BROADCAST

CATALOGUE

Ground-to-Air

Antennas and Antenna Line Products

KATHREIN

KATHREIN

Information about KATHREIN Broadcast

As of 1st June 2019, KATHREIN SE's (formerly KATHREIN-Werke KG) business unit "BROADCAST" will be transferred to KATHREIN Broadcast GmbH (limited liability company).

From 1st June 2019, the new company data are:
KATHREIN Broadcast GmbH
Ing.-Anton-Kathrein-Str. 1, 3, 5, 7
83101 Rohrdorf, Germany
Tax Payer's ID No.: 156/117/31113
VAT Reg. No.: DE 323 189 785
Commercial Register Traunstein: HRB 27745

Catalogue Issue 06/2019
All data published in previous catalogue issues hereby becomes invalid.
We reserve the right to make alterations in accordance with the requirements of our customers, therefore for binding data please check valid data sheets on our homepage: www.kathrein.com

Please also see additional information on inside back cover.

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.

Our products are compliant to the EU Directive RoHS as well as to other environmentally relevant regulations (e.g. REACH).

Antennas for Communication

Antennas for Navigation

Electrical Accessories

Mechanical Accessories

Services

Summary of Types

KATHREIN

The articles are listed by type number in numerical order.

Antennas for Ground-to-Air Communication
VHF Band 100–160 MHz
UHF Band 225–400 MHz

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Yagi Antenna

118–144 MHz

Polarization

V

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- 3-element broadband-yagi.

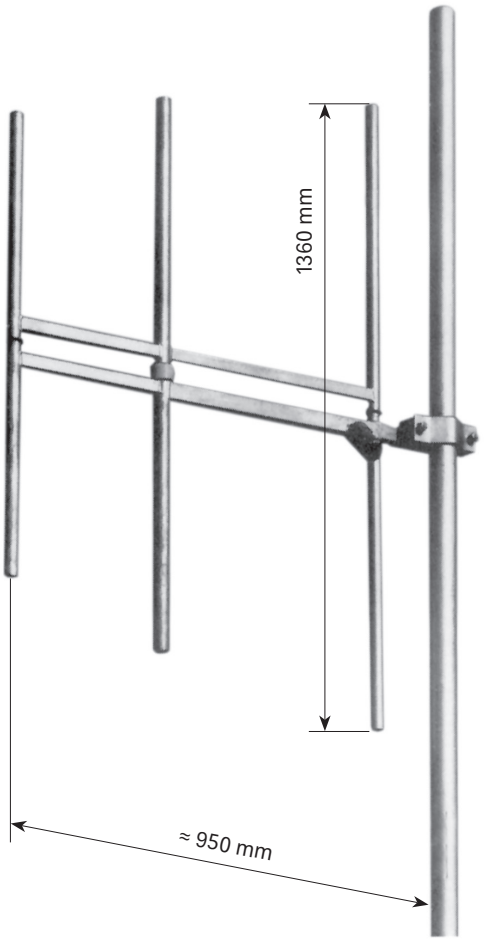
Order No.	**600906** K531831
Input	N female
Max. power	160 W (at 50 °C ambient temperature)
Frequency range	118 – 144 MHz
VSWR	< 1.5
Gain	4 dBd
Impedance	50 Ω
Polarization	Vertical
Antenna height	1360 mm
Packing size	1500 x 1150 x 90 mm
Weight	10 kg
Windload	250 N (at 160 km/h)
Max. wind velocity	200 km/h (incl. ½″ radial ice)

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

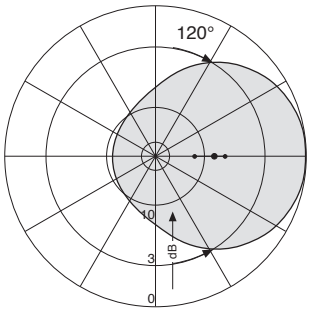
Mounting: To pipes of 60–115 mm OD by means of hot-dip galvanized steel clamp, supplied.

Grounding: The antenna is DC grounded by a cross section of 256 mm² hot-dip galvanized steel.

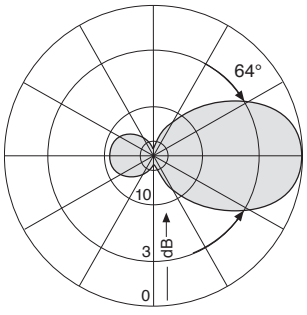
Scope of supply: Antenna including mounting hardware.



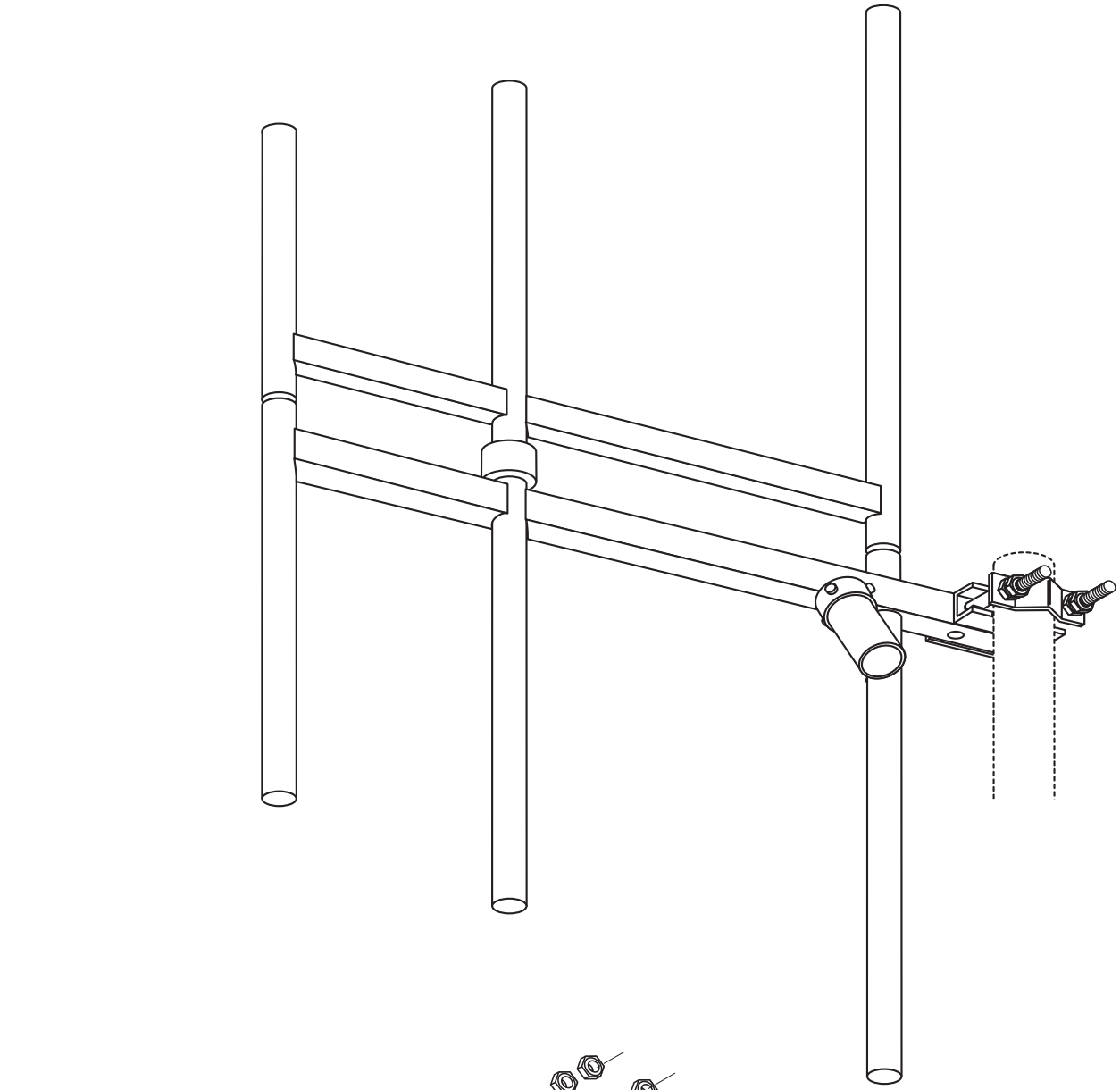
Radiation Pattern (at mid-band)

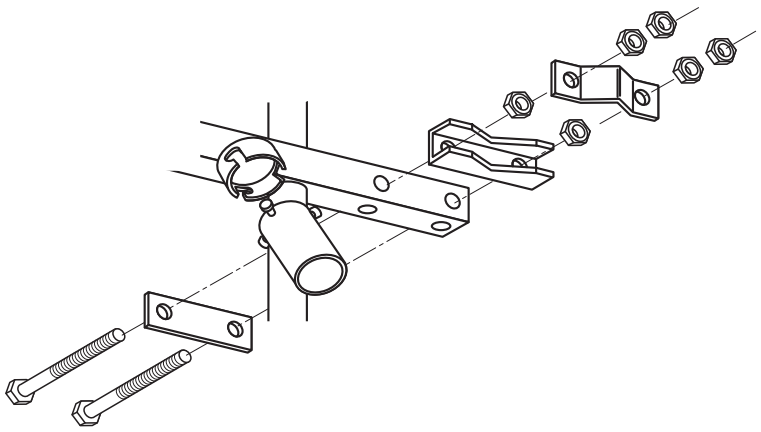


Horizontal Radiation Pattern



Vertical Radiation Pattern





Panel Antenna

108–137 MHz

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Polarization

H **V**

- Broadband Panel Antenna.
- Weather-resistant aluminum.

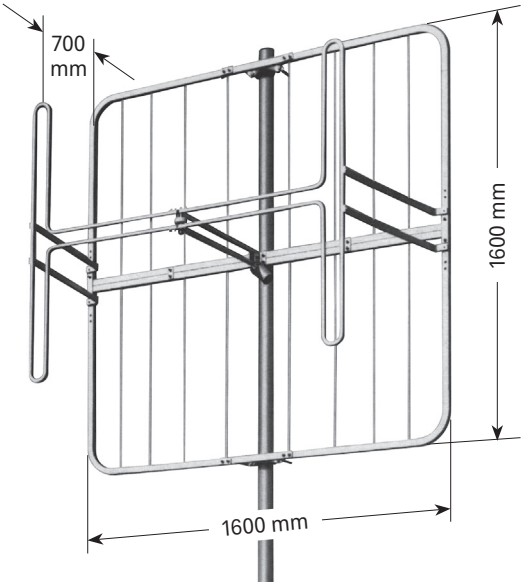
Order No.	**600253** K523131
Input	N female
Max. power input	1550 W (at 35 °C ambient temperature) 880 W (at 50 °C ambient temperature)
Frequency range	108 – 137 MHz
VSWR	< 1.4
Gain	7 dBd
Impedance	50 Ω
Polarization	Horizontal or vertical
Width/height/depth	1600 / 1600 / 700 mm
Packing size	1620 x 850 x 200 mm
Weight	12 kg
Lateral wind load	560 N (at 160 km/h)
Max. wind velocity w/o ice 1/2″ radial ice	 200 km/h 120 km/h

Material: Reflector screen and dipoles: Heavy duty alodined aluminum.
Mounting clamps: Hot dip galvanized steel.
All screws and nuts: Stainless steel.

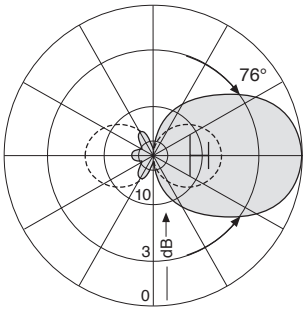
Scope of supply: Antenna including mounting hardware.

Mounting: To masts of 60–115 mm OD.

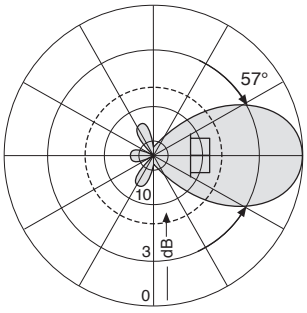
Lightning protection: All metal parts of the antenna are DC grounded.



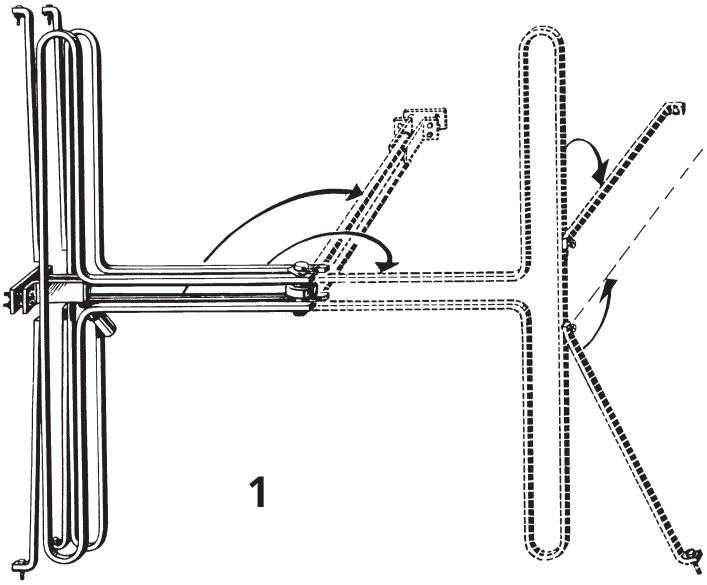
Radiation Pattern (at mid-band)



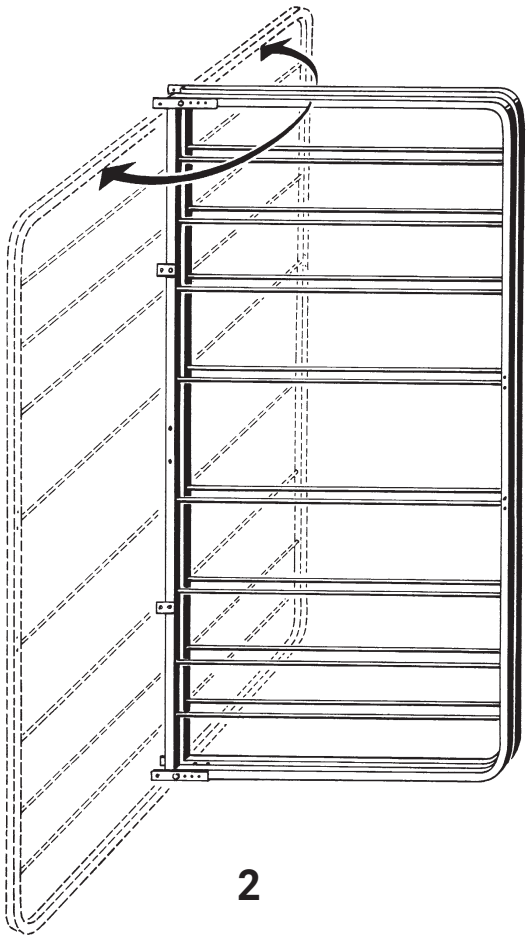
in E-plane



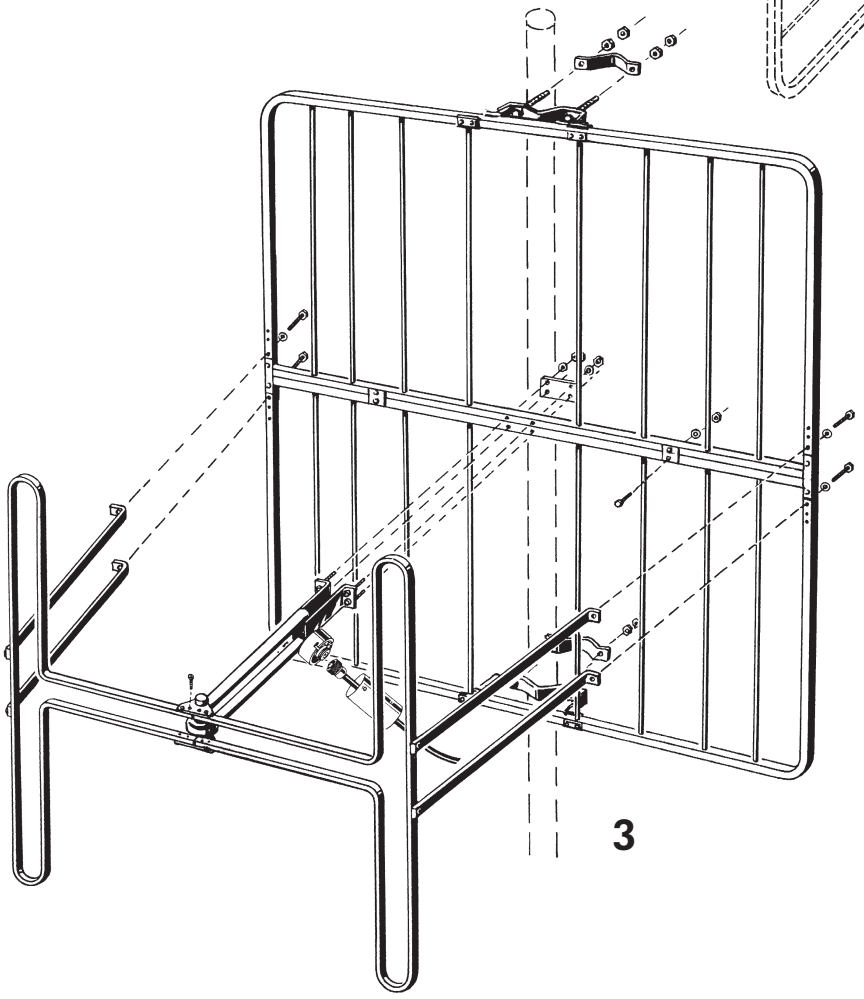
in H-plane



1



2



3

For horizontal polarization
install mounting clamps here

Mounting to pipes
of 60–115 mm diameter

Panel Antenna

100–160 MHz

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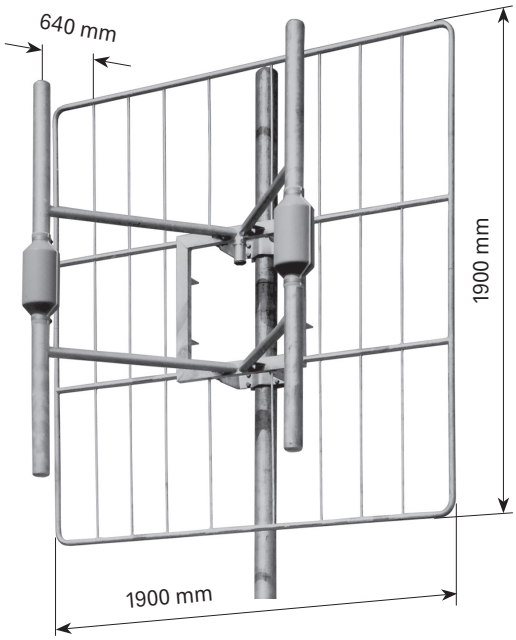
Polarization

H **V**

- Heavy duty panel antenna.
- Hot-dip galvanized steel with at least 85 µm zinc layer.

Order No.	**601029** K523031	**600237** K523037
Input	N female	7-16 female
Max. power	1590 W (at 50 °C ambient temperature)	
Frequency range	100 – 160 MHz	
VSWR	< 1.3	
Gain	8 dBd	
Impedance	50 Ω	
Polarization	Horizontal or vertical	
Height/width/depth	1900 x 1900 x 640 mm	
Packing size	2000 x 2000 x 850 mm	
Weight	35 kg	
Wind load	1200 N (at 160 km/h)	
Max. wind velocity	200 km/h (incl. ½″ radial ice)	



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

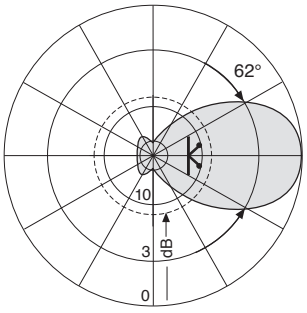
Mounting: By means of a pair of hot-dip gavanized steel clamps 75310466 to pipes of 60–115 mm OD, or the pair of clamps 75310465 to pipes of 115–200 mm.

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

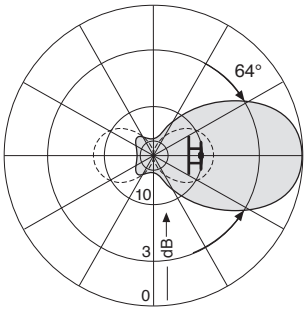
Scope of supply: Panel without mounting hardware.

Special features: The fiberglass cover of the radiators keeps the electrical characteristics, even under heavy icing conditions, nearly constant.

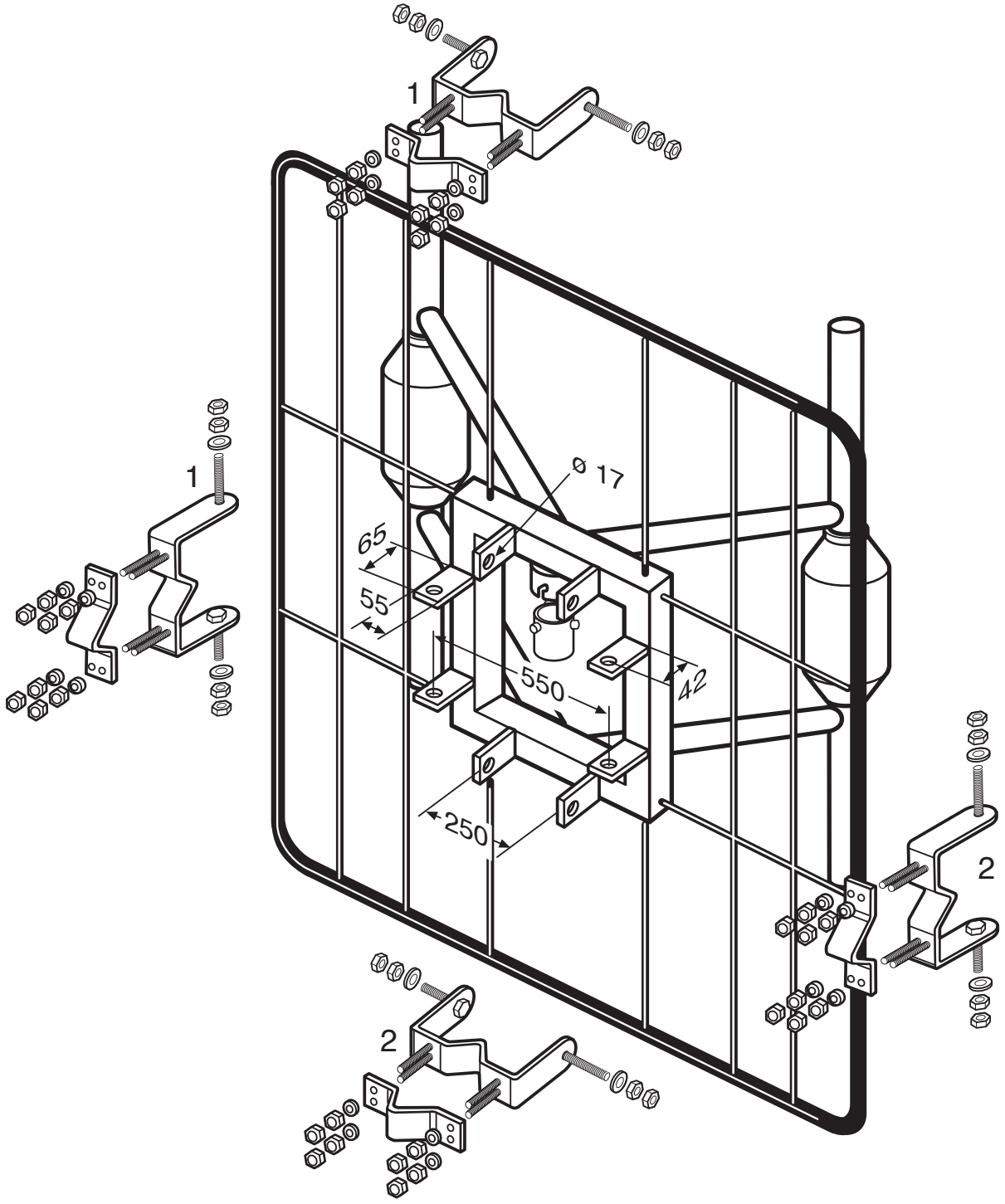
Radiation Pattern (at mid-band)



in H-plane



in E-plane



1, 2: Pair of clamps 75310466 for pipes of 60–115 mm OD or
pair of clamps 75010465 for pipes of 115–200 mm OD

Required metric wrenches: 19 mm and 24 mm

Dipole Antenna

118–137 MHz

Polarization

V

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- Dipole antenna.
- Hot-dip galvanized steel.

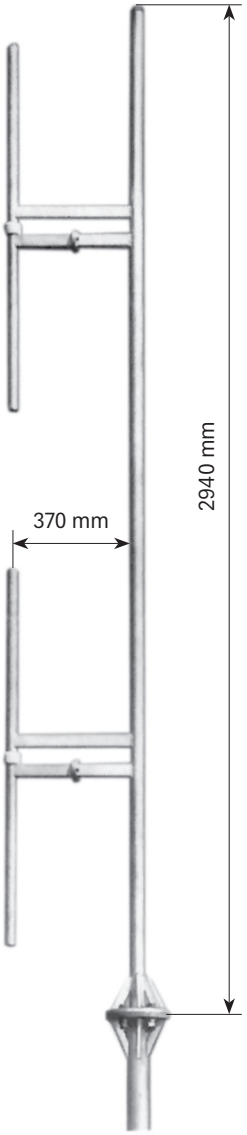
Order No.	**600410** K553131
Input	N female connector
Connector position	Bottom, inside flange
Max. power	280 W (at 50 °C ambient temperature)
Frequency range	118 – 137 MHz
VSWR	< 1.5
Gain	5 dBd
Impedance	50 Ω
Polarization	Vertical
Antenna height	2940 mm
Packing size	3000 x 510 x 200 mm
Weight	20 kg
Wind load	370 N (at 160 km/h)
Max. wind velocity w/o ice 1/2″ radial ice	 200 km/h 150 km/h

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

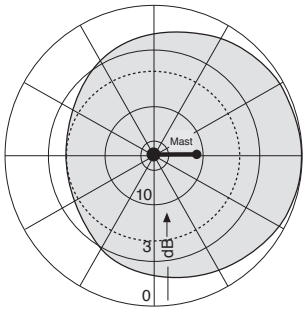
Mounting: Flange 190 mm OD for mounting on a flanged pipe (see rearside).

Grounding: The antenna is DC grounded by a cross-section of 342 mm² hot-dip galvanized steel.

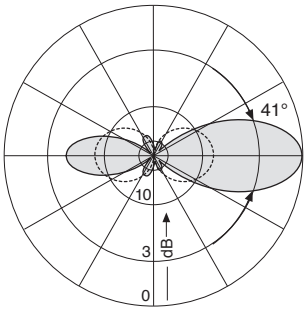
Scope of supply: Antenna with neoprene O-ring at the flange, but without mounting hardware.



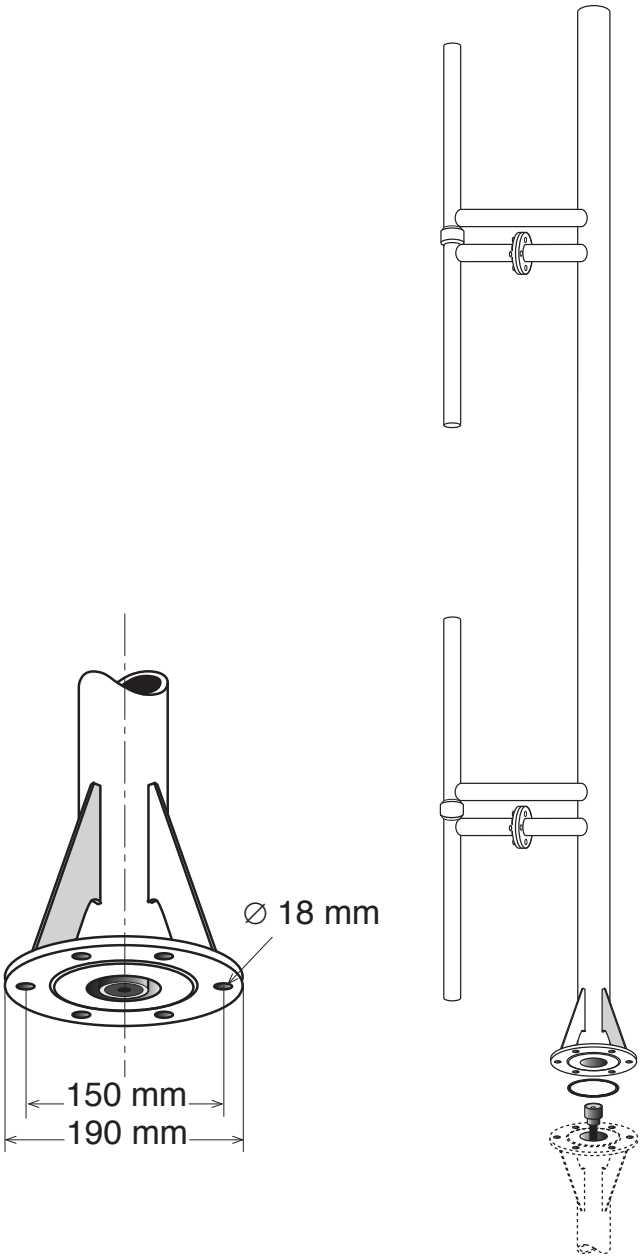
Radiation Pattern (at mid-band)



Horizontal Radiation Pattern



Vertical Radiation Pattern


∅ 18 mm
150 mm
190 mm

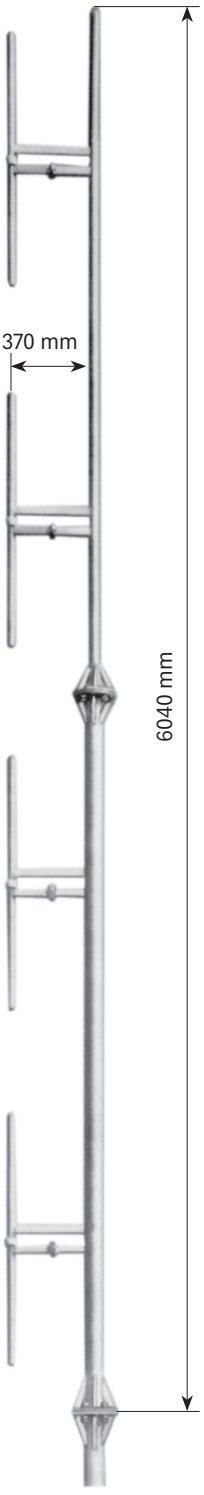
Dipole Antenna

118–144 MHz

Polarization

V

- High gain dipole antenna.
- Hot-dip galvanized steel.



Order No.	**600420** K553231
Input	N female
Connector position	Bottom inside flange
Max. power	220 W (at 50 °C ambient temperature)
Frequency range	118 – 144 MHz
VSWR	< 1.5
Gain	8 dBd
Impedance	50 Ω
Polarization	Vertical
Packing size	3600 x 510 x 200 mm and 3000 x 510 x 200 mm
Weight	54 kg
Wind load	950 N (at 160 km/h)
Max. wind velocity w/o ice 1/2″ radial ice	 170 km/h 135 km/h

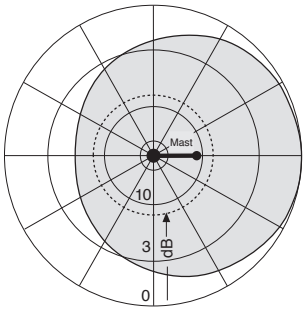
Material: Hot-dip galvanized steel.
All screws and nuts: Stainless steel.

Mounting: Flange 210 mm OD for mounting on a flanged supporting pipe (see mounting instruction).

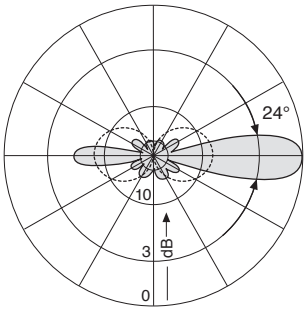
Grounding: The antenna is DC grounded by a cross-section of 798 mm² hot-dip galvanized steel.

Scope of supply: Antenna with neoprene O-ring at the flange, but without mounting hardware.

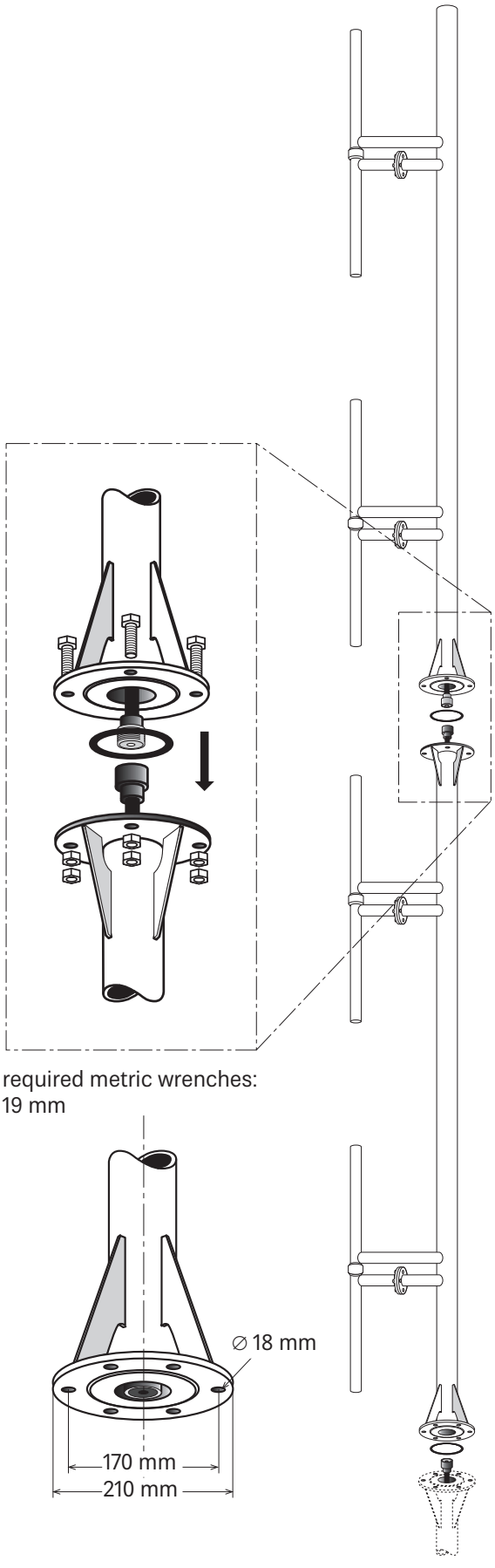
Radiation Pattern (at mid-band)



Horizontal Radiation Pattern



Vertical Radiation Pattern


required metric wrenches:
19 mm
∅ 18 mm
170 mm
210 mm

Dipole Antenna

225–400 MHz

Polarization

V

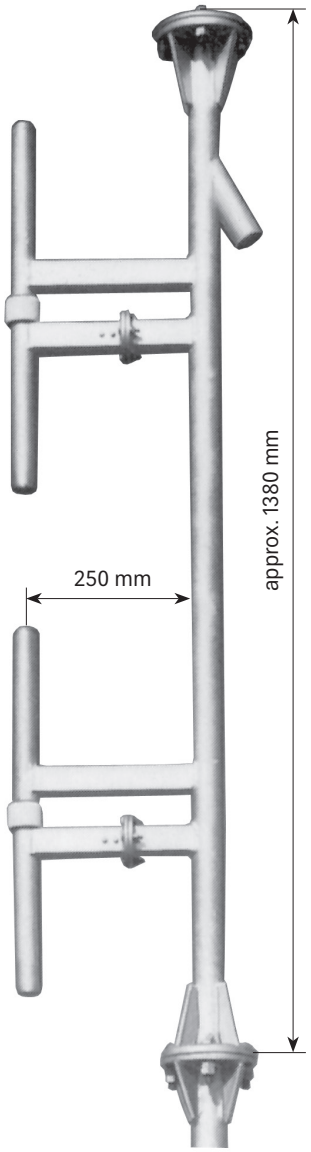
- Dipole antenna.
- Hot-dip galvanized steel.

Order No.	**600977** K753111
Input	N female
Connector position	Bottom, inside flange
Max. power	260 W (at 50 °C ambient temperature)
Frequency range	225 – 400 MHz
VSWR	< 1.7
Gain	5.5 dBd
Impedance	50 Ω
Polarization	Vertical
Weight	18 kg
Antenna height	Approx. 1380 mm
Packing size	1450 x 400 x 200 mm
Wind load	200 N (at 160 km/h)
Max. wind velocity	200 km/h (incl. ½″ radial ice)

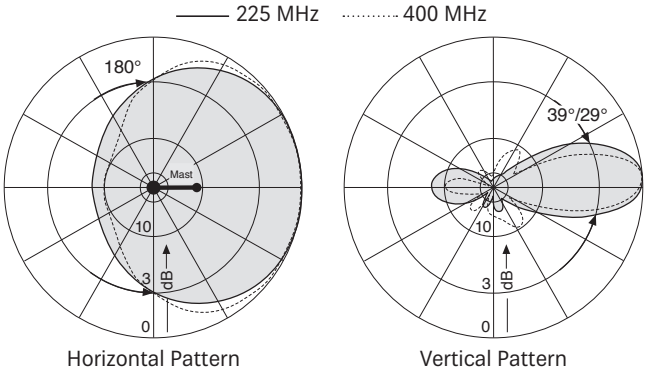
Material: Hot-dip galvanized steel.
All screws and nuts: Stainless steel.

Mounting: See flange drawing.
The upper flange is suitable for installation of an obstruction light.

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

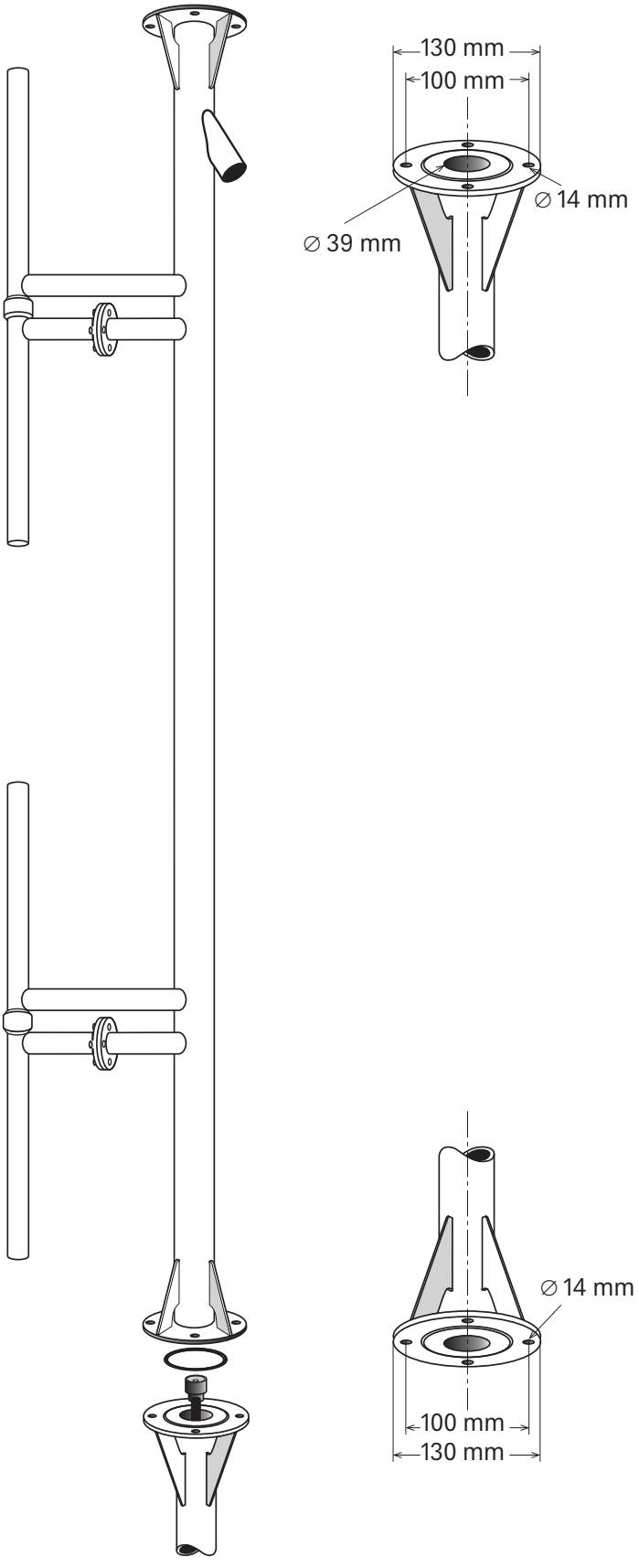


Radiation Pattern



Horizontal Pattern

Vertical Pattern


130 mm
100 mm
∅ 14 mm
∅ 39 mm
∅ 14 mm
100 mm
130 mm

Dipole Antenna

225–400 MHz

Polarization

V

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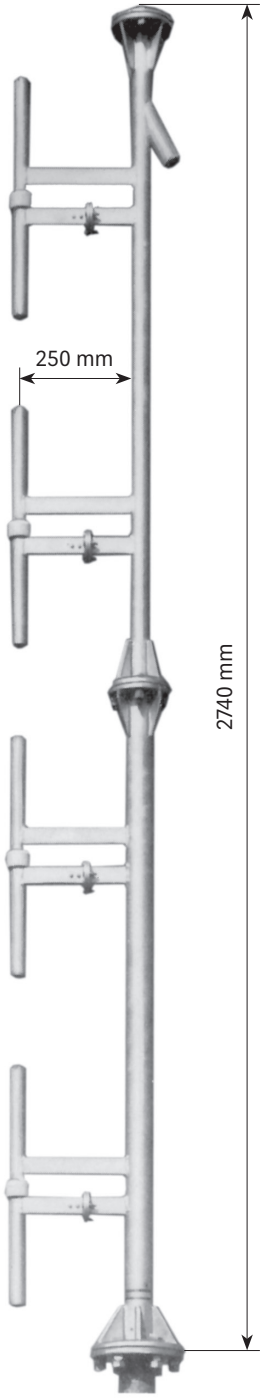
- High-gain dipole antenna.
- Hot-dip galvanized steel.

Order No.	**600956** K753211
Input	N female
Connector position	Bottom, inside flange
Max. power	300 W (at 50 °C ambient temperature)
Frequency range	225 – 400 MHz
VSWR	< 1.7
Gain	8 dBd
Impedance	50 Ω
Polarization	Vertical
Weight	40 kg
Antenna height	2740 mm
Packing size	2800 x 400 x 200 mm
Windload	450 N (at 160 km/h)
Max. wind velocity	200 km/h (incl. ½″ radial ice)

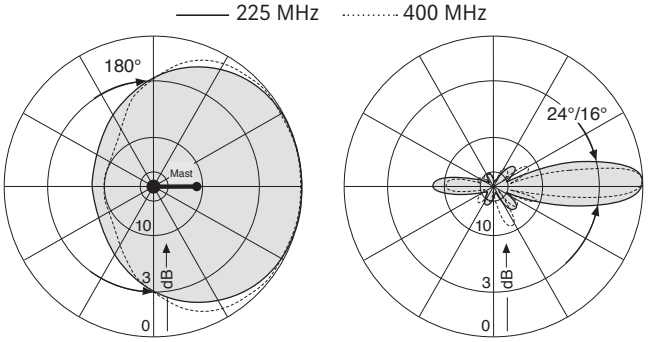
Material: Hot-dip galvanized steel.
All screws and nuts: Stainless steel.

Mounting: See flange drawing.
The upper flange is suitable for installation of an obstruction light.

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

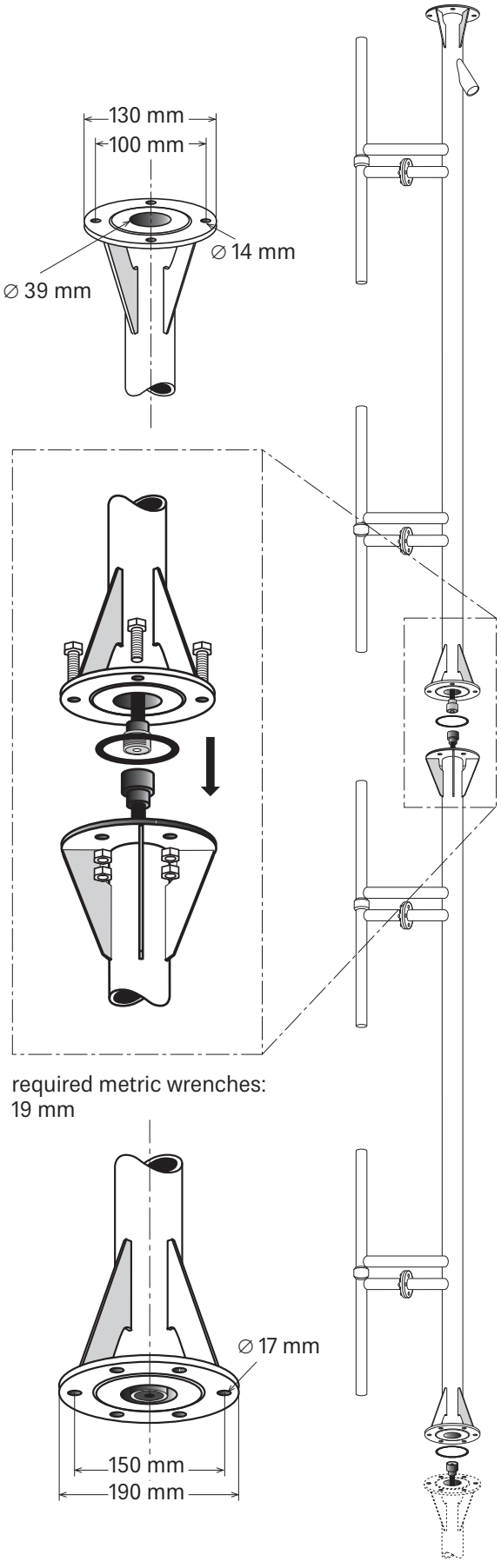


Radiation Pattern



Horizontal Pattern

Vertical Pattern



required metric wrenches:
19 mm

Omnidirectional Antenna 116–152 MHz

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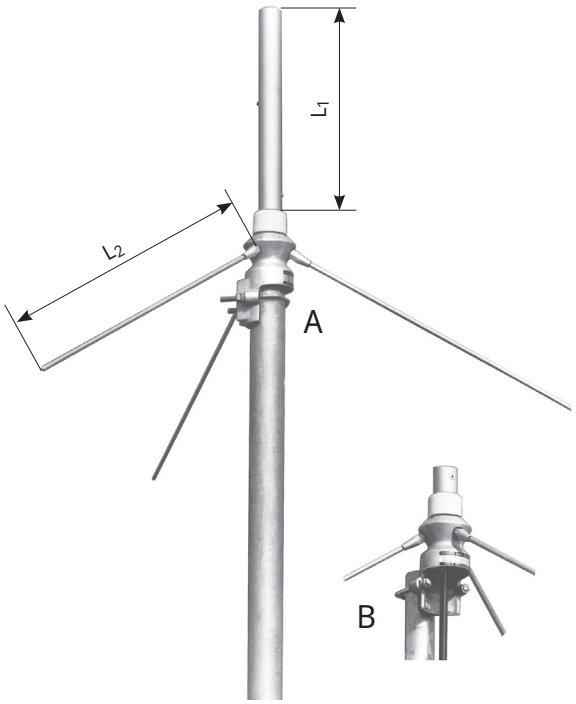
Polarization V

- Broadband aluminum groundplane-antenna with stainless steel radials.

Order No.	601818 K512631
Input	N female
Connector position	Bottom, in the antenna base
Max. power	60 W (at 50 °C ambient temperature)
Frequency range	116 – 152 MHz
VSWR	< 1.6 (118 – 144 MHz) < 2.0 (116 – 152 MHz)
Gain	0 dBd
Impedance	50 Ω
Polarization	Vertical
Height	L_1: 430 mm, L_2: 700 mm
Packing size	100 x 85 x 720 mm
Weight	1.5 kg
Wind load	50 N (at 160 km/h)
Max. wind velocity w/o ice 1/2″ radial ice	 200 km/h 135 km/h



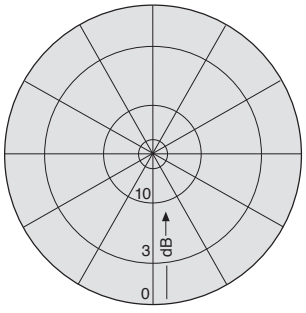
Material: Radiator: Heavy duty alodined aluminum.
Radials: Stainless steel 8 mm diameter.
Base: High strength cast aluminum.
All screws and nuts: Stainless steel.

Mounting: The antenna can be mounting by means of a supplied stainless steel clamp in such a manner as to permit the cable to be run either inside a 40–54 mm pipe (Fig. A) or outside a 20–54 mm pipe (Fig. B).

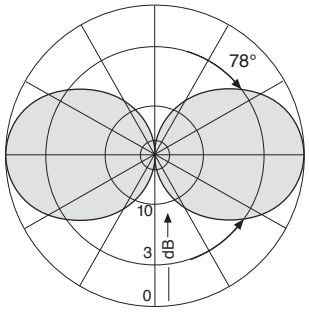
Grounding: The antenna is DC grounded by a cross section of 120 mm^2 aluminum.

Scopy of supply: Antenna including mounting hardware.

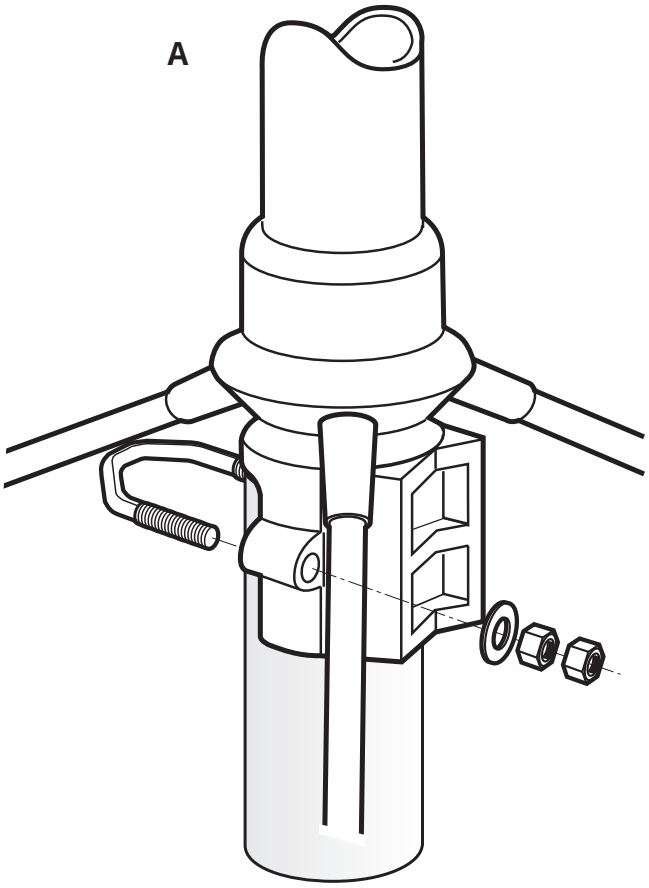
Radiation Pattern (at mid-band)



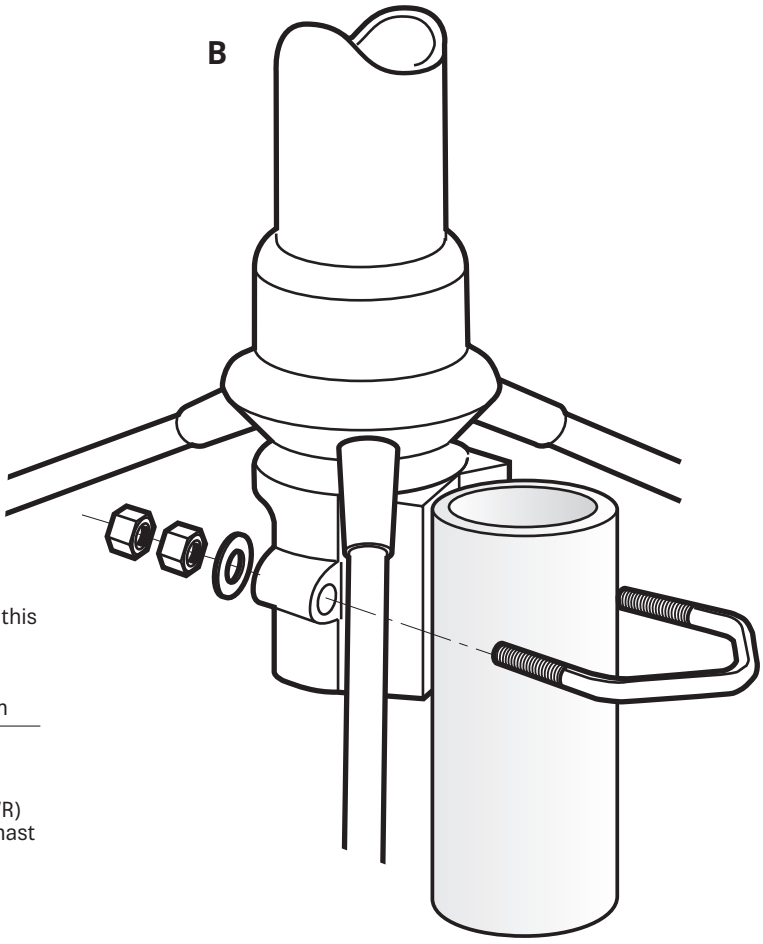
Horizontal Radiation Pattern



Vertical Radiation Pattern



A: for pipes of 40–54 mm ∅
B: for pipes of 20–54 mm ∅



Side mounting on a mast

Brackets for pipes of 55 to 105 mm OD are available for this mounting mode:

Distance between pipe and antenna	500 mm	1000 mm
Order No.	**601368** K61333	**601369** K61334

With this mounting mode the standing wave ratio (VSWR) will be altered somewhat as a factor of clearance and mast diameter.

Omnidirectional Antenna 118–137 MHz

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Polarization V

- 4 dipoles round a mast connected via power splitter.

Order No.	718215
Input	7-16 female
Max. power	400 W (at 50 °C ambient temperature)
Frequency range	118 – 137 MHz
VSWR	< 1.5
Gain	0 dBd
Horizontal radiation pattern: Deviation from circularity	±1.5 dB
Impedance	50 Ω
Polarisation	Vertical
Height	1050 mm
Weight	32 kg
Wind load	2.5 kN (at 180 km/h and 4 cm radial ice)
Max. wind velocity	200 km/h

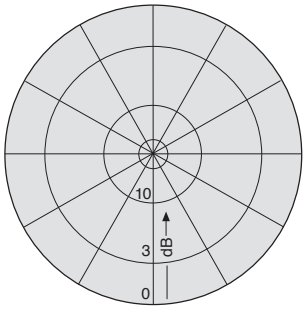
Material: Hot-dip galvanized steel.

Mounting: On a pipe mast with a diameter of 406.4 mm, other diameters on request.
Please specify exact diameter with order.

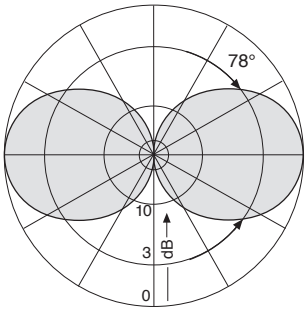
Grounding: All metal parts of the antenna including the delivered mounting kit are DC grounded.

Scope of supply: Antenna incl. power splitter and cables (pipe mast not supplied).

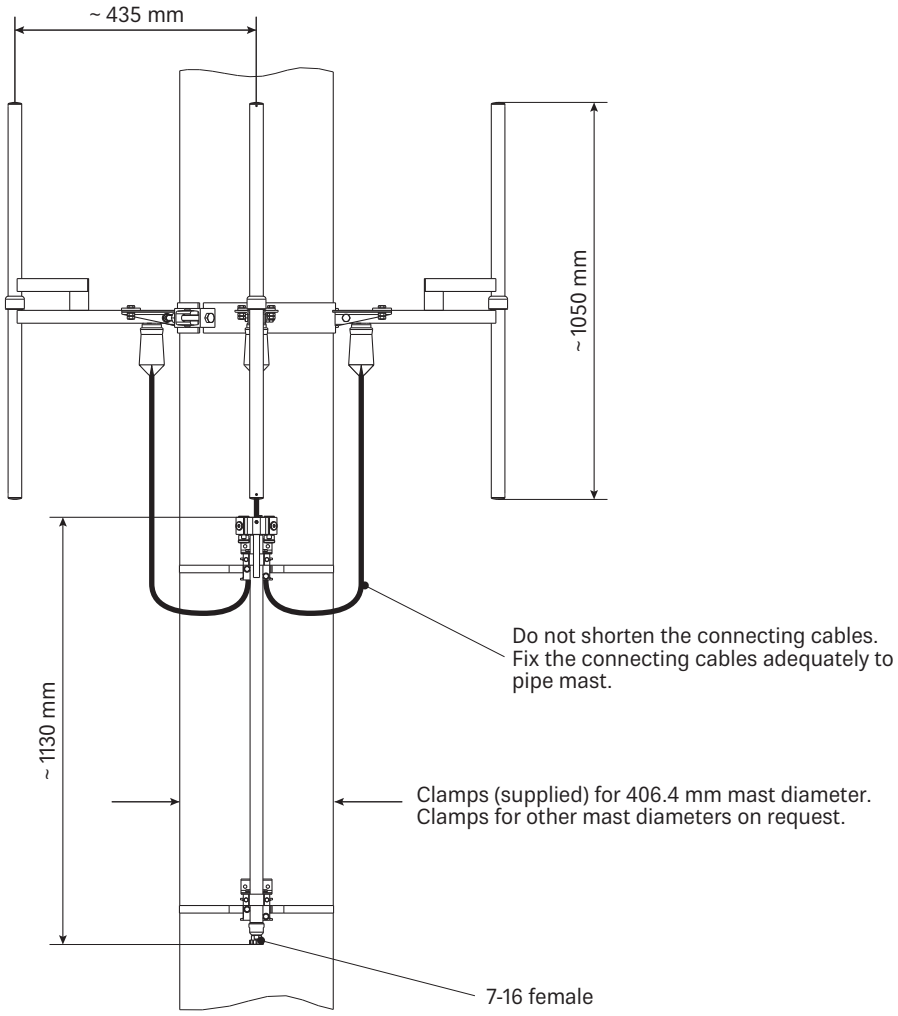
Radiation Pattern (at mid-band)

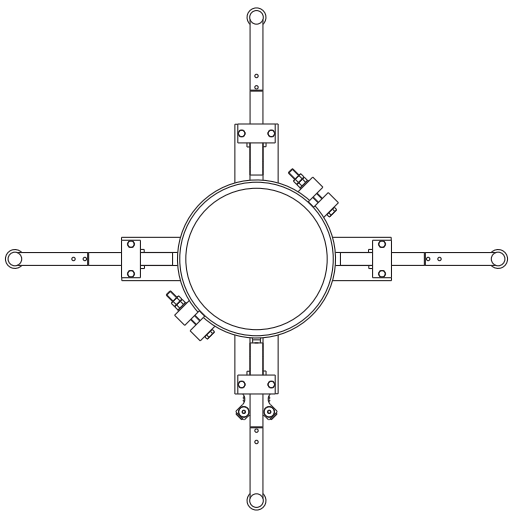


Horizontal Radiation Pattern
(for mast diameter 400 mm)



Vertical Radiation Pattern


~ 435 mm
~ 1050 mm
~ 1130 mm
Do not shorten the connecting cables.
Fix the connecting cables adequately to
pipe mast.
Clamps (supplied) for 406.4 mm mast diameter.
Clamps for other mast diameters on request.
7-16 female



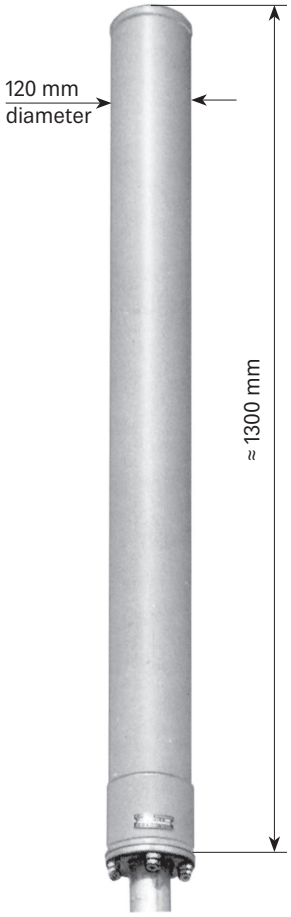
Omnidirectional Antenna 108–152 MHz

Polarization V

KATHREIN

- Broadband omnidirectional antenna in fiberglass radome.

Order No.	600371 K552131
Input	N female
Connector position	Bottom, inside flange
Max. power	110 W (at 50 °C ambient temperature)
Frequency range	108 – 152 MHz
VSWR	< 2.0
Gain	0 dBd
Impedance	50 Ω
Polarization	Vertical
Height	Approx. 1300 mm
Packing size	1400 x 150 x 150 mm
Weight	5.2 kg
Wind load	120 N (at 160 km/h)
Max. wind velocity	200 km/h (incl. ½″ radial ice)



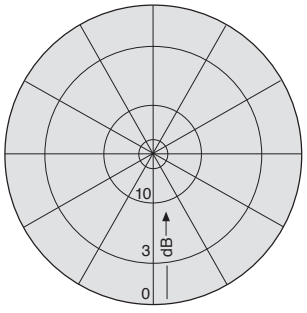
Material: Aluminum radiator in fiberglass radome.
Colour: Grey RAL 7001.
Hot-dip galvanized steel bottom.
All screws and nuts: Stainless steel.

Mounting: By means of 4 studs M12 to flange 130 mm diameter.

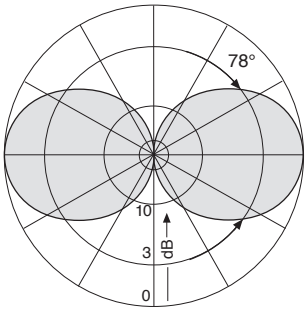
Grounding: The antenna is DC grounded by a cross section of 26 mm² aluminum.

Scope of supply: Antenna including 1 neoprene O-ring and 4 mounting studs, each with 2 nuts and 1 washer.

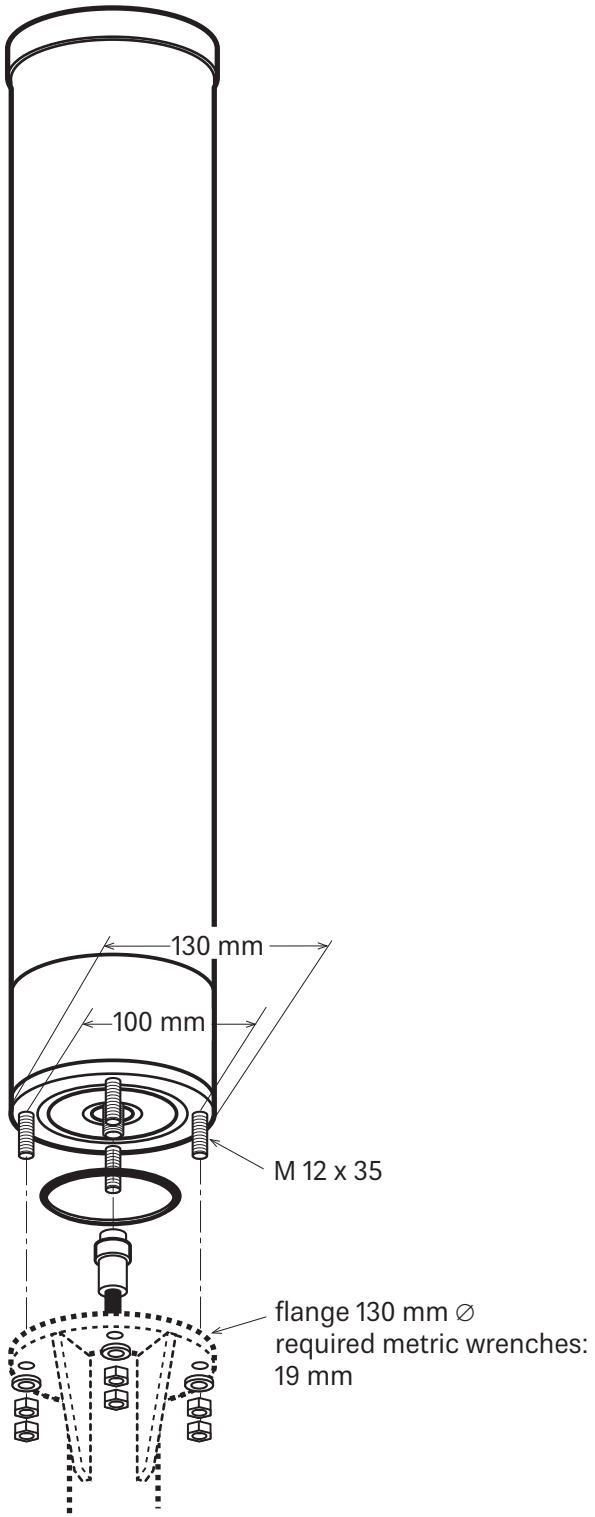
Radiation Pattern (at mid-band)



Horizontal Radiation Pattern



Vertical Radiation Pattern


130 mm
100 mm
M 12 x 35
flange 130 mm ∅
required metric wrenches:
19 mm

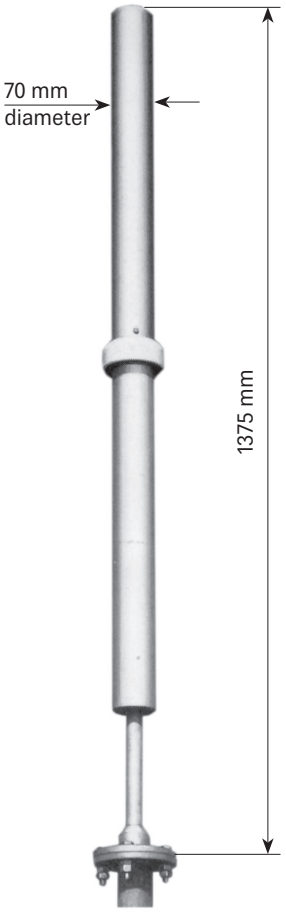
Omnidirectional Antenna 118–137 MHz

KATHREIN

Polarization V

- Broadband omnidirectional antenna.
- Hot-dip galvanized steel.

Order No.	601813 K552031
Input	N female
Connector position	Bottom, inside flange
Max. power	1000 W (at 50 °C ambient temperature)
Frequency range	118 – 137 MHz
VSWR	< 2.0
Gain	0 dBd
Impedance	50 Ω
Polarization	Vertical
Height	1375 mm
Packing size	1390 x 140 x 140 mm
Weight	6.6 kg
Wind load	125 N (at 160 km/h)
Max. wind velocity	200 km/h (incl. ½″ radial ice)



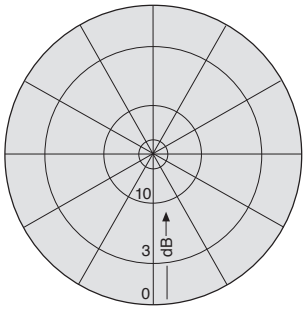
Material: Hot-dip galvanized steel pipes and mounts. All screws and nuts: Stainless steel.

Mounting: Flange 130 mm OD for mounting on a flanged supporting pipe (see mounting instruction).

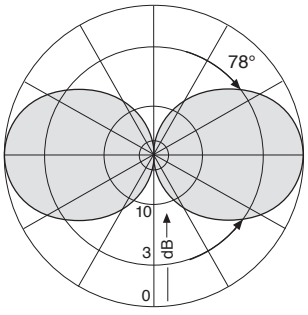
Grounding: The antenna is DC grounded by a cross section of 218 mm² hot-dip galvanized steel.

Scope of supply: Antenna with neoprene O-ring at the flange, but without mounting hardware.

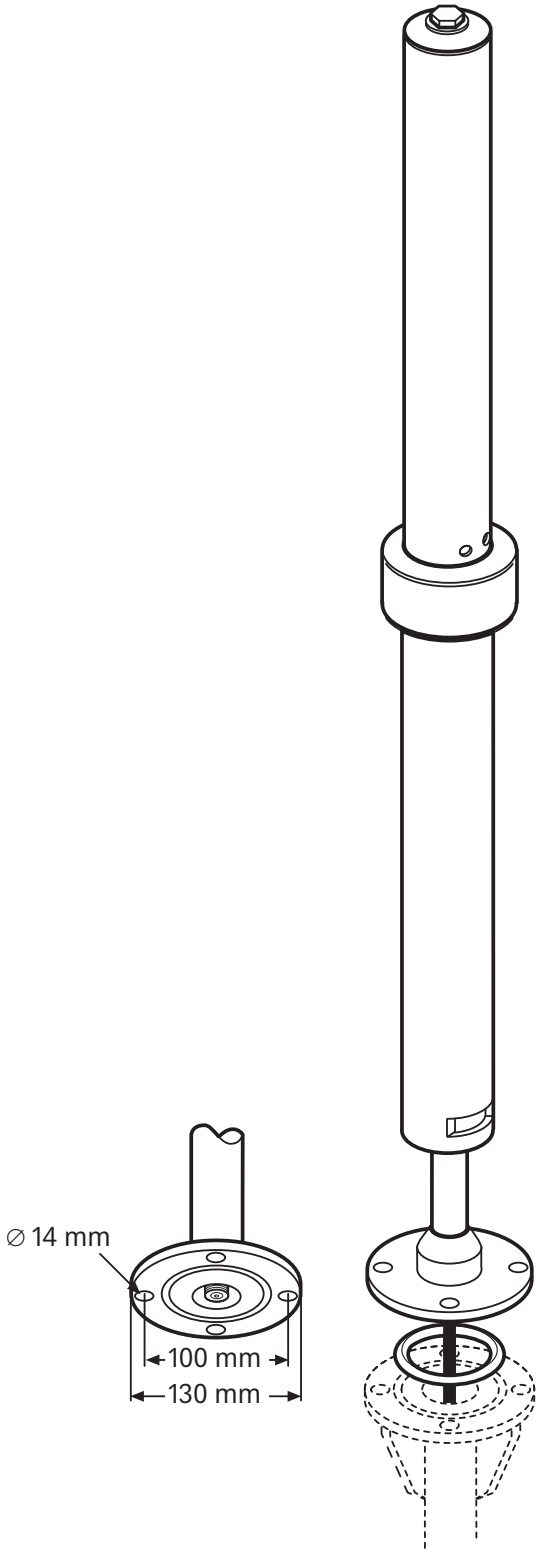
Radiation Pattern (at mid-band)



Horizontal Radiation Pattern



Vertical Radiation Pattern

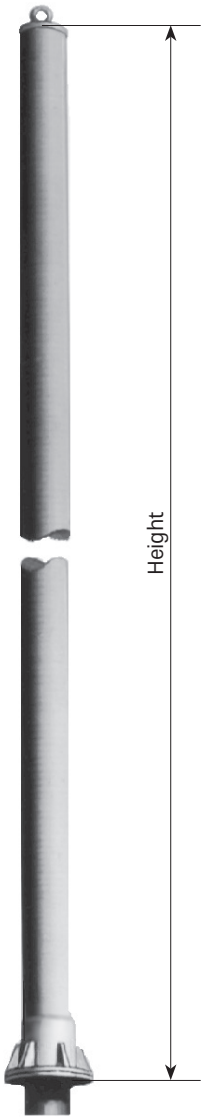

⌀ 14 mm
100 mm
130 mm

Omnidirectional Antenna 118–137 MHz

KATHREIN

Polarization V

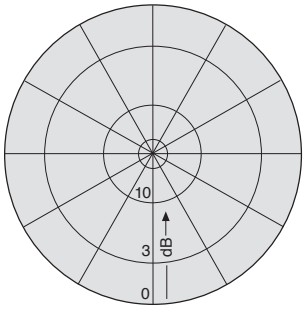
- 2-element / 3-element antenna, consisting of stacked, independently fed dipoles arranged in line.



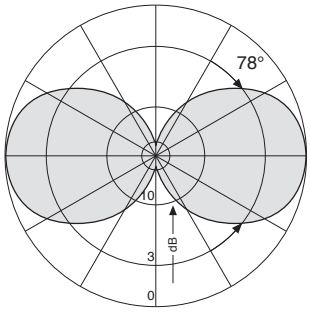
Order No.	727463	729803
Input	N female	
No. of dipoles	2	3
Connector position	Bottom, inside flange	
Max. power	400 W (at 50 °C ambient temperature)	
Frequency range	118 – 137 MHz	
VSWR	< 1.8	
Gain	0.5 dBd	
Horizontal radiation pattern	Deviation from circularity± 0.3 dB for each dipole	
Impedance	50 Ω	
Polarization	Vertical	
Decoupling	> 27 dB between adjacent dipoles	> 25 dB between adjacent dipoles
Radome diameter	120 mm	
Height	4300 mm	6000 mm
Weight	33 kg	54 kg
Wind load	480 N (at 160 km/h)	730 N (at 160 km/h)
Max. wind velocity	200 km/h	

Material:	Radiator: Hot-dip galvanized steel. Radome: Fiberglass, colour: Brown (RAL 1019). Flange: Hot-dip galvanized steel (727463), Aluminum (729803). All screws and nuts: Stainless steel.
Mounting:	See flange drawings.
Grounding:	The antenna is DC grounded by a cross section of 110 mm^2 hot-dip galvanized steel.
Scope of supply:	Antenna with neoprene O-ring at the flange, but without mounting hardware.

Radiation Pattern (at mid-band)

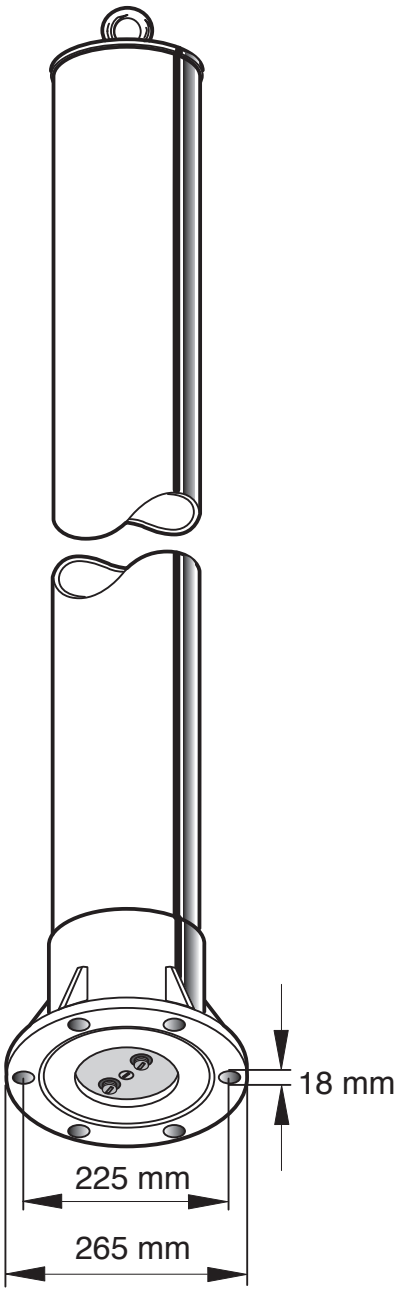


Horizontal Radiation Pattern

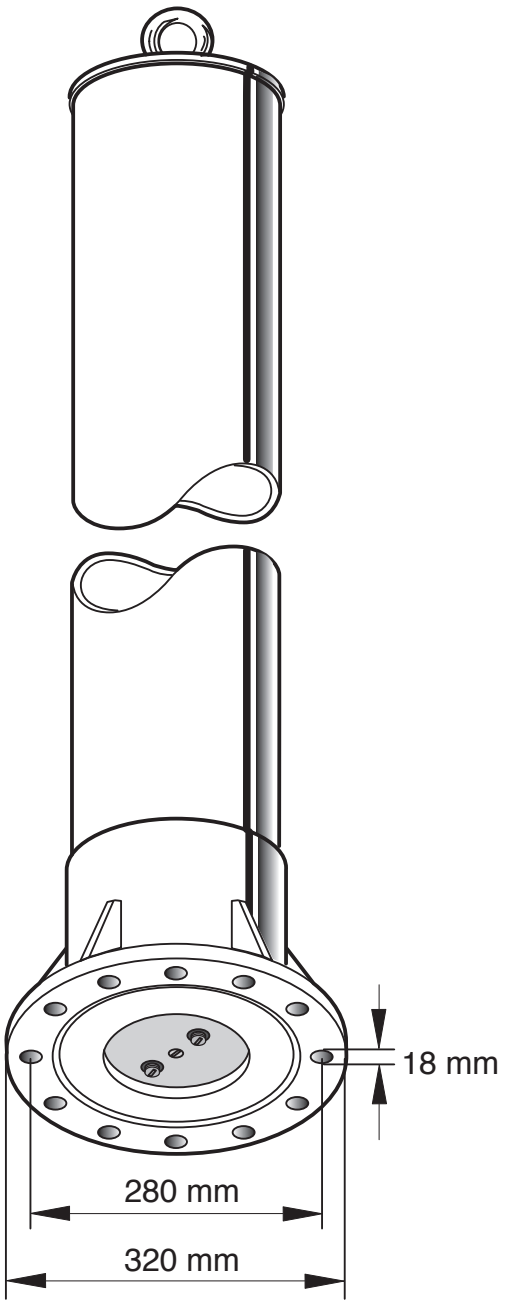


Vertical Radiation Pattern

727463



729803



- Mount the aluminum flange on plane surface only (max. unevenness 0.5 mm)
- Put the O-ring carefully into the circular groove of the flange
- Mounting screws: M16 stainless or hot-dip galvanized steel
  (min. strength 5.6 accord. DIN 267)
  Max. torque: 50 Nm (screws should be greased with MoS_2)
- Put a stainless steel washer between aluminum flange and screw head or nut

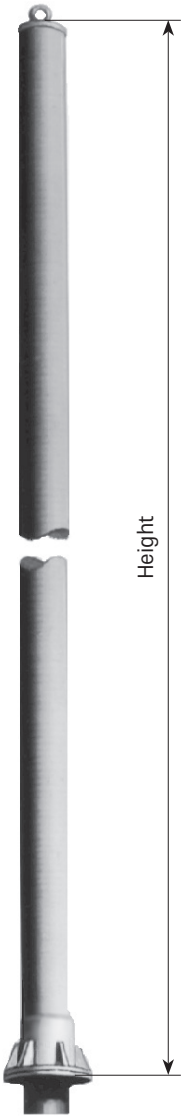
Omnidirectional Antenna 116...152 MHz

KATHREIN

Polarization V

- Omnidirectional antenna in fiberglass radome.

Order No.	719543	717265	717266
Input	N female		
Connector position	Bottom, inside flange		
Max. power	200 W (at 50 °C ambient temperature)		
Frequency range	116 – 152 MHz	118 – 137 MHz	118 – 137 MHz
VSWR	< 2.0	< 1.7	< 1.8
Gain	3.0 dBd	3.5 dBd	4.5 dBd
Horizontal radiation pattern	±0.3 dB Devitation from circularity		
Impedance	50 Ω		
Polarization	Vertical		
Radome diameter	188 mm	120 mm	120 mm
Height	4600 mm	4000 mm	6000 mm
Weight	46 kg	33 kg	51 kg
Wind load	765 N	430 N (at 160 km/h)	700 N
Max. wind velocity	200 km/h		



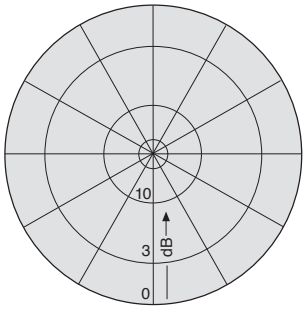
Material: Radiator: Hot-dip galvanized steel.
Radome: Fiberglass, colour: Brown (RAL 1019).
Flange: Aluminum (OD 320 mm).
Hot-dip galvanized steel (OD 265 mm).
All screws and nuts: Stainless steel.

Mounting: See flange drawings.

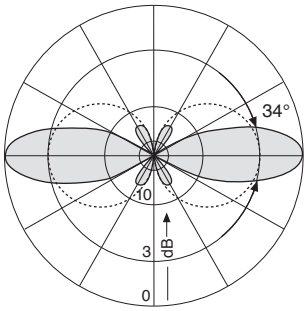
Grounding: The antenna is DC grounded by a cross section of 214 mm² (719543) and 110 mm² (717265, 717266) hot-dip galvanized steel.

Scope of supply: Antenna with neoprene O-ring at the flange, but without mounting hardware.

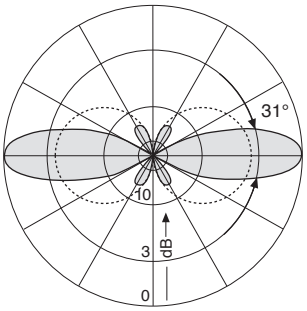
Radiation Pattern (at mid-band)



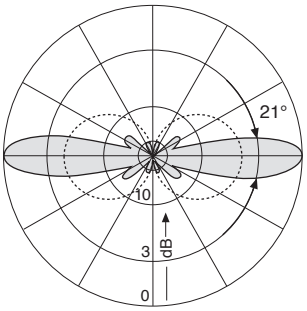
Horizontal Radiation Pattern



Vertical Radiation Pattern
719543

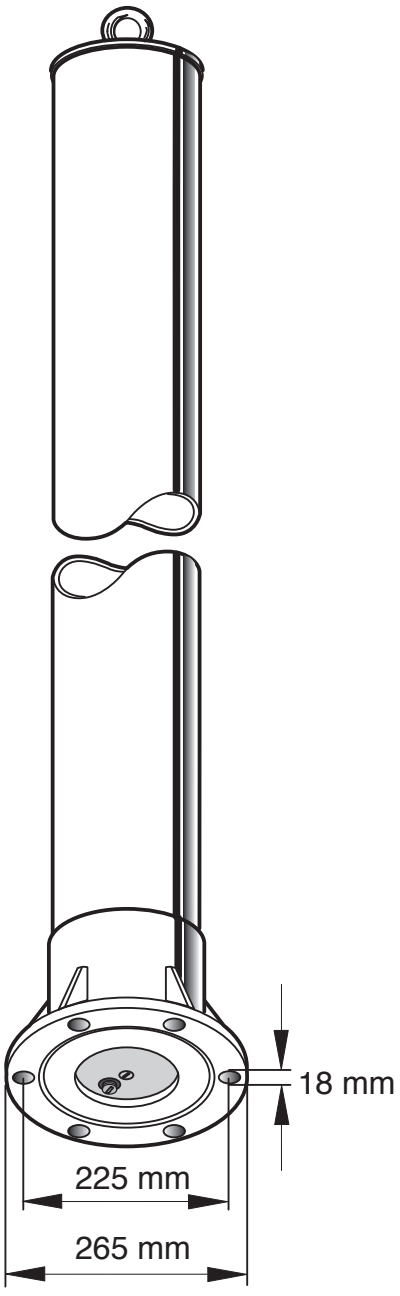


Vertical Radiation Pattern
717265

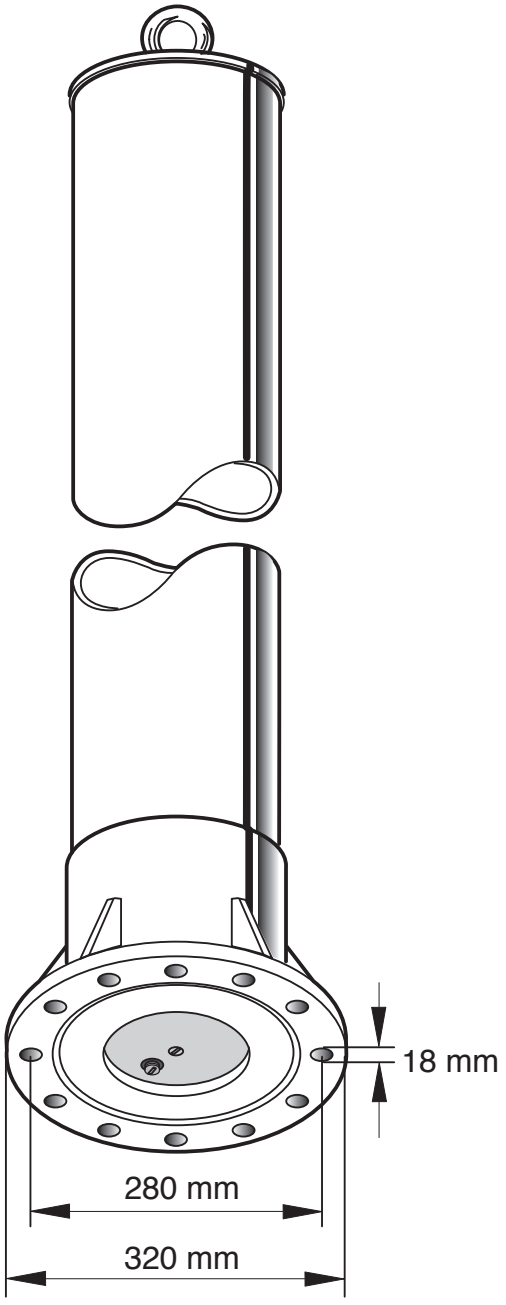


Vertical Radiation Pattern
717266

717265
717266



719543



- Mount the aluminum flange on plane surface only (max. unevenness 0.5 mm)
- Put the O-ring carefully into the circular groove of the flange
- Mounting screws: M16 stainless or hot-dip galvanized steel
  (min. strength 5.6 accord. DIN 267)
  Max. torque: 50 Nm (screws should be greased with MoS_2)
- Put a stainless steel washer between aluminum flange and screw head or nut

Omnidirectional Antenna 110–500 MHz

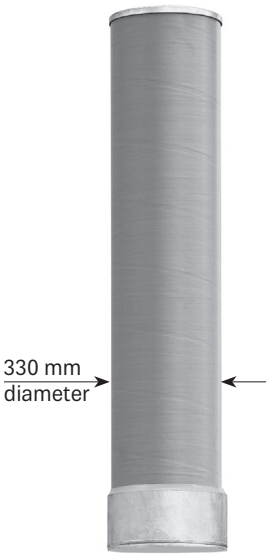
KATHREIN

Polarization V

New product

- Broadband Omnidirectional Antenna.
- Self supporting radome.

Order No.	75010452
Input	7-16 female
Max. power	Up to 200 MHz: 1000 W Up to 500 MHz: 600 W
Frequency range	110 – 500 MHz
VSWR	< 1.8
Gain	0 dBd
Half-power beam width	E-plane: approx. 90° H-plane: 360°
Impedance	50 Ω
Polarization	Vertical
Length	1300 mm
Weight (bracket excluded)	21 kg
Wind load	375 N (at 160 km/h)
Max. wind velocity	240 km/h



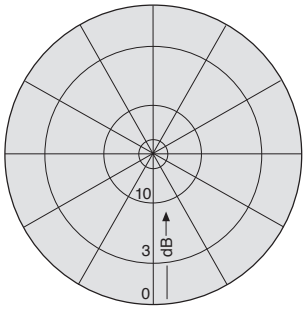
Material: Aluminum radiator in fiberglass radome.
Colour: Grey RAL 7035.
Weather-proof aluminum bottom.
All screws and nuts: Stainless steel.

Mounting: See flange drawing.

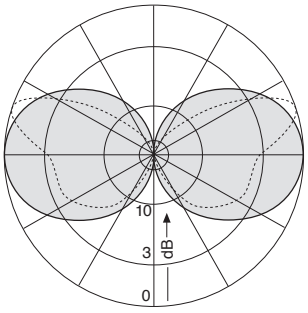
Grounding: All metal parts of the antenna including the mounting kit and the inner conductor are DC grounded.

Scope of supply: Antenna without mounting hardware.

Radiation Patterns (typical)

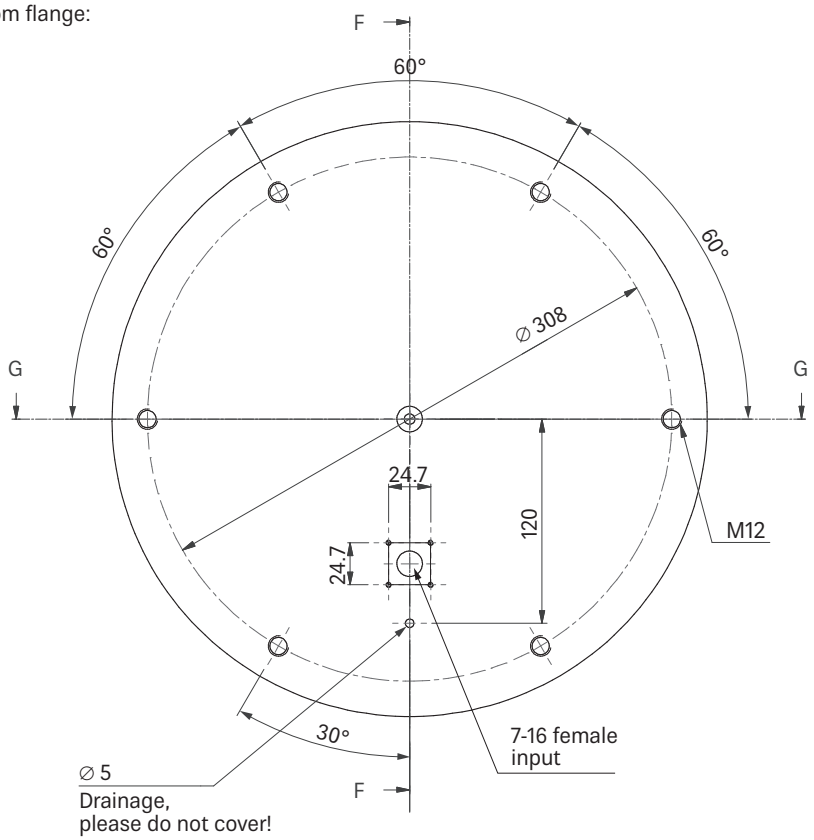


Horizontal Radiation Pattern



Vertical Radiation Pattern
—— VHF-Band
····· UHF-Band

Bottom flange:



All dimensions in mm

Omnidirectional Antenna

118–144 / 225–400 MHz

KATHREIN

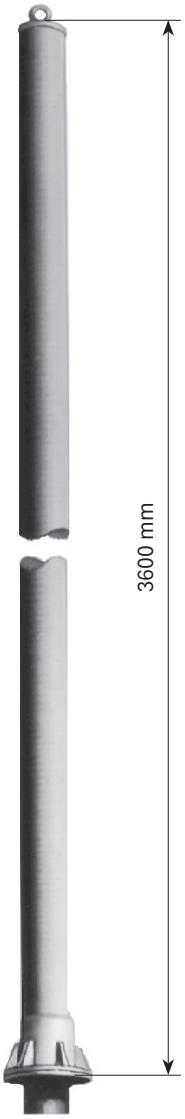
Polarization

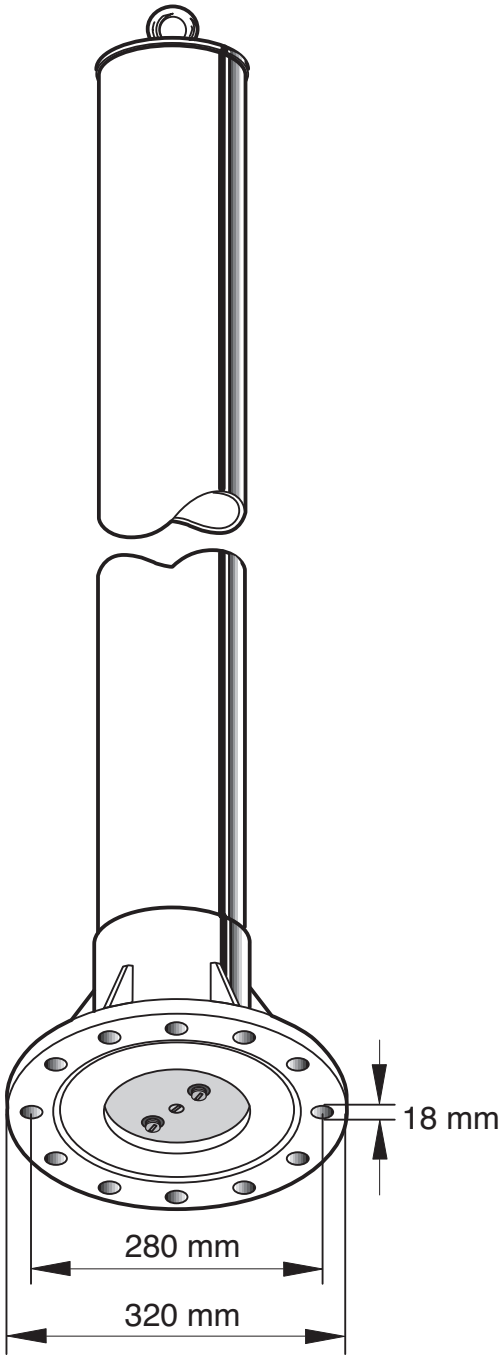
V

- Omnidirectional 2-unit antenna.
- Consisting of one VHF and one UHF dipole in a common fiberglass radome.

Order No. **colour: brown** **colour: red/white/red**	**717338** **727728**	
System	**VHF**	**UHF**
Input	N female	N female
Max. power	100 W (at 50 °C ambient temperature)	
Frequency range	118 – 144 MHz	225 – 400 MHz
VSWR	< 1.8	< 2.0
Gain	0 dBd	1 dBd
Horizontal radiation pattern: Deviation from circularity	± 0.3 dB	± 0.3 dB (225 MHz) ±1 dB (400 MHz)
Impedance	50 Ω	
Polarization	Vertical	
Decoupling	118 – 144 MHz: > 27 dB 225 – 400 MHz: > 24 dB	
Radome diameter	188 mm	
Height	3600 mm	
Weight	38 kg	
Wind load	590 N (at 160 km/h)	
Max. wind velocity	241 km/h	

Material:	Radiator: Hot-dip galvanized steel. Radome: Fiberglass. Base: Aluminum.
Mounting:	See flange drawing.
Grounding:	The antenna is DC grounded by a cross section of 214 mm^2 steel.
Scope of supply:	Antenna with neoprene O-ring at the flange, but without mounting hardware.





– Mount only on a plane surface with max. unevenness 0.5 mm

– Put the O-ring carefully into the circular groove of the flange

– Mounting screws: M 16 stainless or hot-dip galvanized steel
(min. strength 5.6 accord. DIN 267)
Max. torque: 50 Nm (screws should be greased with MoS2)

– Put a stainless steel washer between aluminum flange and screw head or nut

Omnidirectional Antenna

118–137 / 225–400 MHz

KATHREIN

Polarization

V

- Multiple antenna.
- Consisting of 2 VHF and 2 UHF omnidirectional antennas.

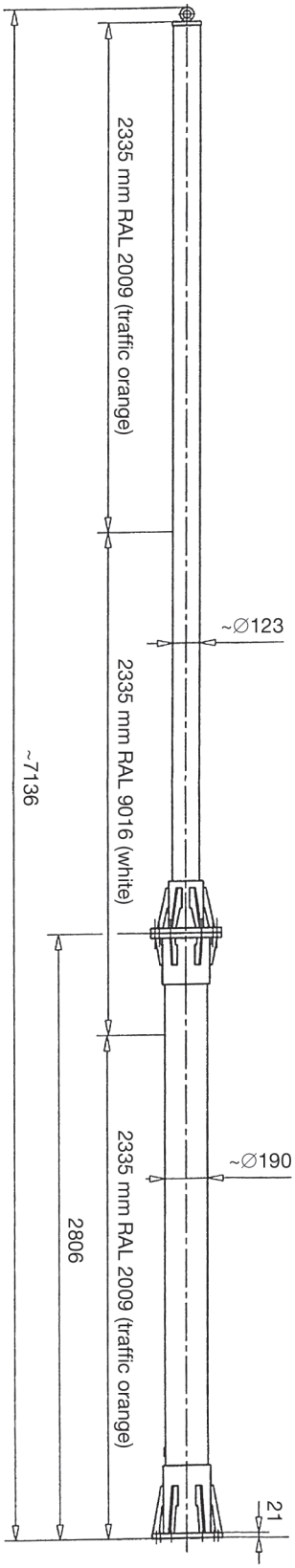
Order No.	723904	
System	**VHF**	**UHF**
Input	2 x N female	2 x N female
Connector position	Bottom	Bottom
Max. power	100 W (at 50 °C ambient temperature)	100 W
Frequency range	118 – 137 MHz	225 – 400 MHz
Horizontal radiation pattern: Deviation from circularity	< ±0.3 dB	< ±1 dB
Gain	0 dBd	1 dBd
Impedance	50 Ω	
Polarization	Vertical	
Decoupling	UHF – UHF: > 25 dB VHF – VHF: > 25 dB UHF – VHF: > 20 dB	
Height	7136 mm	
Weight	80 kg	
Bending moment (y–y)	3050 Nm (at 160 km/h)	
Wind load	1000 N (at 160 km/h)	
Max. wind velocity	200 km/h	

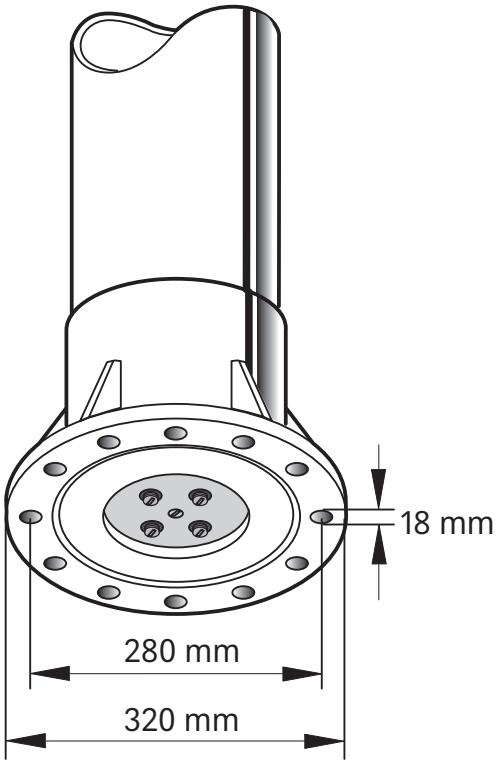
Material: Radiator: Hot-dip galvanized steel.
Radome: Fiberglass (color: Orange/white/orange).
Flange: Aluminum.
All screws and nuts: Stainless steel.

Mounting: See flange drawing.

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

Scope of supply: Antenna with neoprene O-ring at the flange, but without mounting hardware.





- Mount the flange on plane surface only (max. unevenness 0.5 mm)
- Put the O-ring carefully into the circular groove of the flange
- Mounting screws: M16 stainless or hot-dip galvanized steel
  (min. strength 5.6 accord. DIN 267)
  Max. torque: 50 Nm (screws should be greased with MoS_2)
- Put a stainless steel washer between flange and screw head or nut

Omnidirectional Antenna 225–400 MHz

KATHREIN

Polarization V

- 6 dipoles round a mast connected via power splitter.

Order No.	718217
Input	7-16 female
Max. power	650 W (at 50 °C ambient temperature)
Frequency range	225 – 400 MHz
VSWR	< 2.0
Gain	0 dBd
Horizontal radiation pattern: Deviation from circularity	Mastdiameter 500 mm: ±1.0 dB (225 MHz) ±1.5 dB (325 MHz) ±3.5 dB (400 MHz)
Impedance	50 Ω
Polarization	Vertical
Weight	40 kg
Wind load	3.5 kN (at 180 km/h and 4 cm radial ice)
Max. wind velocity	200 km/h

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

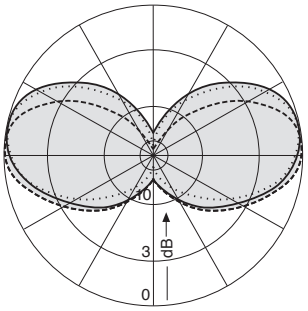
Mounting: On a pipe mast with a diameter of 406.4 mm, other diameters on request.
Please specify exact diameter with order.

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

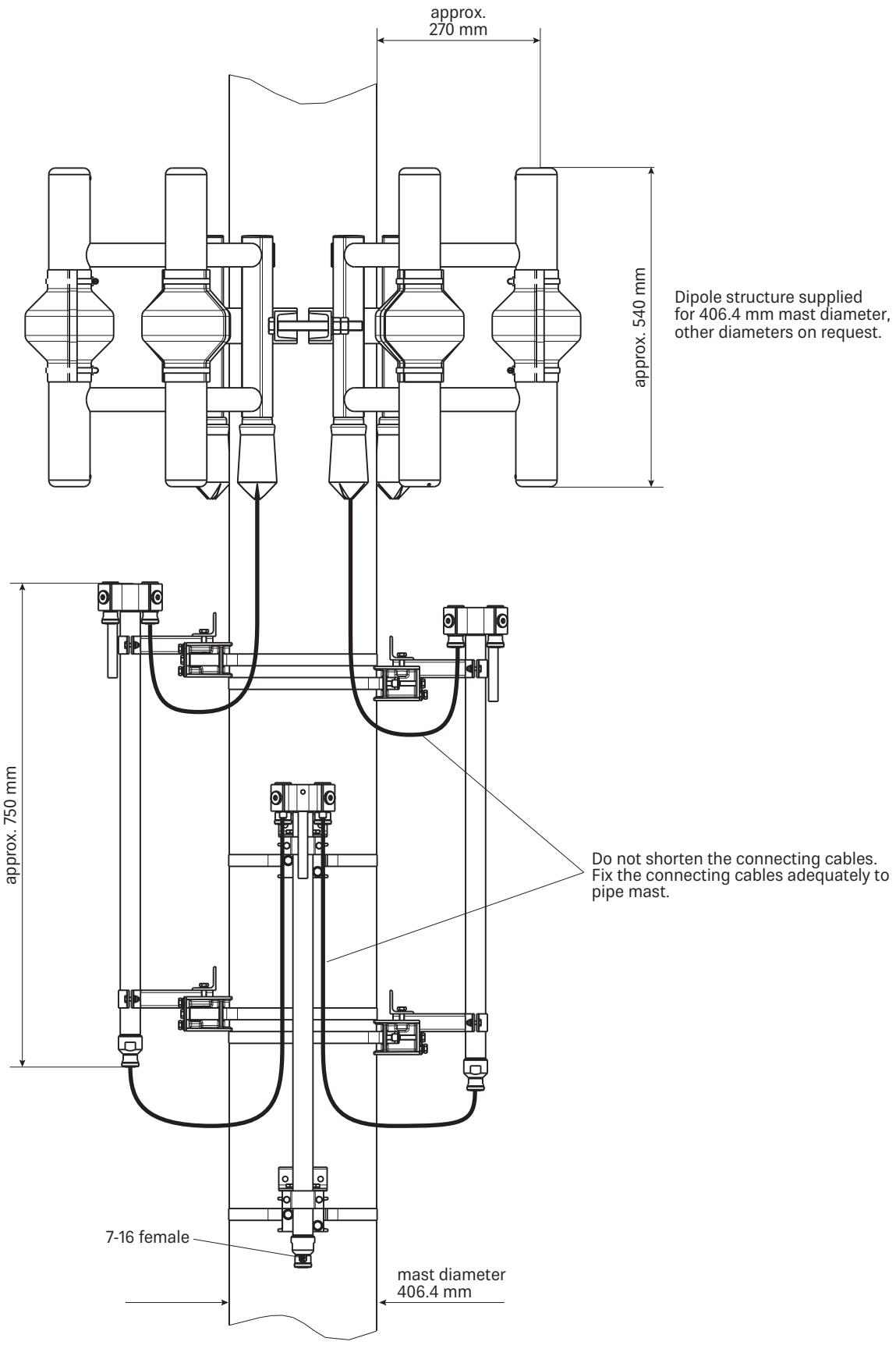
Scope of supply: Antenna incl. power splitter and cables (pipe mast not supplied).

Radiation Pattern (at mid-band)

—— 225 MHz ····· 310 MHz - - - - - 400 MHz



Vertical Radiation Pattern


approx.
270 mm
approx. 540 mm
Dipole structure supplied
for 406.4 mm mast diameter,
other diameters on request.
approx. 750 mm
Do not shorten the connecting cables.
Fix the connecting cables adequately to
pipe mast.
7-16 female
mast diameter
406.4 mm

Omnidirectional Antenna 225–400 MHz

Polarization V

KATHREIN

- Omnidirectional broadband antenna.

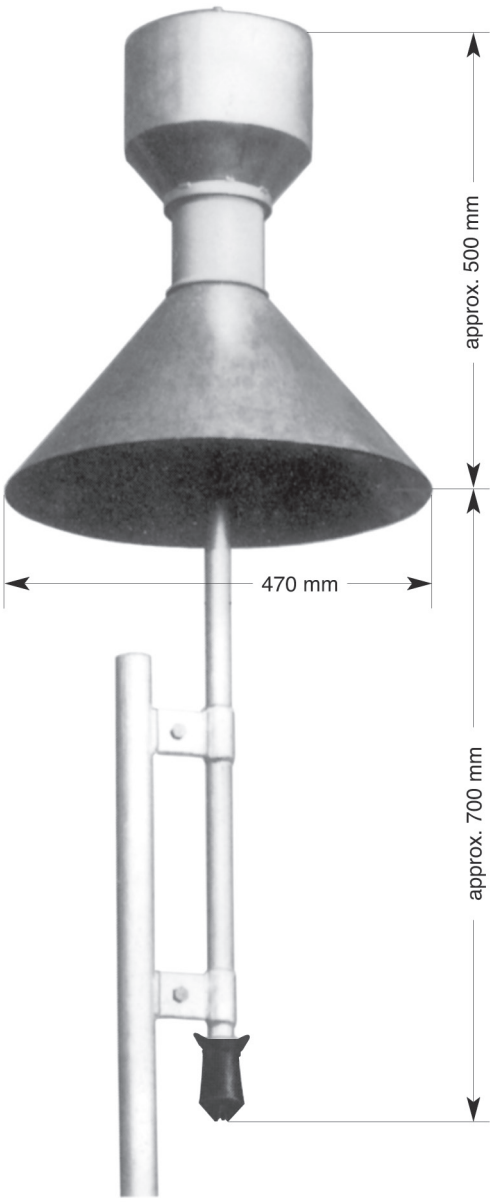
Order No.	600759 K751011
Input	N female
Connector position	At the lower end of the support pipe
Max. Power	290 W (at 50 °C ambient temperature)
Frequency range	225 – 400 MHz
VSWR	< 1.8
Gain	0.5 dBd
Impedance	50 Ω
Polarization	Vertical
Packing size	1250 x 520 x 520 mm
Weight	9.5 kg
Windload	160 N (at 160 km/h)
Max. wind velocity	200 km/h (incl. ½″ radial ice)

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

Mounting: Parallel mounting at the top of the mast by means of two butt straps (see mounting instruction).

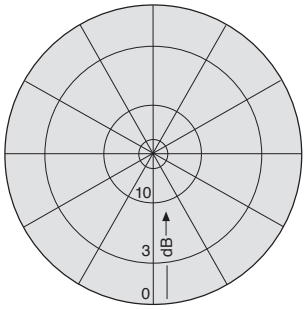
Grounding: The antenna is DC grounded by a cross-section of 400 mm² hot-dip galvanized steel.

Scope of supply: Antenna without mounting hardware.

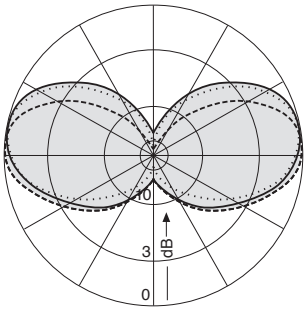


Radiation Pattern

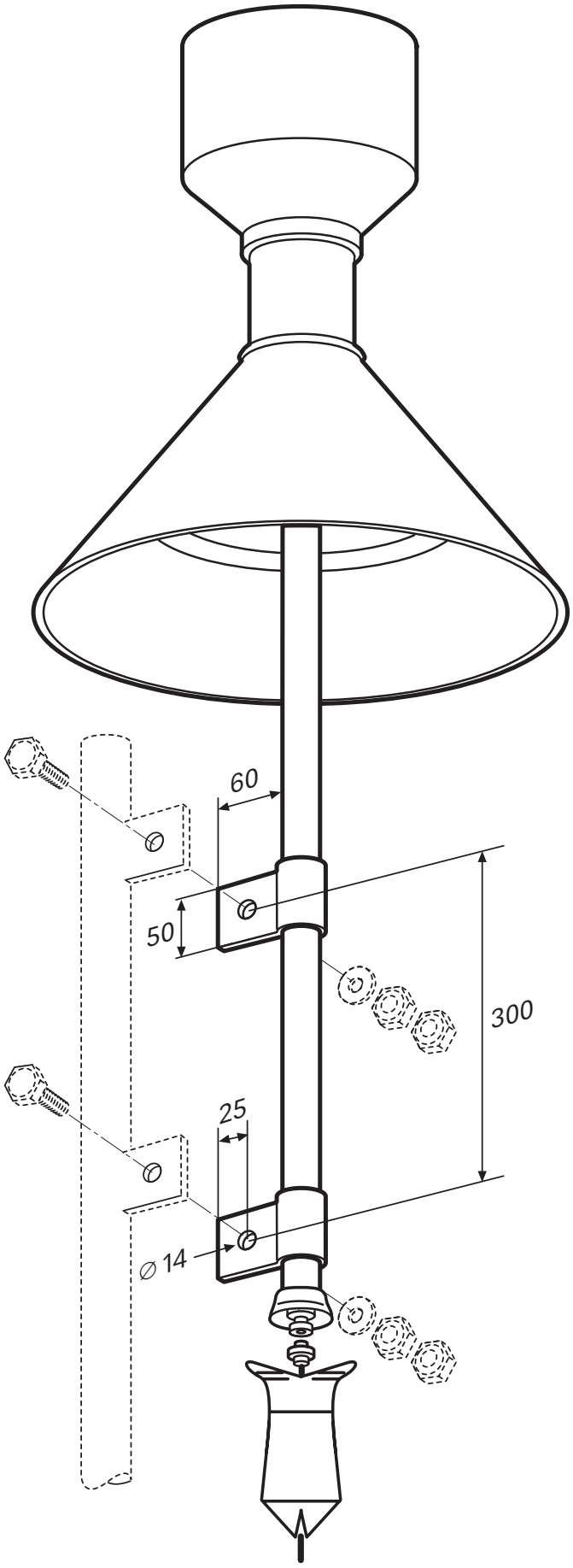
225 MHz 310 MHz 400 MHz



Horizontal Radiation Pattern



Vertical Radiation Pattern

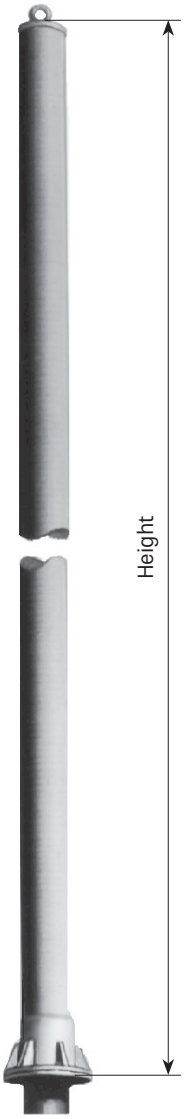

60
50
300
25
∅ 14

Omnidirectional Antenna 225–400 MHz

KATHREIN

Polarization V

- Multi-element antenna.
- Consisting of several stacked and separately fed dipoles arranged in line.



Standard models: Multiple-unit antenna

Order No.	601475 K7540121	601476 K7540131	601477 K7540141	601478 K7540151
Input	N female			
Connector position	Bottom, inside flange			
Numer of dipoles	2	3	4	5
Max. power	110 W (at 50 °C ambient temperature)			
Frequency range	225 – 400 MHz			
VSWR	< 2.0			
Gain each dipole	1 dBd			
Impedance	50 Ω			
Polarization	Vertical			
Decoupling	> 27 dB between adjacent dipoles			
Weight	29 kg	37 kg	49 kg	67 kg
Radome diameter	188 mm			
Height	2650 mm	3690 mm	4730 mm	5770 mm
Bending moment	560 Nm	1070 Nm	1780 Nm	2690 Nm
	at 160 km/h (at attachment point)			
Wind load	430 N	590 N	760 N	940 N
	(at 160 km/h)			
Max. wind velocity	200 km/h			

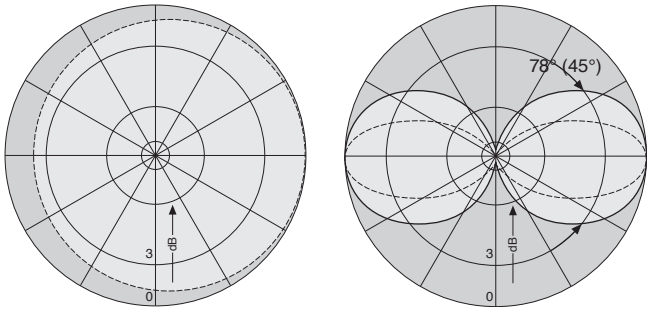
Material: Radiating elements: Hot-dip galvanized steel.
Base: Weatherproof aluminum.
Radome: Fiberglass, colour: Brown.
Internal screws and nuts: Stainless steel.

Mounting: See flange drawing.

Scope of supply: Antenna with neoprene O-ring at the flange, but without screws.

Grounding: The antenna is DC grounded by a cross section of 214 mm^2 hot-dip galvanized steel.

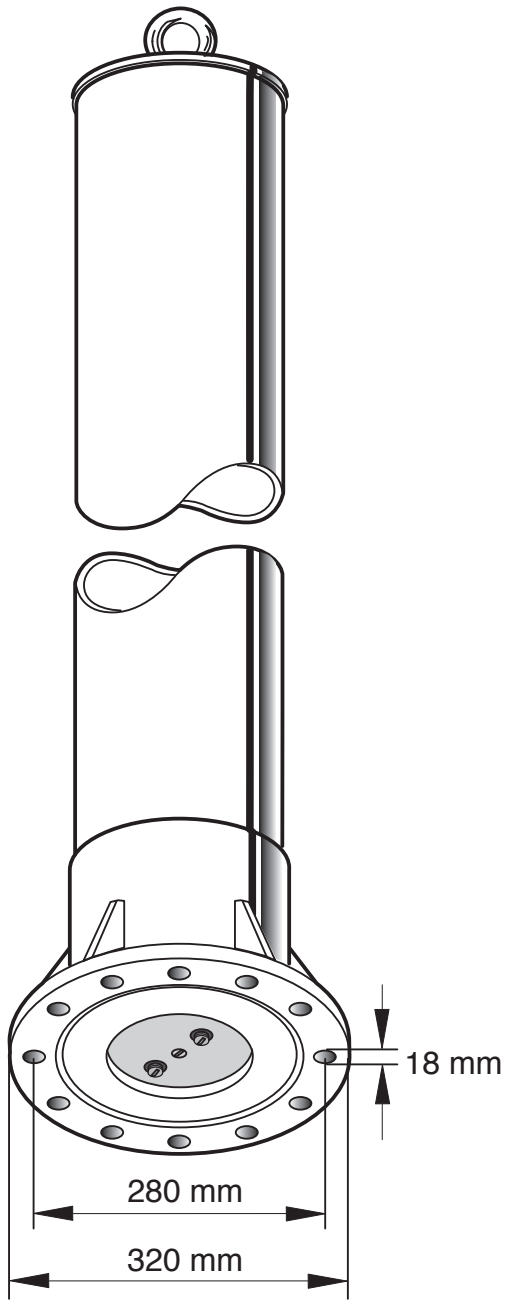
For standard models



Horizontal Radiation Pattern Vertical Radiation Pattern

Radiation Pattern —— 225 MHz ····· 400 MHz

601475
K7540121



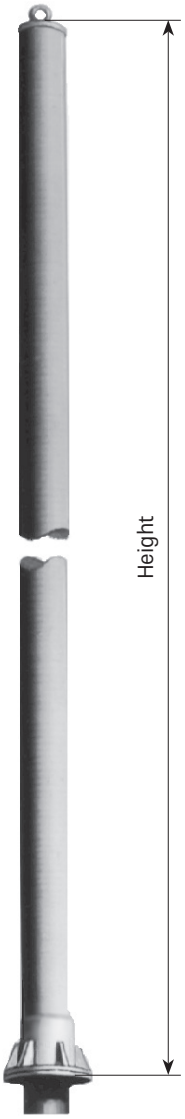
- Mount the aluminum flange on plane surface only (max. unevenness 0.5 mm)
- Put the O-ring carefully into the circular groove of the flange
- Mounting screws: M16 stainless or hot-dip galvanized steel
  (min. strength 5.6 accord. DIN 267)
  Max. torque: 50 Nm (screws should be greased with MoS_2)
- Put a stainless steel washer between aluminum flange and screw head or nut

Omnidirectional Antenna 225–400 MHz

KATHREIN

Polarization V

- Special models of gain antennas.
- With an integrated power splitter.



Omnidirectional gain antenna

Order No.	723141	723517
Input	N female	
Connector position	Bottom, inside flange	
Max. power	110 W (at 50 °C ambient temperature)	
Frequency range	225 – 400 MHz	
VSWR	< 2.0	
Gain	3 dBd	7 dBd
Impedance	50 Ω	
Polarization	Vertical	
Decoupling	> 27 dB between adjacent dipoles	
Weight	29 kg	67 kg
Radome diameter	188 mm	
Height	2650 mm	5770 mm
Bending moment	560 Nm at 160 km/h (at attachment point)	2690 Nm
Wind load	430 N (at 160 km/h)	940 N
Max. wind velocity	200 km/h	

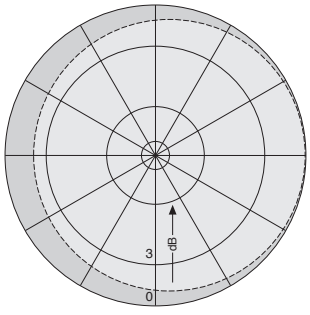
Material: Radiating elements: Hot-dip galvanized steel.
Base: Weatherproof aluminum.
Radome: Fiberglass, colour: Brown.
Internal screws and nuts: Stainless steel.

Mounting: See flange drawing.

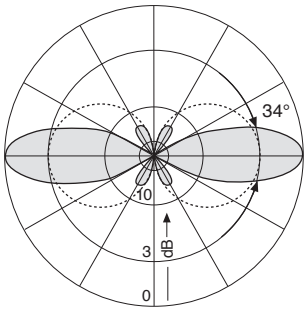
Scope of supply: Antenna with neoprene O-ring at the flange, but without screws.

Grounding: The antenna is DC grounded by a cross section of 214 mm^2 hot-dip galvanized steel.

Radiation Pattern (typical)

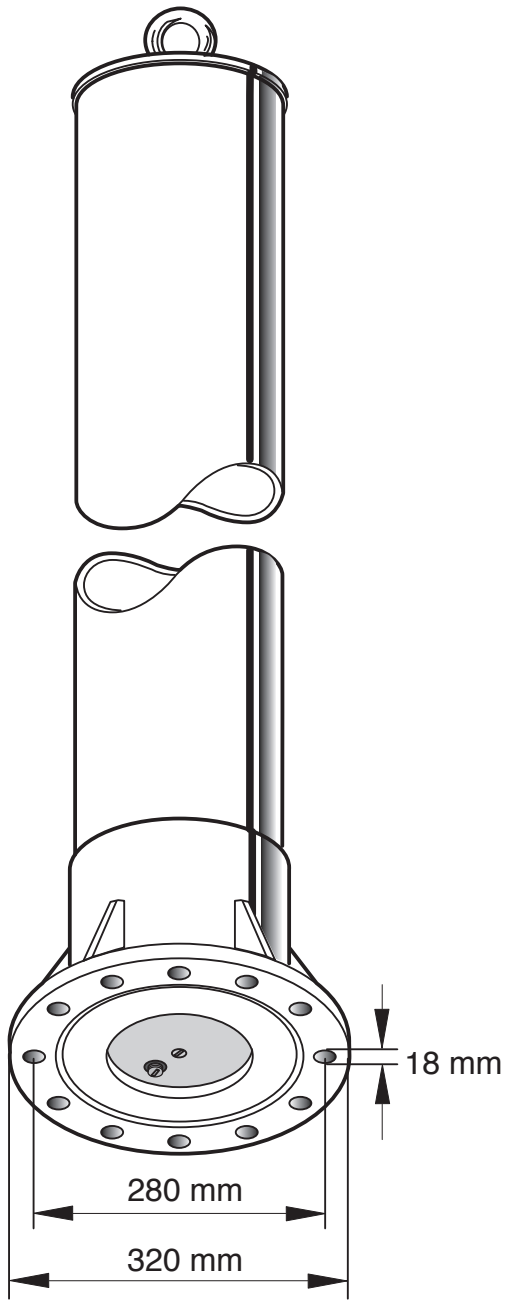


Horizontal Radiation Pattern



Vertical Radiation Pattern
(example 723141)

723141



- Mount the aluminum flange on plane surface only (max. unevenness 0.5 mm)
- Put the O-ring carefully into the circular groove of the flange
- Mounting screws: M16 stainless or hot-dip galvanized steel
  (min. strength 5.6 accord. DIN 267)
  Max. torque: 50 Nm (screws should be greased with MoS_2)
- Put a stainless steel washer between aluminum flange and screw head or nut

Antenna Type	Frequency Range	Page
Marker Beacon Antenna	**74–76 MHz**	**49**
Localizer Monitor Antenna	**108–118 MHz**	**50–51**
Glide Path Antennas	**328–336 MHz**	**52–57**
DME Antennas	**960–1215 MHz**	**58–61**
ADS-B Antennas	**1027–1033 MHz** **1087–1093 MHz**	**62–63**

Yagi Antenna

74–76 MHz

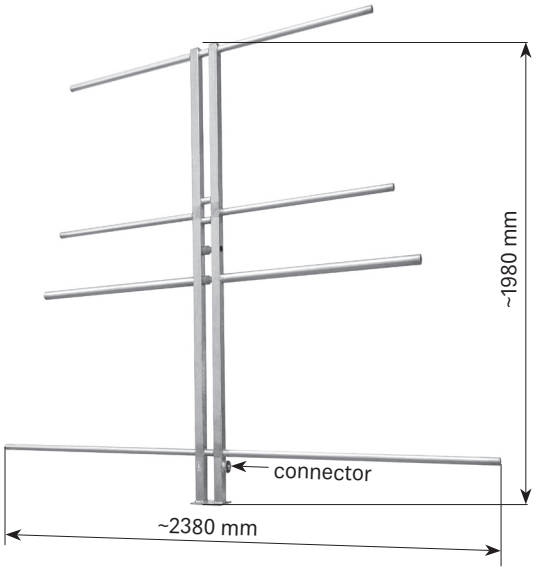
Polarization

H

KATHREIN

- 4-element yagi antenna.
- Marker Beacon antenna in upright position.

Order No.	80010228
Input	N female
Connector position	See photo
Max. power	15 W
Frequency range	74 – 76 MHz
VSWR	< 1.4
Gain	4.9 dBd
Impedance	50 Ω
Polarization	Horizontal
Height/width	1980 / 2380 mm
Packing size	2424 x 2118 x 182 mm
Weight	22 kg
Windload	590 N (at 160 km/h)
Max. wind velocity	180 km/h

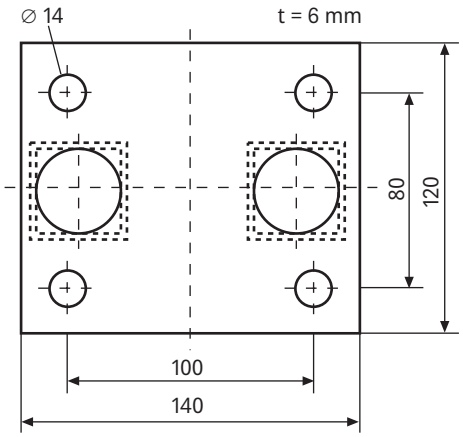


Material: Hot-dip galvanized steel.

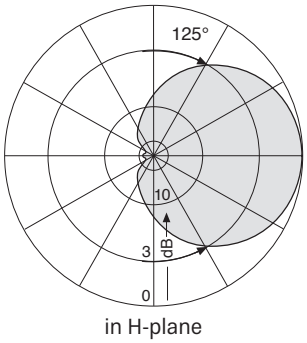
Montage: Using the supplied flange 120 x 140 mm.

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

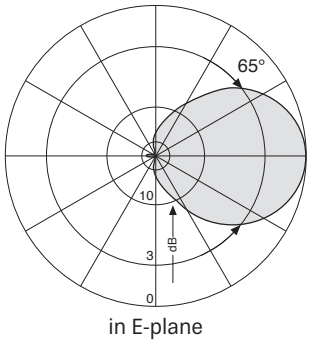
Supplied flange: All dimensions in mm



Radiation Pattern (at mid-band)



in H-plane



in E-plane

Yagi Antenna

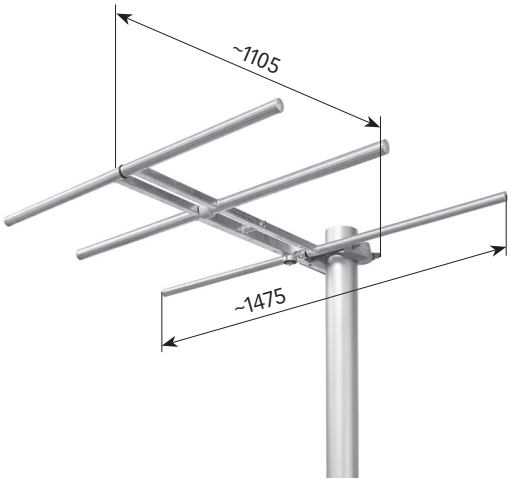
108–118 MHz

KATHREIN

Polarization

H

- 3-element yagi antenna.
- Localizer monitor antenna.



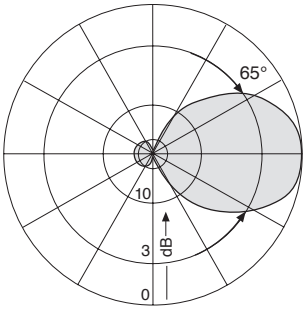
Order No.	711329
Input	N female
Max. power	300 W (at 50 °C ambient temperature)
Frequency range	108 – 118 MHz
VSWR	< 1.3
Gain	5 dBd
Impedance	50 Ω
Polarization	Horizontal
Front-to-back ratio	> 15 dB
Packing size	1525 x 1190 x 92 mm
Weight	10 kg
Wind load	220 N (at 150 km/h)
Max. wind velocity	150 km/h

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

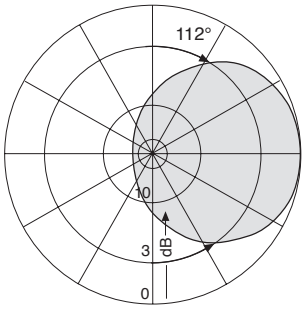
Mounting: To pipes of 60–125 mm diameter by means of hot-dip galvanized steel clamp, supplied.

Lightning protection: All metal parts of this antenna are DC grounded.

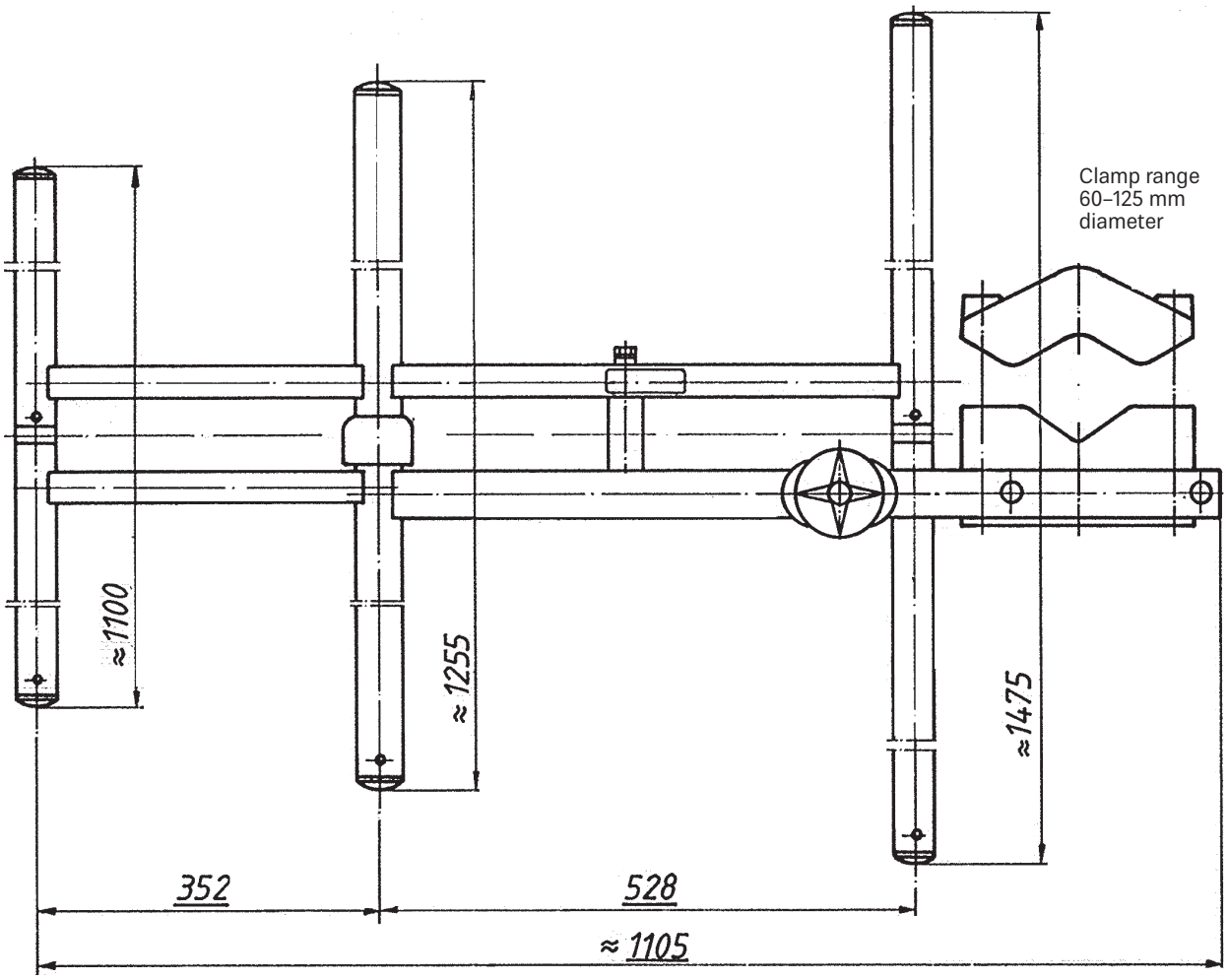
Radiation Pattern (at mid-band)

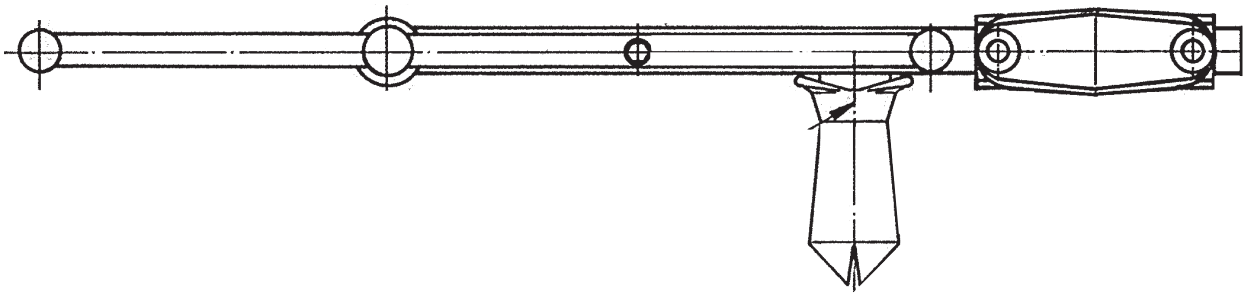


Horizontal Radiation Pattern



Vertical Radiation Pattern


Clamp range
60–125 mm
diameter
≈1100
≈1255
≈1475
352
528
≈1105



Dipole Antenna

328–336 MHz

KATHREIN

Polarization

H

- Half-wave dipole in front of a reflector screen.
- In fiberglass radome.
- Monitor antenna for glide-path signal.

Order No.	715630
Input	N female
Connector position	Rearside
Max. power	60 W (at 50 °C ambient temperature)
Frequency range	328 – 336 MHz
VSWR	< 1.3
Gain	4 dBd
Impedance	50 Ω
Polarization	Horizontal
Height/width/depth	300 / 480 / 135 mm
Weight	4.3 kg
Wind load	140 N (at 160 km/h)
Max. wind velocity	200 km/h (incl. ½″ radial ice)

Material: Radiators: Heavy duty aluminum. Reflector screen: High strength aluminum alloy sheet. Radome: Impact-resistant fiberglass. Hot-dip galvanized steel clamps. All screws and nuts: Stainless steel.

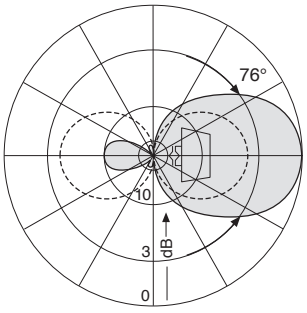
Mounting: To pipes of 60–120 mm OD by means of hot-dip galvanized steel clamp, supplied.

Grounding: The antenna is DC grounded by a cross section of 304 mm² aluminum.

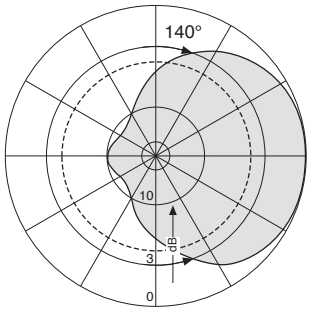
Ice protection: The rugged, impact-resistant fiberglass radome keeps the electrical characteristics, even under heaviest icing, nearly constant.

Scope of supply: Antenna including mounting hardware.

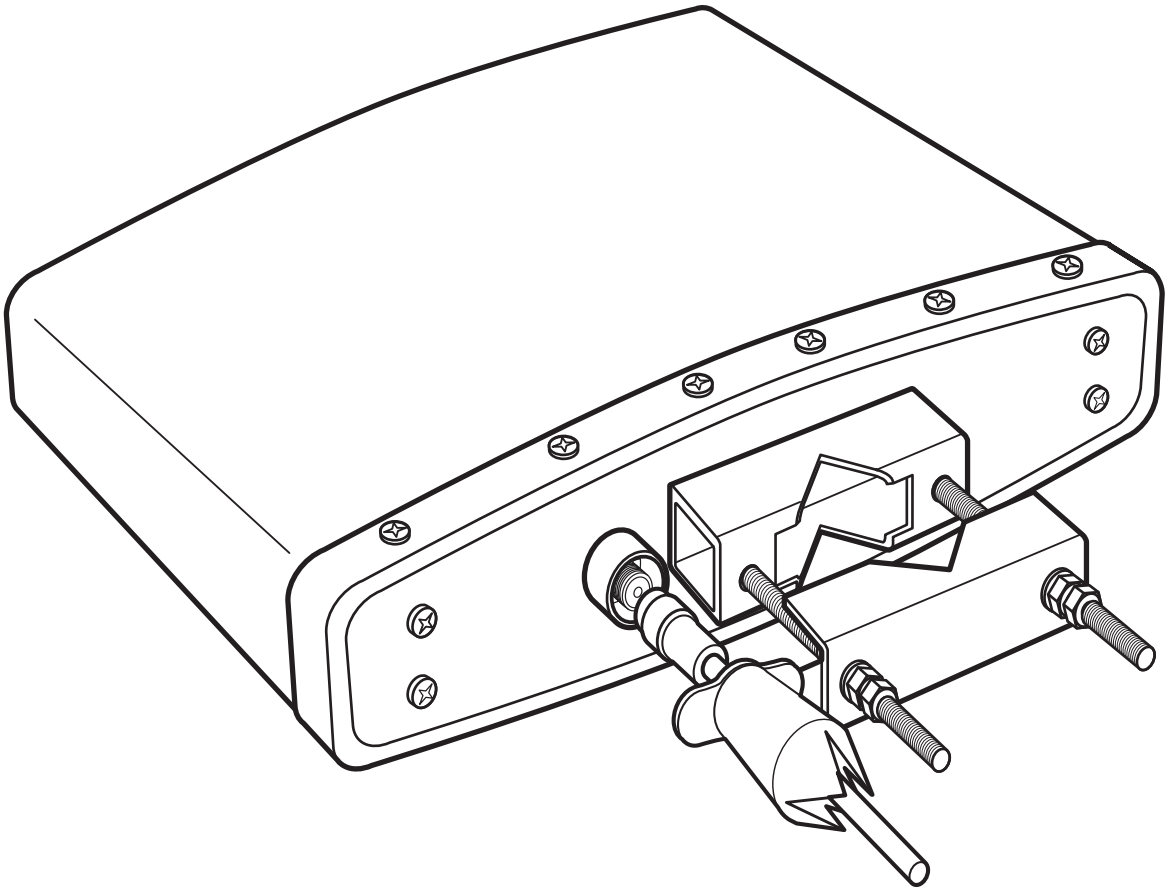
Radiation Pattern (at mid-band)



Horizontal Radiation Pattern



Vertical Padiation Pattern



Panel Antenna

328–335.5 MHz

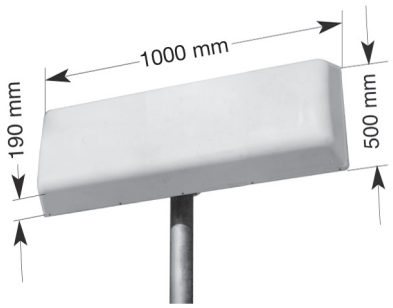
KATHREIN

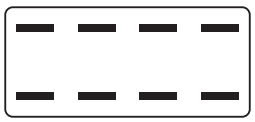
Polarization

H

- Glide path antenna.
- 4 dipole panel protected by fiberglass radome.
- Includes radiation monitoring system.

Order No.	714747
Input	N female
Max. power input (CW)	60 W (at 50 °C ambient temperature)
Frequency range	328 – 335.5 MHz
VSWR	< 1.1
Gain	8.5 dBd
Impedance	50 Ω
Polarization	Horizontal
Max. current (DC)	1 A (between inner and outer conductor)
Width/height/depth	1000 / 500 / 190 mm
Packing size	106 x 50 x 50 cm
Weight	12 kg
Wind load (at 160 km/h)	Frontal: 625 N Rearside: 875 N Lateral: 80 N
Max. wind velocity w/o ice 1/2" radial ice	 220 km/h 160 km/h





Material: Radiators: Heavy duty cast aluminum 35 x 2 mm. Reflector screen: High strength aluminum alloy sheet. Radome: Impact-resistant fiberglass. Hot-dip galvanized steel clamps. All screws and nuts: Stainless steel.

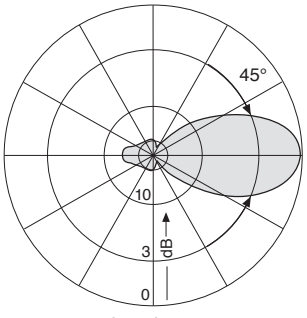
Mounting: E.g. by means of hot-dip galvanized steel clamps (optional) to be ordered separately.

Lightning protection: The antenna is DC grounded by a cross section of 204 mm^2 aluminum.

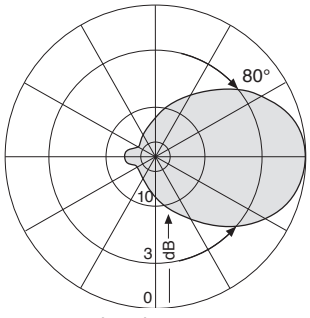
Scope of supply: Antenna with two weather protective rubber caps for the connectors, but without mounting hardware.

RF monitor system	
Input	N female
Frequency range	328 – 335.5 MHz
VSWR	< 1.3
Coupling attenuation	30 ±4 dB

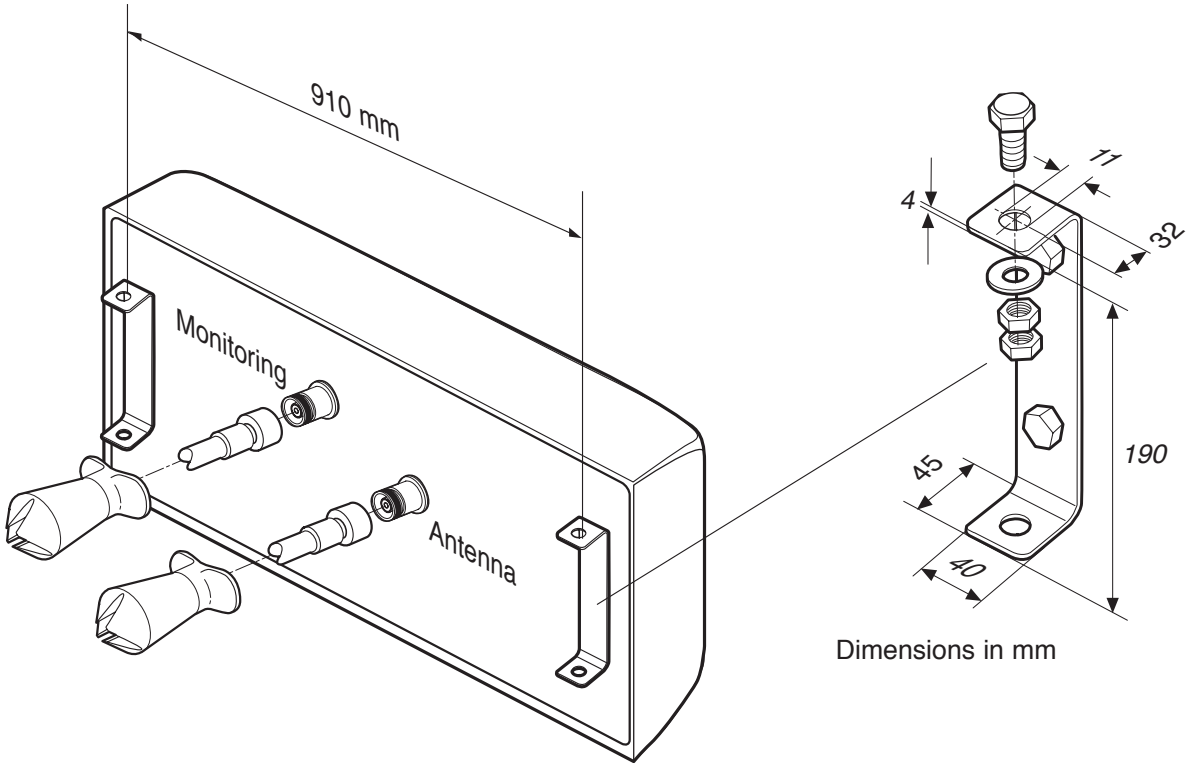
Radiation Pattern (at mid-band)



Horizontal Radiation Pattern



Vertical Radiation Pattern



Dimensions in mm

Panel Antenna

328–335.5 MHz

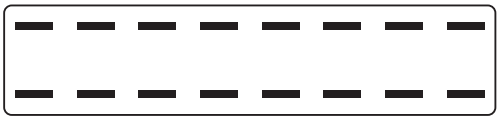
KATHREIN

Polarization

H

- Glide path antenna.
- 8 dipole panel protected by fiberglass radome.
- Includes radiation monitoring system.

Order No.	713316B
Input	N female
Max. power input (CW)	60 W (at 50 °C ambient temperature)
Frequency range	328 – 335.5 MHz
VSWR	< 1.1
Gain	12 dBd
Impedance	50 Ω
Polarization	Horizontal
Max. current (DC)	1 A (between inner and outer conductor)
Width/height/depth	2000 / 500 / 190 mm
Packing size	2100 x 510 x 260 mm
Weight	19 kg
Wind load (at 160 km/h)	Frontal: 1250 N Rearside: 1750 N Lateral: 80 N
Max. wind velocity	200 km/h (incl. ½″ radial ice)



Material: Dipole system: Cast aluminum.
Reflector: Weatherproof aluminum.
Radome: Fiberglass (white).
Hot-dip galvanized steel clamps.

All screws and nuts: Stainless steel.

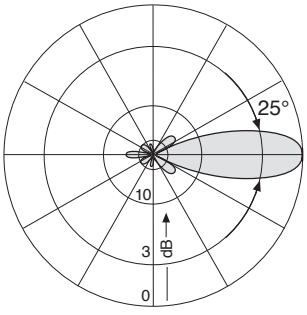
Mounting: E.g. by means of hot-dip galvanized steel brackets (optional), to be ordered separately.

Grounding: The antenna is DC grounded including the inner conductors.

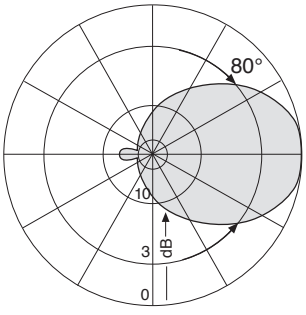
Scope of supply: Antenna with two weather protective rubber caps for the connectors, but without mounting hardware.

RF monitor system	
Input	N female
Frequency range	328 – 335.5 MHz
VSWR	< 1.3
Coupling attenuation	31 ±1 dB

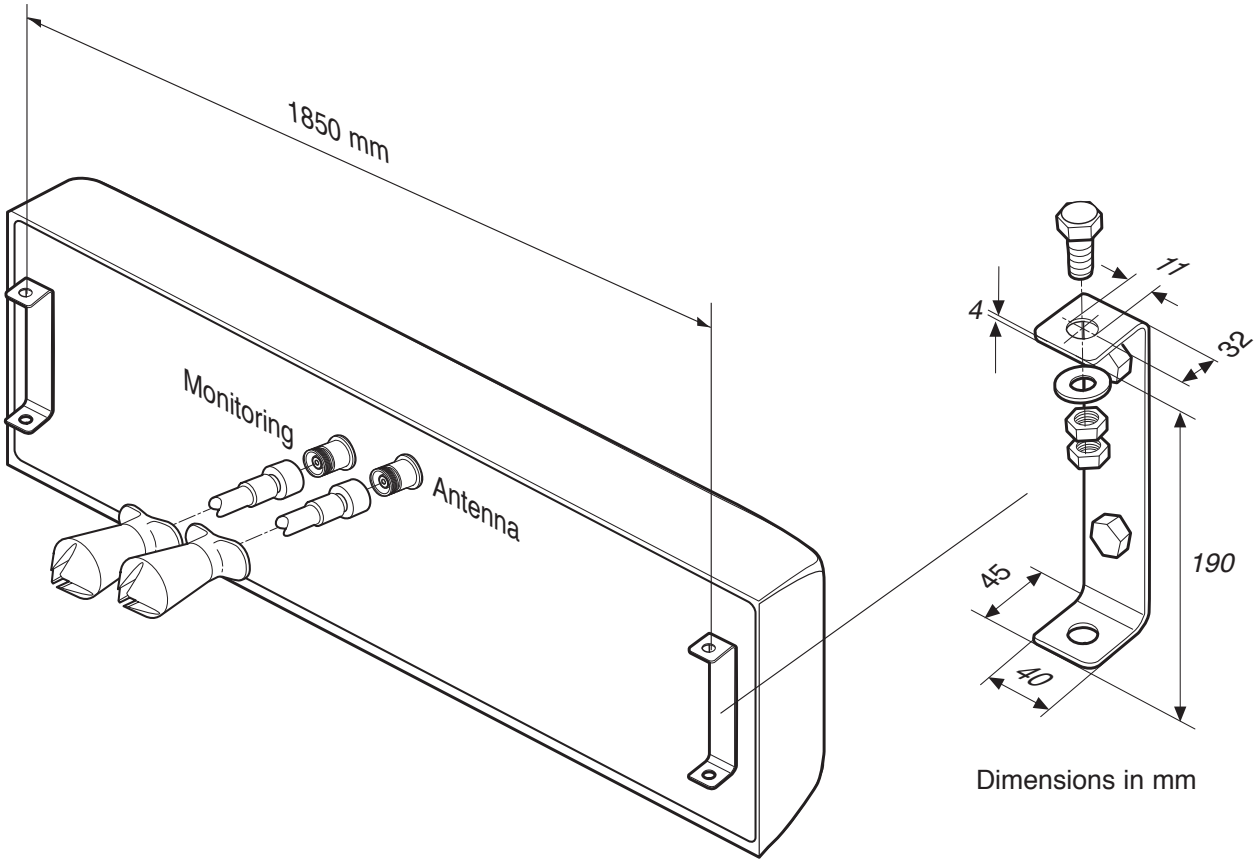
Radiation Pattern (at mid-band)



Horizontal Radiation Pattern



Vertical Radiation Pattern



Dimensions in mm

Omnidirectional Antenna 960–1215 MHz

KATHREIN

Polarization V

- DME antenna consists of a number of identical, decoupled half-wave dipoles, phase-feeding cables and transformer.
- Two antenna monitor probes integrated.
- Widely immune to damage from lightning.
- Type 715986 includes top mounted LED obstruction light.

Order No.	715986	722394
Obstruction light	Yes	No
Frequency range	960 – 1215 MHz	
VSWR	< 1.8 (antenna input)	
Gain	9 ±0.5 dBi	
Impedance	50 Ω	
Horizontal pattern	Omnidirectional: Devitation from omni better ±1.5 dB	
Vertical pattern uptilt	3 ±0.5°	
Coupling attenuation	25 ±3 dB (antenna/monitor probes)	
RF peak power	10 kW, modulated as per ICAO recommendation	
Polarization	Vertical	
Temperature range	–40 to +60 °C ambient	

Material: Dipoles, decoupling elements, supporting tube and transformer: High quality brass.
Base: Weather-resistant aluminum.
Radome: Fiberglass, colour: Grey.
All screws and nuts: Stainless steel.

Mounting: To pipes of 60–62 mm OD by means of mounting clamps, supplied.

Grounding: The antenna is DC grounded by a cross section of 98 mm² brass.

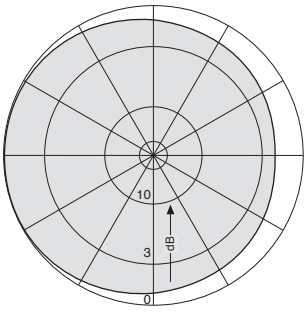
Obstruction light: The antenna 715986 is fitted with a double LED obstruction light. The obstruction light is preconfigured as follows: operation with 1 LED and activated failure detection. In case of a malfunction of the main LED, the second LED will be activated automatically.

Technical data

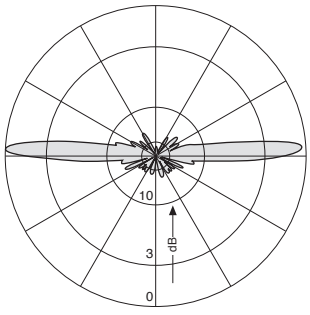
Supply voltage	180–254 V, ~50–60 Hz
Power input	7 W
Average life	~100,000 h

Please note: The installation team must be properly qualified and also be familiar with the relevant national safety regulations! Non observance of following standards may damage or destroy the devices and severe injuries may occur!

Radiation Pattern (at mid-band)



Horizontal Radiation Pattern

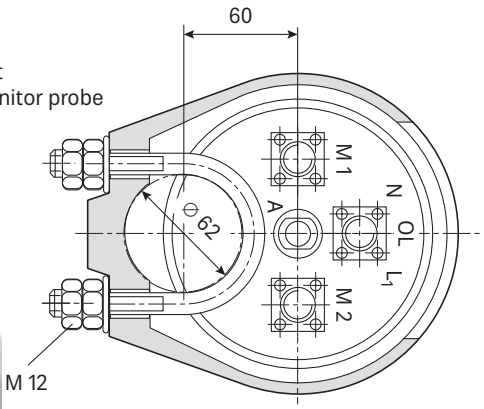


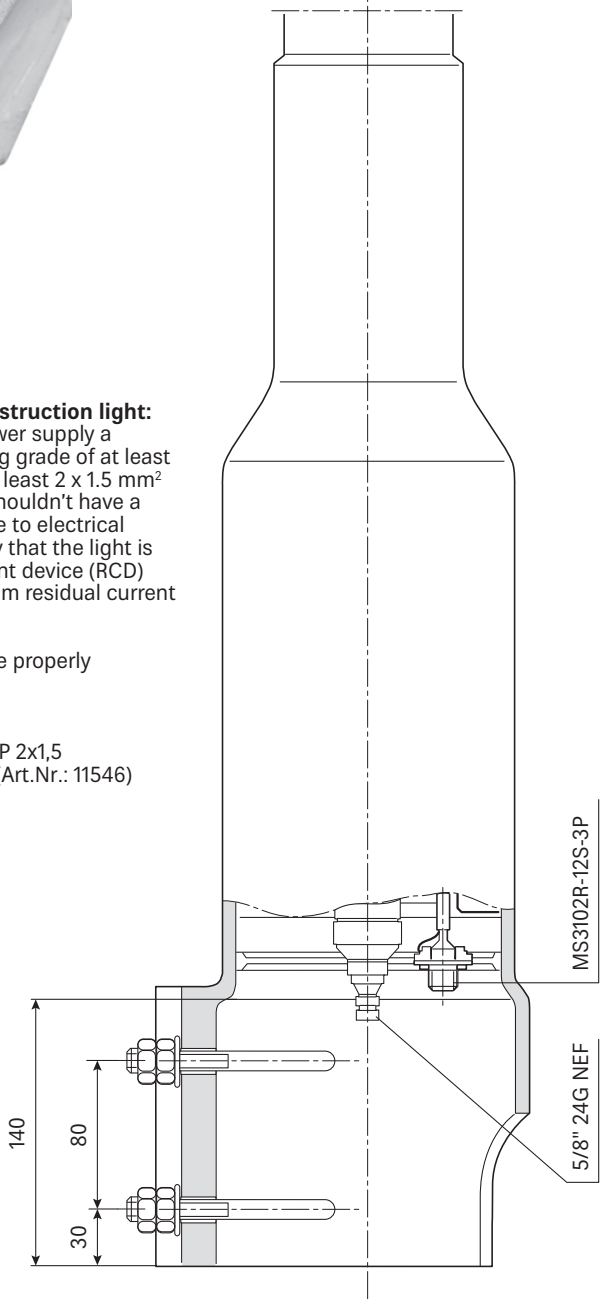
Vertical Radiation Pattern

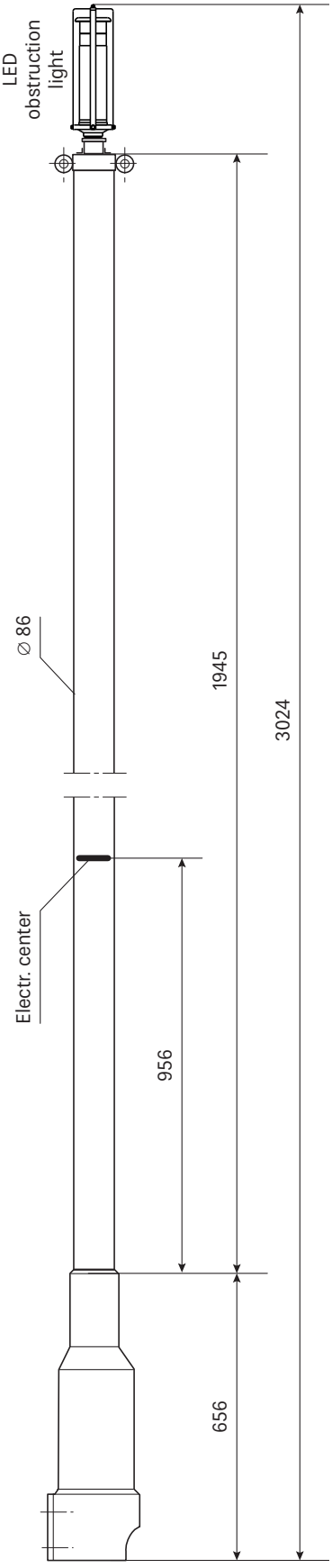
Mechanical specifications	715986	722394
Input	N female	N female
Connector position	Bottom	Bottom
Wind load	370 N (at 150 km/h with 12 mm radial ice)	290 N
Max. wind velocity	200 km/h (incl. 12 mm radial ice)	241 km/h
Weight	23 kg	20 kg
Radome diameter	86 mm	86 mm
Length	3024 mm	2657 mm
Packing size [mm]	3180 x 280 x 300	2780 x 280 x 300

OL: Obstruction light
M1, M2: Antenna monitor probe
A: RF input

Bottom view







Installation hints for LED obstruction light:
For connection to electric power supply a shielded cable with a shielding grade of at least 80% and a cross-section of at least 2 x 1.5 mm² is recommended. The cable shouldn't have a protection earth (PE) wire. Due to electrical safety reasons it is mandatory that the light is connected to a residual current device (RCD) with a recommended maximum residual current of 30 mA.

Antenna support pipe must be properly grounded.

Cable examples:
LAPP ÖLFLEX® CLASSIC 415 CP 2x1,5
Helukabel OZ-600-Y-CY 2x1,5 (Art.Nr.: 11546)
Necessary cable connector:
1x Amphenol MS3101R-12S-3S

Observance of standards:
DIN VDE 0100
DIN VDE 0185
DIN VDE 0855

Panel Antenna

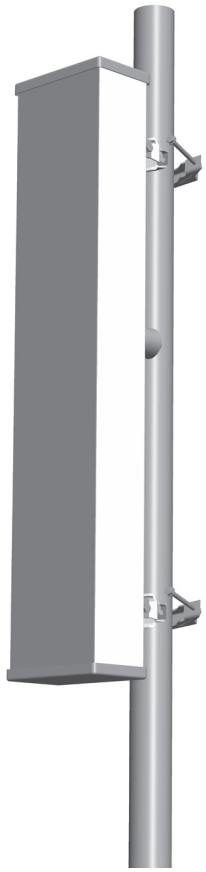
960–1215 MHz

KATHREIN

Polarization

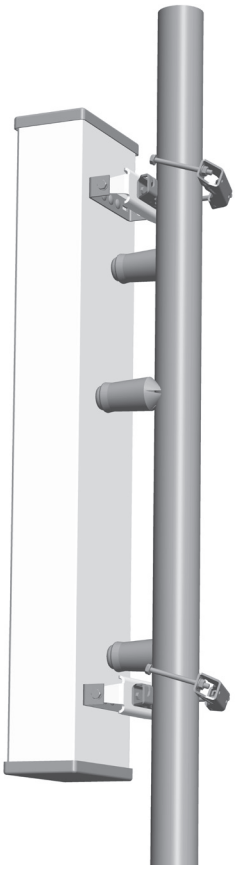
V

- DME antenna.
- 4 dipole panel protected by fiberglass radome.
- Includes radiation monitoring system.

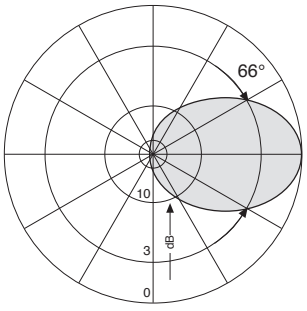


Order No.	716405	88010003
Inputs (antenna and monitoring probes)	N female	
Connector positions	Rearside	
Frequency range	960 – 1215 MHz	
VSWR	< 1.6	
Gain	14 dBd	
Impedance	50 Ω	
Coupling attenuation	25 ±3 dB (antenna/monitoring probes)	20 ±3 dB
Beam tilt	+4° ±0.5°	
R. F. peak power	10 kW; duty cycle 2%	
Polarization	Vertical	
Temperature range	–40 °C to +60 °C ambient	
Height/width/depth	1305 / 255 / 150 mm	
Packing size	1420 x 360 x 250 mm	
Weight	12 kg	
Wind load (at 160 km/h)	Frontal: 675 N Lateral: 350 N Rearside: 650 N	
Max. wind velocity	200 km/h (incl. ½˝ radial ice)	

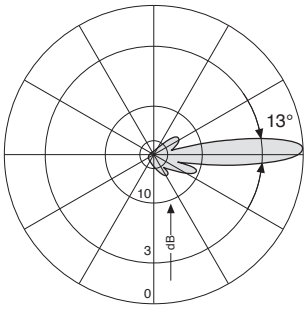
Material:	Radiators: Brass. Reflector screen: High strength aluminum alloy sheet. Cover: Fiberglass. Clamps: Hot dip galvanized steel. All screws and nuts: Stainless steel
Mounting:	To pipes of 42–115 mm OD by means of mounting clamps, supplied. Optional clamps for larger OD see accessories list.
Grounding:	The antenna is DC grounded via mounting clamps. The inner conductors are also DC grounded.
Scope of supply:	Antenna including clamps and three weather protective rubber caps for the connectors.



Radiation Patterns (at mid-band)

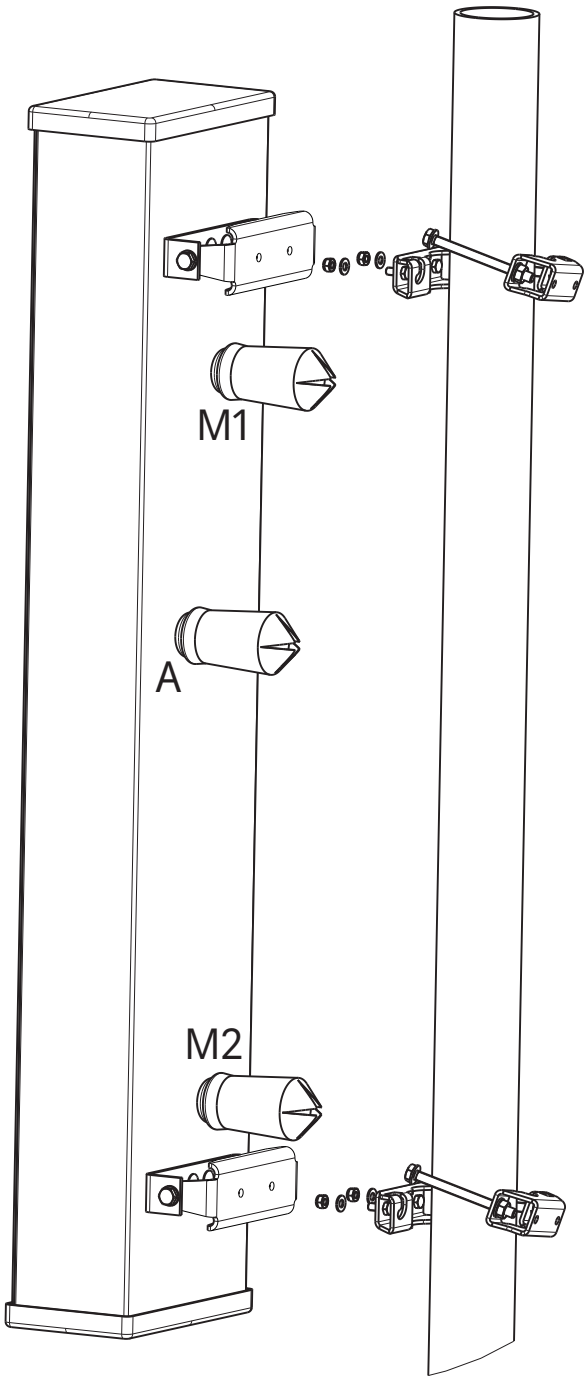


Horizontal Radiation Pattern



Vertical Radiation Pattern

M1, M2 = connectors monitoring system
A = connector RF input



Torque:
M8 – 20 Nm
M10 – 25 Nm

Accessories

Type No.	Description	Remarks	Weight approx.	Units per antenna
738546	**1 clamp**	**Mast: 42–115 mm diameter**	**1.1 kg**	**2 (included in the scope of supply)**
731651	1 clamp	Mast: 28–60 mm diameter	0.8 kg	2 (order separately if required)
85010002	1 clamp	Mast: 110–220 mm diameter	2.7 kg	2 (order separately if required)
85010003	1 clamp	Mast: 210–380 mm diameter	4.8 kg	2 (order separately if required)
85010060	1 offset	in combination with the clamps	1.3 kg	2 (order separately if required)

For other special items consult our catalogue.

Omnidirectional Antenna 1027–1033 MHz 1087–1093 MHz

KATHREIN

Polarization V

- ADS-B antenna consists of a number of identical, decoupled half-wave dipoles, phase-feeding cables and transformer.
- Two antenna monitor probes integrated.
- Widely immune to damage from lightning.
- Minimized “cone of silence”.

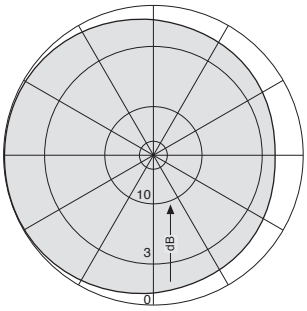
Order No.	88010002
Frequency range	1027 – 1033 / 1087 – 1093 MHz
VSWR	< 1.8
Gain	11.5 ±0.5 dBi
Impedance	50 Ω
Horizontal pattern	Omnidirectional: Devitation from omni better ±1.5 dB
Vertical pattern uptilt	2 ±0.5°
Coupling attenuation	25 ±3 dB (antenna/monitor probes)
R. F. peak power	1 kW, modulated as per ICAO recommendation
Polarization	Vertical
Temperature range	–55 to +70 °C ambient

Material: Dipoles, decoupling elements, supporting tube and transformer: High quality brass.
Base: Weather-resistant aluminum.
Radome: Fiberglass, colour: Grey.
All screws and nuts: Stainless steel.

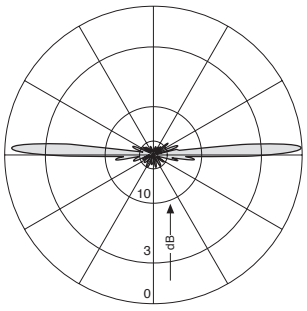
Mounting: To pipes of 60–62 mm OD by means of mounting clamps, supplied.

Grounding: The antenna is DC grounded by a cross section of 98 mm² brass.

Radiation Pattern (at mid-band)

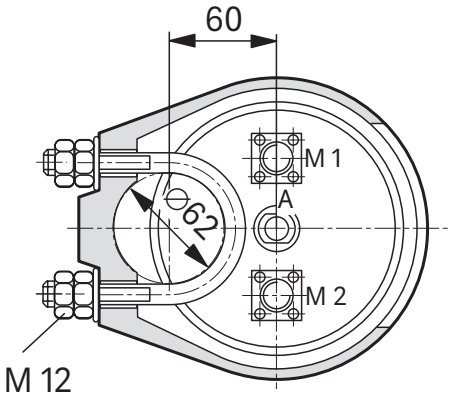


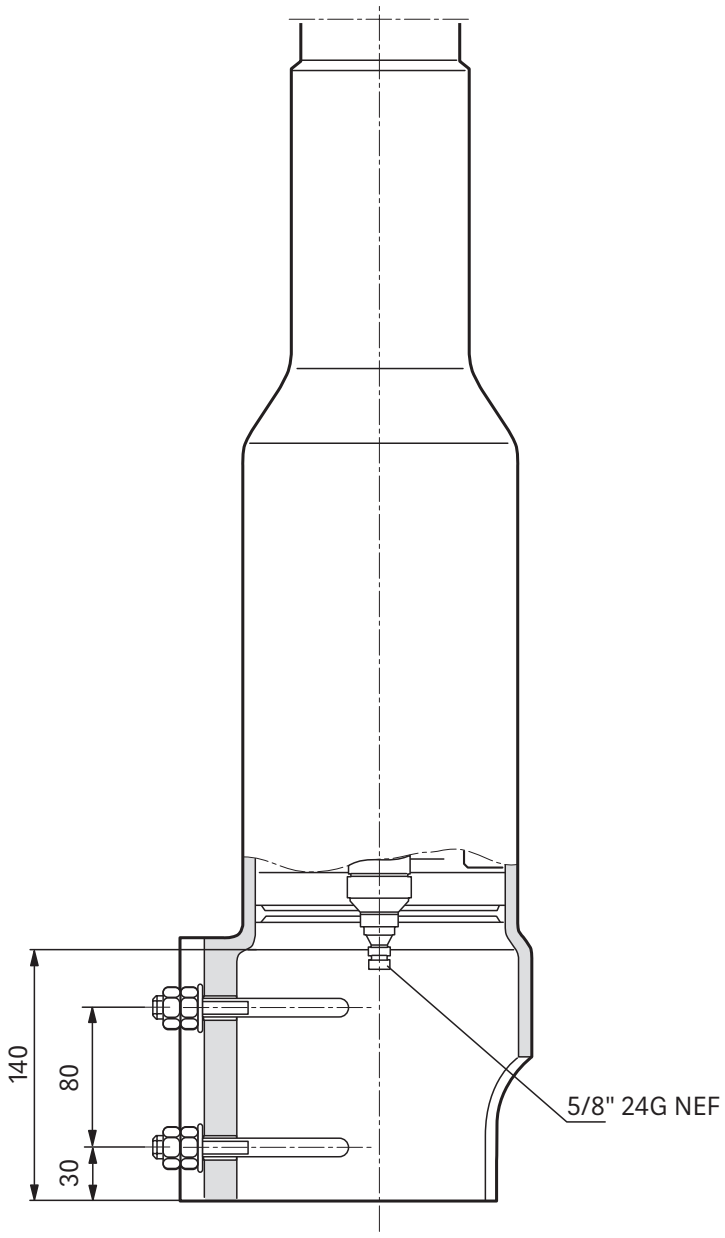
Horizontal Radiation Pattern

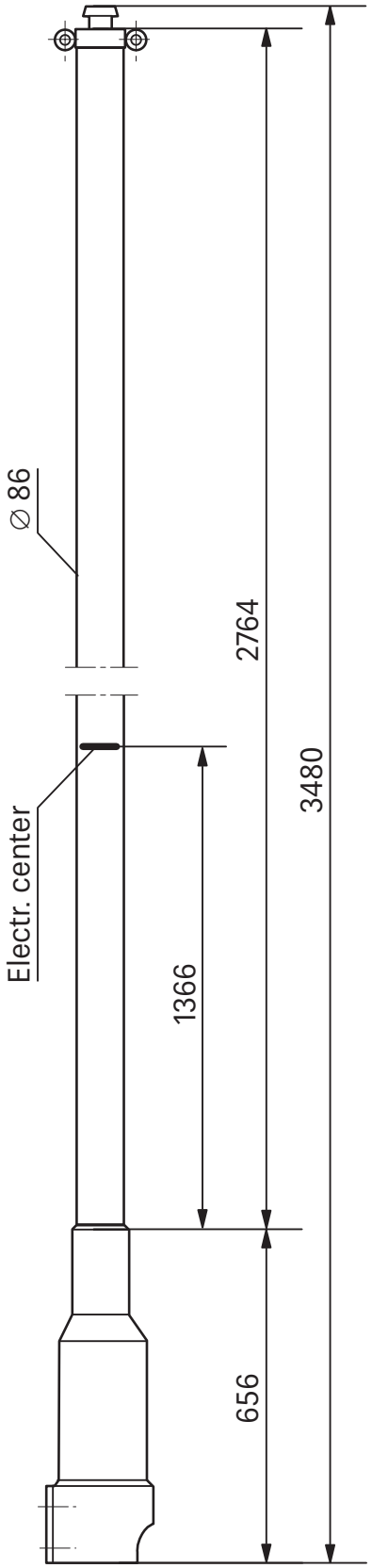


Vertical Radiation Pattern

Mechanical specifications	
Input	N female
Connector position	Bottom
Wind load	380 N (at 150 km/h with 12 mm radial ice)
Max. wind velocity	200 km/h 300 km/h when using plastic guy wires (e.g. parafilropes)
Weight	26 kg
Radome diameter	86 mm
Height	3480 mm
Packing size	3580 x 280 x 300 mm


60
M 1
A
⌀62
M 2
M 12


140
80
30
5/8" 24G NEF


⌀ 86
Electr. center
2764
3480
1366
656

Band-pass Filter
118...144 MHz

KATHREIN

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

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

Design and construction:
The band-pass filter is designed as a temperature stabilized λ/4 coaxial resonator. The pass band frequency as well as the input and output coupling are adjustable.

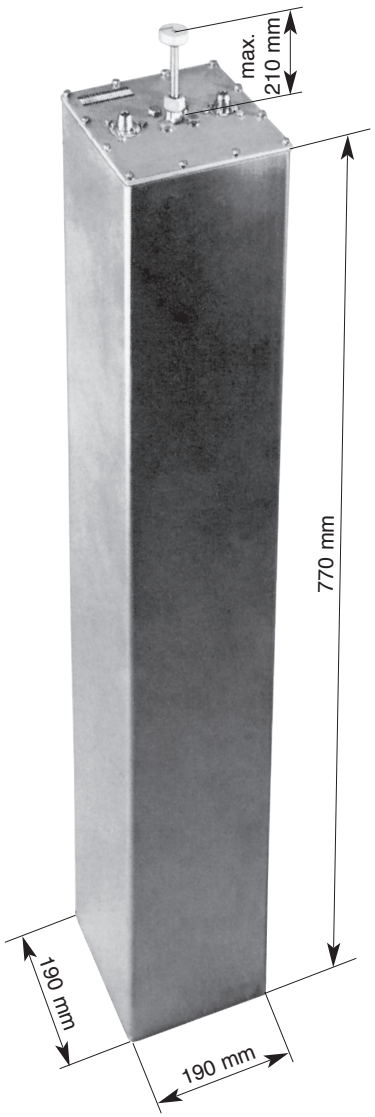
Filter characteristics:
Narrow pass band range with low insertion loss, high stop band attenuation, variable filter response corresponding to the desired stop band attenuation.

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

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

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

Tuning:
The band-pass filter is tuned to the desired pass band frequency and insertion loss at the factory. Please specify desired pass band frequency **and** insertion loss (curve A, B, C, D) when ordering.
The pass band filter can also be tuned on site using the supplied instructions.



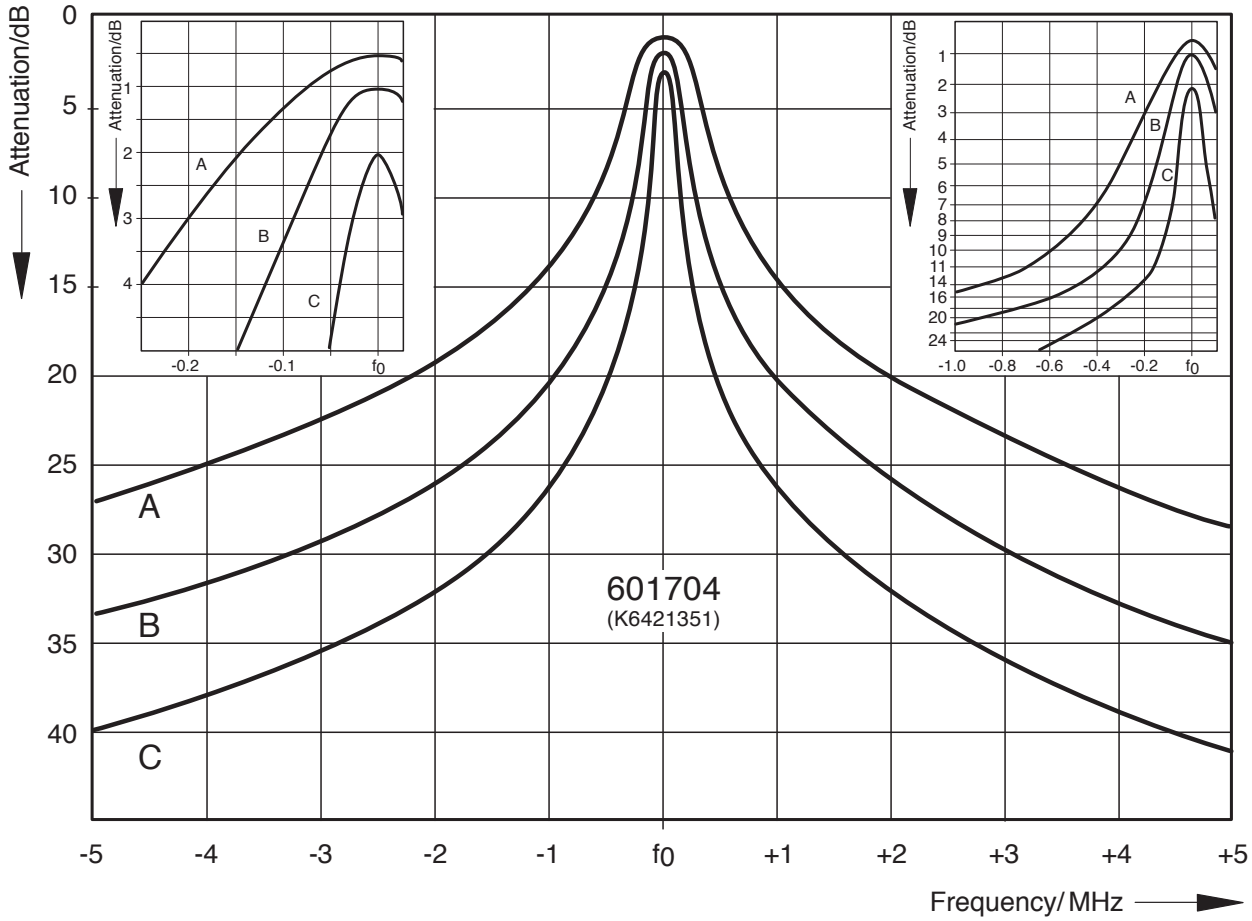
Technical Data

Order No.	**601704** K6421351
Frequency range	118 ... 144 MHz
Insertion loss	0.5 ... 2 dB
VSWR	< 1.5
Impedance	50 Ω
Input power	< 200 W
Temperature range	–30 ... +60 °C
Connectors	N female, silver-plated
Material	Outer conductor: Aluminum Inner conductor: Brass, silver-plated
Installation	Free standing or wall mounting with mounting angles
Attached hardware	Filter with 2 mounting angles and 2 connecting pieces
Weight	13 kg
Packing size	207 x 1125 x 207 mm
Dimensions (w x h x d)	190 x max. 980 x 190 mm (with tuning rod)

Band-pass Filter
118...144 MHz
Typical attenuation curves

Tuning examples:

Band-pass Filter
601704 (K6421351)



Curve	Insertion loss
A	0.5 dB
B	1.0 dB
C	2.0 dB

S-P Filter
118...144 MHz

KATHREIN

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

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

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

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

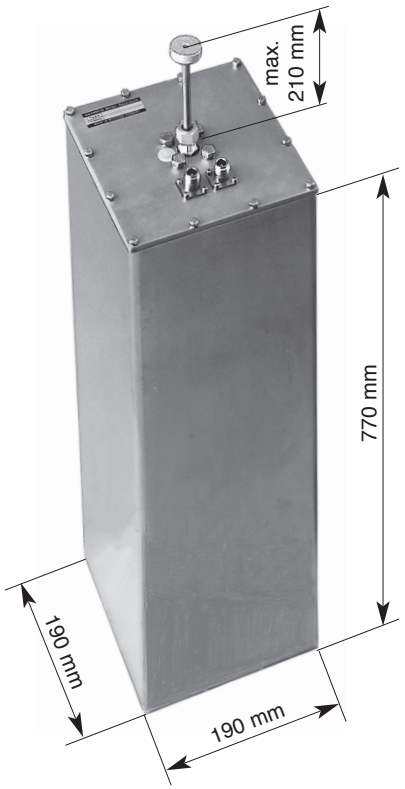
Combination of several S-P filters:
Several S-P filters can be interconnected by cables with an electrical length of λ/4.

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

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

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

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



Technical Data

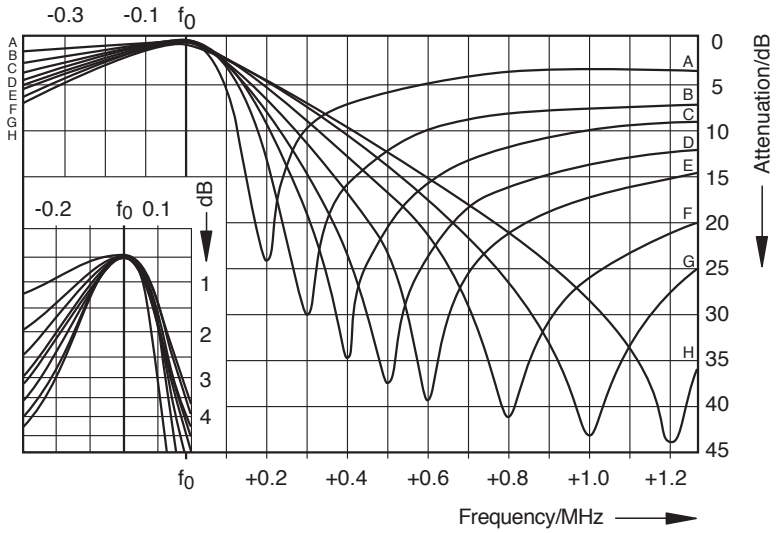
Order No.	**601686** K6421361	**601687** K6421371
Pass frequency	**Below** stop frequency	**Above** stop frequency
Frequency range	118 ... 144 MHz	
Frequency separtion Minimum Maximum	0.2 MHz 5 MHz	
Insertion loss	0.5 ±0.15 dB	
VSWR	< 1.5	
Impedance	50 Ω	
Input power	< 200 W	
Temperature range	–20 ... +60 °C	
Effect of temperature	< 0.2 kHz / °C	
Connectors	N female	
Material	Outer conductor: Aluminum Inner conductor: Brass, silver-plated	
Installation	Free standing or wall mounting with mounting angles	
Attached hardware	S-P filter with 2 mounting angles and 2 connecting pieces	
Weight	13 kg	
Packing size	207 x 1125 x 207 mm	
Dimensions (w x h x d)	190 x max. 980 x 190 mm (with tuning rod)	

S-P Filter
118...144 MHz
Typical attenuation curves

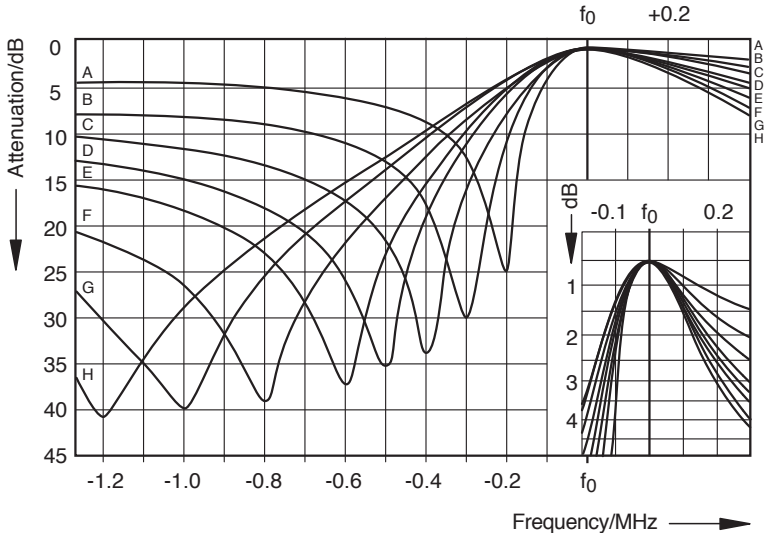
KATHREIN

Tuning examples:

601686 (K6421361)
Pass frequency below stop frequency



601687 (K6421371)
Pass frequency above stop frequency



Curve	Frequency separation stop band frequency / pass band frequency
A	0.2 MHz
B	0.3 MHz
C	0.4 MHz
D	0.5 MHz
E	0.6 MHz
F	0.8 MHz
G	1.0 MHz
H	1.2 MHz

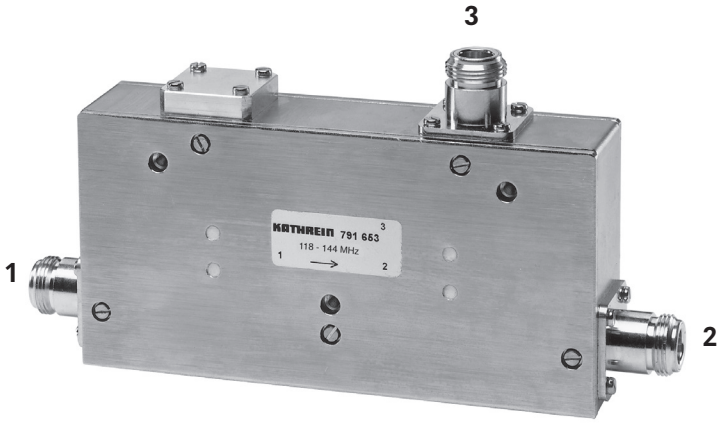
Circulator
118–144 MHz

KATHREIN

The circulator can be used:
– to increase the coupling attenuation between transmitters, to reduce intermodulation products,
– to prevent adverse effects to unmatched load impedance on amplifier performance.

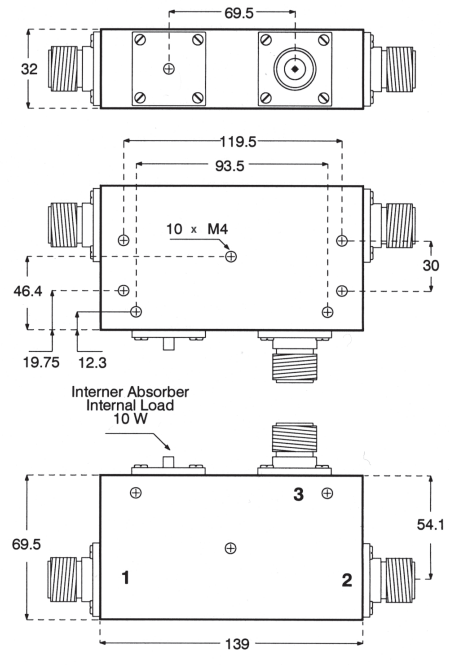
Function:
The circulator is a non-reciprocal component with low insertion loss in the forward direction (1 → 2) and high attenuation in the reverse direction (2 → 1). The impedance at the input (1) of the circulator is constant and independent of the impedance of the components following, since the reflected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

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



Technical Data

Order No.	791653
Frequency range	118 – 144 MHz
Insertion loss 1 → 2	< 0.8 dB
Isolation 2 → 1	> 40 dB
VSWR	< 1.25
Impedance	50 Ω
Input power (CW)	< 120 W
Temperature range	0 ... +50 °C
Connectors	3 x N female
Material	Brass case, nickel plated
Weight	1.2 kg
Dimensions (w x h x d)	180 x 32 x 90 mm (incl. connectors)



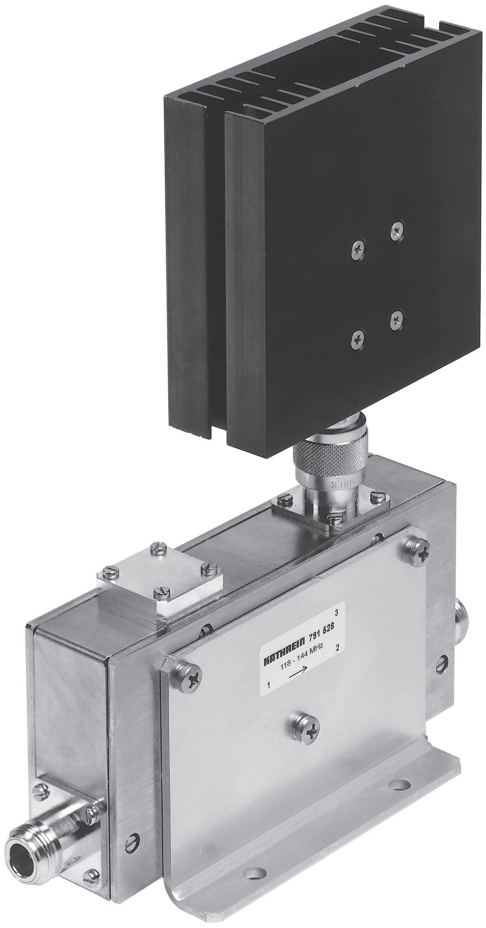
Decoupling unit 118–144 MHz

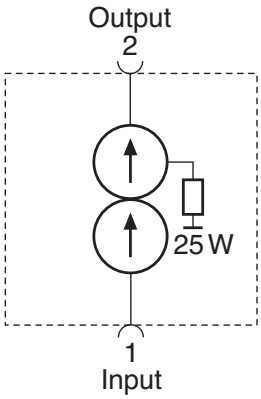
KATHREIN

This decoupling unit can be used to increase the isolation between transmitters, if the used antennas are situated very close together.

The decoupling unit consists of a double circulator and an absorber.

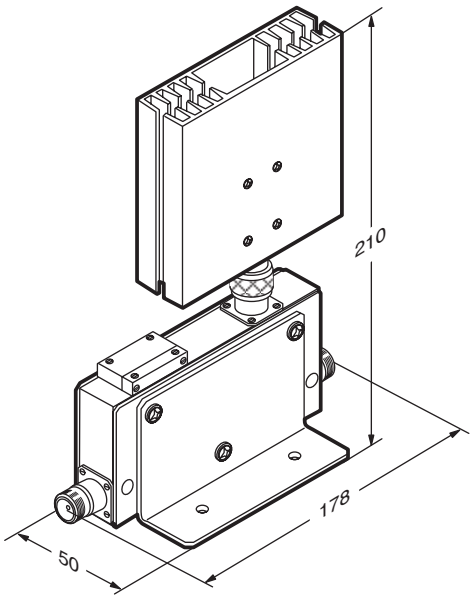
The impedance at the input of the decoupling unit is constant and is independent of the antenna's VSWR. The signal received or reflected by the antenna is fed to the absorber.





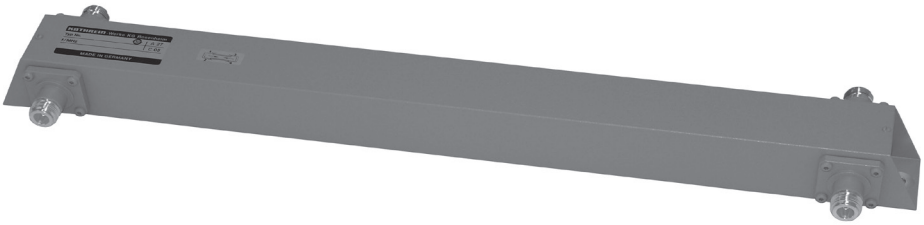
Technical Data

Order No.	791528
Frequency range	118 – 144 MHz
Insertion loss 1 → 2	< 0.8 dB
Isolation	> 40 dB
VSWR	< 1.25
Impedance	50 Ω
Input power	< 100 W
Return power	< 25 W
Temperature range	0 ... +50 °C
Connectors	N female
Installation	With 2 screws (max. 4 mm diameter)
Weight	1.8 kg
Packing size	241 x 202 x 115 mm
Dimensions (w x h x d)	See figure



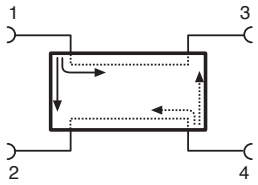
3-dB Coupler (90° Hybrid)
100–150 MHz

KATHREIN

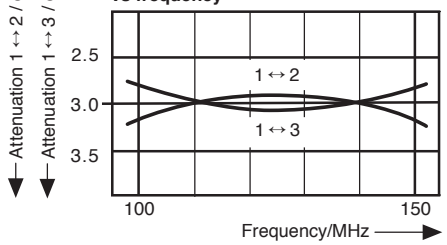


The 3-dB coupler can be used:
- as decoupled power splitter with a ratio of 1:1,
- for the decoupled combining of two transmitters with arbitrarily low frequency spacing (at 3-dB loss),
- for the decoupled combining of two receivers with arbitrarily low frequency spacing,
- for the decoupled combining of two transmitter/receiver units, whose integrated duplexers are within the same frequency range, as a frequency independent 90° phase shifter,
- as a component to form combiners.

Design and function:
The 3-dB coupler has four ports, two of which are decoupled from each other.
For example effective power entering into port 1 is distributed into ports 2 and 3.
Port 4 is decoupled and without power if ports 2 and 3 are ideally matched. In practice an absorber of suitable power is to be planned for according to the mismatch of ports 2 and 3.



Typical attenuation 1 ↔ 2 and 1 ↔ 3 vs frequency

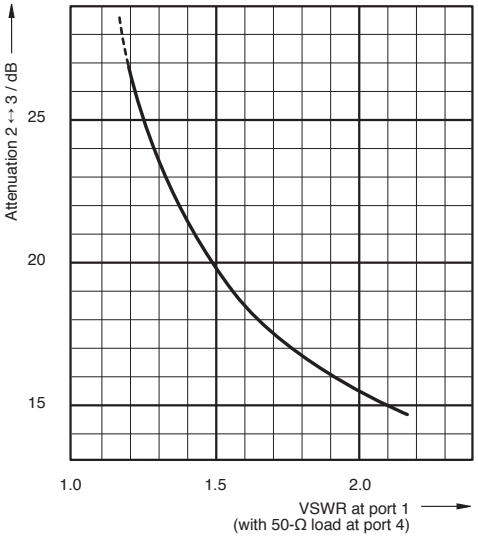


Technical Data

Order No.	**601011** K627031
Connectors	N female
Frequency range	100 – 150 MHz
Attenuation 1 ↔ 2 / 1 ↔ 3	3 ±0.4 dB
Attenuation 2 ↔ 3	See diagram
Directivity	> 35 dB
VSWR	< 1.06
Impedance	50 Ω
Max. power	500 W
Material	Brass, silver-plated
Colour	Grey (RAL 7032)
Installation	With 2 screws (max. 6 mm diameter)
Weight	1.6 kg
Packing size	931 x 54 x 126 mm
Dimensions (w x h x d)	625 x 40 x 95 mm (incl. connectors)

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

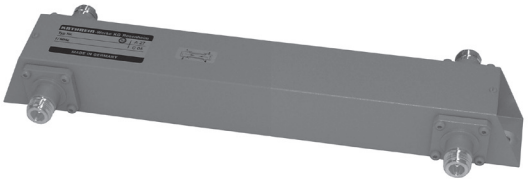
Attenuation 2 ↔ 3 vs VSWR at port 1



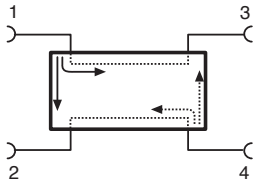
3-dB Coupler (90° Hybrid)
225 – 400 MHz

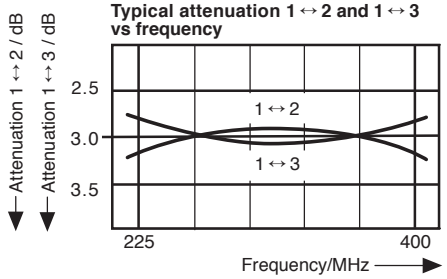
KATHREIN

The 3-dB coupler can be used:
- as decoupled power splitter with a ratio of 1:1,
- for the decoupled combining of two transmitters with arbitrarily low frequency spacing (at 3-dB loss),
- for the decoupled combining of two receivers with arbitrarily low frequency spacing,
- for the decoupled combining of two transmitter/receiver units, whose integrated duplexers are within the same frequency range, as a frequency independent 90° phase shifter,
- as a component to form combiners.



Design and function:
The 3-dB coupler has four ports, two of which are decoupled from each other. For example effective power entering into port 1 is distributed into ports 2 and 3. Port 4 is decoupled and without power if ports 2 and 3 are ideally matched. In practice an absorber of suitable power is to be planned for according to the mismatch of ports 2 and 3.



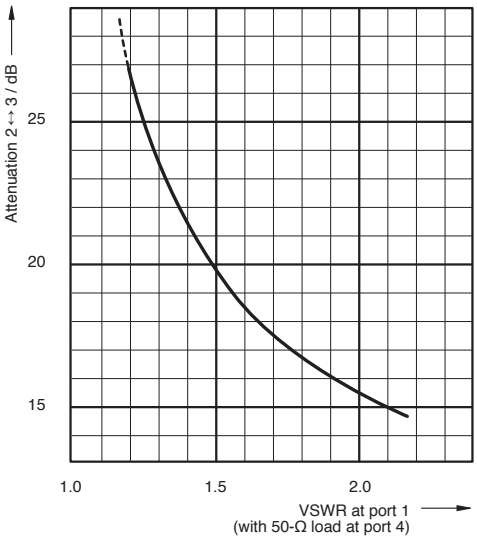


Technical Data

Order No.	**601825** K637011
Connectors	N female
Frequency range	225 – 400 MHz
Attenuation 1 ↔ 2 / 1 ↔ 3	3 ±0.4 dB
Attenuation 2 ↔ 3	See diagram
Directivity	> 32 dB
VSWR	< 1.06
Impedance	50 Ω
Max. power	400 W
Material	Brass, silver-plated
Colour	Grey
Installation	With 2 screws (max. 6 mm diameter)
Weight	0.9 kg
Dimensions (w x h x d)	312 x 40 x 95 mm (incl. connectors)

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

Attenuation 2 ↔ 3 vs VSWR at port 1



Filter Transmitter Combiner, 100 W with 4 inputs 118 ... 144 MHz

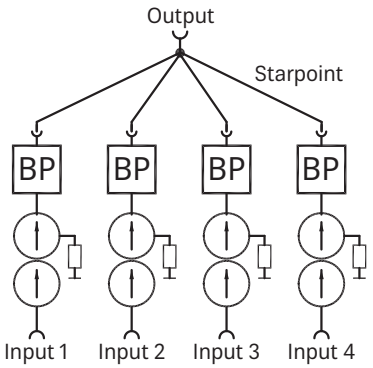
KATHREIN

The Tx combiner enables several transmitters to be connected into one common antenna.

The Tx combiner consists of one douple circulator and one 1-pole bandpass filter per channel. The outputs of the filters are connected via pre-defined cable lengths onto a common starpoint. This star-point then forms the output of the combiner.

Tuning:
The bandpasses must be tuned to the individual operating channels. Upon request this tuning may be performed at our factory (in this case please state the operating channels when ordering) or it may be undertaken on site.

Typ. combiner



Tx combiner 791525

BP: Band-pass filter
↑: Circulator

Technical Data

The insertion loss and isolation values apply to the minimum frequency spacing.

Order No.	791525
Frequency range	118...144 MHz (tunable)
Min. requency spacing	200 kHz
Insertion loss	< 3.5 dB
Isolation	> 60 dB
VSWR	< 1.25 (at the operating frequency)
Impedance	50 Ω
Max. powr (CW)	4 x 100 W
Temperature range	0...+50 °C
Connection	N female
Material	Outer conductor: Aluminum Inner conductor: Brass, silver plated
Color	Front plate: Grey
Weight	81 kg
Dimensions	19˝ drawer: Height: 22 hu* / 977 mm Depth: 380 mm

* hu = height unit

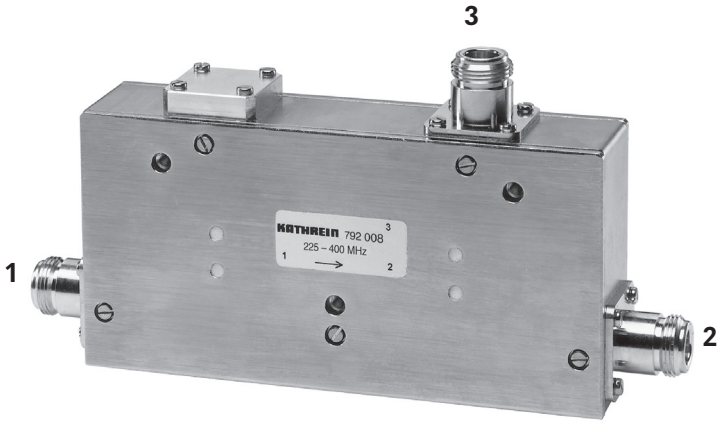
Circulator
225–400 MHz

KATHREIN

The circulator can be used:
– to increase the coupling attenuation between transmitters, to reduce intermodulation products,
– to prevent adverse effects to unmatched load impedance on amplifier performance.

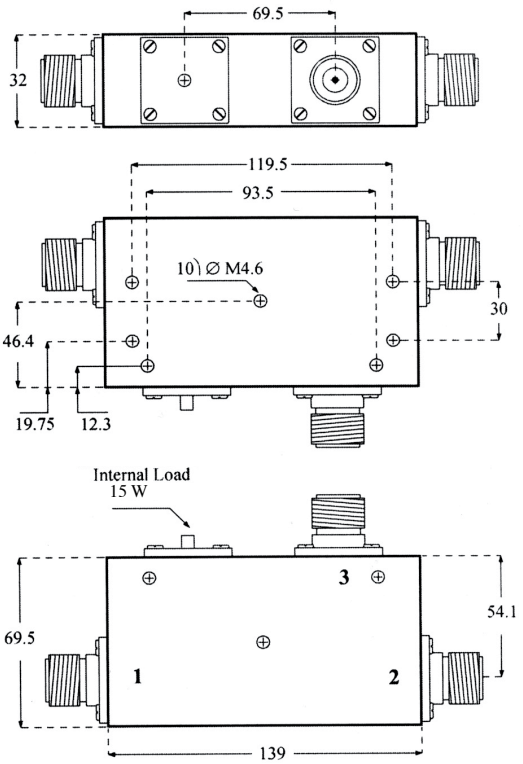
Function:
The circulator is a non-reciprocal component with low insertion loss in the forward direction (1 → 2) and high attenuation in the reverse direction (2 → 1). The impedance at the input (1) of the circulator is constant and independent of the impedance of the components following, since the reflected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

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



Technical Data

Order No.	792008
Frequency range	225 – 400 MHz
Insertion loss 1 → 2	< 1.8 dB
Isolation 2 → 1	> 35
VSWR	< 1.4
Impedance	50 Ω
Input power (CW)	< 100 W
Temperature range	–10 ... +55 °C
Connectors	3 x N female
Material	Brass case, nickel plated
Weight	Approx. 1.2 kg
Dimensions (w x h x d)	180 x 32 x 90 mm (incl. connectors)



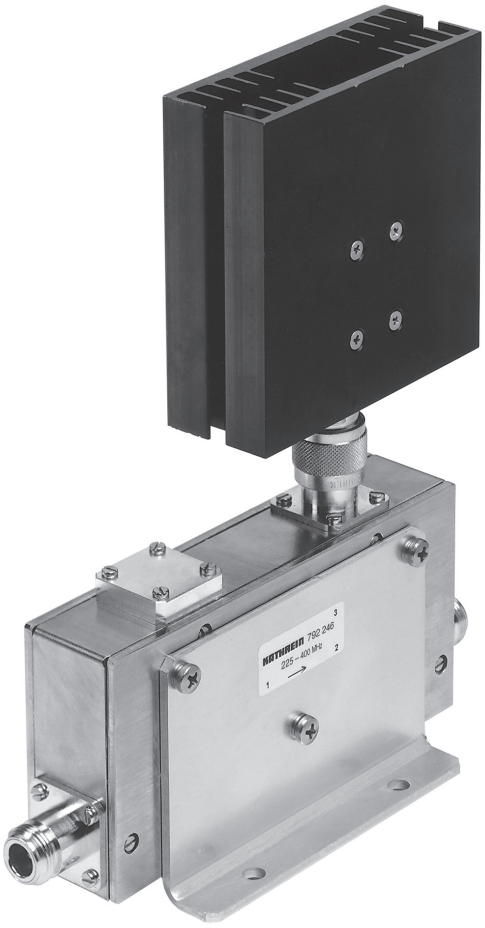
Decoupling unit
225–400 MHz

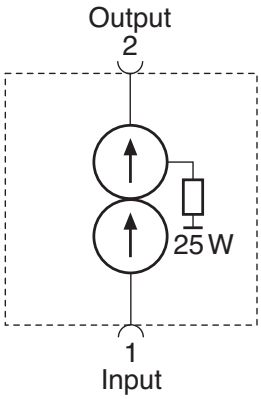
KATHREIN

This decoupling unit can be used to increase the isolation between transmitters, if the used antennas are situated very close together.

The decoupling unit consists of a double circulator and an absorber.

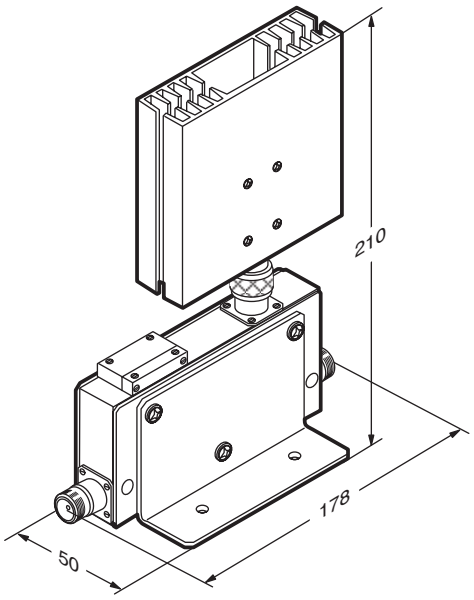
The impedance at the input of the decoupling unit is constant and is independent of the antenna's VSWR. The signal received or reflected by the antenna is fed to the absorber.





Technical Data

Order No.	792246
Frequency range	225 – 400 MHz
Insertion loss 1 → 2	< 1.8 dB
Isolation	> 35
VSWR	< 1.4
Impedance	50 Ω
Input power	< 100 W
Return power	< 25 W
Temperature range	–10 ... +55 °C
Connectors	N female
Installation	With 2 screws (max. 4 mm diameter)
Weight	1.6 kg
Packing size	241 x 202 x 115 mm
Dimensions (w x h x d)	See figure



Coaxial Cables and Accessories

KATHREIN

- KATHREIN supplies products of high quality brands.
- Branch cables completely configurated, phase-adjusted and fully tested.
- Feeder cables incl. accessories up to 6⅛".
- Fire retardant jacket available.
- Air or foam dielectric cables.

Photo: RFS

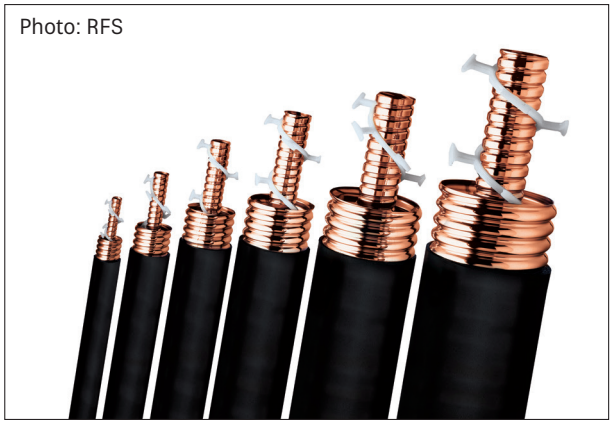
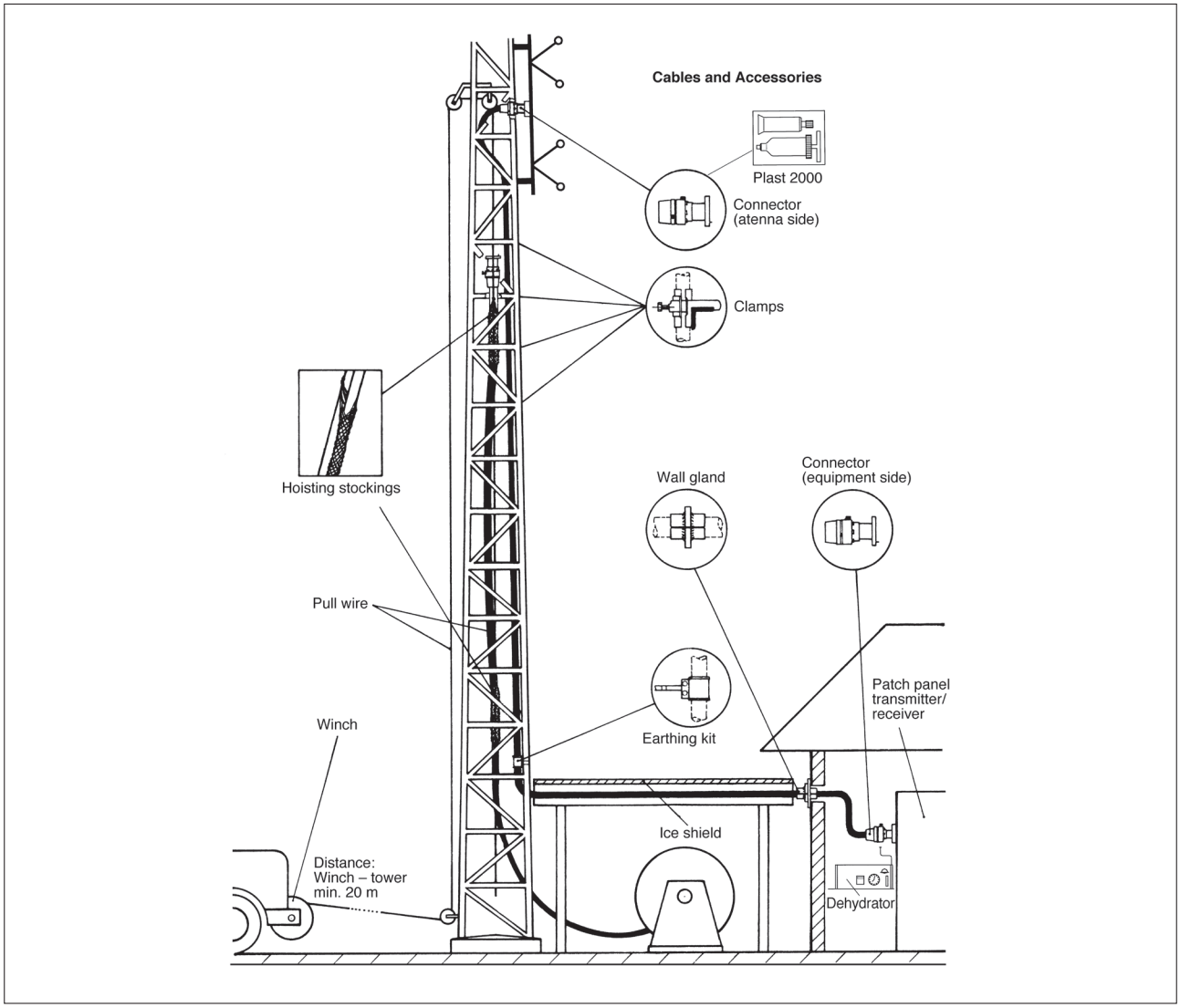


Photo: RFS



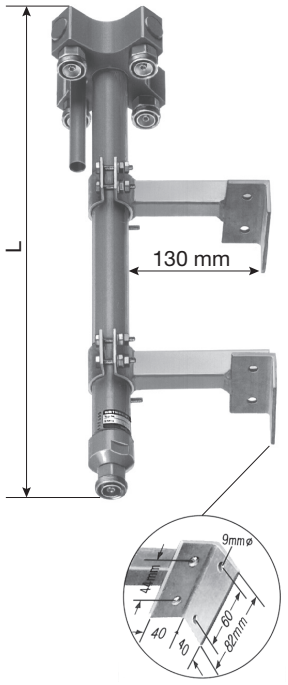
Power Splitter
100–156 MHz / 225–400 MHz
7511112., 7511113.

KATHREIN

New product

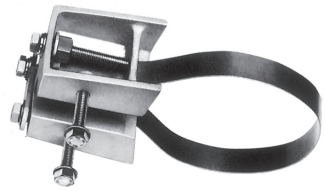
Power Splitters for low-loss connection of several antennas:

Frequency range MHz	For connecting ... antennas	Length L approx. mm	Max. power Watt		Type No. for female connection (equipment and antenna side)	
			7-16	N	7-16	N
100–156	2	1135	2000	1000	**75111120**	**75111121**
	3	1135	2000	1000	**75111122**	**75111123**
	4	1135	2000	1000	**75111124**	**75111125**
225–400	2	830	1500	750	**75111130**	**75111131**
	3	830	1500	750	**75111132**	**75111133**
	4	830	1500	750	**75111134**	**75111135**



Impedance:	50 Ω
Input and output:	N female or 7-16 female connector
VSWR:	< 1.15
Insertion loss:	< 0.05 dB (of the transformation line)
Material:	Outer conductor: Brass with protective grey paint. Inner conductor: Brass or aluminum.
Mounting:	On flat surfaces using the standard mounting equipment supplied (Bracket arm, 130 mm). To tubes of 30–340 mm diameter by means of 2 tension band clamps Type No. 759044 (please order separately).
Pressurization:	The pressurization-tight transformer housing has a ventilation tube to balance out excess pressure. For pressurized operation (typically at 300 mbar) this ventilation tube must be closed with the supplied sealing screw. IP 65 (closed ventiation tube for pressurized operation) IP 53 (opened ventilation tube for non-presserized operation)

759044

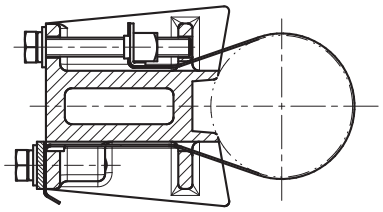


Optional mounting accessory:
Tension band clamp

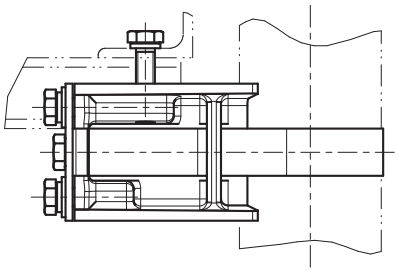
Mounting Instruction
Power Splitter
7511112., 7511113.

KATHREIN

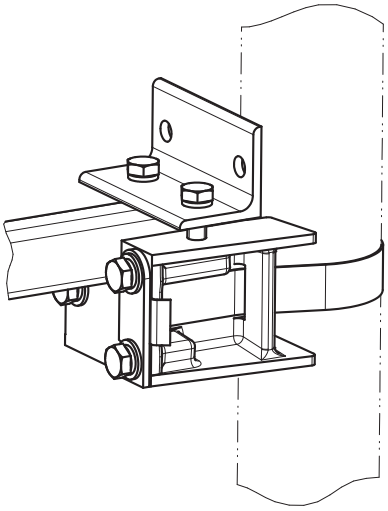
1. Tension band clamp, top view



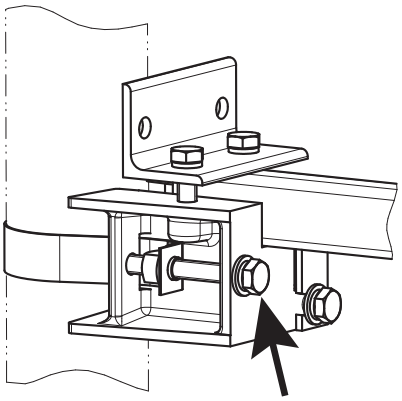
2. Tension band clamp, side view



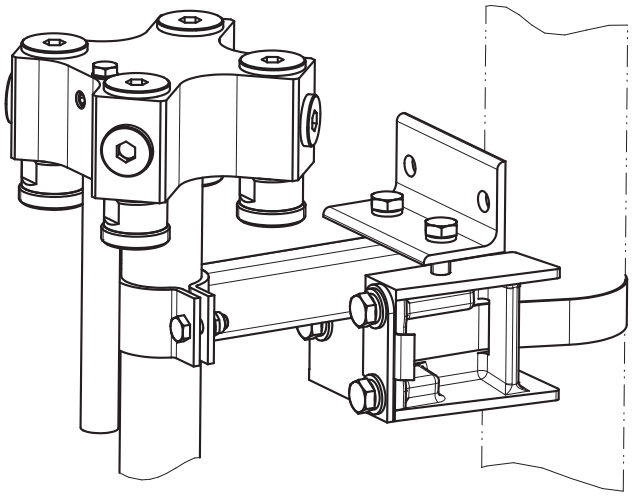
3. Wrap the tension band around the mast, bend it and lock it.



4. Tighten the tension band by the bolt marked.



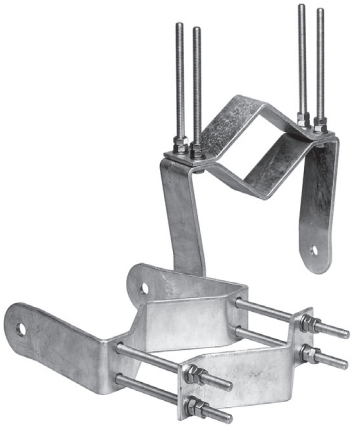
5. Fix the splitter via the brackets supplied to the tension band clamp as shown.



KATHREIN

Components for mounting VHF antennas to tube masts.

Material: Hot-dip galvanized steel.
Stainless steel bolts and nuts are supplied.



Pair of clamps for one VHF panel

Order No.	Old type number*	Suitable for tube mast of mm ∅	Weight kg
75310466	K61120	60–115	3.4
75310465	K61130	115–210	4.5

* Number only for reference, do not use for ordering!

Further Accessories:

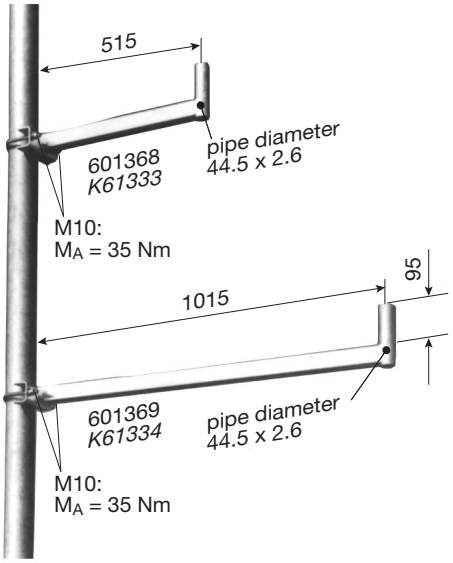
Weather protection caps

Order No.	Description
021097	straight
021226	elbow

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.

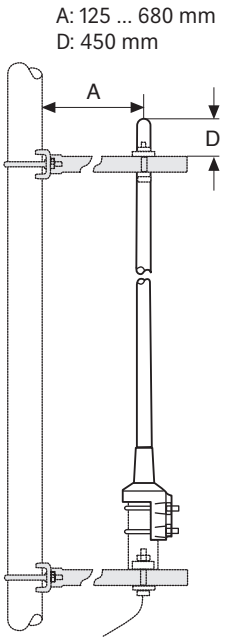
Bracket with fixed spacing

Type No.	601368 K61333	716192	601369 K61334	713645
Weight	2 kg	7 kg	3.2 kg	8.5 kg
Distance A:	500 mm		1000 mm	
Suitable for antennas with a maximum wind load of	215 N (at 150 km/h)		85 N (at 150 km/h)	
Suitable for antennas with	mounting kit to pipe masts of 20–54 mm diameter.			
Attachment	By means of mounting kit (supplied) to pipes of diameter:			
	55 mm – 105 mm	105 mm – 265 mm	55 mm – 105 mm	105 mm – 265 mm
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	Double stand off fig. C
Type No.	601645 K613311	601646 K613321	737398
Weight	6.6 kg	13.7 kg	6 kg
Distance A: min. max.	125 mm 680 mm		100 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		
	55–105 mm diameter		40–105 mm diameter
Material	Hot-dip galvanized steel		
Wind load	45 N (at 150 km/h)	100 N (at 150 km/h)	65 N (at 150 km/h)



Double Bracket

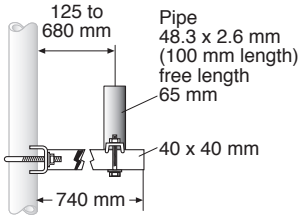


fig. A

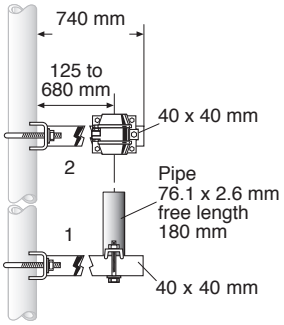


fig. B

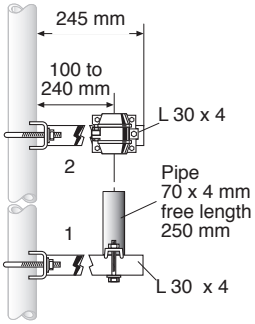


fig. C

Mounting Hardware for Power Splitters

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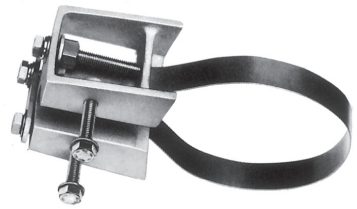
Components for mounting power splitters to tube masts.

Stainless steel bolts and nuts are supplied.

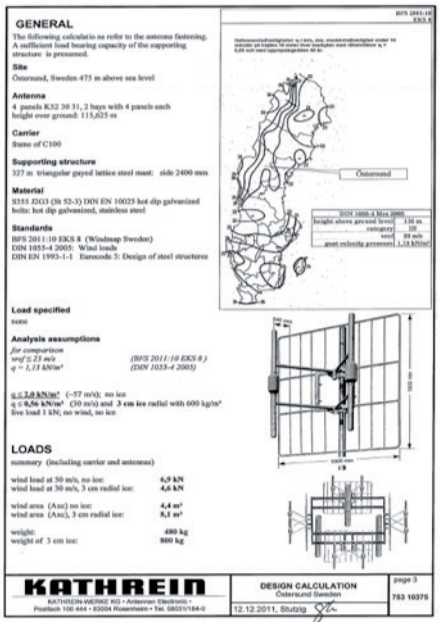
Tension band for mounting medium power splitters

Order No.	Suitable for tube mast of mm ⌀	Weight kg
759044	30–340	0.65



Kathrein also offers full turnkey-projects for Ground-to-Air Antenna Systems, e.g. consisting of:

- Site Survey
- System Planning
- Customized Engineering
- Fixation Design
- Hardware Delivery
- Installation and Commissioning



GENERAL

The following calculation refer to the antenna fastening. A sufficient load bearing capacity of the supporting structure is presumed.

Site
Östersund, Sweden 475 m above sea level

Antenna
4 panels KS2 30 31, 2 bays with 4 panels each
height over ground: 115,625 m

Carrier
frame of C100

Supporting structure
327 m triangular guyed lattice steel mast: side 2400 mm

Material
S355 J2G3 (St 52-3) DIN EN 10025 hot dip galvanized
bolts: hot dip galvanized, stainless steel

Standards
BFS 2011:10 EKS 8 (Windmap Sweden)
DIN 1055-4 2005: Wind loads
DIN EN 1993-1-1 Eurocode 3: Design of steel structures

Load specified
none

Analysis assumptions
for comparison
$v_{ref} \leq 23$ m/s (BFS 2011:10 EKS 8)
$q = 1{,}13$ kN/m² (DIN 1055-4 2005)

$q \leq 2{,}0$ kN/m² (~57 m/s); no ice
$q \leq 0{,}56$ kN/m² (30 m/s) and 3 cm ice radial with 600 kg/m³
live load 1 kN; no wind, no ice

LOADS
summary (including carrier and antennas)

wind load at 50 m/s, no ice:	6,9 kN
wind load at 30 m/s, 3 cm radial ice:	4,6 kN
wind area (Axc) no ice:	4,4 m²
wind area (Axc), 3 cm radial ice:	8,1 m²
weight:	480 kg
weight of 3 cm ice:	800 kg

KATHREIN
KATHREIN-WERKE KG • Antennen Electronic •
Postfach 100 444 • 83004 Rosenheim • Tel. 08031/184-0

DESIGN CALCULATION
Östersund Sweden
12.12.2011, Stutzig

page 3
753 10375

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.

The antennas may be used at locations where the anticipated peak wind velocity or gust wind speed lies within the maximum wind speed listed in the datasheet. We guarantee the mechanical safety and electrical functionality under such conditions. The wind speeds are defined in accordance with the DIN, EN or TIA standards. This guarantee makes allowance for the partial safety factors specified in those standards.

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. Cylindrical bodies can show crosswind response, which can cause the supporting structure to oscillate and to be damaged. Prismatic bodies, even with non-circular cross-section can show crosswind response, which can cause the supporting structure to oscillate (see EN 1991-1-4 or EN 1993-3-1). Fatigue calculations are required for structures having cylindrical parts. So a fatigue analysis must be carried out by a stress engineer for the supporting structure (mast) with the antenna.

These facts must be considered during the site planning process.

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

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

The limits for the coupling torque of RF-connectors, recommended by the connector manufacturers must be obeyed.

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

The maximum wind velocities listed should be understood in the sense of working values according to DIN and EN standards. These values include a safety factor (1.5) below the ultimate limit state (elastic limit or permanent deformation). For these wind velocities we guarantee the mechanical safety and the electrical integrity of our antennas.

We confirm that the products shown in this catalogue are CE conform with respect to RoHS compliance.

MTBF Statement: Traditionally, passive components like antennas cannot be well calculated due to the lack of a sufficient number of components in the MTBF library. Unfortunately, this constraint results in a very inaccurate calculation. Thus, such results are technically questionable and unrealistic.

In essence, antennas are made out of mechnical parts that do not show any failure rates. Only available failure rates can be calculated into an MTBF value. Consequently such components cannot be listed in any MTBF library.

Ifever calulations require concrete figures, a typical lifetime of > 15 years can be assummed.

We reserve the right to make alterations in accordance with the requirements of our customers, therefore for binding data please check valid data sheets on our homepage: www.kathrein.com

9980000098/PDF/0619/TPM | Subject to change.

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