27 – 512 MHz Base Station Antennas for Mobile Communications

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Antennen · Electronic

Photo on title page: Applications for TETRA.

Catalogue Issue 10/04

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 principies 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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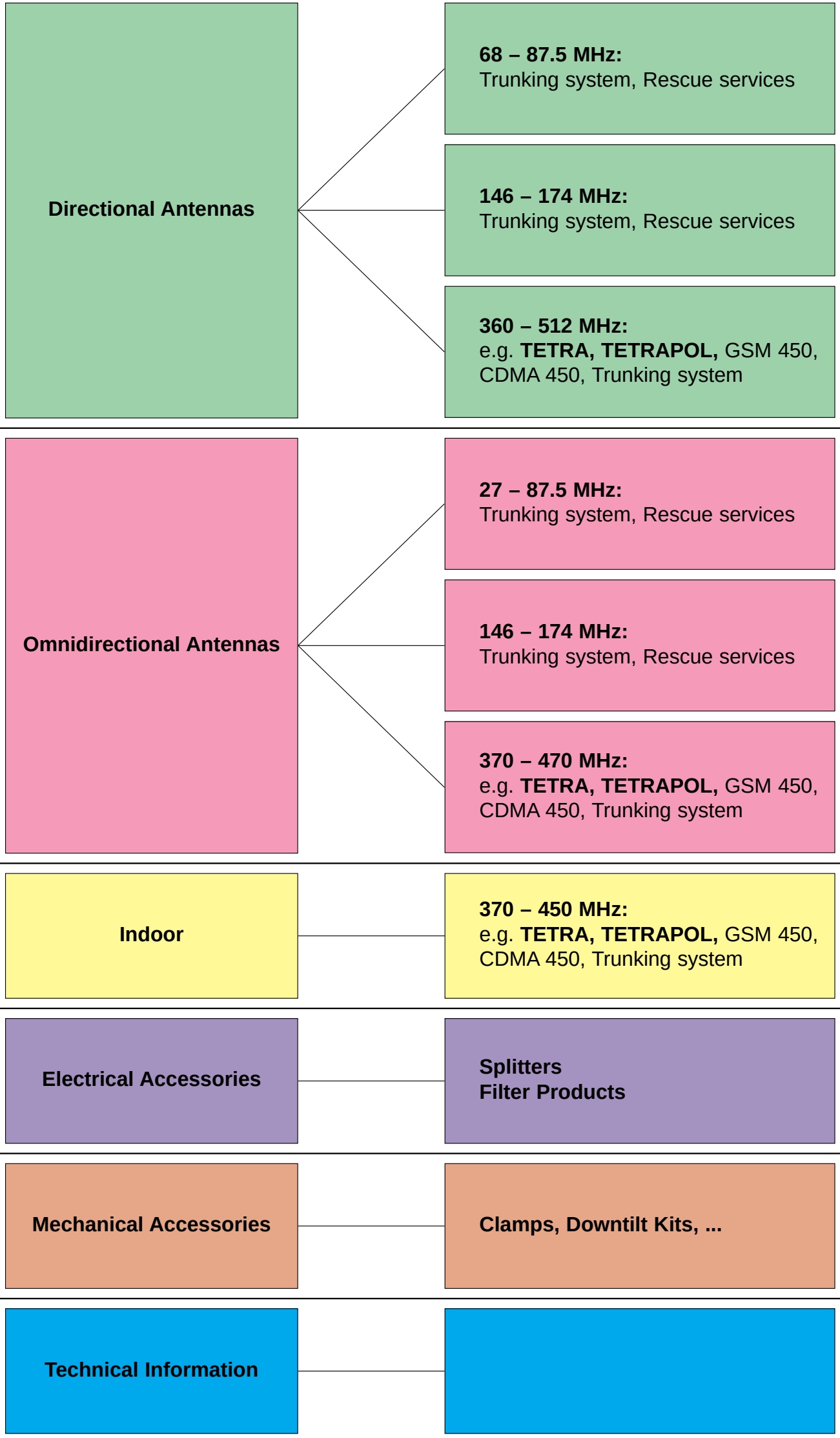
Directional Antennas
68 – 87.5 MHz:
Trunking system, Rescue services
146 – 174 MHz:
Trunking system, Rescue services
360 – 512 MHz:
e.g. TETRA, TETRAPOL, GSM 450, CDMA 450, Trunking system
Omnidirectional Antennas
27 – 87.5 MHz:
Trunking system, Rescue services
146 – 174 MHz:
Trunking system, Rescue 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

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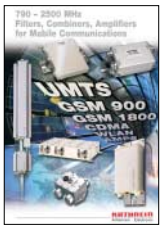
790 – 2500 MHz Base Station Antennas for Mobile Communications

27 – 512 MHz Base Station Antennas for Mobile Communiations

Ground-to-Air Communication Antennas

Antennas for Trains and Busses

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



450 MHz Filters, Combiners, Amplifiers for Mobile Communications

80 / 160 MHz Filters, Combiners Amplifiers for Mobile Communications

The listed catalogues are also available on CD-ROM

Summary of Types

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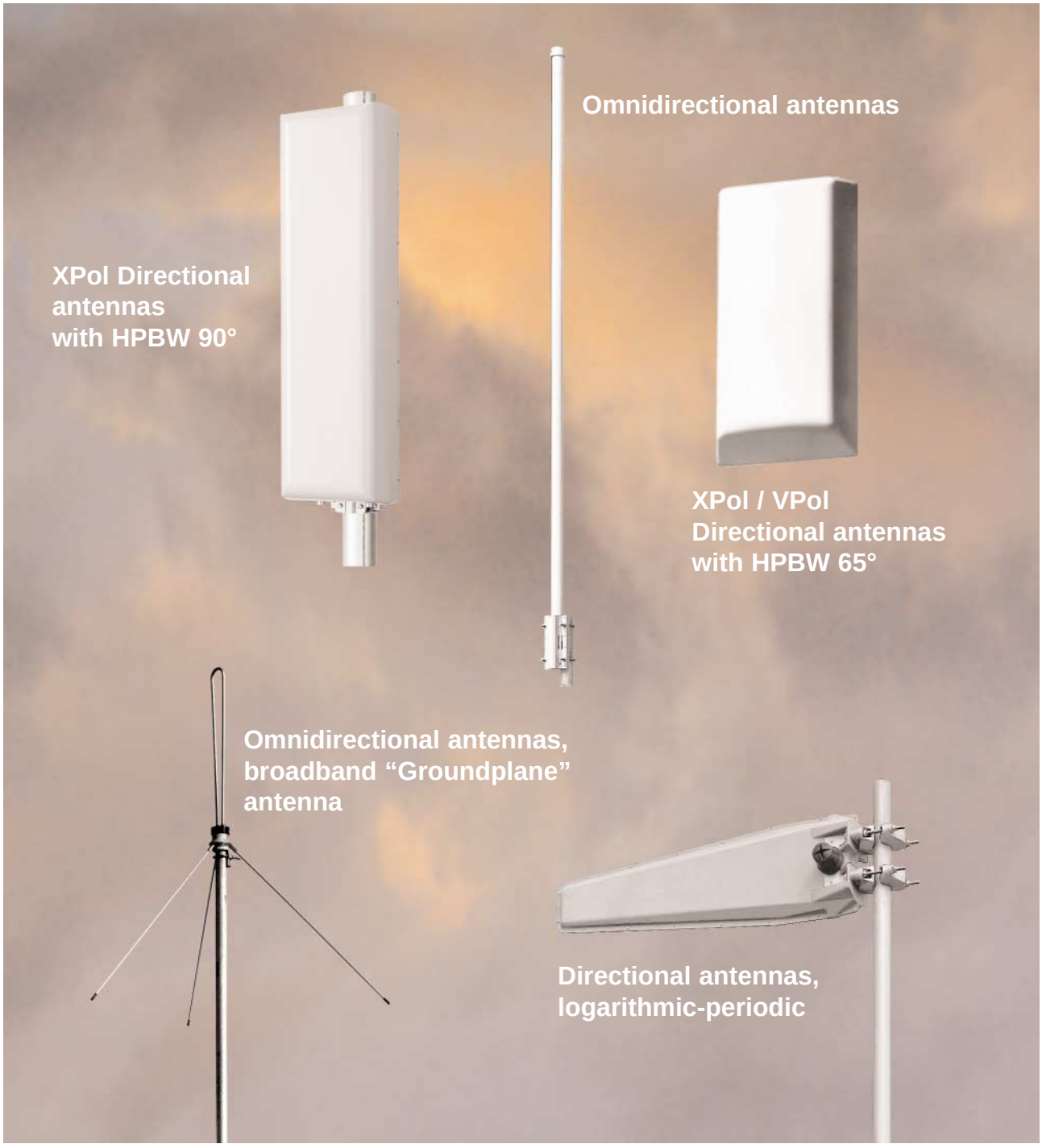
The articles are listed by type number in numerical order.


Omnidirectional antennas
XPol Directional antennas with HPBW 90°
XPol / VPol Directional antennas with HPBW 65°
Omnidirectional antennas, broadband “Groundplane” antenna
Directional antennas, logarithmic-periodic

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.
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).

Summary – Directional Antennas 68 – 87.5 MHz

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Type				Type No.	Height [mm]	Input	Page
Yagi	68–80	162°	3dB	K 53 19 41 1	2000	N female	10
Yagi	74–87.5	162°	3dB	K 53 19 42 1	2000	N female	10
Yagi	68–87.5	120°	6dB	K 53 17 41	2380	N female	11

Gain ref. $\lambda/2$ dipole

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

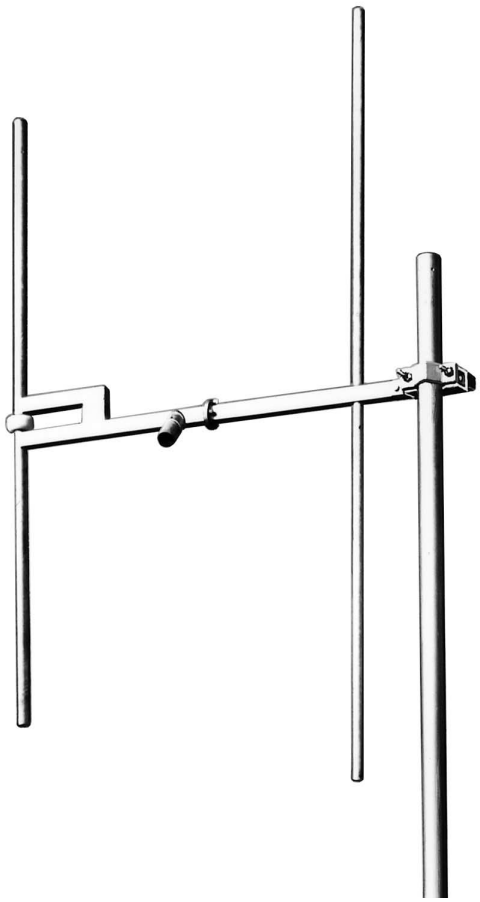
Type No.	K 53 19 41 1	K 53 19 42 1
Frequency range	68 – 80 MHz	74 – 87.5 MHz
Polarization	Usable for horizontal or vertical polarization.	
Gain (ref. $\lambda/2$ dipole)	3 dB	
Impedance	50 Ω	
VSWR	< 1.5	
Max. power	1300 W (at 50 °C ambient temperature)	

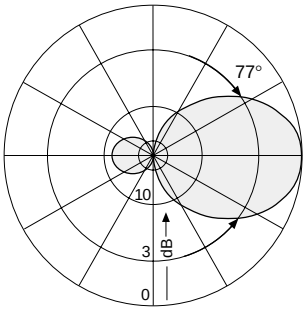
Material: Hot-dip galvanized steel.
All screws and nuts: Stainless steel.

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

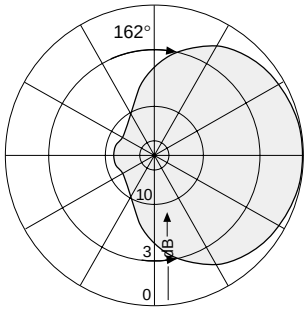
Grounding: All metal parts of the antenna including the mounting kit are DC grounded.
The inner conductor is coupled capacitively.

Special features: The antenna will be shipped dismounted.





in E-plane



in H-plane

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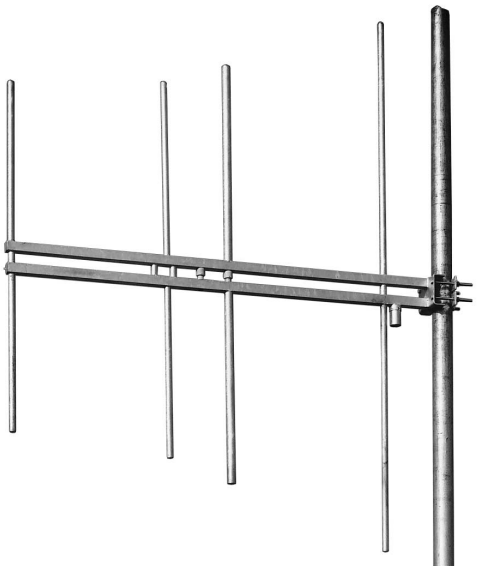
- **4-element Yagi antenna, large bandwidth.**
- **Hot-dip galvanized steel.**
- **Gain 6 dB.**

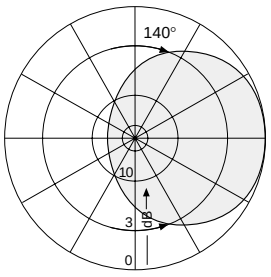
Yagi 68–87.5 120° 6dB

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)

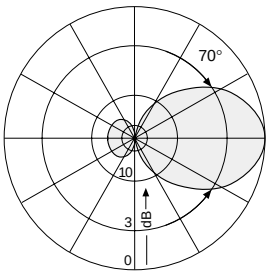


Material:	Hot-dip galvanized steel. All screws and nuts: Stainless steel.
Mounting:	On masts from 60 – 115 mm diameter, clamps supplied.
Grounding:	All metal parts of the antenna including the mounting kit are DC grounded. The inner conductor is coupled capacitively.

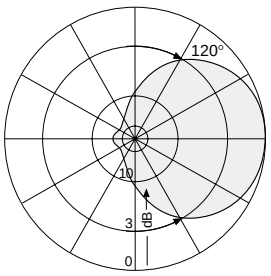
Radiation patterns at different frequencies:



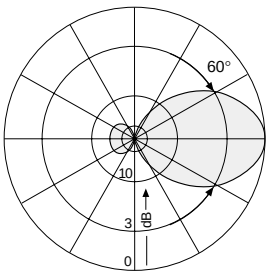
Horizontal 69 MHz



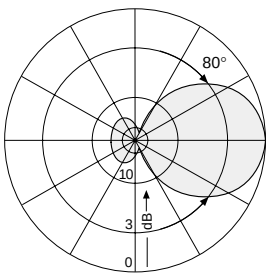
Vertical 69 MHz



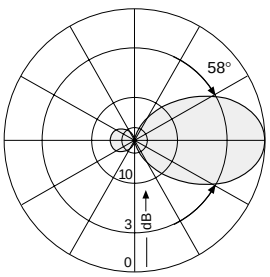
Horizontal 77 MHz



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

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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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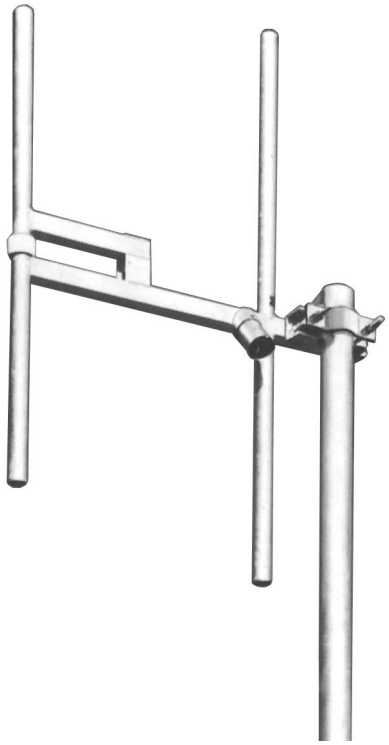
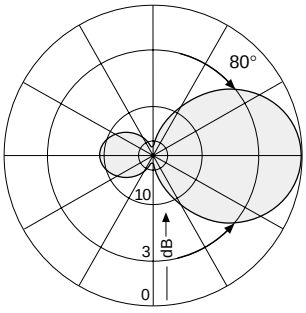
Yagi 146–174 170° 3dB

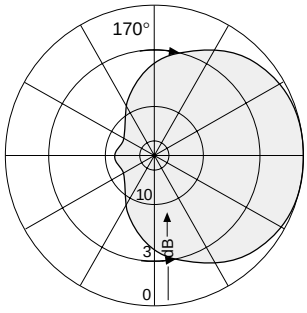
Type No.	K 53 19 21
Frequency range	146 – 174 MHz
Polarization	Usable for horizontal or vertical polarization.
Gain (ref. $\lambda/2$ dipole)	3 dB
Impedance	50 Ω
VSWR	< 1.4
Max. power	560 W (at 50 °C ambient temperature)

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.





in E-plane



in H-plane

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

Directional Antenna Polarization

146 – 174

H or V

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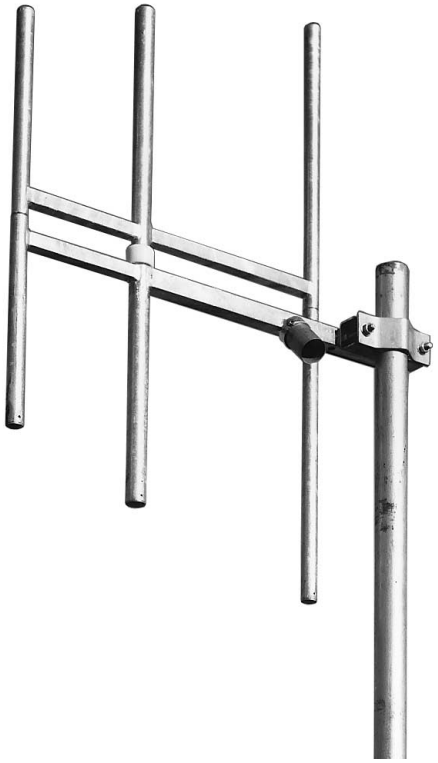
Yagi 146–174 118° 4dB

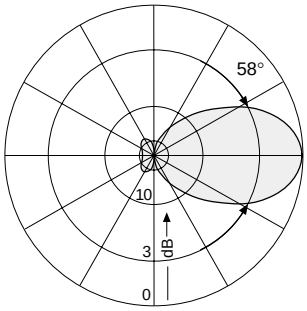
Type No.	K 53 18 21
Frequency range	146 – 174 MHz
Polarization	Usable for horizontal or vertical polarization.
Gain (ref. $\lambda/2$ dipole)	4 dB
Impedance	50 Ω
VSWR	< 1.3
Max. power	380 W (at 50 °C ambient temperature)

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

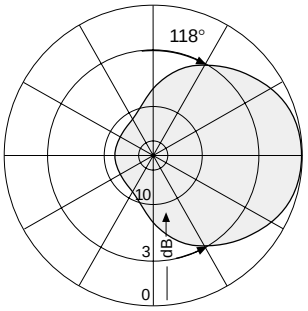
Mounting: On masts from 60 – 125 mm diameter, clamps supplied.

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





in E-plane



in H-plane

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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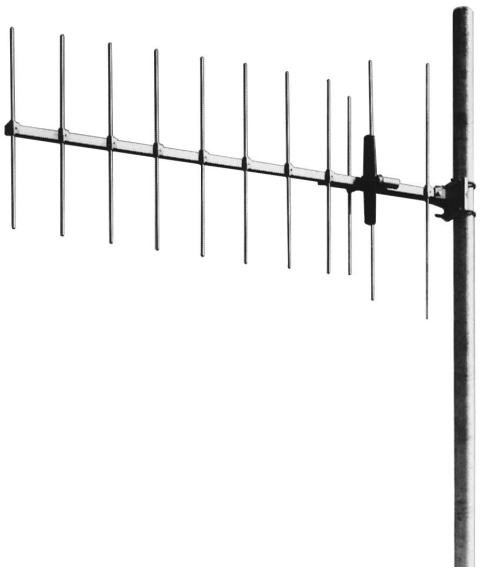
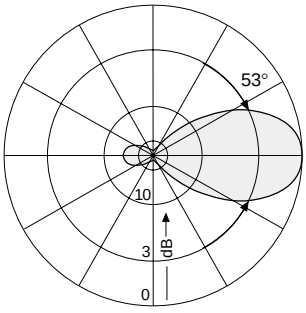
Yagi 146–174 63° 8.5dB

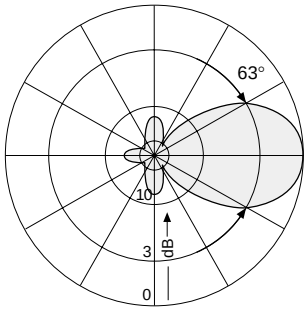


Type No.	K 52 07 21
Frequency range	146 – 174 MHz
Polarization	Usable for horizontal or vertical polarization.
Gain (ref. $\lambda/2$ dipole)	8.5 dB
Impedance	50 Ω
VSWR	< 1.5
Max. power	250 W (at 50 °C ambient temperature)

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.



in E-plane



in H-plane

Mechanical specifications		
Input	N female	
Weight	10 kg	
Wind load (at 150 km/h)	Horizontal:	Vertical:
lateral:	235 N	210 N
frontal:	140 N	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	

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)

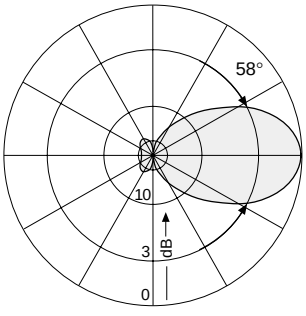
Material: Hot-dip galvanized steel.
All screws and nuts: Stainless steel.

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).

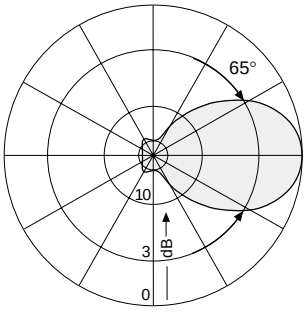
Combination: The antenna is especially suitable as a component in arrays to achieve various radiation patterns.

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.



in E-plane



in H-plane

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

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Type				Type No.	Height [mm]	Input	Page
XPol Panel	380–500	65°	12dBi	741 515	992	2 x 7-16 female	20
XPol Panel	380–500	65°	15dBi	741 516	2000	2 x 7-16 female	21
XPol Panel	380–430	68°	14.5dBi 6°T	742 242	2000	2 x 7-16 female	22
XPol Panel	380–500	88°	10.5dBi	741 517	1007	2 x 7-16 female	23
XPol Panel	380–500	88°	13.5dBi	741 518	1997	2 x 7-16 female	24
VPol Panel	406–512	63°	9dBi	K 73 36 21	493	N female	25
VPol Panel	380–500	65°	12dBi	800 10252	992	7-16 female	26
VPol Panel	380–500	65°	15dBI	800 10253	2000	7-16 female	27
VPol Panel	400–470	120°	9dBi	731 291	992	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
LogPer	440–512/824–960	68°/60°	10.5/11.5dBi	739 990	350	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	406–512	87°	9dBi	K 73 23 21	400	N 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

Panel
Dual Polarization
Half-power Beam Width

380 – 500

X

65°

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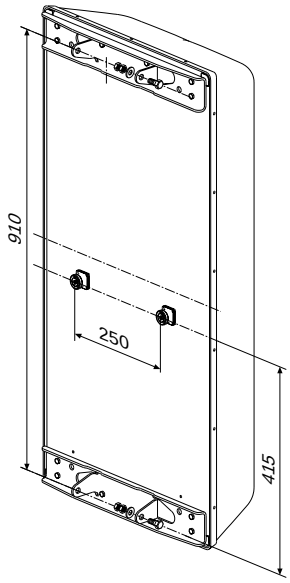
XPol Panel 380–500 65° 12dBi

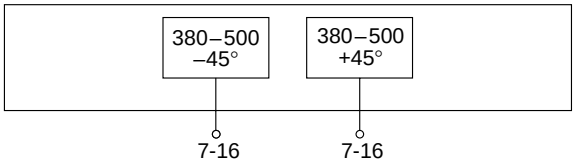
Type No.	741 515	
Frequency range	380 – 500	
	380 – 430 MHz	430 – 500 MHz
Polarization	+45°, –45°	+45°, –45°
Gain	11.5 dBi	12 dBi
Half-power beam width Copolar +45°/–45°	Horizontal: 65° Vertical: 36°	
Front-to-back ratio, copolar	> 25 dB	
Isolation	> 30 dB	
Impedance	50 Ω	
VSWR	< 1.5	
Intermodulation 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.

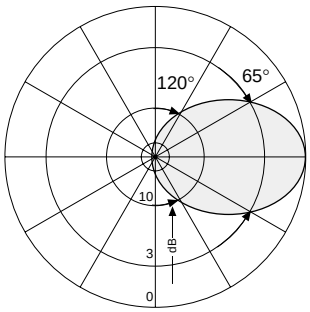
Ice protection: Due to the very sturdy antenna construction and the protection of the radiating system by the radome, the antenna remains operational even under icy conditions.

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

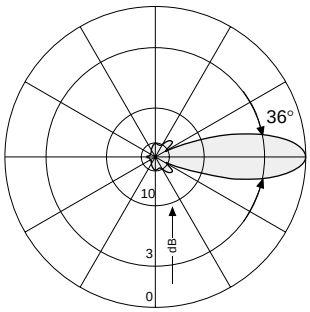




+45°/–45° Polarization



Horizontal Pattern



Vertical Pattern

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

380 – 500

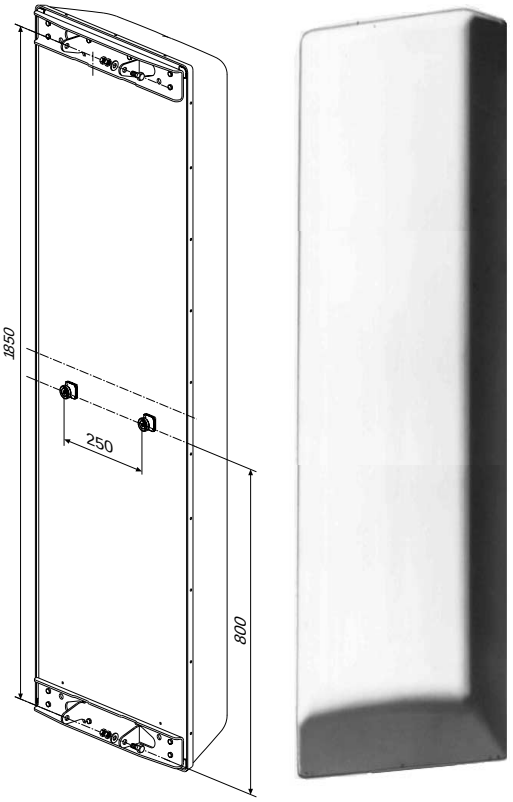
X

65°

KATHREIN
Antennen · Electronic

XPol Panel 380–500 65° 15dBi

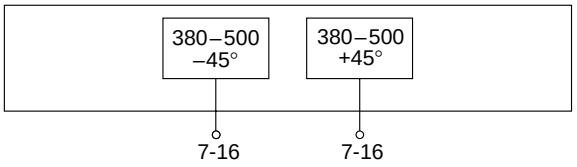
Type No.	741 516	
Frequency range	**380 – 500**	
	380 – 430 MHz	430 – 500 MHz
Polarization	+45°, –45°	+45°, –45°
Gain	14.5 dBi	15 dBi
Half-power beam width Copolar +45°/–45°	Horizontal: 65° Vertical: 18°	
Front-to-back ratio, copolar	> 25 dB	
Isolation	> 30 dB	
Impedance	50 Ω	
VSWR	< 1.5	
Intermodulation IM3 (2 x 43 dBm carrier)	< –150 dBc	
Max. power per input	500 W (at 50 °C ambient temperature)	



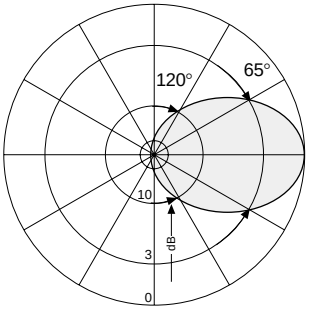
Material: Radiators: Tin-plated copper.
Reflector screen: Weatherproof aluminum.
Radome: Fiberglass, colour: Grey.
All screws and nuts: Stainless steel.

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.

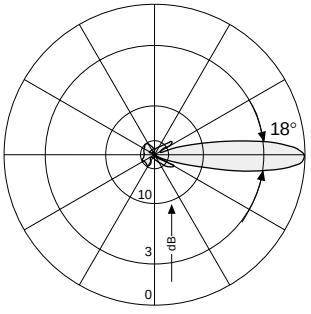
Grounding: The metal parts of the antenna including the mounting kit and the inner conductors are DC grounded.



+45°/–45° Polarization



Horizontal Pattern



Vertical Pattern

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 380–430
Dual Polarization X
Half-power Beam Width 68°
Fixed Electrical Downtilt 6°

KATHREIN
Antennen · Electronic

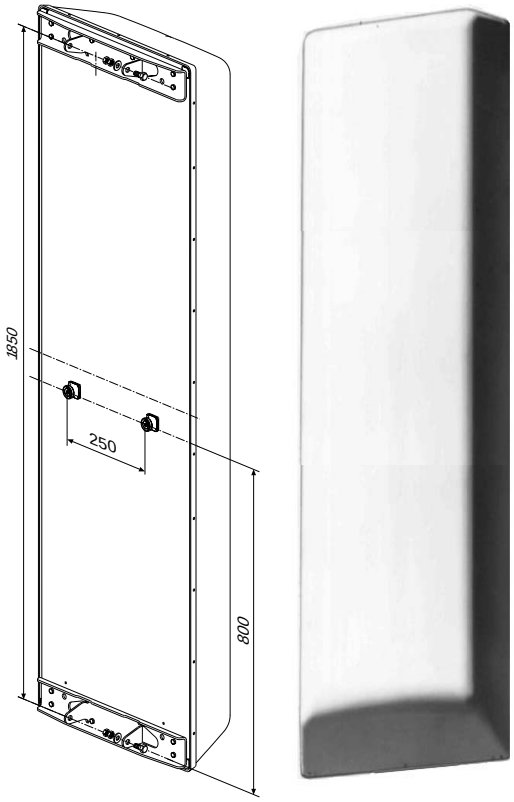
XPol Panel 380–500 68° 14.5dBi 6°T

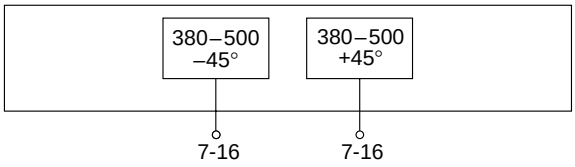
Type No.	742 242
Frequency range	380 – 430 MHz
Polarization	+45°, –45°
Gain	14.5 dBi
Half-power beam width Copolar +45°/–45°	Horizontal: 68° Vertical: 18°
Electrical tilt	6°, fixed
Front-to-back ratio, copolar	> 25 dB
Isolation	> 30 dB
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3 (2 x 43 dBm carrier)	< –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.

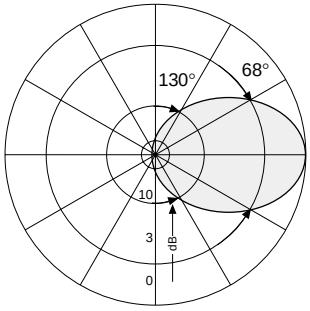
Ice protection: Due to the very sturdy antenna construction and the protection of the radiating system by the radome, the antenna remains operational even under icy conditions.

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

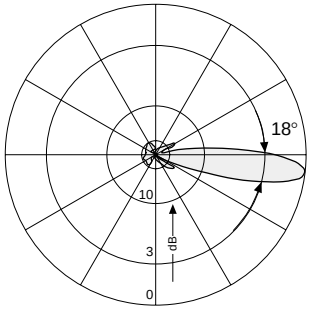




+45°/–45° Polarization



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

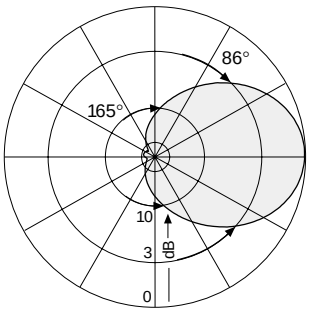
88°

KATHREIN
Antennen · Electronic

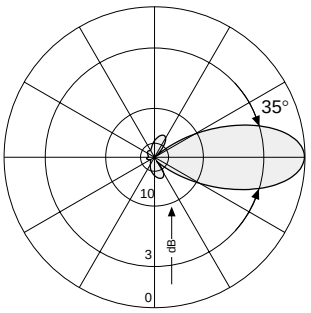
XPol Panel 380–500 88° 10.5dBi

Type No.	741 517	
Frequency range	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
Max. power per input	500 W (at 50 °C ambient temperature)	

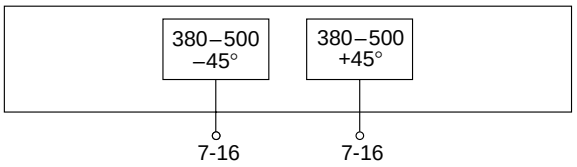
430 – 500 MHz: +45°/–45° Polarization



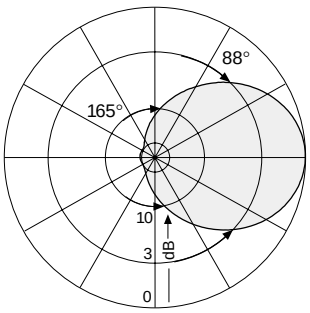
Horizontal Pattern



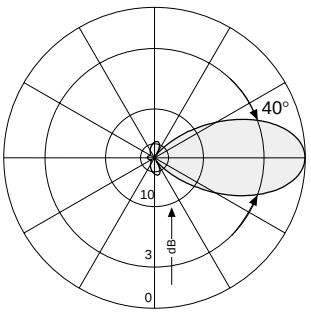
Vertical Pattern



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

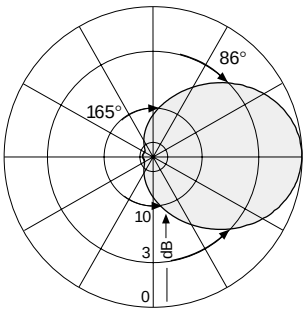
88°

KATHREIN
Antennen · Electronic

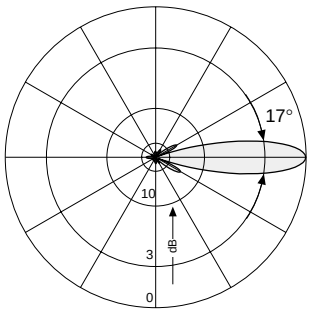
XPol Panel 380–500 88° 13.5dBi

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
Max. power per input	500 W (at 50 °C ambient temperature)	

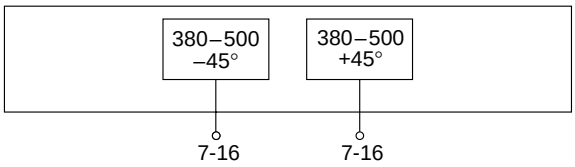
430 – 500 MHz: +45°/–45° Polarization



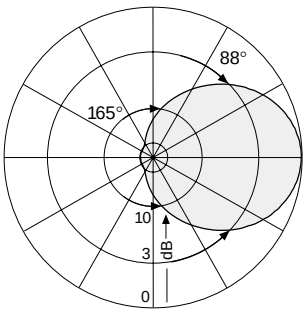
Horizontal Pattern



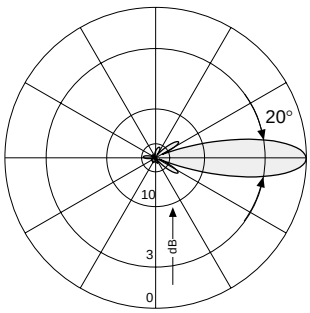
Vertical Pattern



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: Lateral:	715 N (at 150 km/h) 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

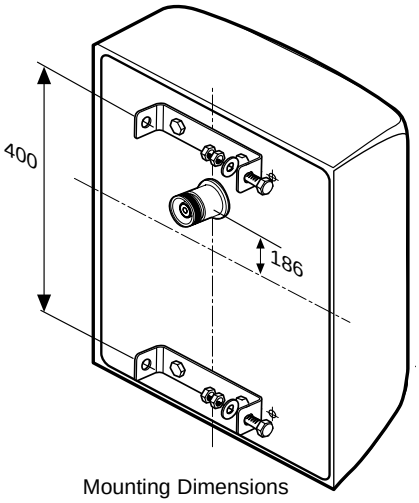
V

63°

KATHREIN
Antennen · Electronic

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
Intermodulation IM3 (2 x 43 dBm carrier)	< –150 dBc
Max. power	500 W (at 50 °C ambient temperature)



Mounting Dimensions

Arrays: This antenna is especially suitable as a component in arrays to achieve various radiation patterns.

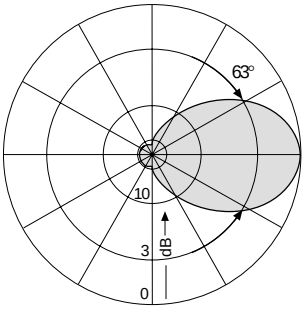
Scope of supply: Antenna including two weather-proof covers for straight and elbow connector, but without mounting hardware.

Material: Dipoles and reflector screen: Weather-resistant aluminum.
Radome: Fiberglass, colour: White.
All screws and nuts: Stainless steel.

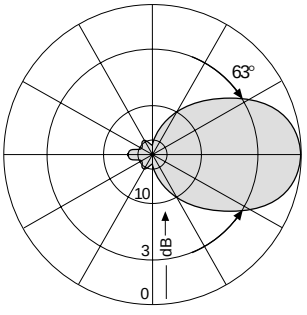
Attachment: Use clamps K 61 14 0 .. for tubular mast diameters of 40 – 521 mm (see the “Mechanical Accessories” part of this catalogue).

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.



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

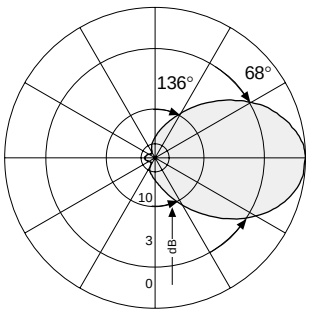
65°

KATHREIN
Antennen · Electronic

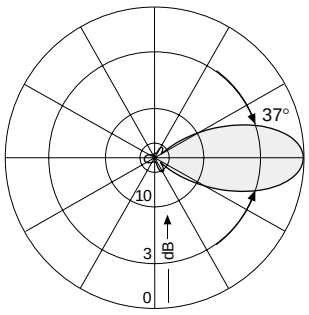
VPol Panel 380–500 65° 12dBi

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

380 – 430 MHz

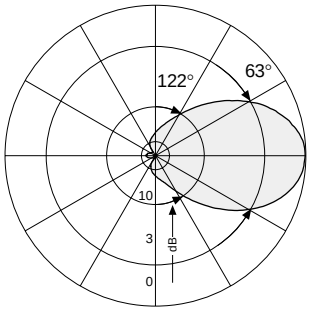


Horizontal Pattern

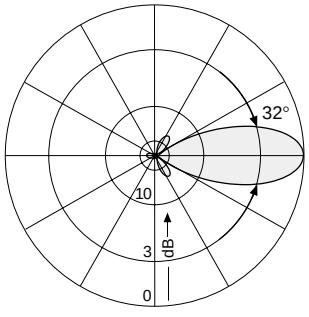


Vertical Pattern

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

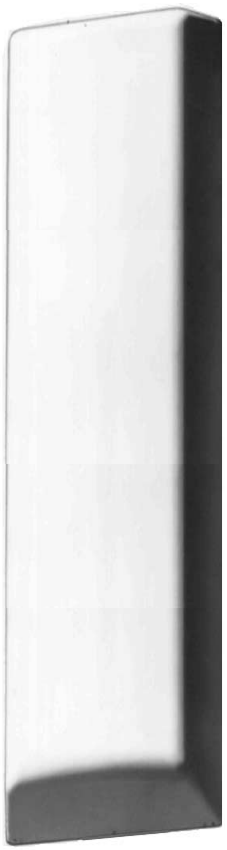
Multi-band Panel
Vertical Polarization
Half-power Beam Width

380 – 500

V

65°

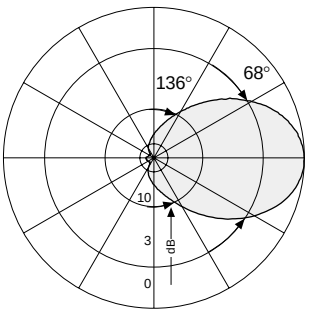
KATHREIN
Antennen · Electronic



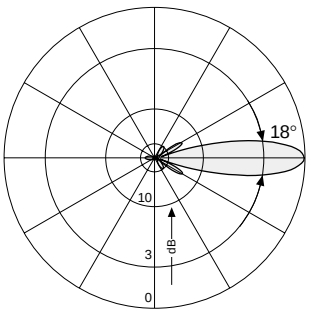
VPol Panel 380–500 65° 15dBi

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

380 – 430 MHz

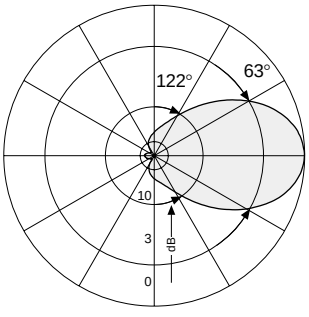


Horizontal Pattern

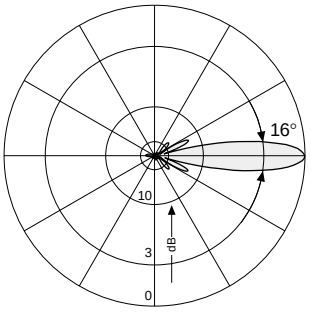


Vertical Pattern

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

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
Intermodulation IM3 (2 x 43 dBm carrier)	< –150 dBc
Max. power	500 W (at 50 °C ambient temperature)

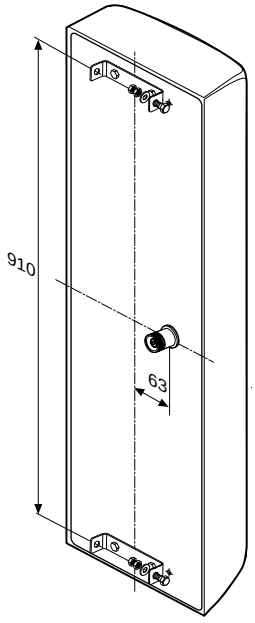
Scope of supply: Antenna including two weather-proof covers for straight and elbow connector, but without mounting hardware.

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

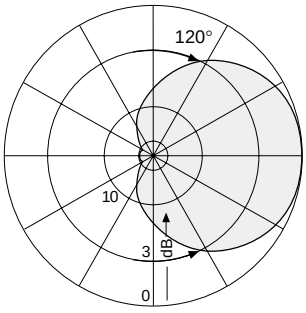
Attachment: Use clamps K 61 14 0 .. for tubular mast diameters of 40 – 521 mm (see the “Mechanical Accessories” part of this catalogue).

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.

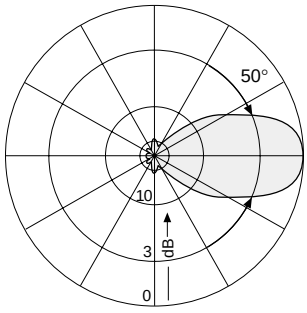
Grounding: All metal parts of the antenna including the mounting kit and the inner conductor are DC grounded.



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

Eurocell Panel
Vertical Polarization
Half-power Beam Width

380 – 430

V

115°

KATHREIN
Antennen · Electronic

VPol Panel 380–430 115° 8.5dBi

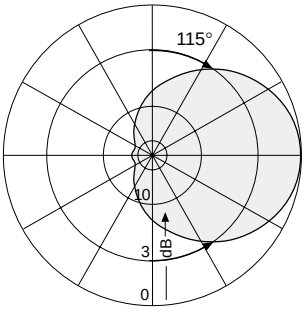
Type No.	**739 504**
Frequency range	380 – 430 MHz
Polarization	Vertical
Gain	8.5 dBi
Half-power beam width	H-plane: 115° E-plane: 38°
Front-to-back ratio	> 18 dB
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3 (2 x 43 dBm carrier)	< –150 dBc
Max. power	500 W (at 50 °C ambient temperature)

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

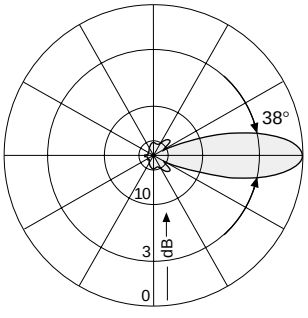
Attachment: See the “Mechanical Accessories” part of this catalogue.

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

Eurocell Panel
Vertical Polarization
Half-power Beam Width

380 – 430

V

115°

KATHREIN
Antennen · Electronic

VPol Panel 380–430 115° 11.5dBi

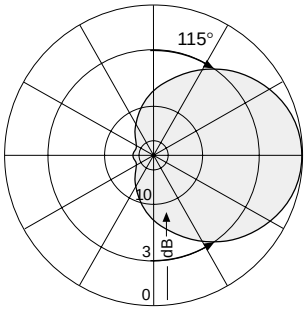
Type No.	739 506
Frequency range	380 – 430 MHz
Polarization	Vertical
Gain	11.5 dBi
Half-power beam width	H-plane: 115° E-plane: 18°
Front-to-back ratio	> 18 dB
Impedance	50 Ω
VSWR	< 1.5
Intermodulation IM3 (2 x 43 dBm carrier)	< –150 dBc
Max. power	500 W (at 50 °C ambient temperature)

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

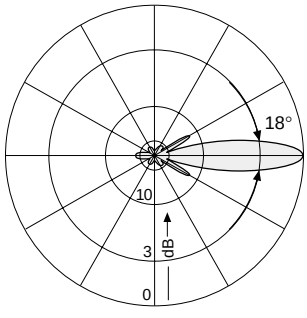
Attachment: See the “Mechanical Accessories” part of this catalogue.

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

Logarithmic-periodic
Vertical Polarization
Half-power Beam Width

440 – 512/824 – 960

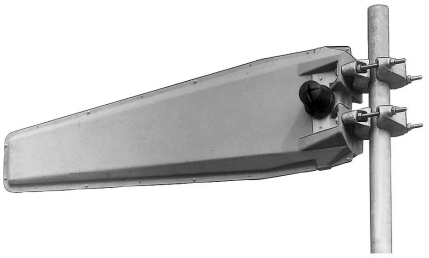
V

68°/60°

KATHREIN
Antennen · Electronic

VPol LogPer 440–512/824–960 68/60° 10.5/11.5dBi

Type No.	739 990	
Frequency range	440 – 512 MHz	824 – 960
Polarization	Vertical	Vertical
Gain	10.5 dBi	11.5 dBi
Half-power beam width	H-plane: 68° E-plane: 54°	H-plane: 60° E-plane: 48°
Front-to-back ratio	> 23 dB	> 25 dB
Impedance	50 Ω	
VSWR	< 1.4	
Intermodulation IM3 (2 x 43 dBm carrier)	< –150 dBc	
Max. power	100 W (at 50 °C ambient temperature)	



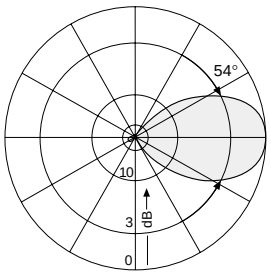
Material: Radiator: Weather-proof aluminum.
Radome: Fiberglass, colour: Grey.
All screws and nuts: Stainless steel.

Mounting: The antenna can be mounted on tubular mast with a diameter of 48 – 115 mm with supplied clamps.

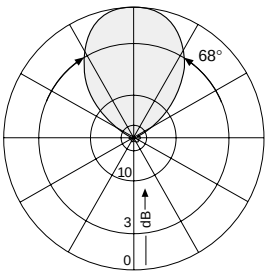
Ice protection: The radiation system ist protected by the radome. Due its very sturdy construction, the antenna remains operational even under icy conditions.

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

440 – 512 MHz

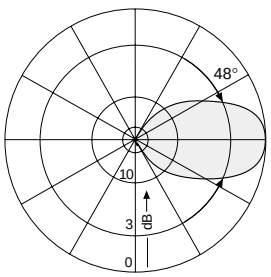


Radiation Pattern
in E-plane

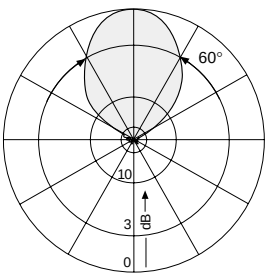


Radiation Pattern
in H-plane

824 – 960 MHz



Radiation Pattern
in E-plane



Radiation Pattern
in H-plane

Mechanical specifications		
Input	7-16 female	
Connector position	Bottom	
Weight	9 kg	
Wind load	Frontal: Lateral:	55 N (at 150 km/h) 440 N (at 150 km/h)
Max. wind velocity	180 km/h	
Packing size	1172 x 372 x 225 mm	
Height/width/depth	1160 / 350 / 170 mm	

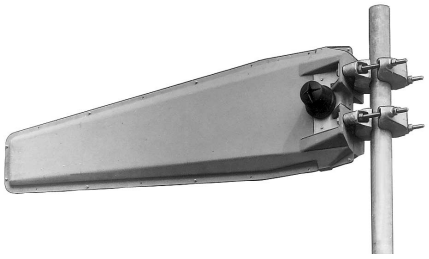
Logarithmic-periodic Vertical / Horizontal Polarization Half-power Beam Width

406 – 512 | **V or H** | **67°**

KATHREIN
Antennen · Electronic

LogPer 406–512 67° 10.5dBi

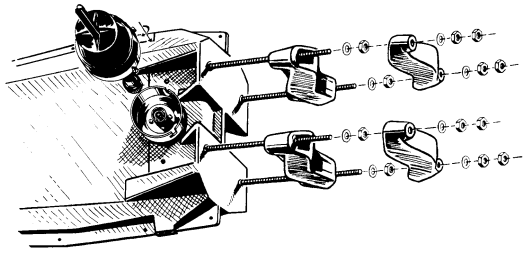
Type No.	K 72 22 41	K 72 22 47
Frequency range	406 – 512 MHz	
Polarization	Usable for horizontal or vertical polarization.	
Gain	10.5 dBi	
Half-power beam width	H-plane: 67° E-plane: 53°	
Side-lobe Suppression	> 25 dB at 440 – 512 MHz > 20 dB at 406 – 512 MHz	
Impedance	50 Ω	
VSWR	< 1.4	
Intermodulation IM3 (2 x 43 dBm carrier)	< –150 dBc	
Max. power	300 W (at 50 °C ambient temperature)	



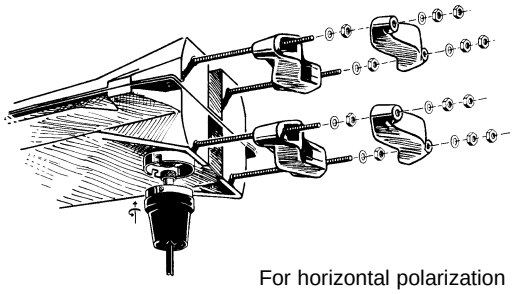
For vertical polarization

For horizontal polarization

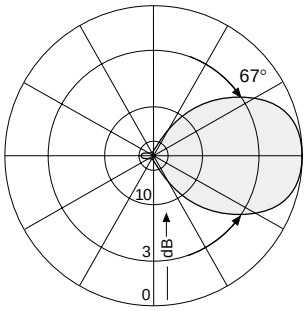
Arrays:	Several antennas can be combined to increase the gain and to produce radiation patterns with very high side-lobe suppressions.
Scope of supply:	Antenna with weather protective casing for straight connectors.
Material:	Radiator and mounting kit: Aluminum. Radome: Fiberglass, colour: Grey. All 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.



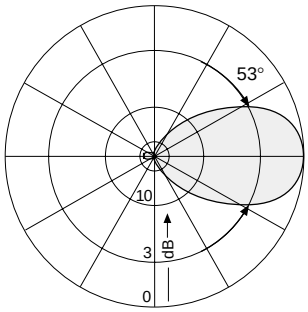
For vertical polarization



For horizontal polarization



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

406 – 512

V

87°

KATHREIN
Antennen · Electronic

VPol LogPer 406–512 87° 9dBi

Type No.	K 73 23 21
Frequency range	406 – 512 MHz
Polarization	Vertical
Gain	9 dBi
Half-power beam width	H-plane: 87° E-plane: 62°
Side-lobe suppression	> 28 dB at 440 – 512 MHz > 21 dB at 406 – 512 MHz
Impedance	50 Ω
VSWR	< 1.3
Intermodulation IM3 (2 x 43 dBm carrier)	< –150 dBc
Max. power	500 W (at 50 °C ambient temperature)

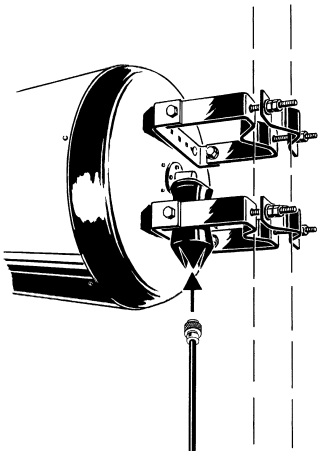
Scope of supply: Antenna with weather protective casing for straight connectors.

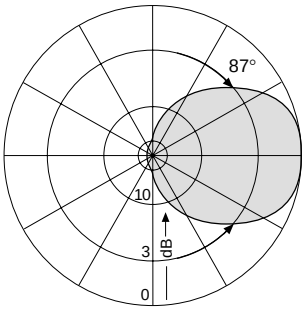
Material: Radiator: Weather-resistant aluminum.
Radome: Fiberglass, colour: White.
Mounting kit: Hot-dip galvanized steel.
All screws and nuts: Stainless steel.

Attachment: To tubular masts of 60 – 115 mm diameter using supplied clamps.

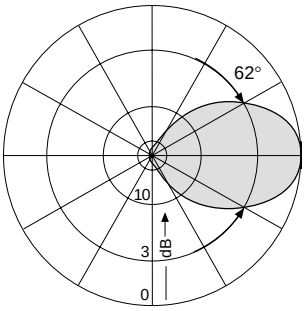
Ice protection: Due to the very sturdy antenna construction and the protection of the radiating system by the radome, the antenna remains operational even under icy conditions.

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



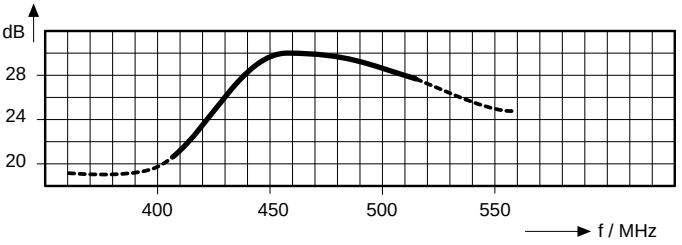


Horizontal Pattern



Vertical Pattern

Typical side-lobe suppression



Mechanical specifications		
Input	N female	
Connector position	Rearside	
Weight	8.3 kg	
Wind load	Frontal: Lateral:	54 N (at 150 km/h) 150 N (at 150 km/h)
Max. wind velocity	180 km/h	
Packing size	960 x 470 x 470 mm	
Height/width/depth	860 / 400 / 400 mm	

Corner-reflector Antenna
Vertical Polarization
Half-power Beam Width

360 – 490

V

44°

KATHREIN
Antennen · Electronic

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
Intermodulation IM3 (2 x 43 dBm carrier)	< –150 dBc
Max. power	180 W (at 50 °C ambient temperature)

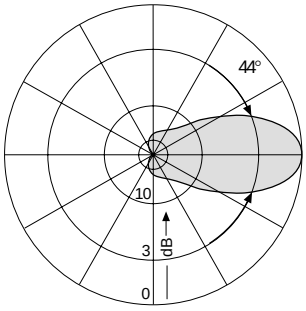
Scope of supply: Antenna with weather protective casing for straight connectors, mounting kit included.

Material: Radiator and reflector: Weather-resistant aluminum.
Mounting U-bold: Stainless steel.
All screws and nuts: Stainless steel.

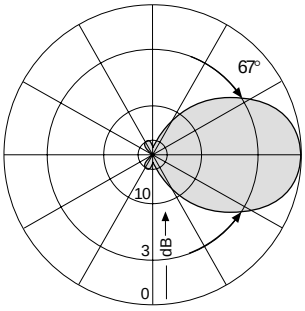
Attachment: To tubular masts of 30 – 54 mm diameter using supplied U-bolts.

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

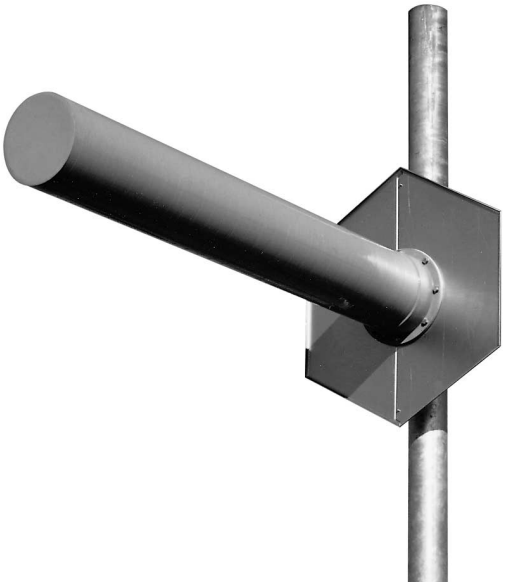
Helix Antenna
Right Handed Circular Polarization
Half-power Beam Width

400 – 470 | **RHC** | **33°**

KATHREIN
Antennen · Electronic

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)



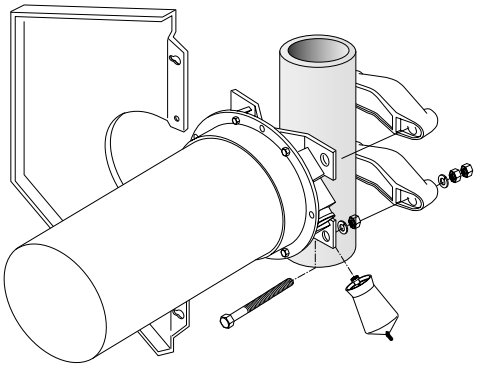
Scope of supply: Antenna with weather protective casing for straight connectors, mounting kit included.

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.

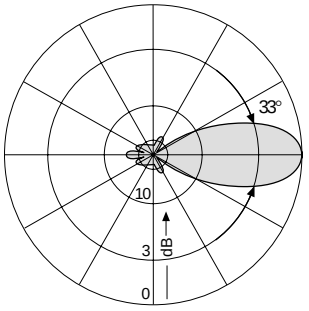
Attachment: To tubular masts of 60 – 125 mm diameter using supplied U-bolts.

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.



Mounting Instructions



Relative field strength in mid-band

Mechanical specifications		
Input	N female	
Weight	12 kg	
Wind load	Frontal: Lateral:	450 N (at 150 km/h) 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	

Summary – Omnidirectional Antennas 27 – 87.5 MHz

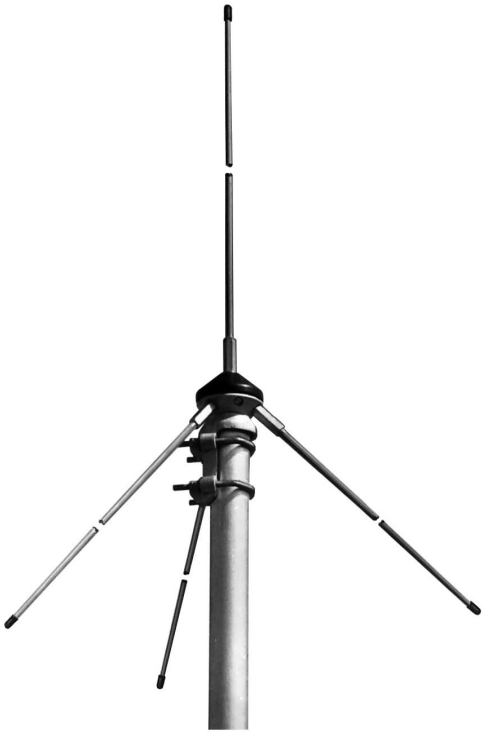
KATHREIN
Antennen · Electronic

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

VPol Omni 27…61 360° 0dB

Type No. / Antenna / Spare radials	K 51 24 72 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)

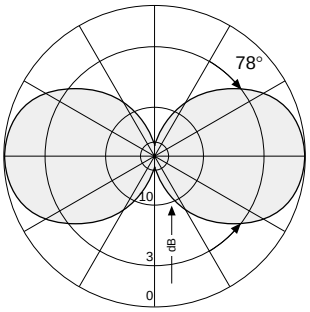


Material: Radiator and radials: Fiberglass with imbedded stranded copper wire.
Base: Aluminum.
Mounting U-bolt and all screws and nuts: Stainless steel.

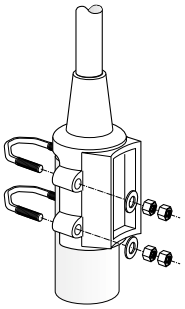
Mounting: The antenna can be attached in two ways with the supplied mounting kit:
1. On the tip of a tubular mast of 40 – 54 mm diameter (connecting cable runs inside the mast).
2. Laterally at the tip of a tubular mast of 20 – 54 mm diameter (connecting cable runs outside the mast).

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

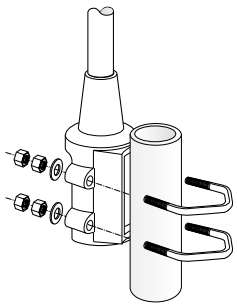
Grounding: The metal parts of the antenna including the mounting kit are DC grounded.



Vertical Pattern

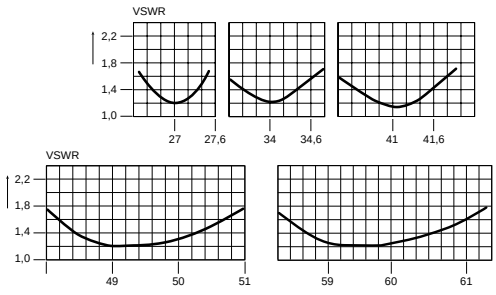


On the tip of a tubular mast



Laterally at the tip of a tubular mast

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



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

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

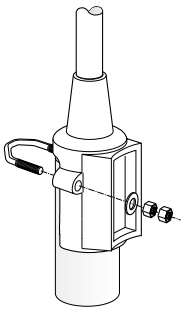
Type No. / Antenna / Spare radials	K 51 26 41 1 K 51 26 40 12	K 51 26 42 1 K 51 26 40 22
Frequency range	68 – 80 MHz	74 – 87.5 MHz
Polarization	Vertical	
Gain (ref. $\lambda/2$ dipole)	0 dB	
Impedance	50 Ω	
VSWR	< 1.5	
Max. power	75 W (at 50 °C ambient temperature)	

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

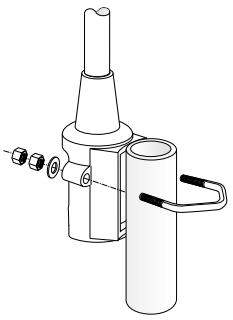
Mounting: The antenna can be attached in two ways with the supplied mounting kit:
1. On the tip of a tubular mast of 40 – 54 mm diameter (connecting cable runs inside the mast).
2. Laterally at the tip of a tubular mast of 20 – 40 mm diameter (connecting cable runs outside the mast).

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

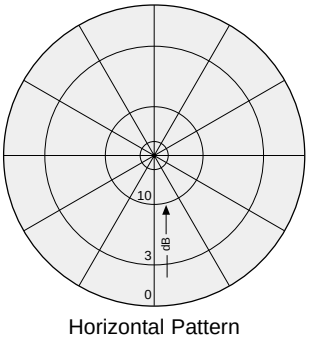
Grounding: All metal parts of the antenna including the mounting kit are DC grounded.



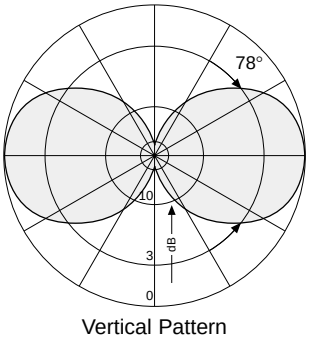
On the tip of a tubular mast



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

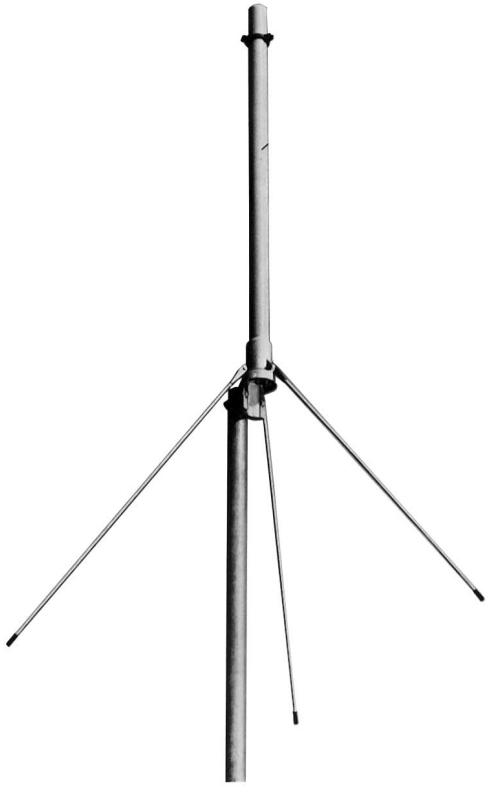
Dual-band Omnidirectional Antenna Vertical Polarization

74.2–77.7 84.0–87.5	167.5–174
V	V

KATHREIN
Antennen · Electronic

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

Type No. / Antenna Spare radials	K 51 25 42 1 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)	

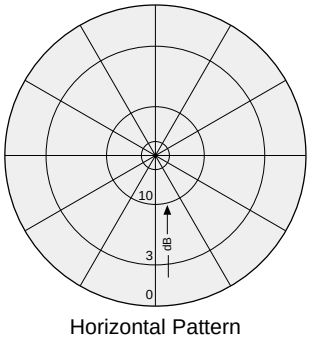


Material: Radiator: Weather-resistant aluminum in fiberglass radome.
Radials: Fiberglass with imbedded stranded copper wire.
Base: Aluminum.
Mounting U-bolt and all screws and nuts: Stainless steel.

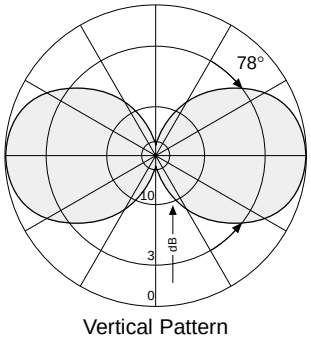
Mounting: To pipes of 30 – 54 mm diameter by means of mounting kit (supplied). The antenna must be mounted in such a manner, that the feeder cables runs outside the mast.

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

KATHREIN
Antennen · Electronic

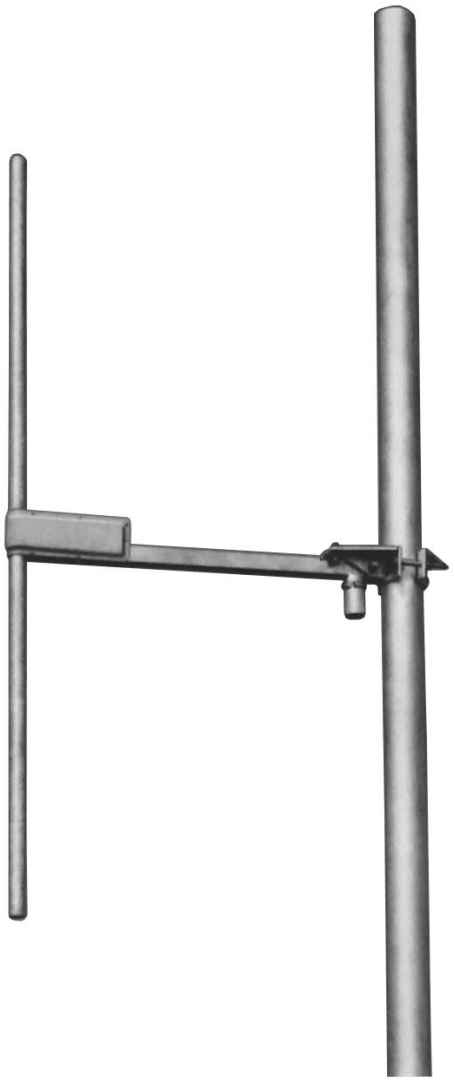
VPol Omni 68–87.5 360° 2dB

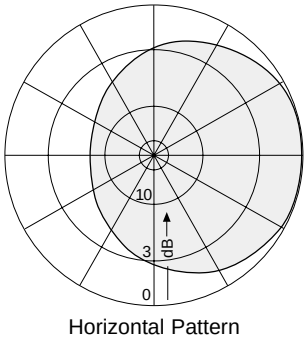
Type No.	K 55 28 41
Frequency range	68 – 87.5 MHz
Polarization	Vertical
Radiation pattern	Preferred direction: mast to radiator.
Gain (ref. $\lambda/2$ dipole)	2 dB
Impedance	50 Ω
VSWR	< 1.5
Max. power	230 W (at 50 °C ambient temperature)

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

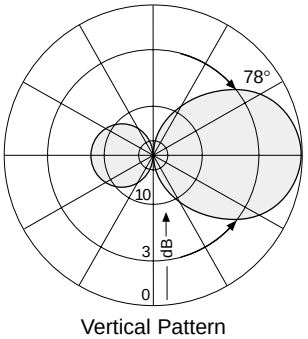
Mounting: On masts from 60 – 115 mm diameter, clamps supplied.

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





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

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Antennen · Electronic

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	146–156	360°	4dB	K 55 16 21 1	4830	cable termination	47
VPol Omni	155–164	360°	4dB	K 55 16 22 1	4645	cable termination	47
VPol Omni	164–174	360°	4dB	K 55 16 23 1	4330	cable termination	47
VPol Omni	146–174	360°	2dB	K 55 29 21	840	N female	48

Gain ref. $\lambda/2$ dipole

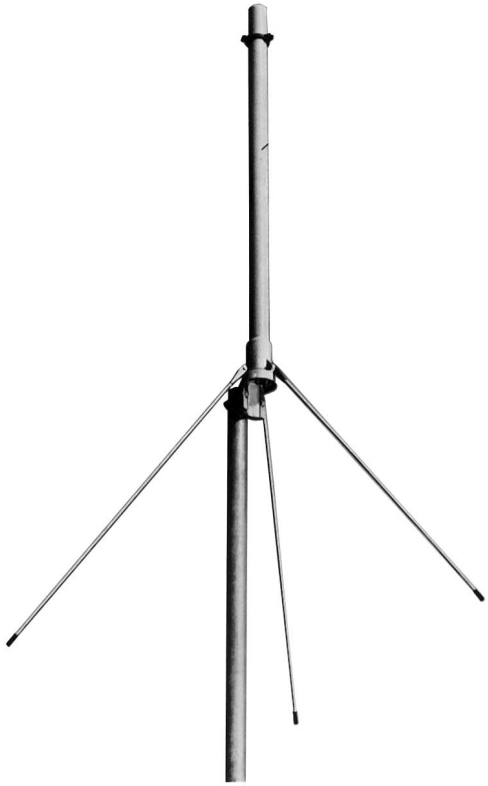
Dual-band Omnidirectional Antenna Vertical Polarization

74.2–77.7 84.0–87.5	167.5–174
V	V

KATHREIN
Antennen · Electronic

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

Type No. / Antenna Spare radials	K 51 25 42 1 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)	

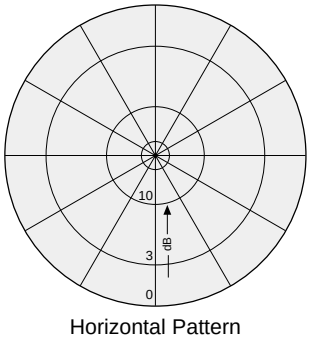


Material: Radiator: Weather-resistant aluminum in fiberglass radome.
Radials: Fiberglass with imbedded stranded copper wire.
Base: Aluminum.
Mounting U-bolt and all screws and nuts: Stainless steel.

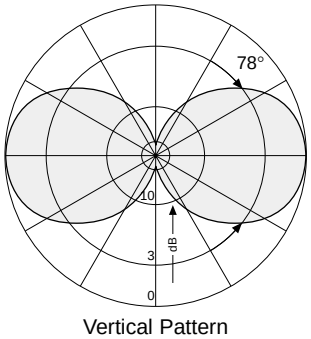
Mounting: To pipes of 30 – 54 mm diameter by means of mounting kit (supplied). The antenna must be mounted in such a manner, that the feeder cables runs outside the mast.

Special features: The radials can be fold up.

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

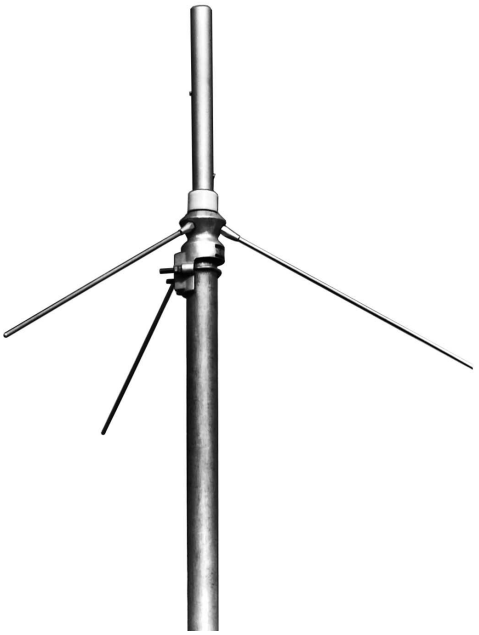


Horizontal Pattern



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



VPol Omni 146–174 360° 0dB

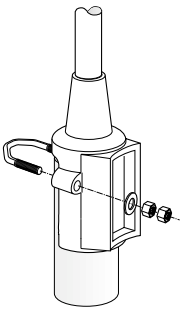
Type No. / Antenna / Spare radials	K 51 26 2 K 51 26 20 2	711 530 K 51 26 20 2
Frequency range	146 – 174 MHz	
Polarization	Vertical	
Gain (ref. $\lambda/2$ dipole)	0 dB	
Impedance	50 Ω	
VSWR	< 1.5	
Max. power	170 W (at 50 °C ambient temperature)	700 W

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

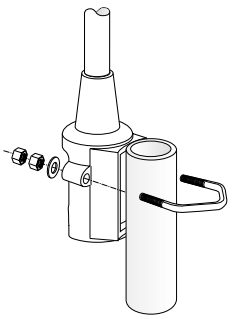
Mounting: The antenna can be attached in two ways with the supplied mounting kit:
1. On the tip of a tubular mast of 40 – 54 mm diameter (connecting cable runs inside the mast).
2. Laterally at the tip of a tubular mast of 20 – 40 mm diameter (connecting cable runs outside the mast).

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

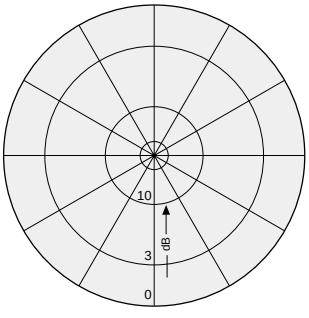
Grounding: All metal parts of the antenna including the mounting kit are DC grounded.
The inner conductor is capacitively coupled.



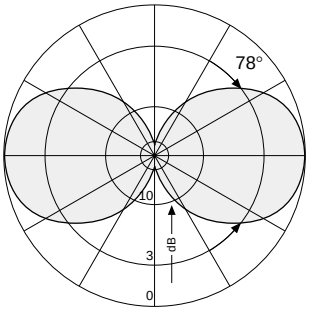
On the tip of a tubular mast



Laterally at the tip of a tubular mast



Horizontal Pattern

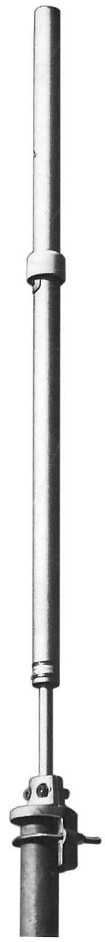


Vertical Pattern

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	

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)		

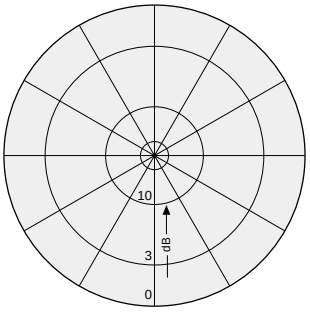


Material: Radiator and base: Weather-resistant aluminum.
Mounting U-bolt and all screws and nuts: Stainless steel.

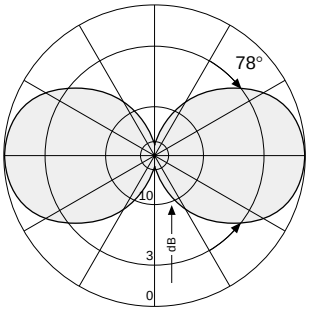
Mounting: The antenna can be attached in two ways with the supplied mounting kit:
1. On the tip of a tubular mast of 40 – 54 mm diameter (connecting cable runs inside the mast).
2. Laterally at the tip of a tubular mast of 20 – 40 mm diameter (connecting cable runs outside the mast).

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

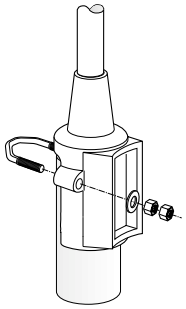
Grounding: All metal parts of the antenna including the mounting kit are DC grounded. The inner conductor is capacitively coupled.



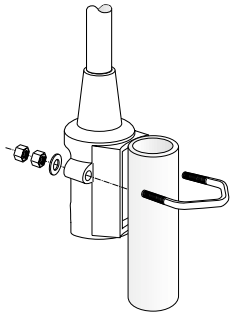
Horizontal Pattern



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

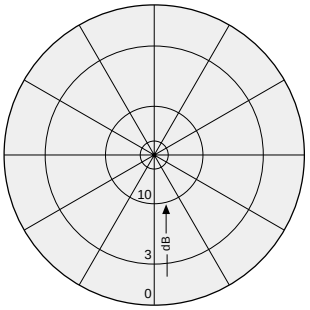
K 55 16 21 1: VPol Omni 146–156 360° 4dB
K 55 16 22 1: VPol Omni 155–164 360° 4dB
K 55 16 23 1: VPol Omni 164–174 360° 4dB

Type No.	K 55 16 21 1	K 55 16 22 1	K 55 16 23 1
Frequency range	146 – 156 MHz	155 – 164 MHz	164 – 174 MHz
Polarization	Vertical		
Gain (ref. $\lambda/2$ dipole)	4 dB		
Impedance	50 Ω		
VSWR	< 1.5		
Max. power	500 W (at 50 °C ambient temperature)		

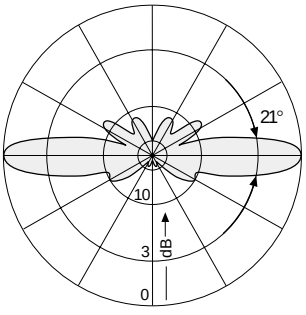
Material: Radiator: Brass.
Radome: Fiberglass, colour:Grey.
Base: Aluminum.
Mounting U-bolt and all screws and nuts: Stainless steel.

Mounting: The antenna can be attached in two ways with the supplied mounting kit:
1. On the tip of a tubular mast of 65 – 105 mm diameter (connecting cable runs inside the mast).
2. Laterally at the tip of a tubular mast of 30 – 90 mm diameter (connecting cable runs outside the mast).

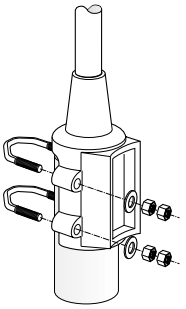
Grounding: All metal parts of the antenna including the mounting kit are DC grounded.

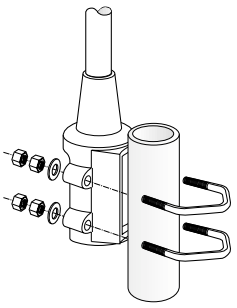


Horizontal Pattern



Vertical Pattern


On the tip of a tubular mast


Laterally at the tip of a tubular mast

Mechanical specifications	K 55 16 21 1	K 55 16 22 1	K 55 16 23 1
Input	N female		
Weight	7 kg	6.5 kg	6.5 kg
Wind load (at 150 km/h)	280 N	270 N	250 N
Max. wind velocity	150 km/h		
Packing size (L)	5011 mm	4826 mm	4511 mm
Packing size (w x d)	198 x 152 mm		
Height	4830 mm	4645 mm	4330 mm
Diameter	max. 52 mm		

Omnidirectional Off-set Antenna
Vertical Polarization

146 – 174

V

KATHREIN
Antennen · Electronic

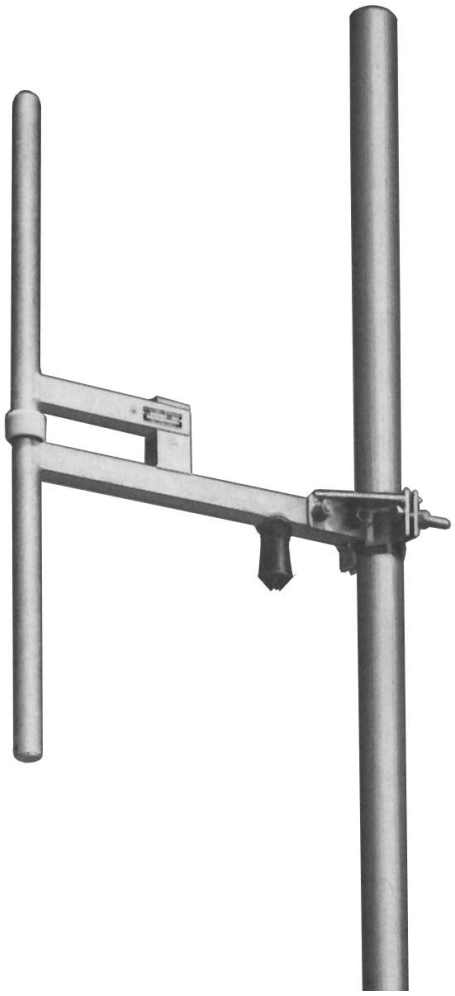
VPol Omni 146–174 360° 2dB

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)

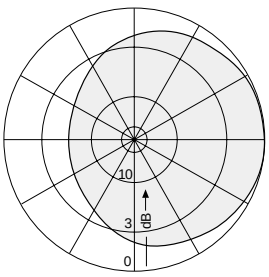
Material: Hot-dip galvanized steel.
All screws and nuts: Stainless steel.

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

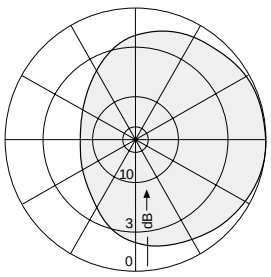
Grounding: All metal parts of the antenna including the mounting kit are DC grounded.



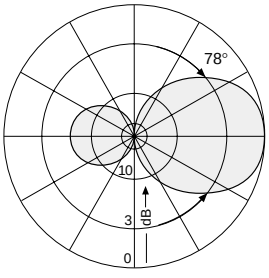
Radiation Pattern with different mast diameters:



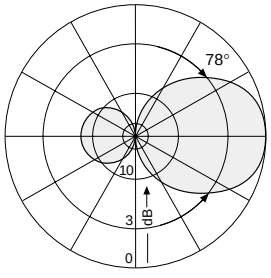
Horizontal Pattern
60 mm ∅



Horizontal Pattern
115 mm ∅



Vertical Pattern
60 mm ∅



Vertical Pattern
115 mm ∅

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

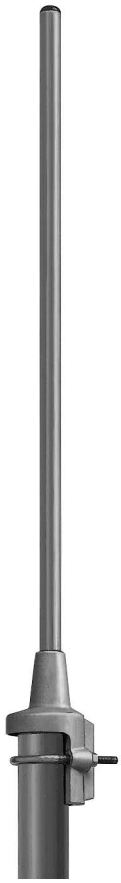
Summary – Omnidirectional Antennas 370 – 470 MHz

KATHREIN
Antennen · Electronic

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	406–430	360°	5dBi	K 75 15 21 1	1273	N female	51
VPol Omni	440–470	360°	5dBi	K 75 15 22 1	1144	N female	51
VPol Omni	440–470	360°	5dBi	721 387	1144	N female	51
VPol Omni	406–430	360°	7dBi	K 75 16 21 1	2020	N female	52
VPol Omni	406–430	360°	7 dBi	728 888	2016	7-16 female	52
VPol Omni	440–470	360°	7dBi	721 388	2016	N female	52
VPol Omni	440–470	360°	7dBi	720 880	2016	7-16 female	52
VPol Omni	380–400	360°	7.5dBi	K 75 16 37	2840	7-16 female	53
VPol Omni	380–400	360°	7.5dBi 8.5°T	737 545	3281.5	7-16 female	54
VPol Omni	410–430	360°	8dBi 8.5°T	737 546	3114	7-16 female	55
VPol Omni	450–470	360°	8.5dBi	742 155	3113	7-16 female	56
VPol Omni	406–430	360°	10dBi	728 889	4430	7-16 female	57
VPol Omni	440–470	360°	10dBi	720 842	4175	7-16 female	57
VPol Omni	400–470	360°	4dBi	K 75 29 21	315	N female	58

737 003: VPol Omni 370–430 360° 2dBi
K 75 11 21: VPol Omni 406–470 360° 2dBi

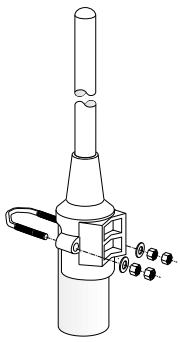
Type No.	737 003	K 75 11 21
Frequency range	370 – 430 MHz	406 – 470 MHz
Polarization	Vertical	
Gain	2 dBi	
Impedance	50 Ω	
VSWR	< 1.5	
Intermodulation IM3 (2 x 43 dBm carrier)	< –150 dBc	
Max. power	100 W (at 50 °C ambient temperature)	



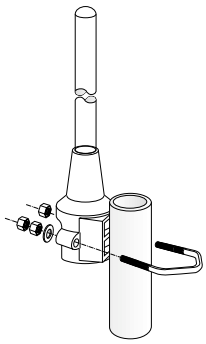
Material: Radiator: Brass.
Radome: Fiberglass, dia. 21 mm, colour: Grey.
Base: Aluminum.
Mounting U-bolt and all screws and nuts: Stainless steel.

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).

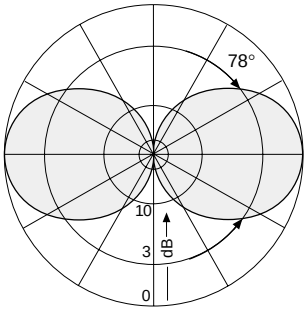
Grounding: All metal parts of the antenna including the inner conductor are DC grounded.



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

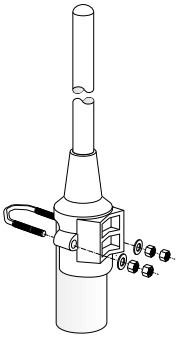
K 75 15 21 1: VPol Omni 406–430 360° 5dBi
K 75 15 22 1: VPol Omni 440–470 360° 5dBi
721 387: VPol Omni 440–470 360° 5dBi

Type No.	K 75 15 21 1	K 75 15 22 1	721 387
Frequency range	406 – 430 MHz	440 – 470 MHz	
Polarization	Vertical		
Gain	5 dBi		
Impedance	50 Ω		
VSWR	< 1.5		
Max. power	55 W	55 W	500 W
	(at 50 °C ambient temperature)		

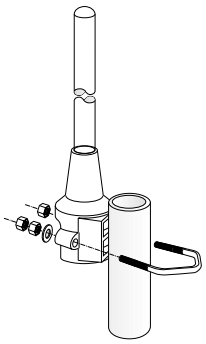
Material: Radiator: Brass.
Radome: Fiberglass, dia. 21 mm, colour: Grey.
Base: Aluminum.
Mounting U-bolt and all screws and nuts: Stainless steel.

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).

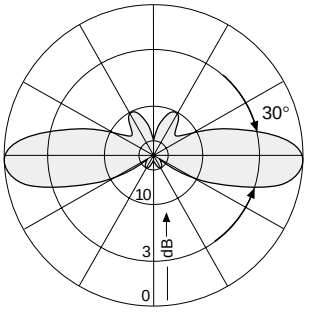
Grounding: All metal parts of the antenna including the inner conductor are DC grounded.



On the tip of a tubular mast



Laterally at the tip of a tubular mast

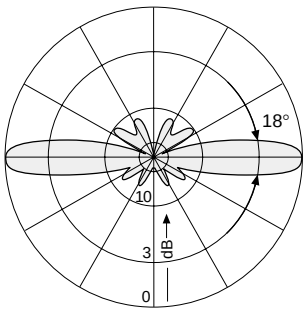


Vertical Pattern

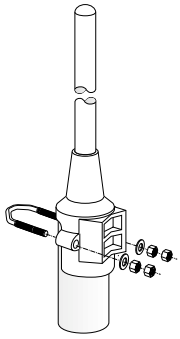
Mechanical specifications	K 75 15 21 2	K 75 15 22 1	721 387
Input	N female		
Connector position	Bottom		
Weight	1.2 kg		
Wind load	40 N (at 150 km/h)	35 N (at 150 km/h)	
Max. wind velocity	200 km/h		
Packing size [mm]	1350 x 110 x 100	1250 x 110 x 100	
Height	1273 mm	1144 mm	

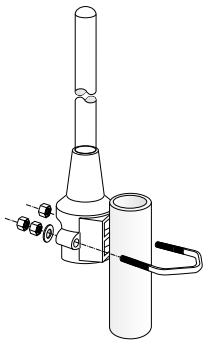
K 75 16 21 1: VPol Omni 406–430 360° 7dBi
721 388, 720 880: VPol Omni 440–470 360° 7dBi
728 888: VPol Omni 406–430 360° 7dBi

Type No.	K 75 16 21 1	721 388 720 880	728 888
Frequency range	406 – 430 MHz	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	70 W	500 W (at 50 °C ambient temperature)	



Vertical Pattern


On the tip of a tubular mast


Laterally at the tip of a tubular mast

Mechanical specifications

N female 7-16 female	K 75 16 21 1	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 [mm]	2100 x 110 x 100	112 x 97 x 2124	
Height	2020 mm	2016 mm	

Omnidirectional Antenna
Vertical Polarization

380 – 400

V

KATHREIN
Antennen · Electronic

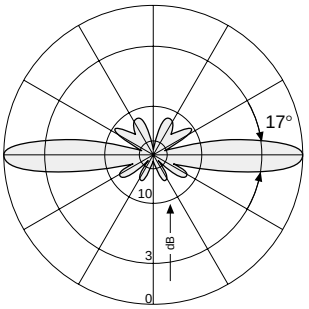
VPol Omni 380–400 360° 7.5dBi

Type No.	K 75 16 37
Frequency range	380 – 400 MHz
Polarization	Vertical
Gain	7.5 dBi
Impedance	50 Ω
VSWR	< 1.5
Max. power	500 W (at 50 °C ambient temperature)

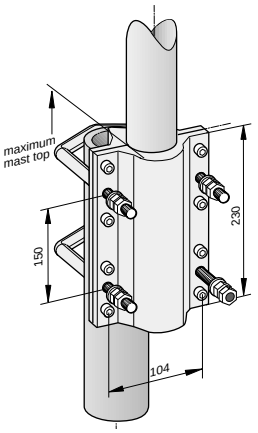
Material: Radiator: Copper and brass.
Radome: Fiberglass, dia. 51 mm, colour: Grey.
Base: Aluminum.
Mounting kit, screws and nuts: Stainless steel.

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 mm^2.
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 Elctrical Downtilt

380 – 400

V

8.5°

KATHREIN
Antennen · Electronic

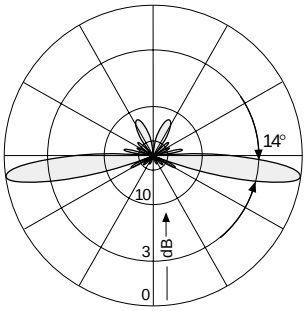
VPol Omni 380–400 360° 7.5dBi 8.5°T

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
Max. power	500 W (at 50 °C ambient temperature)

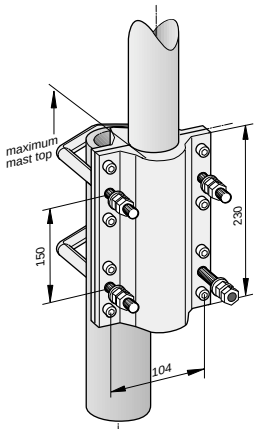
Material: Radiator: Copper and brass.
Radome: Fiberglass, colour: Grey.
Base: Weather-proof aluminum.
Mounting kit, screws and nuts: Stainless steel.

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 mm^2.
The inner conductor is capacitively coupled.



Vertical Pattern
8.5° electrical downtilt



Mechanical specifications	
Input	7-16 female
Connector position	Bottom
Weight	8.5 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	3281.5 mm

Side-mounting brackets see cataloge part “Mechanical Accessories”

Omnidirectional Antenna
Vertical Polarization
Fixed Electrical Downtilt

410 – 430

V

8.5°

KATHREIN
Antennen · Electronic

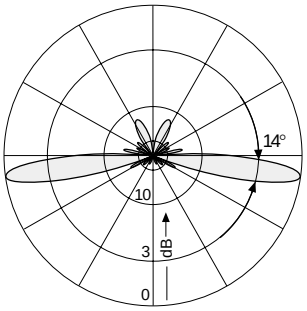
VPol Omni 410–430 360° 8dBi 8.5°T

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)

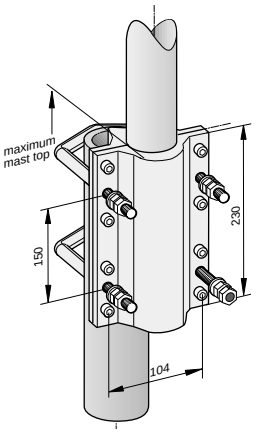
Material: Radiator: Copper and brass.
Radome: Fiberglass, colour: Grey.
Base: Weather-proof aluminum.
Mounting kit, screws and nuts: Stainless steel.

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

Side-mounting brackets see cataloge part “Mechanical Accessories”

Omnidirectional Antenna
Vertical Polarization

450 – 470

V

KATHREIN
Antennen · Electronic

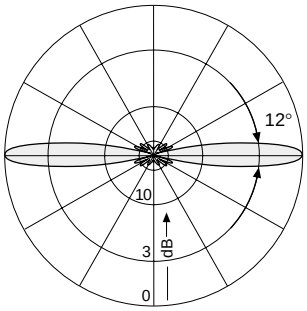
VPol Omni 450–470 360° 8.5dBi

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)

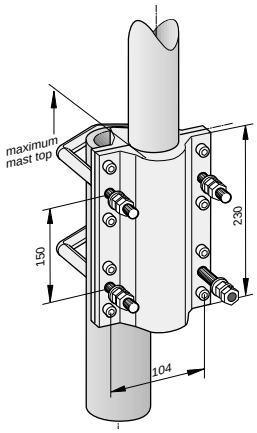
Material: Radiator: Copper and brass.
Radome: Fiberglass, colour: Grey.
Base: Weather-proof aluminum.
Mounting kit, screws and nuts: Stainless steel.

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 mm^2.
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

Side-mounting brackets see cataloge part “Mechanical Accessories”

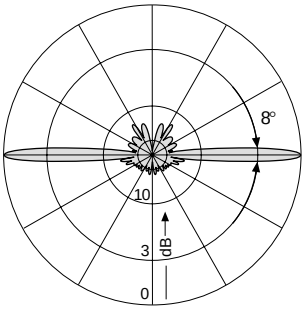
728 889: VPol Omni 406–430 360° 10dBi
720 842: VPol Omni 440–470 360° 10dBi

Type No.	728 889	720 842
Frequency range	406 – 430 MHz	440 – 470 MHz
Polarization	Vertical	
Gain	10 dBi	
Impedance	50 Ω	
VSWR	< 1.5	
Max. power	500 W (at 50 °C ambient temperature)	

Material: Radiator: Brass.
Radome: Fiberglass, dia. 30 – 52 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 65 – 105 mm dia. (connecting cable runs inside the mast).
2. Laterally at the tip of any tubular mast of 30 – 90 mm dia. (connecting cable runs outside the mast).

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



Vertical Pattern

Mechanical specifications	728 889	720 842
Input	7-16 female	
Connector position	Bottom	
Weight	7.0 kg	6.5 kg
Radome diameter	30 – 52 mm	
Wind load	240 N (at 150 km/h)	230 N
Max. wind velocity	150 km/h	
Packing size	4600 x 198 x 152 mm	
Height	4430 mm	4175 mm

Omnidirectional Off-set Antenna
Vertical Polarization

400 – 470

V

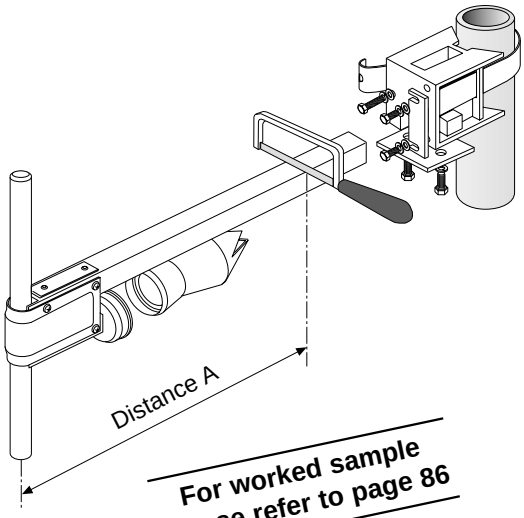
KATHREIN
Antennen · Electronic

- **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 400–470 360° 4dBi

Type No.	K 75 29 21
Frequency range	400 – 470 MHz
Polarization	Vertical
Gain	4 dBi
Impedance	50 Ω
VSWR	< 1.5
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.



For worked sample please refer to page 86

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

Side-mounting brackets see cataloge part “Mechanical Accessories”

Summary – Indoor Antennas
Vertical Polarization

KATHREIN
Antennen · Electronic

Indoor Omnidirectional Antennas – Single-band

Type				Type No.	Height [mm]	Input	Page
VPol Indoor	406–430	360°	2dBi	737 299	400	cable termination	60
VPol Indoor	450–470	360°	2dBi	736 831	360	cable termination	60
VPol Omni	370–430	360°	2dBi	737 003	552	N female	61
VPol Omni	406–470	360°	2dBi	K 75 11 21	510	N female	61

Indoor Directional Antennas – Single-band

Type				Type No.	Height [mm]	Input	Page
VPol Indoor	380–405	90°	7dBi	800 10278	292	N female	62
VPol Indoor	405–430	90°	7dBi	800 10330	292	N female	63

Kathrein Train Antennas – a Solution also for Indoor Applications

please refer to part “Technical Information”, page 82

737 299: VPol Indoor 406–430 360° 2dBi
736 831: VPol Indoor 450–470 360° 2dBi

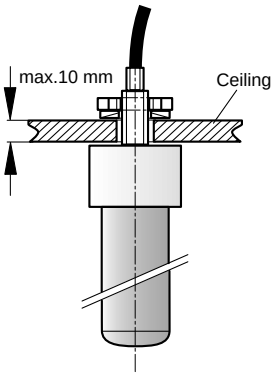
Type No.	737 299	736 831
Frequency range	406 – 430 MHz	450 – 470 MHz
Polarization	Vertical	
Gain	2 dBi	
Impedance	50 Ω	
VSWR	< 1.5	
Intermodulation IM3 (2 x 43 dBm carrier)	< –150 dBc	
Max. power	50 W (at 50 °C ambient temperature)	

Material: Dipole: Brass.
Radome: Fiberglass, colour: White.
Additional mounting plate: Aluminum.

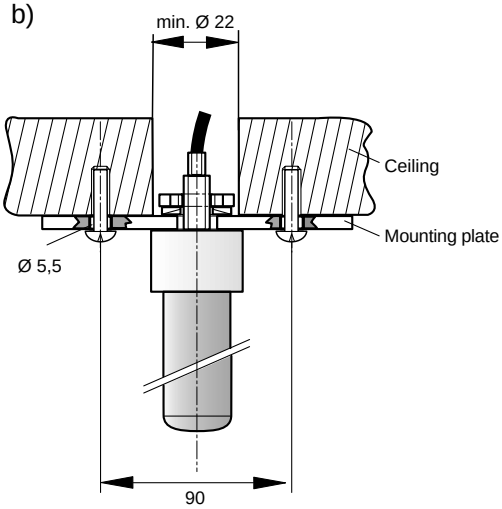
Mounting:
a) Single-hole mounting (12 mm diameter) on surface of up to 10 mm thickness.
b) On surfaces of more than 10 mm thickness, by means of mounting plate included in the scope of delivery.

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

a)



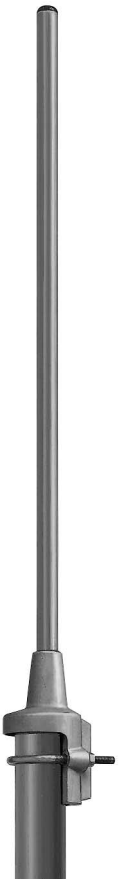
b)



Mechanical specifications	737 299	736 831
Input	Cable RG 58/CU of 1 m length, grey, connector is not supplied	
Weight	0.25 kg	0.23 kg
Radome diameter	20 mm	
Mounting plate	115 x 25 mm	
Packing size	Foil: 650 x 130 mm	
Height	400 mm	360 mm

737 003: VPol Omni 370–430 360° 2dBi
K 75 11 21: VPol Omni 406–470 360° 2dBi

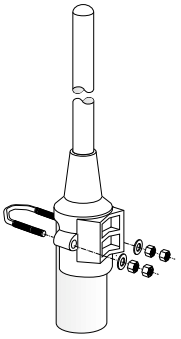
Type No.	737 003	K 75 11 21
Frequency range	370 – 430 MHz	406 – 470 MHz
Polarization	Vertical	
Gain	2 dBi	
Impedance	50 Ω	
VSWR	< 1.5	
Intermodulation IM3 (2 x 43 dBm carrier)	< –150 dBc	
Max. power	100 W (at 50 °C ambient temperature)	



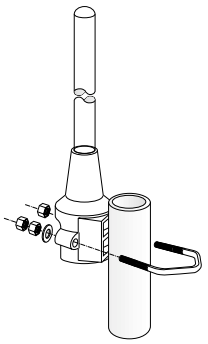
Material: Radiator: Brass.
Radome: Fiberglass, dia. 21 mm, colour: Grey.
Base: Aluminum.
Mounting U-bolt and all screws and nuts: Stainless steel.

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).

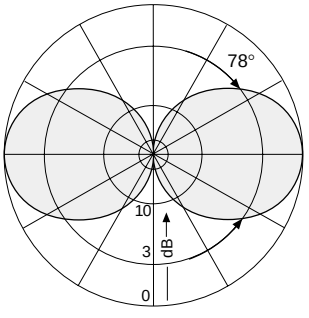
Grounding: All metal parts of the antenna including the inner conductor are DC grounded.



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

Indoor Directional Antenna
Vertical Polarization
Half-power Beam Width

380 – 405

V

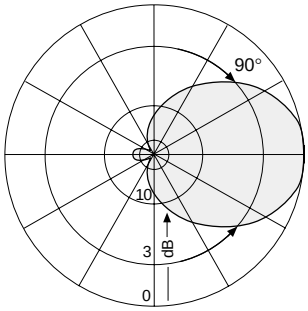
90°

KATHREIN
Antennen · Electronic

VPol Indoor 380–405 90° 7dBi

Type No.	800 10278
Frequency range	380 – 405 MHz
Polarization	Vertical
Gain	≈ 7 dBi
Half-power beam width	Horizontal: ≈ 90°
Impedance	50 Ω
VSWR	< 2.0
Max. power	50 W (at 50 °C ambient temperature)
Input	N female connector
Protection class	IP 30
Weight	500 g
Packing size	approx. 320 x 250 x 60 mm
Height/width/depth	approx. 290 x 240 x 45 mm

Material:	Reflector: Aluminum. Radome: PS, 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.



Horizontal Pattern

Indoor Directional Antenna
Vertical Polarization
Half-power Beam Width

405 – 430

V

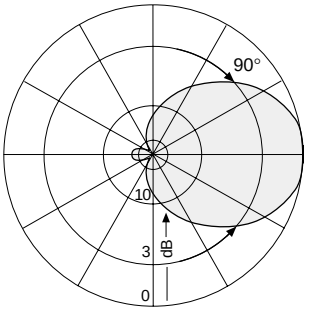
90°

KATHREIN
Antennen · Electronic

VPol Indoor 405–430 90° 7dBi

Type No.	800 10330
Frequency range	405 – 430 MHz
Polarization	Vertical
Gain	≈ 7 dBi
Half-power beam width	Horizontal: ≈ 90°
Impedance	50 Ω
VSWR	< 2.0
Max. power	50 W (at 50 °C ambient temperature)
Input	N female connector
Protection class	IP 30
Weight	500 g
Packing size	approx. 320 x 250 x 60 mm
Height/width/depth	approx. 290 x 240 x 45 mm

Material:	Reflector: Aluminum. Radome: PS, 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.



Horizontal Pattern

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	66
3-way Splitter	75 MHz	K 62 56 41	68 – 88 MHz	1055 mm	N female	960 Watt	66
4-way Splitter	75 MHz	K 62 57 41	68 – 88 MHz	1195 mm	N female	960 Watt	66

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	66
3-way Splitter	150 MHz	K 62 56 21	146 – 174 MHz	630 mm	N female	680 Watt	66
4-way Splitter	150 MHz	K 62 57 21	146 – 174 MHz	730 mm	N female	680 Watt	66

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	67
2-way Splitter	450 MHz	K 63 20 22 7	380 – 512 MHz	409 mm	7-16 female	1000 Watt	67
3-way Splitter	450 MHz	K 63 20 23 1	380 – 512 MHz	409 mm	N female	500 Watt	67
3-way Splitter	450 MHz	K 63 20 23 7	380 – 512 MHz	409 mm	7-16 female	1000 Watt	67
4-way Splitter	450 MHz	K 63 20 24 1	380 – 512 MHz	409 mm	N female	500 Watt	67
4-way Splitter	450 MHz	K 63 20 24 7	380 – 512 MHz	409 mm	7-16 female	1000 Watt	67

Filter products summary
Combiners, Filters, Duplexers …

For detailed information see the catalogues "Filters, Combiners, Amplifiers for Mobile Communications"

68 + 69

For outdoor and indoor use.

2-way Splitter 75
3-way Splitter 75
4-way Splitter 75

Type No.	K 62 55 41	K 62 56 41	K 62 57 41
Connector (female)	N		
Max. power	960 W		
	(at 50 °C ambient temperature)		
For connecting ... antennas	2	3	4
Frequency range	68 – 88 MHz		
VSWR	< 1.1		
Impedance	50 Ω		
Insertion loss	< 0.05 dB		
Length L	950 mm	1055 mm	1195 mm

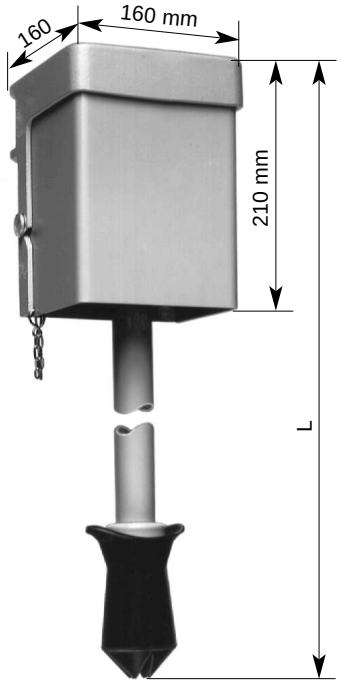
For outdoor and indoor use.

2-way Splitter 150
3-way Splitter 150
4-way Splitter 150

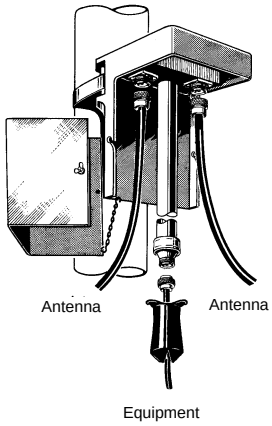
Type No.	K 62 55 21	K 62 56 21	K 62 57 21
Connector (female)	N		
Max. power	680 W		
	(at 50 °C ambient temperature)		
For connecting ... antennas	2	3	4
Frequency range	146 – 174 MHz		
VSWR	< 1.1		
Impedance	50 Ω		
Insertion loss	< 0.05 dB		
Lenth L	530 mm	630 mm	730 mm

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

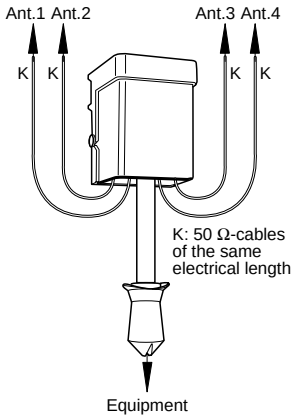
Mounting: On tubular masts of 60 – 320 mm dia. OD
by means of non-corrosive clamp-strap
(1020 x 20 x 1 mm, supplied).
Transformers with a total length of over 700 mm
are delivered with a supporting clamp.



Example for 2-way antenna splitter



Example for 4-way antenna splitter



For outdoor and indoor use.

2-way Splitter 390/420/450

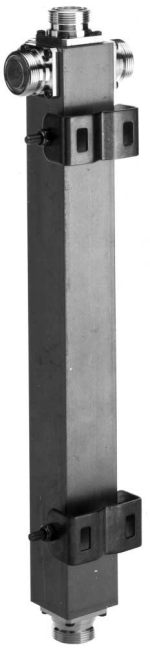
3-way Splitter 390/420/450

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
718 785	400 ... 470 MHz
718 290	400 ... 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	389 ... 470 MHz
K 65 41 26	380 ... 470 MHz
782 10197	380 – 385 / 390 – 395 MHz
782 10198	385 – 390 / 395 – 400 MHz
790 752	410 – 415 / 420 – 425 MHz
791 055	410 – 415 / 420 – 425 MHz
791 104	415 – 420 / 425 – 430 MHz
791 607	415 – 420 / 425 – 430 MHz
792 025	450 – 455/ 460 – 465 MHz

718 628

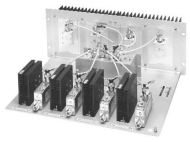
K 64 41 23

790 752

782 10197

Hybrid Transmitter Combiner

792 067	4 x 100 W	146 – 174 MHz
791 652	4 x 100 W	400 – 470 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

728 954

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

K 63 73 21 1

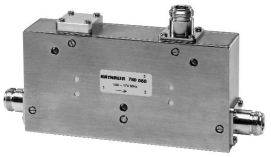
Decoupled Power Splitter

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

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



780 060

DC-stop

721 062	68 – 470 MHz

721 062

50-Ohm Loads

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

Receiver Multicoupler

780 234	8 outputs	68 – 87.5 MHz
780 232	8 outputs	146 – 174 MHz
727 621	8 outputs	400 – 470 MHz

727 621

Summary – Mechanical Accessories
Clamps, Downtilt Kits ...

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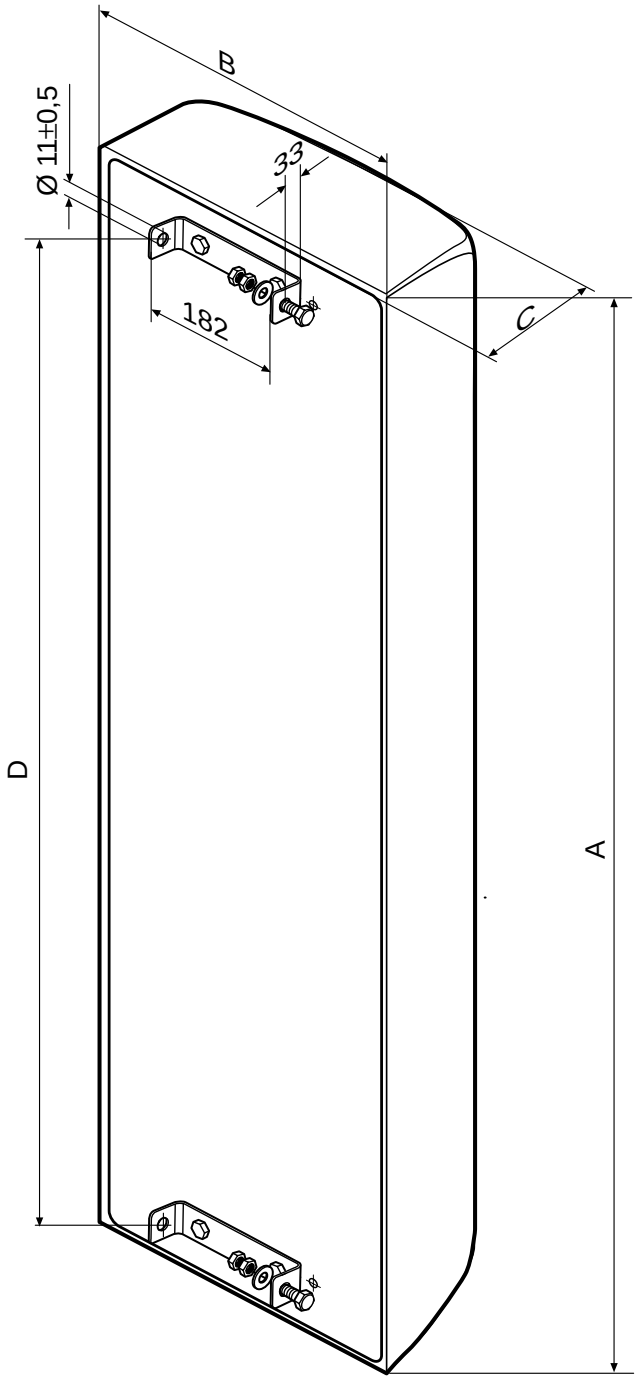
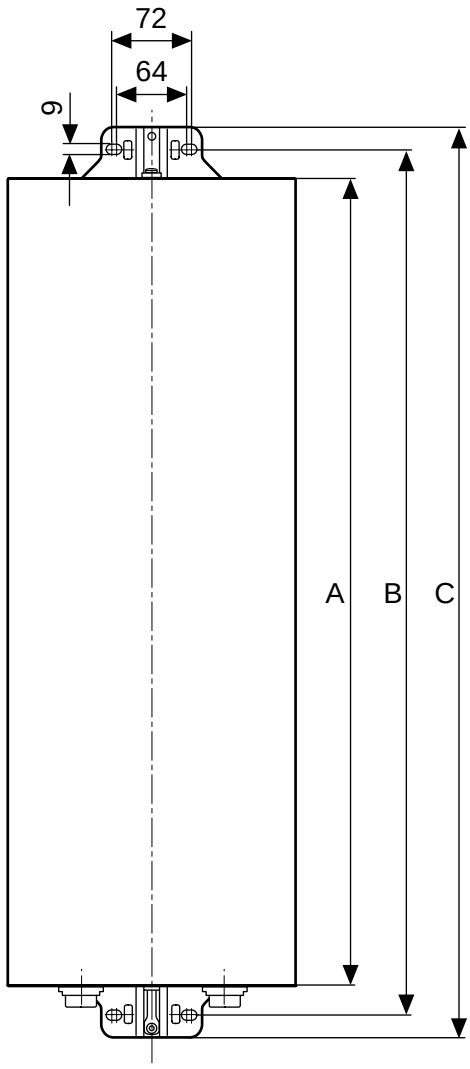
VPol Panel 63° / 65° / 180°
XPol Panel 65°

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

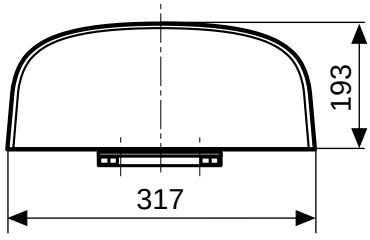
XPol Panel 88°

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



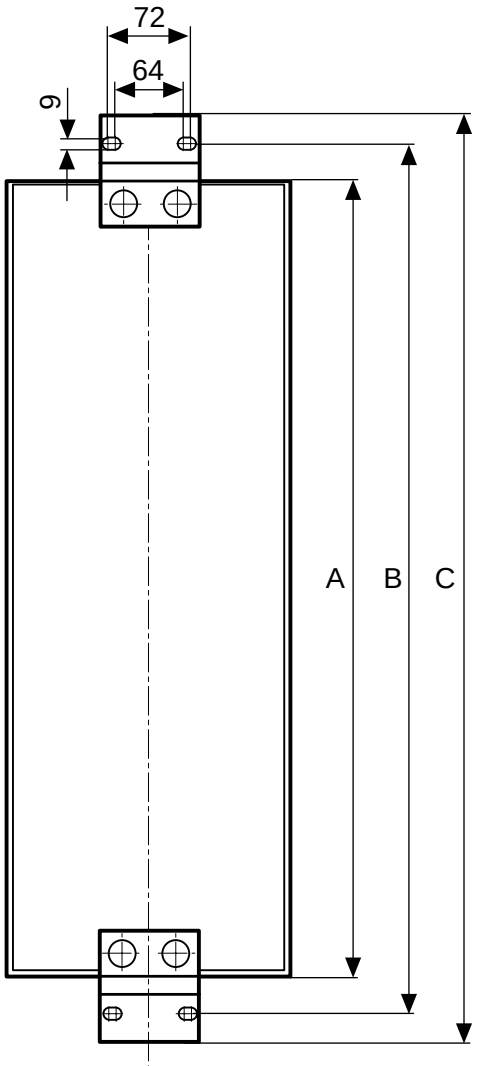


Top view

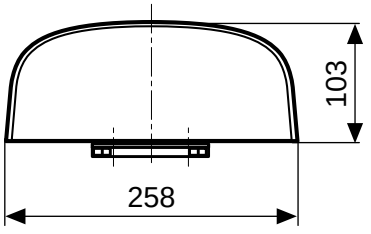


VPol Panel 115° – Eurocell Panel

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



Top view



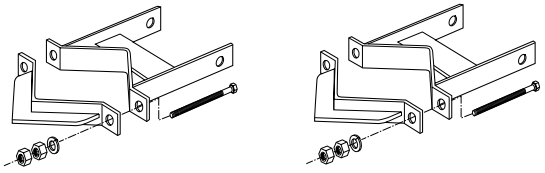
Mounting Hardware for Directional Antennas
VPol Panel 63° / 65° 120°
XPol Panel 65°

KATHREIN
Antennen · Electronic

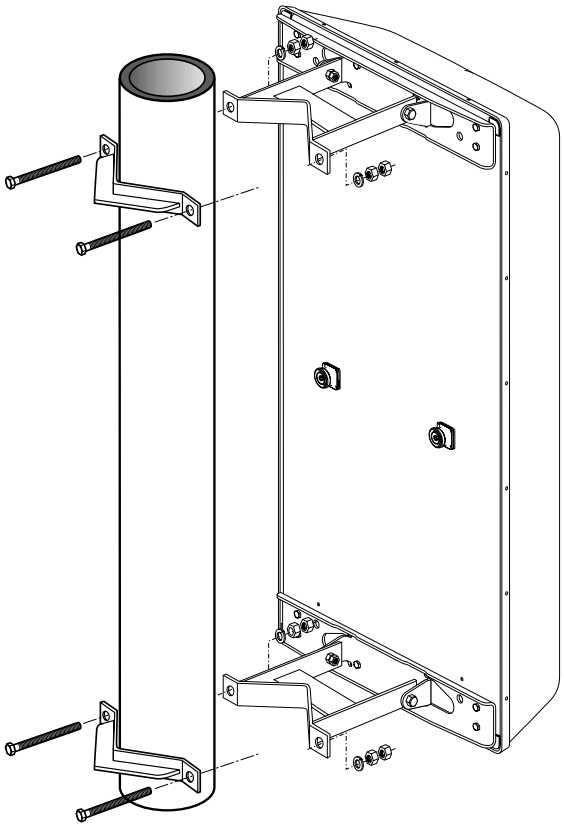
Mounting clamps/Downtilt kit
(order separately)

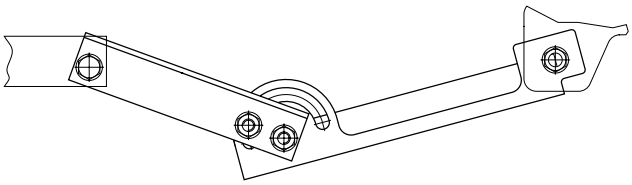
Type No. (Pair of clamps)	Suitable for pipe masts of ... mm diameter	Weight kg
K 61 14 01	40 – 95	2.6
K 61 14 02	60 – 116	2.6
K 61 14 03	116 – 210	4.0
K 61 14 04	210 – 380	7.2
K 61 14 05	380 – 521	10.2
733 695	Downtilt (to be used with a suitable pair of clamps for the individual mast diameter!)	

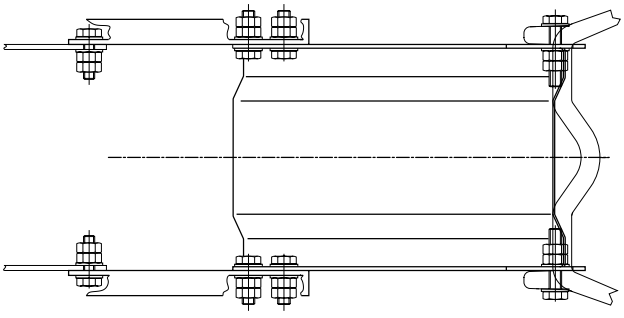
Antenna Height	Downtilt Angle
992 mm	0° – 22°
1983 mm	0° – 11°



Pair of clamps K 61 14 03

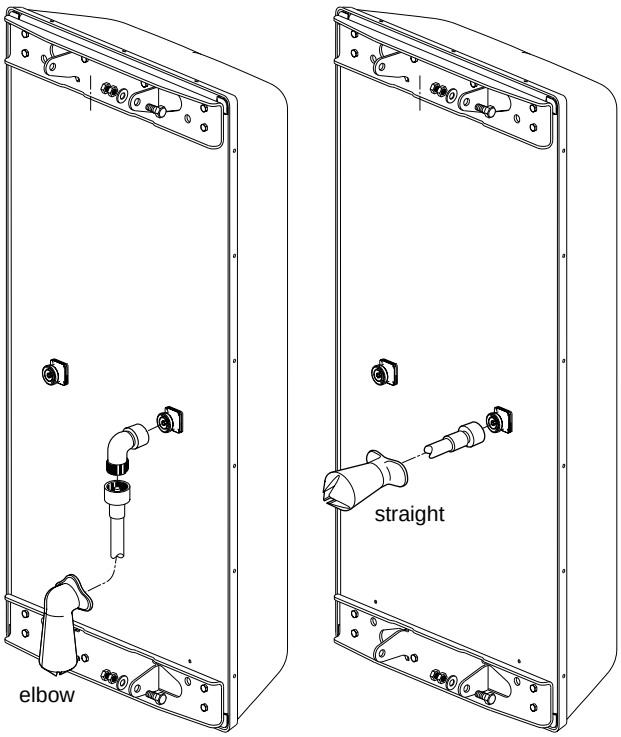






Downtilt kit 733 695

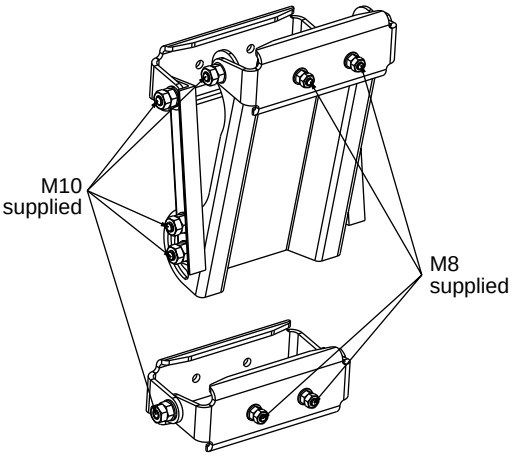
Weather-proof cover for elbow and straight connectors are supplied.



Mounting Hardware for Directional Antennas XPol Panel 88°

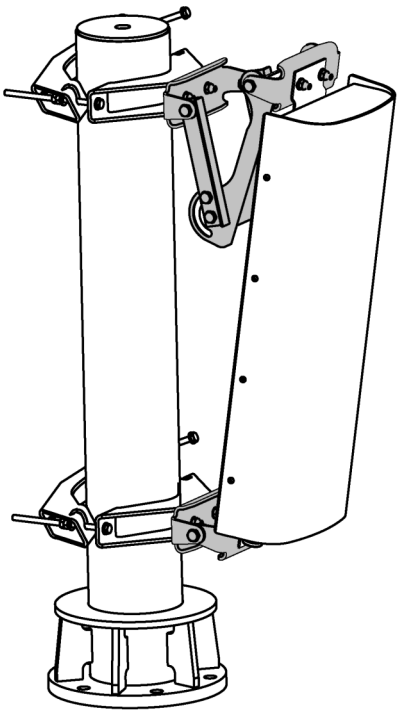
KATHREIN
Antennen · Electronic

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:

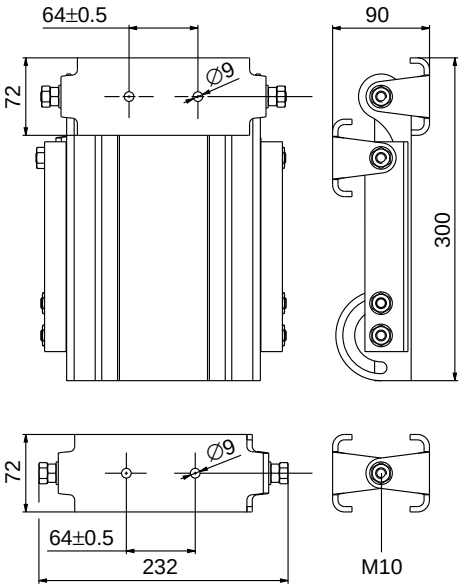
Screw size	Torque
M8	12 Nm
M10	26 Nm

Maximum acceptable load:

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

Downtilt angle

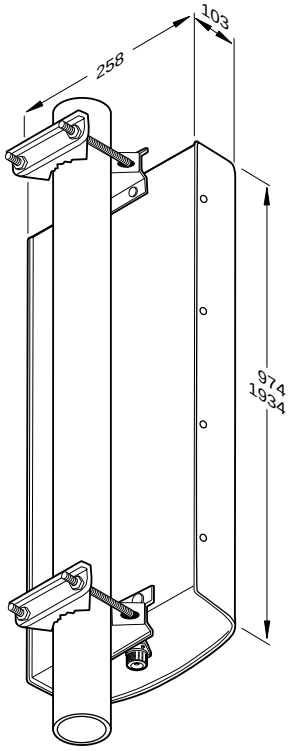
Antenna height	Downtilt angle
1000 mm	0° – 15°
2058 mm	0° – 11°

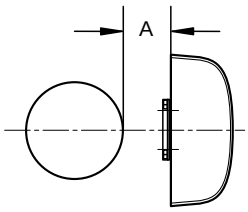


Mounting Hardware for Directional Antennas
VPol Panel 115°
Downtilt kits

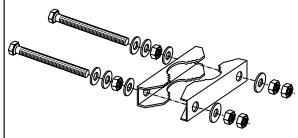
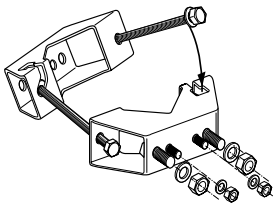
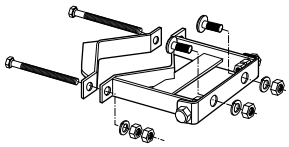
KATHREIN
Antennen · Electronic

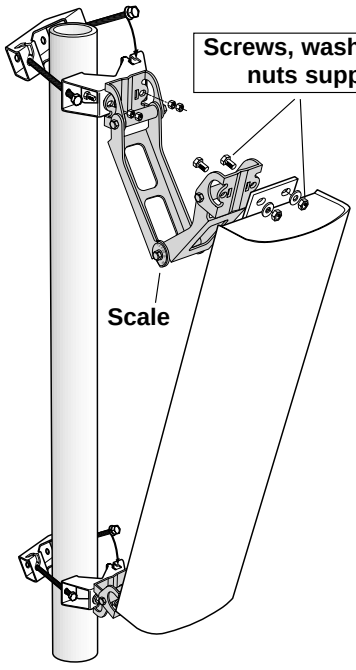
Antenna Height: 974 mm – 1934 mm





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
new	110 – 220 mm	**850 10002**	47 – 56	2.7 kg	see sketch
new	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

731 651	738 546	733 677 ... 733 680
		



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.

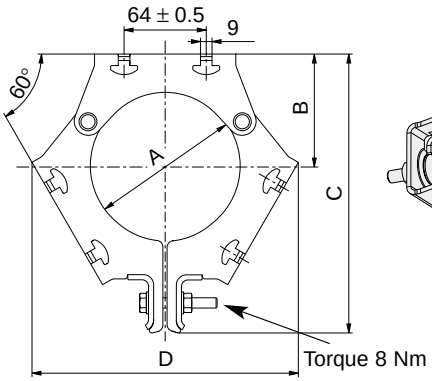
Eurocell Panels
3 Sector Panel Arrangement – Mounting Hardware
3 Sector Clamp Kit / Pipe Mast with Flange Base

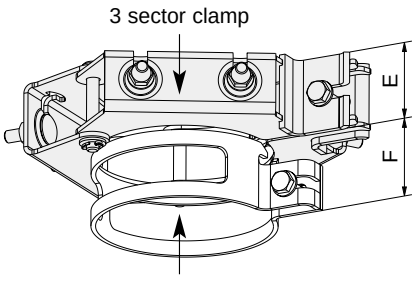
KATHREIN Antennen · Electronic

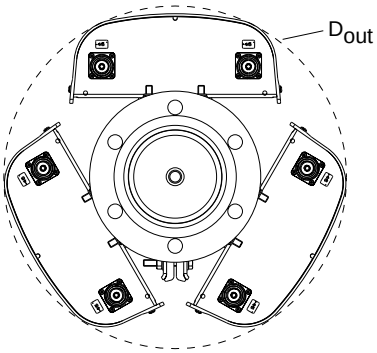
- Slim and unobstrusive design
- Nearly cylindrical optical appearance with small outer diameter

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 – 3 sector clamp – Mounting support clamp – Screws	Hot-dip galvanized steel Aluminum Stainless steel	Hot-dip galvanized steel Aluminum Stainless steel
Outer diameter (D_{out}) of the 3 A-Panel Arrangement	420 mm	441 mm
Weight – Clamp kit – 3 sector clamp	3.0 kg 1.4 kg	3.2 kg 1.5 kg



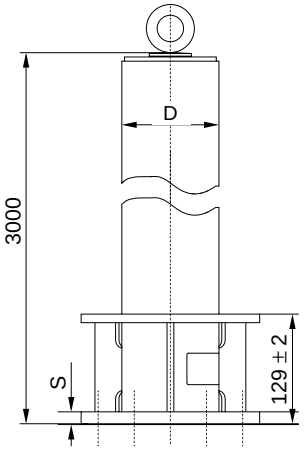




Bottom view without downtilt kit

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

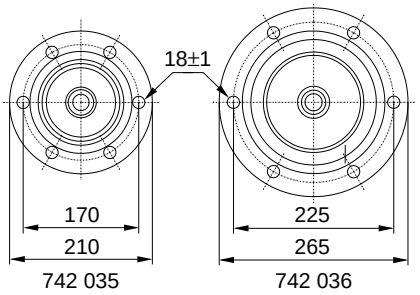
all dimensions in mm



Pipe Mast with Flange Base

Type No.		742 035	742 036
Pipe diameter according DIN 2448	D	114.3 mm	139.7 mm
Wall thickness pipe		6.3 mm	4 mm
Pipe length		3000 mm	3000 mm
Flange diameter		210 mm	265 mm
Flange thickness	S	14 ± 1 mm	19 ± 1 mm
Hole circle diameter		170 mm	225 mm
Number of holes		6	6
Hole diameter		18 ± 1 mm	18 ± 1 mm
Enclosed bolts thread x length Hot-dip galvanized steel		M16 x 100 mm Quality min. 8.8	M16 x 100 mm 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

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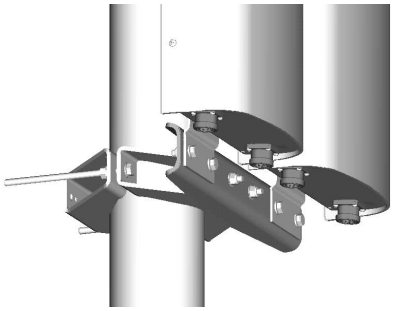
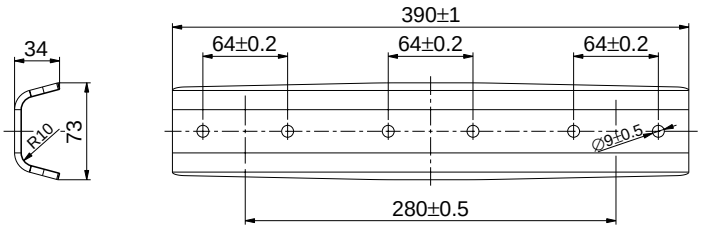
Antennen · Electronic

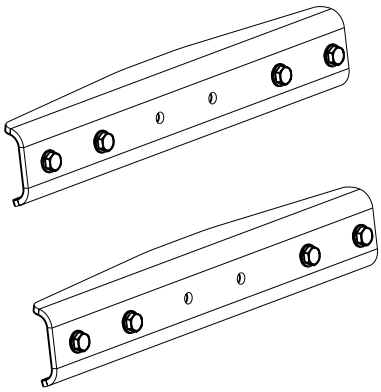
Use this mounting kit only for antennas less than 25 kg each.

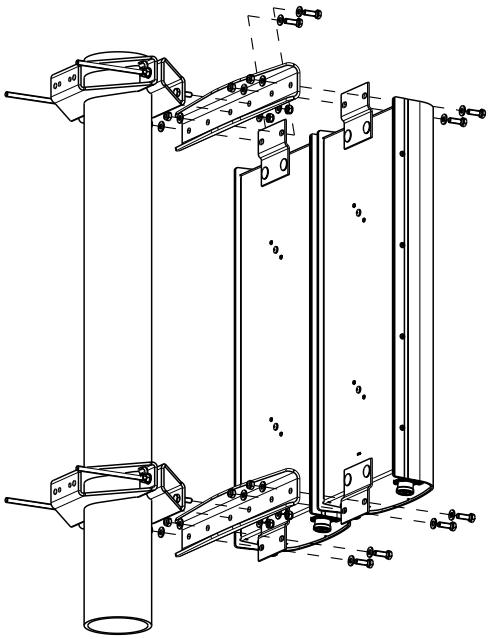


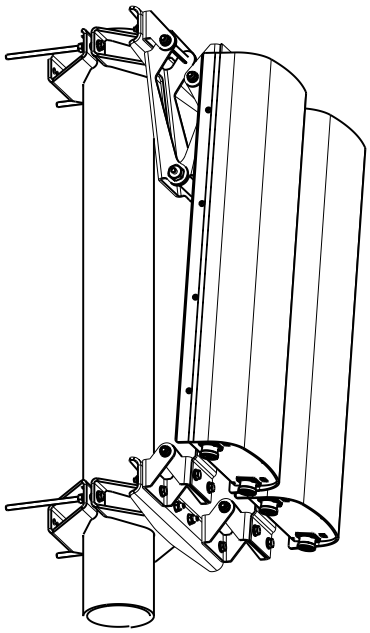
Type No.	850 10006
No. of pieces	2 x brackets
Suitable for A-/C-Panels 65°, 90° with a max. height	2.6 m
Material: – Clamp – Screws	Hot-dip galvanized steel Stainless steel
Weight	Approx. 3.3 kg
Mounting	Screws are supplied

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

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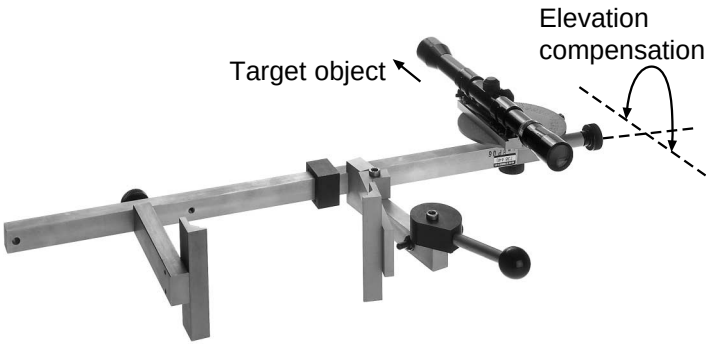
Antennen · Electronic

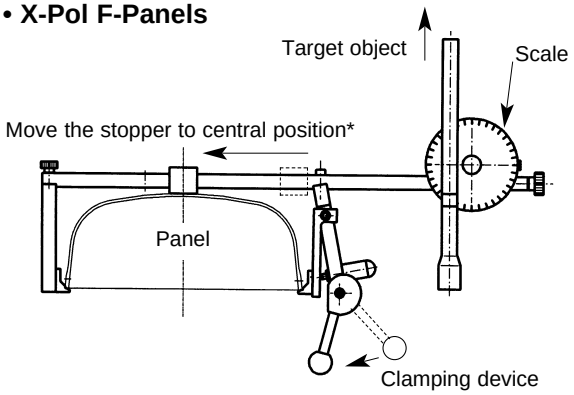
Type No. 738 440

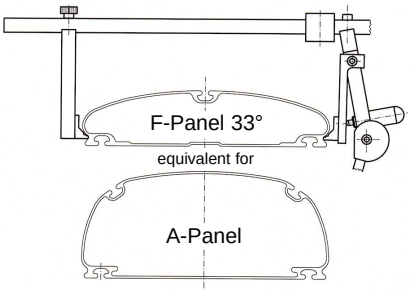
Precise azimuth adjustment for mast mounted antennas can easily be achieved by using the azimuth adjustment tool.

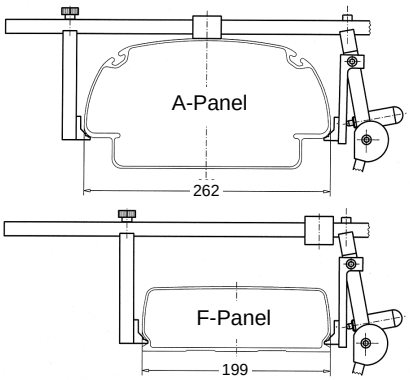
This tool is suitable to all types of Eurocell Panels

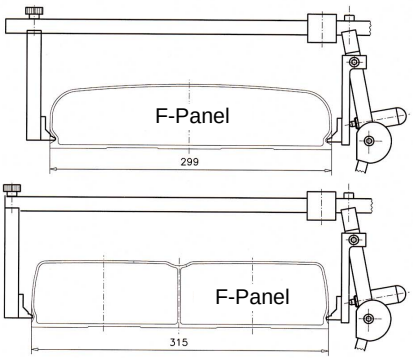
- **Panels**
- **A-Panels**
- **C-Panels**
- **F-Panels**
- **X-Pol F-Panels**

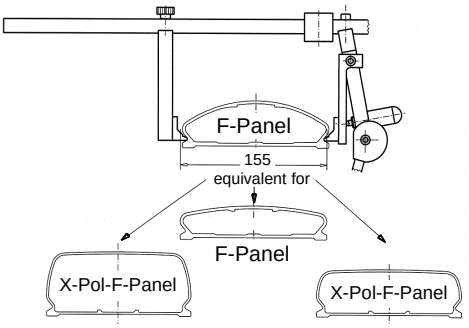












Instruction:

– 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.

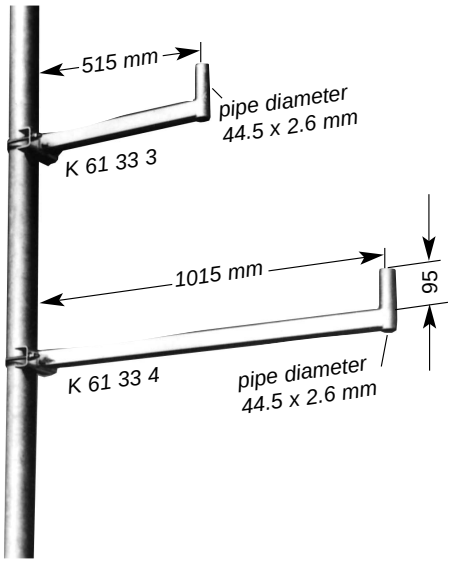
– Then rotate the antenna until the target object appears in the telescope.

* 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 86 and 87)

Bracket with fixed spacing

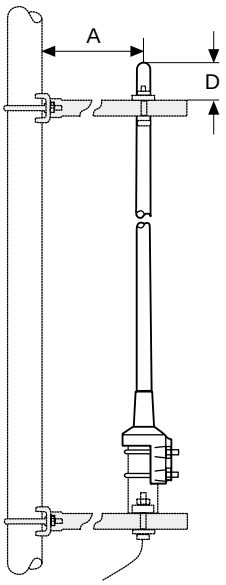
Type No.	K 61 33 3	716 192	K 61 33 4	713 645
Weight	2 kg	7 kg	3.2 kg	8.5 kg
Distance A:	500 mm		1000 mm	
Suitable for antennas with a maximum wind load of	215 N (at 150 km/h)		85 N (at 150 km/h)	
Suitable for antennas with	mounting kit to pipe masts of 20 – 54 mm diameter.			
Attachment	By means of mounting 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
Distance A: max.	680 mm		240 mm
Suitable for	antennas with mounting kit to pipe masts of 20 – 54 mm diameter	30 – 90 mm diameter	50 – 94 mm diameter
Attachment	By means of mounting kit (supplied) to pipes of 55 mm – 105 mm diameter		40 – 105 mm diameter
Material	Hot-dip galvanized steel.		
Wind load	45 N (at 150 km/h)	100 N (at 150 km/h)	65 N (at 150 km/h)

A: 125 … 680 mm
D: 450 mm



Double Bracket

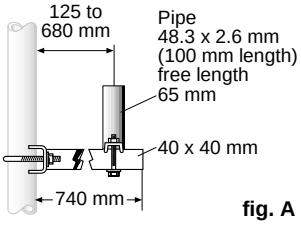


fig. A

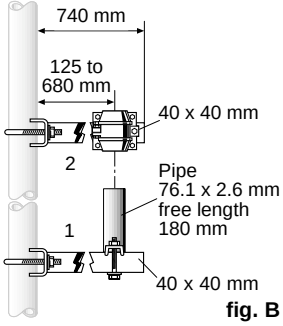


fig. B

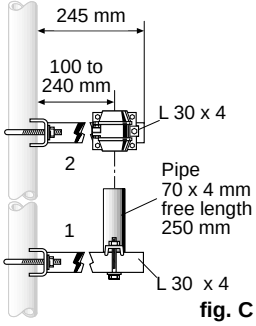


fig. C

Summary of Technical Information

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Kathrein Train Antennas – a Solution also for Indoor Applications

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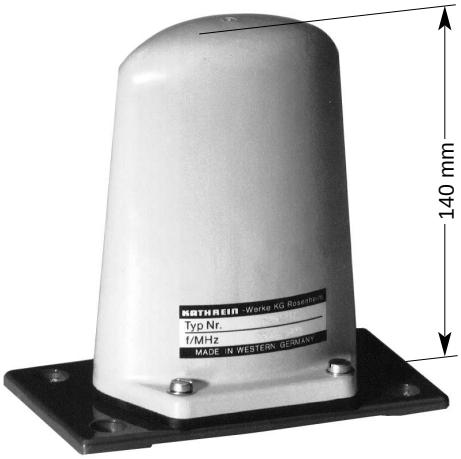
Kathrein train antennas has been implemented on indoor systems all over the world.

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

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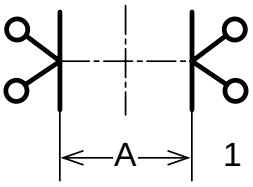
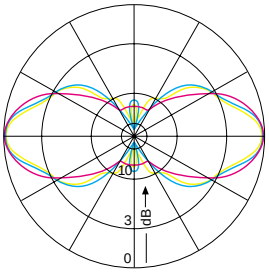
Arrangement	Horizontal Radiation Pattern	Technical Data

1

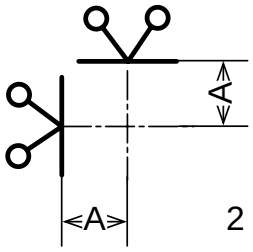


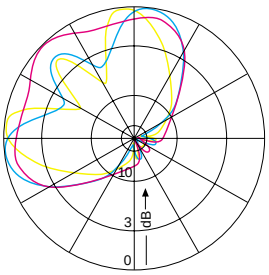


Spacing A	100 % rel. field strength corresponds to a gain* of	
	1 bay	2 bays
0.5 m	5.4 dB	8.4 dB
2.0 m	5.2 dB	8.2 dB
4.0 m	5.4 dB	8.4 dB

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

2

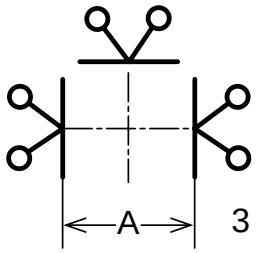


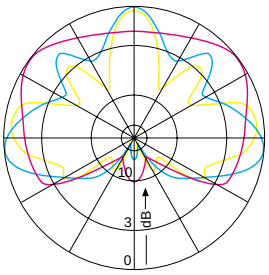


Spacing A	100 % rel. field strength corresponds to a gain* of	
	1 bay	2 bays
0.7 m	4.8 dB	7.8 dB
1.4 m	5.5 dB	8.5 dB
2.0 m	6.1 dB	9.1 dB

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

3

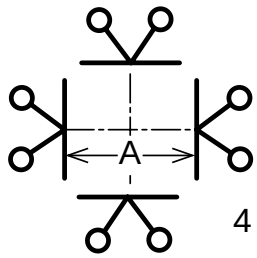


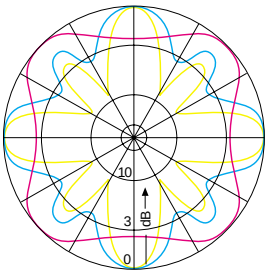


Spacing A	100 % rel. field strength corresponds to a gain* of	
	1 bay	2 bays
1.4 m	3.3 dB	6.3 dB
2.8 m	4.0 dB	7.0 dB
4.0 m	5.0 dB	8.0 dB

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

4





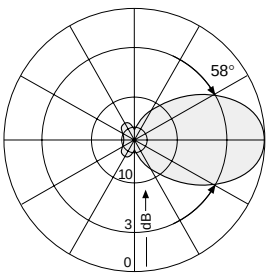
Spacing A	100 % rel. field strength corresponds to a gain* of	
	1 bay	2 bays
1.4 m	1.8 dB	4.8 dB
2.8 m	2.6 dB	5.6 dB
4.0 m	4.0 dB	7.0 dB

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

* ref. $\lambda/2$ dipole

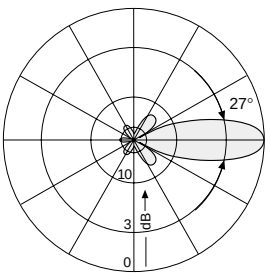
Vertical Radiation Pattern of the Arrangements 1,2,3 and 4

1 Bay



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

2 Bays
(Vertical spacing 0.96 λ = 1.8 m)



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

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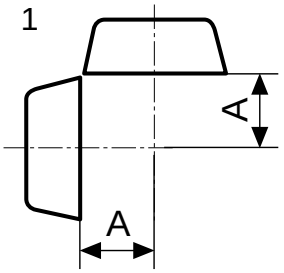
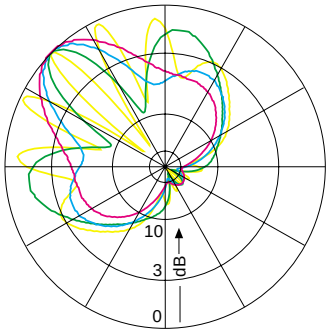
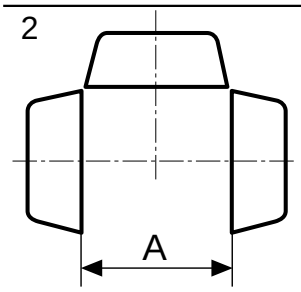
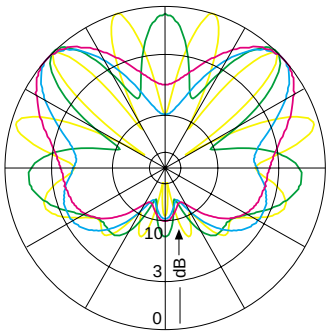
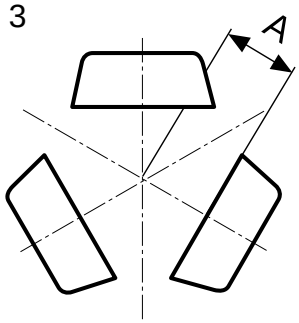
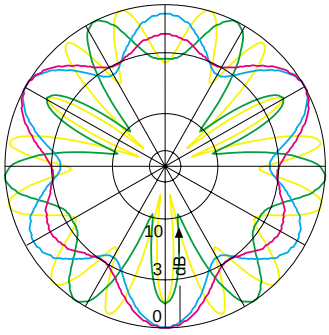
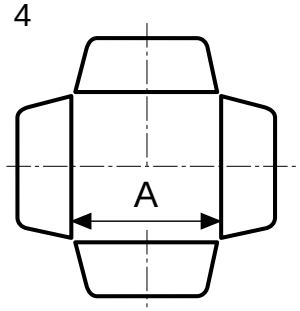
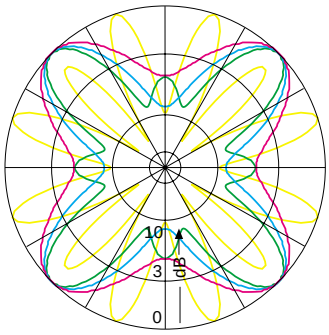
Array	Horizontal Radiation Pattern	Technical Data
1 		**Distance A** — 100% rel. field strenght corresponds to a gain of 0.16 m — 9.85 dBi 0.25 m — 9.95 dBi 0.5 m — 9.45 dBi 1.5 m — 9.55 dBi
2 		**Distance A** — 100% rel. field strenght corresponds to a gain of 0.32 m — 7.75 dBi 0.5 m — 8.15 dBi 1.0 m — 7.85 dBi 2.0 m — 7.95 dBi
3 		**Distance A** — 100% rel. field strenght corresponds to a gain of 0.16 m — 5.85 dBi 0.22 m — 5.75 dBi 0.65 m — 6.55 dBi 1.1 m — 6.35 dBi
4 		**Distance A** — 100% rel. field strenght corresponds to a gain of 0.32 m — 6.15 dBi 0.5 m — 7.15 dBi 0.8 m — 7.65 dBi 2.1 m — 7.35 dBi

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

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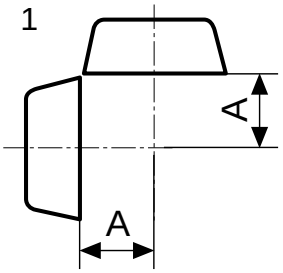
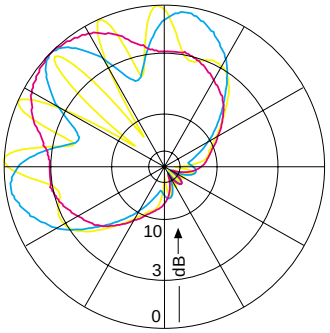
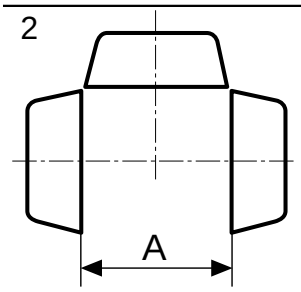
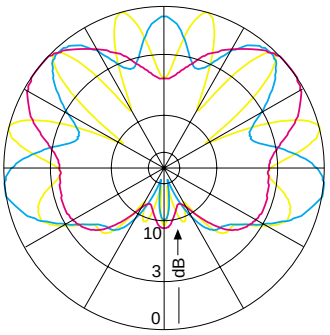
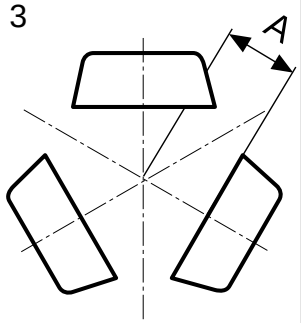
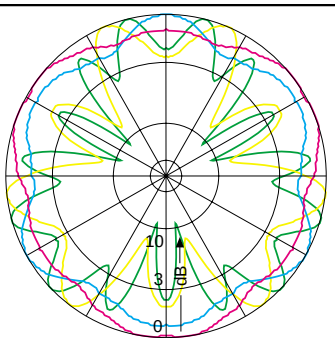
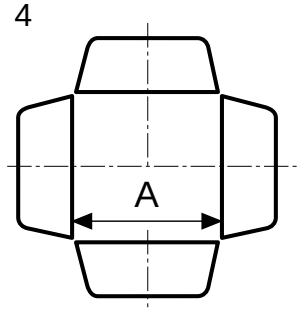
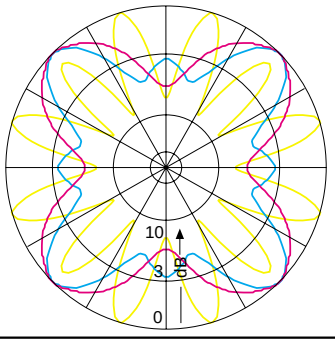
Array	Horizontal Radiation Pattern	Technical Data
1 		**Distance A** — 100% rel. field strenght corresponds to a gain of 0.25 m — 9.55 dBi 0.5 m — 9.35 dBi 1.5 m — 9.85 dBi
2 		**Distance A** — 100% rel. field strenght corresponds to a gain of 0.5 m — 8.05 dBi 1.0 m — 7.75 dBi 2.0 m — 8.35 dBi
3 		**Distance A** — 100% rel. field strenght corresponds to a gain of 0.16 m — 5.45 dBi 0.22 m — 5.75 dBi 0.65 m — 6.95 dBi 1.1 m — 6.95 dBi
4 		**Distance A** — 100% rel. field strenght corresponds to a gain of 0.5 m — 6.85 dBi 0.8 m — 7.35 dBi 2.1 m — 7.45 dBi

Radiation Patterns
for Side-mounted Omnidirectional Antennas

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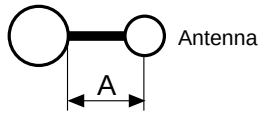
Examples of horizontal radiation patterns for different mast diameters where A = 0.25 λ; 0.5 λ; 0.75 λ. Examples also apply for antenna K 75 29 2 .

Distance A:

Tubular mast

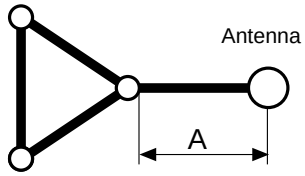


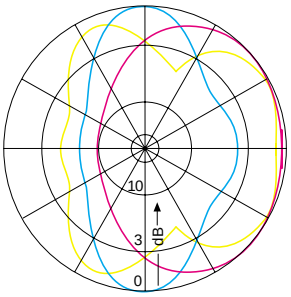
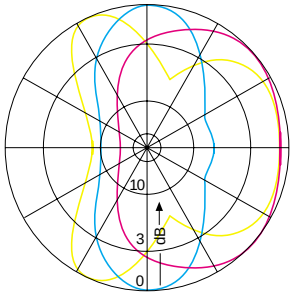
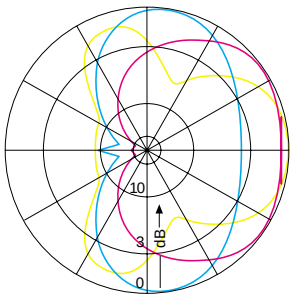
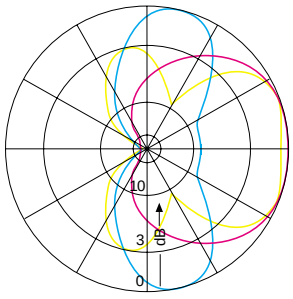
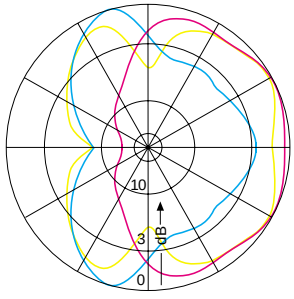
A = 0.25 λ

A = 0.5 λ

A = 0.75 λ

Triangular lattice mast



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

Isolation Between Two Half-wave Dipoles

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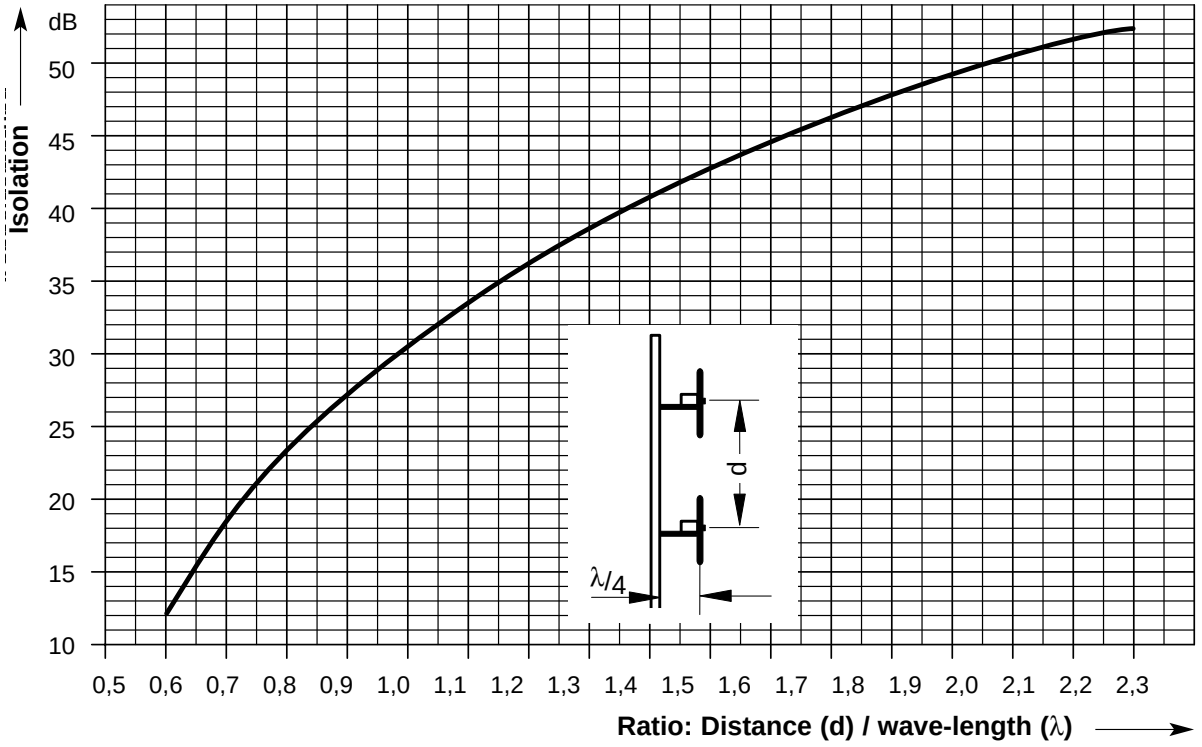
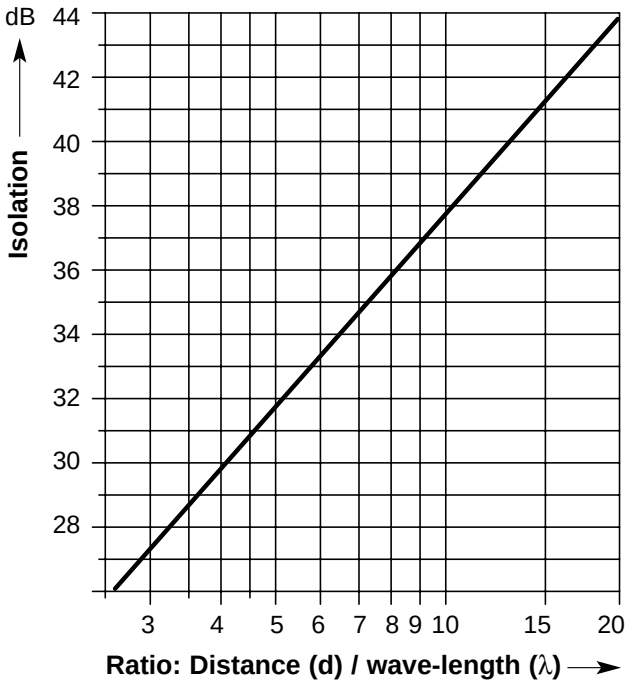
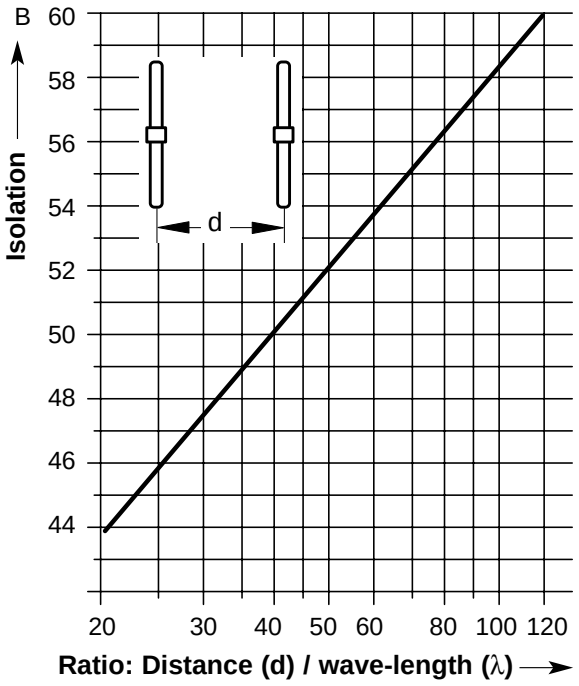
Isolation between two half-wave dipoles, vertically polarized and positioned vertically in line above each other on one common mast.



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





Isolation
of Two Vertically Stacked Panels K 73 30 2.

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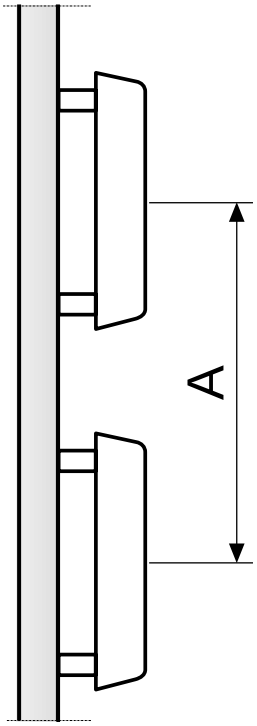

Isolation depends on vertical spacing A (at 450 MHz)

Antenna Gain, VSWR / Reflected power

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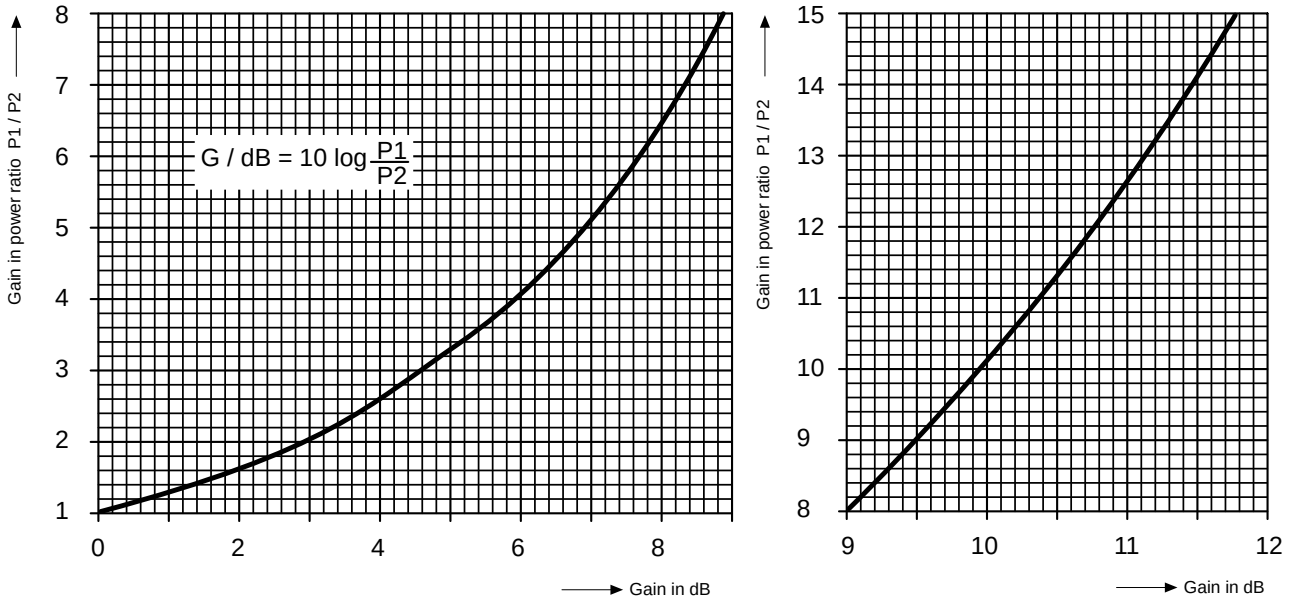
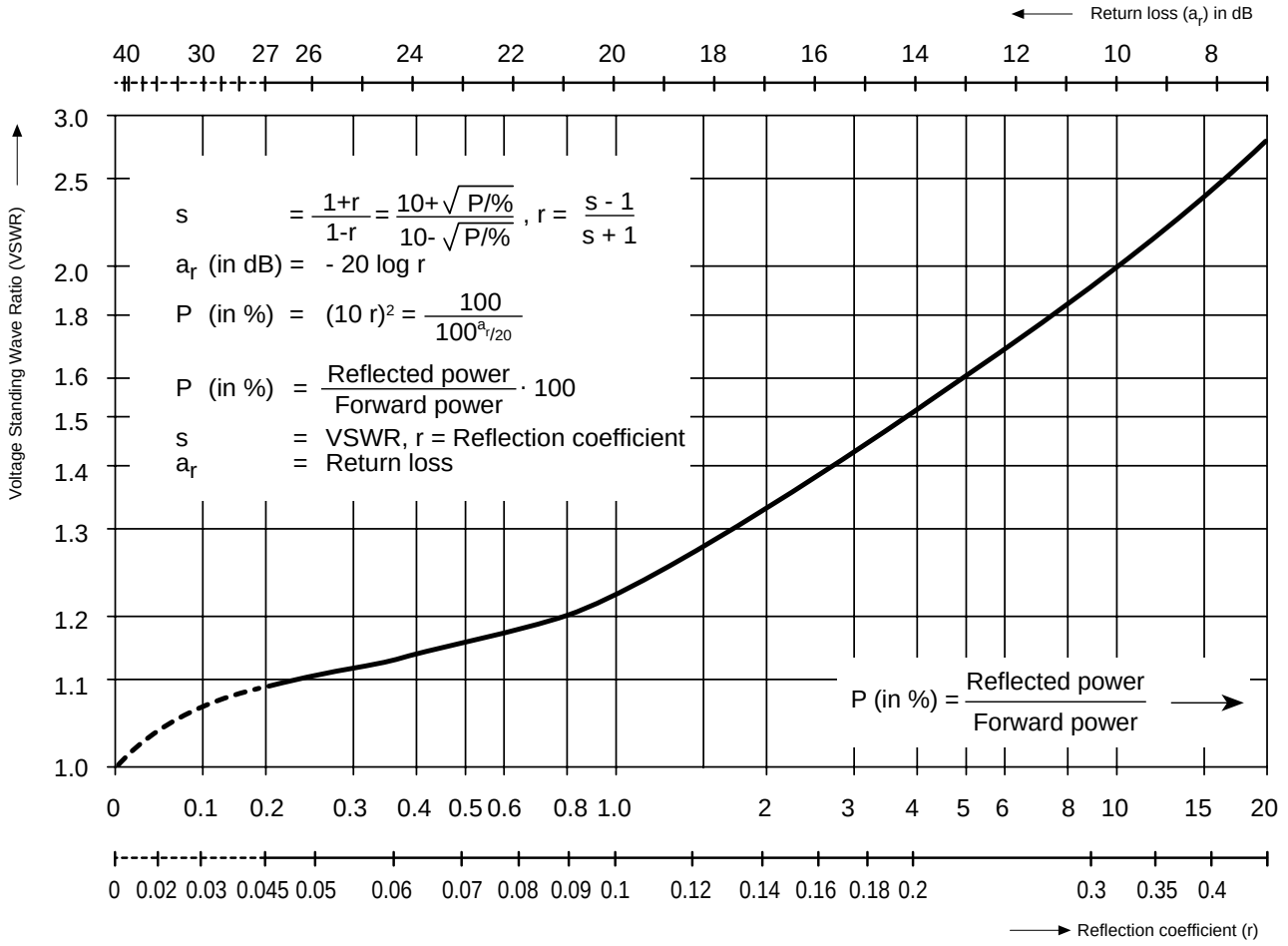
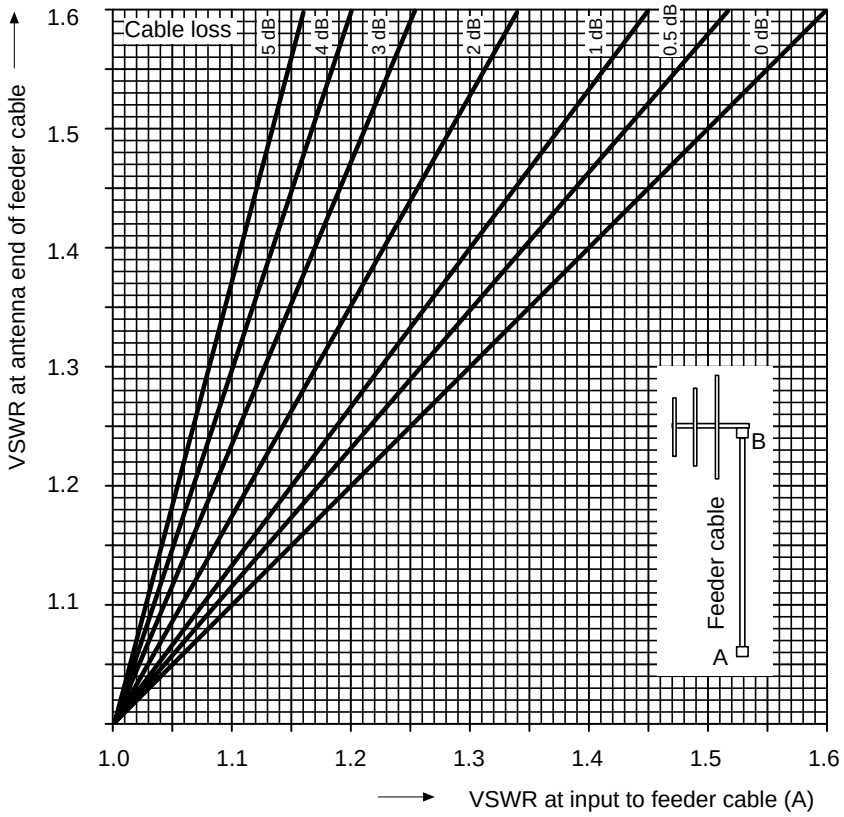
Antenna Gain in power ratio vs gain in dB



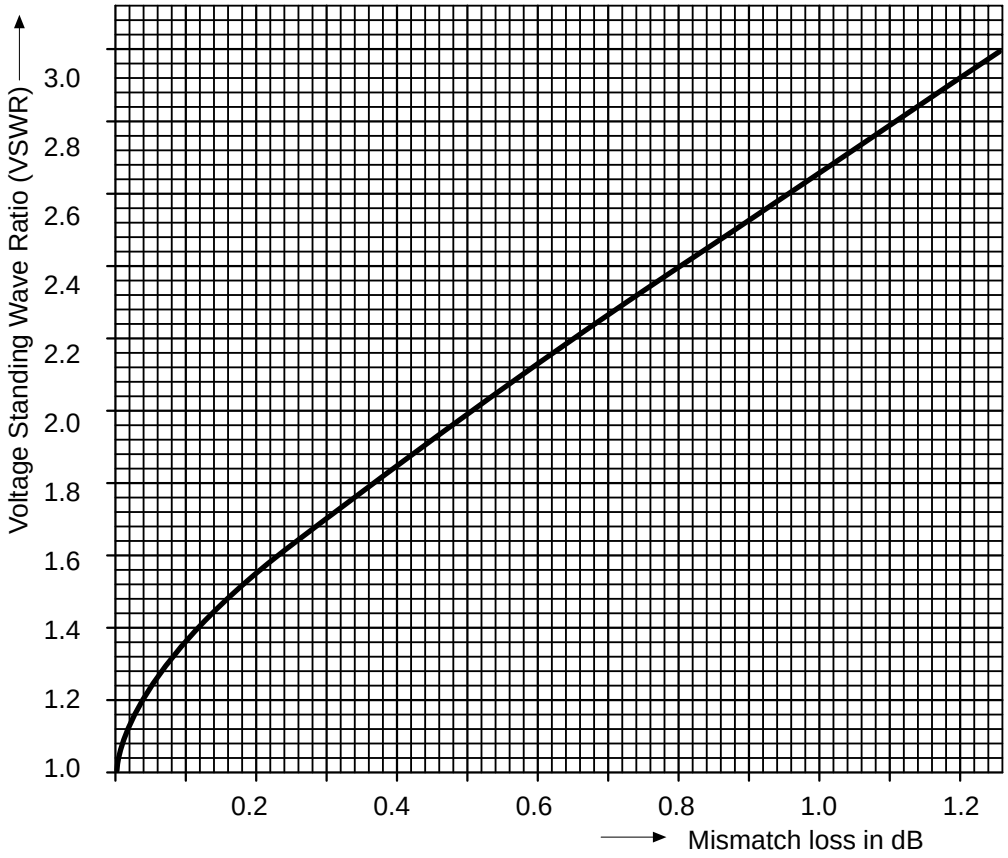
Voltage Standing Wave Ratio (VSWR) vs Reflected power



Reduction of VSWR as a result of feeder cable attenuation



Mismatch loss vs VSWR



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9987.206/1004/1.5/ZW/HA Subject to alteration.

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