

27 - 512 MHz Base Station Antennas for Mobile Communications



KATHREIN

Antennen · Electronic

Photo on title page: Applications for TETRA.

Catalogue Issue 02/2007

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, which include the static mechanical load imposed on an antenna by wind at maximum velocity.

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

These facts must be considered during the site planning process.

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

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

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



“Quality leads the way”

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

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

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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
Filter Products**

Mechanical Accessories

Clamps, Downtilt Kits, ...

Technical Information

List of available Catalogues for Mobile Communication Antennas and Accessories

790 – 6000 MHz Base Station Antennas for Mobile Communications



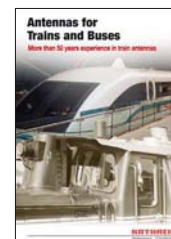
27 – 512 MHz Base Station Antennas for Mobile Communications



Ground-to-Air Communication Antennas



Antennas for Trains and Buses



790 – 2500 MHz Filters, Combiners, Amplifiers for Mobile Communications



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



The listed catalogues are also available on CD-ROM



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 ...		737 973	82	850 ...		K 61 14 03	80
711 530	45	737 975	82	850 10002	81 ...	K 61 14 04	80
				850 10003	81 ...	K 61 14 05	80
713 ...		738 ...		850 10006	84	K 61 33 11	86
713 645	87	738 440	86	850 10007	81	K 61 33 21	86
		738 546	81 ...	850 10014	85	K 61 33 3	86
716 ...				850 10015	85	K 61 33 4	86
716 192	87	739 ...		850 10016	85		
		739 504	29	850 10017	85	K 62 ...	
720 ...		739 506	30			K 62 55 21	72
720 880	55			K 51 ...		K 62 55 41	72
		741 ...		K 51 24 72	38		
721 ...		741 515	20	K 51 25 42 1	40 ...	K 63 ...	
721 388	55	741 516	22	K 51 26 2	45	K 63 20 22 1	73
		741 517	24	K 51 26 41 1	39	K 63 20 22 7	73
728 ...		741 518	25	K 51 26 42 1	39	K 63 20 23 1	73
728 888	55					K 63 20 23 7	73
		742 ...		K 52 ...		K 63 20 24 1	73
731 ...		742 033	83	K 52 07 21	16	K 63 20 24 7	73
731 291	31	742 034	83	K 52 32 21	17		
731 651	82	742 035	83			K 72 ...	
		742 036	83	K 53 ...		K 72 22 41	32
733 ...		742 155	60	K 53 17 41	11	K 72 22 47	32
733 677	82	742 242	23	K 53 18 21	15		
733 678	82			K 53 19 21	14	K 73 ...	
733 679	82	800 ...		K 53 19 41 1	10	K 73 12 21	34
733 680	82	800 10252	27	K 53 19 42 1	10	K 73 36 21	26
733 695	80	800 10253	28			K 73 51 21	35
		800 10277	65	K 55 ...			
736 ...		800 10278	69	K 55 26 26	46	K 75 ...	
736 831	68	800 10330	69	K 55 26 27	46	K 75 11 21	50 ...
		800 10339	65	K 55 26 28	46	K 75 15 21 1	53
737 ...		800 10391	33	K 55 28 41	41	K 75 15 22 1	53
737 003	50 ...	800 10392	54	K 55 29 21	47	K 75 15 37	52
737 299	66	800 10403	21			K 75 16 37	56
737 398	87	800 10434	58	K 61 ...		K 75 29 21	61
737 545	57	800 10448	51	K 61 14 01	80		
737 546	59			K 61 14 02	80		



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.

Summary – Directional Antennas

68 – 87.5 MHz

Type	Type No.	Height [mm]	Input	Page			
Yagi	68–80	162°	3dB	K 53 19 41 1	2100	N female	10
Yagi	74–87.5	162°	3dB	K 53 19 42 1	2100	N female	10
Yagi	68–87.5	120°	6dB	K 53 17 41	2380	N female	11

Gain ref. $\lambda/2$ dipole

Directional Antennas

Polarization

68 ... 87.5

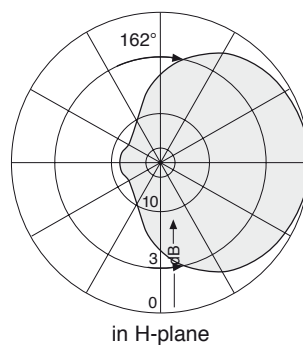
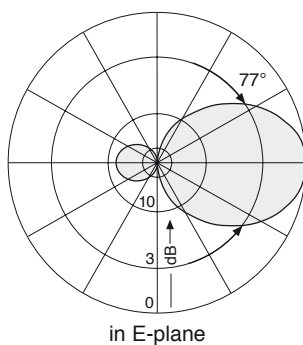
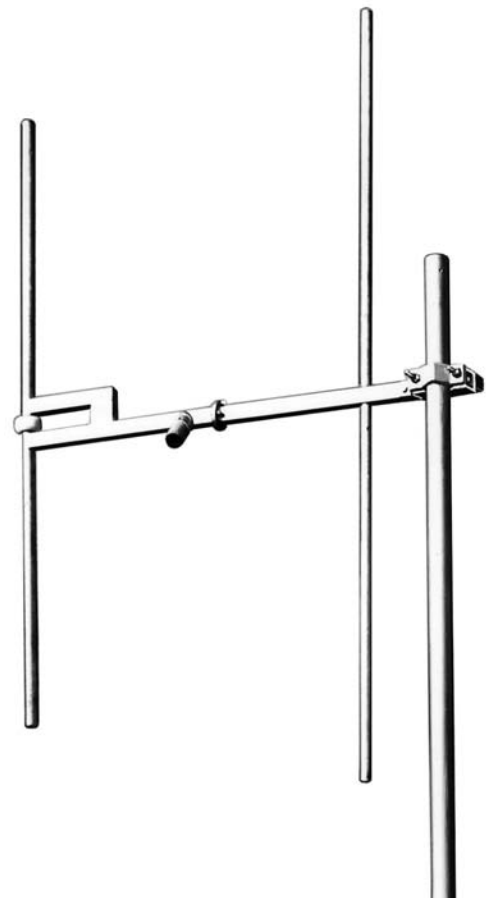
H or V

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K 53 19 41 1: Yagi 68–80 162° 3dB
K 53 19 42 1: Yagi 74–87.5 162° 3dB

Type No.	K 53 19 41 1	K 53 19 42 1
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.

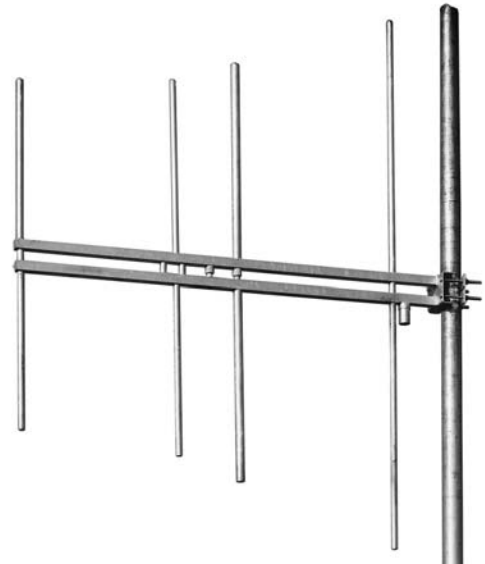
Yagi 68–87.5 120° 6dB

Type No.	K 53 17 41
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)

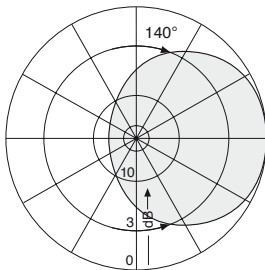
Material: Hot-dip galvanized steel.
All screws and nuts: Stainless steel.

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

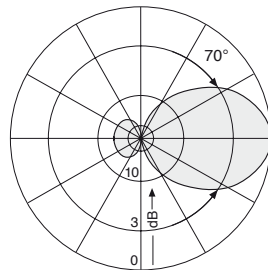
Grounding: All metal parts of the antenna including the mounting kit are DC grounded.
The inner conductor is coupled capacitively.



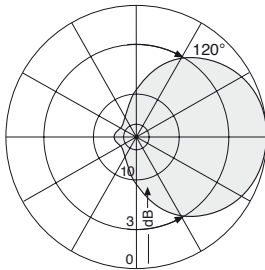
Radiation patterns at different frequencies:



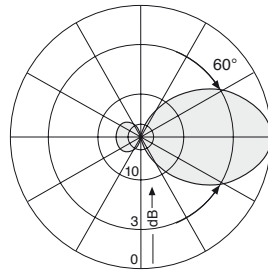
Horizontal 69 MHz



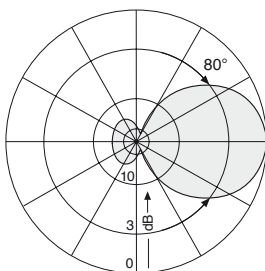
Vertical 69 MHz



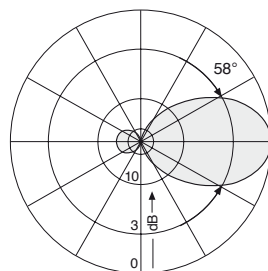
Horizontal 77 MHz



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	K 53 19 21	1060	N female	14
Yagi	146-174	118°	4dB	K 53 18 21	1100	N female	15
Yagi	146-174	63°	8.5dB	K 52 07 21	1022	N female	16
Panel	146-174	65°	8dB	K 52 32 21	1320	N female	17

Gain ref. $\lambda/2$ dipole

Directional Antenna Polarization

146–174

H or V

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Directional
146 – 174 MHz

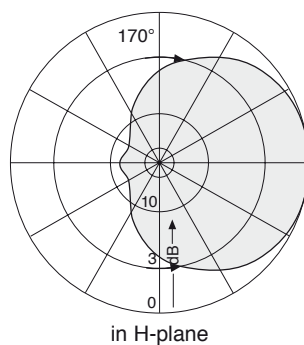
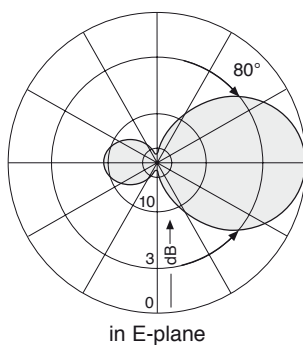
Yagi 146–174 170° 3dB

Type No.	K 53 19 21
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.



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

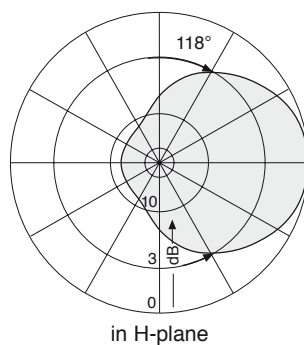
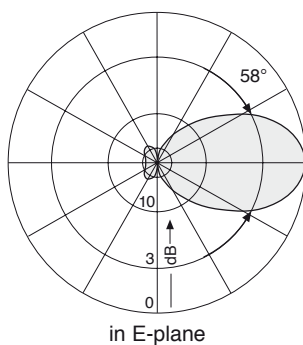
Yagi 146–174 118° 4dB

Type No.	K 53 18 21
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

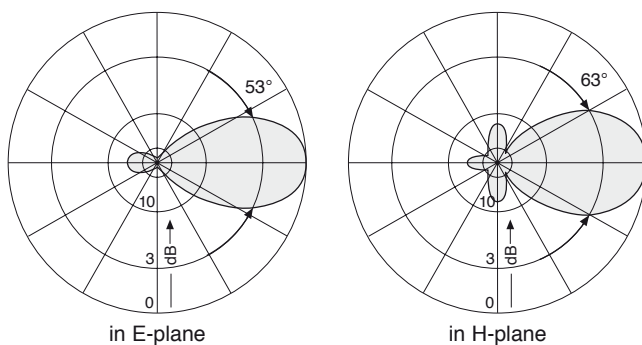
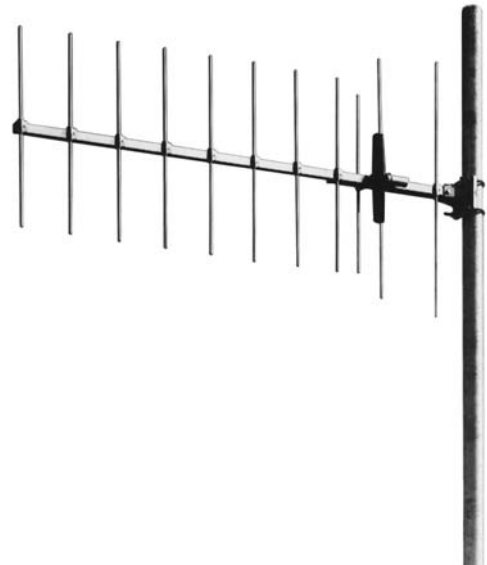
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Directional
146 – 174 MHz

Yagi 146–174 63° 8.5dB

Type No.	K 52 07 21
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

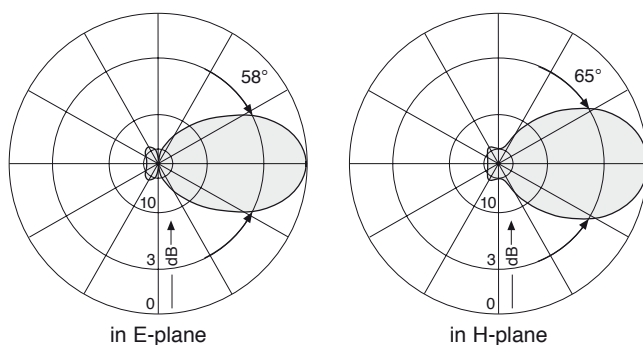
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Directional
146 – 174 MHz

Yagi 146–174 65° 8dB

Type No.	K 52 32 21
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 741 515	992	2 x 7-16 female	20
XPol Panel	380–470 65° 14dBi 800 10403	1999	2 x 7-16 female	21
XPol Panel	380–500 65° 15dBi 741 516	2000	2 x 7-16 female	22
XPol Panel	380–470 68° 14.5dBi 6°T 742 242	2000	2 x 7-16 female	23
XPol Panel	380–500 88° 10.5dBi 741 517	1007	2 x 7-16 female	24
XPol Panel	380–500 88° 13.5dBi 741 518	1997	2 x 7-16 female	25
VPol Panel	406–512 63° 9dBi K 73 36 21	493	N female	26
VPol Panel	380–500 65° 12dBi 800 10252	992	7-16 female	27
VPol Panel	380–500 65° 15dBi 800 10253	2000	7-16 female	28
VPol Panel	380–430 115° 8.5dBi 739 504	974	7-16 female	29
VPol Panel	380–430 115° 11.5dBi 739 506	1934	7-16 female	30
VPol Panel	400–470 120° 9dBi 731 291	992	7-16 female	31
LogPer	406–512 67° 10.5dBi K 72 22 41	353	N female	32
LogPer	406–512 67° 10.5dBi K 72 22 47	353	7-16 female	32
LogPer	380–520 87° 9dBi 800 10391	785	7-16 female	33
Corner	360–490 44° 11dBi K 73 12 21	500	N female	34
RHCPol Helix	400–470 33° 12dBi K 73 51 21	718	N female	35
Remote Electrical Tilt (RET) System				36

New Products

Panel Dual Polarization Half-power Beam Width

380–500

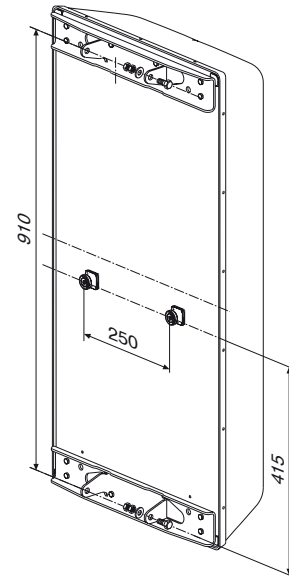
X

65°

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TETRAPOL



XPol Panel 380–500 65° 12dBi

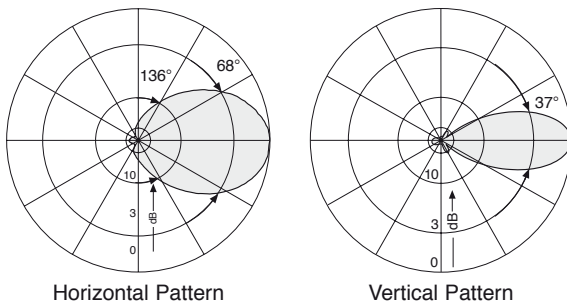
Type No.	741 515	
Frequency range	380–500	
	380 – 430 MHz	430 – 500 MHz
Polarization	+45°, –45°	+45°, –45°
Gain	11.5 dBi	12 dBi
Half-power beam width Copolar +45°/–45°	Horizontal: 68° Vertical: 37°	Horizontal: 65° Vertical: 32°
Front-to-back ratio, copolar	> 25 dB	
Isolation	> 30 dB	
Impedance	50 Ω	
VSWR	< 1.5	
Intermodulation IM3 (2 x 43 dBm carrier)	< –150 dBc	
Max. power per input	500 W (at 50 °C ambient temperature)	

Material:
Radiators: Tin-plated copper.
Reflector screen: Weatherproof 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.

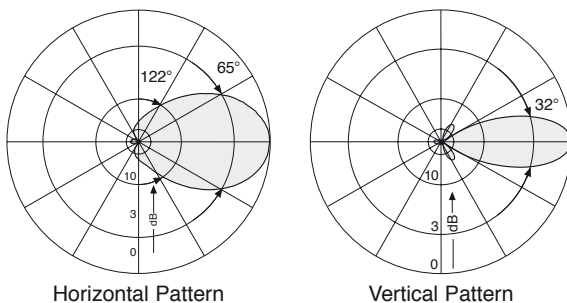
380 – 430 MHz



Horizontal Pattern

Vertical Pattern

430 – 500 MHz



Horizontal Pattern

Vertical Pattern

380–500 –45°	380–500 +45°
7-16	7-16

Mechanical specifications

Input	2 x 7-16 female
Connector position	Rearside
Weight	12 kg
Wind load	Frontal: 550 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
Packing size	1062 x 562 x 274 mm
Height/width/depth	992 / 492 / 190 mm

Panel Dual Polarization Half-power Beam Width Adjust. Electr. Downtilt

set by hand or by optional RCU (Remote Control Unit)

380–470

X

65°

2°–16°

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TETRA/
TETRAPOL

XPoI Panel 380–470 65° 14dBi 2°–16°T

Type No.	800 10403	
Frequency range	380–470	
	380 – 430 MHz	430 – 470 MHz
Polarization	+45°, –45°	
Gain (dBi)	13.5 ... 13 ... 12.5	14 ... 13.5 ... 13
Tilt	2° ... 9° ... 16°	2° ... 9° ... 16°
Half-power beam width Copolar +45°/–45°	Horizontal: 66° Vertical: 22°	Horizontal: 62° Vertical: 19°
Electrical tilt	2° – 16°, continuously adjustable	
Front-to-back ratio, copolar (180° ±30°)	> 25 dB	
Cross polar ratio Maindirection	0° ±60°	Typically: 25 dB > 10 dB
Isolation	> 30 dB	
Impedance	50 Ω	
VSWR	< 1.5	
Intermodulation IM3	< –150 dBc (2 x 43 dBm carrier)	
Max. power per input	400 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.

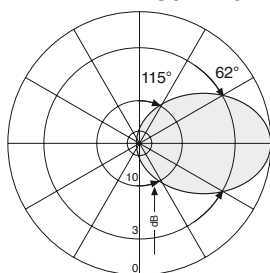
Ice protection:
Due to the very sturdy antenna construction and the protection of the radiating system by the radome, the antenna remains operational even under icy conditions.

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

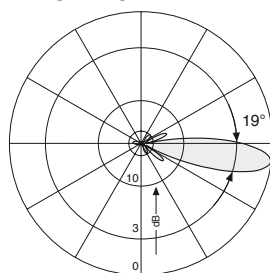


Directional
360 – 512 MHz

430–470 MHz: +45°/–45°

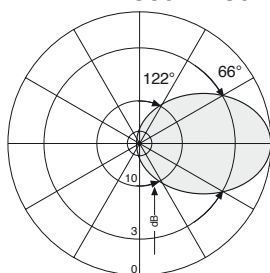


Horizontal Pattern

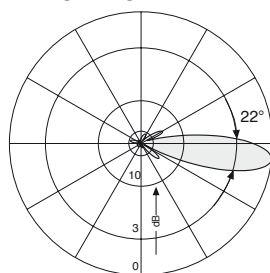


Vertical Pattern
2°–16° electrical downtilt

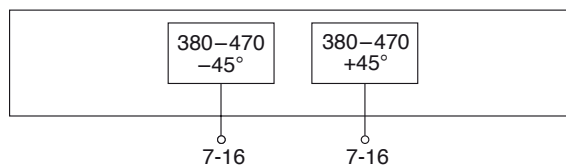
380 – 430 MHz: +45°/–45°



Horizontal Pattern



Vertical Pattern
2°–16° electrical downtilt



Mechanical specifications	
Input	2x 7-16 female
Connector position	Bottom
Adjustment mechanism	1 x, Position bottom continuously adjustable
Weight	19 kg
Wind load	Frontal: 1200 N (at 150 km/h) Lateral: 440 N (at 150 km/h) Rearside: 2000 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	Approx. 2250 x 630 x 215 mm
Height/width/depth	1999 / 575 / 199 mm

Panel Dual Polarization Half-power Beam Width

380–500

X

65°

KATHREIN

Antennen · Electronic

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TETRAPOL

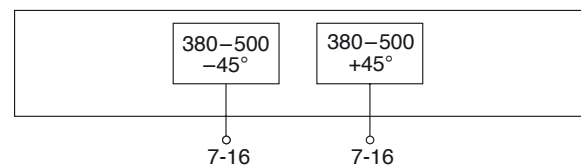
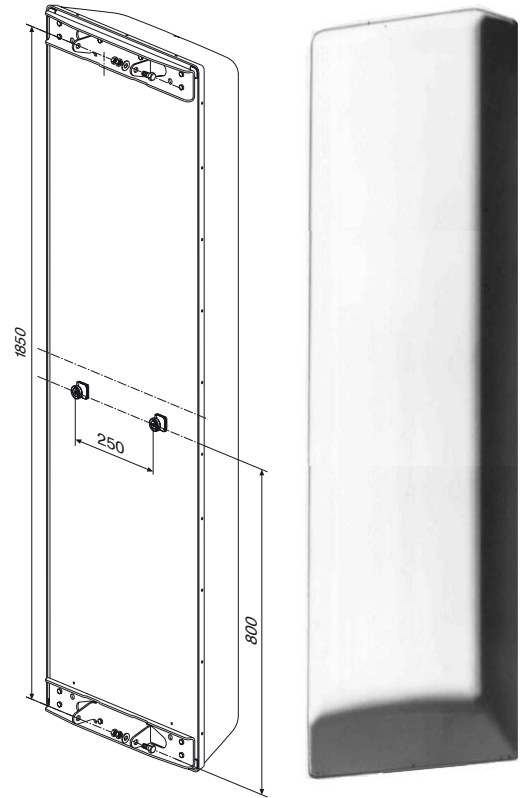
XPol Panel 380–500 65° 15dBi

Type No.	741 516	
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 (2 x 43 dBm carrier)	< –150 dBc	
Max. power per input	500 W (at 50 °C ambient temperature)	

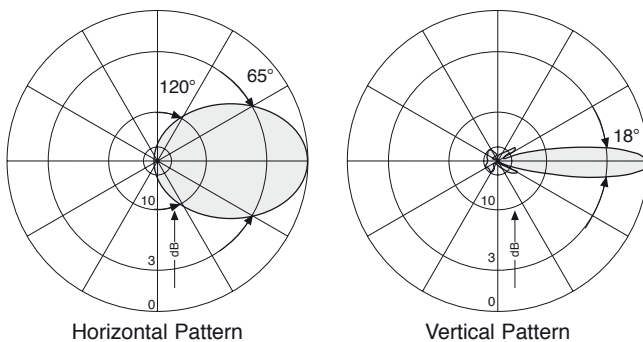
Material:
Radiators: Tin-plated copper.
Reflector screen: Weatherproof aluminum.
Radome: Fiberglass, colour: Grey.
All screws and nuts: Stainless steel.

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.



+45°/–45° Polarization



Mechanical specifications	
Input	2 x 7-16 female
Connector position	Rearside
Weight	19 kg
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
Packing size	2060 x 562 x 274 mm
Height/width/depth	2000 / 492 / 190 mm

Panel Dual Polarization Half-power Beam Width Fixed Electrical Downtilt

380–470

X

65°

6°

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TETRAPOL

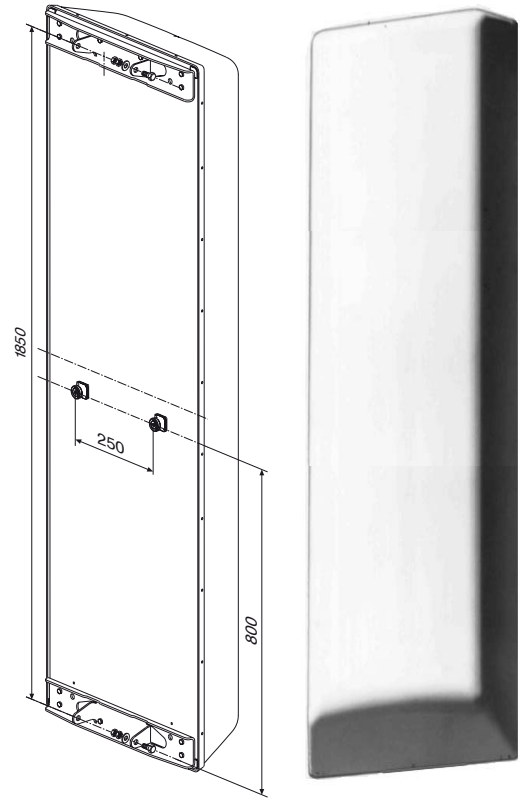
XPol Panel 380–470 65° 14.5dBi 6°T

Type No.	742 242	
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	< –150 dBc (2 x 43 dBm carrier)	
Max. power per input	500 W (at 50 °C ambient temperature)	

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

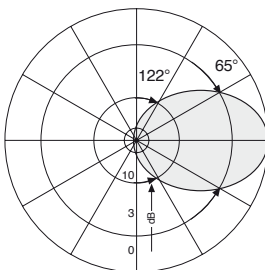
Ice protection:
Due to the very sturdy antenna construction and the protection of the radiating system by the radome, the antenna remains operational even under icy conditions.

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

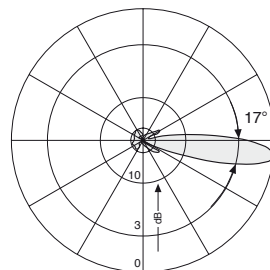


Directional
360 – 512 MHz

430–470 MHz: +45°/–45°

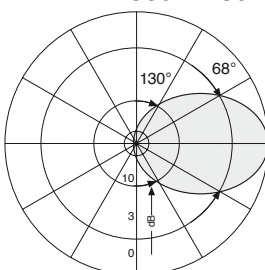


Horizontal Pattern

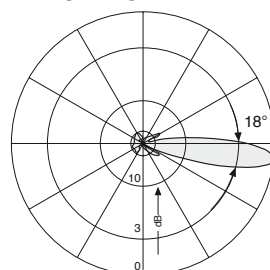


Vertical Pattern
6° electrical downtilt

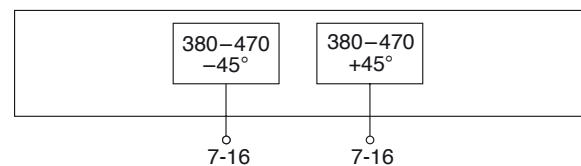
380 – 430 MHz: +45°/–45°



Horizontal Pattern



Vertical Pattern
6° electrical downtilt



Mechanical specifications	
Input	2 x 7-16 female
Connector position	Rearside
Weight	19 kg
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
Packing size	2060 x 562 x 274 mm
Height/width/depth	2000 / 492 / 190 mm

Panel Dual Polarization Half-power Beam Width

380–500

X

88°

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TETRAPOL

XPol Panel 380–500 88° 10.5dBi

Type No.	741 517	
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)	

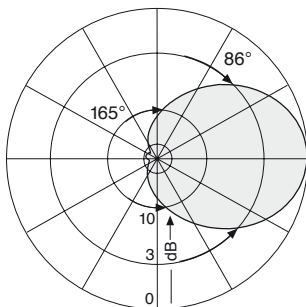
Material: Reflector screen: Weather-proof aluminum.
Radome: Fiberglass, colour: Grey.
All screws and nuts: Stainless steel.

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.

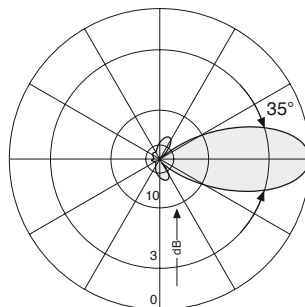
Grounding: The metal parts of the antenna including the mounting kit and the inner conductors are DC grounded.



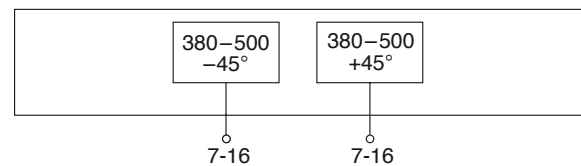
430 – 500 MHz: +45°/–45° Polarization



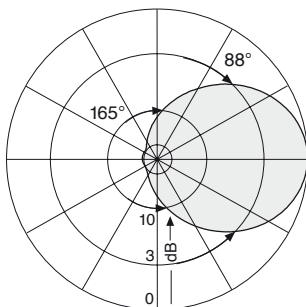
Horizontal Pattern



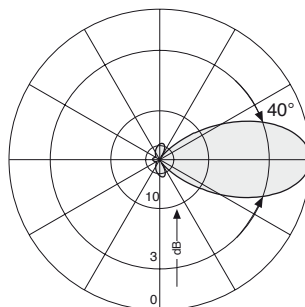
Vertical Pattern



380 – 430 MHz: +45°/–45° Polarization



Horizontal Pattern



Vertical Pattern

Mechanical specifications

Input	2 x 7-16 female
Connector position	Bottom
Weight	10.5 kg
Wind load	Frontal: 360 N (at 150 km/h) Lateral: 220 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	1140 x 330 x 240 mm
Height/width/depth	1007 / 317 / 193 mm

Panel Dual Polarization Half-power Beam Width

380–500

X

88°

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TETRA/
TETRAPOL

XPol Panel 380–500 88° 13.5dBi

Type No.	741 518	
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.

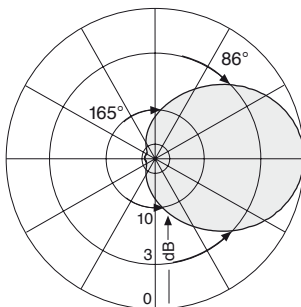
Ice protection: Due to the very sturdy antenna construction and the protection of the radiating system by the radome, the antenna remains operational even under icy conditions.

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

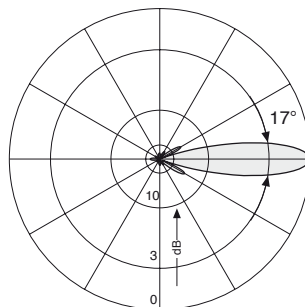


Directional
360 – 512 MHz

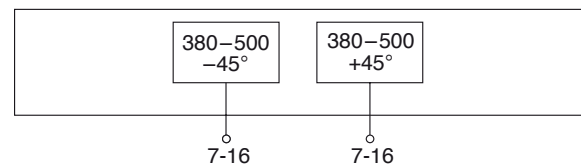
430 – 500 MHz: +45°/–45° Polarization



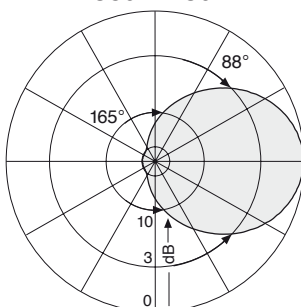
Horizontal Pattern



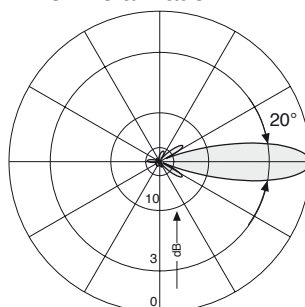
Vertical Pattern



380 – 430 MHz: +45°/–45° Polarization



Horizontal Pattern



Vertical Pattern

Mechanical specifications

Input	2 x 7-16 female
Connector position	Bottom
Weight	18.5 kg
Wind load	Frontal: 715 N (at 150 km/h) Lateral: 440 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	2130 x 330 x 240
Height/width/depth	1997 / 317 / 193 mm

Panel Vertical Polarization Half-power Beam Width

406–512

V

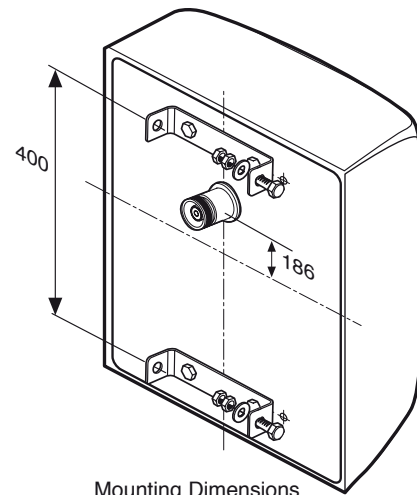
63°

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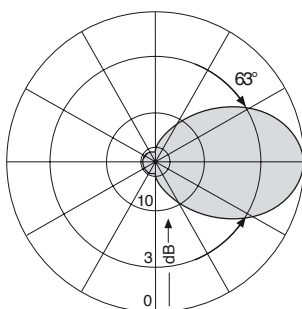
VPol Panel 406–512 63° 9dBi

Type No.	K 73 36 21
Frequency range	406 – 512 MHz
Polarization	Vertical
Gain	9 dBi
Half-power beam width	H-plane: 63° E-plane: 63°
Impedance	50 Ω
VSWR	< 1.4
Max. power	500 W (at 50 °C ambient temperature)

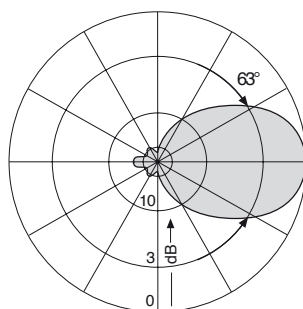
- Arrays:** This antenna is especially suitable as a component in arrays to achieve various radiation patterns.
- Scope of supply:** Antenna including two weather-proof covers for straight and elbow connector, but without mounting hardware.
- Material:** Dipoles and reflector screen: Weather-resistant aluminum.
Radome: Fiberglass, colour: White.
All screws and nuts: Stainless steel.
- Attachment:** Use clamps K 61 14 0 .. for tubular mast diameters of 40 – 521 mm (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 are DC grounded.
The inner conductor is capacitively coupled.



Mounting Dimensions



Horizontal Pattern



Vertical Pattern

Mechanical specifications	
Input	N female
Connector position	Rearside
Weight	6 kg
Wind load	Frontal: 220 N (at 150 km/h) Lateral: 100 N (at 150 km/h) Rearside: 330 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	603 x 567 x 282 mm
Height/width/depth	493 / 493 / 209 mm

Multi-band Panel Vertical Polarization Half-power Beam Width

380–500

V

65°

KATHREIN

Antennen · Electronic

TETRA/
TETRAPOL

VPol Panel 380–500 65° 12dBi

Type No.	800 10252	
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.

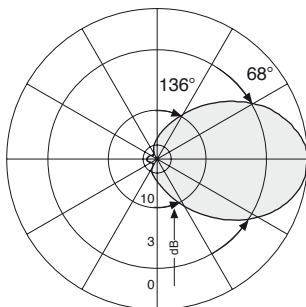
Ice protection: Due to the very sturdy antenna construction and the protection of the radiating system by the radome, the antenna remains operational even under icy conditions.

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

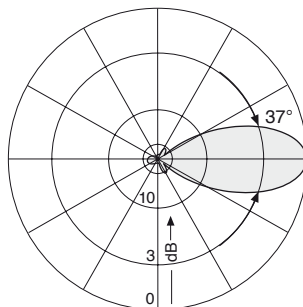


Directional
360 – 512 MHz

380 – 430 MHz

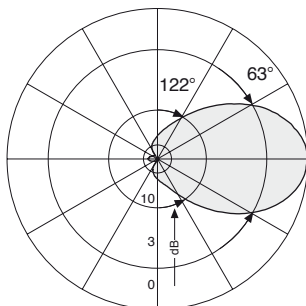


Horizontal Pattern

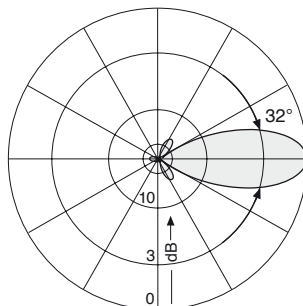


Vertical Pattern

430 – 500 MHz



Horizontal Pattern



Vertical Pattern

Mechanical specifications

Input	1 x 7-16 female
Connector position	Rearside
Weight	12 kg
Wind load	Frontal: 550 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
Packing size	1062 x 562 x 274 mm
Height/width/depth	992 / 492 / 190 mm

Multi-band Panel Vertical Polarization Half-power Beam Width

380 – 500

V

65°

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TETRA/
TETRAPOL

VPol Panel 380–500 65° 15dBi

Type No.	800 10253	
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)	

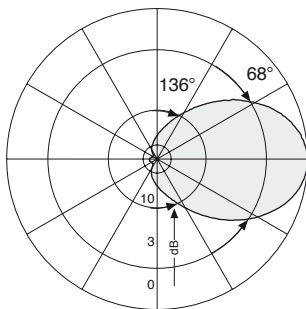
Material: Reflector screen: Weather-proof aluminum.
Radiator: Tin-plated copper.
Radome: Fiberglass, colour: Grey.
All screws and nuts: Stainless steel.

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.

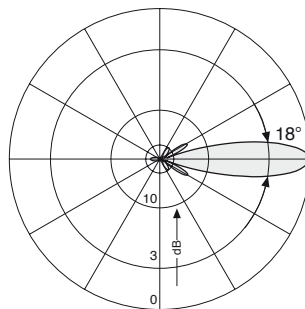
Grounding: The metal parts of the antenna including the mounting kit and the inner conductors are DC grounded.



380 – 430 MHz

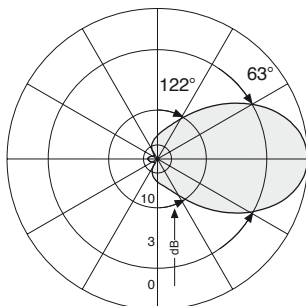


Horizontal Pattern

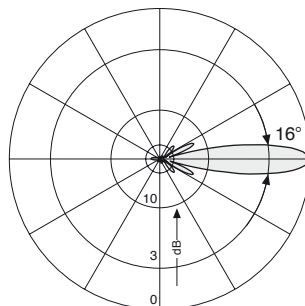


Vertical Pattern

430 – 500 MHz



Horizontal Pattern



Vertical Pattern

Mechanical specifications

Input	1 x 7-16 female
Connector position	Rearside
Weight	20 kg
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
Packing size	2060 x 562 x 274 mm
Height/width/depth	2000 / 492 / 190 mm

Eurocell Panel
Vertical Polarization
Half-power Beam Width

380–430

V

115°

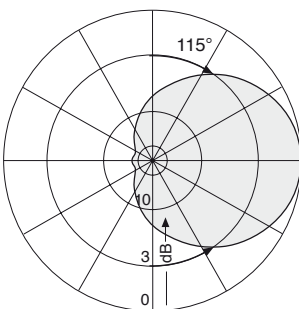
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 TETRAPOL

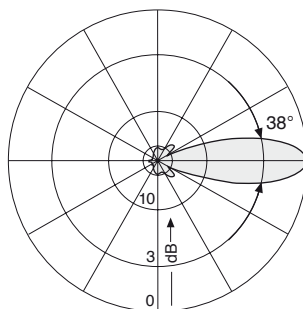
VPol Panel 380–430 115° 8.5dBi

Type No.	739 504
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 (2 x 43 dBm carrier)	< -150 dBc
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
Weight	4.5 kg
Wind load	Frontal: 160 N (at 150 km/h) Lateral: 100 N (at 150 km/h) Rearside: 360 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	1102 x 272 x 160 mm
Height/width/depth	974 / 258 / 103 mm

Directional
 360 – 512 MHz

Eurocell Panel

Vertical Polarization

Half-power Beam Width

380–430

V

115°

KATHREIN

Antennen · Electronic

TETRA/
TETRAPOL

VPol Panel 380–430 115° 11.5dBi

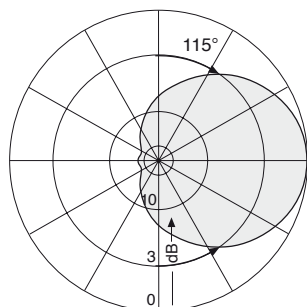
Type No.	739 506
Frequency range	380 – 430 MHz
Polarization	Vertical
Gain	11.5 dBi
Half-power beam width	Horizontal: 115° Vertical: 18°
Front-to-back ratio	> 18 dB
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3 (2 x 43 dBm carrier)	< -150 dBc
Max. power	500 W (at 50 °C ambient temperature)

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

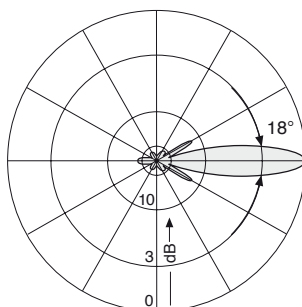
Attachment: See the “Mechanical Accessories” part of this catalogue.

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
Weight	9 kg
Wind load	Frontal: 340 N (at 150 km/h) Lateral: 220 N (at 150 km/h) Rearside: 750 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	2062 x 272 x 160 mm
Height/width/depth	1934 / 258 / 103 mm

Panel
Vertical Polarization
Half-power Beam Width

400–470

V

120°

KATHREIN
 Antennen · Electronic

VPol Panel 400–470 120° 9dBi

Type No.	731 291
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)

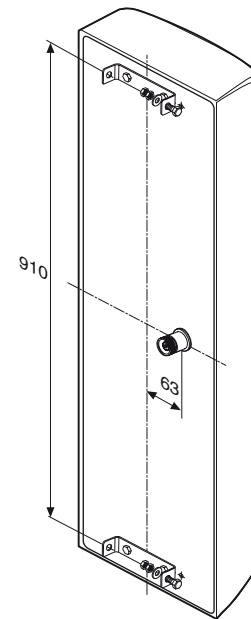
Scope of supply: Antenna including two weather-proof covers for straight and elbow connector, but without mounting hardware.

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

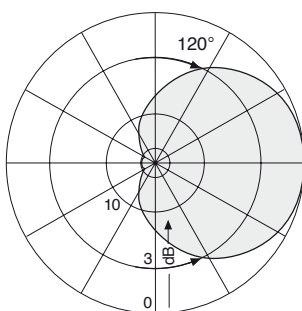
Attachment: Use clamps K 61 14 0 .. for tubular mast diameters of 40 – 521 mm (see the “Mechanical Accessories” part of this catalogue).

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.

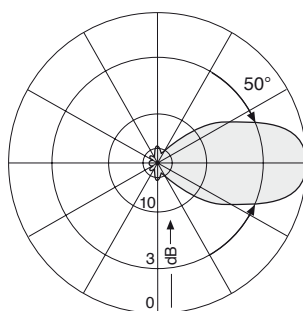
Grounding: All metal parts of the antenna including the mounting kit and the inner conductor are DC grounded.



Mounting Dimensions



Horizontal Pattern



Vertical Pattern

Mechanical specifications	
Input	7-16 female
Connector position	Rearside
Weight	9 kg
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
Packing size	1062 x 562 x 274 mm
Height/width/depth	992 / 492 / 190 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.	K 72 22 41	K 72 22 47
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.

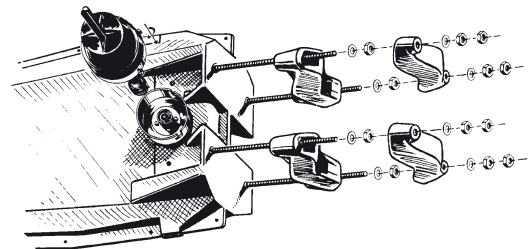
Grounding: All metal parts of the antenna including the mounting kit and the inner conductor are DC grounded.



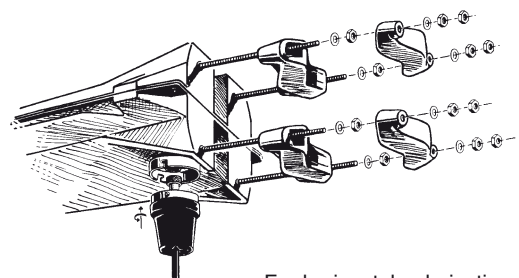
For vertical polarization



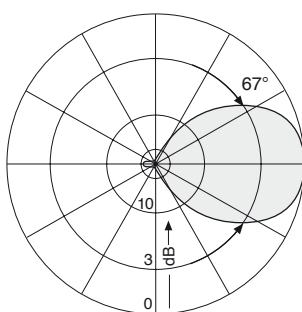
For horizontal polarization



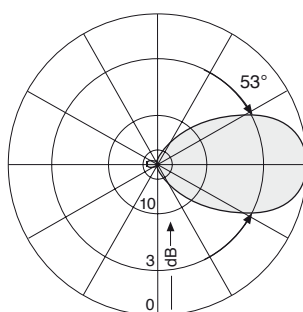
For vertical polarization



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

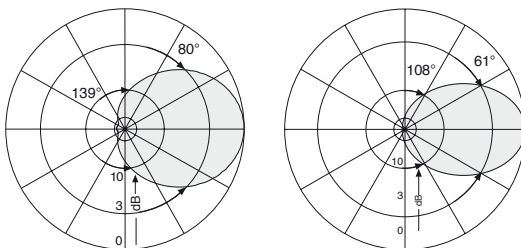
Type No.	800 10391		
Frequency range	380 – 410 MHz	410 – 470 MHz	470 – 520 MHz
Polarization	Vertical		
Gain	9.2 dBi	9 dBi	8.7 dBi
Half-power beam width	Horizontal: 80° Vertical: 61°	Horizontal: 85° Vertical: 60°	Horizontal: 88° Vertical: 59°
Impedance	50 Ω		
VSWR	< 1.5		
Intermodulation IM3	< – 150 dBc (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.

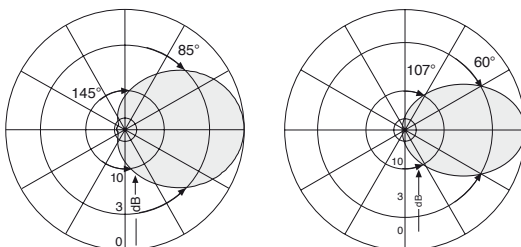
380–410 MHz: +45°/–45°



Horizontal Pattern

Vertical Pattern

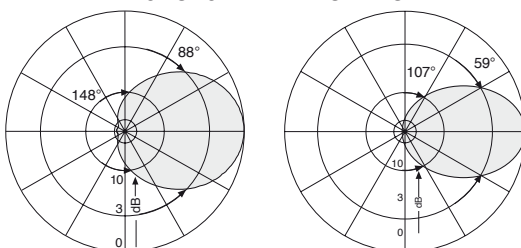
410–470 MHz: +45°/–45°



Horizontal Pattern

Vertical Pattern

470–520 MHz: +45°/–45°



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°

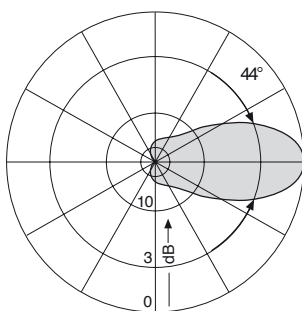
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VPol Corner 360–490 44° 11dBi

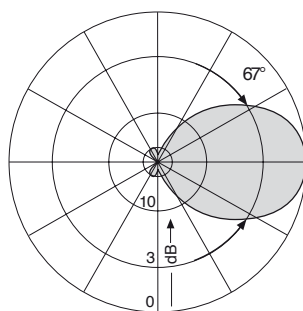
Type No.	K 73 12 21
Frequency range	360 – 490 MHz
Polarization	Vertical
Gain	11 dBi
Half-power beam width	H-plane: 44° E-plane: 67°
Impedance	50 Ω
VSWR	< 1.5 at 360 – 490 MHz < 1.3 at 400 – 470 MHz
Max. power	180 W (at 50 °C ambient temperature)



- 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°

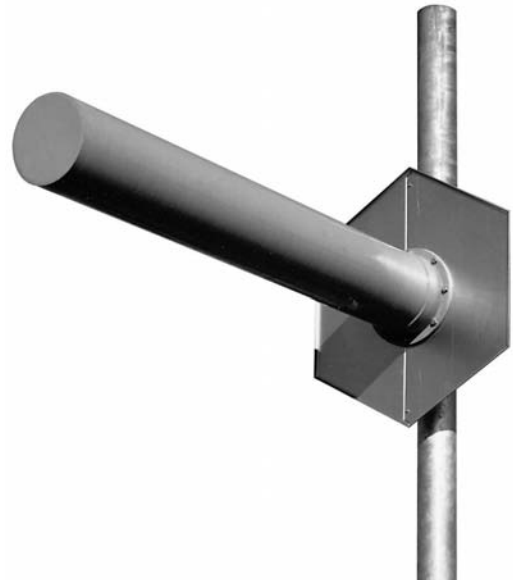
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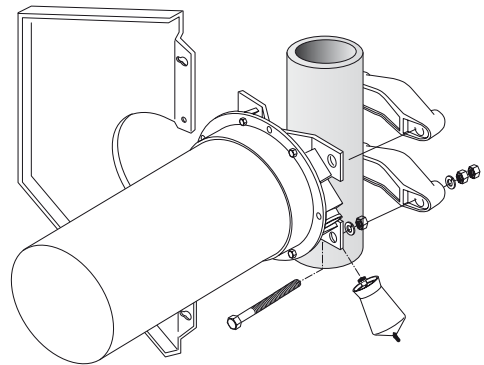
RHCPol Helix 400–470 33° 12dBi

Type No.	K 73 51 21
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)

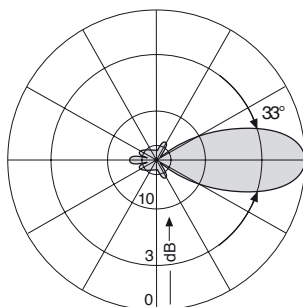
- Scope of supply:** Antenna with weather protective casing for straight connectors, mounting kit included.
- Material:** Antenna: Copper band helix in protective fiberglass tube, colour: Grey.
Reflector screen: Weather-resistant aluminum.
Attachment construction: Hot dip galvanized steel.
All screws 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

Optional:

- Smart bias-tee

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:
antennas.mobilcom@kathrein.de

Summary – Omnidirectional Antennas

27 – 87.5 MHz

Type				Type No.	Height [mm]	Input	Page
VPol Omni	27...61	360°	0dB	K 51 24 72	4330	UHF female	38
VPol Omni	68–80	360°	0dB	K 51 26 41 1	1690	N female	39
VPol Omni	74–87.5	360°	0dB	K 51 26 42 1	1570	N female	39
VPol Omni	74.2...87.5/167.5–174	360°/360°	0/0.5dB	K 51 25 42 1	1880	2 x N female	40
VPol Omni	68–87.5	360°	2dB	K 55 28 41	1750	N female	41

Gain ref. $\lambda/2$ dipole

Omnidirectional Antenna Vertical Polarization

27...61

V

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VPol Omni 27...61 360° 0dB

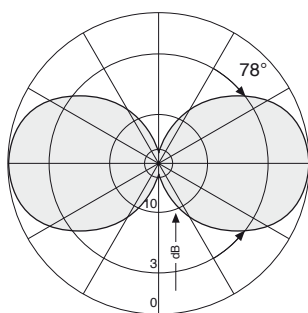
Type No.	Antenna	K 51 24 72
	Spare radials	K 51 24 70 1
Frequency range		27 ... 61 MHz
Polarization		Vertical
Gain (ref. $\lambda/2$ dipole)		0 dB
Impedance		50 Ω
Max. power		500 W (at 50 °C ambient temperature)

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.

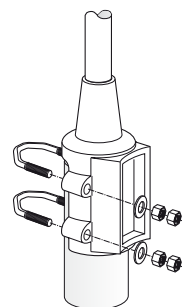
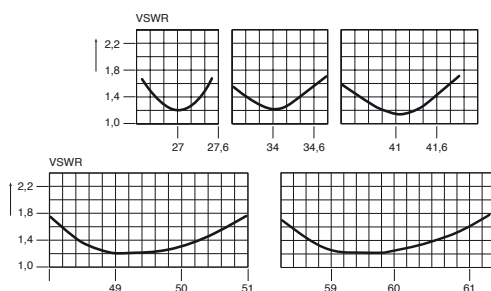
Grounding: The metal parts of the antenna including the mounting kit are DC grounded.



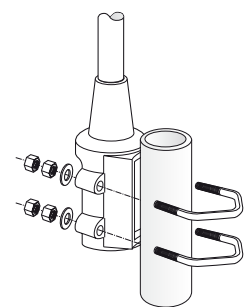
Vertical Pattern

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	K 51 26 41 1 K 51 26 40 12	K 51 26 42 1 K 51 26 40 22
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.

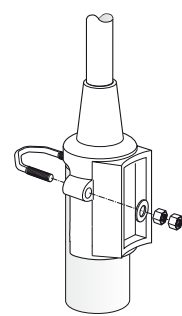
Mounting: The antenna can be attached in two ways with the supplied mounting kit:
1. On the tip of a tubular mast of 40 – 54 mm diameter (connecting cable runs inside the mast).
2. Laterally at the tip of a tubular mast of 20 – 40 mm diameter (connecting cable runs outside the mast).

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

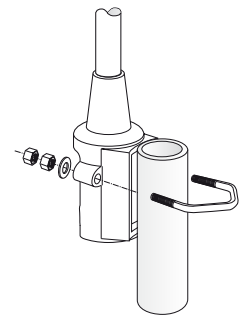
Grounding: All metal parts of the antenna including the mounting kit are DC grounded.



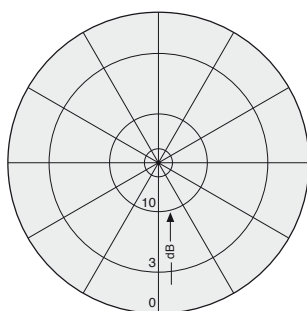
Omnidirectional
27 – 87.5 MHz



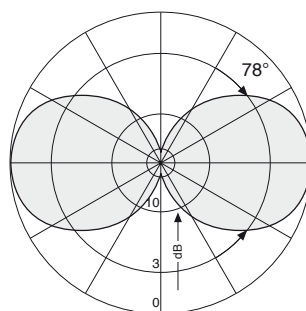
On the tip of a tubular mast



Laterally at the tip of a tubular mast



Horizontal Pattern



Vertical Pattern

Mechanical specifications	K 51 26 41 1	K 51 26 42 1
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

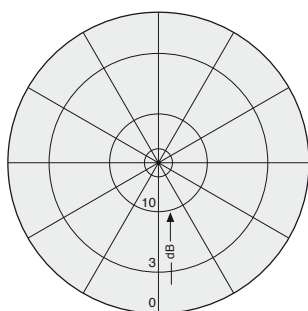
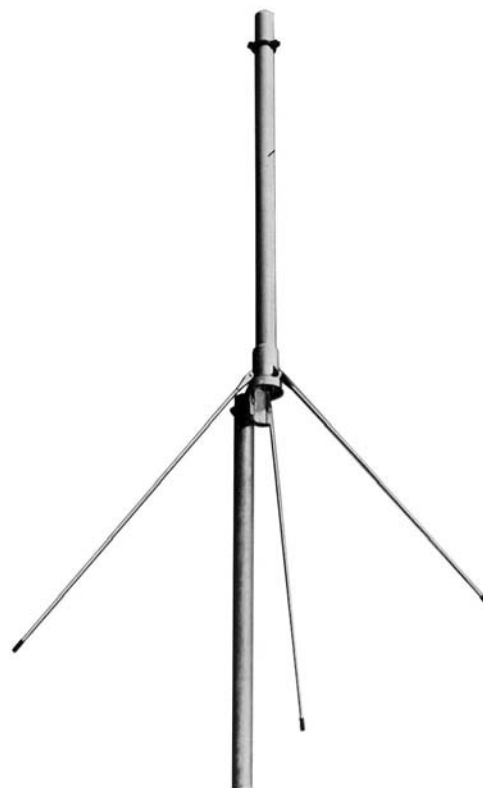
V

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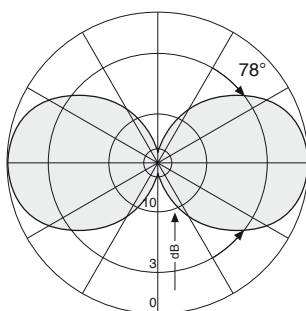
VPol Omni 74.2...87.5/167.5–174 360°/360° 0/0.5dB

Type No.	Antenna	K 51 25 42 1	
	Spare radials	K 51 25 40 2	
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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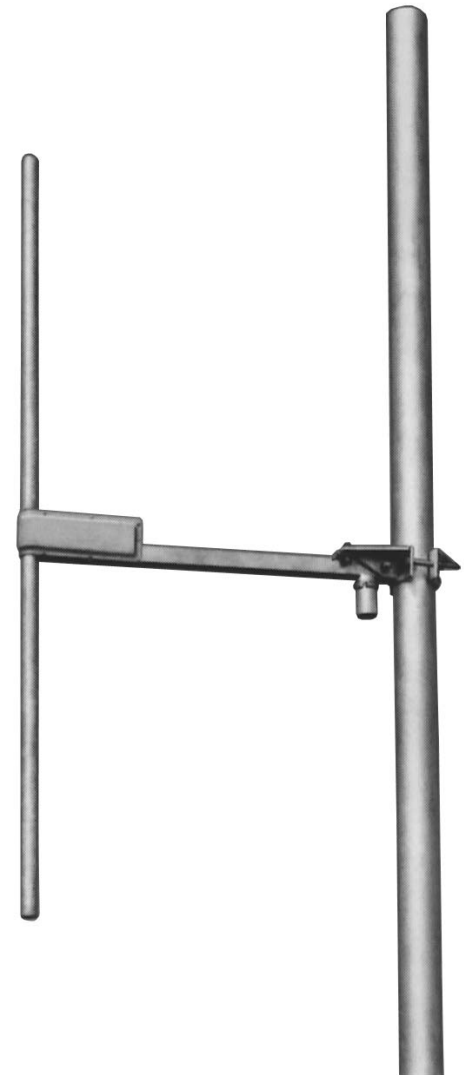
VPol Omni 68–87.5 360° 2dB

Type No.	K 55 28 41
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)

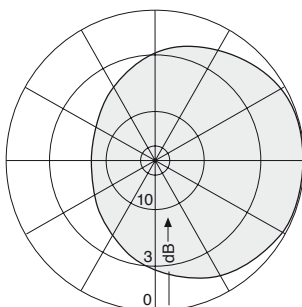
Material: Hot-dip galvanized steel.
Radome: Fiberglass.
All screws and nuts: Stainless steel.

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

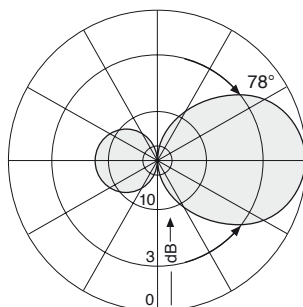
Grounding: All metal parts of the antenna including the mounting kit are DC grounded.
The inner conductor is coupled capacitively.



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	K 51 25 42 1	1880	2 x N female	44
VPol Omni 146–174 360° 0dB	K 51 26 2	905	cable termination	45
VPol Omni 146–174 360° 0dB	711 530	905	N female	45
VPol Omni 146–156 360° 0dB	K 55 26 26	1085	cable termination	46
VPol Omni 155–165 360° 0dB	K 55 26 27	1042	cable termination	46
VPol Omni 164–174 360° 0dB	K 55 26 28	993	cable termination	46
VPol Omni 146–174 360° 2dB	K 55 29 21	840	N female	47

Gain ref. $\lambda/2$ dipole

Dual-band Omnidirectional Antenna Vertical Polarization

74.2–77.7
84.0–87.5

167.5–174

V

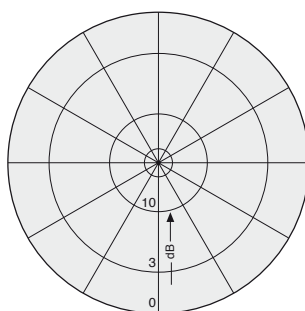
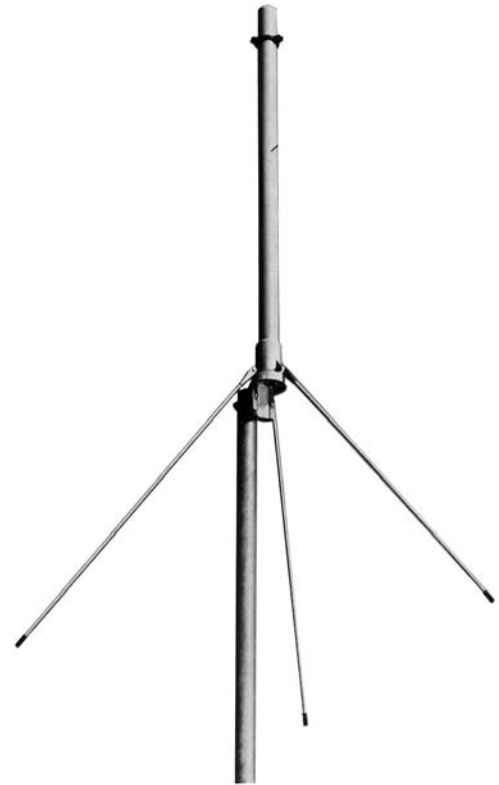
V

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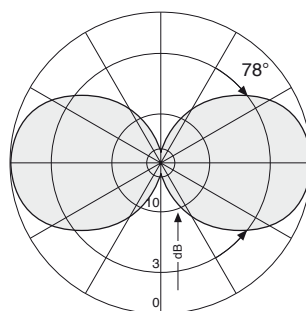
VPol Omni 74.2...87.5/167.5–174 360°/360° 0/0.5dB

Type No.	Antenna	K 51 25 42 1	
	Spare radials	K 51 25 40 2	
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	K 51 26 2	711 530
	Spare radials	K 51 26 20 2	K 51 26 20 2
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)	

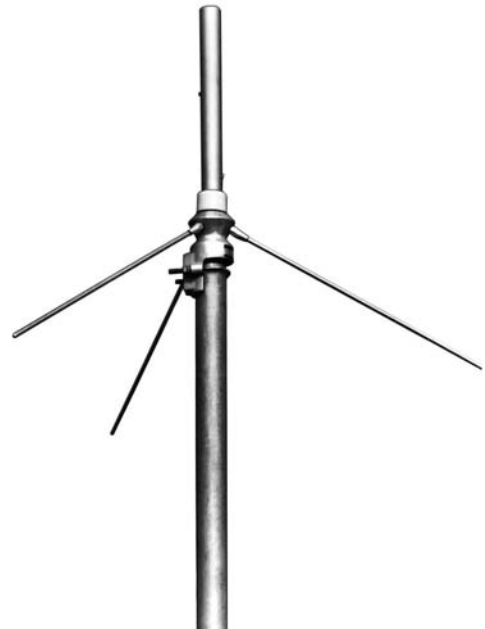
Material: Radiator and radials: Weather-resistant aluminum.
Mounting U-bolt and all screws and nuts: Stainless steel.

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

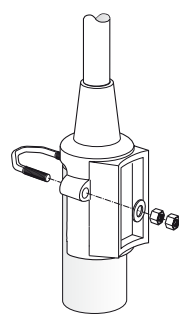
1. On the tip of a tubular mast of 40 – 54 mm diameter (connecting cable runs inside the mast).
2. Laterally at the tip of a tubular mast of 20 – 40 mm diameter (connecting cable runs outside the mast).

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

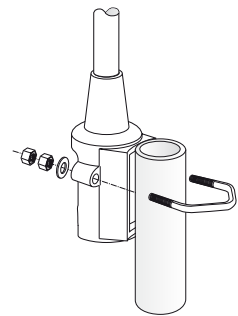
Grounding: All metal parts of the antenna including the mounting kit are DC grounded.
The inner conductor is capacitively coupled.



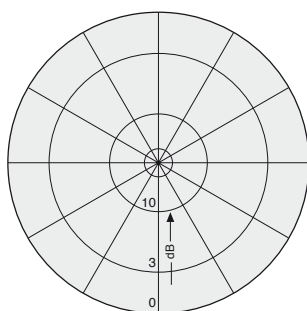
Omnidirectional
146 – 174 MHz



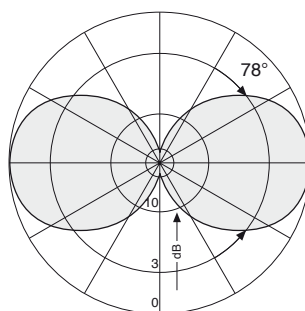
On the tip of a tubular mast



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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Antennen · Electronic

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.	K 55 26 26	K 55 26 27	K 55 26 28
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)		

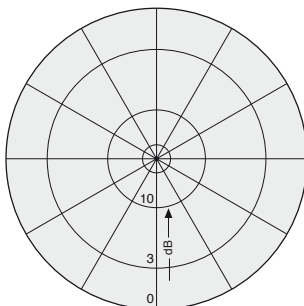
Material: Radiator and base: Weather-resistant aluminum.
 Mounting U-bolt and all screws and nuts: Stainless steel.

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

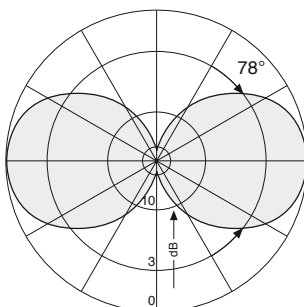
1. On the tip of a tubular mast of 40 – 54 mm diameter (connecting cable runs inside the mast).
2. Laterally at the tip of a tubular mast of 20 – 40 mm diameter (connecting cable runs outside the mast).

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

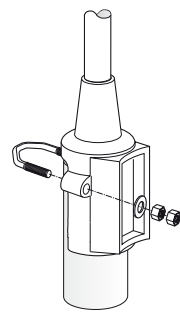
Grounding: All metal parts of the antenna including the mounting kit are DC grounded. The inner conductor is capacitively coupled.



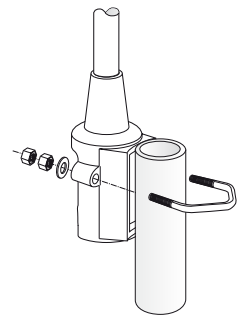
Horizontal Pattern



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
146 – 174 MHz

Omnidirectional Off-set Antenna Vertical Polarization

146–174

V

KATHREIN
Antennen · Electronic

VPol Omni 146–174 360° 2dB

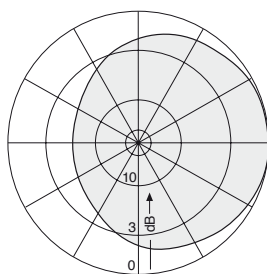
Type No.	K 55 29 21
Frequency range	146 – 174 MHz
Polarization	Vertical
Radiation Pattern	Preferred direction: Mast to radiator.
Gain (ref. $\lambda/2$ dipole)	2 dB
Impedance	50 Ω
VSWR	< 1.4
Max. power	440 W (at 50 °C ambient temperature)

- 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.

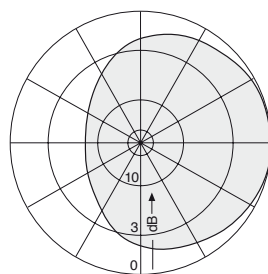


Omnidirectional
146 – 174 MHz

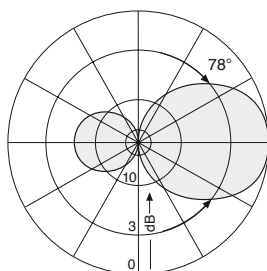
Radiation Pattern with different mast diameters:



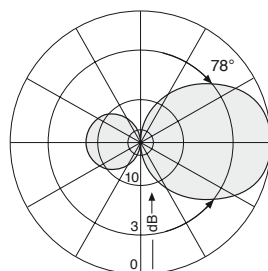
Horizontal Pattern
60 mm \varnothing



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	737 003	552	N female	50
VPol Omni 406–470 360° 2dBi	K 75 11 21	510	N female	50
VPol Omni 380–406 360° 5dBi	800 10448	1400	7-16 female	51
VPol Omni 380–400 360° 5dBi	K 75 15 37	1612	7-16 female	52
VPol Omni 406–430 360° 5dBi	K 75 15 21 1	1273	N female	53
VPol Omni 440–470 360° 5dBi	K 75 15 22 1	1144	N female	53
VPol Omni 380–400 360° 7dBi	800 10392	2060	7-16 female	54
VPol Omni 406–430 360° 7dBi	728 888	2016	7-16 female	55
VPol Omni 440–470 360° 7dBi	721 388	2016	N female	55
VPol Omni 440–470 360° 7dBi	720 880	2016	7-16 female	55
VPol Omni 380–400 360° 7.5dBi	K 75 16 37	2840	7-16 female	56
VPol Omni 380–400 360° 7.5dBi 8.5°T	737 545	3282	7-16 female	57
VPol Omni 380–400 360° 8dBi	800 10434	3282	7-16 female	58
VPol Omni 410–430 360° 8dBi 8.5°T	737 546	3114	7-16 female	59
VPol Omni 450–470 360° 8.5dBi	742 155	3113	7-16 female	60
VPol Omni 380–470 360° 4dBi	K 75 29 21	315	N female	61

New Products

Omnidirectional Antennas Vertical Polarization

370...470

V

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737 003: VPol Omni 370–430 360° 2dBi

K 75 11 21: VPol Omni 406–470 360° 2dBi

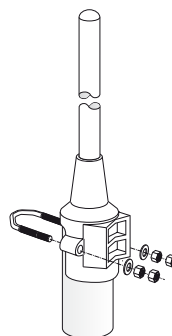
Type No.	737 003	K 75 11 21
Frequency range	370 – 430 MHz	406 – 470 MHz
Polarization	Vertical	
Gain	2 dBi	
Impedance	50 Ω	
VSWR	< 1.5	
Intermodulation IM3 (2 x 43 dBm carrier)	< -150 dBc	
Max. power	100 W (at 50 °C ambient temperature)	

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

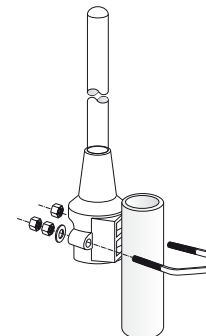
Mounting:
 The antenna can be attached in two ways with the supplied mounting kit:

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).

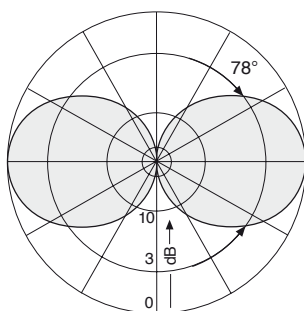
Grounding:
 All metal parts of the antenna including the inner conductor are DC grounded.



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]	552	510

Omnidirectional
370 – 470 MHz

Omnidirectional Antenna Vertical Polarization

380–406

V

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VPol Omni 380–406 360° 5dBi

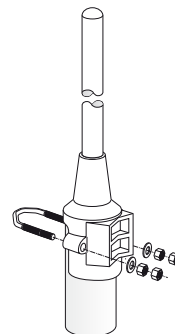
Type No.	800 10448
Frequency range	380 – 406 MHz
Polarization	Vertical
Gain	5 dBi
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3 (2 x 43 dBm carrier)	< -150 dBc
Max. power	500 W (at 50 °C ambient temperature)

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

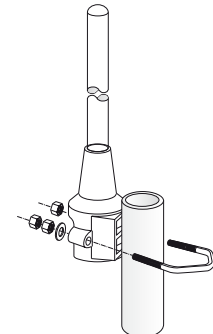
Mounting: The antenna can be attached in two ways with the supplied mounting kit:

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).

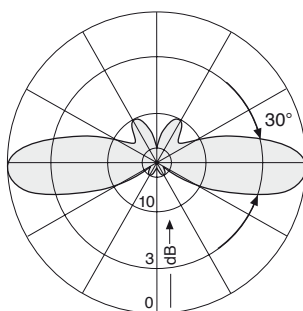
Grounding: All metal parts of the antenna as well as the inner conductor and the mounting kit are DC grounded.



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	1.4 kg
Radome diameter	21 mm
Wind load	43 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	112 mm x 97 mm x 1495 mm
Height	1400 mm

Omnidirectional Antenna Vertical Polarization

380–400

V

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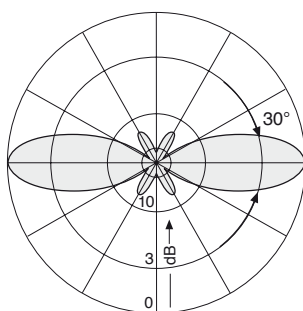
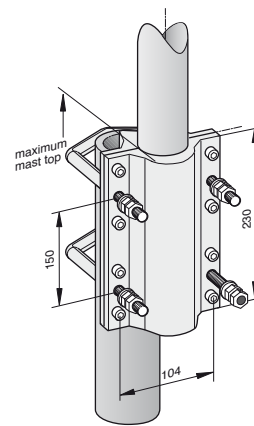
VPol Omni 380–400 360° 5dBi

Type No.	K 75 15 37
Frequency range	380 – 400 MHz
Polarization	Vertical
Gain	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 a tubular mast of 50 – 94 mm diameter with two U-bolt brackets supplied with the antenna (connecting cable runs outside the mast).

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



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

Side-mounting brackets see catalogue part "Mechanical Accessories"

Omnidirectional Antennas Vertical Polarization

406...470

V

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

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

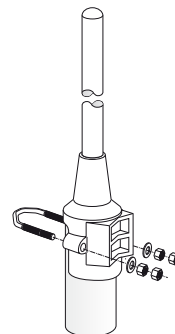
Type No.	K 75 15 21 1	K 75 15 22 1
Frequency range	406 – 430 MHz	440 – 470 MHz
Polarization	Vertical	
Gain	5 dBi	
Impedance	50 Ω	
VSWR	< 1.5	
Max. power	55 W (at 50 °C ambient temperature)	

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

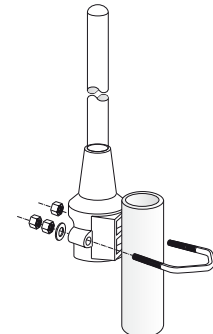
Mounting: The antenna can be attached in two ways with the supplied mounting kit:

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).

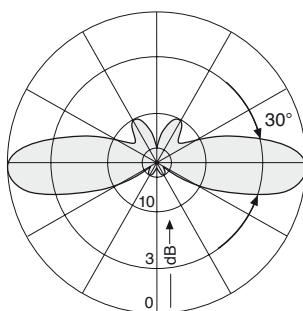
Grounding: All metal parts of the antenna including the inner conductor are DC grounded.



On the tip of a tubular mast



Laterally at the tip of a tubular mast



Vertical Pattern

Mechanical specifications	K 75 15 21 2	K 75 15 22 1
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

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VPol Omni 380–400 360° 7dBi

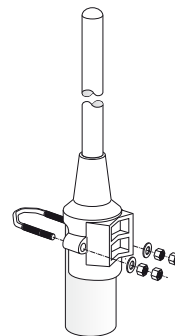
Type No.	800 10392
Frequency range	380 – 400 MHz
Polarization	Vertical
Gain	7 dBi
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3	< -150 dBc (2 x 43 dBm carrier)
Max. power	200 W (at 50 °C ambient temperature)

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

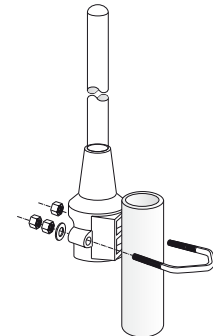
Mounting:
 The antenna can be attached in two ways with the supplied mounting kit:

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).

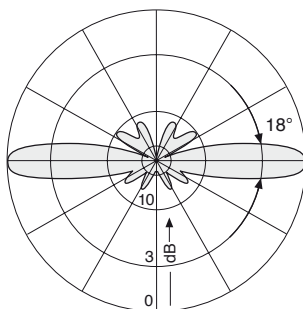
Grounding:
 All metal parts of the antenna as well as the inner conductor and the mounting kit are DC grounded.



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	1.8 kg
Radome diameter	21 mm
Wind load	65 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	Approx. 112 x 97 x 2200 mm
Height	Approx. 2060 mm

Omnidirectional Antennas Vertical Polarization

406...470

V

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K 75 16 21 1: VPol Omni 406–430 360° 7dBi
721 388, 720 880: VPol Omni 440–470 360° 7dBi
728 888: VPol Omni 406–430 360° 7dBi

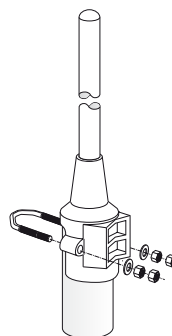
Type No.	721 388	728 888
	720 880	728 888
Frequency range	440 – 470 MHz	406 – 430 MHz
Polarization	Vertical	
Gain	7 dBi	
Impedance	50 Ω	
VSWR	< 1.5	
Intermodulation IM3 (2 x 43 dBm carrier)	< -150 dBc	
Max. power	500 W (at 50 °C ambient temperature)	

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

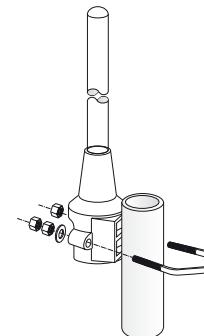
Mounting: The antenna can be attached in two ways with the supplied mounting kit:

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).

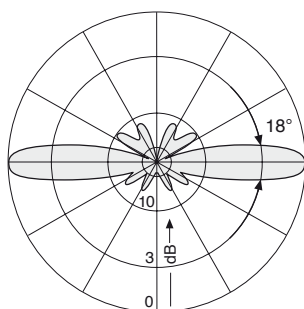
Grounding: All metal parts of the antenna including the inner conductor are DC grounded.



On the tip of a tubular mast



Laterally at the tip of a tubular mast



Vertical Pattern

Mechanical specifications

	N female 7-16 female	721 388 720 880	728 888
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
370 – 470 MHz

Omnidirectional Antenna Vertical Polarization

380–400

V

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TETRAPOL

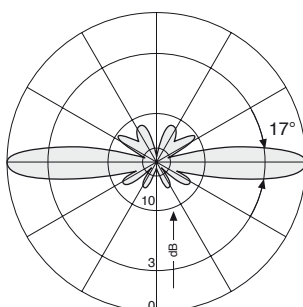
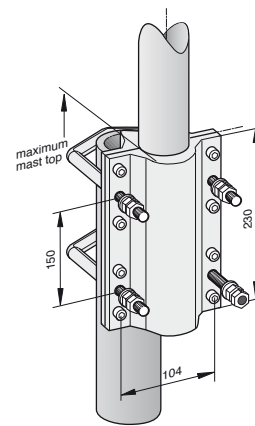
VPol Omni 380–400 360° 7.5dBi

Type No.	K 75 16 37
Frequency range	380 – 400 MHz
Polarization	Vertical
Gain	7.5 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, 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).

Grounding: The antenna is DC grounded via a copper tube having a cross-sectional area of 22 mm².
The inner conductor is capacitively coupled.



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°

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TETRAPOL

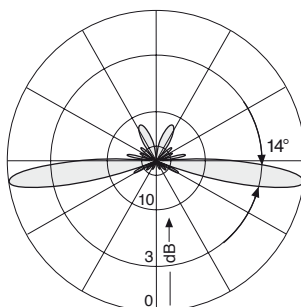
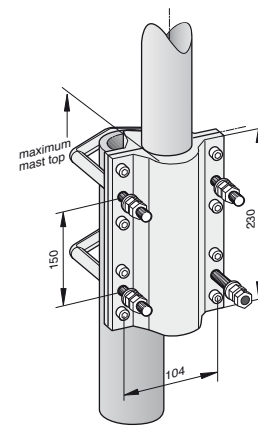
VPol Omni 380–400 360° 7.5dBi 8.5°T

Type No.	737 545
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).

Grounding:
The antenna is DC grounded via a copper tube having a cross-sectional area of 22 mm².
The inner conductor is capacitively coupled.



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

Antennen · Electronic

TETRA/
TETRAPOL

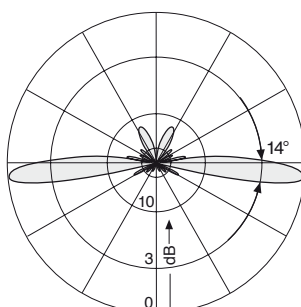
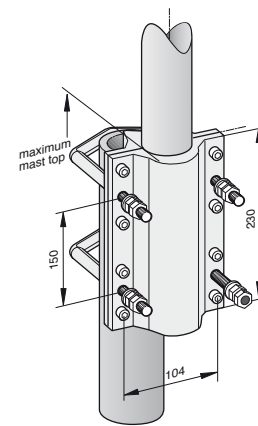
VPol Omni 380–400 360° 8dBi 5°T

Type No.	800 10434
Frequency range	380 – 400 MHz
Polarization	Vertical
Gain	8 dBi
Electrical tilt	5°, fixed
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3 (2 x 43 dBm carrier)	< -150 dBc
Max. power	500 W (at 50 °C ambient temperature)

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).

Grounding:
The antenna is DC grounded via a copper tube having a cross-sectional area of 22 mm².
The inner conductor is coupled capacitively.



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 Antenna Vertical Polarization Fixed Electrical Downtilt

410–430

V

8.5°

KATHREIN

Antennen · Electronic

TETRA/
TETRAPOL

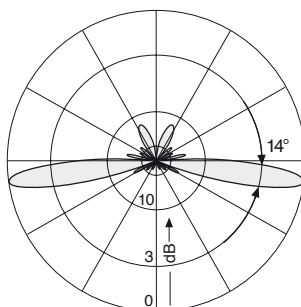
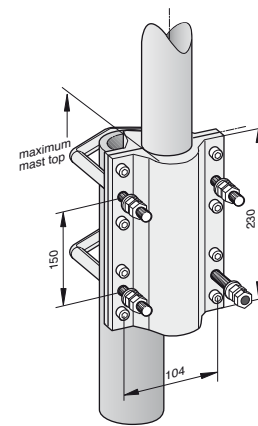
VPol Omni 410–430 360° 8dBi 8.5°T

Type No.	737 546
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).

Grounding:
 The antenna is DC grounded via a copper tube having a cross-sectional area of 22 mm².
 The inner conductor is capacitively coupled.



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

KATHREIN
Antennen · Electronic

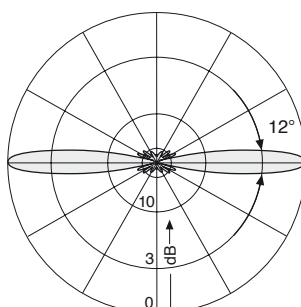
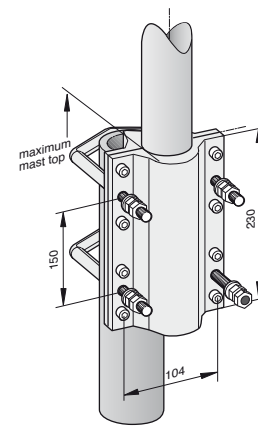
VPol Omni 450–470 360° 8.5dBi

Type No.	742 155
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).

Grounding: The antenna is DC grounded via a copper tube having a cross-sectional area of 22 mm².
The inner conductor is coupled capacitively.



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

KATHREIN

Antennen · Electronic

- 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.

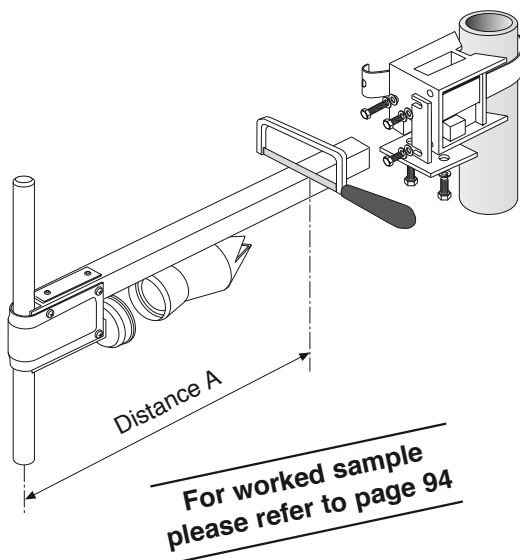
VPol Omni 380–470 360° 4dBi

Type No.	K 75 29 21
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	737 003	552	N female	64
VPol Omni	380–405 360° 2dBi	800 10277	77	N female	65
VPol Omni	405–430 360° 2dBi	800 10339	77	N female	65
VPol Indoor	406–430 360° 2dBi	737 299	400	cable termination	66
VPol Omni	406–470 360° 2dBi	K 75 11 21	510	N female	67
VPol Indoor	450–470 360° 2dBi	736 831	360	cable termination	68

Indoor Directional Antennas – Single-band

Type	Type No.	Height [mm]	Input	Page	
VPol Indoor	380–405 90° 7dBi	800 10278	302	N female	69
VPol Indoor	405–430 90° 7dBi	800 10330	302	N female	69

New Products

Kathrein Train Antennas – a Solution also for Indoor Applications

please refer to part “Technical Information”, page 90

Omnidirectional Antenna Vertical Polarization

370–430

V

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Antennen · Electronic

TETRA/
TETRAPOL

VPol Omni 370–430 360° 2dBi

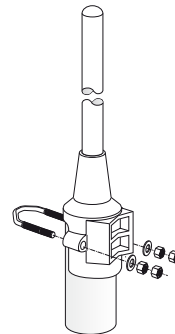
Type No.	737 003
Frequency range	370 – 430 MHz
Polarization	Vertical
Gain	2 dBi
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3 (2 x 43 dBm carrier)	< -150 dBc
Max. power	100 W (at 50 °C ambient temperature)

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

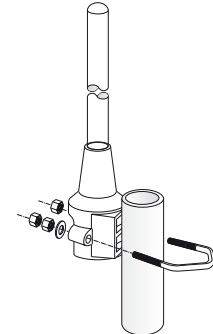
Mounting:
 The antenna can be attached in two ways with the supplied mounting kit:

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).

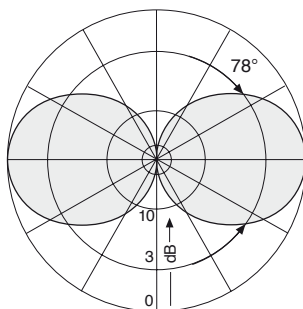
Grounding:
 All metal parts of the antenna including the inner conductor are DC grounded.



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	552 mm

Indoor Omnidirectional Antennas Vertical Polarization

380–430

V

KATHREIN
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- The antennas need no additional groundplane.

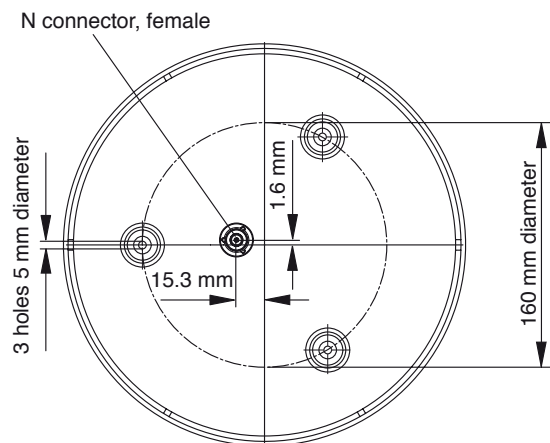
800 10277: VPol Indoor 380–405 360° 2dBi

800 10339: VPol Indoor 405–430 360° 2dBi

Type No.	800 10277	800 10339
Frequency range	380 – 405 MHz	405 – 430 MHz
Polarization	Vertical	Vertical
Gain	Approx. 2 dBi	Approx. 2 dBi
Impedance	50 Ω	50 Ω
VSWR	< 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)



Indoor
370 – 470 MHz

Indoor Omnidirectional Antenna Vertical Polarization

406–430

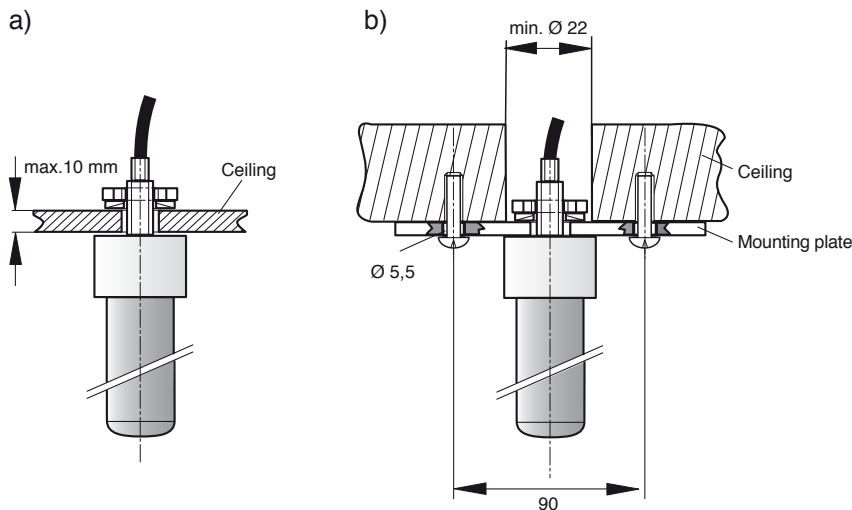
V

KATHREIN
Antennen · Electronic

VPol Indoor 406–430 360° 2dBi

Type No.	737 299
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 Antenna Vertical Polarization

370–470

V

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Antennen · Electronic

TETRA/
TETRAPOL

VPol Omni 406–470 360° 2dBi

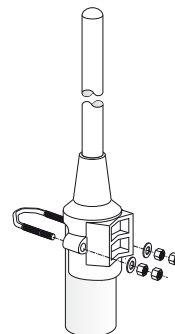
Type No.	K 75 11 21
Frequency range	406 – 470 MHz
Polarization	Vertical
Gain	2 dBi
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3 (2 x 43 dBm carrier)	< -150 dBc
Max. power	100 W (at 50 °C ambient temperature)

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

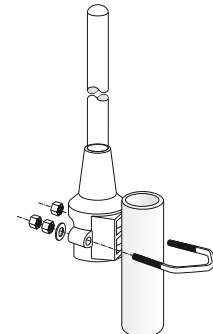
Mounting:
 The antenna can be attached in two ways with the supplied mounting kit:

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).

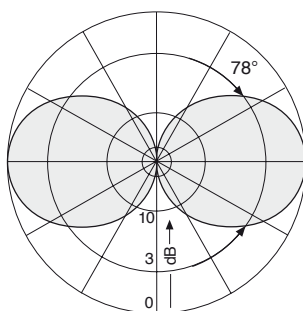
Grounding:
 All metal parts of the antenna including the inner conductor are DC grounded.



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	510 mm

Indoor
370 – 470 MHz

Indoor Omnidirectional Antenna Vertical Polarization

450–470

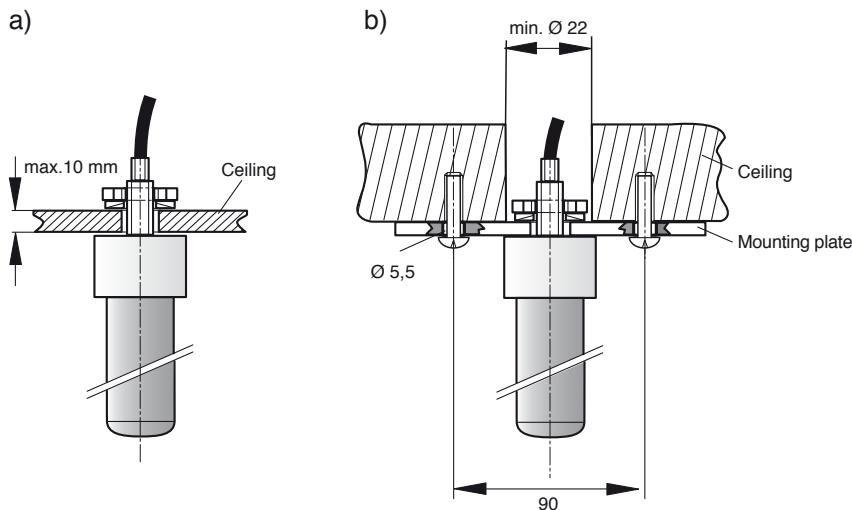
V

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VPol Indoor 450–470 360° 2dBi

Type No.	736 831
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**

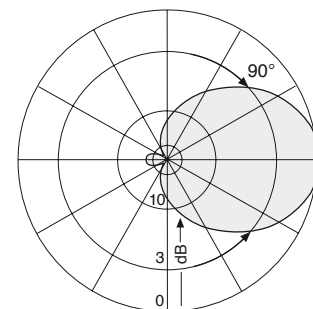
380–430
V
90°

KATHREIN
Antennen · Electronic

**TETRA/
TETRAPOL**

800 10278: VPol Indoor 380–405 90° 7dBi
800 10330: VPol Indoor 405–430 90° 7dBi

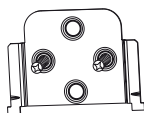
Type No.	800 10278	800 10330
Frequency range	380 – 405 MHz	405 – 430 MHz
Polarization	Vertical	Vertical
Gain	Approx. 7 dBi	Approx. 7 dBi
Half-power beam width	Horizontal: Approx. 90°	Horizontal: Approx. 90°
Impedance	50 Ω	50 Ω
VSWR	< 2.0	< 2.0
Max. power	50 W (at 50 °C ambient temperature)	
Input	N female 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	



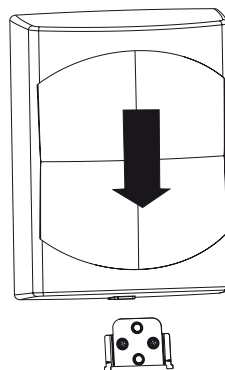
Horizontal Pattern

- 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)

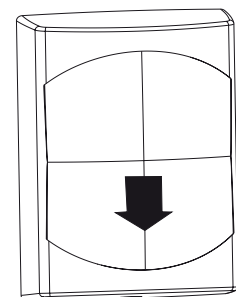
Mounting:



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	K 62 55 41	68 – 88 MHz	950 mm	N female	960 Watt	72

150 MHz

Type	Type No.	Frequency Range	Height	Input	Max. Power	Page	
2-way Splitter	150 MHz	K 62 55 21	146 – 174 MHz	530 mm	N female	680 Watt	72

450 MHz

Type	Type No.	Frequency Range	Height	Input	Max. Power	Page	
2-way Splitter	450 MHz	K 63 20 22 1	380 – 512 MHz	409 mm	N female	500 Watt	73
2-way Splitter	450 MHz	K 63 20 22 7	380 – 512 MHz	409 mm	7-16 female	1000 Watt	73
3-way Splitter	450 MHz	K 63 20 23 1	380 – 512 MHz	409 mm	N female	500 Watt	73
3-way Splitter	450 MHz	K 63 20 23 7	380 – 512 MHz	409 mm	7-16 female	1000 Watt	73
4-way Splitter	450 MHz	K 63 20 24 1	380 – 512 MHz	409 mm	N female	500 Watt	73
4-way Splitter	450 MHz	K 63 20 24 7	380 – 512 MHz	409 mm	7-16 female	1000 Watt	73

Filter products summary
Combiners, Filters, Duplexers ...

*For detailed information
see the catalogues
“Filters, Combiners,
Amplifiers
for Mobile Communications”*

74 + 75

For outdoor and indoor use.

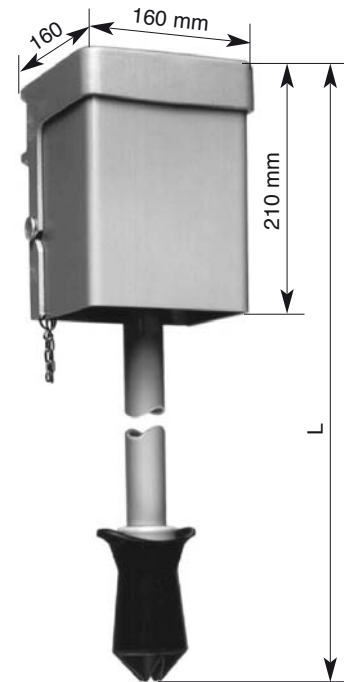
2-way Splitter 75

2-way Splitter 150

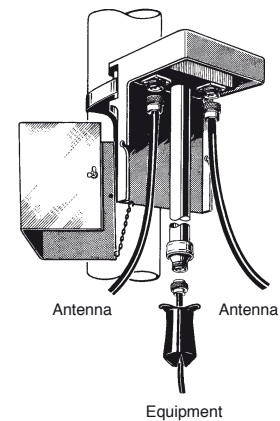
Type No.	K 62 55 41	K 62 55 21
Connector (female)	N	N
Max. power (at 50 °C ambient temperature)	960 W	680 W
For connecting ... antennas	2	2
Frequency range	68 – 88 MHz	146 – 174 MHz
VSWR	< 1.1	< 1.1
Impedance	50 Ω	50 Ω
Insertion loss	< 0.05 dB	< 0.05 dB
Length L	950 mm	530 mm

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.	K 63 20 22 1	K 63 20 22 7	K 63 20 23 1	K 63 20 23 7	K 63 20 24 1	K 63 20 24 7
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).



K 63 20 24 7

Clamps

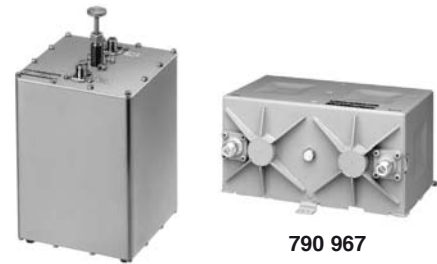
Type No.	Description	Mast Diameter
734 360	2 clamps	30 – 55 mm
734 361	2 clamps	55 – 75 mm
734 362	2 clamps	75 – 95 mm
734 363	2 clamps	95 – 115 mm
734 364	2 clamps	115 – 135 mm



734 364

Band-pass Filter

K 64 21 45 1	68 ... 87.5 MHz
K 64 21 25 1	146 ... 174 MHz
K 65 21 25 1	380 ... 470 MHz
790 965	146 ... 174 MHz
790 964	146 ... 174 MHz
790 967	380 ... 470 MHz
790 966	380 ... 470 MHz



K 65 21 25 1

790 967

S-P Filter

K 64 21 46 1	68 ... 87.5 MHz
K 64 21 47 1	68 ... 87.5 MHz
K 64 21 26 1	146 ... 174 MHz
K 65 21 26 1	380 ... 470 MHz



K 64 21 26 1

Duplexer

718 987	68 ... 87.5 MHz
719 069	68 ... 87.5 MHz
719 628	146 ... 174 MHz
718 388	146 ... 174 MHz
719 785	380 ... 470 MHz
718 290	380 ... 470 MHz
K 64 41 43	68 ... 87.5 MHz
K 64 41 44	68 ... 87.5 MHz
K 64 41 23	146 ... 174 MHz
K 64 41 24	146 ... 174 MHz
K 65 41 25	380 ... 470 MHz
K 65 41 26	380 ... 470 MHz
782 10361 (Tetra/Tetrapol)	380 – 385 / 390 – 395 MHz
782 10362 (Tetra/Tetrapol)	382 – 387 / 392 – 397 MHz
782 10363 (Tetra/Tetrapol)	385 – 390 / 395 – 400 MHz
782 10364 (Tetra/Tetrapol)	410 – 415 / 420 – 425 MHz
782 10365 (Tetra/Tetrapol)	415 – 420 / 425 – 430 MHz
782 10366 (Tetra/Tetrapol)	450 – 455 / 460 – 465 MHz
782 10367 (Tetra/Tetrapol)	455 – 460 / 465 – 470 MHz



719 628



K 64 41 23



782 10361

Hybrid Transmitter Combiner

792 067	4 x 100 W	146 – 174 MHz
791 652	4 x 100 W	400 – 470 MHz
784 10140 (Tetra/Tetrapol)	4 x 100 W	380 – 430 MHz



792 067

Filter Transmitter Combiner

790 044	4 x 50 W	420 ... 430 MHz
---------	----------	-----------------



790 044

Multiband Combiner

K 64 50 4	68 – 87.5 / 146 – 174 MHz
721 138	68 – 174 / 380 – 470 MHz
790 244	68 – 174 / 400 – 470 MHz
782 954	68 – 470 / 870 – 970 MHz
722 437	68 – 470 / 870 – 970 MHz
782 10460	50 – 470 / 1710 – 2500 MHz
782 10369 (Tetra/Tetrapol)	380 – 400 / 410 – 430 MHz



728 954



782 10460

3-dB Coupler

K 62 70 41	68 – 108 MHz
K 62 70 21	140 – 180 MHz
K 63 70 21	340 – 512 MHz



K 62 70 41

Hybrid Ring Junction

K 62 73 41	68 – 87.5 MHz
K 62 73 21	146 – 174 MHz
K 63 73 21 1	400 – 470 MHz
730 092 (Tetra/Tetrapol)	380 – 430 MHz



K 63 73 21 1

Decoupled Power Splitter

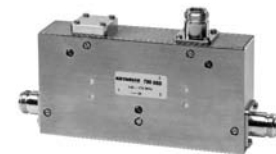
742 346	1:3	68 – 87.5 MHz
725 870	1:4	68 – 87.5 MHz
724 347	1:3	146 – 174 MHz
725 234	1:4	146 – 174 MHz
724 348	1:3	400 – 470 MHz
725 871	1:4	400 – 470 MHz
782 10231 (Tetra/Tetrapol)	1:3	380 – 430 MHz
782 10189 (Tetra/Tetrapol)	1:4	380 – 430 MHz



725 871

Circulator

793 276	68 – 88 MHz
793 277	146 – 174 MHz
780 060	146 – 174 MHz
791 630	400 – 470 MHz
790 215	400 – 470 MHz
784 10175 (Tetra/Tetrapol)	380 – 430 MHz



780 060

DC-stop

721 062	68 – 470 MHz
---------	--------------



721 062

50-Ohm Loads

784 10367 male	1.5 W outdoor	0 – 4000 MHz
784 10470 female	1.5 W outdoor	0 – 4000 MHz
K 62 26 11 1	2 W	0 – 2500 MHz
K 62 26 41 1	10 W	0 – 2500 MHz
K 62 26 21 1	25 W	0 – 2500 MHz
K 62 26 30 1	50 W	0 – 2500 MHz



K 62 26 30 1



784 10367

Receiver Multicoupler

780 234	8 outputs	68 – 87.5 MHz
780 232	8 outputs	146 – 174 MHz
727 621 (Tetra/Tetrapol)	8 outputs	380 – 470 MHz
727 622 (Tetra/Tetrapol)	16 outputs	380 – 470 MHz



727 621

	Page
Directional Antennas	
Dimensions	78
Clamps and Downtilt kits	80
Azimuth Adjustment Kit	85
Tools	
Azimuth Adjustment Tool	86
Brackets	
Bracket with Fixed Spacing	87
Bracket with Adjustable Spacing	87

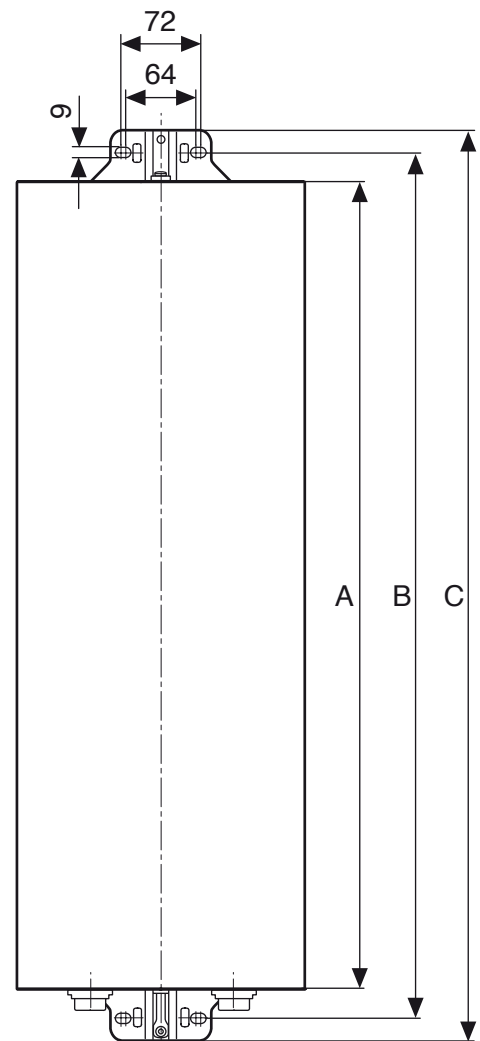
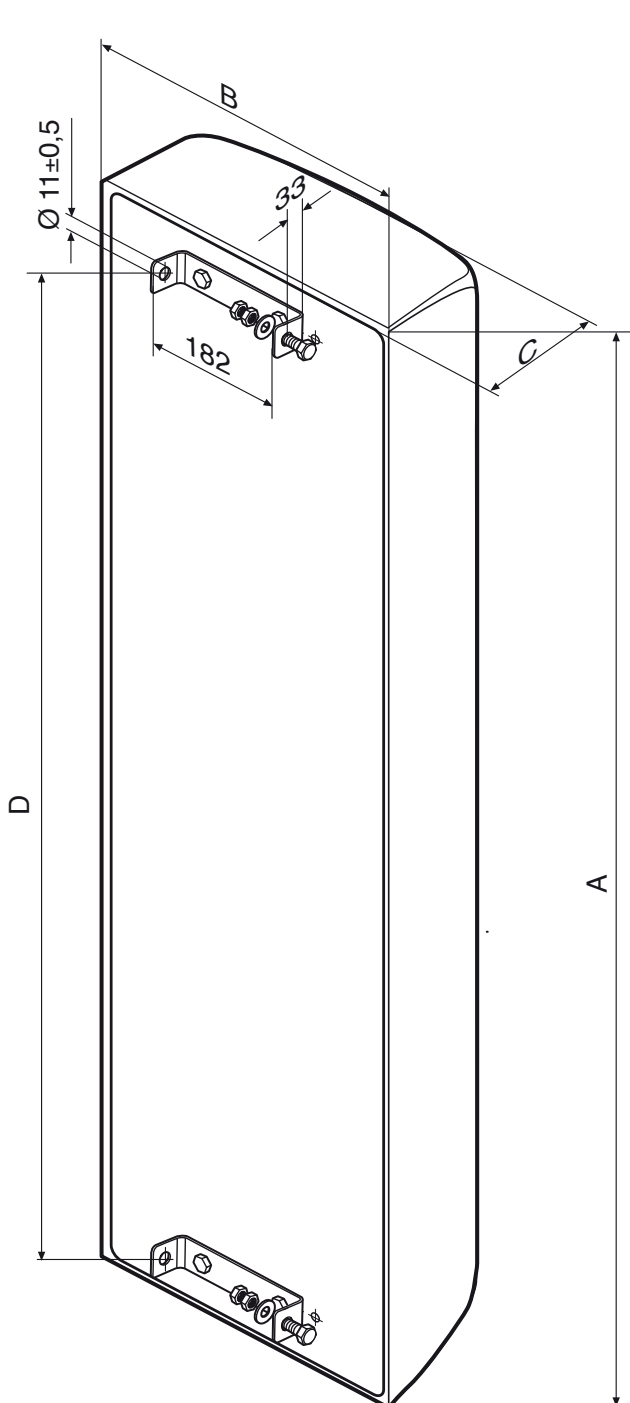
Directional Antennas Dimensions

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

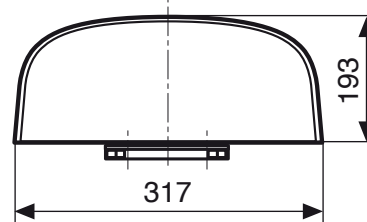
A	493 mm	992 mm	1983 mm
B	493 mm	492 mm	485 mm
C	209 mm	190 mm	190 mm
D	400 mm	910 mm	1850 mm

XPol Panel 88°

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



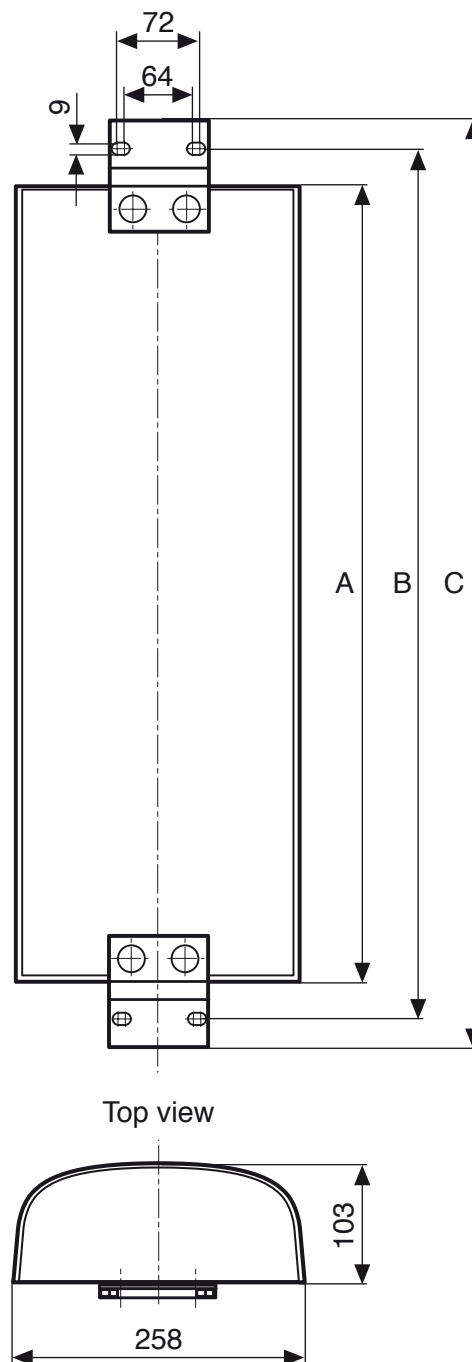
Top view



Directional Antennas Eurocell Panels Antenna Dimensions

VPol Panel 115° – Eurocell Panel

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



Mounting Hardware for Directional Antennas

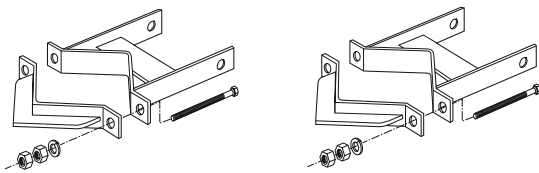
VPol Panel 63° / 65° 120°

XPol Panel 65°

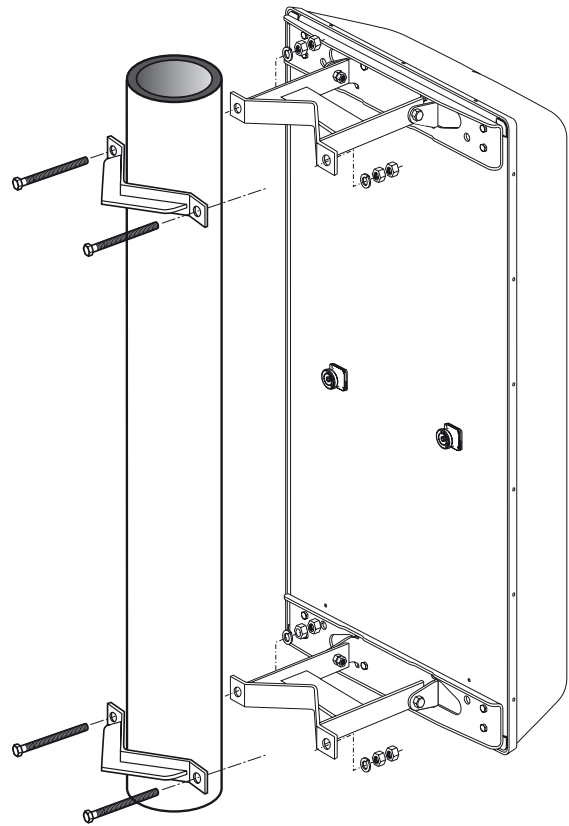
Mounting clamps/Downtilt kit (order separately)

Type No. (Pair of clamps)	Suitable for pipe masts of ... mm diameter	Weight kg
K 61 14 01	40 – 95	1.6
K 61 14 02	60 – 116	1.6
K 61 14 03	116 – 210	4.0
K 61 14 04	210 – 380	7.2
K 61 14 05	380 – 521	10.2
733 695	Downtilt (to be used with a suitable pair of clamps for the individual mast diameter!)	

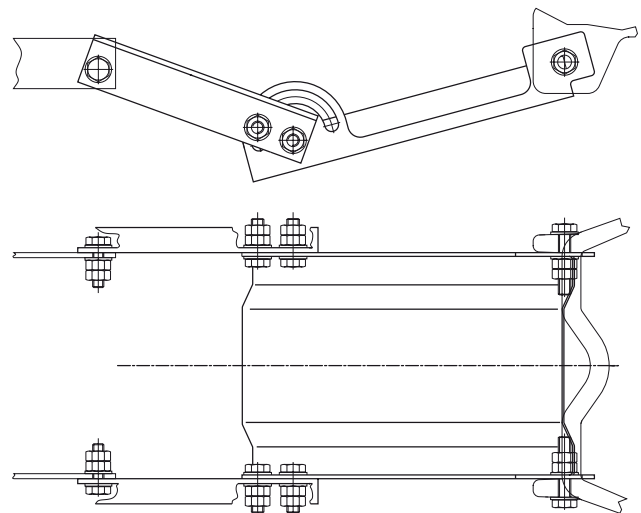
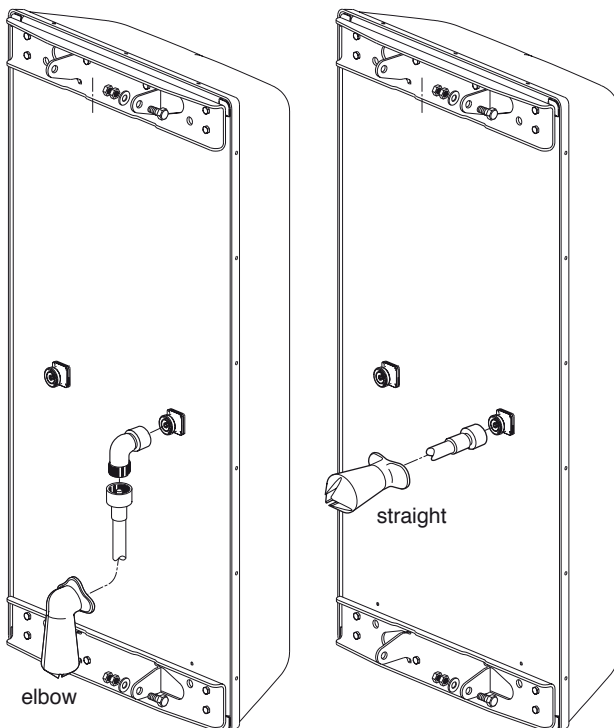
Antenna Height	Downtilt Angle
992 mm	0° – 22°
1983 mm	0° – 11°



Pair of clamps K 61 14 03



Weather-proof cover for elbow and straight connectors are supplied.



Downtilt kit 733 695

Mounting Hardware for Directional Antennas XPol Panel 88°

Special downtilt kit for Eurocell Panel antennas with a weight greater than 25 kg and for XPol Panel for Tetra

Downtilt kit

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

Recommended mast clamps:

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

Recommended torque for all bolted connections:

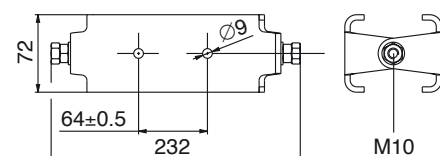
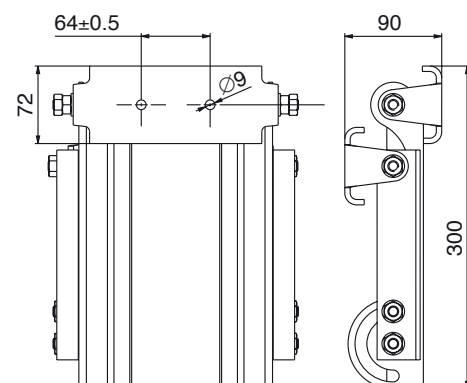
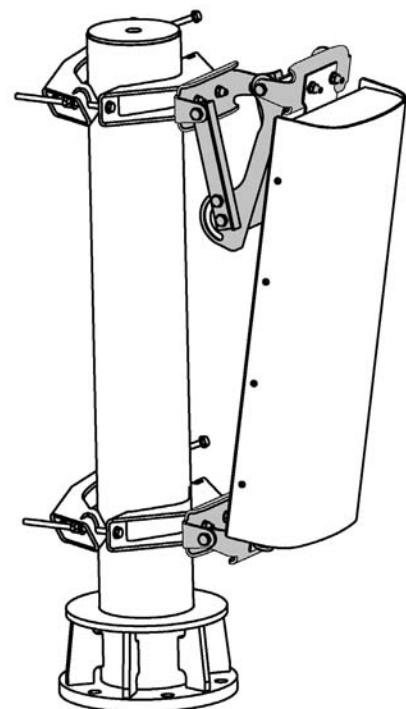
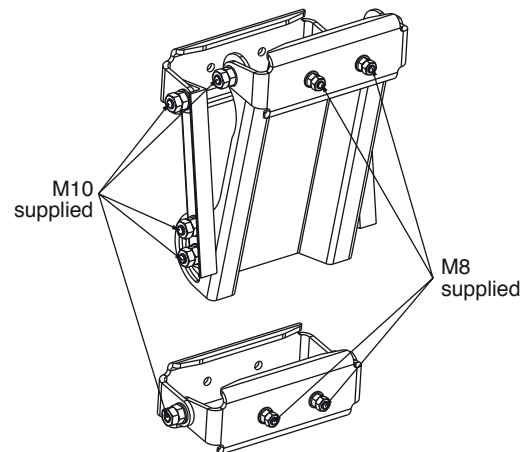
Screw size	Torque
M8	12 Nm
M10	26 Nm

Maximum acceptable load:

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

Downtilt angle

Antenna height	Downtilt angle
1000 mm	$0^\circ - 15^\circ$
2058 mm	$0^\circ - 11^\circ$

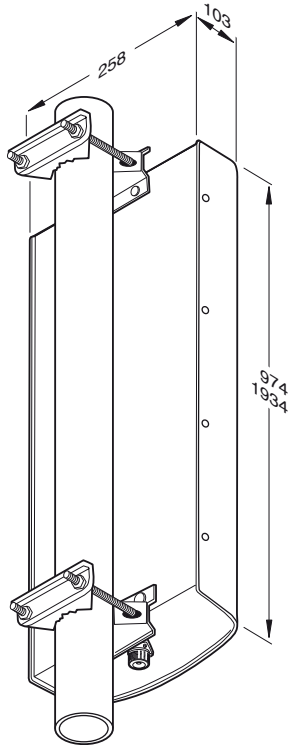


Mounting Hardware for Directional Antennas

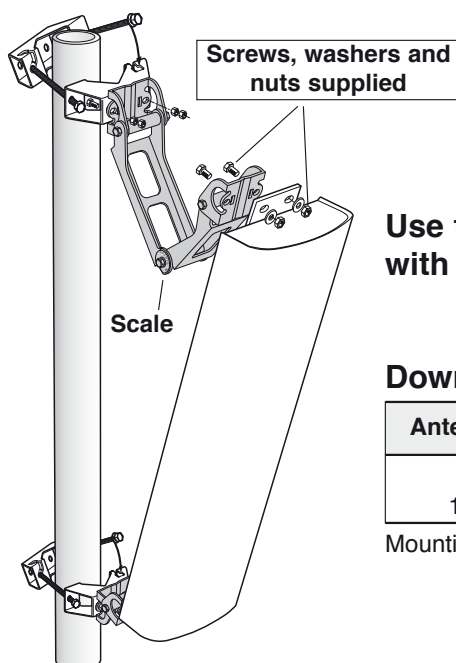
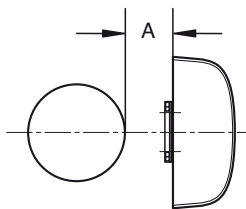
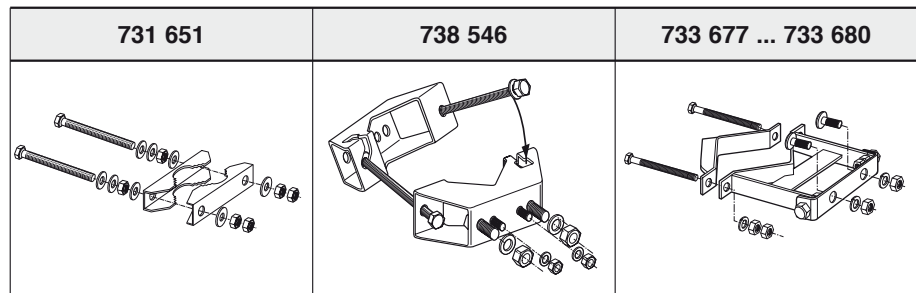
VPol Panel 115°

Downtilt kits

Antenna Height: 974 mm – 1934 mm



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



Use the downtilt kit together with the clamps mentioned above

Downtilt angle

Antenna Height	Downtilt angle	Type No.	Weight
974 mm	0° – 21°	737 973	approx. 2.8 kg
1934 mm	0° – 11°	737 975	approx. 2.8 kg

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

3 Sector Clamp Kit / Pipe Mast with Flange Base

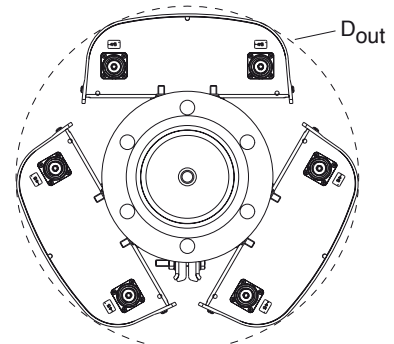
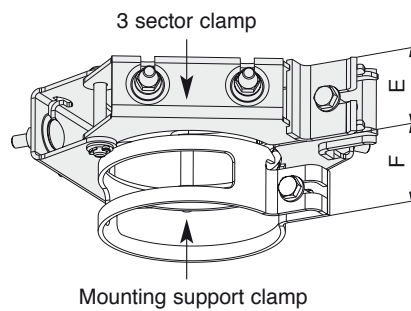
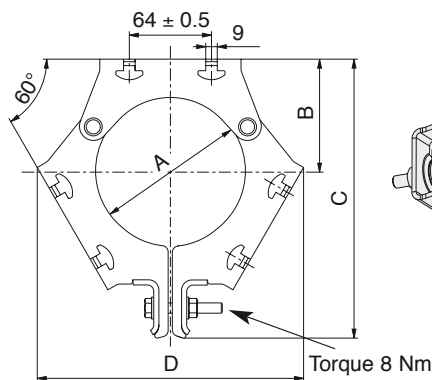
- Slim and unobstrusive design
- Nearly cylindrical optical appearance with small outer diameter

Only for Types
739 504
739 506
741 517
741 518



3 Sector Clamp Kit

Type No.	742 033	742 034
Angle between antennas	120°	120°
Suitable for mast diameter	114.3 mm	139.7 mm
Type No. of pipe mast (please order separately)	742 035	742 036
Number of pieces	2 x 3 sector clamp 2 x mounting support clamp	2 x 3 sector clamp 2 x mounting support clamp
Material	Hot-dip galvanized steel Aluminum	Hot-dip galvanized steel Aluminum
–3 sector clamp		
–Mounting support clamp		
–Screws	Stainless steel	Stainless steel
Outer diameter (D _{Out}) of the 3 Eurocell Panel Arrangement	419 mm	441 mm
Weight	–Clamp kit 3.0 kg –3 sector clamp 1.4 kg	–Clamp kit 3.2 kg –3 sector clamp 1.5 kg



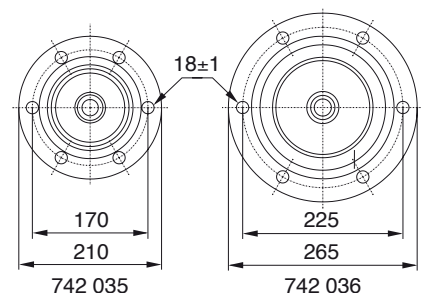
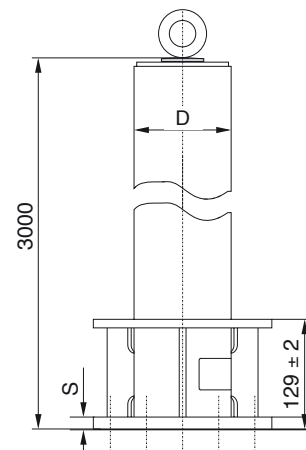
Bottom view without downtilt kit

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

all dimensions in mm

Pipe Mast with Flange Base

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



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

Eurocell Panels Mounting Hardware

2 x C-Panel Mounting Kit

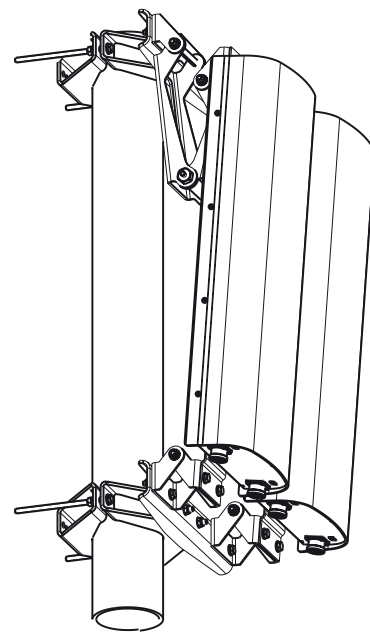
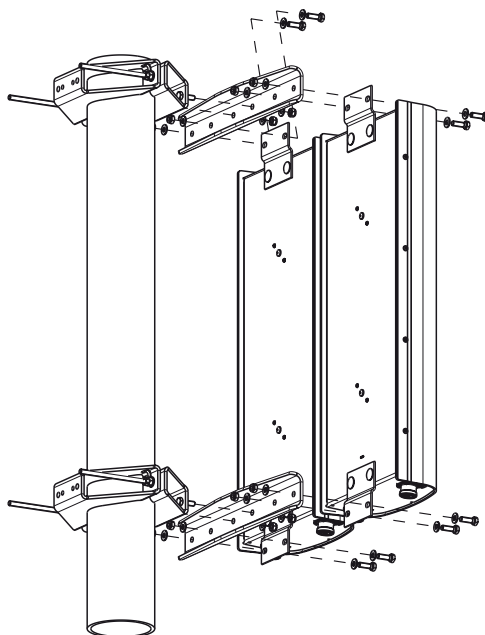
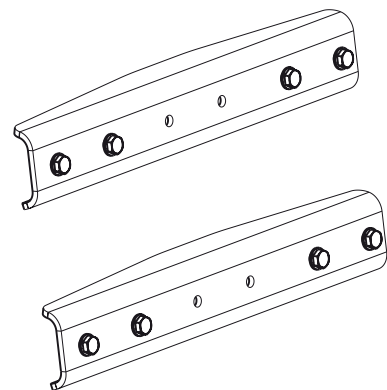
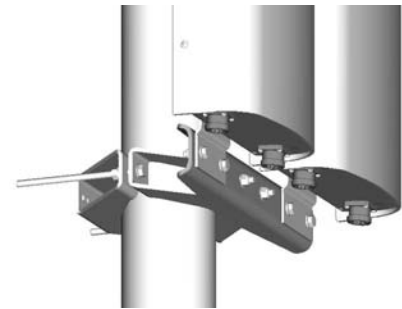
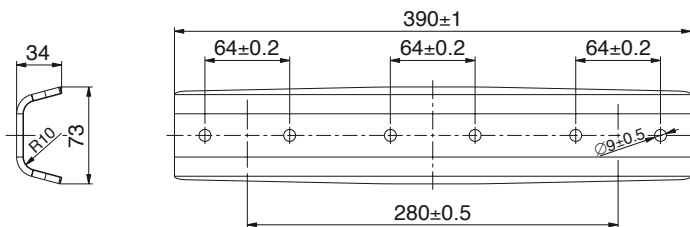
Only for
Eurocell Panels

KATHREIN
Antennen · Electronic

Use this mounting kit only for antennas less than 25 kg each.

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

Recommended torque for M8 bolted connections: 12 Nm



Mounting Accessories (order separately)

Clamps (only the listed clamps are allowed!)

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

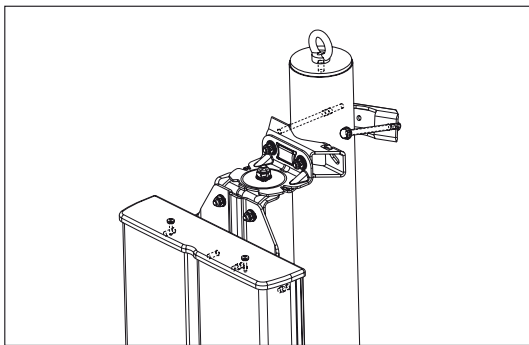
Please chose the fitting downtilt kit that you need, from the antenna datasheet.

A-Panels / C-Panels / Eurocell Panels / F-Panels **KATHREIN**

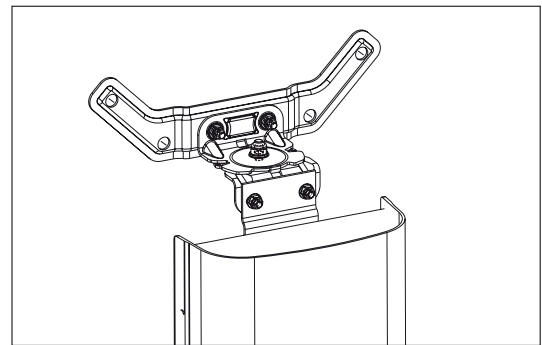
Mounting Hardware

Azimuth Adjustment Kits

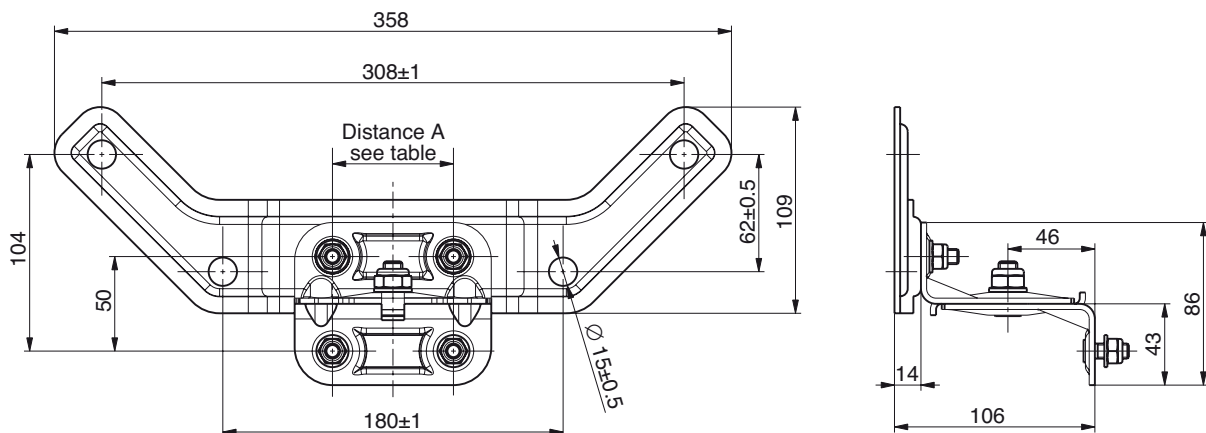
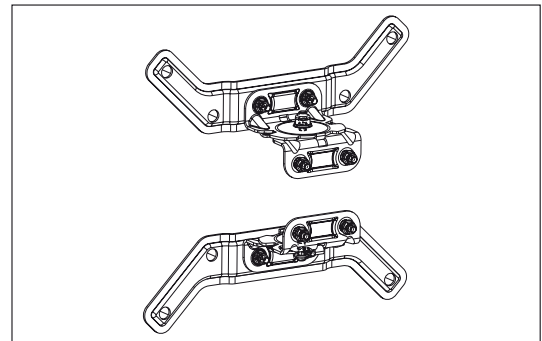
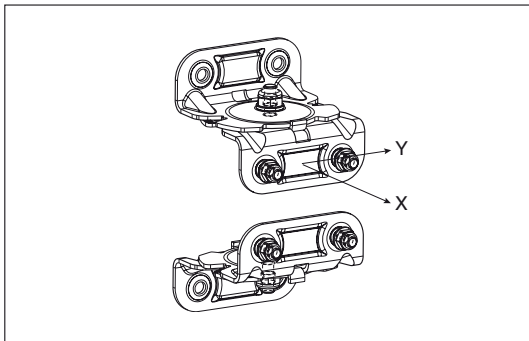
Antennen · Electronic



Pole mounting



Wall mounting



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.	850 10014	850 10015	850 10016	850 10017
Suitable for	pole mounting		wall mounting	
Number of pieces	2 brackets	2 brackets	2 brackets	2 brackets
Distance between screws [A]	64 mm	72 mm	64 mm	72 mm
Angular range	± 30°		± 30°	
Weight	approx. 550 g	approx. 700 g	approx. 1050 g	approx. 1200 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.	
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 for all supplied screws: 20 Nm, MoS₂ greased

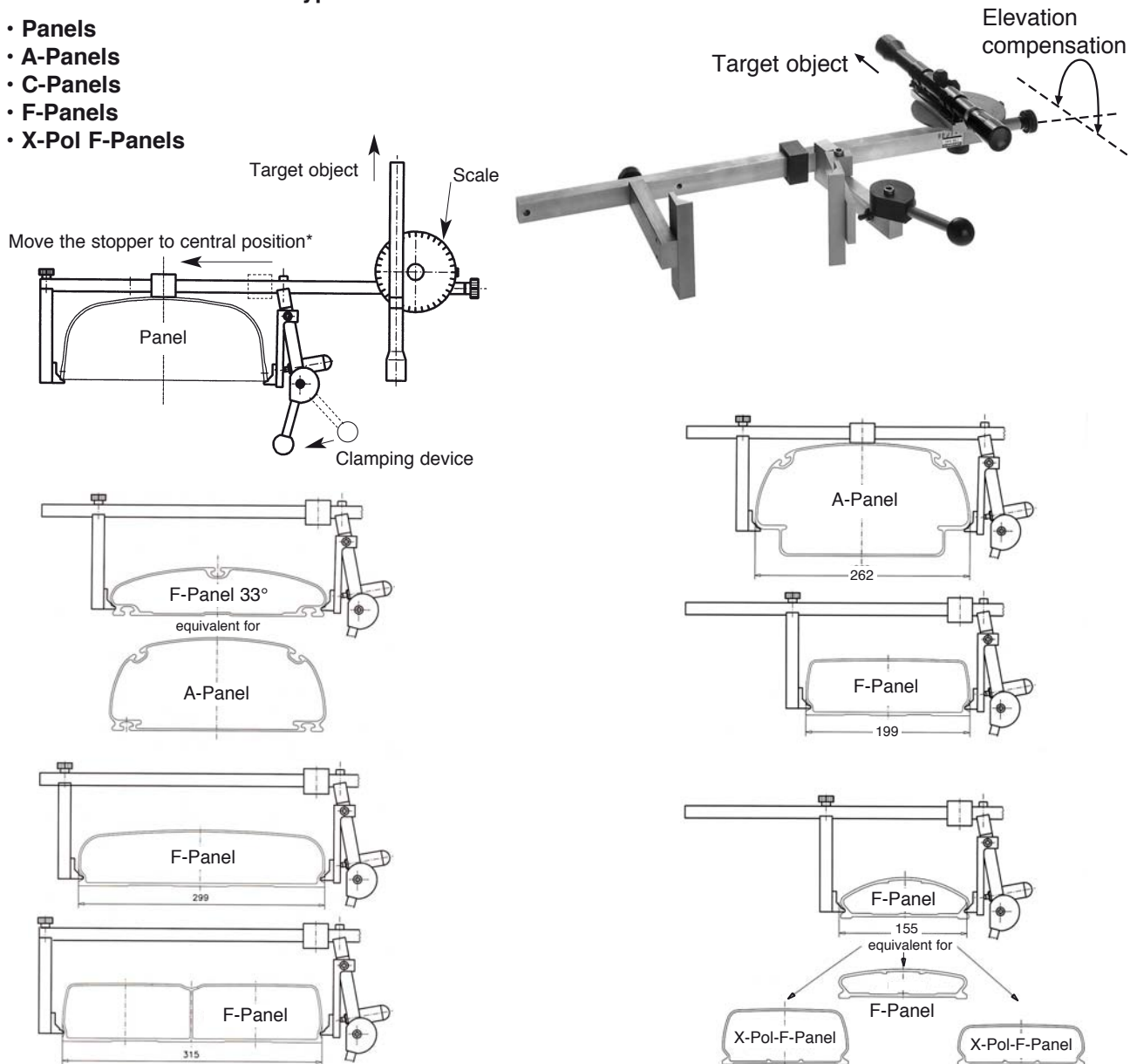
A-Panel / C-Panel / F-Panel / Eurocell Panel Accessories Azimuth Adjustment Tool

Type No. 738 440

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

This tool is suitable to all types of Eurocell Panels

- Panels
- A-Panels
- C-Panels
- F-Panels
- X-Pol F-Panels



Instruction:

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

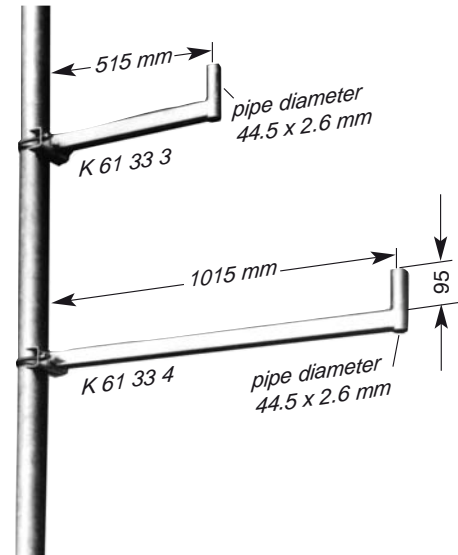
* Observe the position of the stopper when fitting the azimuth adjustment tool.

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 94 and 95)

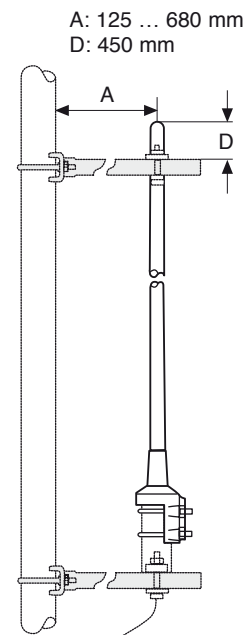
Bracket with fixed spacing

Type No.	K 61 33 3	716 192	K 61 33 4	713 645
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)	

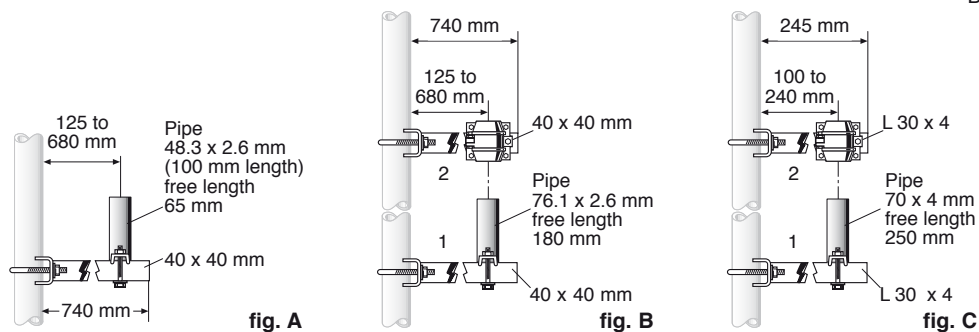


Bracket with adjustable spacing A

Implementation	Stand-off fig. A	Double stand-off	
		fig. B	fig. C
Type No.	K 61 33 11	K 61 33 21	737 398
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)



Double Bracket



Type	Page
Kathrein Train Antennas – a Solution also for Indoor Applications	90
Antenna Systems with Panels K 52 32 2. .	91
Examples of Radiation Patterns at 390 MHz with Combinations of Panels 741 517	92
Examples of Radiation Patterns at 390 MHz with Combinations of Panels 800 10252	93
Radiation Patterns for Side-mounted Omnidirectional Antennas	94
Isolation Between Two Half-wave Dipoles	95
Isolation of Two Vertically Stacked Panels K 73 30 2.	96
Antenna Gain, VSWR / Reflected power	97
VSWR-reduction / Mismatch loss	98

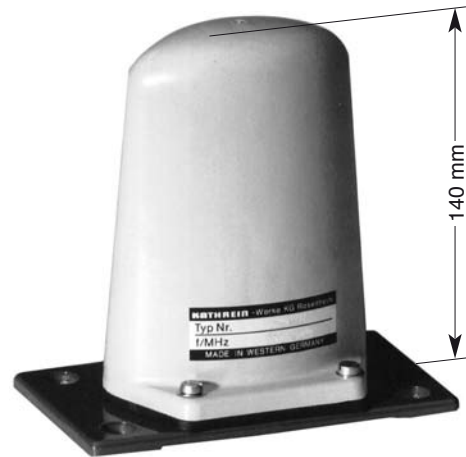
Kathrein train antennas has been implemented on indoor systems all over the world.

Advantages:

- Sophisticated and robust design based on a fiberglass radome.
Because of this rugged radome design, the antenna is well protected against vandalism.
- Low profile broadband antenna with small optical appearance.

Especially in lower frequency applications, indoor antennas may have an unhandy size. This is due to the fact, that the antennas normally use a halfwave lambda radiator.
Example: TETRA 390 MHz, antenna length roughly 400 mm.

Train antennas are based on quarterwave radiators resulting in conjunction with a special radiator design in very low lengths. The antenna 732 997 for the range of 380–412 MHz (see picture aside) is only 140 mm long!
For a proper operation these antennas need an electrical counterweight or ground plane of a certain min. dimension.



Mounting situation:

The antennas has to be mounted on a conductive surface with dimensions according to the datasheet. This could be realized by a metallic sheet on the ceiling or directly by mounting the antenna on a metallic artificial ceiling.

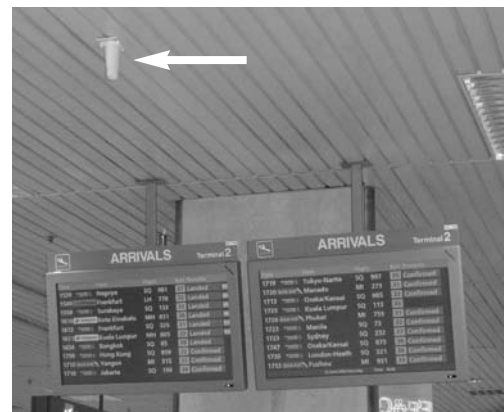
For a good contact one side of the antenna flange is not painted. Accordingly also the ground plane should be free of color in the area of mounting location.

We strongly recommend to follow these specifications, otherwise the VSWR of the antenna will increase, destroying the performance of the antenna.

Painting:

The radome and base can be painted in any long-lasting color to match the surroundings.

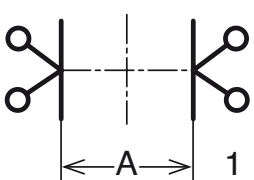
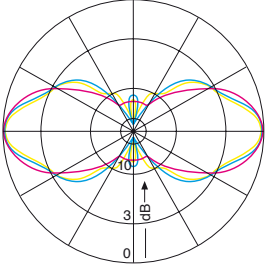
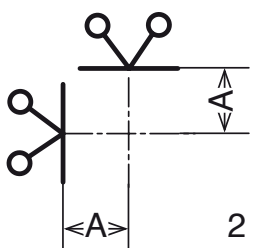
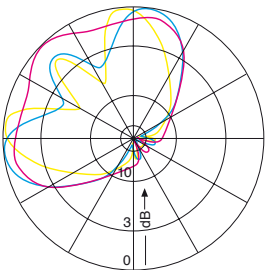
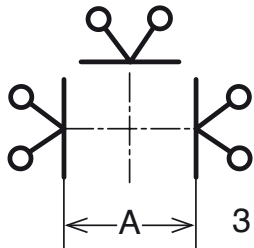
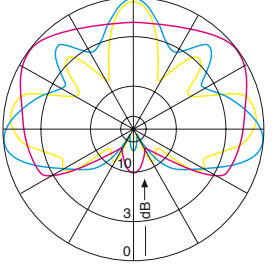
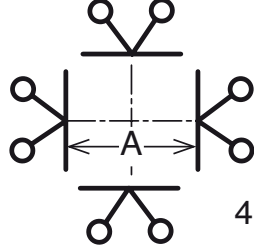
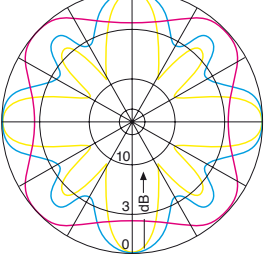
Suitable commercial paints consist of one or two components. The manufacturer's instruction for use and processing must be observed. Paints with metallic effects or metallic components are not permissible.



Indoor system at the airport of Singapore with Kathrein train antennas

Antenna Systems with Panels K 52 32 2..

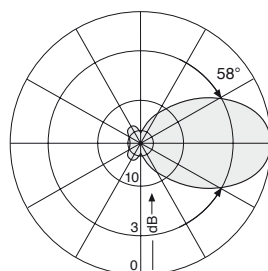
Examples for radiation patterns at 160 MHz

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
1 bay	2 bays										
3.3 dB	6.3 dB										
4.0 dB	7.0 dB										
5.0 dB	8.0 dB										
 <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										
		<p>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</p>									
		<p>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</p>									
		<p>Required components with conn. N female (without mounting kits): 4 antennas K 52 32 21, 4 junction cables K 62 21 3, 1 antenna transformer K 62 57 21</p>									

* ref. $\lambda/2$ dipole

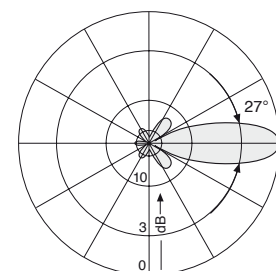
Vertical Radiation Pattern of the Arrangements 1,2,3 and 4

1 Bay

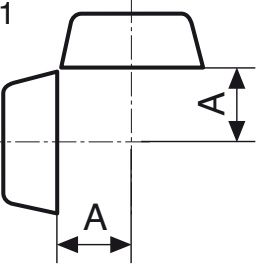
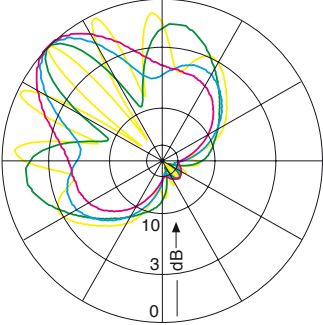
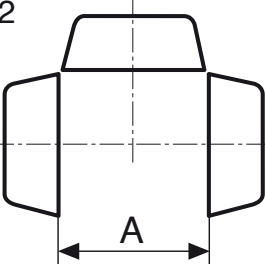
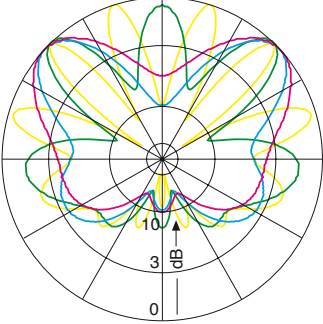
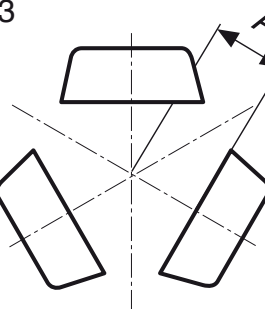
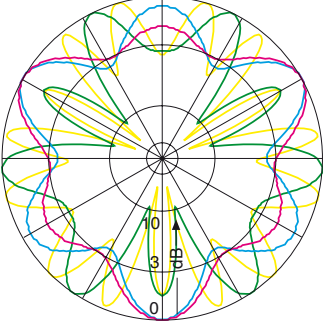
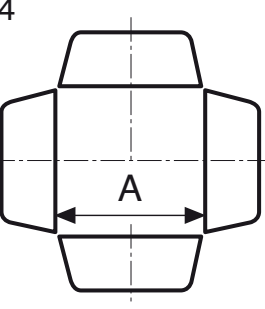
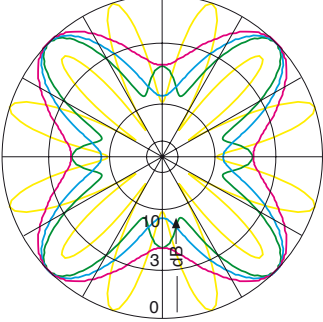


Vertical Radiation Pattern of the Arrangements 1,2,3 and 4

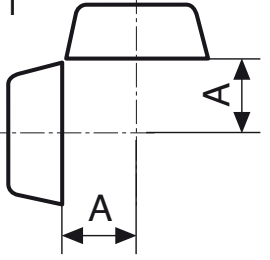
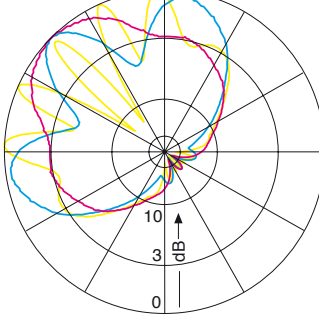
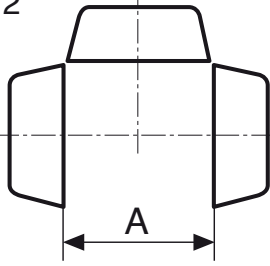
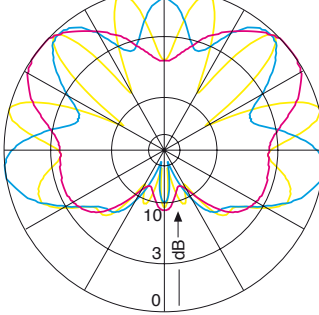
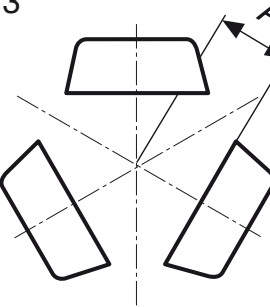
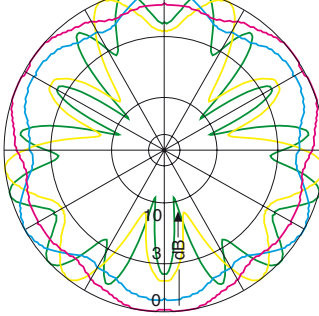
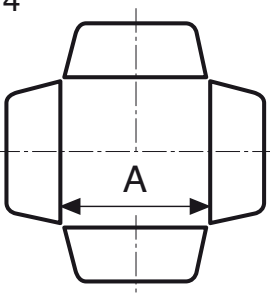
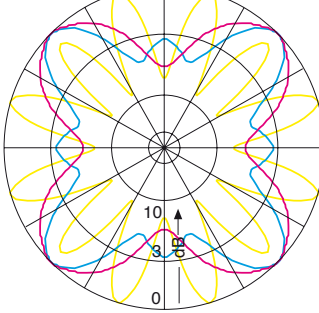
2 Bays
(Vertical spacing $0.96 \lambda = 1.8 \text{ m}$)



Examples of Radiation Patterns at 390 MHz with Combinations of Panels 741 517 (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

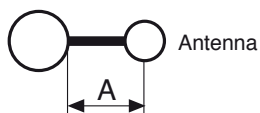
Examples of Radiation Patterns at 390 MHz with Combinations of Panels 800 10252 (VPol)

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 K 75 29 2 .

Distance A:

Tubular mast



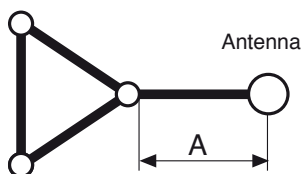
— $A = 0.25 \lambda$

— $A = 0.5 \lambda$

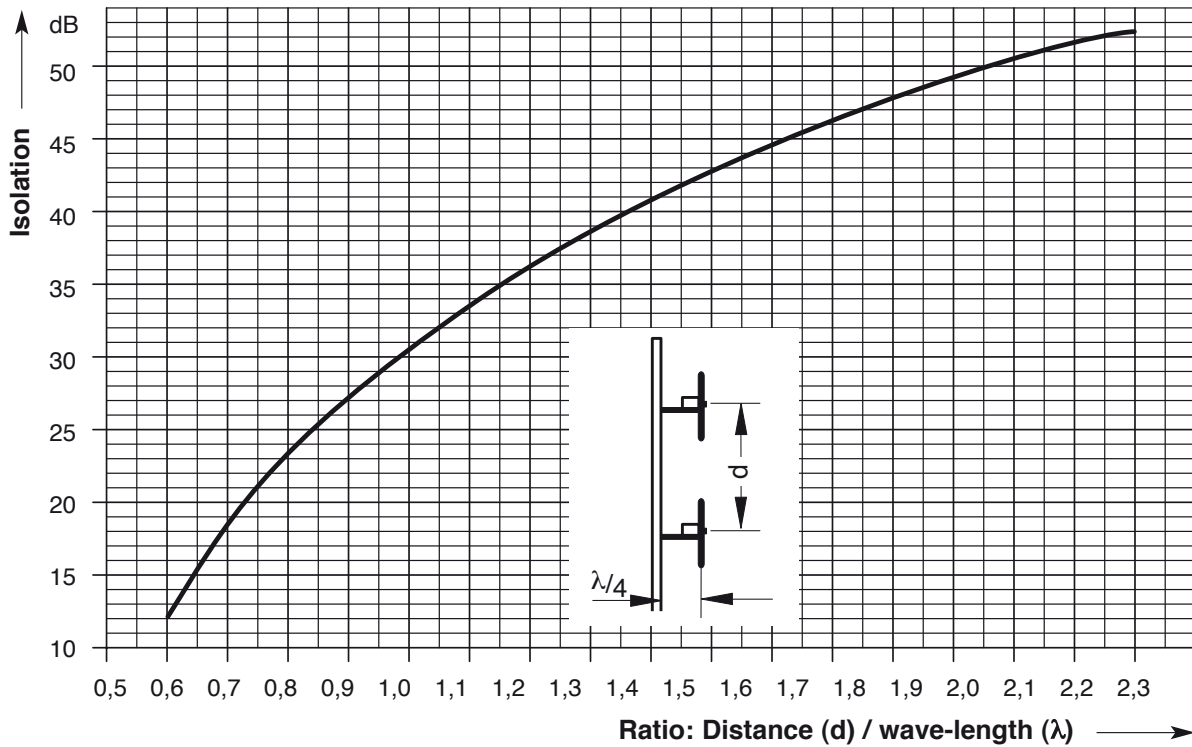
— $A = 0.75 \lambda$

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

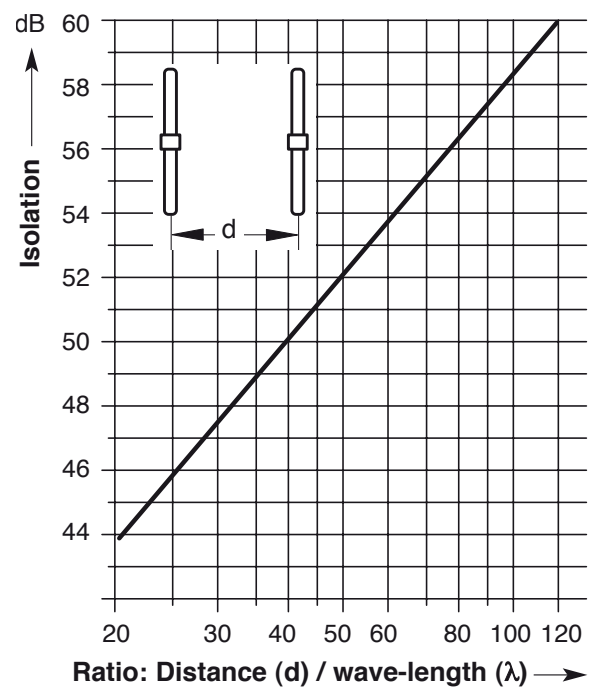
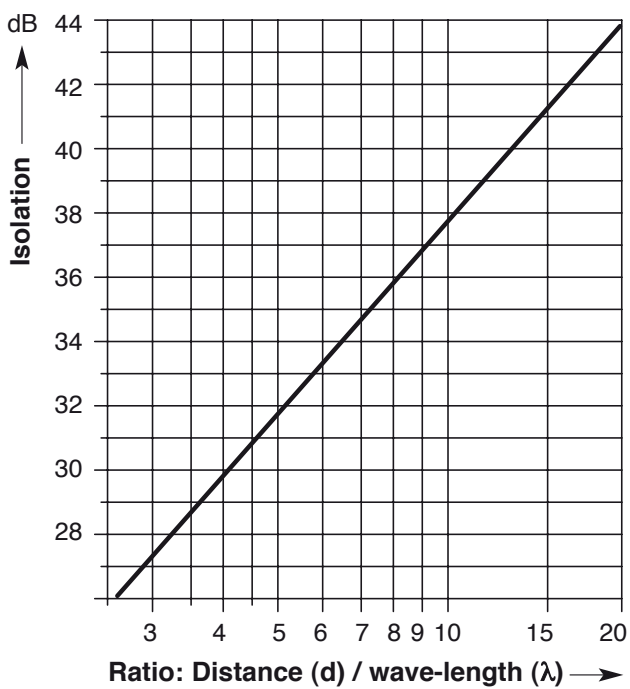
Triangular lattice mast



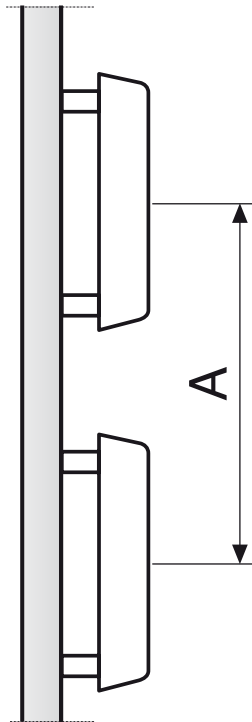
Isolation between two half-wave dipoles, vertically polarized and positioned vertically in line above each other on one common mast.



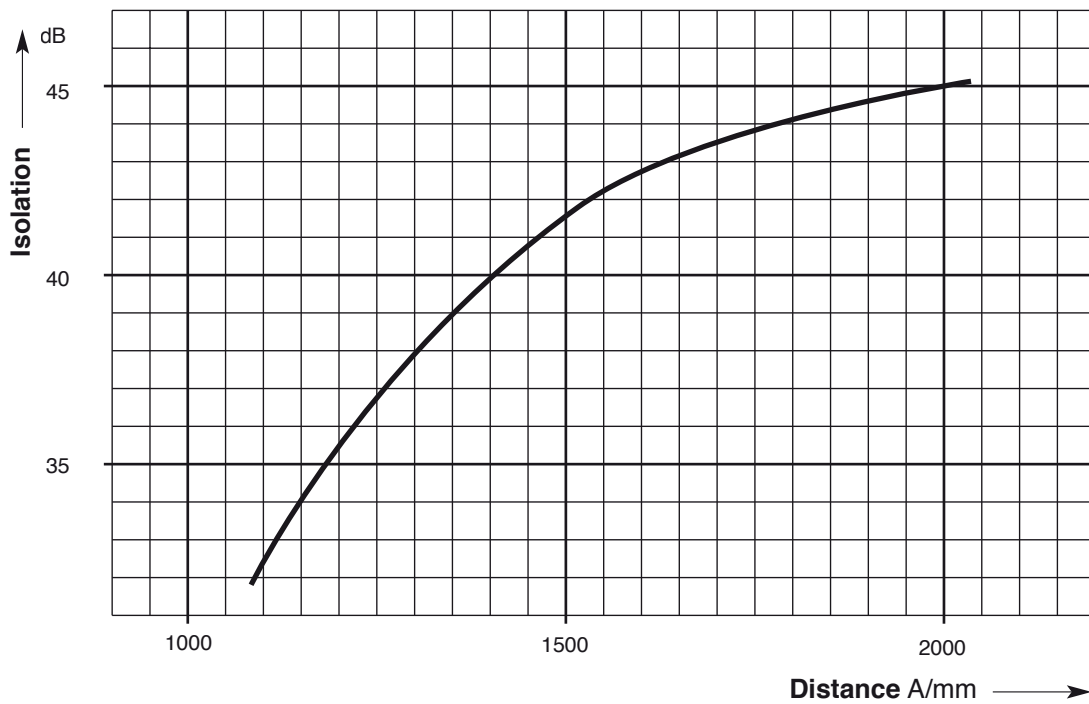
Isolation between two vertically polarized half-wave dipoles mounted laterally.



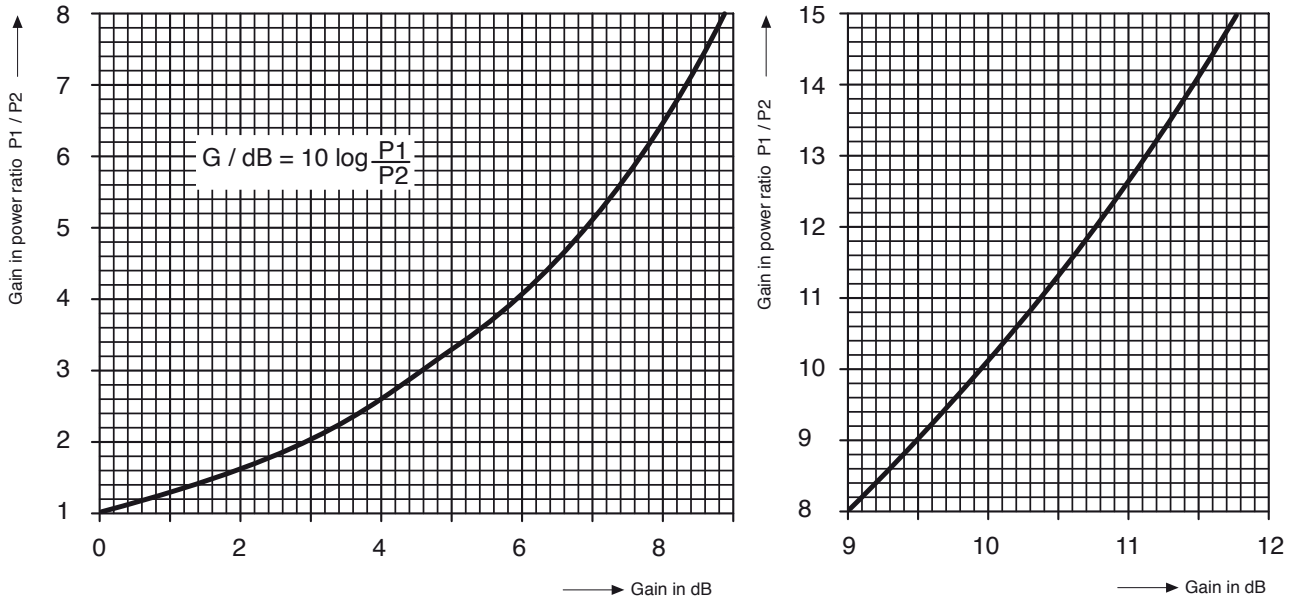
Isolation of Two Vertically Stacked Panels K 73 30 2.



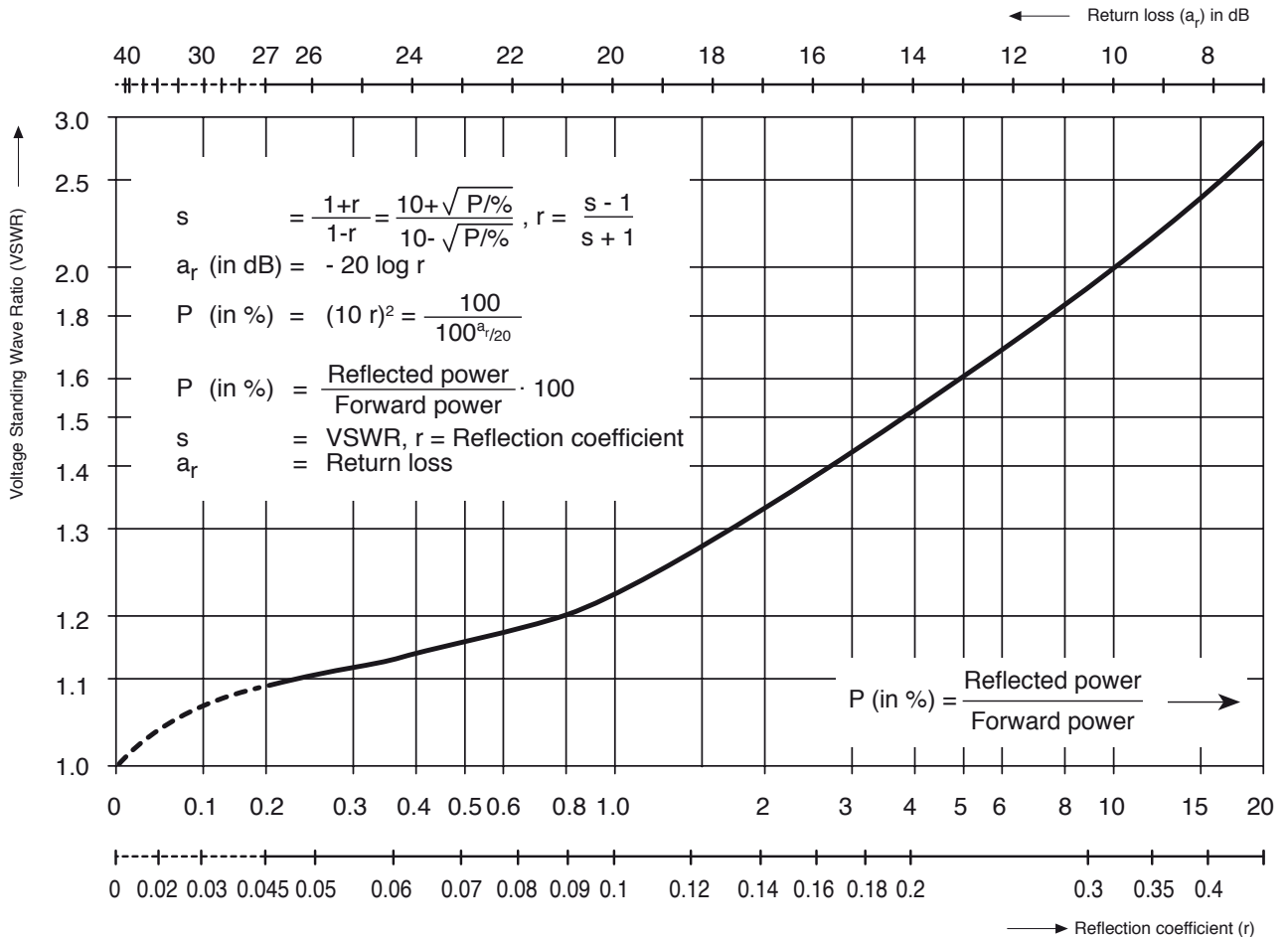
Isolation depends on vertical spacing A (at 450 MHz)



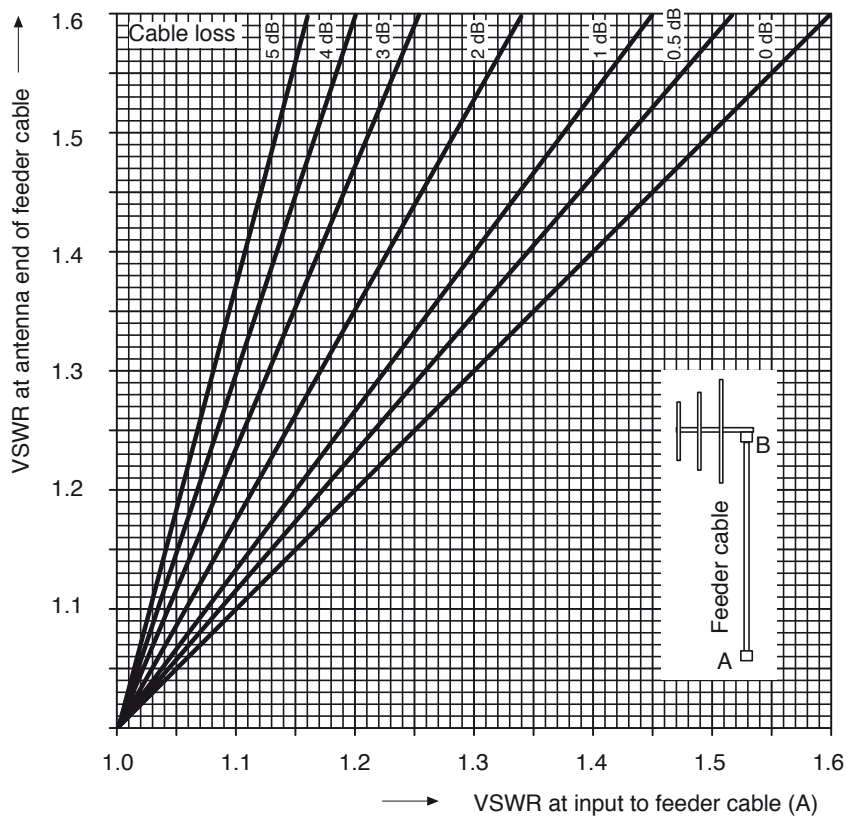
Antenna Gain in power ratio vs gain in dB



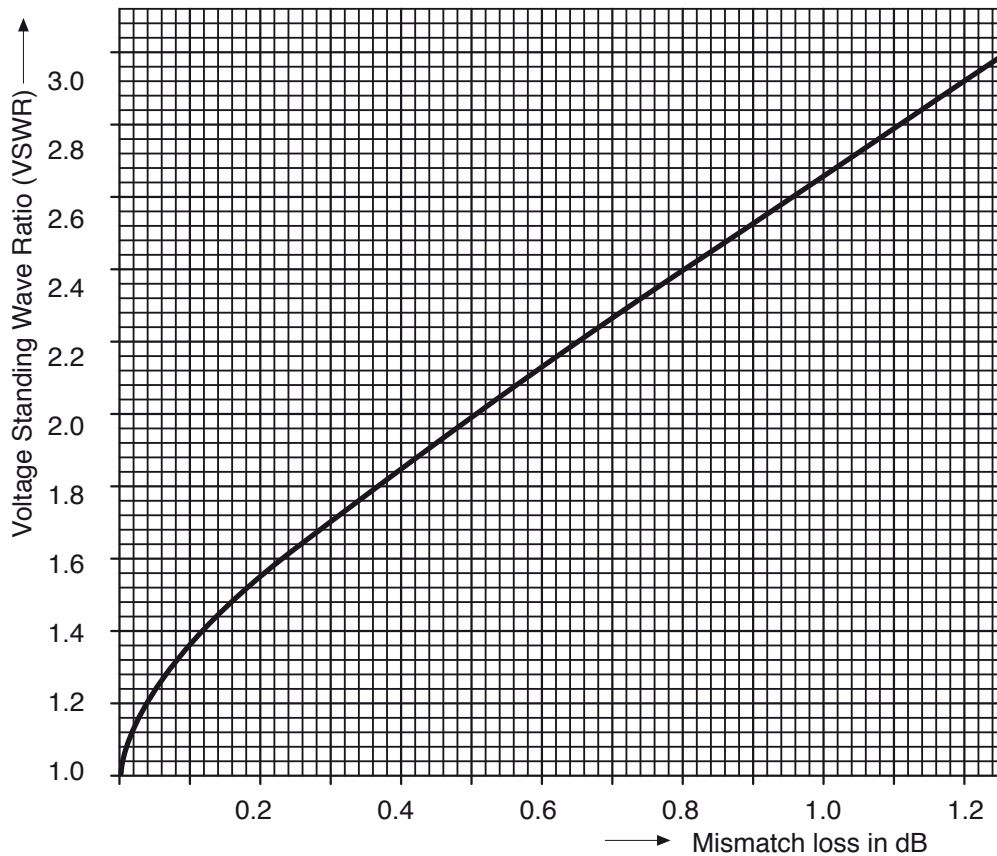
Voltage Standing Wave Ratio (VSWR) vs Reflected power



Reduction of VSWR as a result of feeder cable attenuation



Mismatch loss vs VSWR





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9981.0506/0207/5/ZW/MM Subject to alteration.

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