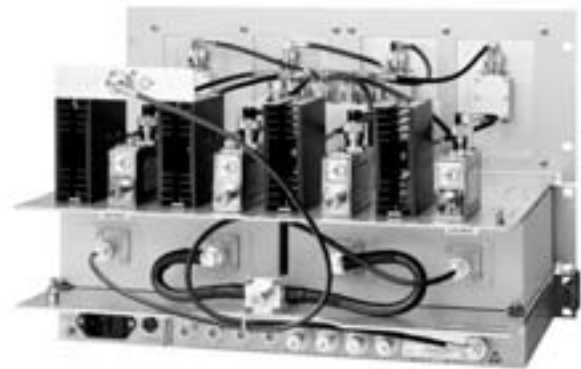
Example

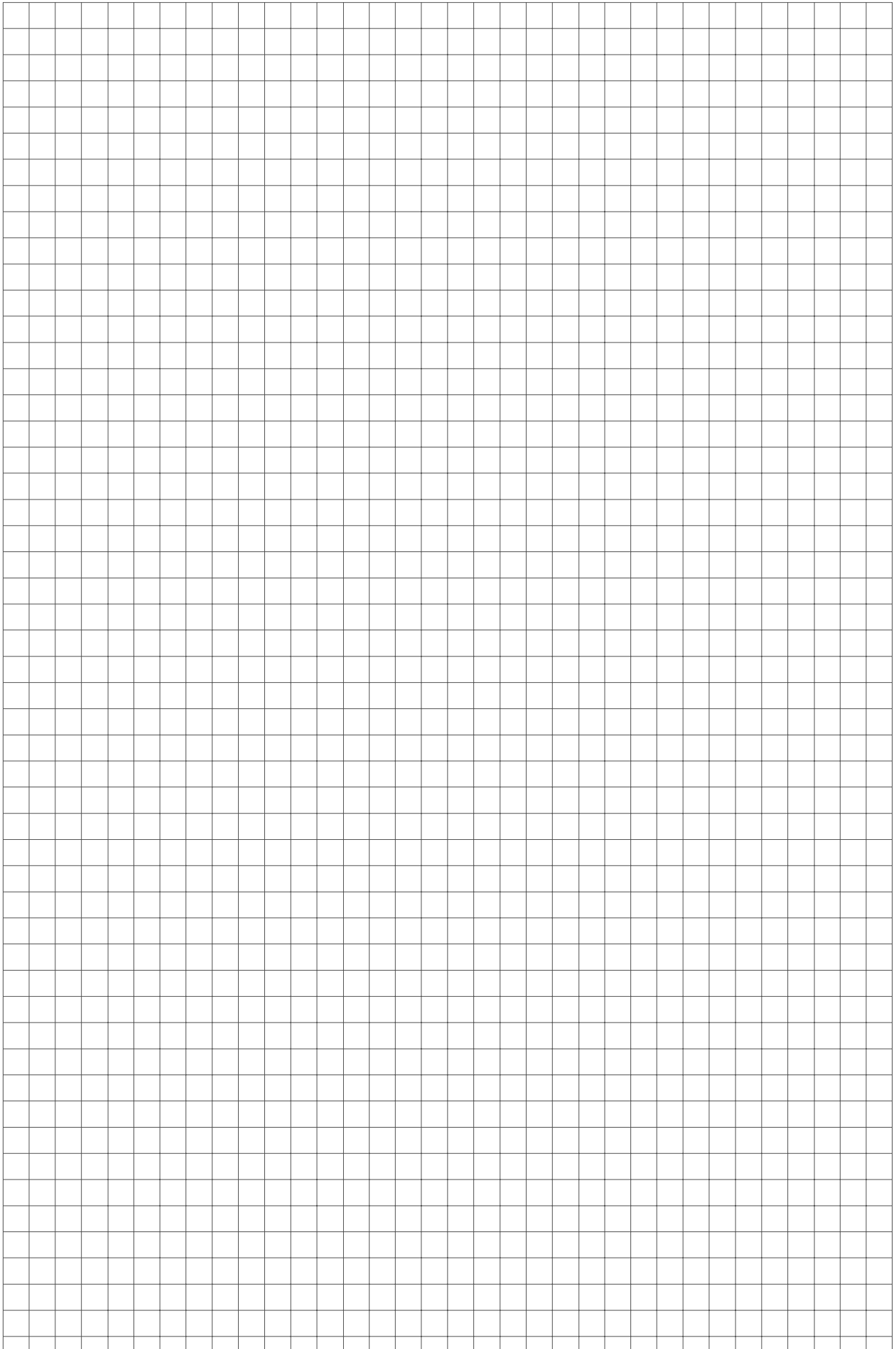
Service radio for governmental and emergency

Frequency range: 450 – 465 MHz

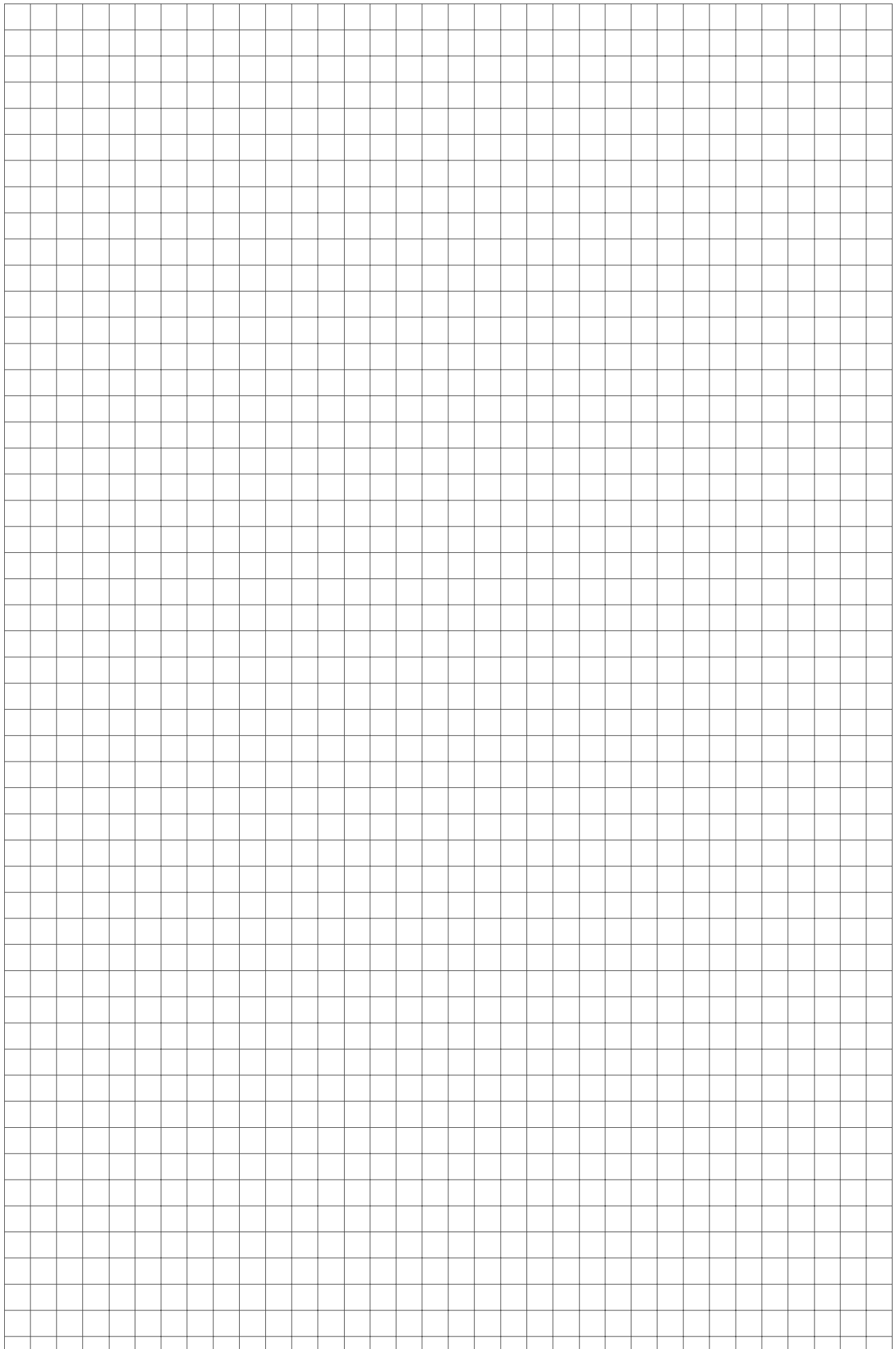
For combining of 4 transmitters and 4 receivers each to one common Tx/Rx-antenna.

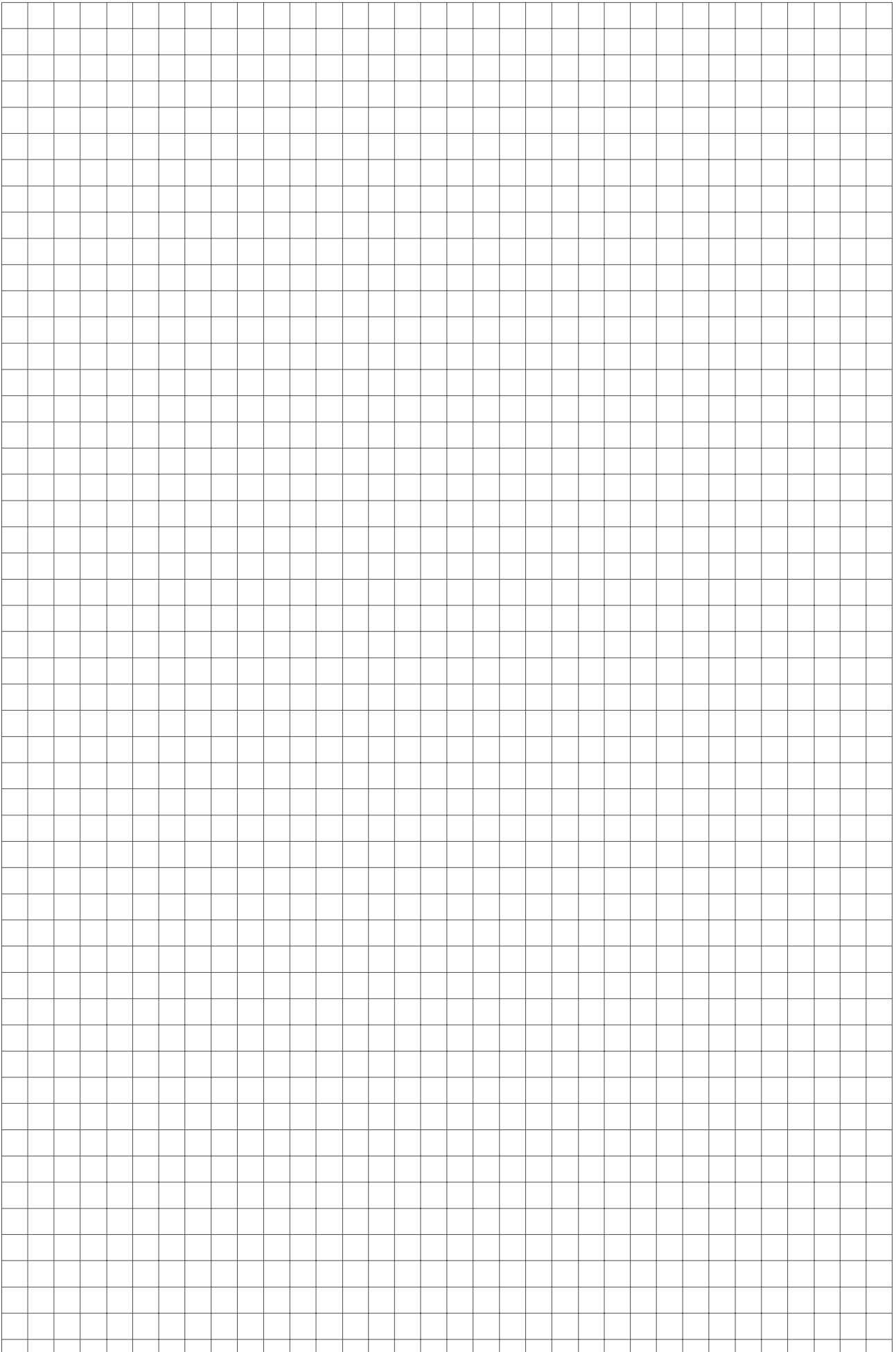
- D = Duplexer
- DS = Decoupled power splitter
- RMC = Receiver multicoupler
- ↑ = Isolator
- Tx = Transmitter
- Rx = Receiver





Note





Subsidiaries/Affiliates

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

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