Broadcast Antenna Systems for FM, TV, MMDS, DAB and DVB

KATHREIN

Antennen · Electronic

Photo on title page: Antenna System with 12 bays for DVB-T.

Catalogue Issue 06/2007

Kathrein Plant IV near Rosenheim, Germany

Kathrein is one of the world's leading manufacturers of professional broadcast antenna systems, including a full range of transmitting antennas for FM, TV, MMDS, DAB and DVB broadcasting.

KATHREIN-Werke KG was founded in 1919 in Rosenheim, Germany, to produce antennas and lightning protection equipment.

Since 1955 Kathrein has been supplying professional antenna systems of all sizes to broadcasters in every part of the world, from Canada to China and from Norway to South Africa.

Right from the start Kathrein has maintained a high level of engineering capability. Today there is a team of antenna and mechanical engineers dealing exclusively with broadcast transmitting antennas.
This highly qualified engineering team is responsible for:

– Design of components (antennas, power splitters, etc.).

– Design and optimization of complete antenna systems.

– Installation and testing of antenna systems.

– Project management.

Kathrein can provide turn-key installations in cooperation with other contractors or using the customer's installation personnel.

Customers are welcome to take advantage of the technical expertise available from Kathrein and to discuss their specific requirements. If your needs cannot be met with our standard components we are prepared to develop special solutions for you.

Kathrein's quality management system is certified in accordance with ISO 9001, which includes not only all manufacturing operations, but also design processes.

"Quality leads the way"

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

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.

Please note:

As a result of more stringent legal regulations and judgements regarding product liability, we are obliged to point out certain risks that may arise when products are used under extraordinary operating conditions.

The mechanical design is based on the environmental conditions as stipulated in ETS 300 019-1-4, which include the static mechanical load imposed on an antenna by wind at maximum velocity.

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

These facts must be considered during the site planning process.

The 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 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.

Antenna Systems

The antenna systems listed are examples of typical configurations.

The mechanical and electrical data can be used to estimate gain, size and mechanical loads of a system.

The final configuration and technical data of an individually designed antenna system, meeting the customer's specific needs, will be determined by the Kathrein engineers.

Antennas, Power Splitters and Accessories

The basic antennas and related components shown in this catalog are only a small portion of the Kathrein broadcast product line.
Many special versions are available, with different connectors, higher power ratings, and other features such as special probes or extra ice protection.

Your enquiries are most welcome and we would like to discuss your special requirements.

Summary of Types

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The articles are listed by type number in numerical order.

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The articles are listed by type number in numerical order.

Antenna Systems
47 ... 88 MHz

TV Transmitting Antenna with dipole panels K 52 31 8.. 47 … 88 MHz

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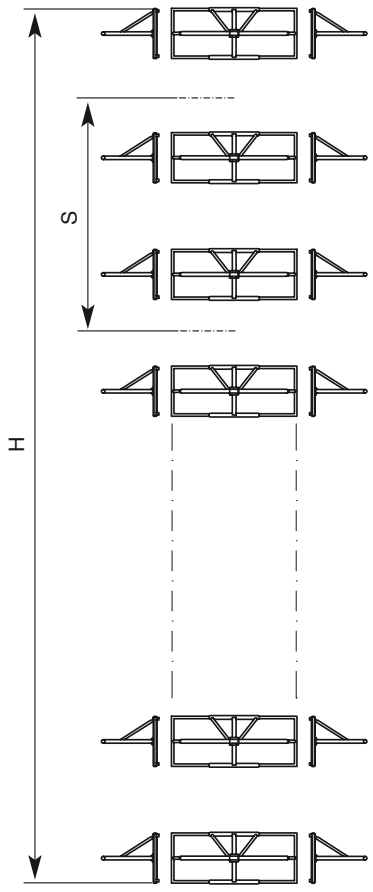
- Antenna array of dipole panels K 52 31 8.. for different radiation patterns, especially suitable for mounting on square masts.
- The feeder network is made up of coaxial power splitters and flexible connecting cables in accordance with the radiation patterns specification and the transmitting power.

Input	Connectors according to IEC, EIA or DIN.
Frequency range	One channel in Band I (47 … 88 MHz)
VSWR	s < 1.05 in one channel
Impedance	50 Ω
Polarization	Horizontal
Internal connections	Connectors according to IEC, EIA or DIN are used throughout the system, allowing easy assembly and maintenance.
Max. power	According to customer's requirements.
Vertical radiation pattern	Null fill and beam tilt upon request.
Horizontal radiation pattern	Omnidirectional, directional or custom-designed.
Half antenna splitting	Upon request, the antenna can be divided into 2 halves (for measurement and maintenance). The 2 halves are connected by a 2-way power splitter or patch panel.
Pressurization	Splitters and connecting cables can be supplied with dry air (please specify when ordering).
Painting	If required, the antenna is painted in aviation warning colours.
Grounding	Via mounting parts.
Max. wind velocity	225 km/h



No. of bays	Panels per bay	Gain* in dB	**Weight in kg** (without mounting hardware) Frequency in MHz						**Windload in kN** (160 km/h) Frequency in MHz						**Antenna height H in m** (Spacing S in m) Frequency in MHz					
			47–54	54–61	60–68	66–72	76–82	82–88	47–54	54–61	60–68	66–72	76–82	82–88	47–54	54–61	60–68	66–72	76–82	82–88
			2	3 2	4 3	4	5	6	2	3 2	4 3	4	5	6	2	3 2	4 3	4	5	6
1	2	5.4	280	250	220	200	190	180	4.0	3.5	3.3	3.2	2.8	2.6						
	3	3.5	450	400	350	320	300	300	6.0	5.3	5.0	4.8	4.2	3.9	4.5	4.0	3.6	3.3	2.9	2.7
	4	2.0	620	540	460	440	420	400	7.3	6.5	6.0	5.9	5.3	4.8						
2	2	8.4	620	540	460	440	420	400	8.0	7.0	6.5	6.3	5.6	5.2						
	3	6.6	950	840	750	700	660	630	12.0	10.6	10.0	9.6	8.5	7.8	10.9	9.6	8.6	8.0	7.0	6.5
	4	5.0	1250	1100	970	900	850	800	14.5	13.0	12.0	11.8	10.5	9.5	(6.4)	(5.6)	(5.0)	(4.7)	(4.1)	(3.8)
4	2	11.5	1250	1100	970	900	850	800	16.0	14.0	13.0	12.6	11.2	10.4						
	3	9.6	1750	1550	1480	1360	1300	1250	24.0	21.2	20.0	19.2	17.0	15.6	23.7	20.8	18.6	17.4	15.2	14.1
	4	8.1	2500	2200	1960	1800	1710	1630	29.0	26.0	24.0	23.6	21.0	19.0	(6.4)	(5.6)	(5.0)	(4.7)	(4.1)	(3.8)
6	2	13.3	1750	1550	1480	1360	1300	1250	24.1	21.0	19.5	18.9	16.8	15.6						
	3	11.4	2770	2450	2200	2000	1900	1820	36.0	31.8	30.0	28.8	25.5	23.4	36.5	32.0	28.6	26.7	23.3	21.7
	4	9.9	3700	3260	2920	2700	2550	2420	43.6	39.0	36.0	35.4	31.5	28.5	(6.4)	(5.6)	(5.0)	(4.7)	(4.1)	(3.8)
8	2	14.5	2500	2200	1960	1800	1710	1630	32.1	28.0	26.0	25.2	22.4	20.8						
	3	12.6	3700	3260	2920	2700	2550	2420	48.1	42.4	40.0	38.4	34.0	31.2	49.3	43.2	38.6	36.1	31.5	29.3
	4	11.1	4920	4350	3900	3560	3370	3200	58.1	52.0	48.0	47.2	42.0	38.0	(6.4)	(5.6)	(5.0)	(4.7)	(4.1)	(3.8)

* Referred to λ/2 dipole. Attenuation of the internal cabling and the gain-decrease in case of null fill in the vertical radiation pattern are not considered.
Approximate values for gain decrease:
cable attenuation: 0.2 – 0.5 dB
null fill: 0.3 – 1.0 dB
Gain figures are valid for the direction of maximum radiation (see diagrams on following page).

TV Transmitting Antenna with dipole panels K 52 31 8.. 47 … 88 MHz

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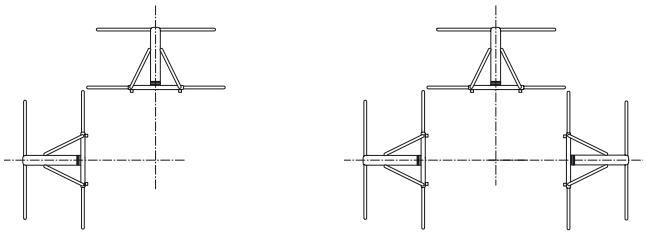
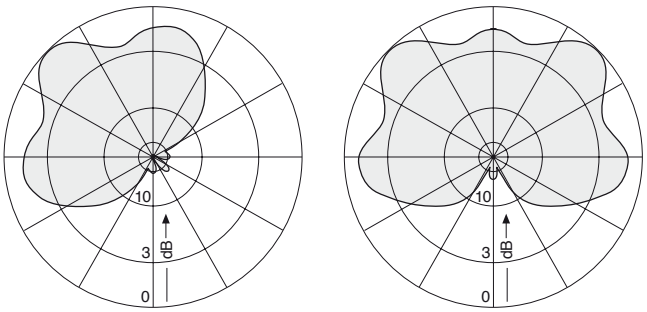
Horizontal Radiation Patterns

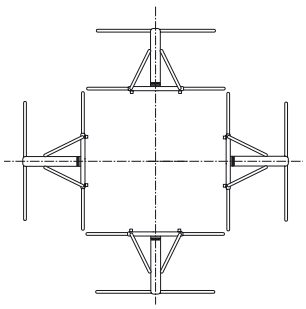
Examples of typical horizontal antenna arrays and their **horizontal** radiation patterns for minimal mast dimensions.

Equal power splitting

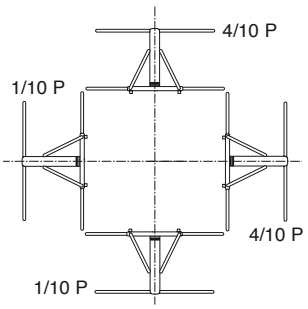


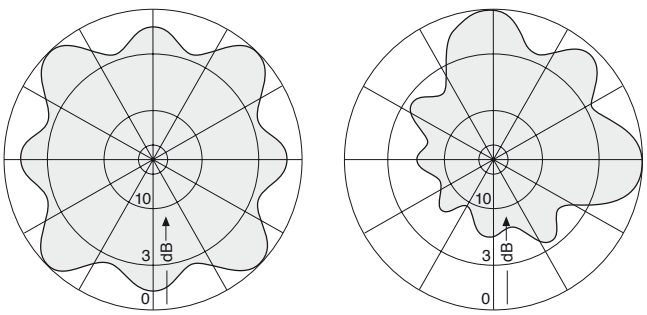


Equal power splitting



Different power splitting

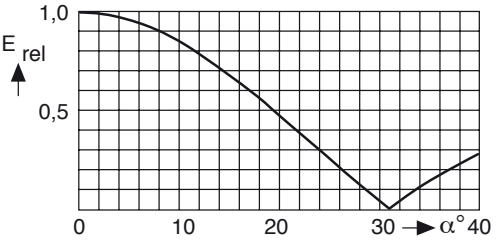




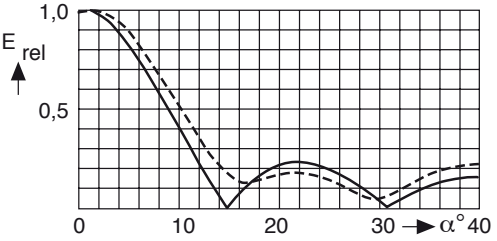
Vertical Radiation Patterns

Examples of typical **vertical** radiation patterns*) for several bays of identical, vertically stacked antenna arrays.

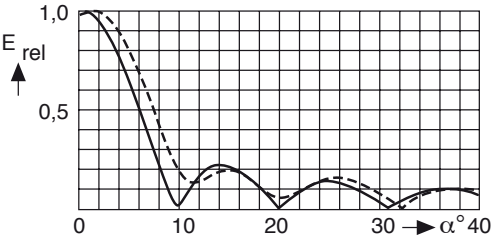
2 bays



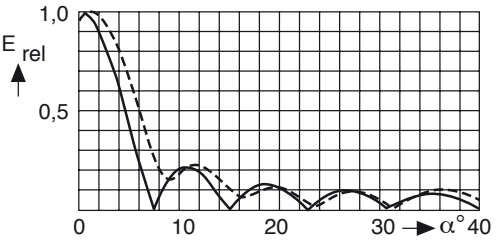
4 bays



6 bays



8 bays



*) ——— without null fill
- - - - - with null fill and beam tilt

TV Transmitting Antenna with dipole panels K 52 34 8.. 47 … 88 MHz

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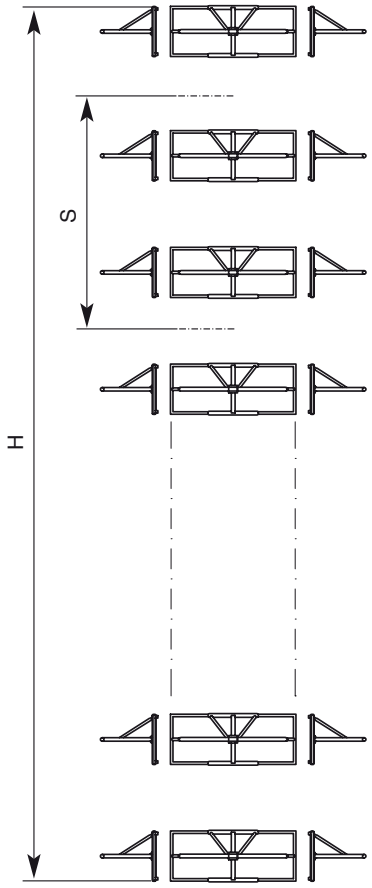
- Antenna array of dipole panels K 52 34 8.. for different radiation patterns, especially suitable for mounting on triangular or round masts.
- The feeder network is made up of coaxial power splitters and flexible connecting cables in accordance with the radiation patterns specification and the transmitting power.

Input	Connectors according to IEC, EIA or DIN.
Frequency range	One channel in Band I (47 … 88 MHz)
VSWR	s < 1.05 in one channel
Impedance	50 Ω
Polarization	Horizontal
Internal connections	Connectors according to IEC, EIA or DIN are used throughout the system, allowing easy assembly and maintenance.
Max. power	According to customer's requirements.
Vertical radiation pattern	Null fill and beam tilt upon request.
Horizontal radiation pattern	Omnidirectional, directional or custom-designed.
Half antenna splitting	Upon request, the antenna can be divided into 2 halves (for measurement and maintenance). The 2 halves are connected by a 2-way power splitter or patch panel.
Pressurization	Splitters and connecting cables can be supplied with dry air (please specify when ordering).
Painting	If required, the antenna is painted in aviation warning colours.
Grounding	Via mounting parts.
Max. wind velocity	225 km/h



No. of bays	Panels per bay	Gain* in dB	**Weight in kg** (without mounting hardware) Frequency in MHz						**Windload in kN** (160 km/h) Frequency in MHz						**Antenna height H in m** (Spacing S in m) Frequency in MHz					
			47–54	54–61	60–68	66–72	76–82	82–88	47–54	54–61	60–68	66–72	76–82	82–88	47–54	54–61	60–68	66–72	76–82	82–88
			2	3	4				2	3	4				2	3	4			
				2	3	4	5	6		2	3	4	5	6		2	3	4	5	6
1	2	3.9	310	275	250	235	205	195	3.9	3.4	3.3	3.0	2.8	2.5	4.5	4.0	3.6	3.3	2.9	2.7
	3	1.7	470	410	375	350	310	290	5.7	5.1	4.8	4.4	4.1	3.8						
2	2	6.9	650	550	500	470	410	390	7.9	6.7	6.5	6.0	5.5	5.0	10.9	9.6	8.6	8.0	7.0	6.5
	3	4.7	990	820	750	700	620	580	11.4	10.1	9.6	8.8	8.1	7.5	(6.4)	(5.6)	(5.0)	(4.7)	(4.1)	(3.8)
4	2	9.9	1310	1095	1000	935	825	775	15.8	14.4	13.0	12.0	11.0	10.0	23.7	20.8	18.6	17.4	15.2	14.1
	3	7.7	1910	1645	1500	1405	1235	1165	22.8	20.2	19.2	17.6	16.2	15.0	(6.4)	(5.6)	(5.0)	(4.7)	(4.1)	(3.8)
6	2	11.7	1910	1645	1500	1405	1235	1165	23.6	20.1	19.5	18.0	16.5	15.0	36.5	32.0	28.6	26.7	23.3	21.7
	3	9.5	2820	2645	2250	2105	1855	1745	31.5	30.3	28.8	26.4	24.3	22.5	(6.4)	(5.6)	(5.0)	(4.7)	(4.1)	(3.8)
8	2	12.9	2600	2190	2000	1870	1650	1550	34.2	26.8	26.0	24.0	22.0	20.0	49.3	43.2	38.6	36.1	31.5	29.3
	3	10.7	3800	3290	3000	2810	2470	2330	45.6	40.4	38.4	35.2	32.4	30.0	(6.4)	(5.6)	(5.0)	(4.7)	(4.1)	(3.8)

* Referred to λ/2 dipole. Attenuation of the internal cabling and the gain-decrease in case of null fill in the vertical radiation pattern are not considered.
Approximate values for gain decrease:
cable attenuation: 0.2 – 0.5 dB
null fill: 0.3 – 1.0 dB
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TV Transmitting Antenna with dipole panels K 52 34 8.. 47 … 88 MHz

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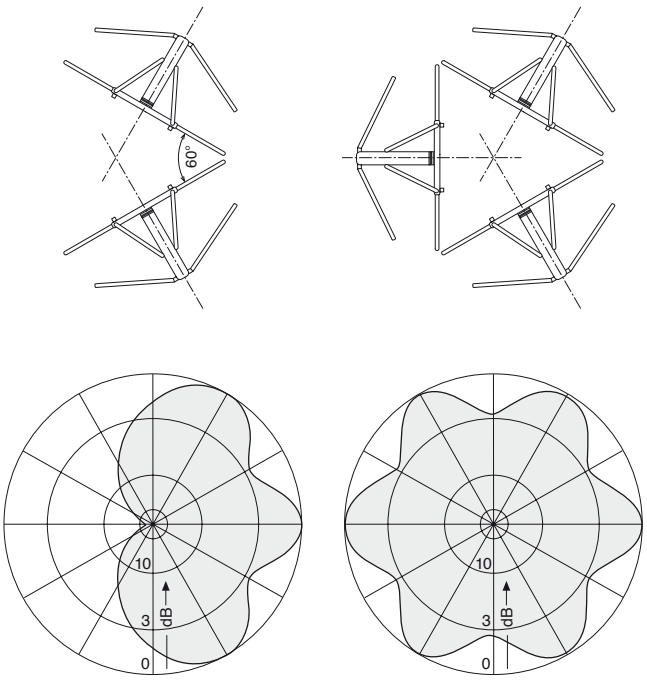
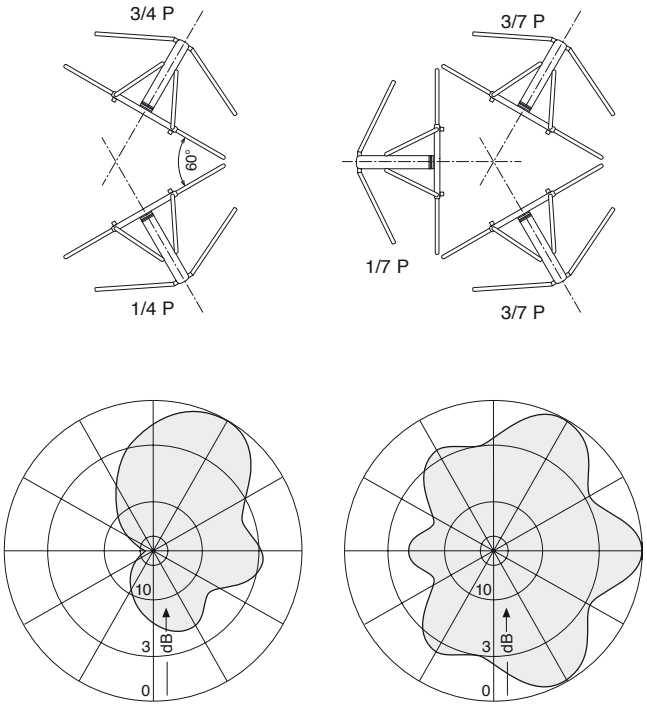
Horizontal Radiation Patterns

Examples of typical horizontal antenna arrays and their **horizontal** radiation patterns for minimal mast dimensions.

Equal power splitting



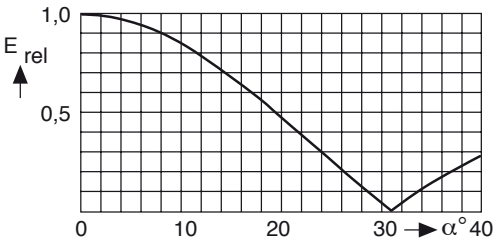
Different power splitting



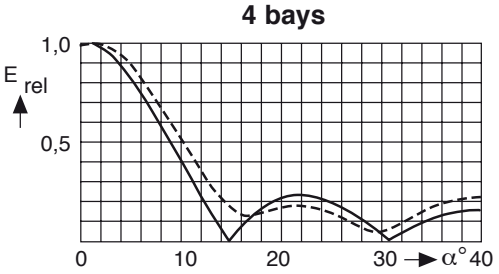
Vertical Radiation Patterns

Examples of typical **vertical** radiation patterns*) for several bays of identical, vertically stacked antenna arrays.

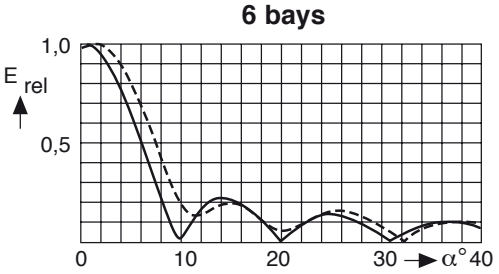
2 bays



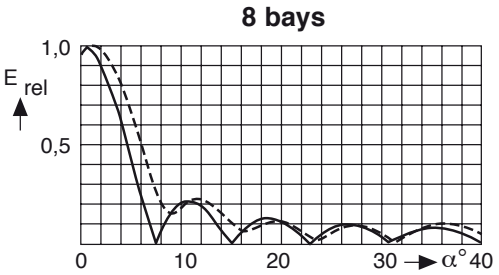
4 bays



6 bays



8 bays



*) ——— without null fill
- - - - - with null fill and beam tilt

Antennas for TV in lower VHF Band 47 ... 88 MHz

Model Types:
K 52 16 8. ., K 52 31 8. ., K 52 34 8. .

Type No.	Description	Frequency range	Gain	Polarization	Page
K 52 31 8. .	Directional Antenna, steel	47 ... 88 MHz	7.5 dB	horizontal	16
K 52 34 8. .	Directional Antenna, steel	47 ... 88 MHz	7.0 dB	horizontal	17
K 52 16 8. .	8 Element Yagi Antenna, aluminum	47 ... 88 MHz	6.0 dB	horizontal or vertical	18

K 52 31 8. .
Directional Antenna
47 ... 88 MHz

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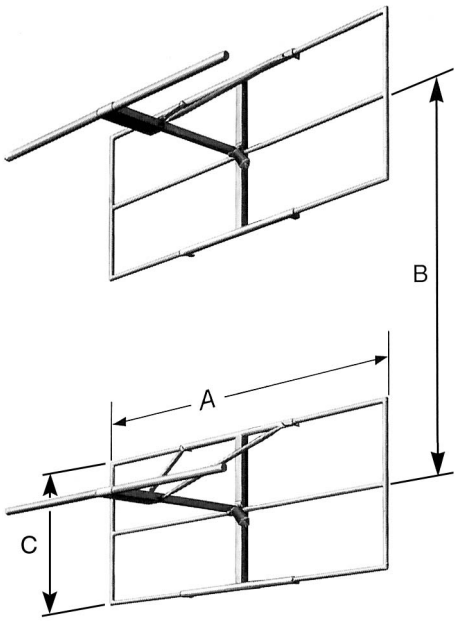
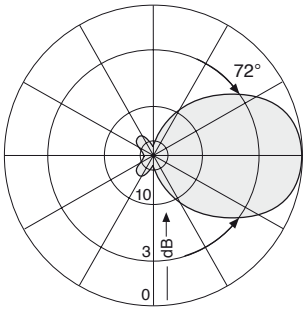
- Directional antenna of hot-dip galvanized steel.
- Especially suitable for square and round masts.

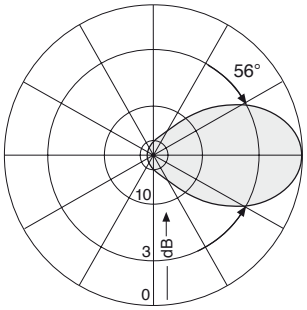


Length see table

Radiation Patterns
(at mid-band)



in E-plane
Horizontal Radiation Pattern



in H-plane
Vertical Radiation Pattern

Type No. Order No.		**K 52 31 81 7** 601 070	**K 52 31 82 7** 601 071	**K 52 31 83 7** 601 072	**K 52 31 84 7** 601 819	**K 52 31 85 7** 601 820	**K 52 31 86 7** 601 821
Frequency range		47 – 54 MHz	54 – 61 MHz	60 – 68 MHz	66 – 72 MHz	76 – 82 MHz	82 – 88 MHz
Channel		2	3	4			
			2	3	4	5	6
Input		7-16 female (type gas-stop)					
VSWR		< 1.15					
Gain (ref. λ/2 dipole)		7.5 dB					
Polarization		Horizontal (vertical upon request)					
Impedance		50 Ω					
Max. power		6 kW (higher power upon request)					
Dimensions in mm	A	3360	2960	2640	2470	2165	2015
	B	3200	2800	2500	2340	2040	1900
	C	1330	1180	1060	995	875	820
Weight in kg		140	124	110	100	94	89
Wind load in kN (at v = 160 km/h)							
	frontal	2.60	2.30	2.10	2.05	1.80	1.60
	lateral	1.30	1.20	1.10	1.10	1.00	0.90
Max. wind velocity		225 km/h					

Material:	Hot-dip galvanized steel. Radome: Fiberglass.
Mounting:	Mounting hardware and mounting dimensions upon request.
Grounding:	Via mounting parts.
Combinations:	The antenna is especially suitable as a component in arrays to achieve various radiation patterns. Particularly for square and round masts.
Special features:	The antenna is shipped dismounted.
Ice protection:	Even under severe icy conditions the antenna is still functional due to its heavy-duty construction and the fiberglass covers for the feeding points.
Scope of supply:	Antenna consisting of two half-wave dipoles with reflector screens.

K 52 34 8. .
Directional Antenna
47 ... 88 MHz

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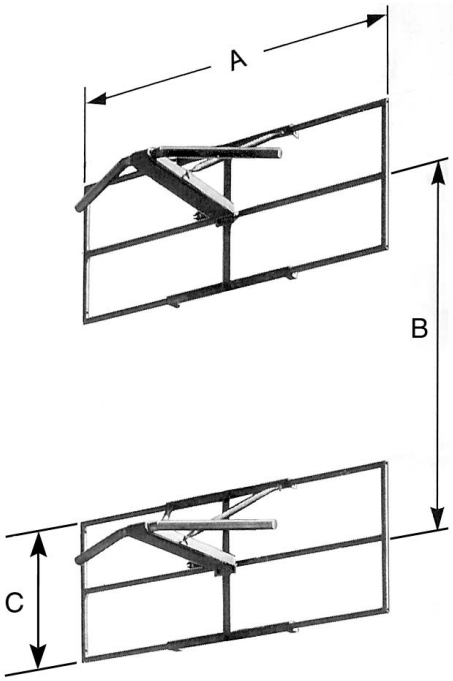
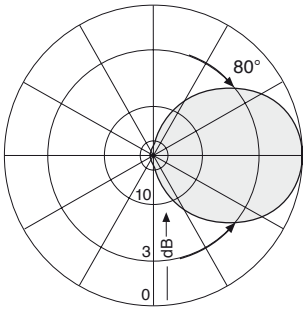
- Directional antenna of hot-dip galvanized steel.
- Especially suitable for triangular and round masts.

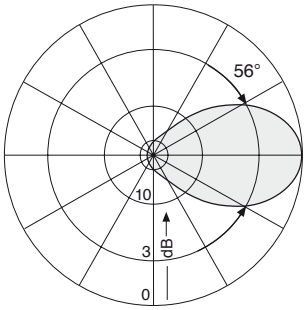


Length see table

Radiation Patterns
(at mid-band)



in E-plane
Horizontal Radiation Pattern



in H-plane
Vertical Radiation Pattern

Type No. Order No.		**K 52 34 81 7** 602 037	**K 52 34 82 7** 602 038	**K 52 34 83 7** 602 039	**K 52 34 84 7** 602 040	**K 52 34 85 7** 602 041	**K 52 34 86 7** 602 042
Frequency range		47 – 54 MHz	54 – 61 MHz	60 – 68 MHz	66 – 72 MHz	76 – 82 MHz	82 – 88 MHz
Channel		2	3 2	4 3	4	5	6
Input		7-16 female					
VSWR		< 1.15					
Gain (ref. λ/2 dipole)		7 dB					
Polarization		Horizontal					
Impedance		50 Ω					
Max. power		6 kW (higher power on request)					
Dimensions in mm	A	3360	2960	2640	2470	2165	2015
	B	3200	2800	2500	2340	2040	1900
	C	1330	1180	1060	995	875	820
Weight in kg		148	137	125	117	103	97
Wind load in kN (at v = 160 km/h)							
	frontal	2.60	2.20	2.05	1.90	1.70	1.55
	lateral	1.30	1.20	1.15	1.10	1.00	0.95
Max. wind velocity		225 km/h					

Material:	Hot-dip galvanized steel. Radome: Fiberglass.
Mounting:	Mounting hardware and mounting dimensions upon request.
Grounding:	Via mounting parts.
Combinations:	The antenna is especially suitable as a component in arrays to achieve various radiation patterns. Particularly for triangular and round masts.
Special features:	The antenna is shipped dismounted.
Ice protection:	Even under icy conditions the antenna keeps operating due to the radomes covering the feed areas.
Scope of supply:	Antenna consisting of two half-wave dipoles with reflector screens.

K 52 16 8. .
Directional Antenna
47 ... 88 MHz

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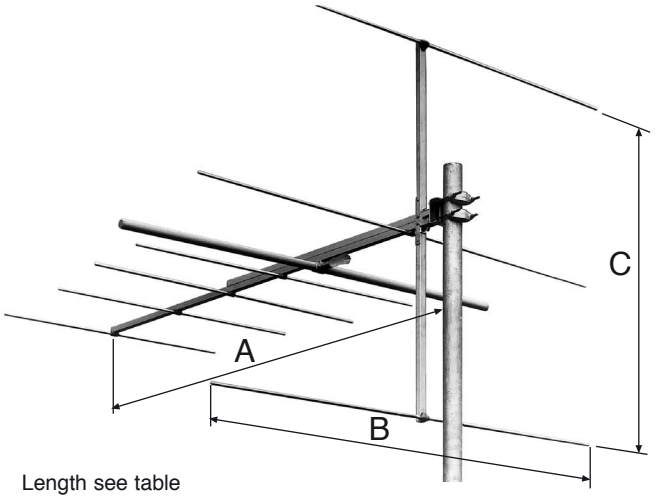
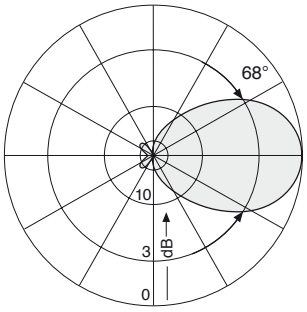
- 8 element Yagi-antenna of weather-proof aluminum, fiberglass-elements with encapsulated copper stranded wire.

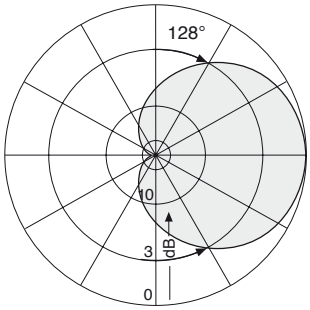


Length see table

Radiation Patterns
(at mid-band)



in E-plane
Horizontal Radiation Pattern



in H-plane
Vertical Radiation Pattern

Type No. Order No.		**K 52 16 81 7** 600 223	**K 52 16 82 7** 600 225	**K 52 16 83 7** 600 227	**K 52 16 84 7** 601 822	**K 52 16 85 7** 601 823	**K 52 16 86 7** 601 824
Frequency range		47 – 54 MHz	54 – 61 MHz	60 – 68 MHz	66 – 72 MHz	76 – 82 MHz	82 – 88 MHz
Channel		2	3 2	4 3	4	5	6
Input		7-16 female					
VSWR		< 1.15					
Gain (ref. λ/2 dipole)		6 dB					
Polarization		Horizontal or vertical by conversion of the clamps					
Impedance		50 Ω					
Max. power		200 W (higher power upon request)					
Dimensions in mm	A	3500	2950	2700	2420	2120	1970
	B	3000	2510	2240	2070	1810	1680
	C	2225	1950	1740	1610	1410	1310
Weight in kg		18	15	12.5	11.5	10	9
Wind load in N (at v = 160 km/h)							
Horizontally polarized	frontal	715	615	540	500	440	400
	lateral	675	575	475	440	375	350
Vertically polarized	frontal	715	615	540	500	440	400
	lateral	790	675	615	565	500	465
Packing in cm		330 x 76 x 13	275 x 76 x 13	250 x 76 x 13	222 x 76 x 13	192 x 76 x13	177 x 76 x 13
Max. wind velocity		160 km/h					

Material:	Support: Weather-proof aluminum. Elements: Fiberglass with inlaid copper wire. Cover: Fiberglass. Clamp: Hot-dip galvanized steel.
Mounting:	To pipes of 60 – 115 mm diameter by means of mounting clamps, supplied.
Special features:	The antenna is shipped dismounted.
Combinations:	Two or more antennas can be combined to achieve higher gain and longer, narrower beam width.
Grounding:	Via mounting parts.

Antenna Systems
87.5 – 108 MHz

FM Transmitting Antenna with dipole panels K 52 31 1. . 87.5 – 108 MHz

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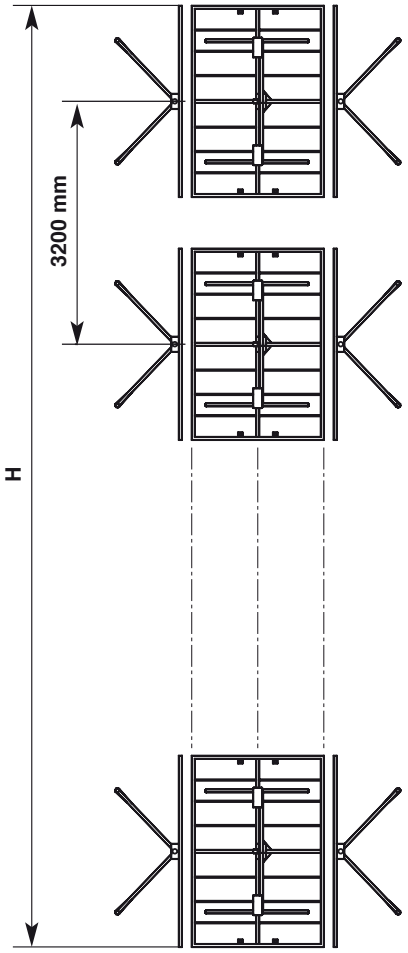
- Antenna array of dipole panels K 52 31 1. . for different radiation patterns, especially suitable for mounting on square masts.
- The feeder network is made up of coaxial power splitters and flexible connecting cables in accordance with the radiation patterns specification and the transmitting power.

Input	Connectors according to IEC, EIA or DIN.
Frequency range	87.5 – 108 MHz
VSWR	s < 1.2 throughout the whole frequency range. Lower VSWR for single channels upon request.
Impedance	50 Ω
Polarization	Horizontal or vertical
Internal connections	Connectors according to IEC, EIA or DIN are used throughout the system, allowing easy assembly and maintenance.
Max. power	According to customer's requirements.
Vertical radiation pattern	Null fill and beam tilt upon request.
Horizontal radiation pattern	Omnidirectional, directional or custom-designed.
Half antenna splitting	Upon request, the antenna can be divided into 2 halves (for measurement and maintenance). The 2 halves are connected by a 2-way power splitter or patch panel.
Pressurization	Splitters and connecting cables can be supplied with dry air (please specify when ordering).
Painting	If required, the antenna is painted in aviation warning colours.
Grounding	Via mounting parts.
Max. wind velocity	225 km/h



No. of bays	Panels per bay	Gain* (at mid-band) dB	Gain* (at mid-band) times	Weight (without mounting hardware) kg	Antenna height H m	Windload (v = 160 km/h) kN
1	2	5.0	3.2	140	2.5	2.7
	3	3.5	2.2	200		4.0
	4	2.0	1.6	260		4.7
2	2	8.0	6.3	260	5.7	5.5
	3	6.5	4.5	400		8.0
	4	5.0	3.2	530		9.5
4	2	11.0	12.6	530	12.1	11.0
	3	9.5	8.9	790		16.0
	4	8.0	6.3	1080		19.0
6	2	12.8	19.1	790	18.5	16.5
	3	11.3	13.0	1200		24.0
	4	9.7	9.3	1610		28.5
8	2	14.0	25.1	1080	24.9	22.0
	3	12.5	17.8	1610		32.0
	4	11.0	12.6	2150		38.0

* Referred to λ/2 dipole. Attenuation of the internal cabling and the gain-decrease in case of null fill in the vertical radiation pattern are not considered.
Approximate values for gain decrease:
cable attenuation: 0.2 – 0.5 dB
null fill: 0.3 – 1.0 dB
Gain figures are valid for the direction of maximum radiation (see diagrams on following page).

FM Transmitting Antenna with dipole panels K 52 31 1. . 87.5 – 108 MHz

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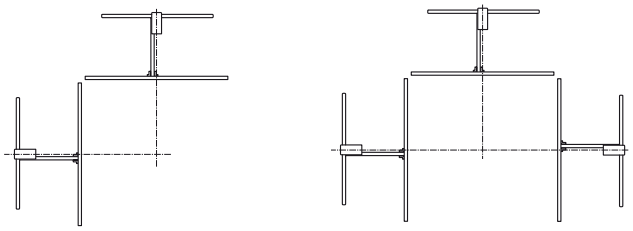
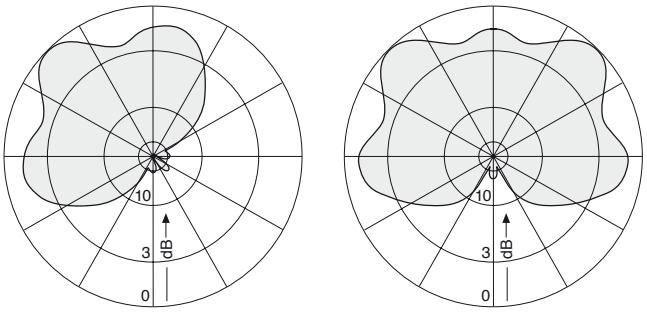
Horizontal Radiation Patterns

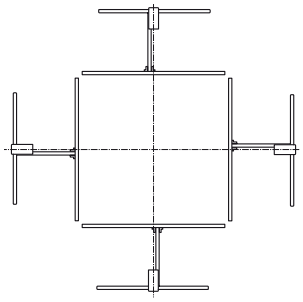
Examples of typical horizontal antenna arrays and their **horizontal** radiation patterns for minimal mast dimensions.

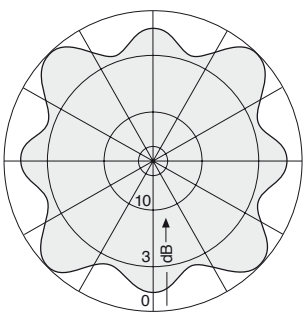
Equal power splitting



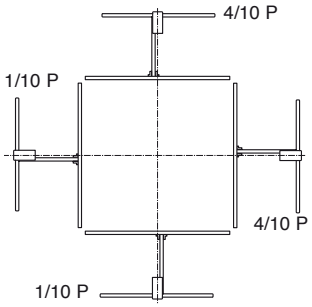


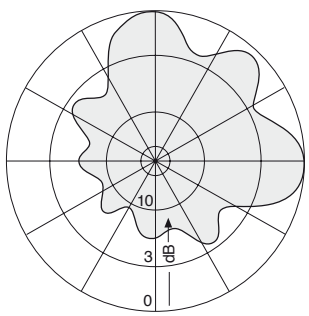
Equal power splitting





Different power splitting

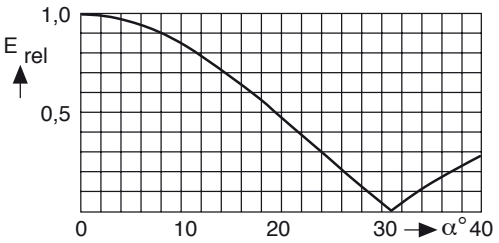




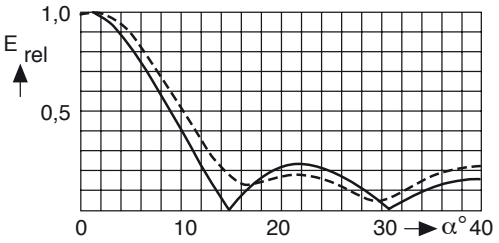
Vertical Radiation Patterns

Examples of typical **vertical** radiation patterns*) for several bays of identical, vertically stacked antenna arrays.

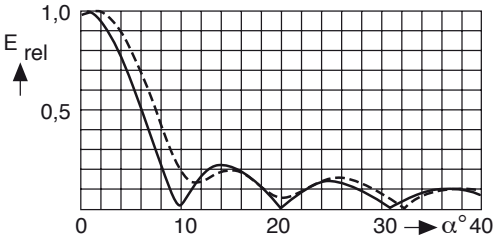
2 bays



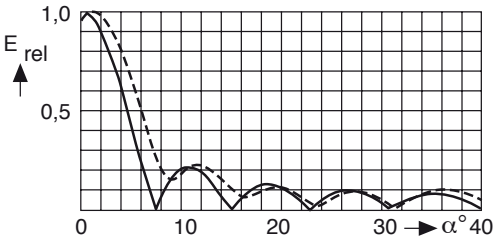
4 bays



6 bays



8 bays



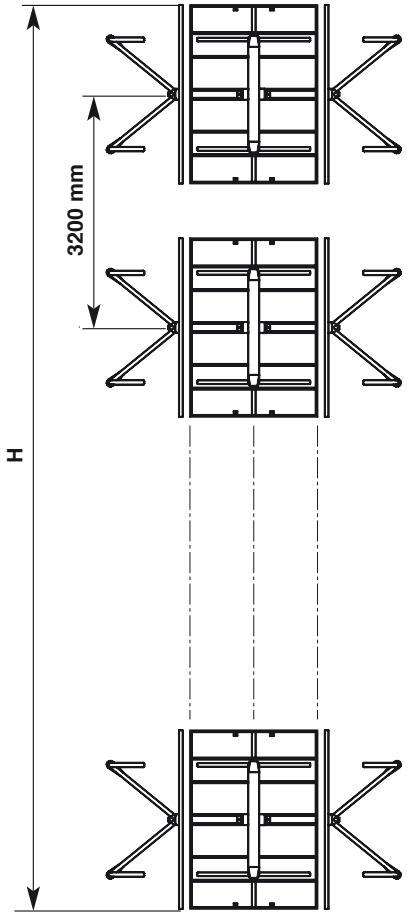
*) ——— without null fill
- - - - - with null fill and beam tilt

FM Transmitting Antenna with dipole panels K 52 34 1. 87.5 – 108 MHz

KATHREIN
Antennen · Electronic

- Antenna array of dipole panels K 52 34 1. for different radiation patterns, especially suitable for mounting on triangular or round masts.
- The feeder network is made up of coaxial power splitters and flexible connecting cables in accordance with the radiation patterns specification and the transmitting power.

Input	Connectors according to IEC, EIA or DIN.
Frequency range	87.5 – 108 MHz
VSWR	s < 1.2 throughout the whole frequency range. Lower VSWR for single channels upon request.
Impedance	50 Ω
Polarization	Horizontal
Internal connections	Connectors according to IEC, EIA or DIN are used throughout the system, allowing easy assembly and maintenance.
Max. power	According to customer's requirements.
Vertical radiation pattern	Null fill and beam tilt upon request.
Horizontal radiation pattern	Omnidirectional, directional or custom-designed.
Half antenna splitting	Upon request, the antenna can be divided into 2 halves (for measurement and maintenance). The 2 halves are connected by a 2-way power splitter or patch panel.
Pressurization	Splitters and connecting cables can be supplied with dry air (please specify when ordering).
Painting	If required, the antenna is painted in aviation warning colours.
Grounding	Via mounting parts.
Max. wind velocity	225 km/h



No. of bays	Panels per bay	Gain* (at mid-band) dB	Gain* (at mid-band) times	Weight (without mounting hardware) kg	Antenna height H m	Windload (v = 160 km/h) kN
1	2	3.9	2.5	150	2.5	3.0
	3	1.7	1.5	220		4.2
2	2	6.9	4.9	290	5.7	6.0
	3	4.7	3.0	420		8.4
4	2	9.9	9.8	560	12.1	12.0
	3	7.7	5.9	850		16.8
6	2	11.7	14.8	850	18.5	18.0
	3	9.5	8.9	1290		25.2
8	2	12.9	19.5	1150	24.9	24.0
	3	10.7	11.7	1700		33.6

* Referred to λ/2 dipole. Attenuation of the internal cabling and the gain-decrease in case of null fill in the vertical radiation pattern are not considered.
Approximate values for gain decrease:
cable attenuation: 0.2 – 0.5 dB
null fill: 0.3 – 1.0 dB
Gain figures are valid for the direction of maximum radiation (see diagrams on following page).

FM Transmitting Antenna with dipole panels K 52 34 1. 87.5 – 108 MHz

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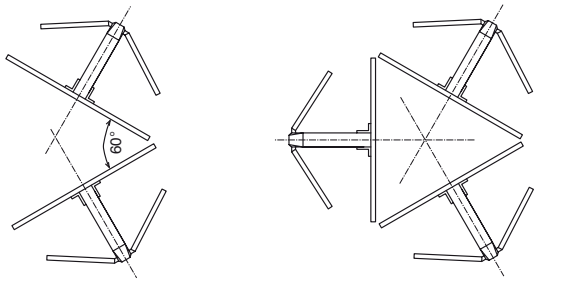
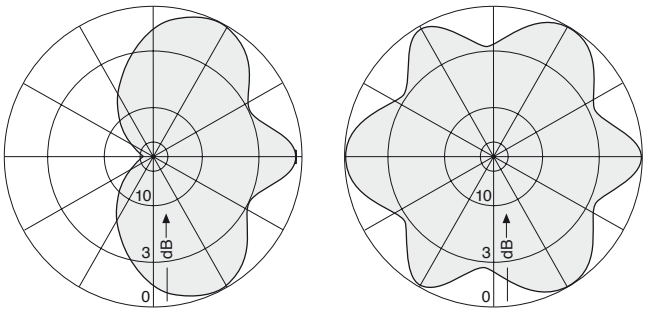
Horizontal Radiation Patterns

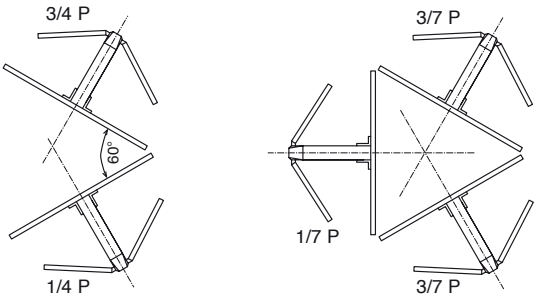
Examples of typical horizontal antenna arrays and their **horizontal** radiation patterns for minimal mast dimensions.

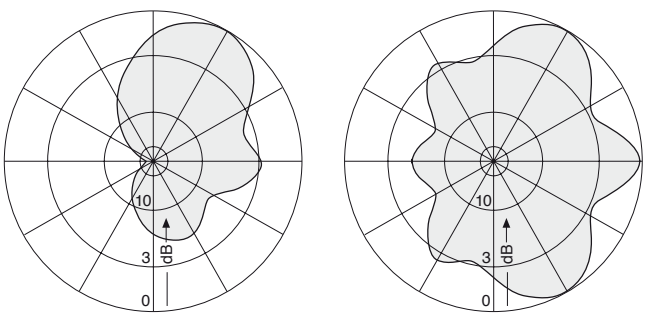
Equal power splitting





Different power splitting

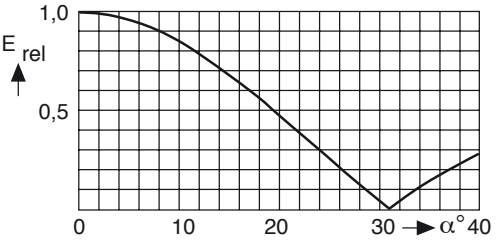




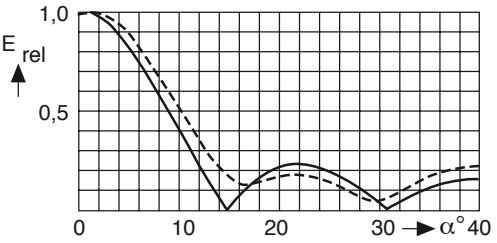
Vertical Radiation Patterns

Examples of typical **vertical** radiation patterns*) for several bays of identical, vertically stacked antenna arrays.

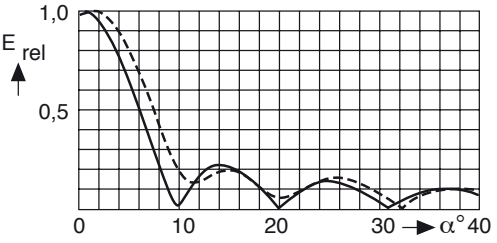
2 bays



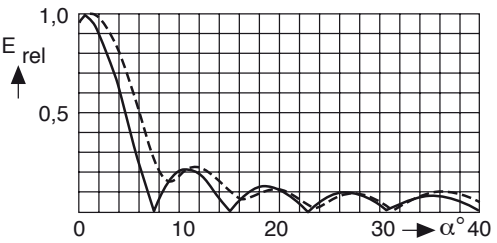
4 bays



6 bays



8 bays



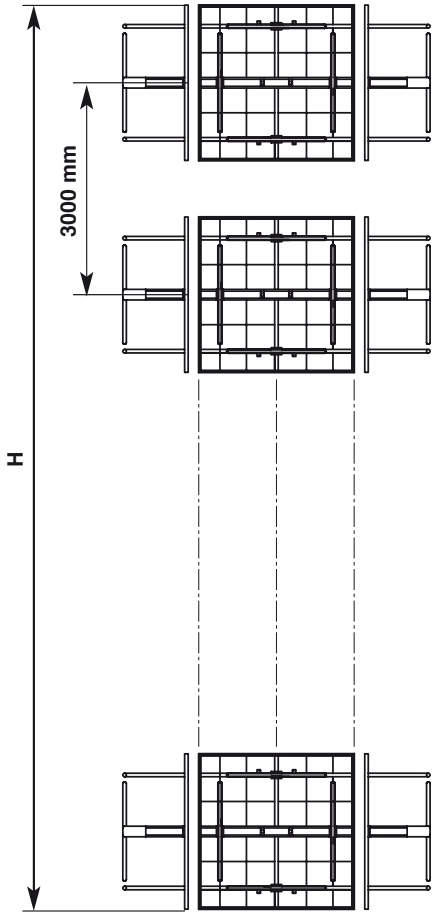
*) ——— without null fill
- - - - - with null fill and beam tilt

FM Transmitting Antenna with dipole panels K 53 32 1. . 87.5 – 108 MHz

KATHREIN
Antennen · Electronic

- Antenna array of circularly polarized dipole panels K 53 32 1. . for different radiation patterns, especially suitable for mounting on square masts.
- The feeder network is made up of coaxial power splitters and flexible connecting cables in accordance with the radiation patterns specification and the transmitting power.

Input	Connectors according to IEC, EIA or DIN.
Frequency range	87.5 – 108 MHz
VSWR	s < 1.2 throughout the whole frequency range. Lower VSWR for single channels upon request.
Impedance	50 Ω
Polarization	Linear, circular or elliptical
Internal connections	Connectors according to IEC, EIA or DIN are used throughout the system, allowing easy assembly and maintenance.
Max. power	According to customer's requirements.
Vertical radiation pattern	Null fill and beam tilt upon request.
Horizontal radiation pattern	Omnidirectional, directional or custom-designed.
Half antenna splitting	Upon request, the antenna can be divided into 2 halves (for measurement and maintenance). The 2 halves are connected by a 2-way power splitter or patch panel.
Pressurization	Splitters and connecting cables can be supplied with dry air (please specify when ordering).
Painting	If required, the antenna is painted in aviation warning colours.
Grounding	Via mounting parts.
Max. wind velocity	225 km/h



No. of bays	Panels per bay	Gain* (at mid-band) dB	Gain* (at mid-band) times	Weight (without mounting hardware) kg	Antenna height H m	Windload (v = 160 km/h) kN
1	2	2.0	1.6	200	2.2	2.75
	3	0.5	1.1	320		4.35
	4	–1.0	0.8	420		5.5
2	2	5.0	3.2	420	5.2	5.5
	3	3.5	2.4	750		8.7
	4	2.0	1.6	850		11.0
4	2	8.0	6.3	850	11.2	11.0
	3	6.5	4.5	1530		17.4
	4	5.0	3.2	1660		22.0
6	2	9.8	9.6	1530	17.2	16.5
	3	8.3	6.8	1870		26.1
	4	6.7	4.7	2240		33.0
8	2	11.0	12.6	1660	23.2	22.0
	3	9.5	8.9	2240		34.8
	4	8.0	6.3	2970		44.0

* Referred to λ/2 dipole. Attenuation of the internal cabling and the gain-decrease in case of null fill in the vertical radiation pattern are not considered.
Approximate values for gain decrease:
cable attenuation: 0.2 – 0.5 dB
null fill: 0.3 – 1.0 dB
Gain figures are valid for the direction of maximum radiation (see diagrams on following page).

FM Transmitting Antenna with dipole panels K 53 32 1. . 87.5 – 108 MHz

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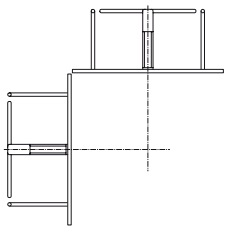
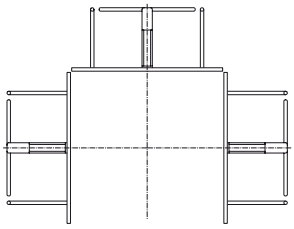
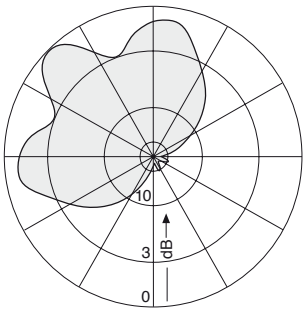
Horizontal Radiation Patterns

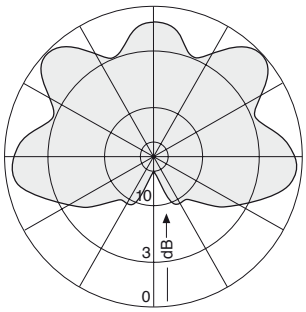
Examples of typical horizontal antenna arrays and their **horizontal** radiation patterns for minimal mast dimensions.

Equal power splitting

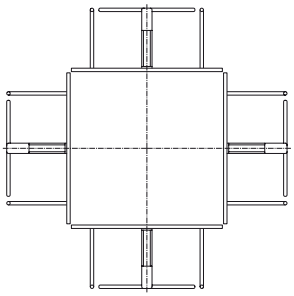




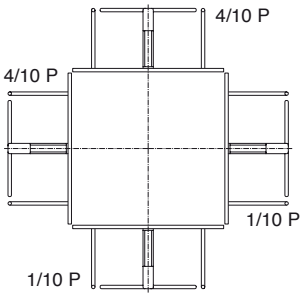


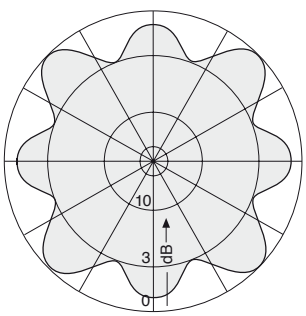


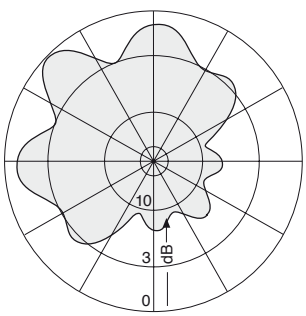
Equal power splitting



Different power splitting



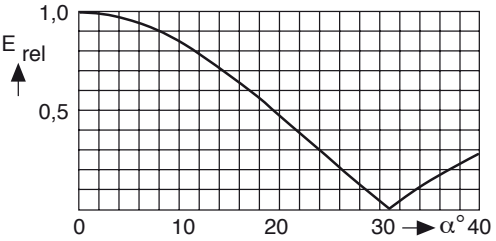




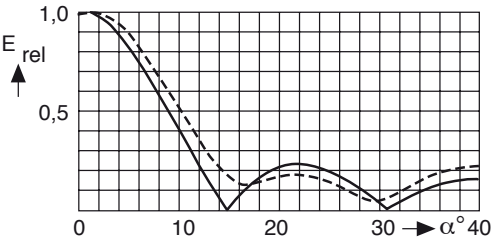
Vertical Radiation Patterns

Examples of typical **vertical** radiation patterns*) for several bays of identical, vertically stacked antenna arrays.

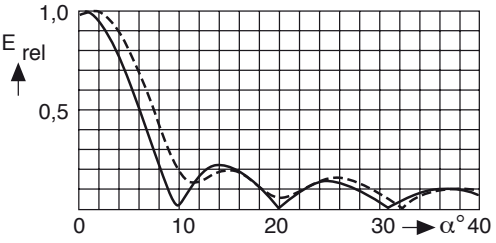
2 bays



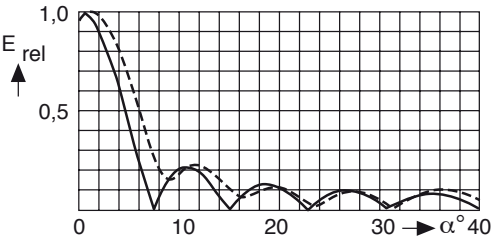
4 bays



6 bays



8 bays



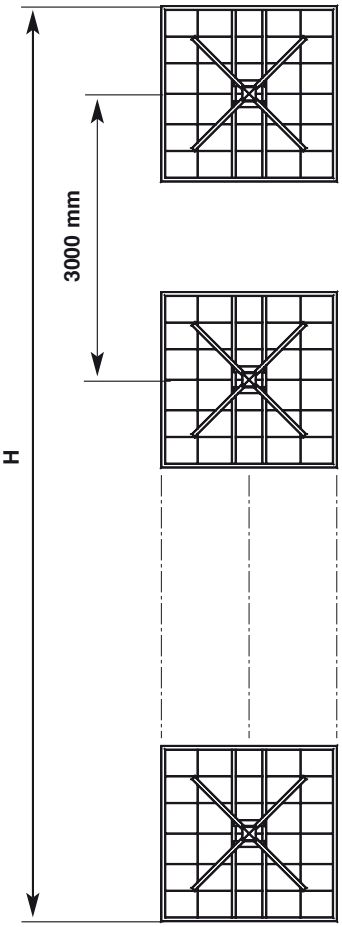
*) ——— without null fill
- - - - - with null fill and beam tilt

FM Transmitting Antenna with dipole panels K 53 36 1. . 87.5 – 108 MHz

KATHREIN
Antennen · Electronic

- Antenna array of circularly polarized dipole panels K 53 36 1. . for different radiation patterns, especially suitable for mounting on triangular or round masts.
- The feeder network is made up of coaxial power splitters and flexible connecting cables in accordance with the radiation patterns specification and the transmitting power.

Input	Connectors according to IEC, EIA or DIN.
Frequency range	87.5 – 108 MHz
VSWR	s < 1.2 throughout the whole frequency range. Lower VSWR for single channels upon request.
Impedance	50 Ω
Polarization	Circular
Internal connections	Connectors according to IEC, EIA or DIN are used throughout the system, allowing easy assembly and maintenance.
Max. power	According to customer's requirements.
Vertical radiation pattern	Null fill and beam tilt upon request.
Horizontal radiation pattern	Omnidirectional, directional or custom-designed.
Half antenna splitting	Upon request, the antenna can be divided into 2 halves (for measurement and maintenance). The 2 halves are connected by a 2-way power splitter or patch panel.
Pressurization	Splitters and connecting cables can be supplied with dry air (please specify when ordering).
Painting	If required, the antenna is painted in aviation warning colours.
Grounding	Via mounting parts.
Max. wind velocity	225 km/h



No. of bays	Panels per bay	Gain* (at mid-band) dB	Gain* (at mid-band) times	Weight (without mounting hardware) kg	Antenna height H m	Windload (v = 160 km/h) kN
1	2	0.0	1.0	140	1.82	2.4
	3	–2.0	0.6	200		3.5
2	2	3.1	2.0	260	4.82	4.8
	3	1.1	1.3	430		7.0
4	2	6.2	4.2	580	10.82	9.6
	3	4.2	2.6	800		14.0
6	2	8.1	6.5	800	16.82	14.4
	3	6.1	4.1	1230		21.0
8	2	9.3	8.5	1100	22.82	19.2
	3	7.3	5.4	1590		28.0

* Referred to λ/2 dipole. Attenuation of the internal cabling and the gain-decrease in case of null fill in the vertical radiation pattern are not considered.
Approximate values for gain decrease:
cable attenuation: 0.2 – 0.5 dB
null fill: 0.3 – 1.0 dB
Gain figures are valid for the direction of maximum radiation (see diagrams on following page).

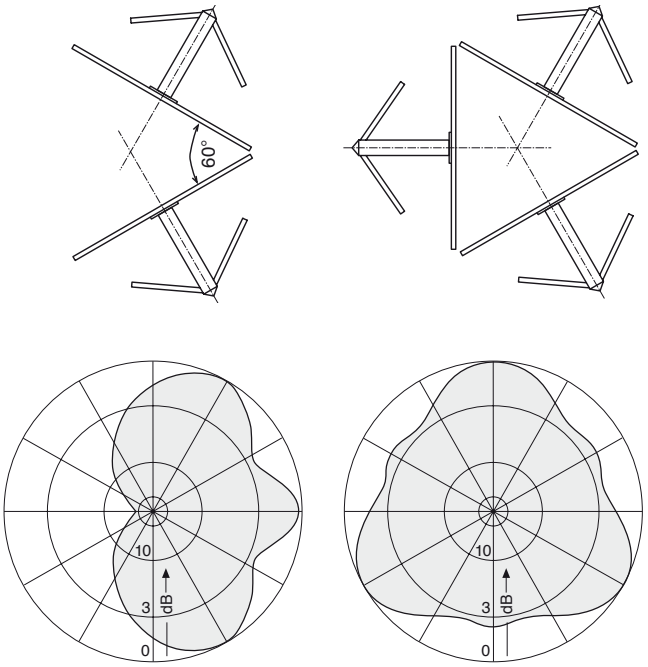
FM Transmitting Antenna with dipole panels K 53 36 1. . 87.5 – 108 MHz

KATHREIN
Antennen · Electronic

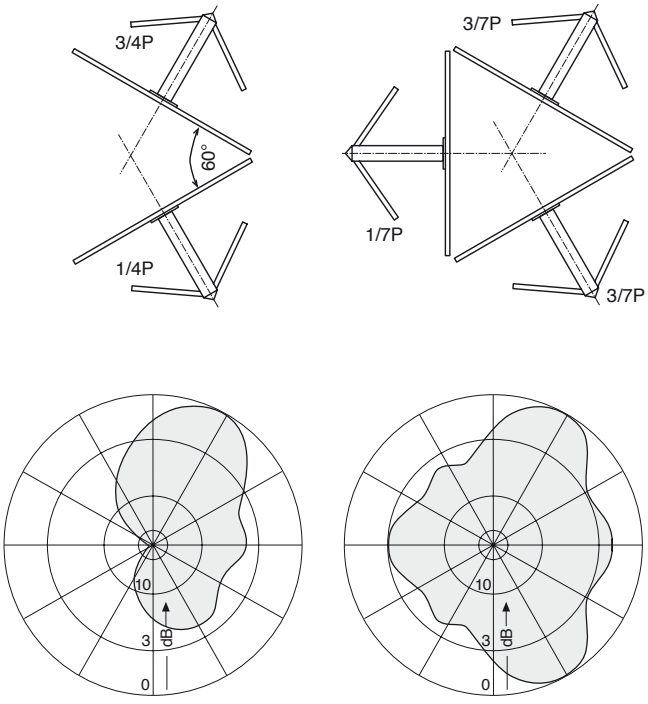
Horizontal Radiation Patterns

Examples of typical horizontal antenna arrays and their **horizontal** radiation patterns for minimal mast dimensions.

Equal power splitting



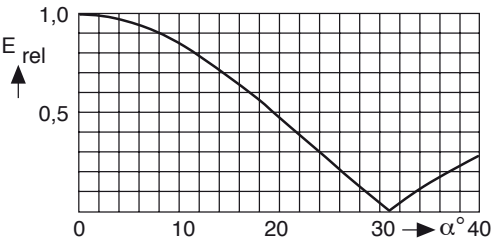
Different power splitting



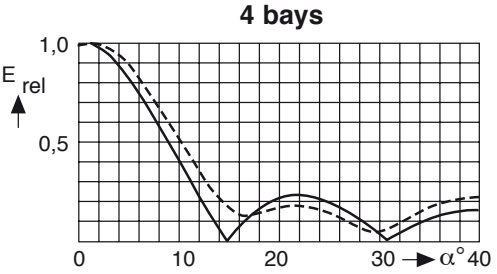
Vertical Radiation Patterns

Examples of typical **vertical** radiation patterns*) for several bays of identical, vertically stacked antenna arrays.

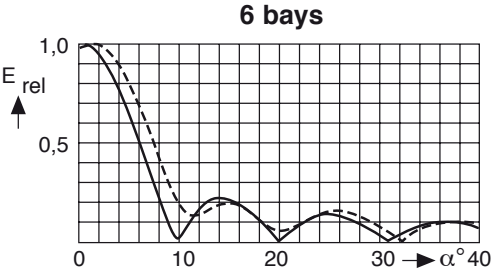
2 bays



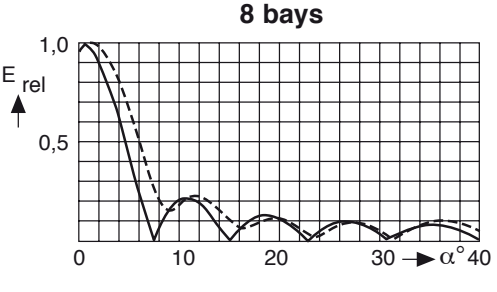
4 bays



6 bays



8 bays



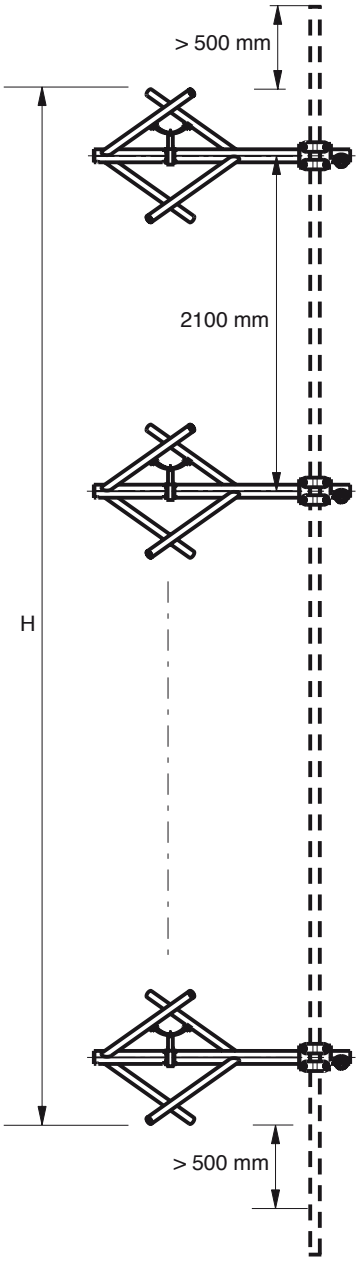
*) ——— without null fill
- - - - - with null fill and beam tilt

FM Transmitting Antenna with Broadband Sidemount Antenna K 53 35 1. . 87.5 – 108 MHz

KATHREIN
Antennen · Electronic

- Antenna array of elliptically polarized dipole panels K 53 35 1. . for different radiation patterns, especially suitable for mounting on pipes.
- The feeder network is made up of coaxial power splitters and flexible connecting cables.

Input	Connectors according to IEC, EIA or DIN.
Frequency range	87.5 – 108 MHz
VSWR	s < 1.25 throughout the whole frequency range. Lower VSWR for single channels upon request.
Impedance	50 Ω
Polarization	Elliptical
Internal connections	Connectors according to IEC or EIA are used throughout the system, allowing easy assembly and maintenance.
Max. power	According to customer's requirements.
Vertical radiation pattern	Null fill and beam tilt upon request.
Horizontal radiation pattern	Omnidirectional,with preferred direction.
Half antenna splitting	Upon request, the antenna can be divided into 2 halves (for measurement and maintenance). The 2 halves are connected by a 2-way power splitter or patch panel.
Pressurization	Splitters and connecting cables can be supplied with dry air (please specify when ordering).
Painting	If required, the antenna is painted in aviation warning colours.
Grounding	Via mounting parts.
Max. wind velocity	225 km/h



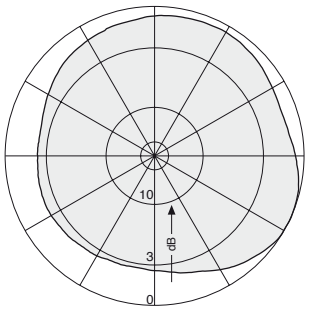
No. of bays	Gain* (at mid-band) dB	times	Weight (without mounting hardware) kg	Antenna height H m	Windload (v = 160 km/h) frontal N	lateral N
1	–1.5	0.7	25	0.834	115	365
4	4.5	2.8	100	7.13	460	1460
6	5.5	3.6	150	11.33	690	2190
8	7.5	5.6	200	15.53	920	2920
10	8.8	7.6	250	19.73	1150	3650

* Referred to λ/2 dipole. Attenuation of the internal cabling and the gain-decrease in case of null fill in the vertical radiation pattern are not considered.
Approximate values for gain decrease:
cable attenuation: 0.2 – 0.5 dB
null fill: 0.3 – 1.0 dB
Gain figures are valid for the direction of maximum radiation (see diagrams on following page).

FM Transmitting Antenna with Broadband Sidemount Antenna K 53 35 1. . 87.5 – 108 MHz

KATHREIN
Antennen · Electronic

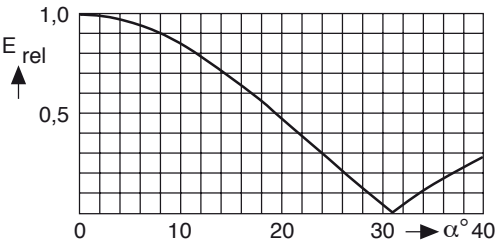
Typical Horizontal Radiation Pattern
(at mid-band)



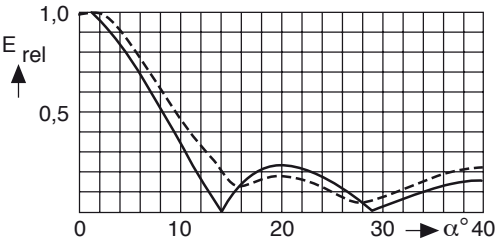
Vertical Radiation Patterns

Examples of typical **vertical** radiation patterns*) for several bays of identical, vertically stacked antenna arrays.

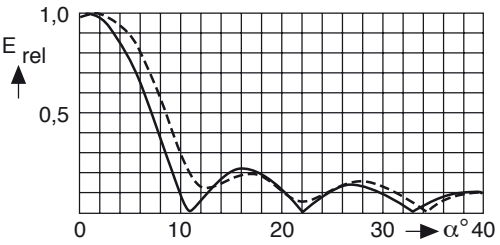
4 bays



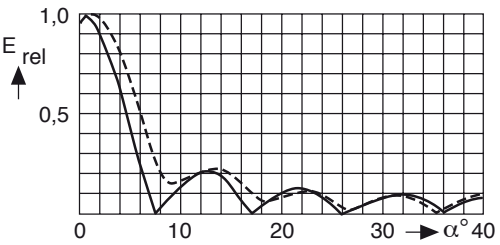
6 bays



8 bays



10 bays



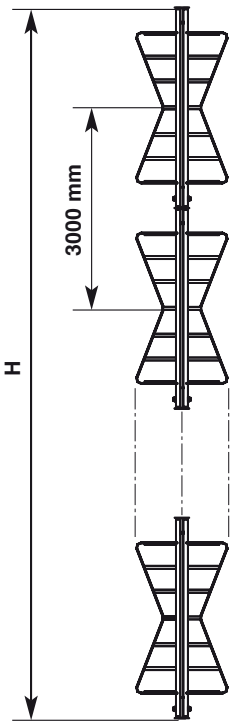
*) ——— without null fill
- - - - - with null fill and beam tilt

FM Transmitting Antenna (Superturnstile Antenna) 87.5 – 108 MHz K 52 97 1. .

KATHREIN
Antennen · Electronic

- Self-supporting hot-dip galvanized steel superturnstile antenna. Up to 4 bays may be stacked.
- Optionally up to 8 bays may be stacked if the superturnstile antennas are mounted inside a self-supporting fiberglass cylinder.

Input	Connectors according to IEC, EIA or DIN.
Frequency range	87.5 – 108 MHz
VSWR	s < 1.2 throughout the whole frequency range. Tuning not required.
Impedance	50 Ω
Polarization	Horizontal
Max. power	According to customer's requirements, 10 kW max. per bay.
Vertical radiation pattern	Null fill and beam tilt upon request.
Horizontal radiation pattern	Omnidirectional
Half antenna splitting	Upon request, the antenna can be divided into 2 halves (for measurement and maintenance). The 2 halves are connected by a 2-way power splitter or patch panel.
Internal connections	The radiating elements are fed with coaxial connecting cables and hybrid couplers. Connectors according to IEC, EIA or DIN are used throughout the system, allowing easy assembly and maintenance.
Structure	Superturnstile antenna on self-supporting hot dip galvanized steel structure. Up to 4 bays may be stacked.
Mounting	On top of existing structure by means of a flange.
Ice protection	Under icing the fiberglass cover over the feedslots and the rugged construction keep the antenna in proper function.
Grounding	Via mounting parts.
Max. wind velocity	160 km/h



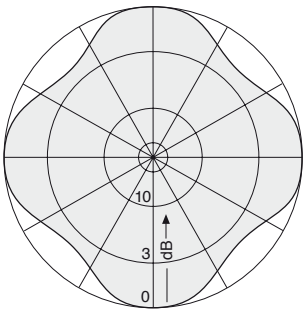
No. of bays	**Type No. /** Order No.	**Gain*** (at mid-band) dB	times	**Weight** (without cylinder) kg	**Antenna height H** m	**Windload** (without cylinder) (160 km/h) kN
1	K 52 97 11	1	1.26	275	3	3.2
2	K 52 97 12	4	2.51	550	6	6.5
4	K 52 97 14	7	5.00	1450	12	15.0

* Referred to λ/2 dipole. Attenuation of the internal cabling and the gain-decrease in case of null fill in the vertical radiation pattern are not considered.
Approximate values for gain decrease:
cable attenuation: 0.2 – 0.4 dB
null fill: 0.3 – 1.0 dB
Gain figures are valid for the direction of maximum radiation (see diagrams on following page).

FM Transmitting Antenna (Superturnstile Antenna) 87.5 – 108 MHz K 52 97 1. .

KATHREIN
Antennen · Electronic

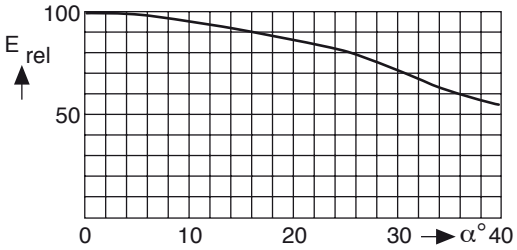
Typical Horizontal Radiation Pattern
(at mid-band)



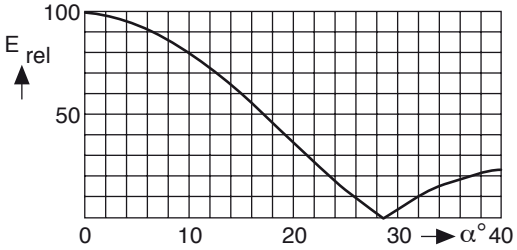
Vertical Radiation Patterns

Examples of typical **vertical** radiation patterns*) for several bays of identical, vertically stacked antenna arrays.

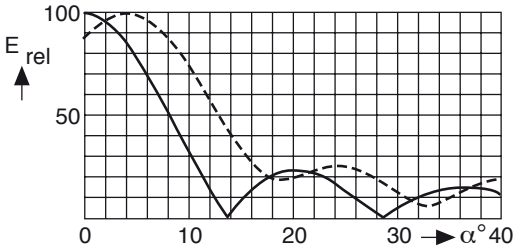
1 bay



2 bays



4 bays



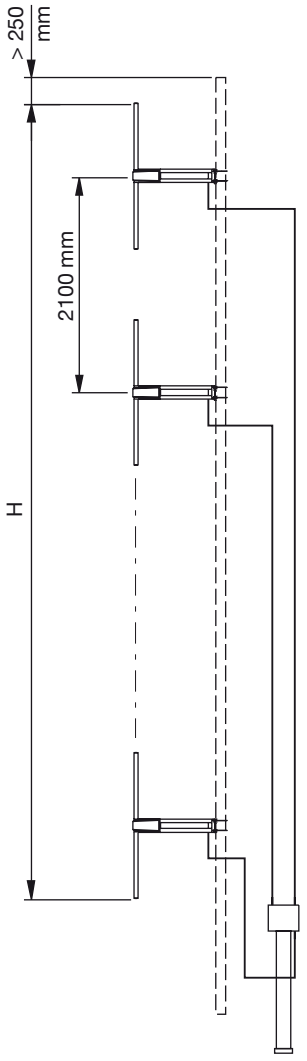
*) ——— without null fill
- - - - - with null fill and beam tilt

K 53 37 1. .
FM-Transmitting Antenna
87.5 – 108 MHz

KATHREIN
Antennen · Electronic

- An economic FM-transmitting antenna system can be built by stacking 2 or more vertical dipoles 762 943 in front of a thin tubular mast.
- Such antenna systems provide signal coverage in all azimuth directions as shown in the horizontal radiation pattern below. (The horizontal radiation pattern will be distorted, if a significantly bigger mast is used).

Input	Connectors according to IEC, EIA or DIN.
Frequency range	87.5 – 108 MHz
VSWR	s < 1.25 throughout the whole frequency range. Lower VSWR for single channels upon request.
Impedance	50 Ω
Polarization	Vertical
Internal connections	Connectors according to IEC, EIA or DIN are used throughout the system, allowing easy assembly and maintenance.
Max. power	According to customer's requirements.
Vertical radiation pattern	Null fill and beam tilt upon request.
Horizontal radiation pattern	Omnidirectional.
Half antenna splitting	Upon request, the antenna can be divided into 2 halves (for measurement and maintenance). The 2 halves are connected by a 2-way power splitter or patch panel.
Pressurization	Splitters and connecting cables can be supplied with dry air (please specify when ordering).
Painting	If required, the antenna is painted in aviation warning colours.
Grounding	Via mounting parts.
Max. wind velocity	225 km/h



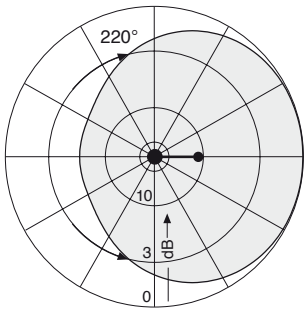
No. of bays	Gain* (at mid-band) dB	Gain* (at mid-band) times	Weight (without mounting hardware) kg	Antenna height H m	Windload (v = 160 km/h) frontal N	Windload (v = 160 km/h) lateral N
1	2.0	1.6	25	1.38	115	220
2	5.0	3.2	25	3.48	230	440
4	8.0	6.3	100	7.68	460	880
6	9.7	9.3	150	11.88	690	1320
8	11.0	12.6	200	16.08	920	1760
10	11.8	15.1	250	20.28	1150	2200

* Referred to λ/2 dipole. Attenuation of the internal cabling and the gain-decrease in case of null fill in the vertical radiation pattern are not considered.
Approximate values for gain decrease:
cable attenuation: 0.2 – 0.5 dB
null fill: 0.3 – 1.0 dB
Gain figures are valid for the direction of maximum radiation (see diagrams on following page).

K 53 37 1. .
FM-Transmitting Antenna
87.5 – 108 MHz

KATHREIN
Antennen · Electronic

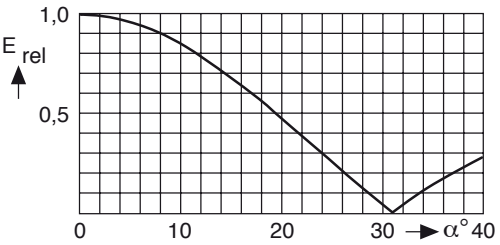
Typical Horizontal Radiation Pattern
(at mid-band beamtilt ≈1°)



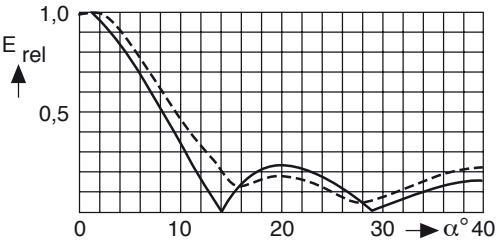
Vertical Radiation Patterns

Examples of typical **vertical** radiation patterns*) for several bays of identical, vertically stacked antenna arrays.

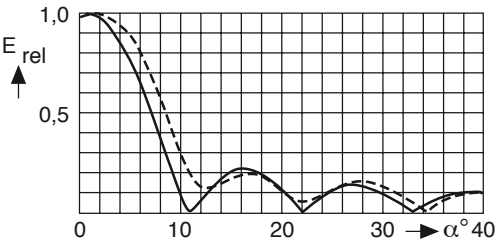
4 bays



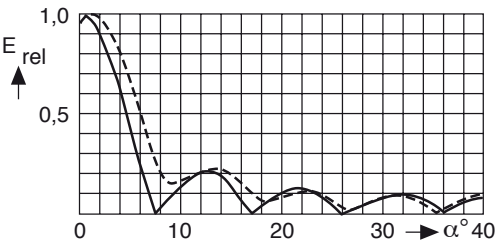
6 bays



8 bays



10 bays



*) ——— without null fill
- - - - - with null fill and beam tilt

Antennas for FM in VHF Band 66 – 73 MHz and 87.5 – 108 MHz

Model Types:

K 52 14 1. ., K 52 22 1. ., K 52 31 1. ., K 52 34 1. ., K 52 35 1. ., K 52 40 1. ., K 52 97 1. ., K 53 22 1. ., K 53 31 1. ., K 53 32 1. ., K 53 35 1. ., K 53 36 1. ., K 53 37 1. ., K 53 38 1. ., K 53 39 1. ., K 53 40 1. .

Type No.	Description	Frequency range	Gain	Polarization	Page
K 52 31 18.	Directional Antenna, steel	87.5 – 108 MHz	7.5 dB	horizontal or vertical	36
715 849	Directional Antenna, steel	87.5 – 108 MHz	7.5 dB	horizontal or vertical	36
774 321	Directional Antenna, steel	87.5 – 108 MHz	7.5 dB	horizontal or vertical	37
K 52 34 17	Directional Antenna, steel	87.5 – 108 MHz	7.0 dB	horizontal	38
750 10008	Directional Antenna, steel	87.5 – 108 MHz	7.0 dB	horizontal	38
752 183	Directional Antenna, steel	87.5 – 108 MHz	7.0 dB	horizontal	38
772 500	Directional Antenna, steel	87.5 – 108 MHz	6.0 dB	vertical	39
772 501	Directional Antenna, steel	87.5 – 108 MHz	6.0 dB	vertical	39
772 502	Directional Antenna, steel	87.5 – 108 MHz	6.0 dB	vertical	39
750 10183	Directional Antenna, steel	87.5 – 108 MHz	4.0 dB	vertical	40
768 476	Dual Band Directional Antenna, steel	66 – 73 MHz 87.5 – 108 MHz	6.0 dB 7.5 dB	horizontal horizontal	41
K 53 32 18.	Directional Antenna, steel	87.5 – 108 MHz	7.5 dB 4.5 dB	linear circular	42
754 154	Directional Antenna, steel	87.5 – 108 MHz	3.5 dB	circular	43
755 587	Directional Antenna, steel	87.5 – 108 MHz	3.5 dB	circular	43
757 629	Directional Antenna, steel	87.5 – 108 MHz	3.5 dB	circular	43
762 109	Directional Antenna, steel	87.5 – 108 MHz	3.5 dB	circular	43
750 10022	Broadband FM Sidemount Antenna, steel	87.5 – 108 MHz	–1.5 dB	elliptical	44
750 10023	Broadband FM Sidemount Antenna, steel	87.5 – 108 MHz	–1.5 dB	elliptical	44
750 10086	Directional Antenna, steel, aluminum	87.5 – 108 MHz	5.5 dB	Horizontal and vertical	45
K 52 40 17	4 Element Yagi Antenna, aluminum	87.5 – 108 MHz	5.5 dB	horizontal or vertical	46
K 52 14 17	9 Element Yagi Antenna, aluminum	87.5 – 108 MHz	7.5 dB	horizontal	47
775 738	Directional Antenna, steel	87.5 – 108 MHz	5.0 dB	vertical	48
775 838	Directional Antenna, steel	87.5 – 108 MHz	5.0 dB	vertical	48
770 776	3 Element Yagi Antenna, steel	87.5 – 108 MHz	4.0 dB	vertical	49
770 777	3 Element Yagi Antenna, steel	87.5 – 108 MHz	4.0 dB	vertical	49
762 943	Broadband Dipole for Tubular Mast, steel	87.5 – 108 MHz	2.0 dB	vertical	50
763 715	Broadband Dipole for Tubular Mast, steel	87.5 – 108 MHz	2.0 dB	vertical	50
775 130	Broadband Dipole for Tubular Mast, steel	87.5 – 108 MHz	2.0 dB	vertical	50
750 10034	Directional Antenna, steel	87.5 – 108 MHz	3.0 dB	vertical	50
750 10035	Directional Antenna, steel	87.5 – 108 MHz	3.0 dB	vertical	51
K 52 22 17	Log.-per. Directional Antenna, steel	87.5 – 108 MHz	6.0 dB	horizontal	52
775 000	Directional Antenna, steel	87.5 – 108 MHz	6.0 dB	vertical	53
775 001	Directional Antenna, steel	87.5 – 108 MHz	6.0 dB	vertical	53
775 002	Directional Antenna, steel	87.5 – 108 MHz	6.0 dB	vertical	53

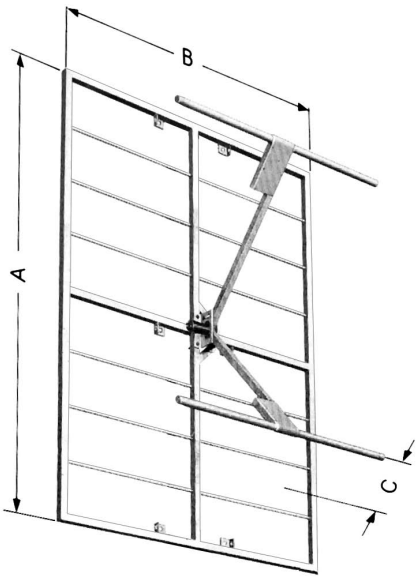
K 52 31 1. .
Directional Antenna
87.5 – 108 MHz

KATHREIN
Antennen · Electronic

- Broadband directional antenna of hot-dip galvanized steel.
- Especially suitable for square masts.

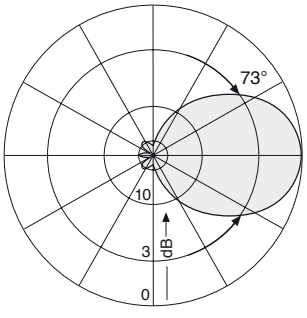
Type No. Order No.	**K 52 31 187** 601 278	**K 52 31 188** 601 629	**715 849**
Input (type gas-stop)	7-16 female	7/8″ EIA-flange	13-30 female
Frequency range	87.5 – 108 MHz		
VSWR	< 1.15		
Gain (ref. to λ/2 dipole)	7.5 dB at mid-band		
Impedance	50 Ω		
Polarization	Horizontal or vertical		
Max. power	2.5 kW	4 kW	6 kW
	(higher power upon request)		
Weight	64 kg		
Wind load (at 160 km/h)			
Horizontally polarized	frontal / lateral: 1500 N / 875 N		
Vertically polarized	frontal / lateral: 1500 N / 825 N		
Max. wind velocity	225 km/h		

Material:	Hot-dip galvanized steel. Radome: Fiberglass.
Mounting:	Mounting hardware and mounting dimensions upon request.
Ice protection:	Even under severe icy conditions the antenna is still functional due to its heavy-duty construction and the fiberglass covers for the feeding points.
Grounding:	Via mounting parts.
Combinations:	The antenna is especially suitable as a component in arrays to achieve various radiation patterns. Particularly for square masts.
Scope of supply:	Antenna without mounting clamps.
Special features:	The antenna is shipped dismounted.

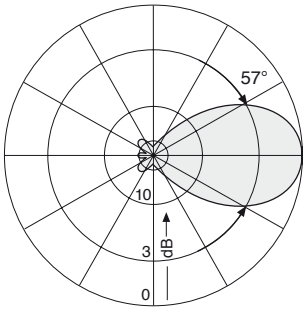


A: 2490 mm
B: 1740 mm
C: 730 mm

Radiation Patterns (at mid-band)



in E-plane



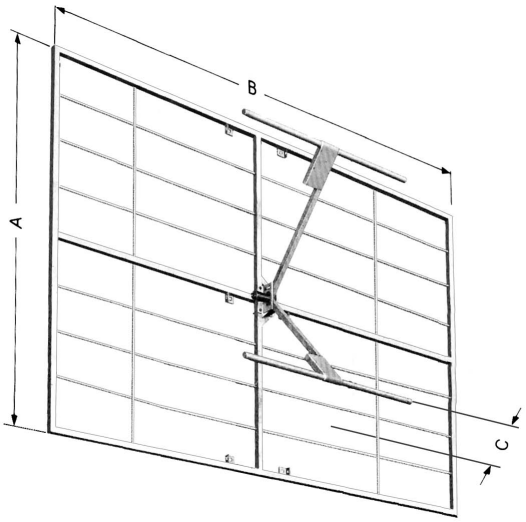
in H-plane

K 52 31 1. .
Directional Antenna
87.5 – 108 MHz

KATHREIN
Antennen · Electronic

- Broadband directional antenna of hot-dip galvanized steel.
- Especially suitable for square masts.

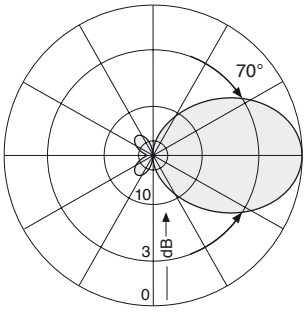
Type No. / Order No.	**774 321**
Frequency range	87.5 – 108 MHz
Input (type gas-stop)	7/8″ EIA-flange
VSWR	< 1.15
Gain (ref. to λ/2 dipole)	7.5 dB at mid-band
Impedance	50 Ω
Polarization	Horizontal or vertical
Max. power	4 kW (higher power upon request)
Weight	85 kg
Wind load (at 160 km/h) Horizontally polarized Vertically polarized	 frontal / lateral: 2000 N / 1380 N frontal / lateral: 2000 N / 1250 N
Max. wind velocity	220 km/h



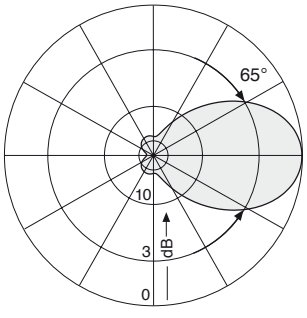
A: 2490 mm
B: 2700 mm
C: 832 mm

Material:	Hot-dip galvanized steel. Radome: Fiberglass.
Mounting:	Mounting hardware and mounting dimensions upon request.
Ice protection:	Even under severe icy conditions the antenna is still functional due to its heavy-duty construction and the fiberglass covers for the feeding points.
Grounding:	Via mounting parts.
Combinations:	The antenna is especially suitable as a component in arrays to achieve various radiation patterns. Particularly for square masts.
Scope of supply:	Antenna without mounting clamps.
Special features:	The antenna is shipped dismounted.

Radiation Patterns (at mid-band)



in E-plane

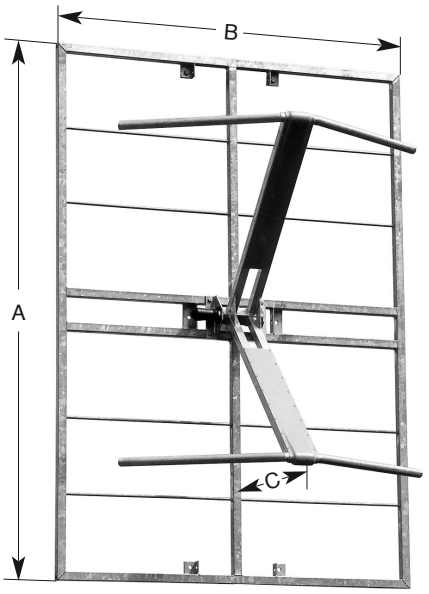


in H-plane

K 52 34 1. .
Directional Antenna
87.5 – 108 MHz

KATHREIN
Antennen · Electronic

- Broadband directional antenna of hot-dip galvanized steel.
- Especially suitable for triangular and round masts.

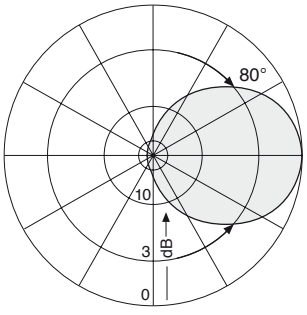


A: 2490 mm
B: 1740 mm
C: 760 mm

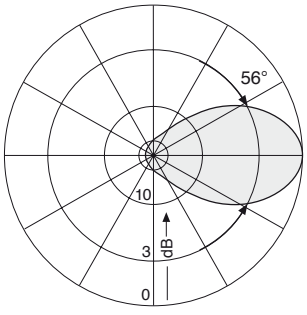
Type No. Order No.	**K 52 34 17** 601 694	**750 10008**	**752 183**
Input (type gas-stop)	7-16 female	7/8″ EIA-flange	13-30 female
Frequency range	87.5 – 108 MHz		
VSWR	< 1.2		
Gain (ref. to λ/2 dipole)	7 dB at mid-band		
Impedance	50 Ω		
Polarization	Horizontal		
Max. power	2.5 kW	4 kW	6 kW
	(higher power upon request)		
Weight	66 kg		
Wind load (at 160 km/h)	frontal: 1700 N lateral: 875 N		
Max. wind velocity	225 km/h		

Material:	Hot-dip galvanized steel. Radome: Fiberglass.
Mounting:	Mounting hardware and mounting dimensions upon request.
Ice protection:	Even under severe icy conditions the antenna is still functional due to its heavy-duty construction and the fiberglass covers for the feeding points.
Grounding:	Via mounting parts.
Combinations:	The antenna is especially suitable as a component in arrays to achieve various radiation patterns. Particularly for triangular and round masts.
Scope of supply:	Antenna without mounting clamps.
Special features:	The antenna is shipped dismounted.

Radiation Patterns (at mid-band)



in E-plane
Horizontal Radiation Pattern



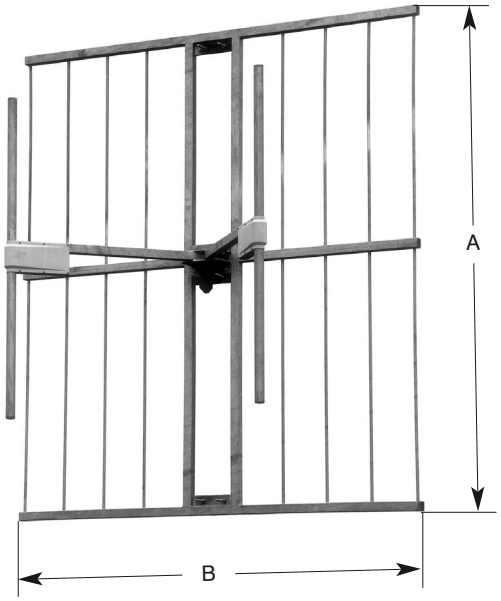
in H-plane
Vertical Radiation Pattern

K 53 31 1. .
Directional Antenna
87.5 – 108 MHz

KATHREIN
Antennen · Electronic

- Vertically polarized directional antenna.
- Especially suitable for triangular and round masts.

Type No. / Order No.		**772 500**	**772 501**	**772 502**
Input		7-16 female (type gas-stop)	7/8″ EIA-flange	1 5/8″ EIA-flange
Frequency range		87.5 – 108 MHz		
VSWR		< 1.15		
Gain (ref. λ/2 dipole)		6 dB at mid-band		
Impedance		50 Ω		
Polarization		Vertical		
Max. power		2.5 kW	5 kW	14 kW
Weight		65 kg	65 kg	75 kg
Wind load (at 160 km/h)	frontal:	1550 N	1550 N	1620 N
	lateral:	850 N	850 N	970 N
Max. wind velocity		225 km/h		
Dimensions	A	2200 mm		
	B	2000 mm		



772 500

Material: Hot-dip galvanized steel.
Radome: Fiberglass.

Mounting: To a vertical pipe of ∅ 89 mm by 3 pcs. U-bolts (supplied) or to proper flanges.
Mounting dimensions upon request.

Grounding: Via mounting parts.

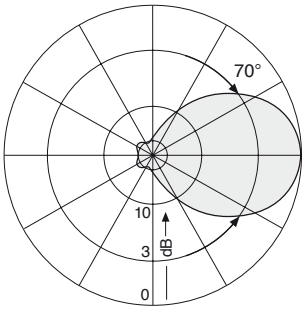
Ice protection: Even under icy conditions the antenna keeps operating due to the radomes covering the feed areas.

Combinations: The antenna is especially suitable as a component in arrays to achieve various radiation patterns. Particularly for triangular and round masts.

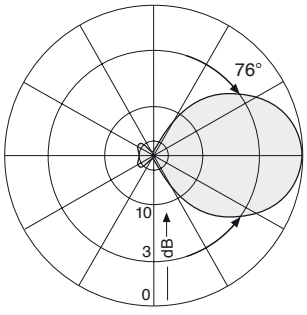
Scope of supply: Antenna consisting of two half-wave dipoles with reflector screen and 3 U-bolts.

Special features: The antenna is shipped dismounted.

Radiation Patterns (at mid-band)



E-plane
Vertical Radiation Pattern



H-plane
Horizontal Radiation Pattern

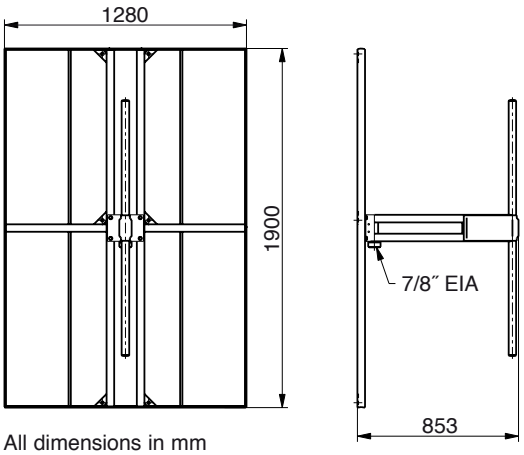
K 53 31 1. .
Directional Antenna
87.5 – 108 MHz

KATHREIN
Antennen · Electronic

- Vertically polarized directional antenna.

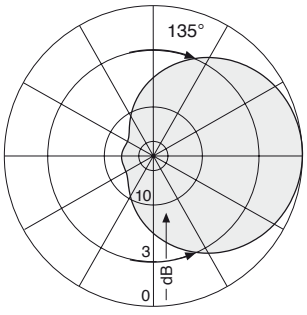
Type No. / Order No.	**750 10183**
Input	7/8″ EIA-flange
Frequency range	87.5 – 108 MHz
VSWR	< 1.3
Gain (ref. λ/2 dipole)	4 dB at mid-band
Impedance	50 Ω
Polarization	Vertical
Max. power	5 kW
Weight approx.	41 kg
Wind load approx. frontal: (at 160 km/h) lateral:	650 N 850 N
Max. wind velocity	225 km/h

Material:	Hot-dip galvanized steel. Radome: Fiberglass.
Mounting:	Mounting hardware upon request.
Grounding:	Via mounting parts.
Ice protection:	Even under icy conditions the antenna keeps operating due to the radomes covering the feed areas.
Scope of supply:	Antenna consisting of one half-wave dipole with reflector screen.
Special features:	The antenna is shipped dismounted.

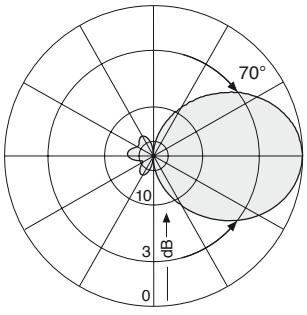


All dimensions in mm

Radiation Patterns (at mid-band)



in H-plane
Horizontal Radiation Pattern



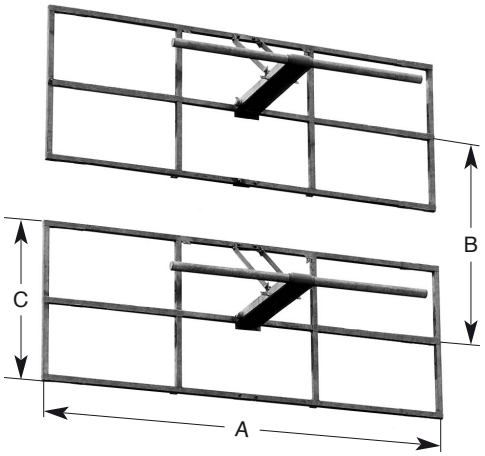
in E-plane
Vertical Radiation Pattern

K 52 35 1. .
Dual Band Directional Antenna
66 – 73 MHz / 87.5 – 108 MHz

KATHREIN
Antennen · Electronic

- Dipole panel for OIRT and CCIR bands for FM radio.
- Especially suitable for square masts.

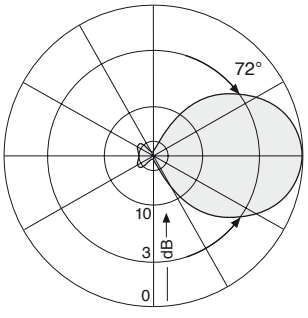
Type No. / Order No.	**768 476**
Input	7-16 female
Frequency range	OIRT: 66 – 73 MHz / CCIR: 87.5 – 108 MHz
VSWR	66 – 73 MHz: ≤ 1.3 / 87.5 – 108 MHz: ≤ 1.2
Gain (ref. λ/2 dipole)	66 – 73 MHz: 6 dB / 87.5 – 108 MHz: 7.5 dB
Impedance	50 Ω
Polarization	Horizontal
Max. power	6 kW (higher power upon request)
Weight	135 kg
Wind load (at 160 km/h)	frontal: 2.5 kN lateral: 1.1 kN
Max. wind velocity	225 km/h



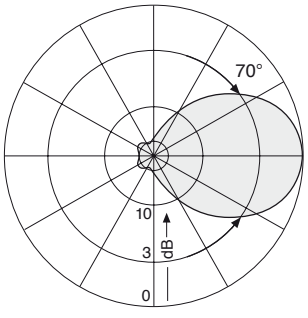
A: 2840 mm
B: 1500 mm
C: 1080 mm

Material:	Hot-dip galvanized steel. Radome: Fiberglass.
Mounting:	Mounting hardware and mounting dimensions upon request.
Ice protection:	Even under severe icy conditions the antenna is still functional due to its heavy-duty construction and the fiberglass covers for the feeding points.
Grounding:	Via mounting parts.
Combinations:	The antenna is especially suitable as a component in arrays to achieve various radiation patterns. Particularly for square masts.
Scope of supply:	Antenna consisting of two half-wave dipoles with reflector screens.
Special features:	The antenna is shipped dismounted.

Radiation Patterns (at mid-band)



in E-plane
Horizontal Radiation Pattern



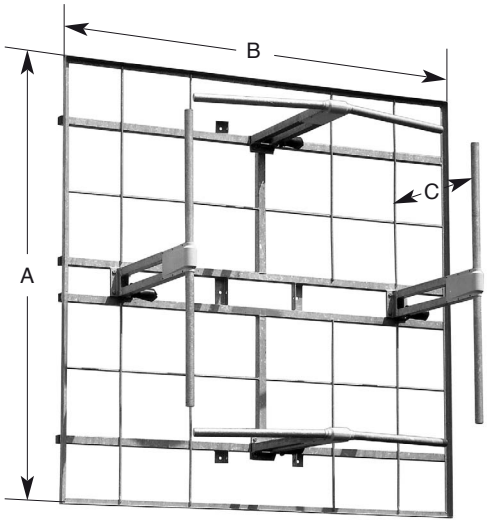
in H-plane
Vertical Radiation Pattern

K 53 32 1. .
Directional Antenna
87.5 – 108 MHz

KATHREIN
Antennen · Electronic

- Broadband directional antenna made of hot-dip galvanized steel.
- Especially suitable for square masts.
- Optionally for circular, horizontal, vertical or slant polarization.

4 dipoles are arranged symmetrically in front of a reflector screen. With suitable feeding the antenna radiates circularly polarized. An isolation of 40 – 50 dB between horizontal and vertical pairs of dipoles is achieved through the spezial design. This design permits the transmission of 2 programs – horizontally and vertically polarized – independently from each other.



A = B: 2200 mm
C = 830 mm

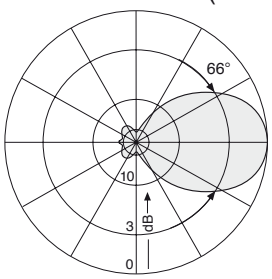
K 53 32 187

Type No. Order No.	**K 53 32 187** 601 768	**K 53 32 188** 601 979
Input	4 x 7-16 female	4 x 7/8 ″ EIA-flange
Frequency range	87.5 – 108 MHz	
VSWR	< 1.25 (linear polarization) < 1.1 (circular polarization)	
Gain (ref. λ/2 dipole)	7.5 dB at mid-band (linear polarization) 4.5 dB at mid-band (circular polarization)	
Impedance	50 Ω	
Max. power	2.5 kW for each input	4 kW for each input
	(higher power upon request)	
Weight	89 kg	
Wind load (at 160 km/h)	Frontal: 1.60 kN Lateral: 1.13 kN	
Max. wind velocity	225 km/h	

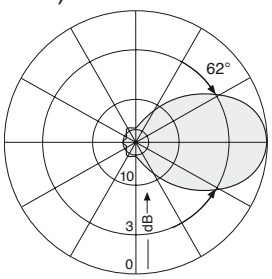
Material:	Hot-dip galvanized steel. Weather protection: fiberglass cover.
Mounting:	The antenna must be mounted so that the bent radiators are horizontally polarized. Mounting dimensions and mounting hardware on request.
Ice protection:	Even under severe icy conditions the antenna is still functional due to its heavy-duty construction and the fibre-glass covers of the feeding points.
Grounding:	Via mounting parts.
Polarization:	Suitable feeding of the horizontal and vertical dipole pairs optionally result in left or right hand circular or elliptical or slant polarization or simultaneous horizontal and vertical polarization.
Combinations:	The antenna is especially suitable as a component in arrays to achieve various radiation patterns. Particularly for square masts.
Scope of supply:	Antenna without mounting clamps.
Special features:	The antenna will be shipped dismounted.

Radiation Patterns
(at mid-band)

Horizontal Polarization
(bent dipoles)

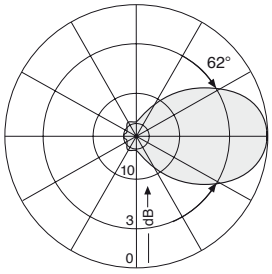


in E-plane
Horizontal Radiation Pattern

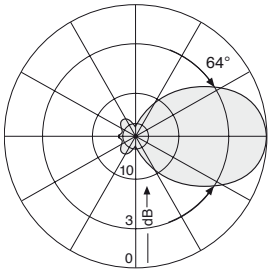


in H-plane
Vertical Radiation Pattern

Vertical Polarization
(straight dipoles)



in H-plane
Horizontal Radiation Pattern



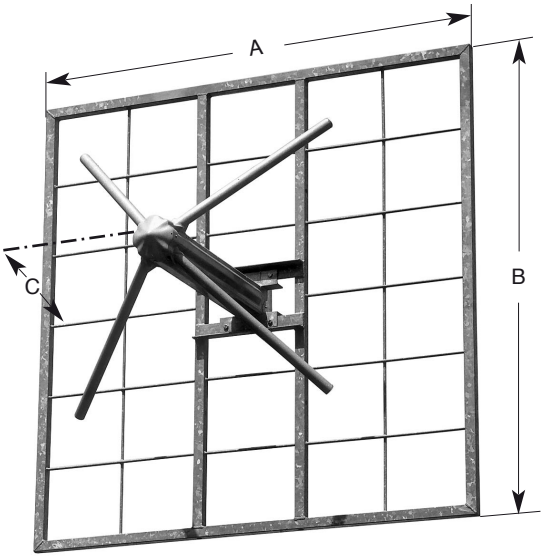
in E-plane
Vertical Radiation Pattern

K 53 36 1. .
Directional Antenna
87.5 – 108 MHz

KATHREIN
Antennen · Electronic

- Circularly polarized broadband directional antenna of hot-dip galvanized steel.
- Especially suitable for triangular and round masts.

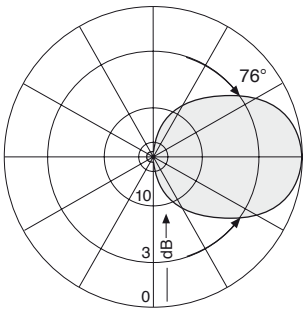
Type No. **normal position** Order No. **rotated position**	**754 154** **757 629**	**755 587** **762 109**
Input	2 x 7-16 female	2 x 13-30 female
Frequency range	87.5 – 108 MHz	
VSWR	< 1.2	
Gain (ref. λ/2 dipole)	3.5 dB at mid-band	
Impedance	50 Ω	
Polarization	Circular	
Max. power	2.5 kW for each input	5 kW for each input
Weight	60 kg	
Wind load (at 160 km/h)	frontal: 1250 N lateral: 875 N	
Max. wind velocity	225 km/h	



A = B: 1820 mm
C: 900 mm

Material:	Hot-dip galvanized steel. Radome: Fiberglass.
Mounting:	Mounting hardware and mounting dimensions upon request.
Ice protection:	Even under severe icy conditions the antenna is still functional due to its heavy-duty construction and the fiberglass covers for the feeding points.
Grounding:	Via mounting parts.
Combinations:	The antenna is especially suitable as a component in arrays to achieve various radiation patterns. Particularly for triangular and round masts.
Scope of supply:	Antenna without mounting clamps.
Special features:	The antenna is shipped dismounted.

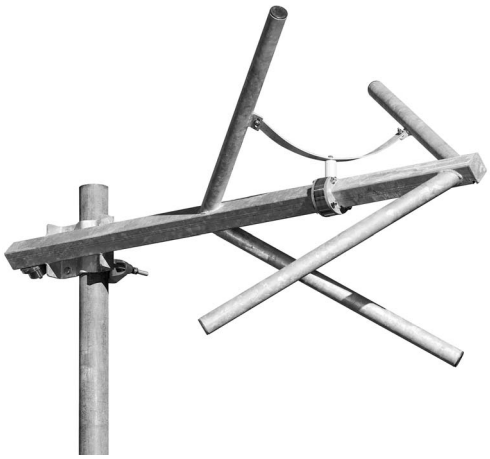
Radiation Patterns
(at mid-band)



K 53 35 1. .
Broadband FM Sidemount Antenna
87.5 – 108 MHz

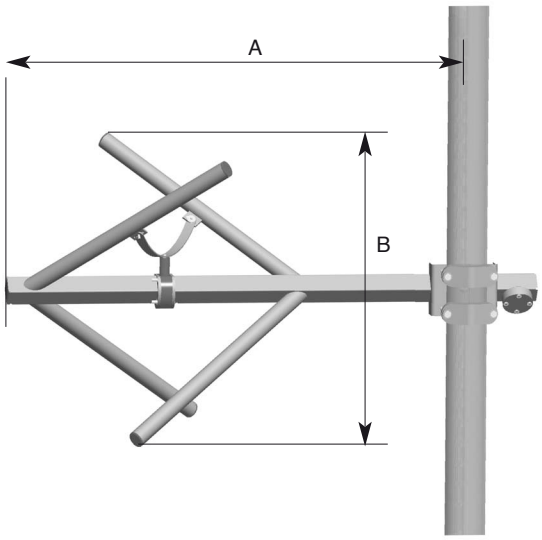
KATHREIN
Antennen · Electronic

- Omnidirectional propagation with preferred direction.
- Mounting to pipes.
- Elliptical polarization.



Type No. / Order No.	**750 10022**	**750 10023**
Input	7/8″ EIA-flange	1 5/8″ EIA-flange
Frequency	87.5 – 108 MHz	
VSWR in one channel	< 1.5	
Gain (ref. λ/2 dipole)	–1.5 dBd at mid-band	
Impedance	50 Ω	
Polarization	Elliptical	
Max. power	5 kW	10 kW
	(at 40 °C ambient temperature)	
Weight	25 kg	
Wind load (at 160 km/h)	frontal: 115 N	
	lateral: 365 N	
Max. wind velocity	240 km/h	
Packing size	1300 x 1300 x 200 mm	

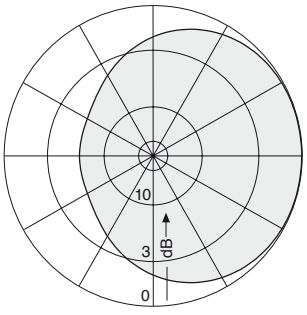
Material:	Hot-dip galvanized steel.
Ice protection:	Feed point radome (optional).
Mounting:	To pipes of 75 – 125 mm ∅ by means of 2 mounting clamps, supplied.
Grounding:	Via mounting parts.



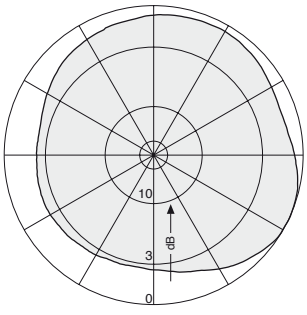
750 10023

A = 1385 mm
B = approx. 834 mm

Horizontal Radiation Patterns (at mid-band)
Polarization and Pattern
depending on mast structure behind



Vertical Polarization



Horizontal Polarization

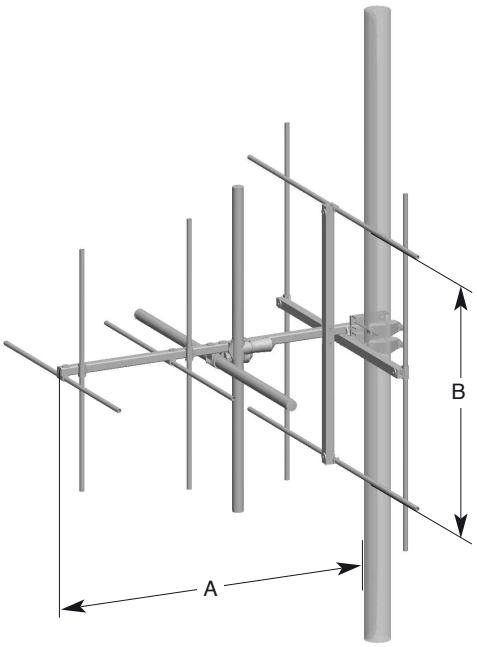
K 53 34 1. .
Directional Antenna
87.5 – 108 MHz

KATHREIN
Antennen · Electronic

- 2 x 4 element broadband Yagi antenna.
- Component for low power transmitting antennas.

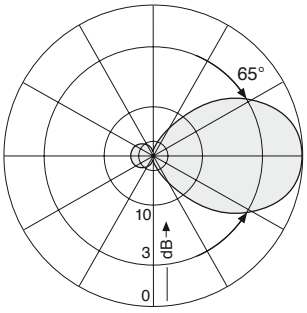
Type No. / Order No.	**750 10086**
Input	2 x 7-16 female
Frequency range	87.5 – 108 MHz
VSWR	s < 1.3
Gain (ref. λ/2 dipole)	5.5 dB at mid-band
Impedance	50 Ω
Polarization	Horizontal and vertical
Max. power	2 x 500 W (at 40 °C ambient temperature)
Weight	25 kg
Wind load (at 160 km/h)	frontal: 115 N lateral: 365 N
Max. wind velocity	240 km/h
Packing size	160 x 160 x 1930 mm

Material:	Supporting pipe: Hot-dip galvanized steel. Director pipe and reflector: Weather-proof aluminum. Radiator in fiberglass radome.
Mounting:	To pipes of 60 – 120 mm diameter by means of mounting clamps, supplied.
Grounding:	Via mounting parts.
Special features:	The antenna is shipped dismounted.

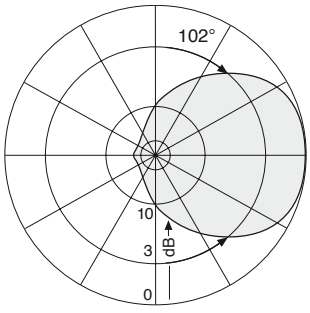


A = approx. 1560 mm
B = 1700 mm

Radiation Patterns (at mid-band)



in E-plane



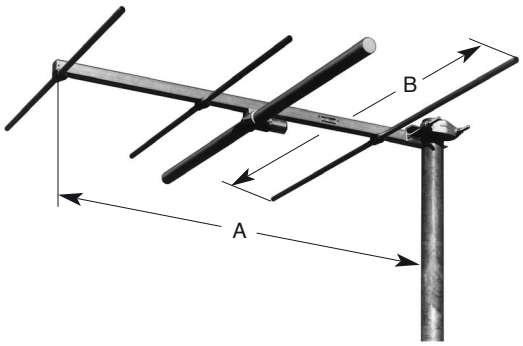
in H-plane

K 52 40 1. .
Directional Antenna
87.5 – 108 MHz

KATHREIN
Antennen · Electronic

- 4 element broadband Yagi antenna.
- Component for low power transmitting antennas.

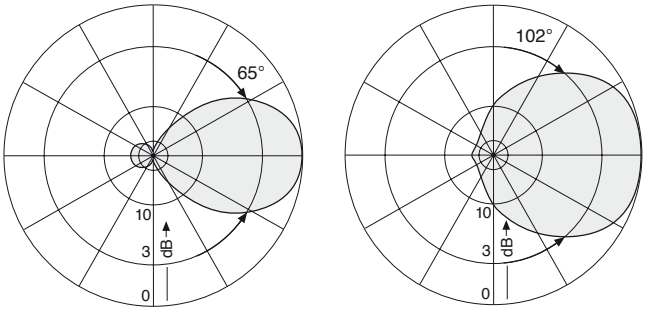
Type No. Order No.	**K 52 40 17** 600 263
Input	7-16 female
Frequency range	87.5 – 108 MHz
VSWR	s < 1.3
Gain (ref. λ/2 dipole)	5.5 dB at mid-band
Impedance	50 Ω
Polarization	Horizontal or vertical
Max. power	500 W (at 40 °C ambient temperature)
Weight	13.5 kg
Wind load (at 160 km/h)	
Horizontally polarized	frontal / lateral: 215 N / 160 N
Vertically polarized	frontal / lateral: 215 N / 340 N
Max. wind velocity	225 km/h
Packing size	160 x 160 x 1900 mm



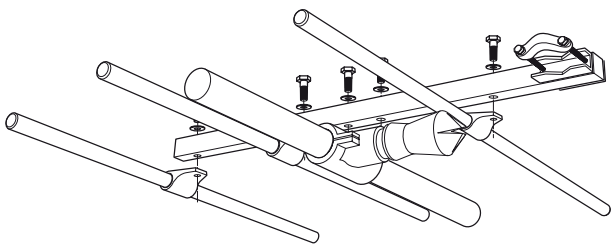
A = 1400 mm
B = 1700 mm

Material:	Supporting pipe: Hot-dip galvanized steel. Director pipe and reflector: Weather-proof aluminum. Radiator in fiberglass radome.
Mounting:	To pipes of 60 – 115 mm diameter by means of mounting clamps, supplied.
Grounding:	Via mounting parts.
Combinations:	The antenna is especially suitable as a component in arrays to achieve various radiation patterns.
Special features:	The antenna is shipped dismounted.
New:	**The design has been improved to allow use of both polarizations.**

Radiation Patterns (at mid-band)



in E-plane in H-plane

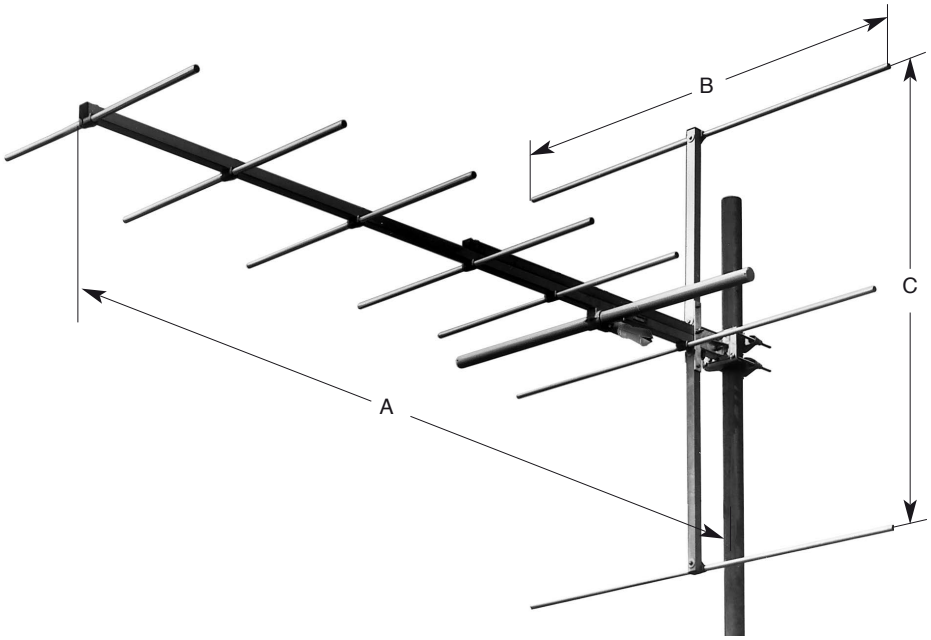


Assembly

K 52 14 1. .
Directional Antenna
87.5 – 108 MHz

KATHREIN
Antennen · Electronic

● 9 element broadband Yagi antenna of weatherproof aluminum.

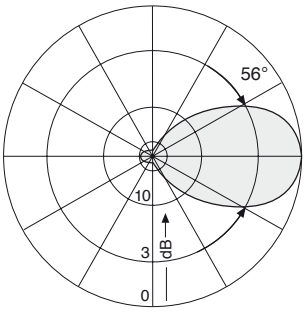


A: 3160 mm
B: 1840 mm
C: 1750 mm

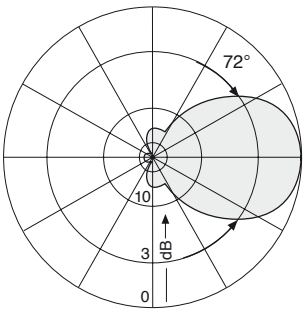
Type No. Order No.	**K 52 14 17** 600 204
Input	7-16 female
Frequency range	87.5 – 108 MHz
VSWR	< 1.4
Gain (ref. λ/2 dipole)	7.5 dB at mid-band
Impedance	50 Ω
Polarization	Horizontal or vertical
Max. power	500 W
Weight	16 kg
Wind load (at 160 km/h)	
Horizontally polarized	frontal / lateral: 575 N / 625 N
Max. wind velocity	225 km/h
Vertically polarized	frontal / lateral: 575 N / 665 N
Max. wind velocity	200 km/h
Packing size	3100 x 220 x 220 mm

Material:	Weather-proof aluminum. Radiator in fiberglass radome.
Mounting:	To pipes of 60 – 115 mm diameter by means of mounting clamps, supplied.
Grounding:	Via mounting parts.
Combinations:	Two or more antennas can be combined to achieve higher gain and longer, narrower beam width.
Special features:	The antenna is shipped dismounted.

Radiation Patterns
(at mid-band)



in E-plane



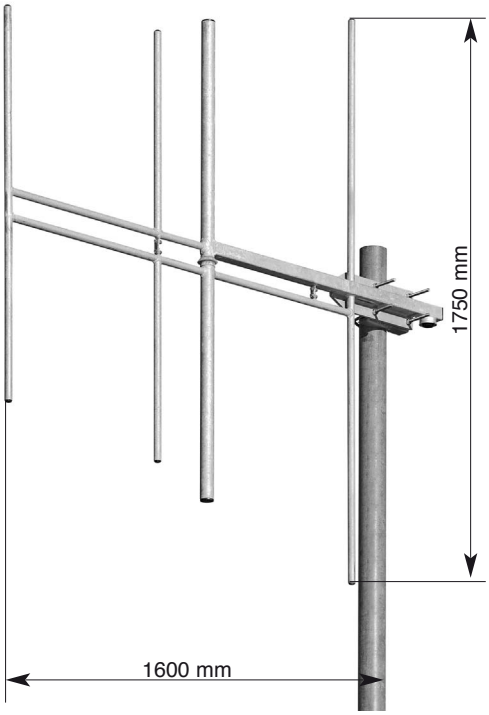
in H-plane

K 53 40 1. .
Directional Antenna
87.5 – 108 MHz

KATHREIN
Antennen · Electronic

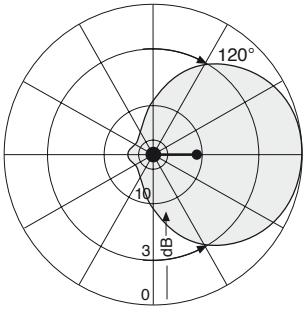
- 4 elements broadband Yagi antenna.
- Mounting to pipes.
- Vertically polarized.
- 5 dB gain.

Type No. / Order No.	**775 738**	**775 838**
Input	7/8″ EIA-flange	7-16 female
Frequency	87.5 – 108 MHz	
VSWR	< 1.3	
Gain (ref. λ/2 dipole)	5 dB at mid-band	
Impedance	50 Ω	
Polarization	Vertical	
Max. power	5 kW	3 kW
	(at 40 °C ambient temperature)	
Weight	20 kg	
Wind load (at 160 km/h)	frontal: 230 N	
	lateral: 400 N	
Max. wind velocity	225 km/h	
Packing size	1800 x 1750 x 95 mm	

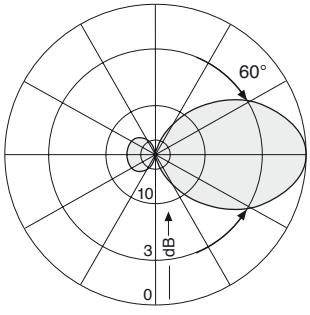


Material:	Hot-dip galvanized steel.
Mounting:	To pipes of 60 – 125 mm ∅ by means of 2 U-bolts, supplied.
Grounding:	Via mounting parts.
Specials:	The antenna may be equipped with ice protection set Type No. 753 10118 for use at sites with icy conditions (please order separately). The max. wind velocity with an ice layer of 3 cm is 130 km/h.

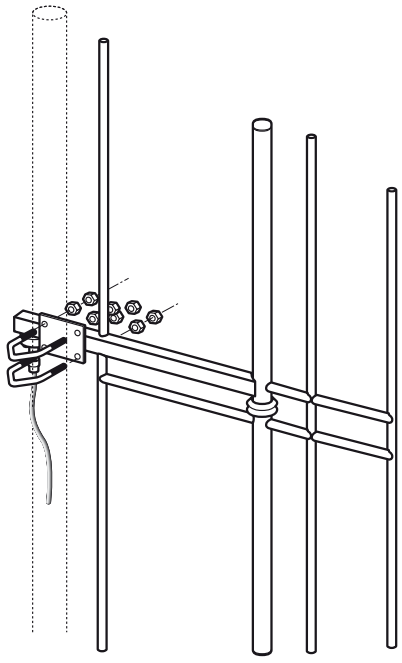
Radiation Patterns (at mid-band)



in H-plane
Horizontal Radiation Pattern



in E-plane
Vertical Radiation Pattern

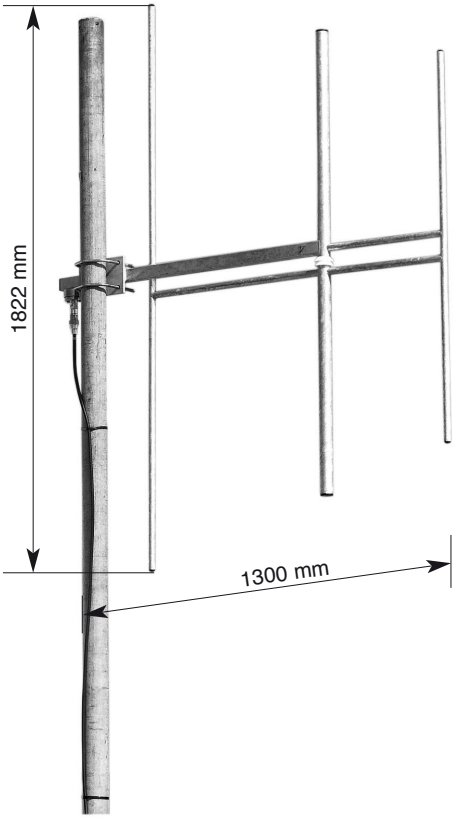


Assembly

K 53 39 1. .
Directional Antenna
87.5 – 108 MHz

KATHREIN
Antennen · Electronic

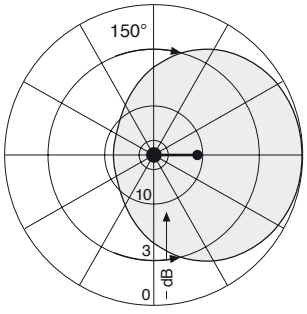
- 3 elements broadband Yagi antenna.
- Mounting to pipes.
- Vertically polarized.
- 4 dB gain.



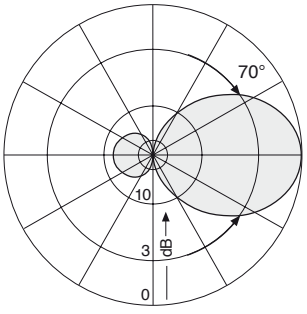
Type No. / Order No.	**770 776**	**770 777**
Input	7/8″ EIA-flange	7-16 female (type gas-stop)
Frequency	87.5 – 108 MHz	
VSWR	< 1.3	
Gain (ref. λ/2 dipole)	4 dB at mid-band	
Impedance	50 Ω	
Polarization	Vertical	
Max. power	5 kW	3 kW
	(at 40 °C ambient temperature)	
Weight	13 kg	
Wind load (at 160 km/h)	frontal: 165 N	
	lateral: 275 N	
Max. wind velocity	225 km/h	
Packing size	1890 x 1550 x 92 mm	

Material:	Hot-dip galvanized steel.
Mounting:	To pipes of 60 – 125 mm ∅ by means of 2 U-bolts, supplied.
Grounding:	Via mounting parts.
Accessories:	The antenna may be equipped with ice protection set Type No. 774 168 for use at sites with icy conditions (please order separately). The max. wind speed with an ice layer of 3 cm is 130 km/h.

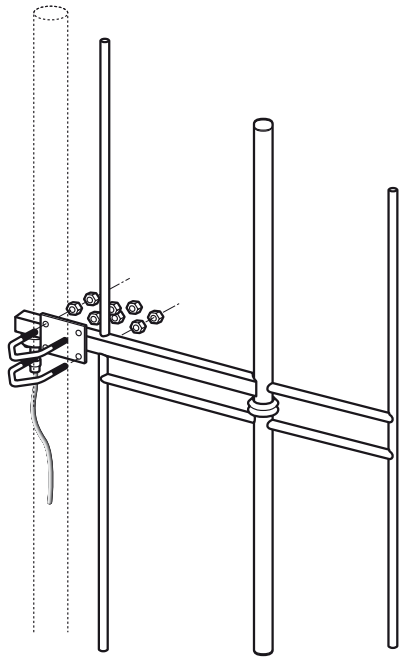
Radiation Patterns (at mid-band)



in H-plane
Horizontal Radiation Pattern



in E-plane
Vertical Radiation Pattern



Assembly

K 53 37 1. .
Broadband Dipole for Tubular Mast
87.5 – 108 MHz

KATHREIN
Antennen · Electronic

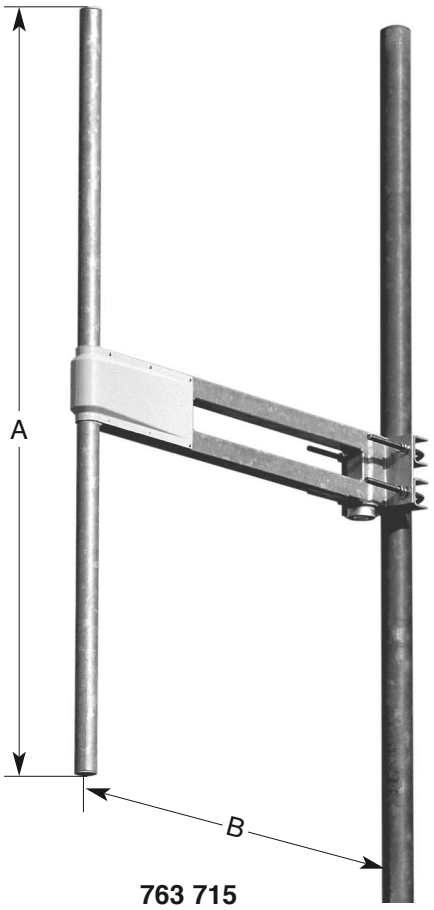
- Omnidirectional propagation with preferred direction.
- Mounting to pipes.
- Vertically polarized.
- 2 dB gain.

Type No. / Order No.	**762 943**	**763 715**	**775 130**
Input	7-16 female (type gas-stop)	7/8″ EIA-flange	1 5/8″ EIA-flange
Max. power	3 kW	5 kW	10 kW
	(at 40 °C ambient temperature)		
Frequency range	87.5 – 108 MHz		
VSWR	s < 1.3		s < 1.25
Gain (ref. λ/2 dipole)	2 dB at mid-band		
Impedance	50 Ω		
Polarization	Vertical		
Wind load frontal:	115 N		165 N
(at 160 km/h) lateral:	220 N		340 N
Weight	13 kg		22 kg
Max. Wind velocity	225 km/h		300 km/h
Packing	1552 x 1186 x 197 mm		

Material: Hot-dip galvanized steel.

Mounting: To pipes of 60 – 125 mm by means of 2 mounting clamps, supplied.

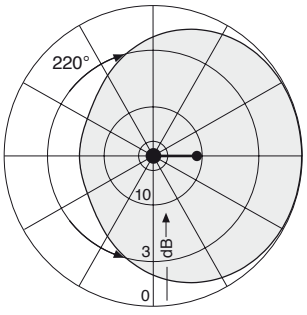
Grounding: Via mounting parts.



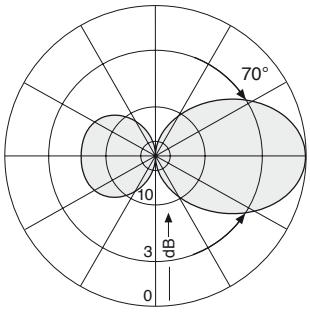
763 715

A: 1380 mm / B: 830 mm

Radiation Patterns (at mid-band)



in H-plane
Horizontal Radiation Pattern

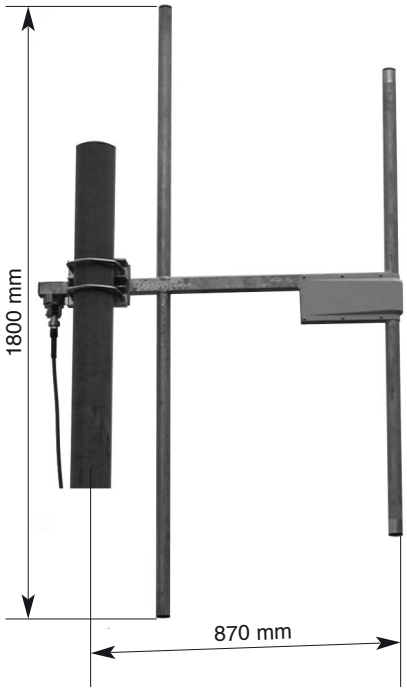


in E-plane
Vertical Radiation Pattern

K 53 38 1. .
Directional Antenna
87.5 – 108 MHz

KATHREIN
Antennen · Electronic

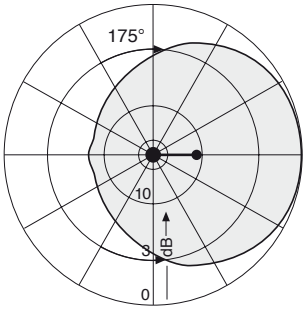
- 2 elements broadband Yagi antenna.
- Mounting to pipes.
- Vertically polarized.
- 3 dB gain.



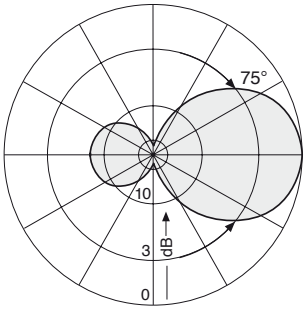
Type No.	750 10035	750 10034
Input	7-16 female (type gas-stop)	7/8″ EIA-flange
Frequency	87.5 – 108 MHz	
VSWR	< 1.3	
Gain (ref. λ/2 dipole)	3 dB at mid-band	
Impedance	50 Ω	
Polarization	Vertical	
Max. power	3 kW	5 kW
	(at 40 °C ambient temperature)	
Weight	13 kg	
Wind load (at 160 km/h)	frontal: 180 N	
	lateral: 320 N	
Max. wind velocity	225 km/h	
Packing size	1850 x 1100 x 92 mm	

Material:	Hot-dip galvanized steel.
Mounting:	To pipes of 60 – 125 mm ∅ by means of 2 U-bolts, supplied.
Grounding:	Via mounting parts.

Radiation Patterns (at mid-band)



in H-plane
Horizontal Radiation Pattern



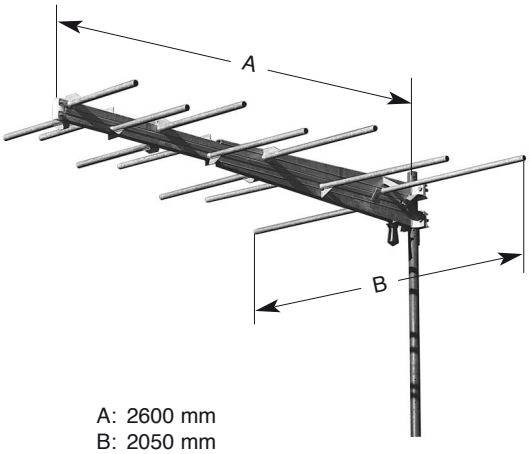
in E-plane
Vertical Radiation Pattern

K 52 22 1. .
Directional Antenna
87.5 – 108 MHz

KATHREIN
Antennen · Electronic

- Logarithmic-periodic broadband directional antenna with extremely low side-lobes.
- Especially rugged design of hot-dip galvanized steel.
- High reliability even under heavy icy conditions.

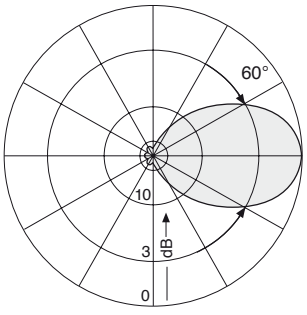
Type No. Order No.	**K 52 22 17** 600 232
Input	7-16 female
Frequency range	87.5 – 108 MHz
VSWR	< 1.3
Gain (ref. to λ/2 dipole)	6 dB at mid-band
Impedance	50 Ω
Side-lobe suppression	> 25 dB
Polarization	Horizontal (special version for vertical polarization upon request)
Max. power	2 kW (higher power upon request)
Weight	46 kg
Wind load (at 160 km/h)	frontal: 500 N lateral: 875 N
Max. wind velocity	225 km/h
Packing size	2650 x 2100 x 370 mm



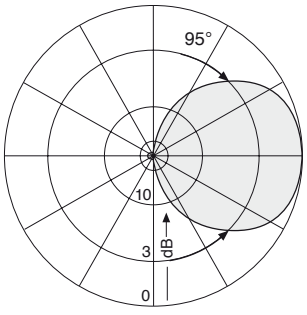
A: 2600 mm
B: 2050 mm

Material:	Hot-dip galvanized steel.
Mounting:	To pipes of 60 – 115 mm diameter by means of mounting clamps, supplied. **Attention:** Antenna may not be installed with vertical polarization.
Grounding:	Via mounting parts.
Combinations:	Several antennas can be combined to increase the gain and to produce radiation patterns with very high side-lobe suppressions.

Radiation Patterns (at mid-band)



in E-Plane
Horizontal Radiation Pattern



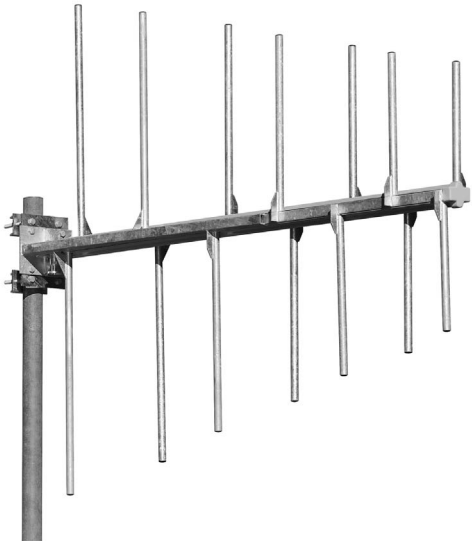
in H-Plane
Vertical Radiation Pattern

K 53 22 1. .
Directional Antenna
87.5 – 108 MHz

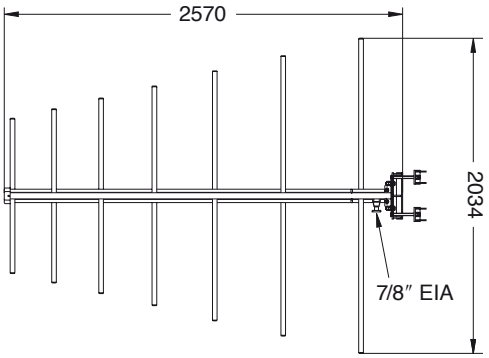
KATHREIN
Antennen · Electronic

- Logarithmic-periodic broadband directional antenna with extremely low side-lobes.
- Especially rugged design of hot-dip galvanized steel.
- High reliability even under heavy icy conditions.

Type No. / Order No.	**775 000**	**775 001**	**775 002**
Input (type gas-stop)	7-16 female	7/8″ EIA-flange	1 5/8″ EIA-flange
Frequency range	87.5 – 108 MHz		
VSWR	< 1.3		
Gain (ref. to λ/2 dipole)	6 dB at mid-band		
Impedance	50 Ω		
Side-lobe suppression	> 25 dB		
Polarization	Vertical		
Max. power	2.5 kW	5 kW	10 kW
	(at 40 °C ambient temperature)		
Weight	46 kg		
Wind load (at 160 km/h)	frontal: 500 N lateral: 1000 N		
Max. wind velocity	225 km/h		
Packing size	2650 x 2100 x 370 mm		

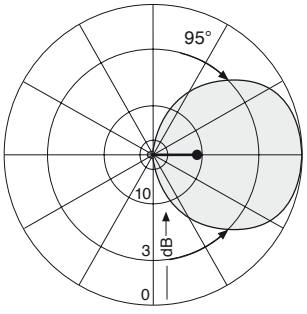


Material:	Hot-dip galvanized steel.
Mounting:	To pipes of 60 – 115 mm diameter by means of mounting clamps, supplied.
Grounding:	Via mounting parts.
Combinations:	Several antennas can be combined to increase the gain and to produce radiation patterns with very high side-lobe suppressions.

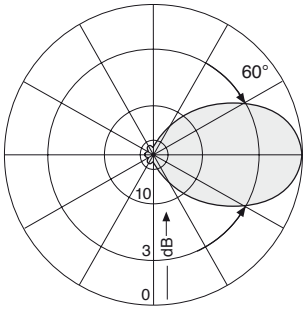


775 001

Radiation Patterns (at mid-band)



in H-Plane
Horizontal Radiation Pattern



in E-Plane
Vertical Radiation Pattern

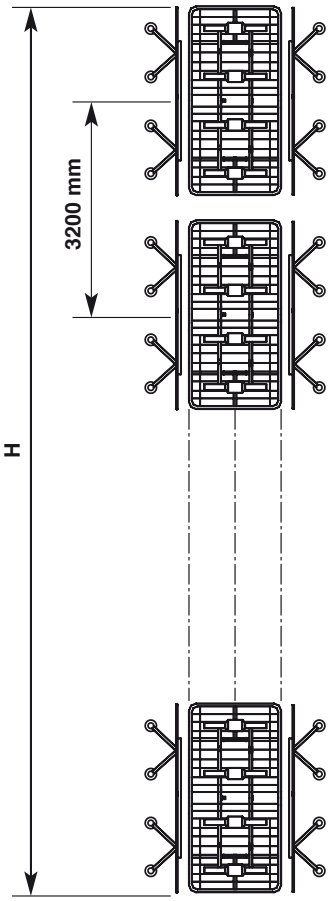
Antenna Systems
174 – 230 MHz

TV Transmitting Antenna with dipole panels K 52 33 5. . 174 – 230 MHz

KATHREIN
Antennen · Electronic

- Antenna array of dipole panels K 52 33 5. . for different radiation patterns, especially suitable for mounting on square masts.
- The feeder network is made up of coaxial power splitters and flexible connecting cables in accordance with the radiation patterns specification and the transmitting power.

Input	Connectors according to IEC, EIA or DIN.
Frequency range	174 – 230 MHz
VSWR	< 1.05 in the operating channels after tuning.
Impedance	50 Ω
Polarization	Horizontal. Application of panels K 53 33 57 allows vertical polarization as well.
Internal connections	Connectors according to IEC, EIA or DIN are used throughout the system, allowing easy assembly and maintenance.
Max. power	According to customer's requirements.
Vertical radiation pattern	Null fill and beam tilt upon request.
Horizontal radiation pattern	Omnidirectional, directional or custom-designed.
Half antenna splitting	Upon request, the antenna can be divided into 2 halves (for measurement and maintenance). The 2 halves are connected by a 2-way power splitter or patch panel.
Pressurization	Splitters and connecting cables can be supplied with dry air (please specify when ordering).
Painting	If required, the antenna is painted in aviation warning colours.
Grounding	Via mounting parts.
Max. wind velocity	225 km/h



No. of bays	Panels per bay	Gain* (at mid-band) dB	Gain* (at mid-band) times	Weight (without mounting hardware) kg	Antenna height H m	Windload (v = 160 km/h) kN
1	2	9.0	7.9	130	2.8	2.5
	3	7.6	5.8	195		3.75
	4	6.1	4.1	270		5.0
2	2	11.8	15.1	270	6.0	5.0
	3	10.4	11.0	390		7.5
	4	8.9	7.8	540		10.0
4	2	14.7	29.5	540	12.4	10.0
	3	13.3	21.4	780		15.0
	4	11.8	15.1	1080		20.0
6	2	16.4	43.7	810	18.8	15.0
	3	15.0	31.6	1170		22.5
	4	13.5	22.4	1640		30.0
8	2	17.6	57.5	1080	25.2	20.0
	3	16.2	41.7	1640		30.0
	4	14.7	29.5	2160		40.0

* Referred to λ/2 dipole. Attenuation of the internal cabling and the gain-decrease in case of null fill in the vertical radiation pattern are not considered.
Approximate values for gain decrease:
cable attenuation: 0.2 – 0.5 dB
null fill: 0.3 – 1.0 dB
Gain figures are valid for the direction of maximum radiation (see diagrams on following page).

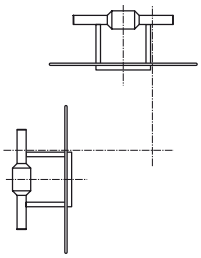
TV Transmitting Antenna with dipole panels K 52 33 5. . 174 – 230 MHz

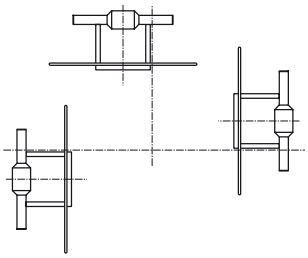
KATHREIN
Antennen · Electronic

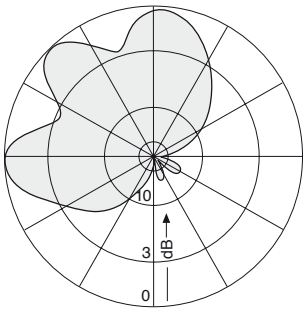
Horizontal Radiation Patterns

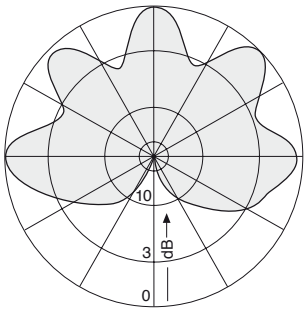
Examples of typical horizontal antenna arrays and their **horizontal** radiation patterns for minimal mast dimensions.

Equal power splitting

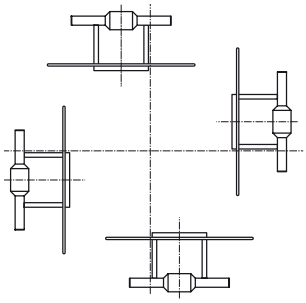




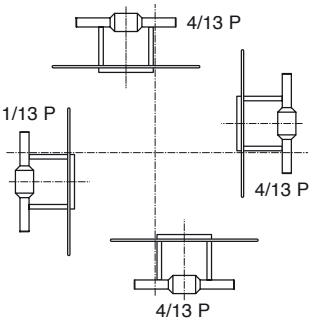


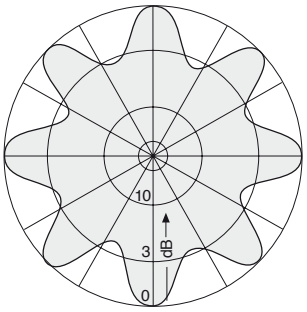


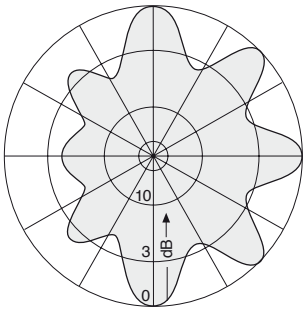
Equal power splitting



Different power splitting



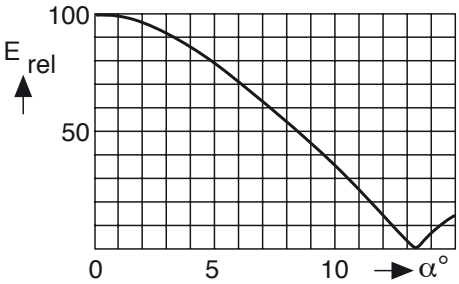




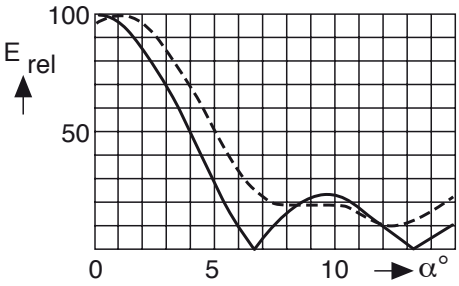
Vertical Radiation Patterns

Examples of typical **vertical** radiation patterns*) for several bays of identical, vertically stacked antenna arrays.

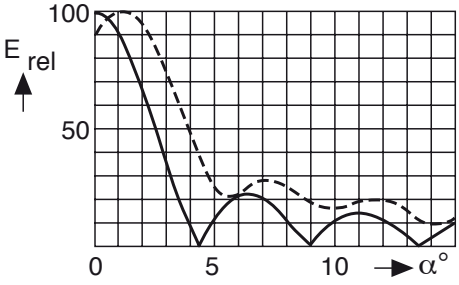
2 bays



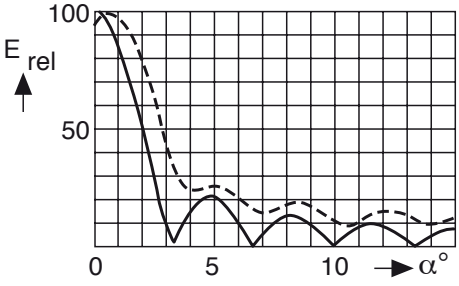
4 bays



6 bays



8 bays



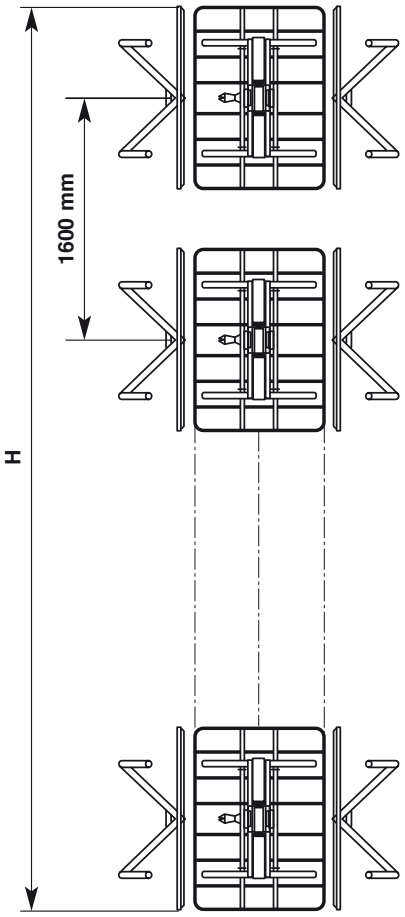
*) ——— without null fill
- - - - - with null fill and beam tilt

TV Transmitting Antenna with dipole panels K 52 34 5. . 174 ... 230 MHz

KATHREIN
Antennen · Electronic

- Antenna array of dipole panels K 52 34 5.. for different radiation patterns, especially suitable for mounting on triangular or round masts.
- The feeder network is made up of coaxial power splitters and flexible connecting cables in accordance with the radiation patterns specification and the transmitting power.

Input	Connectors according to IEC, EIA or DIN.
Frequency range	174 – 202 MHz resp. 202 – 230 MHz
VSWR	< 1.05 in the operating channels after tuning.
Impedance	50 Ω
Polarization	Horizontal
Internal connections	Connectors according to IEC, EIA or DIN are used throughout the system, allowing easy assembly and maintenance.
Max. power	According to customer's requirements.
Vertical radiation pattern	Null fill and beam tilt upon request.
Horizontal radiation pattern	Omnidirectional, directional or custom-designed.
Half antenna splitting	Upon request, the antenna can be divided into 2 halves (for measurement and maintenance). The 2 halves are connected by a 2-way power splitter or patch panel.
Pressurization	Splitters and connecting cables can be supplied with dry air (please specify when ordering).
Painting	If required, the antenna is painted in aviation warning colours.
Grounding	Via mounting parts.
Max. wind velocity	225 km/h



No. of bays	Panels per bay	Gain* (at mid-band) dB	Gain* (at mid-band) times	Weight (without mounting hardware) kg	Antenna height H m	Windload (v = 160 km/h) kN
1	2	3.9	2.5	50	1.2	0.9
	3	1.7	1.5	70		1.25
2	2	6.9	4.9	95	2.8	1.8
	3	4.7	3.0	140		2.5
4	2	9.9	9.8	180	6.0	3.6
	3	7.7	5.9	270		5.0
6	2	11.7	14.8	270	9.2	5.4
	3	9.5	8.9	400		7.5
8	2	12.9	19.5	360	12.4	7.2
	3	10.7	11.7	540		10.0

* Referred to λ/2 dipole. Attenuation of the internal cabling and the gain-decrease in case of null fill in the vertical radiation pattern are not considered.
Approximate values for gain decrease:
cable attenuation: 0.2 – 0.5 dB
null fill: 0.3 – 1.0 dB
Gain figures are valid for the direction of maximum radiation (see diagrams on following page).

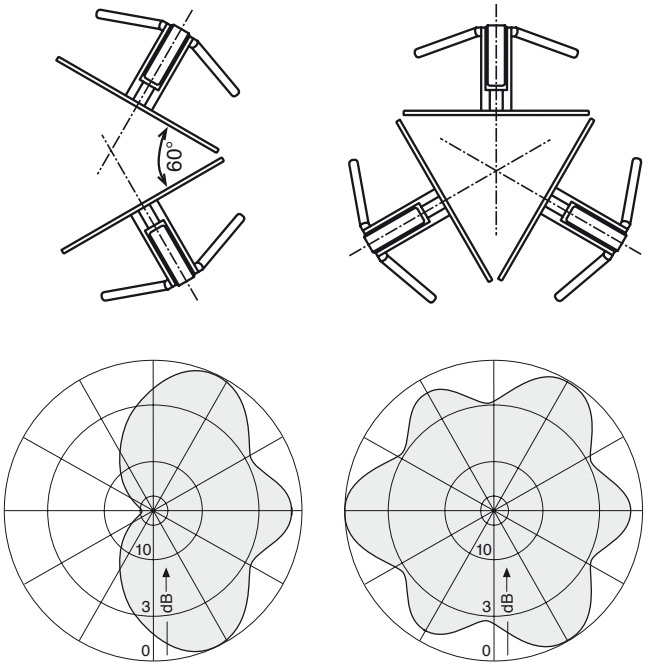
TV Transmitting Antenna with dipole panels K 52 34 5. . 174 ... 230 MHz

KATHREIN
Antennen · Electronic

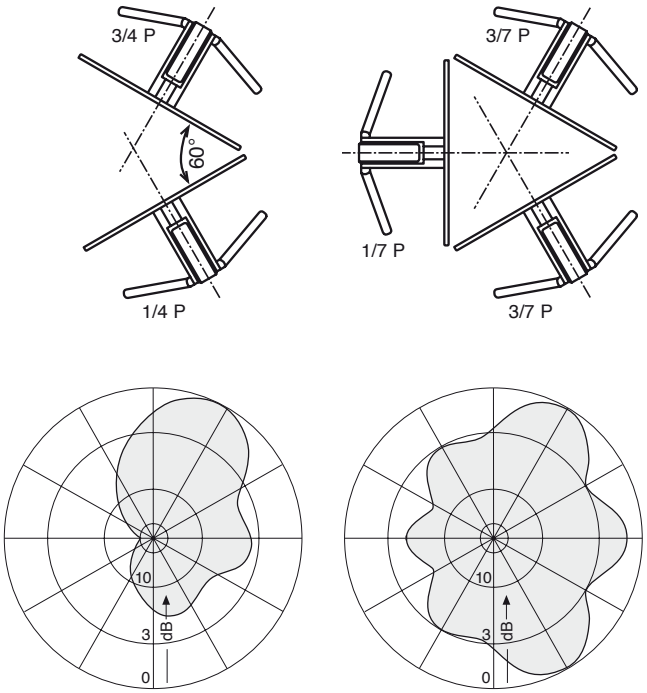
Horizontal Radiation Patterns

Examples of typical horizontal antenna arrays and their **horizontal** radiation patterns for minimal mast dimensions.

Equal power splitting



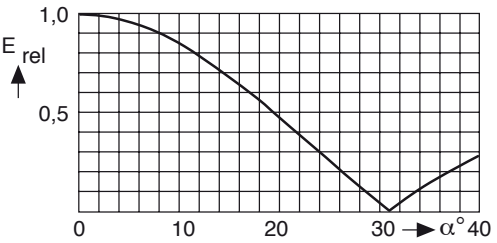
Different power splitting



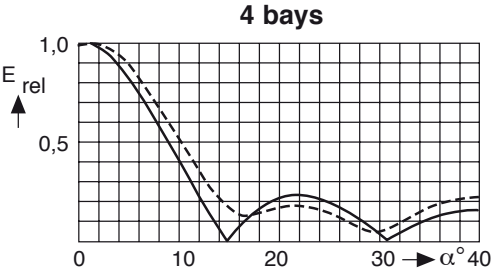
Vertical Radiation Patterns

Examples of typical **vertical** radiation patterns*) for several bays of identical, vertically stacked antenna arrays.

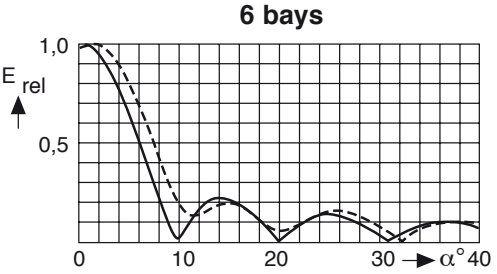
2 bays



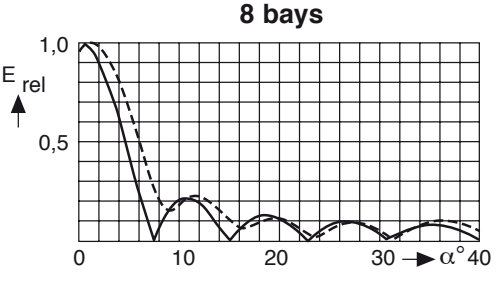
4 bays



6 bays



8 bays



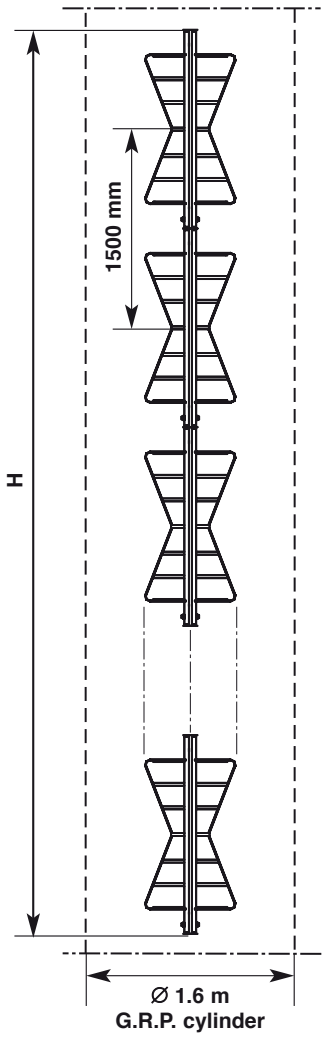
*) ——— without null fill
- - - - - with null fill and beam tilt

TV Transmitting Antenna (Superturnstile Antenna) 174 – 230 MHz K 52 97 5. .

KATHREIN
Antennen · Electronic

- Superturnstile Antenna made of hot-dip galvanized steel for mounting on top of mast.
- Up to 4 bays may be built as self-supporting version. Up to 16 bays can be stacked inside a self-supporting G.R.P. cylinder.

Input	Connectors according to IEC, EIA or DIN.
Frequency range	174 – 230 MHz
VSWR	< 1.05 in the operating channel
Impedance	50 Ω
Polarization	Horizontal
Max. power	According to customer's requirements, 10 kW max. per bay.
Vertical radiation pattern	Null fill and beam tilt upon request.
Horizontal radiation pattern	Omnidirectional
Half antenna splitting	Upon request, the antenna can be divided into 2 halves (for measurement and maintenance). The 2 halves are connected by a 2-way power splitter or patch panel.
Internal connections	The radiating elements are fed with coaxial connecting cables and hybrid couplers. Connectors according to IEC, EIA or DIN are used throughout the system, allowing easy assembly and maintenance.
Mounting	On top of existing structure by means of a flange.
Ice protection	The radiating slots are protected by a fiberglass cover. Cylinder provides full protection.
Grounding	Via mounting parts resp. via 4 grounding ropes at the exterior cylinder-surface.
Max. wind velocity	As required.



No. of bays	**Gain*** (at mid-band) dB	times	**Weight** kg without cylinder	with cylinder	**Antenna height H** m	**Windload** (v = 160 km/h) kN
2	4.0	2.5	150	depending	3.0	4.0
4	7.0	5.0	310	on	6.0	8.0
8	10.0	10.0	660	fiber-	12.0	16.0
12	11.8	15.1	1010	glass-	18.0	24.0
16	13.0	20.0	1360	cylinder	24.0	34.0

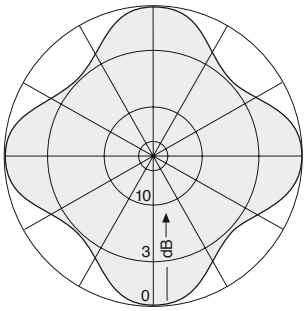
Wind load with cylinder

* Referred to λ/2 dipole. Attenuation of the internal cabling and the gain-decrease in case of null fill in the vertical radiation pattern are not considered.
Approximate values for gain decrease:
cable attenuation: 0.2 – 0.5 dB
null fill: 0.3 – 1.0 dB
Gain figures are valid for the direction of maximum radiation (see diagrams on following page).

TV Transmitting Antenna (Superturnstile Antenna) 174 – 230 MHz K 52 97 5. .

KATHREIN
Antennen · Electronic

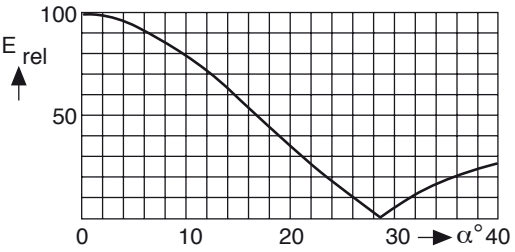
Typical Horizontal Radiation Pattern
(at mid-band)



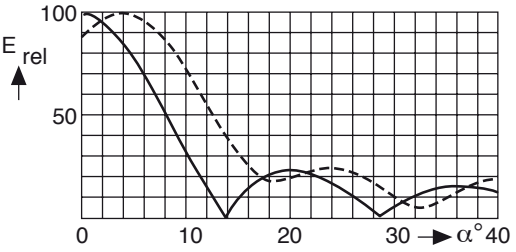
Vertical Radiation Patterns

Examples of typical **vertical** radiation patterns*) for several bays of identical, vertically stacked antenna arrays.

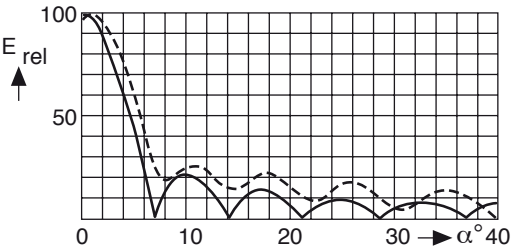
2 bays



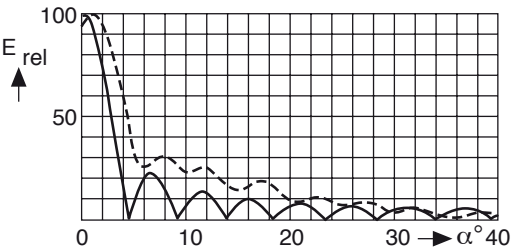
4 bays



8 bays



12 bays



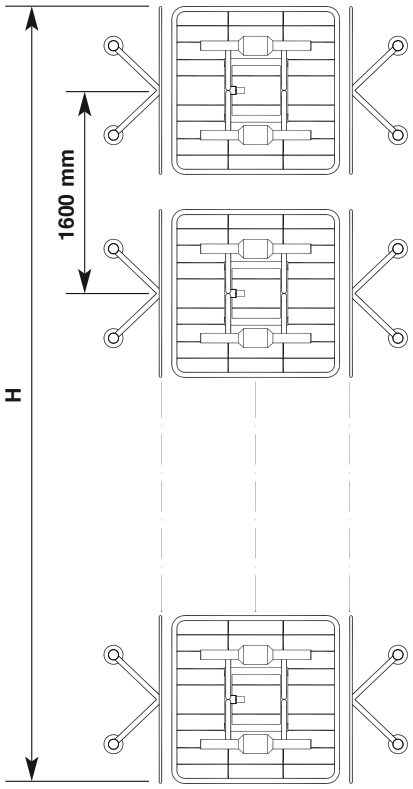
*) ——— without null fill
- - - - - with null fill and beam tilt

TV Transmitting Antenna with dipole panels K 52 30 5. . 174 – 230 MHz

KATHREIN
Antennen · Electronic

- Typical antenna array with dipole panels K 52 30 5. .
- The feeder network is made up of coaxial power splitters and flexible connecting cables in accordance with the radiation patterns specification and the transmitting power.

Input	Connectors according to IEC, EIA or DIN.
Frequency range	174 – 230 MHz
VSWR	< 1.05 in the operating channel after tuning or < 1.1 in the whole range
Impedance	50 Ω
Polarization	Horizontal or vertical
Internal connections	Connectors according to IEC, EIA or DIN are used throughout the system, allowing easy assembly and maintenance.
Max. power	According to customer's requirements.
Radiation pattern	The examples of radiation patterns are valid for horizontal polarization. At vertical polarization patterns vary slightly.
Half antenna splitting	Upon request, the antenna can be divided into 2 halves (for measurement and maintenance). The 2 halves are connected by a 2-way power splitter or patch panel.
Pressurization	Splitters and connecting cables can be supplied with dry air (please specify when ordering).
Grounding	Via mounting parts.
Max. wind velocity	225 km/h / 200 km/h



No. of bays	Panels per bay	Gain* (at mid-band) dB	Gain* (at mid-band) times	Weight (without mounting hardware) kg	Antenna height H m	Windload (v = 160 km/h) kN
1	2	5.5	3.5	66	1.3	1.1
	3	4.3	2.7	94		1.85
	4	3.1	2.0	122		2.2
2	2	8.5	7.1	122	2.9	2.2
	3	7.3	5.4	173		3.7
	4	6.1	4.1	224		4.4
4	2	11.5	14.1	224	6.1	4.4
	3	10.3	10.7	346		7.4
	4	9.1	8.1	453		8.8

* Referred to λ/2 dipole. Attenuation of the internal cabling and the gain-decrease in case of null fill in the vertical radiation pattern are not considered.
Approximate values for gain decrease:
cable attenuation: 0.2 – 0.4 dB
null fill: 0.2 – 0.5 dB
Gain figures are valid for the direction of maximum radiation (see diagrams on following page).

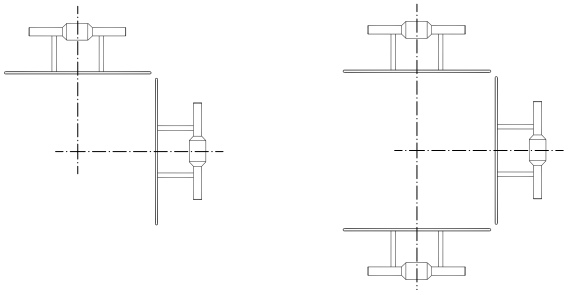
TV Transmitting Antenna with dipole panels K 52 30 5. . 174 – 230 MHz

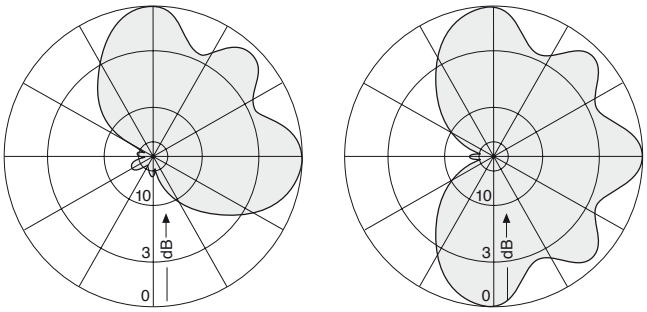
KATHREIN
Antennen · Electronic

Horizontal Radiation Patterns

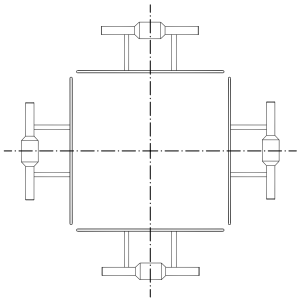
Examples of typical horizontal antenna arrays and their **horizontal** radiation patterns for minimal mast dimensions.

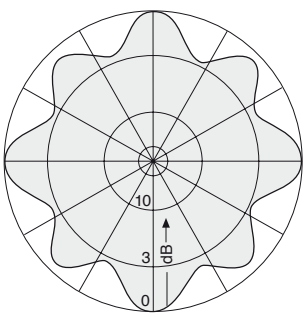
Equal power splitting



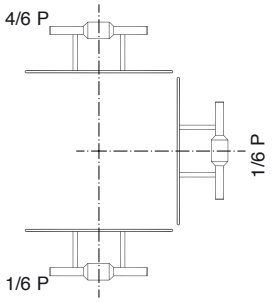


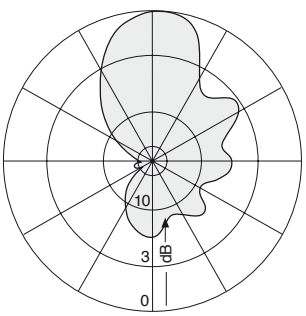
Equal power splitting





Different power splitting

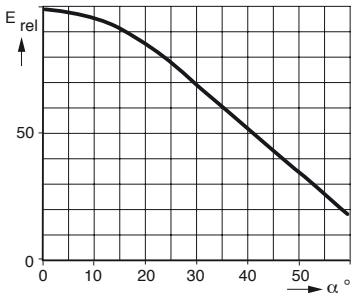




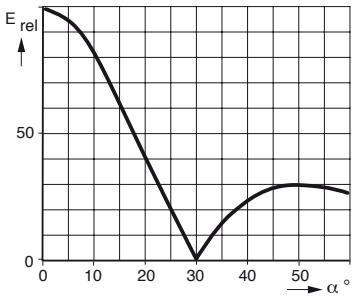
Vertical Radiation Patterns

Examples of typical **vertical** radiation patterns*) for several bays of identical, vertically stacked antenna arrays.

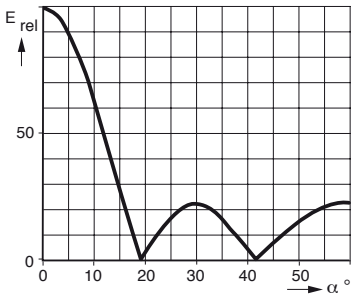
1 bay



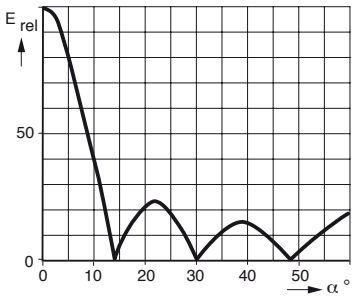
2 bays



3 bays



4 bays



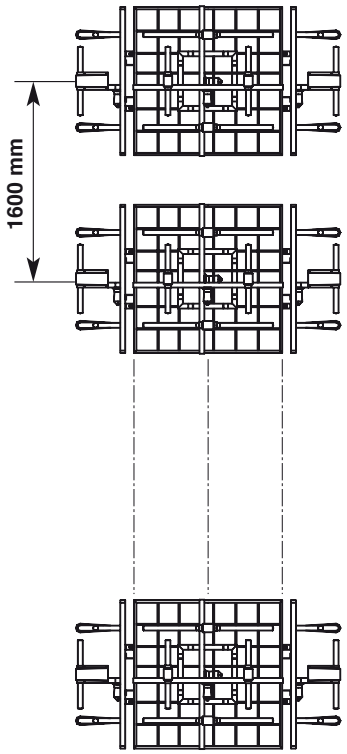
Combined Antenna Systems for TV and DAB
TV: 174 – 223 MHz DAB: 174 – 240 MHz
K 53 32 5. .

KATHREIN
Antennen · Electronic

- Dual-polarized antenna systems for simultaneous transmission of DAB and TV.

	TV	DAB
Frequency range	174 – 223 MHz	174 – 240 MHz
VSWR	< 1.05 in the operating channels after tuning	1.1
Polarization	Horizontal	Vertical
Input	Connectors according to IEC, EIA or DIN.	
Impedance	50 Ω	
Max. power	According to customer's requirements.	
Max. wind velocity	225 km/h	

Internal connections:	Connectors according to IEC, EIA or DIN are used throughout the system, allowing easy assembly and maintenance.
Vertical radiation pattern:	Null fill and beam tilt on request.
Horizontal radiation pattern:	Omnidirectional, directional or custom-designed. Different radiation patterns for TV and DAB can be realized.
Half antenna splitting:	Upon request, the antenna can be divided into 2 halves (for measurement and maintenance). The 2 halves are connected by a 2-way power splitter or patch panel.
Pressurization:	Splitters and connecting cables can be supplied with dry air (please specify when ordering).
Painting:	If required, the antenna is painted in aviation warning colours.
Grounding:	Via mounting parts.



Antennas for TV and DAB in upper VHF Band 174 – 230 MHz

Model Types:

K 52 07 5. ., K 52 14 5. ., K 52 17 5. ., K 52 22 5. ., K 52 30 5. ., K 52 31 5. ., K 52 33 5. ., K 52 34 5. ., K 52 40 5. ., K 53 20 5. ., K 53 31 5. ., K 53 32 5. ., K 53 33 5. ., K 53 36 5. ., K 53 37 5. ., K 53 40 5. .

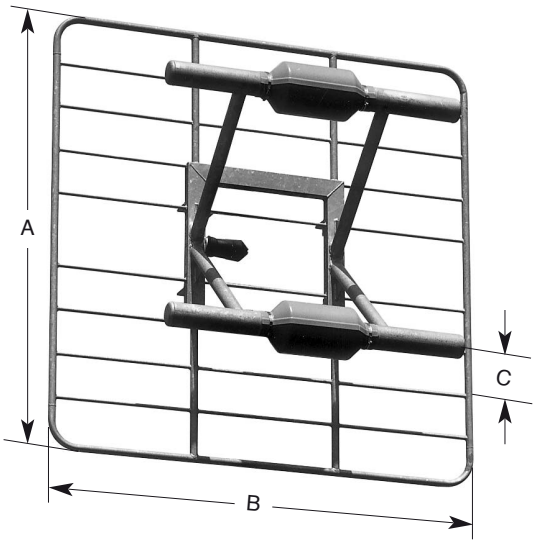
Type No.	Description	Frequency range	Gain	Polarization	Page
K 52 30 5.	Directional Antenna, steel	174 – 230 MHz	8.0 dB	horizontal or vertical	66
K 52 33 5.	Directional Antenna, steel	174 – 230 MHz	11.0 dB	horizontal	67
K 53 33 5.	Directional Antenna, steel	174 – 254 MHz	11.0 dB	vertical	68
K 52 34 5..	Directional Antenna, steel	174 … 230 MHz	7.0 dB	horizontal	69
767 141	Directional Antenna, steel	174 – 209 MHz	7.5 dB	horizontal	70
773 643	Directional Antenna, steel	174 – 209 MHz	7.5 dB	horizontal	70
K 52 31 5.	Directional Antenna, aluminum	174 – 230 MHz	7.5 dB	horizontal or vertical	71
768 000	Directional Antenna for TV, steel Directional Antenna for DAB, steel	174 – 223 MHz 220 – 240 MHz	7.5 dB 7.5 dB	horizontal vertical	72
750 10085	Directional Antenna for TV and DAB/DMB, steel	174 – 223 MHz 174 – 240 MHz	7.5 dB 4.5 dB	linear circular	73
K 52 40 5..	5 Element Yagi Antenna, aluminum	174 … 230 MHz	6.0 dB	horizontal	74
768 494	5 Element Yagi Antenna, aluminum	215 – 242 MHz	6.0 dB	vertical	75
750 10003	5 Element Yagi Antenna, aluminum	202 – 230 MHz	6.0 dB	vertical	75
K 52 17 5..	15 Element Yagi Antenna, aluminum	174 … 230 MHz	8.0 dB	horizontal or vertical	76
K 52 14 5..	16 Element Yagi Antenna, aluminum	174 … 230 MHz	11.0 dB	horizontal	77
K 52 07 5..	15 Element Yagi Antenna, aluminum	174 … 230 MHz	8.0 dB	horizontal or vertical	78
K 52 22 5.	Log.-per. Directional Antenna, steel	174 – 230 MHz	8.5 dB	horizontal or vertical	79
769 006	Dipole Antenna for DAB, steel	216 – 240 MHz	5.5 dB	vertical	80
773 361	Dipole Antenna for DAB, steel	216 – 240 MHz	5.5 dB	vertical	80
772 899	Omnidirectional Antenna for DAB, steel	216 – 240 MHz	3.0 dB	vertical	81
772 900	Omnidirectional Antenna for DAB, steel	216 – 240 MHz	6.0 dB	vertical	81
750 10025	Omnidirectional Antenna for DAB, steel	216 – 240 MHz	6.0 dB	vertical	82
750 10026	Omnidirectional Antenna for DAB, steel	216 – 240 MHz	3.0 dB	vertical	82
776 064	Directional Antenna for DAB, steel	216 – 240 MHz	11.5 dB	vertical	83
766 614	Omnidirectional Antenna, steel	223 – 230 MHz	0 dB	vertical	84

K 52 30 5. .
Directional Antenna
174 – 230 MHz

KATHREIN
Antennen · Electronic

- Broadband directional antenna of hot-dip galvanized steel.
- Especially suitable for square and round masts.

Type No. Order No.	**K 52 30 57** 600 241	**K 52 30 58** 602 036
Input	7-16 female (type gas-stop)	7/8″ EIA-flange
Frequency range	174 – 230 MHz	
VSWR	< 1.08	
Gain (ref. to λ/2 dipole)	8 dB at mid-band	
Impedance	50 Ω	
Polarization	Horizontal or vertical	
Max. power	2 kW	2.5 kW
	(higher power upon request)	
Weight	23 kg	
Wind load (at 160 km/h)		
Horizontally polarized	frontal / lateral: 750 N / 315 N	
Vertically polarized	frontal / lateral: 750 N / 375 N	
Max. wind velocity	225 km/h	
Packing size	1350 x 1350 x 550 mm	



A: 1300 mm
B: 1300 mm
C: 490 mm

Material: Hot-dip galvanized steel.
Weather protection: Fiberglass.

Mounting: By means of the pair of hot-dip galvanized steel clamps:
K 61 12 0 to pipes of 60 – 115 mm ∅
K 61 13 0 to pipes of 115 – 210 mm ∅
(please order separately).
Mounting dimensions upon request.

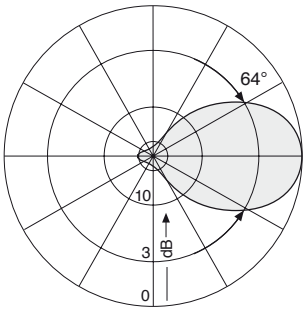
Ice protection: Even under severe icy conditions the antenna is still functional due to its heavy-duty construction and the fiberglass covers for the feeding points.

Grounding: Via mounting parts.

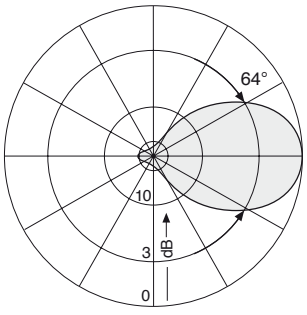
Combinations: The antenna is especially suitable as a component in arrays to achieve various radiation patterns. Particularly for square and round masts.

Scope of supply: Antenna without mounting clamps.

Radiation Patterns (at mid-band)



in E-Plane

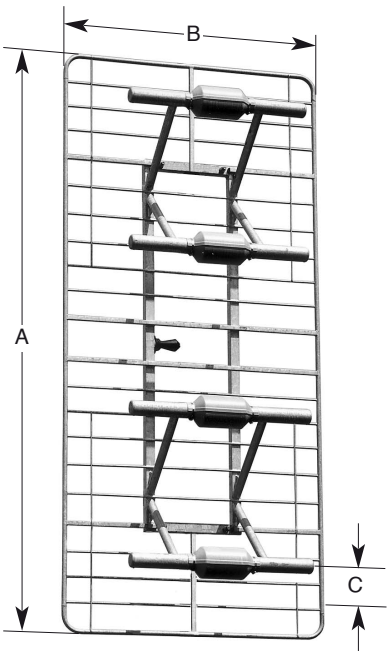


in H-Plane

K 52 33 5. .
Directional Antenna
174 – 230 MHz

KATHREIN
Antennen · Electronic

- Horizontally polarized broadband directional antenna of hot-dip galvanized steel.
- Especially suitable for square masts.



A: 2800 mm
B: 1300 mm
C: 415 mm

Type No. Order No.	**K 52 33 57** 600 261	**K 52 33 58** 601 940
Input	7-16 female (type gas-stop)	7/8″ EIA-flange
Frequency range	174 – 230 MHz	
VSWR	< 1.1	
Gain (ref. to λ/2 dipole)	11 dB at mid-band	
Impedance	50 Ω	
Polarization	Horizontal	
Max. power	2 kW	2.5 kW (higher power upon request)
Weight	60 kg	
Wind load (at 160 km/h)	frontal: 1625 N lateral: 875 N	
Max. wind velocity	225 km/h	
Packing size	2850 x 1350 x 500 mm	

Material: Hot-dip galvanized steel.
Weather protection: Fiberglass.

Mounting: By means of the pair of hot-dip galvanized steel clamps:
K 61 16 01 to pipes of 77 mm ∅
K 61 16 02 to pipes of 60 – 125 mm ∅
(please order separately).
Further mounting hardware and mounting dimensions upon request.

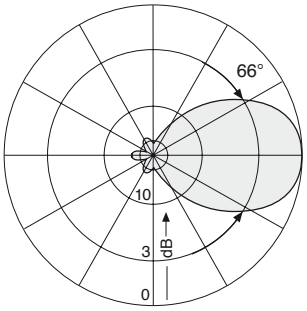
Ice protection: Even under severe icy conditions the antenna is still functional due to its heavy-duty construction and the fiberglass covers for the feeding points.

Grounding: Via mounting parts.

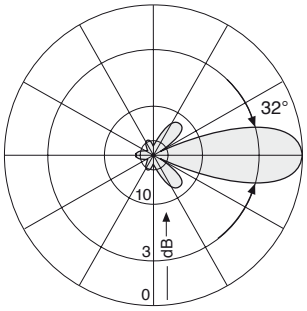
Combinations: The antenna is especially suitable as a component in arrays to achieve various radiation patterns. Particularly for square masts.

Scope of supply: Antenna without mounting clamps.

Radiation Patterns (at mid-band)



in E-plane
Horizontal Radiation Pattern

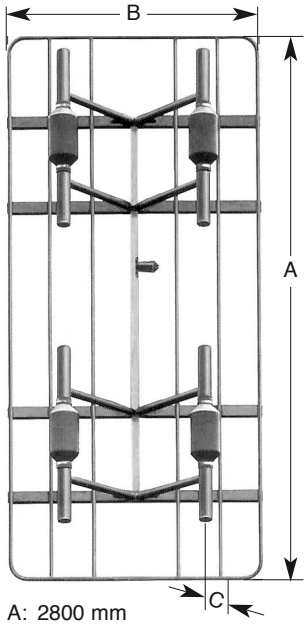


in H-plane
Vertical Radiation Pattern

K 53 33 5. .
Directional Antenna
174 – 254 MHz

KATHREIN
Antennen · Electronic

- Vertically polarized broadband directional antenna of hot-dip galvanized steel.



A: 2800 mm
B: 1300 mm
C: 400 mm

Type No. Order No.	**K 53 33 57** 601 699	**K 53 33 58** 601 939
Input	7-16 female (type gas-stop)	7/8″ EIA-flange
Frequency range	174 – 254 MHz	
VSWR	< 1.1	
Gain (ref. to λ/2 dipole)	11 dB at mid-band	
Impedance	50 Ω	
Polarization	Vertical	
Max. power	2 kW	2.5 kW (higher power upon request)
Weight	55 kg	
Wind load (at 160 km/h)	frontal: 2.00 kN lateral: 1.15 kN	
Max. wind velocity	225 km/h	
Packing size	2850 x 1350 x 500 mm	

Material: Hot-dip galvanized steel.
Weather protection: Fiberglass.

Mounting: By means of 8 screws M 16 x 80 to a suitable construction.
Mounting hardware and mounting dimensions upon request.

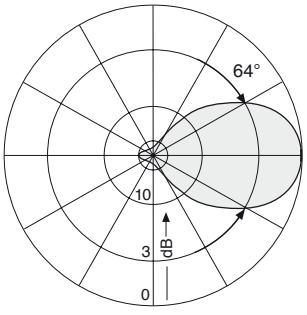
Ice protection: Even under severe icy conditions the antenna is still functional due to its heavy-duty construction and the fiberglass covers for the feeding points.

Grounding: Via mounting parts.

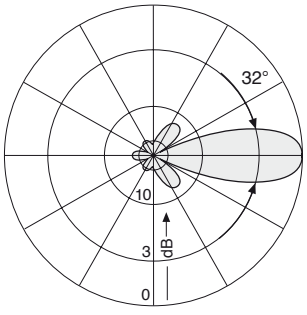
Combinations: The antenna is especially suitable as a component in arrays to achieve various radiation patterns.

Scope of supply: Antenna with 8 screws M 16 x 80.

Radiation Patterns (at mid-band)



in H-plane
Horizontal Radiation Pattern



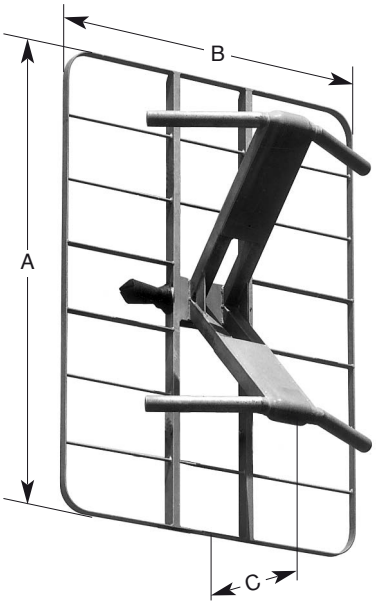
in E-plane
Vertical Radiation Pattern

K 52 34 5. .
Directional Antenna
174 … 240 MHz

KATHREIN
Antennen · Electronic

- Broadband directional antenna of hot-dip galvanized steel.
- Especially suitable for triangular and round masts.

Type No. Order No.	**K 52 34 517** 601 157	**K 52 34 527** 601 835
Input	7-16 female (type gas-stop)	
Frequenca range	174 – 202 MHz	202 – 240 MHz
VSWR	< 1.15	
Gain (ref. to λ/2 dipole)	7 dB	
Impedance	50 Ω	
Polarization	Horizontal	
Max. power	2 kW (higher power upon request)	
Weight	20 kg	
Wind load (at 160 km/h)	frontal: 375 N lateral: 375 N	
Max. wind velocity	225 km/h	



A: 1200 mm
B: 860 mm
C: 405 mm

Material: Hot-dip galvanized steel.
Weather protection: Fiberglass.

Mounting: By means of the pair of hot-dip galvanized steel clamps:
K 61 12 0 to pipes of 60 – 115 mm ∅
K 61 13 0 to pipes of 115 – 210 mm ∅
(please order separately).
Further mounting hardware and mounting dimensions upon request.

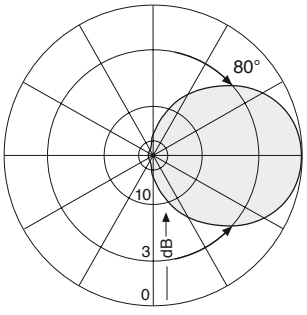
Ice protection: Even under severe icy conditions the antenna is still functional due to its heavy-duty construction and the fiberglass covers for the feeding points.

Grounding: Via mounting parts.

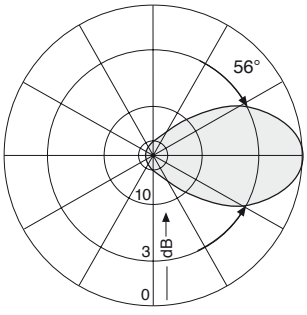
Combinations: The antenna is especially suitable as a component in arrays to achieve various radiation patterns. Particularly for triangular and round masts.

Scope of supply: Antenna without mounting clamps.

Radiation Patterns (at mid-band)



in E-plane
Horizontal Radiation Pattern



in H-plane
Vertical Radiation Pattern

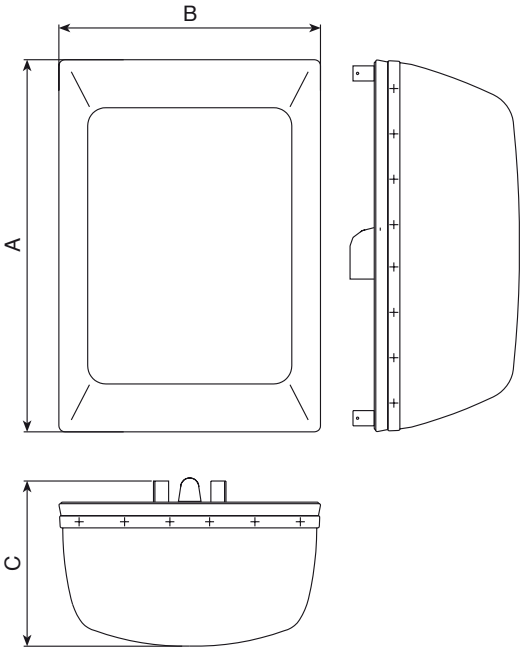
K 52 34 5. .
Directional Antenna
174 ... 230 MHz

KATHREIN
Antennen · Electronic

- Broadband directional antenna of hot-dip galvanized steel.
- Especially suitable for square masts.

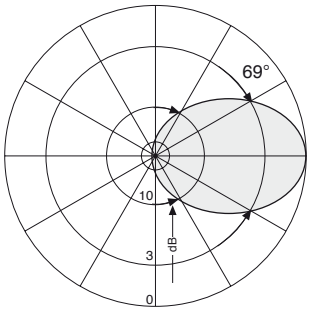
Type No. / Order No.	**773 643**	**767 141**
Input	7-16 female (type gas-stop)	
Frequenca range	174 – 209 MHz	202 – 230 MHz
VSWR	< 1.15	
Gain (ref. to λ/2 dipole)	7.5 dB	
Impedance	50 Ω	
Polarization	Horizontal	
Max. power	2 kW (higher power upon request)	
Weight	46 kg	
Wind load (at 160 km/h)	frontal: 1250 N	
	lateral: 625 N	
Max. wind velocity	225 km/h	
Packing size	1400 x 1000 x 800 mm	

Material:	Hot-dip galvanized steel. Protective cover: Fiberglass.
Mounting:	Mounting hardware and mounting dimensions upon request.
Ice protection:	Even under severe icy conditions the antenna is still functional due to its heavy-duty construction and the fiberglass covers for the feeding points.
Grounding:	Via mounting parts.
Combinations:	The antenna is especially suitable as a component in arrays to achieve various radiation patterns. Particularly for square masts.
Scope of supply:	Antenna without mounting clamps.

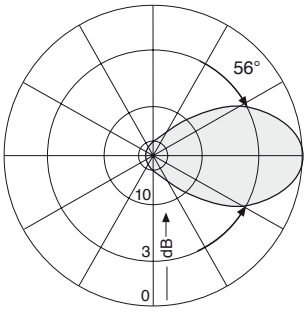


A: 1233 mm
B: 872 mm
C: 558 mm

Radiation Patterns (at mid-band)



in E-plane
Horizontal Radiation Pattern



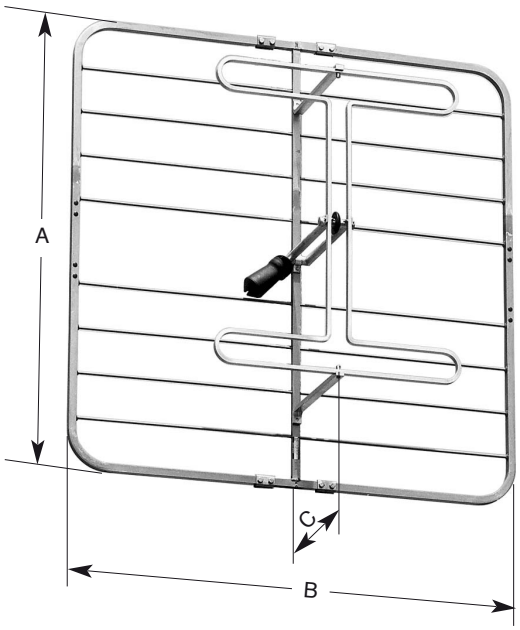
in H-plane
Vertical Radiation Pattern

K 52 31 5. .
Directional Antenna
174 – 230 MHz

KATHREIN
Antennen · Electronic

- Broadband directional antenna of weather-resistant aluminum.

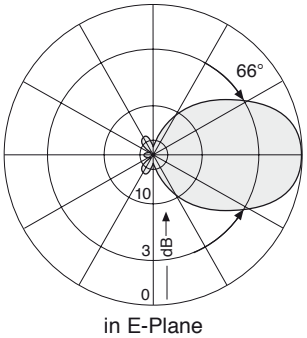
Type No. Order No.	**K 52 31 57** 600 256	**K 52 31 51** 600 837
Input	7-16 female	N female
Frequency range	174 – 230 MHz	
VSWR	< 1.15	
Gain (ref. to λ/2 dipole)	7.5 dB at mid-band	
Impedance	50 Ω	
Polarization	Horizontal or vertical by conversion of two clamps	
Max. power	500 W	
Weight	7 kg	
Wind load		
Horizontal (160 km/h)	frontal / lateral: 440 N / 200 N	
Vertical (160 km/h)	frontal / lateral: 440 N / 350 N	
Max. wind velocity		
Horizontal	225 km/h	
Vertical	200 km/h	
Packing size	1240 x 1240 x 120 mm	



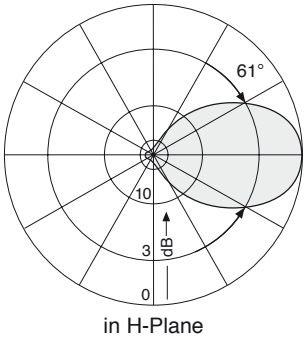
A: 1200 mm
B: 1200 mm
C: 360 mm

Material:	Weather-resistant aluminum.
Mounting:	To pipes of 60 – 115 mm ∅ by means of mounting clamps, supplied
Grounding:	Via mounting parts.
Combinations:	The antenna is especially suitable as a component in arrays to achieve various radiation patterns.
Special features:	The antenna will be shipped dismounted.

Radiation Patterns (at mid-band)



in E-Plane

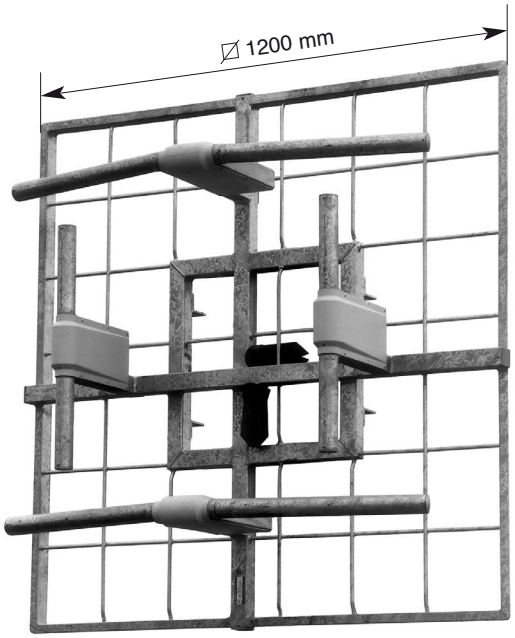


in H-Plane

K 53 32 5. .
Directional Antenna for TV and DAB
TV: 174 – 223 MHz / DAB: 220 – 240 MHz

KATHREIN
Antennen · Electronic

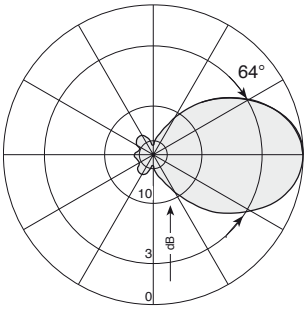
- Dual-polarized antenna.
- Specially designed for simultaneous operation of TV in Band III and DAB in Channel 12 and Channel 13.



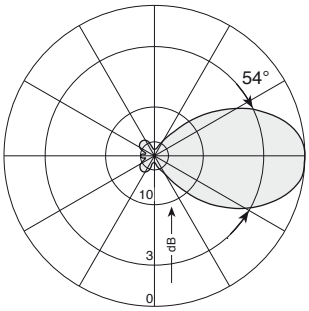
Type No. / Order No.	**768 000**
Input	1 x 7-16 female / horizontal (type gas-stop) 1 x 7-16 female / vertical (type gas-stop)
Frequency range for	
horizontal polarization	1 Channel at Band III
vertical polarization	DAB: 220 – 240 MHz
VSWR	< 1.15
Gain (ref. to λ/2 dipole)	7.5 dB
Impedance	50 Ω
Polarization	TV: horizontal / DAB: vertical
Max. power	2 kW per input (at 40 °C ambient temperature)
Weight	30 kg
Windload (at 160 km/h)	frontal: 815 N lateral: 570 N
Max. wind velocity	225 km/h

Material:	Hot-dip galvanized steel. Radome: Fiberglass
Mounting:	Using M16 screws (supplied) to suitable attachment construction. Antennas K 52 30 5. may be replaced by 768 000 without altering mounting fixture. Mounting dimensions upon request.
Scope of delivery:	Antenna supplied without clamps.
Grounding:	Via mounting parts.

Radiation Patterns for horizontal polarization
(at mid-band)

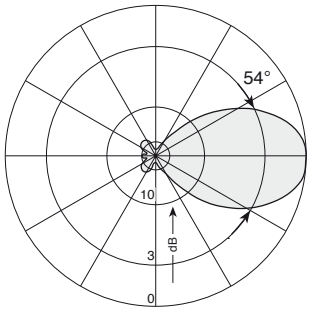


E-plane
Horizontal Radiation Pattern

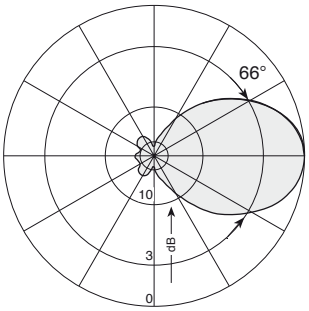


H-plane
Vertical Radiation Pattern

Radiation Patterns for vertical polarization
(at mid-band)



H-plane
Horizontal Radiation Pattern

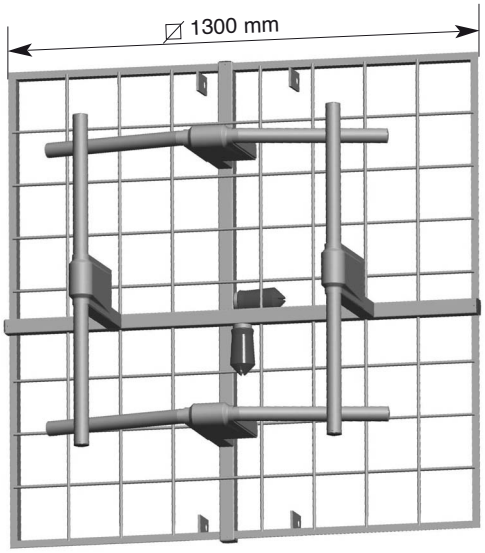


E-plane
Vertical Radiation Pattern

K 53 32 5. .
Directional Antenna for TV and DAB/DMB
174 – 223 MHz (240 MHz)

KATHREIN
Antennen · Electronic

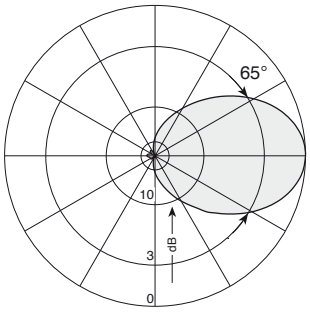
- Dual-polarized antenna (horizontal/vertical).
- Optionally circular or slant polarization.



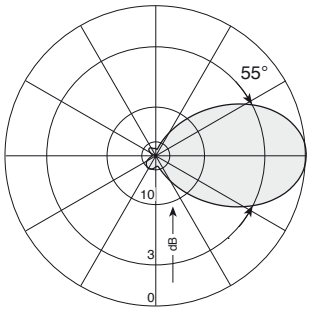
Type No. / Order No.	**750 10085**
Input	2 x 7-16 female (type gas-stop)
Polarization	linear: horizontal, vertical, slant circular
Frequency range	174 – 223 MHz
for vertical polarization	174 – 240 MHz
VSWR	< 1.2 (linear polarization) < 1.1 (circular polarization)
Gain (ref. to λ/2 dipole)	7.5 dB (linear polarization) 4.5 dB (circular polarization)
Impedance	50 Ω
Max. power	2 kW per input (at 40 °C ambient temperature)
Weight	35 kg
Windload (at 160 km/h)	frontal: 680 N lateral: 630 N
Max. wind velocity	225 km/h

Material:	Hot-dip galvanized steel. Radome: Fiberglass
Mounting:	Using M16 screws (supplied) to suitable attachment construction. Mounting dimensions upon request.
Scope of delivery:	Antenna supplied without clamps.
Grounding:	Via mounting parts.

Radiation Patterns for horizontal polarization
(at mid-band)

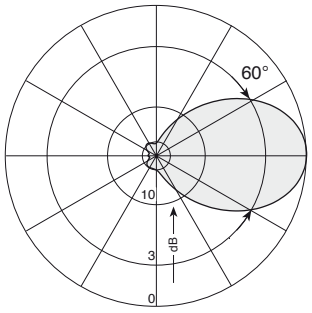


E-plane
Horizontal Radiation Pattern

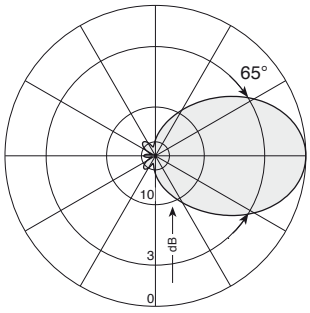


H-plane
Vertical Radiation Pattern

Radiation Patterns for vertical polarization
(at mid-band)



H-plane
Horizontal Radiation Pattern

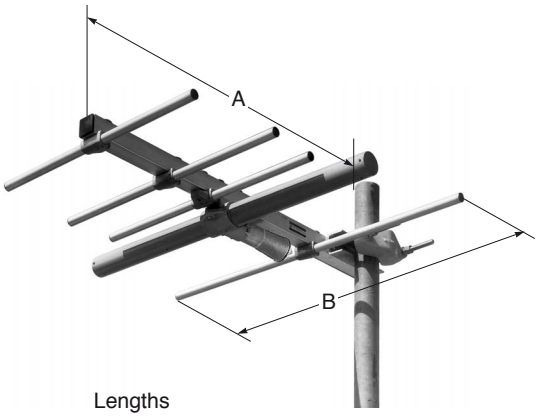


E-plane
Vertical Radiation Pattern

K 52 40 5. .
Directional Antenna
174 ... 230 MHz

KATHREIN
Antennen · Electronic

- 5 element broadband Yagi antenna of weather-proof aluminum.
- Component for low power transmitting antennas.

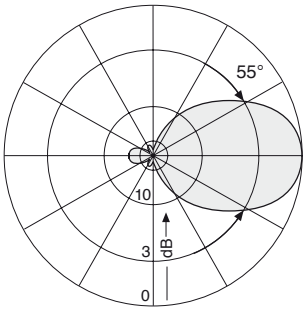


Lengths see table

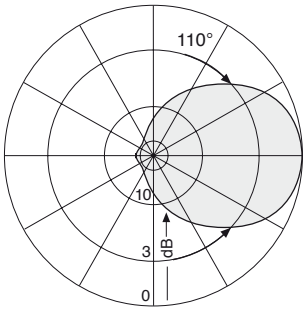
Type No. Order No.	**K 52 40 517** 600 265	**K 52 40 527** 600 267
Frequency range	174 – 202 MHz	202 – 230 MHz
(ch = channel)	(ch 5 – ch 8)	(ch 9 – ch 12)
Dimensions A	930 mm	810 mm
B	885 mm	765 mm
Input	7-16 female	
Gain (ref. to λ/2 dipole)	6 dB	
VSWR	< 1.15	
Impedance	50 Ω	
Polarization	Horizontal	
Max. power	100 W (higher power upon request)	
Weight	5 kg	
Wind load (at 160 km/h)		
frontal:	114 N	102 N
lateral:	102 N	91 N
Max. wind velocity	225 km/h	
Packing size	970 x 200 x 135 mm	

Material:	Weather-proof aluminum. Radiator in fiberglass radome.
Mounting:	To pipes of 60 – 115 mm ∅ by means of mounting clamps, supplied.
Grounding:	Via mounting parts.
Combinations:	The antenna is especially suitable as a component in arrays to achieve various radiation patterns.
Special features:	The antenna will be shipped dismounted.

Radiation Patterns (at mid-band)



in E-plane
Horizontal Radiation Pattern



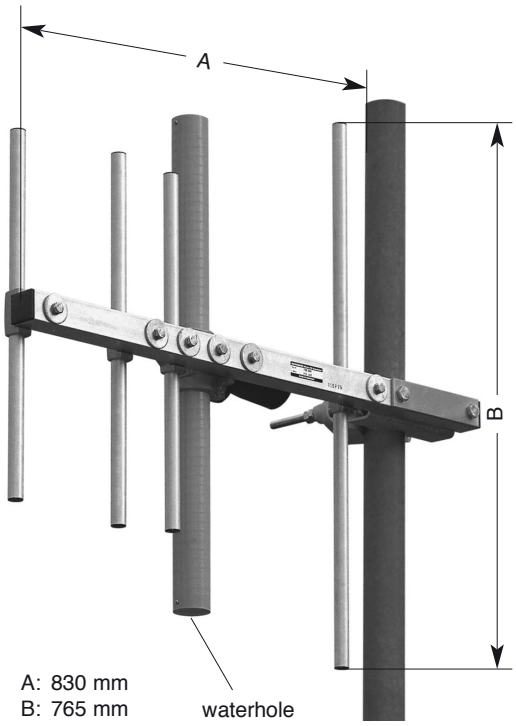
in H-plane
Vertical Radiation Pattern

K 53 40 5. .
Directional Antenna for DAB
215 – 242 MHz

KATHREIN
Antennen · Electronic

- 5 element broadband Yagi antenna of weather-proof aluminum.
- Component for low power transmitting antennas.
- Especially for DAB.

Type No. / Order No.	**768 494**	**750 10033**
Frequency range	215 – 242 MHz	202 – 230 MHz
Input	7-16 female	
Gain (ref. to λ/2 dipole)	6 dB	
VSWR	< 1.2	
Impedance	50 Ω	
Polarization	Vertical	
Max. power	400 W	
Weight	5 kg	
Wind load (160 km/h)	frontal: 100 N lateral: 150 N	
Max. wind velocity	225 km/h	
Packing size	970 x 200 x 135 mm	



A: 830 mm
B: 765 mm

Material: Weather-proof aluminum.
Radiator in fiberglass radome.

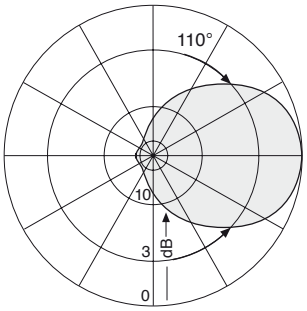
Mounting: To pipes of 60 – 115 mm ∅ by means of mounting clamps, supplied.
Attention: Mounting must be done with waterhole downwards.

Grounding: Via mounting parts.

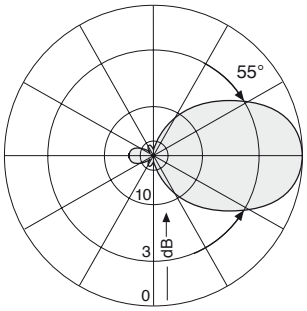
Combinations: The antenna is especially suitable as a component in arrays to achieve various radiation patterns.

Special features: The antenna will be shipped dismounted.

Radiation Patterns (at mid-band)



in H-Plane
Horizontal Radiation Pattern

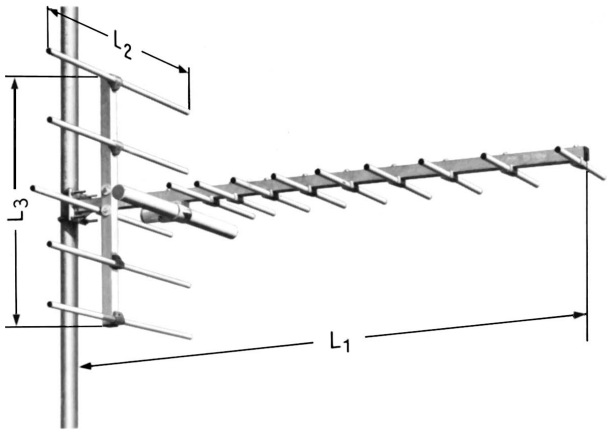


in E-Plane
Vertical Radiation Pattern

K 52 17 5. .
Directional Antenna
174 … 230 MHz

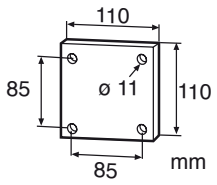
KATHREIN
Antennen · Electronic

- 15 element broadband Yagi antenna of weather-proof aluminum.



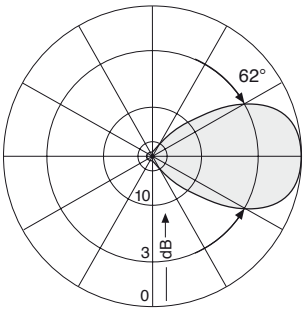
Lengths see table

Mounting flange

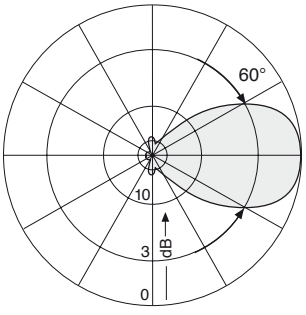


Type No. Order No.	**K 52 17 517** 600 890	**K 52 17 527** 600 891	**K 52 17 537** 600 892
Frequency range	174 – 188 MHz	188 – 209 MHz	209 – 230 MHz
Input		7-16 female	
VSWR		< 1.15	
Gain (ref. to λ/2 dipole)		8 dB	
Impedance		50 Ω	
Polarization		Horizontal or vertical	
Max. power		100 W (higher power upon request)	
Weight	14 kg	12.7 kg	12 kg
Dimensions (Lengths)			
L1	2000 mm	1850 mm	1700 mm
L2	1200 mm	1100 mm	950 mm
L3	900 mm	850 mm	750 mm
Wind load (at 160 km/h)	frontal / lateral:	frontal / lateral:	frontal / lateral:
horizontal:	364 N / 313 N	330 N / 290 N	290 N / 280 N
vertical:	427 N / 540 N	404 N / 490 N	364 N / 427 N
Max. wind velocity			
horizontal:	225 km/h	225 km/h	225 km/h
vertical:	190 km/h	225 km/h	225 km/h
Packing size	2040 x 170 x 170 mm	1900 x 170 x 170 mm	1750 x 170 x 170 mm

Radiation Patterns
(at mid-band)



in E-plane



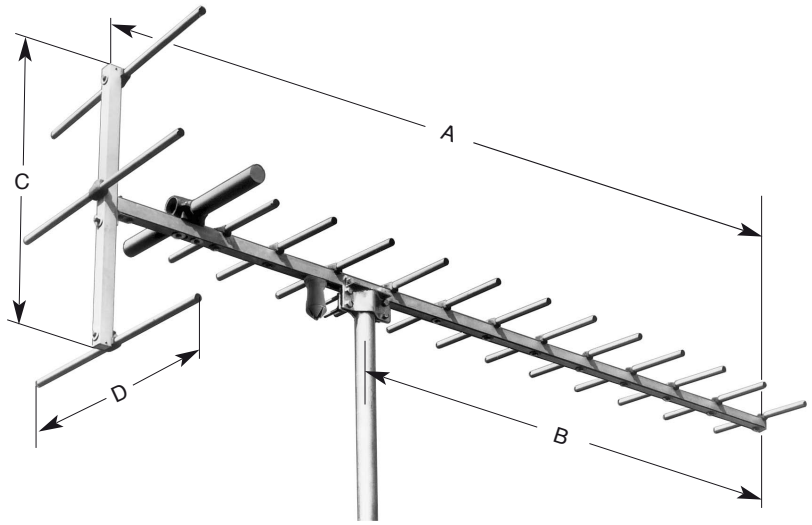
in H-plane

Material:	Elements: Weather-proof aluminum. Dipole cover: Fiberglass. Support and flange: Hot-dip galvanized steel.
Mounting:	By means of mounting flange, supplied.
Grounding:	Via mounting parts.
Combinations:	Two or more antennas can be combined to achieve higher gain and longer, narrower beam width.
Special features:	The antenna is shipped dismounted.

K 52 14 5. .
Directional Antenna
174 … 230 MHz

KATHREIN
Antennen · Electronic

- 16 element Yagi antenna of weather-proof aluminum.

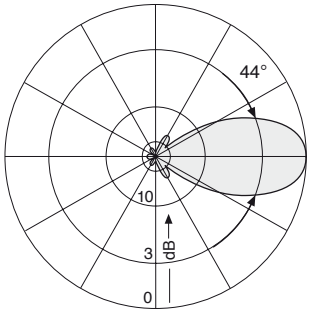


Lengths see table

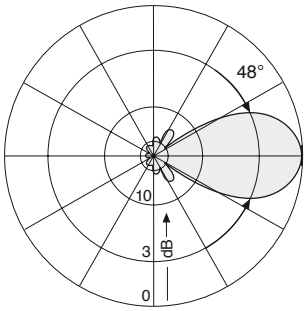
Type No. Order No.		**K 52 14 517** 600 206	**K 52 14 527** 600 208
Frequency range (ch = channel)		174 – 202 MHz (ch 5 – ch 8)	202 – 230 MHz (ch 9 – ch 12)
Input		7-16 female	
VSWR		< 1.15	
Gain (ref. to λ/2 dipole)		11 dB	
Impedance		50 Ω	
Polarization		Horizontal	
Max. power		100 W (higher power upon request)	
Weight		12 kg	11 kg
Dimensions (Lengths)	A	3360 mm	2900 mm
	B	2060 mm	2000 mm
	C	880 mm	760 mm
	D	955 mm	825 mm
Wind load (at 140 km/h)			
	frontal:	210 N	185 N
	lateral:	290 N	250 N
Max. wind velocity		140 km/h	
Packing size		3350 x 170 x 170 mm	2880 x 170 x 170 mm

Material:	Support: Weather-proof aluminum. Dipole cover: Fiberglass. Clamp: Hot-dip galvanized steel.
Mounting:	To pipes of 60 – 115 mm ∅ by means of mounting clamp, supplied.
Grounding:	Via mounting parts.
Combinations:	Two or more antennas can be combined to achieve higher gain and longer, narrower beam width.
Special features:	The antenna is shipped dismounted.

Radiation Patterns
(at mid-band)



in E-plane
Horizontal Radiation Pattern

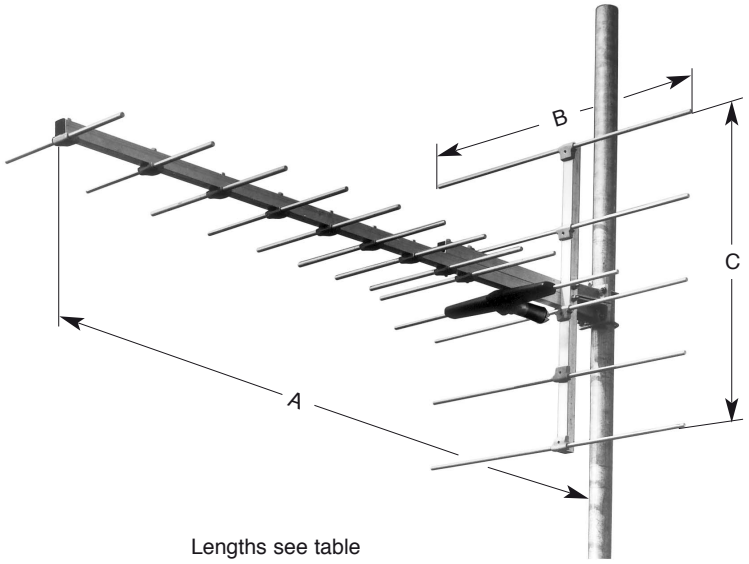


in H-plane
Vertical Radiation Pattern

K 52 07 5. .
Directional Antenna
174 … 230 MHz

KATHREIN
Antennen · Electronic

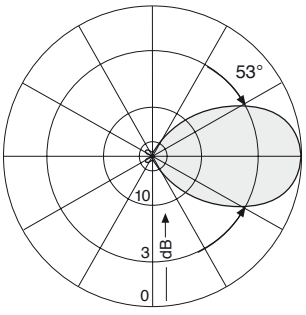
- Particularly light 15 element Yagi antenna of weather-proof aluminum.



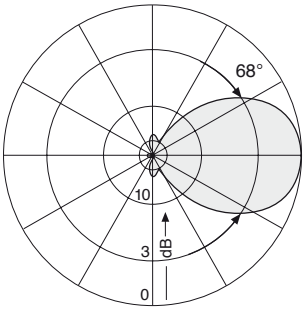
Lengths see table

Type No. Order No.		**K 52 07 517** 601 515	**K 52 07 527** 601 516	**K 52 07 537** 601 517
Frequency range		174 – 188 MHz	188 – 209 MHz	209 – 230 MHz
Input		7-16 female		
VSWR		< 1.2		
Gain (ref. to λ/2 dipole)		8 dB		
Impedance		50 Ω		
Polarization		Horizontal or vertical by conversion of the U-bolts		
Max. power		100 W (higher power upon request)		
Weight		7.5 kg	7.2 kg	6.8 kg
Dimensions (Lengths)	A	2010 mm	1865 mm	1720 mm
	B	1020 mm	940 mm	840 mm
	C	900 mm	850 mm	760 mm
Wind load (at 160 km/h)		frontal / lateral:	frontal / lateral:	frontal / lateral:
	horizontal:	239 N / 279 N	222 N / 267 N	199 N / 250 N
	vertical:	239 N / 313 N	222 N / 290 N	199 N / 250 N
Max. wind velocity		225 km/h		
Packing size		2040 x 170 x 170 mm	1900 x 170 x 170 mm	1760 x 170 x 170 mm

Radiation Patterns
(at mid-band)



in E-plane



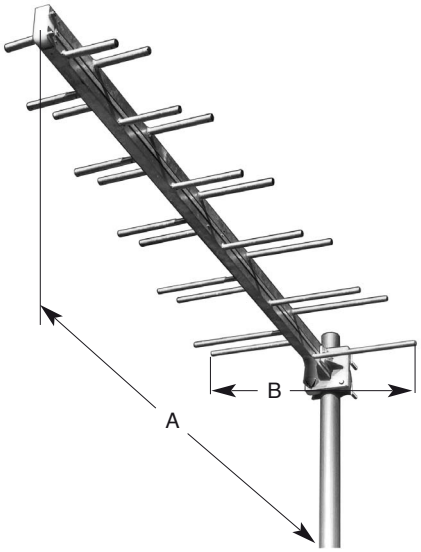
in H-plane

Material:	Weather-proof aluminum: Dipole cover: Hostalen.
Mounting:	To pipes of 57 – 105 mm ∅ by means of supplied U-bolts.
Grounding:	Via mounting parts.
Combinations:	Two or more antennas can be combined to achieve higher gain and longer, narrower beam width.
Special features:	The antenna is shipped dismounted.

K 52 22 5. .
Directional Antenna
174 – 230 MHz

KATHREIN
Antennen · Electronic

- Logarithmic-periodic broadband directional antenna with high side-lobe suppression.
- Especially rugged design of hot-dip galvanized steel.

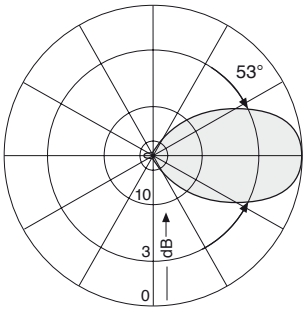


A: 2300 mm
B: 890 mm

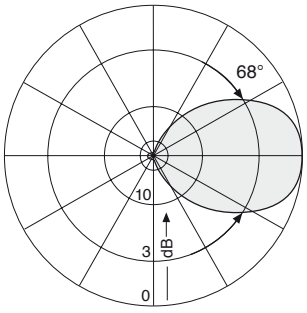
Type No. Order No.	**K 52 22 57** 600 234	**K 52 22 51** 601 340
Input	7-16 female	N female
Frequency range	174 – 230 MHz	
VSWR	< 1.2	
Gain (ref. to λ/2 dipole)	8.5 dB at mid-band	
Impedance	50 Ω	
Side-lobe suppression	> 25 dB	
Polarization	Horizontal or vertical by conversion of two clamps	
Max. power	1 kW (higher power upon request)	
Weight	27 kg	
Wind load (at 160 km/h)		
horizontal:	frontal / lateral: 250 N / 500 N	
vertikal:	frontal / lateral: 250 N / 313 N	
Max. wind velocity	225 km/h	
Packing size	2450 x 290 x 1100 mm	

Material:	Hot-dip galvanized steel.
Mounting:	To pipes of 60 – 115 mm ∅ by means of mounting clamps, supplied.
Grounding:	Via mounting parts.
Combinations:	Several antennas can be combined to increase the gain and to produce radiation patterns with very high side-lobe suppressions.

Radiation Patterns (at mid-band)



in E-plane



in H-plane

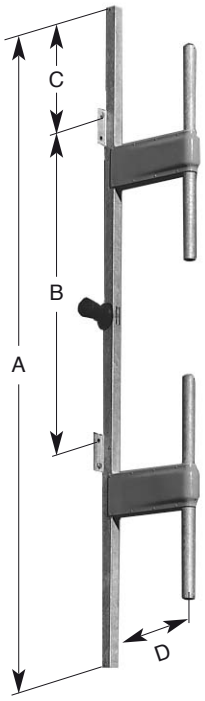
K 53 36 5. .
Dipole Antenna for DAB
216 – 240 MHz

KATHREIN
Antennen · Electronic

- Dipole antenna for side-mounting to masts.

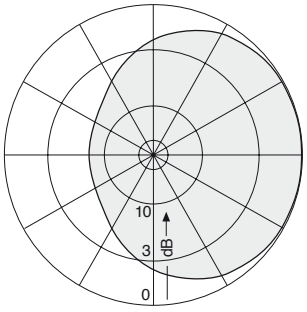
Type No. / Order No.	**769 006**	**773 361**
Input	7-16 female	7-16 female (type gas-stop)
Frequency range	216 – 240 MHz	184 – 230 MHz
VSWR	< 1.2	< 1.3
Gain (ref. to λ/2 dipole)	5.5 dB in preferred direction	
Impedance	50 Ω	
Polarization	Vertical	
Max. power	2 kW (at 40 °C ambient temperature)	
Weight	15 kg	
Wind load (160 km/h)	frontal: 240 N lateral: 440 N	
Max. wind velocity	225 km/h	
Packing size	2310 x 420 x 160 mm	

Material:	Hot-dip galvanized steel. Radome: Fiberglass.
Mounting:	Laterally using 8 screws M 12 x 50 to suitable flange (see draft).
Ice protection:	Even under severe icy conditions the antenna is still functional due to its heavy-duty construction and the fiberglass covers for the feeding points.
Grounding:	Via mounting parts.
Note:	The radiation in the mast direction will be reduced proportionally to the size of the mast.

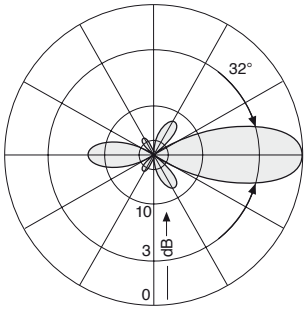


A: 2205 mm
B: 1100 mm
C: 372 mm
D: 315 mm

Radiation Patterns (at mid-band)

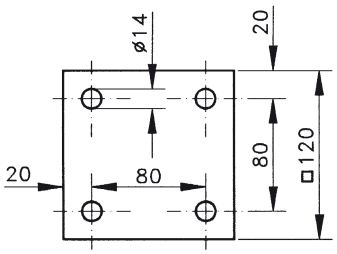


in H-plane
Horizontal Radiation Pattern



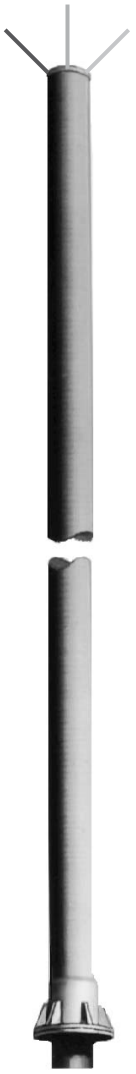
in E-plane
Vertical Radiation Pattern

Flange



K 53 20 5. .
Omnidirectional Antenna for DAB
216 – 240 MHz

KATHREIN
Antennen · Electronic



Type No. / Order No.	**772 899**	**772 900**
Input	7-16 female (type gas-stop)	
Frequency range	216 – 240 MHz	
VSWR	< 1.2	
Gain (ref. λ/2 dipole)	3 dB	6 dB
Impedance	50 Ω	
Polarization	Vertical	
Max. power	1 kW	2 kW
	(higher power upon request)	
Weight	37 kg	67 kg
Windload (at 160 km/h)	500 N	900 N
Max. wind velocity	200 km/h	
Length	2900 mm	5000 mm
Radome diameter	186 mm	
Packing size	3030 x 400 x 400 mm	5230 x 400 x 400 mm

Material: Radiator: Hot-dip galvanized steel.
Radome: Fiberglass, brown.
Antenna base: Aluminum.

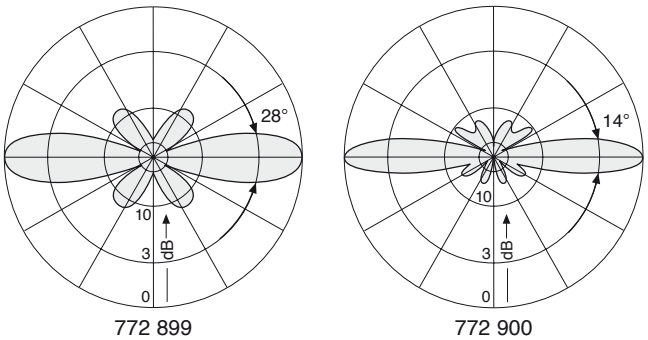
Mounting: With standard flange with 320 mm diameter.

Attention: The aluminum flange may only be mounted to a flat base-plate (max. unevenness 0.5 mm) with a suitable drilled hole in the center for the both 7-16 connectors.
Fastening torque M_A = 50 Nm
(MoS_2-lubricated; washer acc. DIN 125 between casted flange and bolt head)

Grounding: Continuous earth connection between antenna tip and base.

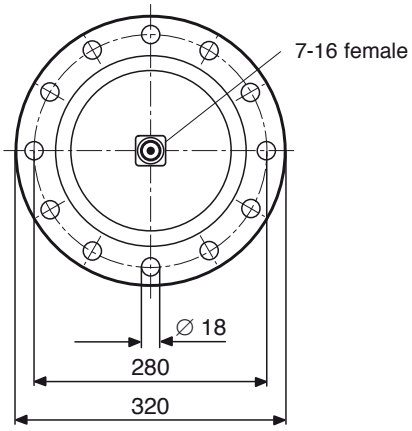
Remark: Special versions with higher input power or modified frequency range or electrical beam tilt are available upon request.

Vertical Radiation Patterns
(at mid-band, beamtilt ≈1°)



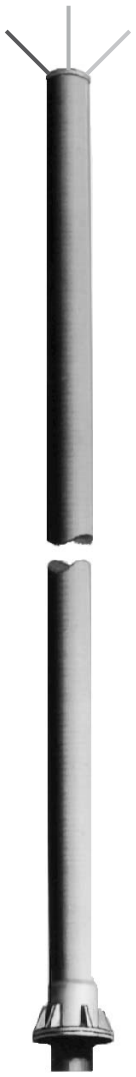
772 899 772 900

Bottom view



K 53 20 5. .
Omnidirectional Antenna for DAB
216 – 240 MHz

KATHREIN
Antennen · Electronic



Type No. / Order No.	**750 10026**	**750 10025**
Input	2 x 7-16 female (type gas-stop)	
Frequency range	216 – 240 MHz	
VSWR	< 1.2	
Gain (ref. λ/2 dipole)	3 dB	6 dB
Impedance	50 Ω	
Polarization	Vertical	
Max. power	2 x 1 kW	2 x 2 kW
	(at 40 °C ambient temperature)	
Weight	42 kg	73 kg
Windload (at 160 km/h)	500 N	900 N
Max. wind velocity	200 km/h	
Length	2900 mm	5000 mm
Radome diameter	186 mm	
Packing size	3030 x 400 x 400 mm	5230 x 400 x 400 mm

Material: Radiator: Hot-dip galvanized steel.
Radome: Fiberglass, brown.
Antenna base: Aluminum.

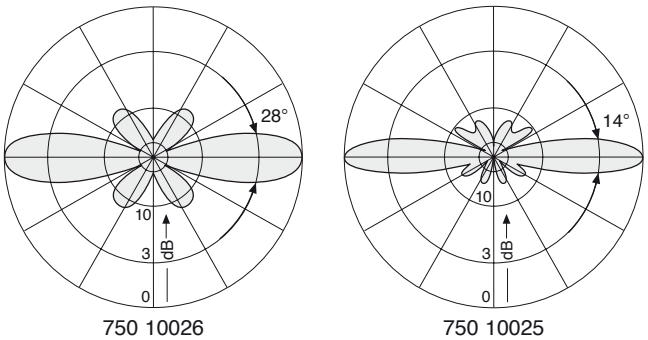
Mounting: With standard flange with 320 mm diameter.

Attention: The aluminum flange may only be mounted to a flat base-plate (max. unevenness 0.5 mm) with a suitable drilled hole in the center for the both 7-16 connectors.
Fastening torque M_A = 50 Nm
(MoS_2-lubricated; washer acc. DIN 125 between casted flange and bolt head)

Grounding: Continuous earth connection between antenna tip and base.

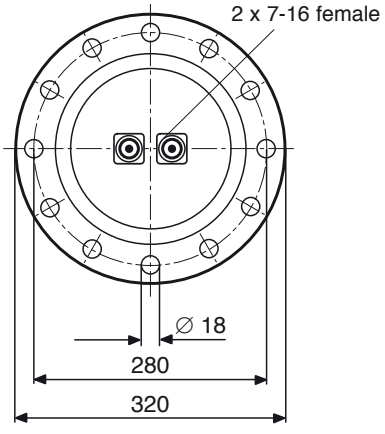
Remark: Special versions with higher input power or modified frequency range or electrical beam tilt are available upon request.

Vertical Radiation Patterns
(at mid-band)



750 10026 750 10025

Bottom view



K 53 31 5. .
Directional Antenna for DAB
216 – 240 MHz

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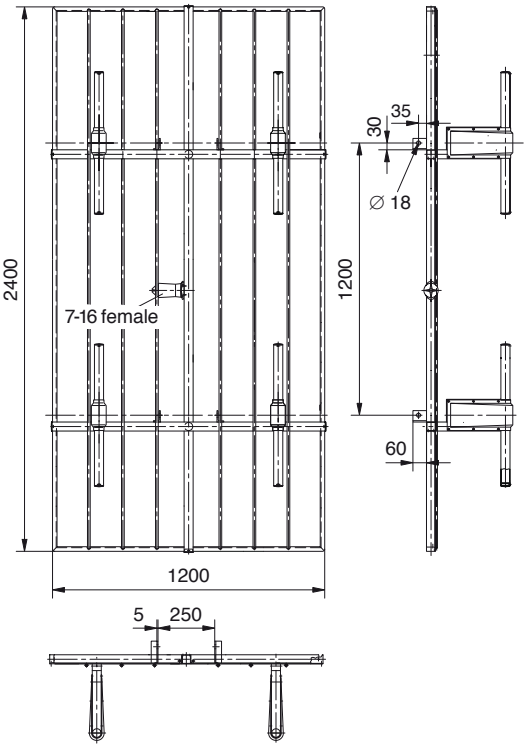
Antennen · Electronic

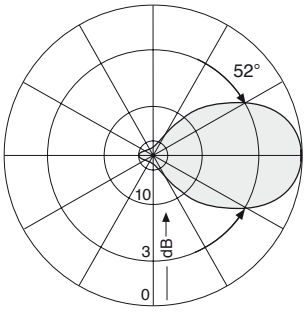
- Especially designed for operation in DAB.
- Suitbale for omnidirectional pattern with 5 panels in one bay.

Type No. / Order No.	**776 064**
Input	7-16 female (type gas-stop)
Frequency range	216 – 240 MHz (219 – 233 MHz)
VSWR	< 1.15 (< 1.10)
Gain (ref. to λ/2 dipole)	11.5 dB at mid-band
Impedance	50 Ω
Polarization	Vertical
Max. power	2 kW (higher power upon request)
Weight	50 kg
Wind load (at 160 km/h)	frontal: 1050 N lateral: 1200 N
Max. wind velocity	225 km/h
Packing size	2530 x 1330 x 680 mm

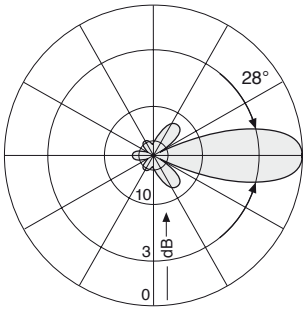
Material:	Hot-dip galvanized steel. Weather protection: Fiberglass.
Mounting:	By means of 4 screws M 16 x 40 to a suitable construction. Mounting hardware upon request.
Ice protection:	Even under severe icy conditions the antenna is still functional due to its heavy-duty construction and the fiberglass covers for the feeding points.
Grounding:	Via mounting parts.
Combinations:	The antenna is especially suitable as a component in arrays to achieve various radiation patterns.
Scope of supply:	Antenna with 4 screws M 16 x 40.



Radiation Patterns (at mid-band)



in H-plane
Horizontal Radiation Pattern



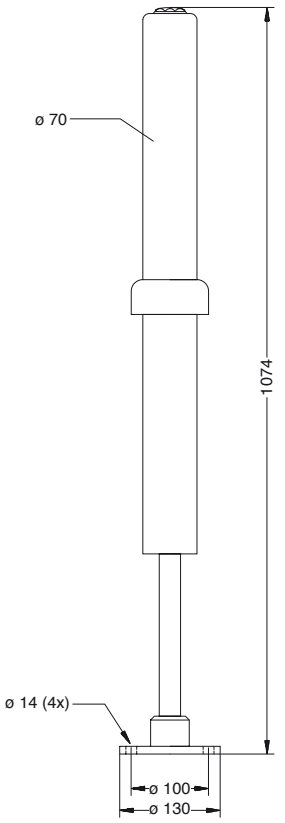
in E-plane
Vertical Radiation Pattern

K 53 37 5. .
Omnidirectional Antenna
223 – 230 MHz

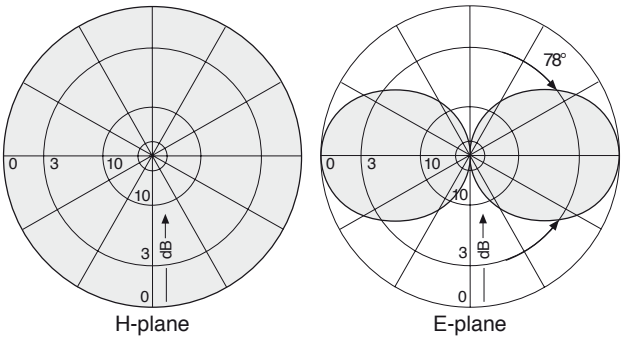
- Omnidirectional broadband antenna for mounting on the mast top.

Type No. / Order No.	**766 614**
Input	7-16 female
Frequency range	223 – 230 MHz
VSWR	< 1.3
Impedance	50 Ω
Gain (ref. λ/2 dipole)	0 dB
Polarization	Vertical
Max. power	1 kW
Weight	6 kg
Wind load	approx. 60 N (at 160 km/h)
Max. wind velocity	225 km/h

Material:	Hot-dip galvanized steel. All screws and nuts: Stainless steel.
Mounting:	To standard flange with diameter 130 mm, with 4 screws M 12.
Grounding:	Via mounting parts.

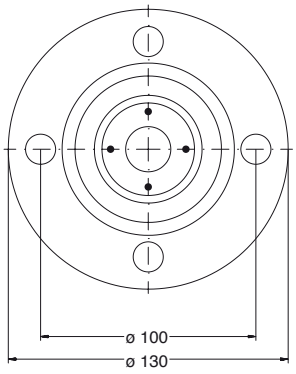


Radiation patterns
(at mid-band)



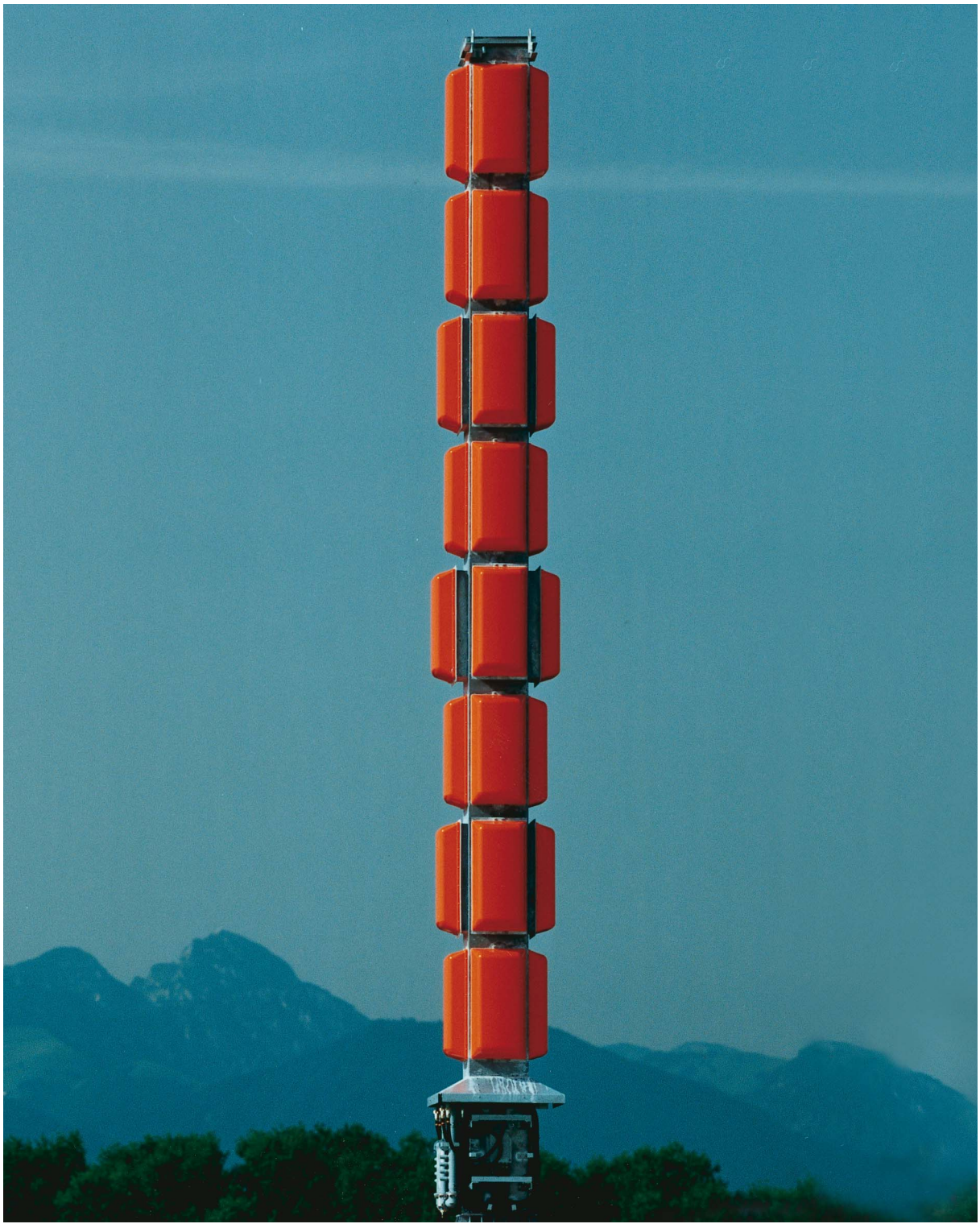
H-plane
Horizontal radiation pattern

E-plane
Vertical radiation pattern



Flange

Antenna Systems
470 – 862 MHz

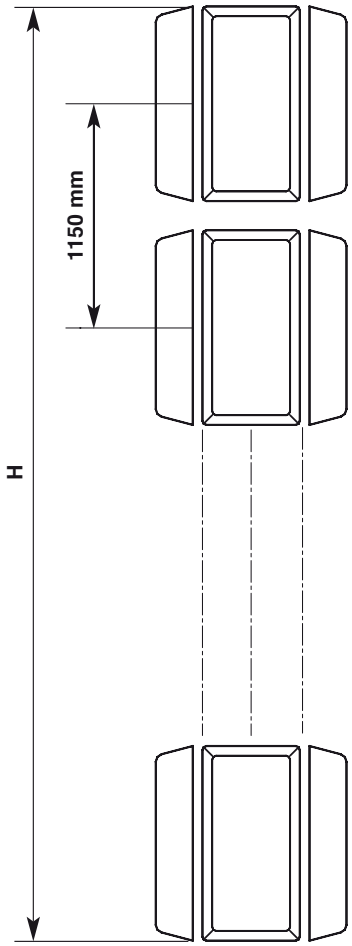


TV Transmitting Antenna with panels K 72 30 4. . – K 72 32 4. . or K 73 30 4. . – K 73 32 4. . 470 – 862 MHz

KATHREIN
Antennen · Electronic

- Antenna systems consisting of dipole panels K 72 30 4. . – K 72 32 4. . or K 73 30 4. . – K 73 32 4. . for various radiation patterns.
- The feeder network is made up of coaxial power splitters and flexible connecting cables in accordance with the radiation patterns specification and the transmitting power.

Input	Connectors according to IEC, EIA or DIN.
Frequency range	470 – 862 MHz
VSWR	< 1.05 in the operating channels after tuning.
Impedance	50 Ω
Polarization	Horizontal with dipole panels K 72 30 4. . – K72 32 4. . or vertical with dipole panels K 73 30 4. . – K 73 32 4. .
Internal connections	Connectors according to IEC, EIA or DIN are used throughout the system, allowing easy assembly and maintenance.
Max. power	According to customer's requirements.
Vertical radiation pattern	Null fill and beam tilt upon request.
Horizontal radiation pattern	Omnidirectional, directional or custom-designed.
Half antenna splitting	Upon request, the antenna can be divided into 2 halves (for measurement and maintenance). The 2 halves are connected by a 2-way power splitter or patch panel.
Pressurization	Splitters and connecting cables can be supplied with dry air (please specify when ordering).
Painting	If required, the antenna is painted in aviation warning colours.
Structure	2 versions are available: a) Panels mounted on hot-dip galvanized steel spine. b) Panels mounted inside self-supporting fiberglass cylinder (1.6 m ∅)
Grounding	Via mounting parts.
Max. wind velocity	As required.



No. of bays	Panels per bay	Gain* (at mid-band) dB	Gain* (at mid-band) times	Weight (without mounting hardware) kg	Antenna height H m	Windload / kN** (v = 160 km/h) with spine	Windload / kN** (v = 160 km/h) with cylinder 1.6 m ∅
4	2	15.2	33.1	120	4.45	6.0	6.0
	3	13.6	22.9	160			
	4	12.3	17.0	210			
6	2	17.0	50.1	170	6.75	9.5	9.0
	3	15.4	34.7	240			
	4	14.1	25.7	330			
8	2	18.2	66.1	240	9.05	13.0	12.0
	3	16.6	45.7	320			
	4	15.3	33.9	420			
12	2	20.0	100.0	350	13.65	20.5	18.0
	3	18.4	69.2	490			
	4	17.1	51.3	670			
16	2	21.2	131.8	450	18.25	28.0	24.0
	3	19.6	91.2	690			
	4	18.3	67.6	890			

* Referred to λ/2 dipole. Attenuation of the internal cabling and the gain-decrease in case of null fill in the vertical radiation pattern are not considered.
Approximate values for gain decrease:
cable attenuation: 0.2 – 0.5 dB
null fill: 0.3 – 1.0 dB
Gain figures are valid for the direction of maximum radiation (see diagrams on following page).

** Average values, depending on design and arrangement.

TV Transmitting Antenna with panels
K 72 30 4. . – K 72 32 4. . or K 73 30 4. . – K 73 32 4. .
470 – 862 MHz

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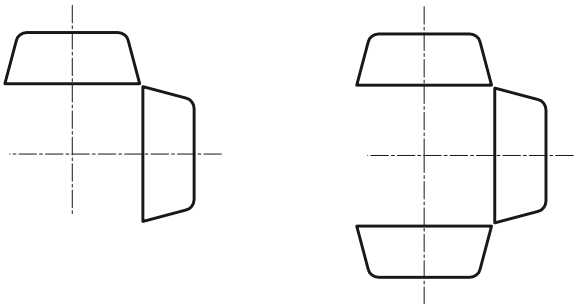
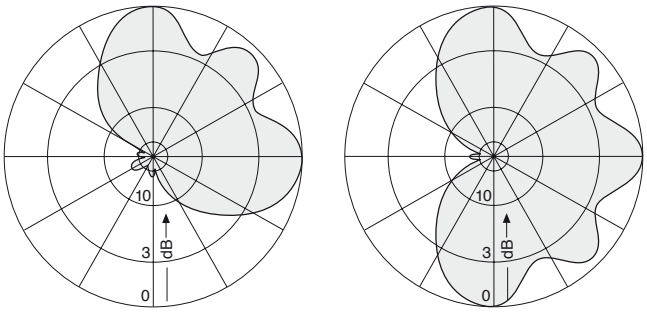
Horizontal Radiation Patterns

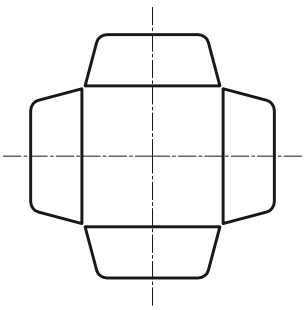
Examples of typical horizontal antenna arrays and their **horizontal** radiation patterns for minimal mast dimensions.

Equal power splitting

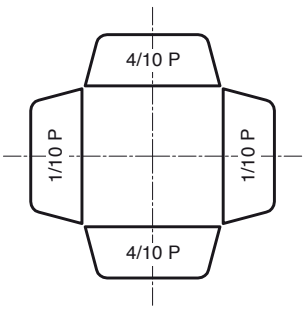


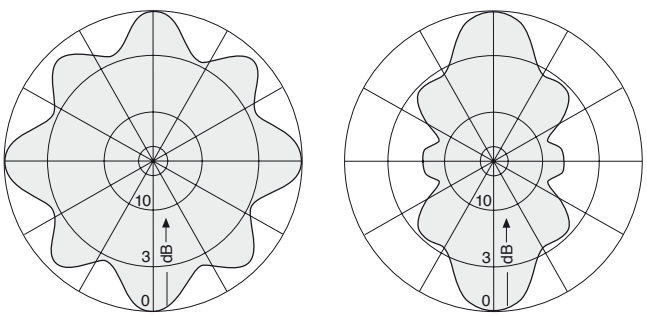


Equal power splitting



Different power splitting

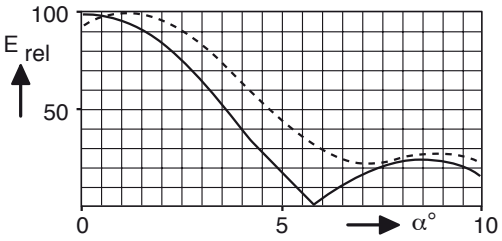




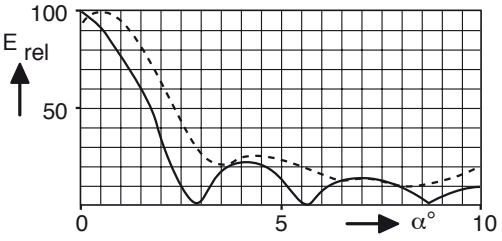
Vertical Radiation Patterns

Examples of typical **vertical** radiation patterns*) for several bays of identical, vertically stacked antenna arrays.

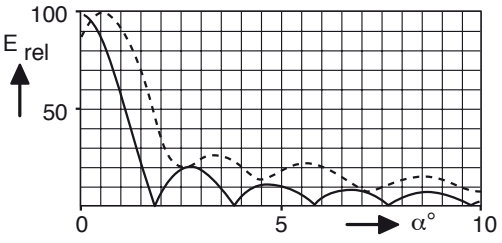
4 bays



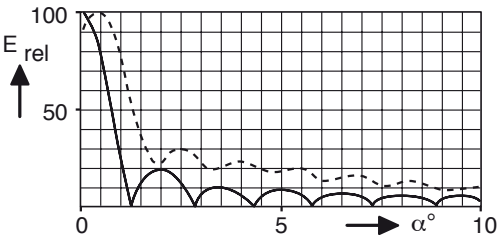
8 bays



12 bays



16 bays



*) ——— without null fill
- - - - - with null fill and beam tilt

TV Transmitting Antenna (Superturnstile Antenna) 470 – 862 MHz K 72 20 4. .

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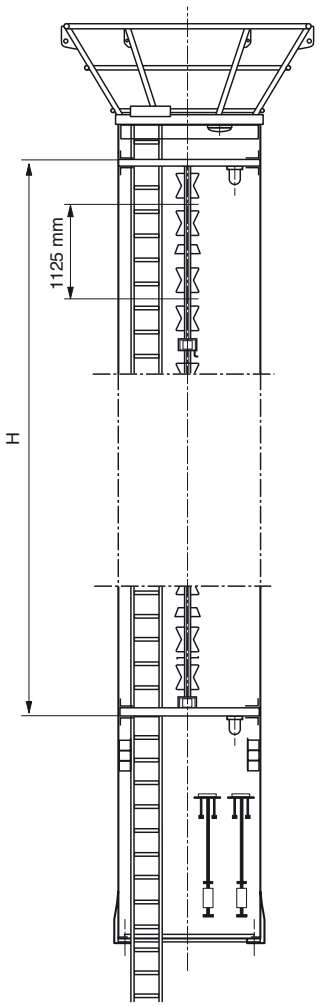
- Superturnstile antenna in a self-supporting fiberglass cylinder with 1.60 m diameter.

Input	Connectors according to IEC, EIA or DIN.
Frequency range	470 – 862 MHz
VSWR	< 1.05 in operating channels
Impedance	50 Ω
Polarization	Horizontal
Max. power	According to customer's requirements, 10 kW max. per bay.
Vertical radiation pattern	Null fill and beam tilt upon request.
Horizontal radiation pattern	Omnidirectional
Half antenna splitting	Upon request, the antenna can be divided into 2 halves (for measurement and maintenance). The 2 halves are connected by a 2-way power splitter or patch panel.
Internal connections	The radiating elements are fed with coaxial connecting cables and hybrid couplers. Connectors according to IEC, EIA or DIN are used throughout the system, allowing easy assembly and maintenance.
Structure	Superturnstile antenna in self-supporting fiberglass-cylinder. Up to 16 bays may be stacked.
Mounting	On top of existing structure by means of a flange.
Ice protection	Fiberglass-cylinder (= supporting structure)
Grounding	Via mounting parts resp. via 4 grounding ropes at the exterior cylinder-surface.



No. of bays	Gain* (at mid-band) dB	times	Weight (with cylinder) kg	Antenna height H m	Windload (v = 160 km/h) kN
2	7.0	5.0	400	2.25	3.0
4	10.0	10.0	800	4.5	6.0
8	13.0	20.0	1600	9.0	12.0
12	14.8	30.2	2600	13.5	18.0
16	16.0	39.8	3600	18.0	24.0

* Referred to λ/2 dipole. Attenuation of the internal cabling and the gain-decrease in case of null fill in the vertical radiation pattern are not considered.
Approximate values for gain decrease:
cable attenuation: 0.2 – 0.5 dB
null fill: 0.3 – 1.0 dB
Gain figures are valid for the direction of maximum radiation (see diagrams on following page).

TV Transmitting Antenna (Superturnstile Antenna) 470 – 862 MHz K 72 20 4. .

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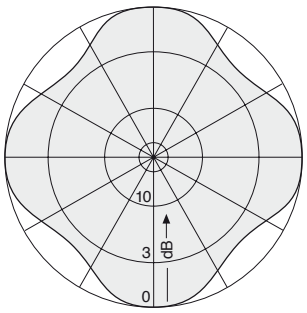
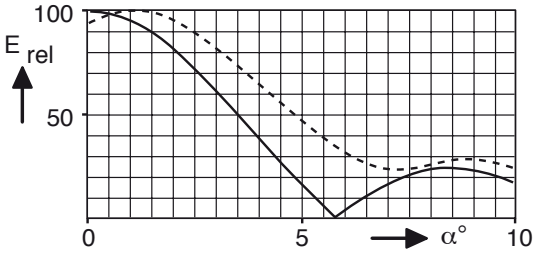
Typical Horizontal Radiation Pattern
(at mid-band)



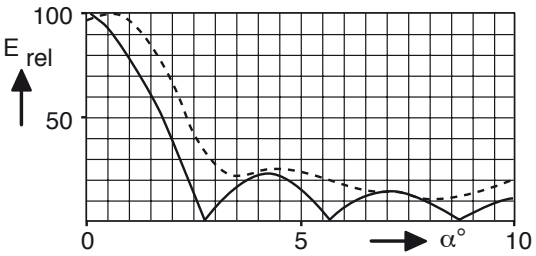
Vertical Radiation Patterns

Examples of typical **vertical** radiation patterns*) for several bays of identical, vertically stacked antenna arrays.

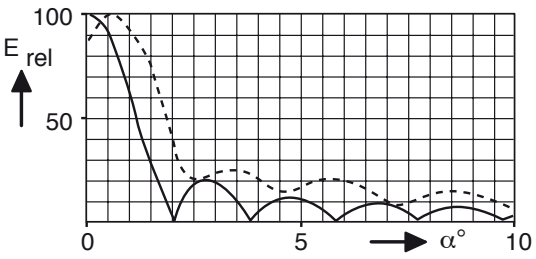
4 bays



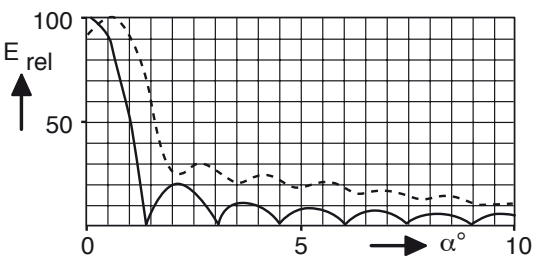
8 bays



12 bays



16 bays



*) ——— without null fill
- - - - - with null fill and beam tilt

Antennas for TV in UHF Band 470 – 862 MHz

Model Types:

K 72 20 4. ., K 72 23 4. ., K 72 31 4. ., K 72 31 5. ., K 72 32 4. ., K 72 36 4. ., K 73 30 4. ., K 73 30 5. ., K 73 31 4. ., K 73 31 6. ., K 73 32 4. ., K 73 33 4. .

Type No.	Description	Frequency range	Gain	Polarization	Page
K 72 36 4.	Directional Antenna, aluminum	470 – 790 MHz	8.0 dB	horizontal	93
K 72 31 4.	Directional Antenna, aluminum	470 – 860 MHz	11.0 dB	horizontal	94
715 022	Directional Antenna, aluminum	470 – 860 MHz	11.0 dB	horizontal	94
774 038	Directional Antenna, aluminum	470 – 860 MHz	11.0 dB	horizontal	95
774 039	Directional Antenna, aluminum	470 – 860 MHz	11.0 dB	horizontal	95
774 040	Directional Antenna, aluminum	470 – 860 MHz	11.0 dB	horizontal	95
774 041	Directional Antenna, aluminum	470 – 860 MHz	11.0 dB	horizontal	95
774 046	Directional Antenna, aluminum	470 – 860 MHz	11.0 dB	horizontal	95
774 047	Directional Antenna, aluminum	470 – 860 MHz	11.0 dB	horizontal	95
774 052	Directional Antenna, aluminum	470 – 860 MHz	11.0 dB	horizontal	96
776 165	Directional Antenna, aluminum	470 – 860 MHz	11.0 dB	vertical	97
776 166	Directional Antenna, aluminum	470 – 860 MHz	11.0 dB	vertical	97
776 167	Directional Antenna, aluminum	470 – 860 MHz	11.0 dB	vertical	97
776 168	Directional Antenna, aluminum	470 – 860 MHz	11.0 dB	vertical	97
776 202	Directional Antenna, aluminum	470 – 860 MHz	11.0 dB	vertical	97
776 203	Directional Antenna, aluminum	470 – 860 MHz	11.0 dB	vertical	97
K 73 31 4.	Directional Antenna, aluminum	470 – 860 MHz	11.0 dB	vertical	98
769 731	Directional Antenna, aluminum	470 – 860 MHz	11.0 dB	vertical	99
750 10082	Directional Antenna, aluminum	470 – 860 MHz	11.0 dB	vertical	100
750 10083	Directional Antenna, aluminum	470 – 860 MHz	11.0 dB	vertical	100
750 10045	Directional Antenna, aluminum	470 – 860 MHz	10.5 dB	vertical	101
750 10046	Directional Antenna, aluminum	470 – 860 MHz	10.5 dB	vertical	101
750 10047	Directional Antenna, aluminum	470 – 860 MHz	10.5 dB	vertical	101
750 10016	Directional Antenna, aluminum	470 – 860 MHz	11.0 dB	horizontal	102
750 10017	Directional Antenna, aluminum	470 – 860 MHz	11.0 dB	horizontal	102
750 10031	Directional Antenna, aluminum	470 – 860 MHz	11.0 dB	horizontal	102
750 10032	Directional Antenna, aluminum	470 – 860 MHz	11.0 dB	horizontal	102
772 549	Directional Antenna, aluminum	470 – 860 MHz	11.0 dB	horizontal	103
772 550	Directional Antenna, aluminum	470 – 860 MHz	11.0 dB	horizontal	103
772 999	Directional Antenna, aluminum	470 – 860 MHz	11.0 dB	horizontal	103
773 000	Directional Antenna, aluminum	470 – 860 MHz	11.0 dB	horizontal	103
773 332	Directional Antenna, aluminum	470 – 860 MHz	11.0 dB	horizontal	103
773 333	Directional Antenna, aluminum	470 – 860 MHz	11.0 dB	horizontal	103
750 10012	Directional Antenna, aluminum	470 – 860 MHz	11.0 dB	horizontal	103
750 10013	Directional Antenna, aluminum	470 – 860 MHz	11.0 dB	horizontal	103
K 72 31 57	Directional Antenna, aluminum	646 – 860 MHz	10.0 dB	horizontal	104
776 015	Directional Antenna, aluminum	646 – 860 MHz	10.0 dB	horizontal	104

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Antennas for TV in UHF Band 470 – 860 MHz

Type No.	Description	Frequency range	Gain	Polarization	Page
K 72 23 4.	Log.-per Directional Antenna, aluminum	470 – 860 MHz	9.0 dB	horizontal or vertical	105
761 327	Log.-per Directional Antenna, aluminum	470 – 860 MHz	9.0 dB	horizontal or vertical	105
767 006	Omnidirectional Antenna, aluminum	470 – 860 MHz	5.0 dB	horizontal	106
770 881	Omnidirectional Antenna, aluminum	470 – 860 MHz	8.0 dB	horizontal	106
771 304	Omnidirectional Antenna, aluminum	470 – 860 MHz	11.0 dB	horizontal	107
775 861	Omnidirectional Antenna, aluminum	470 – 860 MHz	11.0 dB	horizontal	107
750 10060	Omnidirectional Antenna, aluminum	470 – 702 MHz	3.0 – 4.5 dB	vertical	108
750 10062	Omnidirectional Antenna, aluminum	470 – 702 MHz	5.5 – 7.0 dB	vertical	109
750 10112	Omnidirectional Antenna, copper and brass	470 – 502 MHz	6.5 dB	vertical	110
750 10113	Omnidirectional Antenna, copper and brass	502 – 534 MHz	7.0 dB	vertical	110
750 10114	Omnidirectional Antenna, copper and brass	534 – 574 MHz	7.5 dB	vertical	110
750 10115	Omnidirectional Antenna, copper and brass	574 – 614 MHz	7.5 dB	vertical	110
750 10116	Omnidirectional Antenna, copper and brass	614 – 662 MHz	8.0 dB	vertical	110
750 10117	Omnidirectional Antenna, copper and brass	654 – 702 MHz	8.0 dB	vertical	110
750 10118	Omnidirectional Antenna, copper and brass	694 – 750 MHz	8.5 dB	vertical	110
750 10120	Directional Indoor Antenna, brass	470 – 534 MHz	5.0 dB	vertical	111
750 10122	Directional Indoor Antenna, brass	534 – 614 MHz	5.0 dB	vertical	111
750 10124	Directional Indoor Antenna, brass	614 – 702 MHz	5.0 dB	vertical	111
750 10125	Directional Indoor Antenna, brass	702 – 750 MHz	5.0 dB	vertical	111
750 10130	Omnidirectional Indoor Antenna, aluminum	470 – 558 MHz	0 dB	vertical	112
750 10131	Omnidirectional Indoor Antenna, aluminum	550 – 638 MHz	0 dB	vertical	112
750 10132	Omnidirectional Indoor Antenna, aluminum	574 – 702 MHz	0 dB	vertical	112
750 10128	Bidirectional Antenna, tin plated copper	470 – 860 MHz	2 dB	vertical	113

K 72 36 4.
Directional Antenna
470 – 790 MHz

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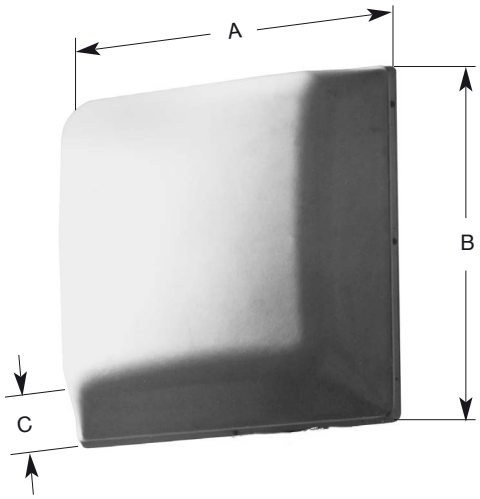
Antennen · Electronic

- Horizontally polarized broadband directional antenna made of aluminum and protected by a fiberglass cover.

Type No. Order No.	**K 72 36 47** 601 787	**K 72 36 41** 601 921
Input	7-16 female	N female
Frequency range	470 – 790 MHz	
VSWR	s < 1.12	
Gain (ref. λ/2 dipole)	8 dB at mid-band	
Impedance	50 Ω	
Polarization	Horizontal	
Max. power	500 W (higher power upon request)	
Weight	6 kg	
Wind load (at 160 km/h)	Frontal: 250 N Rearside: 375 N Lateral: 125 N	
Max. wind velocity	225 km/h	
Packing size	567 x 567 x 294 mm	



A = B: 500 mm
C: 190 mm

Material: Reflector screen and dipoles: Weather-resistant aluminum. Protective cover: Fiberglass. Colour: White, upon request orange. Attachment elbow: Hot-dip galvanized steel.

Attachment: (please order separately): E.g. by using clamps K 61 14 0… to tubular masts of 40 – 521 mm diameter. Further attachment parts and mounting dimensions upon request.

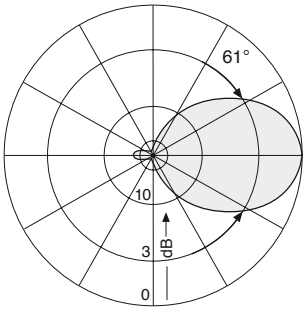
Grounding: Via mounting parts.

Ice protection: Even under severe icy conditions the antenna is still functional due to its heavy-duty construction and the fiberglass covers for the feeding points.

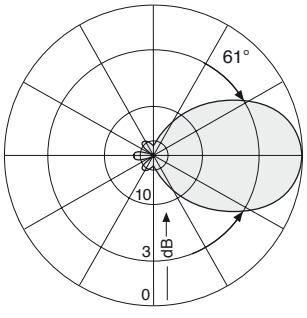
Combinations: The antenna is particularly suitable for use in combinations in order to achieve various radiation patterns.

Scope of delivery: Directional antenna with one weather protection unit each for straight connectors and elbow connectors.

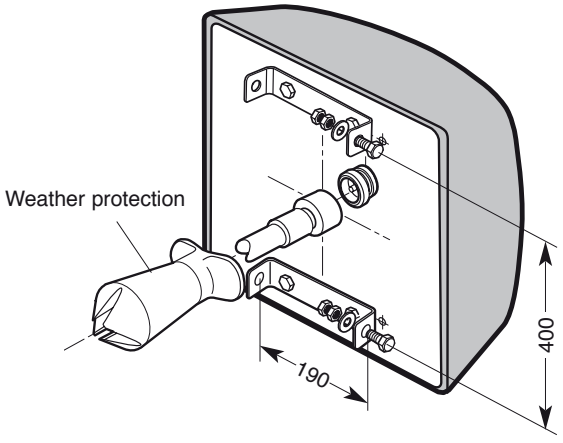
Radiation Patterns (at mid-band)



in E-plane
Horizontal Radiation Pattern



in H-plane
Vertical Radiation Pattern



All dimensions in mm

K 72 31 4. .
Directional Antenna
470 – 860 MHz

KATHREIN
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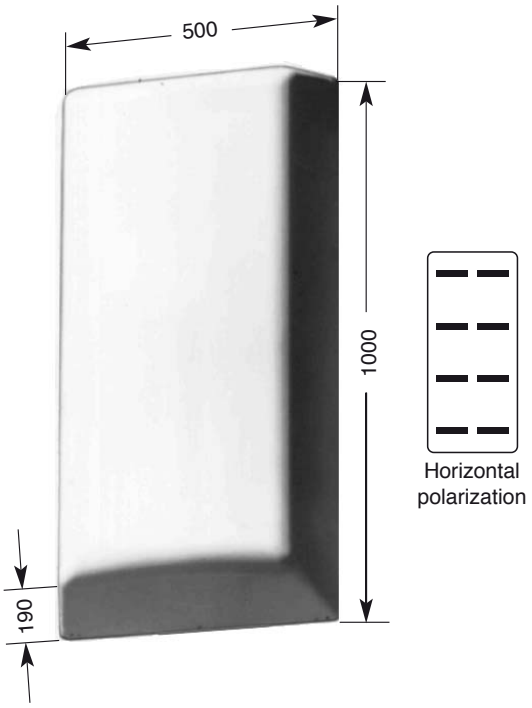
- Horizontally or vertically polarized broadband directional antenna made of aluminum and protected by a fiberglass cover.

Type No. Order No.	**K 72 31 47** 601 417	**715 022**
Input	7-16 female	13-30 female
Frequency range	470 – 860 MHz	
VSWR	s < 1.1	
Gain (ref. λ/2 dipole)	11 dB at mid-band	
Polarization	Horizontal	
Max. power	1 kW	2 kW
Wind load (at 160 km/h)	Frontal: 565 N Rearside: 815 N Lateral: 250 N	
Max. wind velocity	225 km/h	
Weight	12 kg	
Packing size	1062 x 562 x 275 mm	
Height/width/depth	1000 x 500 x 190 mm	



Horizontal polarization

Material: Reflector screen and dipoles: Weather-resistant aluminum. Protective cover: Fiberglass. Attachment elbow: Hot-dip galvanized steel.

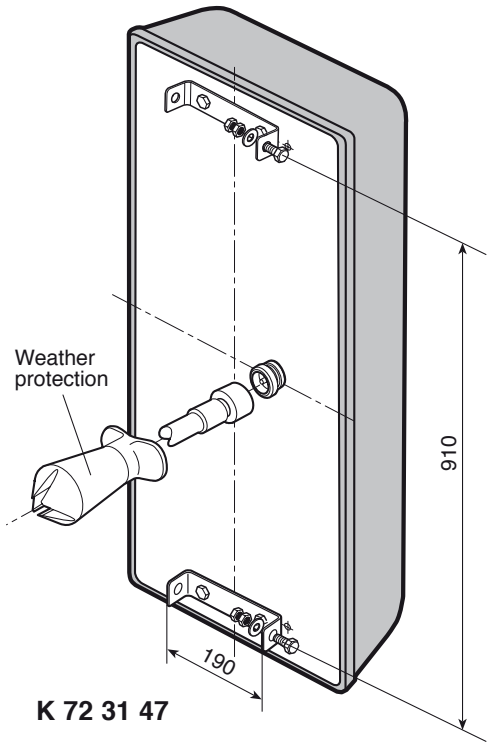
Attachment: (please order separately): E.g. by using clamps K 61 14 0… to tubular masts of 40 – 521 mm diameter. Further attachment parts and mounting dimensions upon request.

Grounding: Via mounting parts.

Ice protection: The dipoles remain fully functioning even in icy conditions as the fiberglass cover protects the whole antenna and also the antenna is of a very robust design.

Combinations: The antenna is particularly suitable for use in combinations in order to achieve various radiation patterns.

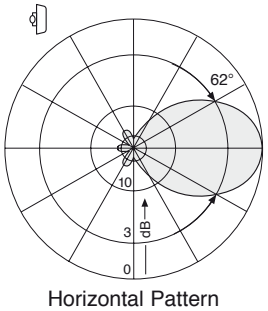
Scope of supply: Directional antenna with one weather protection unit each for straight connectors and elbow connectors.



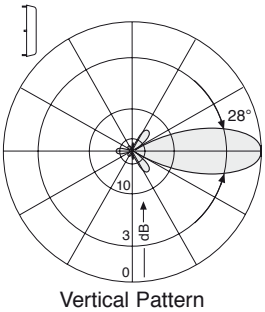
K 72 31 47

All dimensions in mm

Radiation Patterns (at mid-band)



Horizontal Pattern



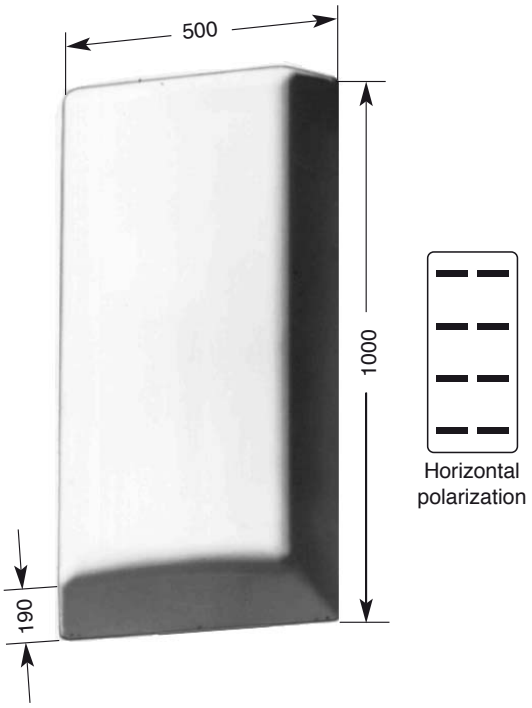
Vertical Pattern

K 72 31 4. .
Directional Antenna
470 – 860 MHz

KATHREIN
Antennen · Electronic

- **Horizontally polarized broadband directional antenna made of aluminum and protected by a fiberglass cover.**
- **Similar to type K 72 31 47.**

Type No. / Order No.	**white** **orange**	**774 040** **774 041**	**774 046** **774 047**	**774 038** **774 039**
Input (from below)		7-16 female	13-30 female	7/8″ EIA-flange
Frequency range		470 – 860 MHz		
VSWR		< 1.1		
Gain (ref. λ/2 dipole)		11 dB at mid-band		
Impedance		50 Ω		
Polarization		Horizontal		
Max. power		1 kW	2 kW	1.5 kW
Weight		12 kg		
Wind load (at 160 km/h)		Frontal: 565 N Rearside: 815 N Lateral: 250 N		
Max. wind velocity		225 km/h		
Packing size		1062 x 562 x 294 mm		
Height/width/depth		1000 x 500 x 190 mm		



Material: Reflector screen and dipoles: Weather-resistant aluminum.
Protective cover: Fiberglass.
Attachment plate: Hot-dip galvanized steel.

Attachment: Using M 8 x 35 screws (supplied) to suitable attachment construction.
Mounting dimensions upon request.

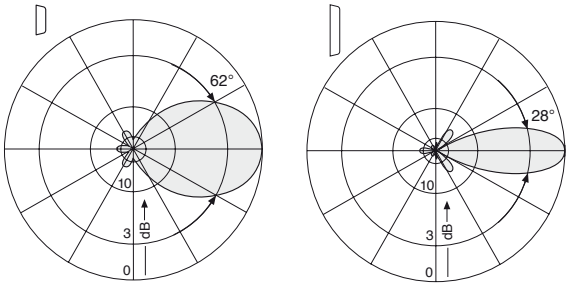
Grounding: Via mounting parts.

Ice protection: The dipoles remain fully functioning even in icy conditions as the fiberglass cover protects the whole antenna and also the antenna is of a very robust design.

Combinations: The antenna is particularly suitable for use in combinations in order to achieve various radiation patterns.

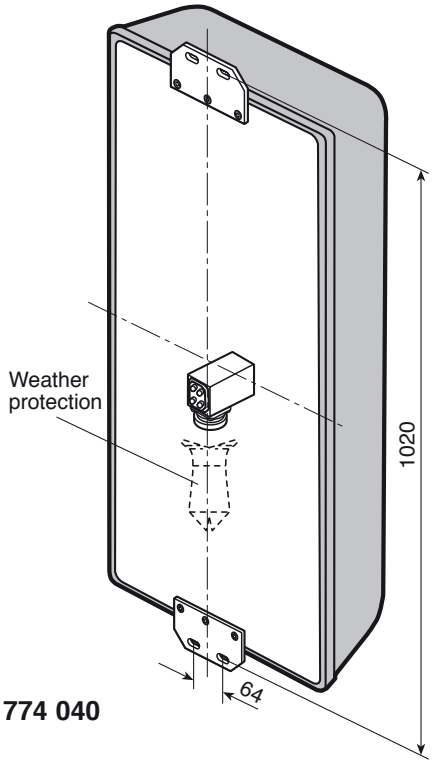
Scope of supply: The 7-16 female connector is supplied with a weather protection unit.

Radiation Patterns (at mid-band)



in E-plane
Horizontal Pattern

in H-plane
Vertical Pattern



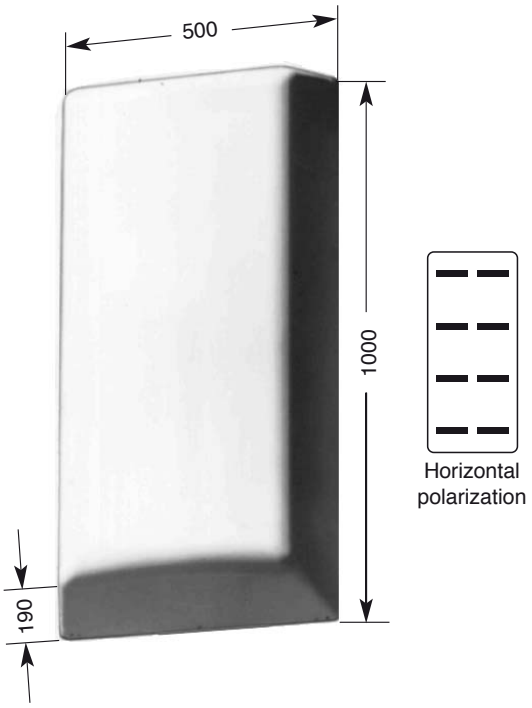
774 040

All dimensions in mm

K 72 31 4. .
Directional Antenna
470 – 860 MHz

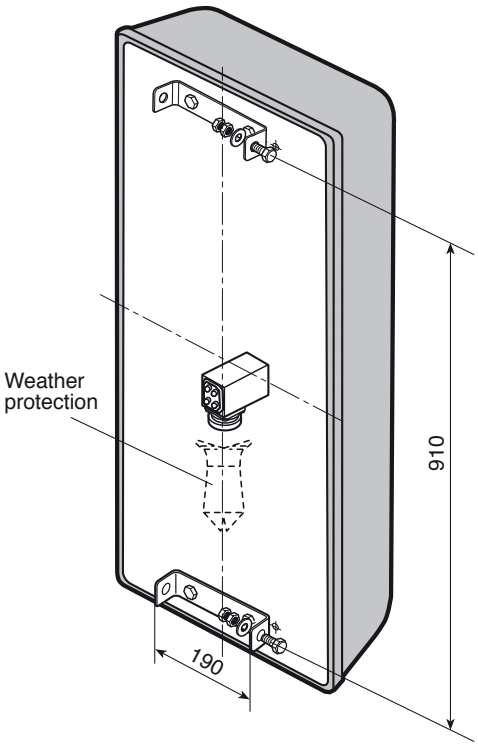
KATHREIN
Antennen · Electronic

- **Horizontally polarized broadband directional antenna made of aluminum and protected by a fiberglass cover.**
- **Similar to type K 72 31 47.**



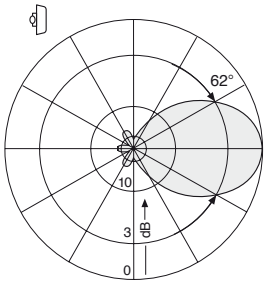
Type No. / Order No.	**774 052**
Input (from below)	7-16 female
Polarization	Horizontal
VSWR	s < 1.1
Gain (ref. λ/2 dipole)	11 dB at mid-band
Frequency range	470 – 860 MHz
Max. power	1 kW
Wind load (at 160 km/h)	Frontal: 565 N Rearside: 815 N Lateral: 250 N
Max. wind velocity	225 km/h
Weight	12 kg
Packing size	1062 x 562 x 294 mm
Height/width/depth	1000 x 500 x 190 mm

Material:	Reflector screen and dipoles: Weather-resistant aluminum. Protective cover: Fiberglass. Colour: White, upon request orange. Attachment elbow and attachment plate: Hot-dip galvanized steel.
Attachment: (please order separately)	E.g. by using clamps K 61 14 0… to tubular masts of 40 – 521 mm diameter. Further attachment parts and mounting dimensions upon request.
Grounding:	Via mounting parts.
Ice protection:	The dipoles remain fully functioning even in icy conditions as the fiberglass cover protects the whole antenna and also the antenna is of a very robust design.
Combinations:	The antenna is particularly suitable for use in combinations in order to achieve various radiation patterns.
Scope of supply:	Directional antenna with one weather protection unit.

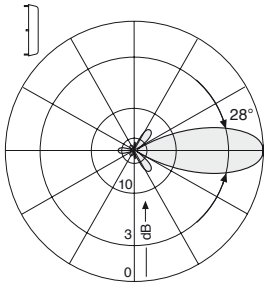


All dimensions in mm

Radiation patterns (at mid-band)



in E-plane
Horizontal Pattern



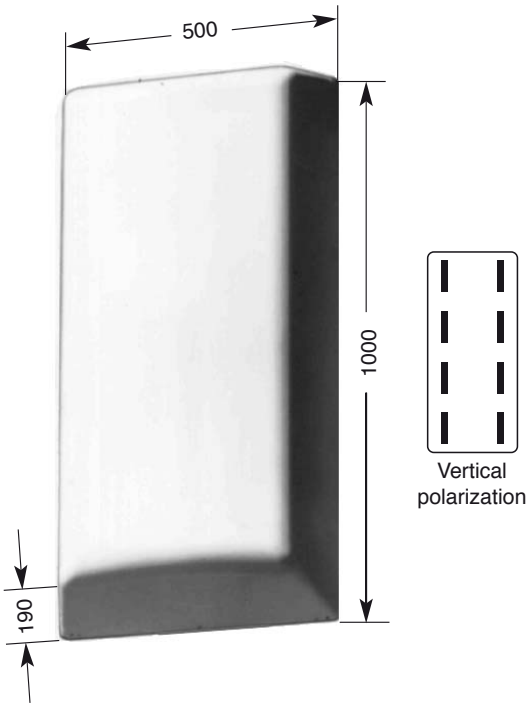
in H-plane
Vertical Pattern

K 73 31 4. .
Directional Antenna
470 – 860 MHz

KATHREIN
Antennen · Electronic

- **Vertically polarized broadband directional antenna made of aluminum and protected by a fiberglass cover.**
- **Similar to type K 73 31 47.**

Type No. / Order No.	**white** / **orange**	**776 165** / **776 166**	**776 167** / **776 168**	**776 202** / **776 203**
Input (from below)		7-16 female	13-30 female	7/8″ EIA-flange
Frequency range		470 – 860 MHz		
VSWR		< 1.12		
Gain (ref. λ/2 dipole)		11 dB at mid-band		
Impedance		50 Ω		
Polarization		Vertical		
Max. power		1 kW	2 kW	1.5 kW
Weight		12 kg		
Wind load (at 160 km/h)		Frontal: 565 N Rearside: 815 N Lateral: 250 N		
Max. wind velocity		225 km/h		
Packing size		1062 x 562 x 294 mm		
Height/width/depth		1000 x 500 x 190 mm		



Material: Reflector screen and dipoles: Weather-resistant aluminum.
Protective cover: Fiberglass.
Attachment plate: Hot-dip galvanized steel.

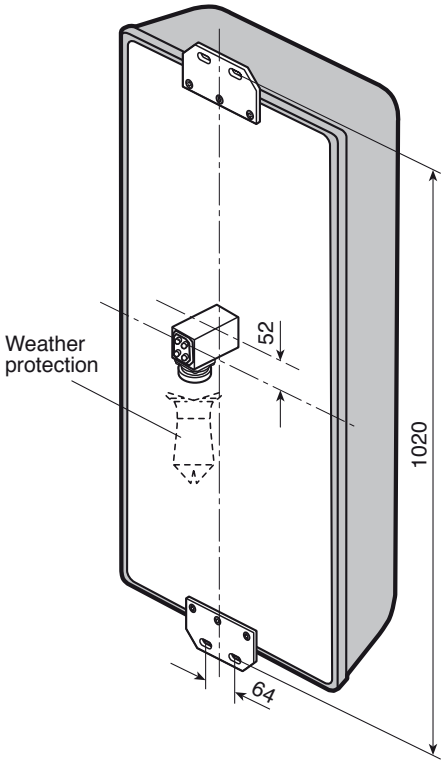
Attachment: Using M 8 x 35 screws (supplied) to suitable attachment construction.
Mounting dimensions upon request.

Grounding: Via mounting parts.

Ice protection: The dipoles remain fully functioning even in icy conditions as the fiberglass cover protects the whole antenna and also the antenna is of a very robust design.

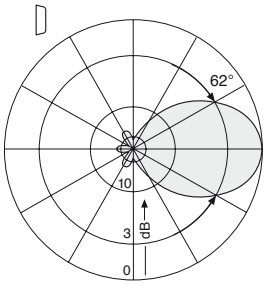
Combinations: The antenna is particularly suitable for use in combinations in order to achieve various radiation patterns.

Scope of supply: The 7-16 female connector is supplied with a weather protection unit.

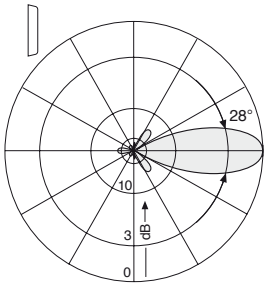


All dimensions in mm

Radiation Patterns (at mid-band)



in H-plane
Horizontal Pattern



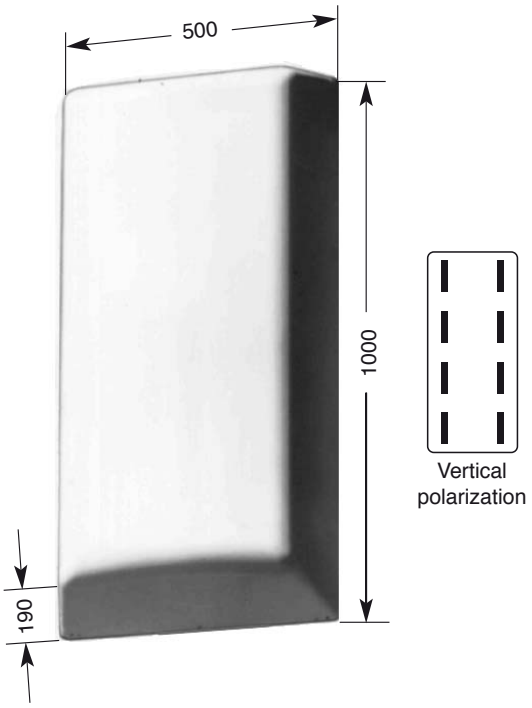
in E-plane
Vertical Pattern

K 73 31 4. .
Directional Antenna
470 – 860 MHz

KATHREIN
Antennen · Electronic

- Horizontally or vertically polarized broadband directional antenna made of aluminum and protected by a fiberglass cover.

Type No. Order No.	**K 73 31 41** 601 492	**K 73 31 47** 601 709
Input	N female	7-16 female
Frequency range	470 – 860 MHz	
VSWR	s < 1.12	
Gain (ref. λ/2 dipole)	11 dB at mid-band	
Polarization	Vertical	
Max. power	0.5 kW	1 kW
Wind load (at 160 km/h)	Frontal: 565 N Rearside: 815 N Lateral: 250 N	
Max. wind velocity	225 km/h	
Weight	12 kg	
Packing size	1062 x 562 x 275 mm	
Height/width/depth	1000 x 500 x 190 mm	



Vertical polarization

Material: Reflector screen and dipoles: Weather-resistant aluminum. Protective cover: Fiberglass. Attachment elbow: Hot-dip galvanized steel.

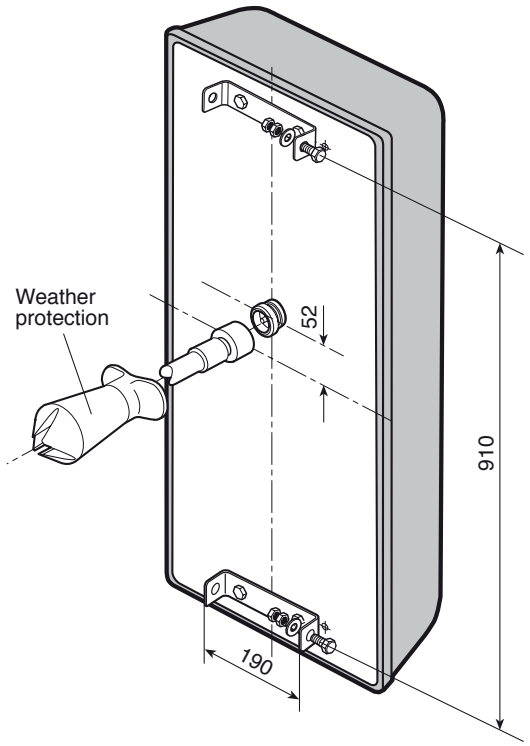
Attachment: (please order separately): E.g. by using clamps K 61 14 0… to tubular masts of 40 – 521 mm diameter. Further attachment parts and mounting dimensions upon request.

Grounding: Via mounting parts.

Ice protection: The dipoles remain fully functioning even in icy conditions as the fiberglass cover protects the whole antenna and also the antenna is of a very robust design.

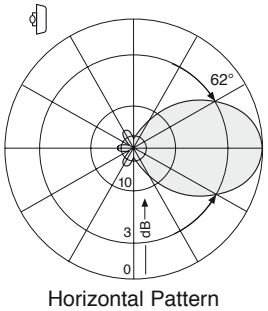
Combinations: The antenna is particularly suitable for use in combinations in order to achieve various radiation patterns.

Scope of supply: Directional antenna with one weather protection unit each for straight connectors and elbow connectors.

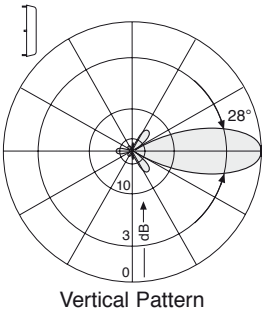


All dimensions in mm

Radiation Patterns (at mid-band)



Horizontal Pattern



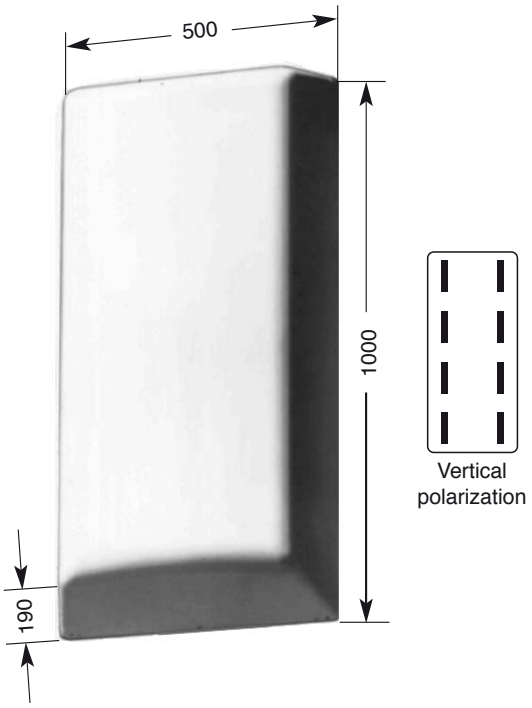
Vertical Pattern

K 73 31 4. .
Directional Antenna
470 – 860 MHz

KATHREIN
Antennen · Electronic

- **Vertically polarized broadband directional antenna made of aluminum and protected by a fiberglass cover.**
- **Similar to type K 73 31 47.**

Type No. / Order No.	**769 731**
Input	7-16 female
Frequency range	470 – 860 MHz
VSWR	< 1.12
Gain (ref. λ/2 dipole)	11 dB at mid-band
Impedance	50 Ω
Polarization	Vertical
Max. power	1 kW
Weight	12 kg
Wind load (at 160 km/h)	Frontal: 565 N Rearside: 815 N Lateral: 250 N
Max. wind velocity	225 km/h
Packing size	1062 x 562 x 294 mm
Height/width/depth	1000 x 500 x 190 mm



Material: Reflector screen and dipoles: Weather-resistant aluminum.
Protective cover: Fiberglass.
Attachment plate: Hot-dip galvanized steel.

Attachment: Using M 8 x 35 screws (supplied) to suitable attachment construction.

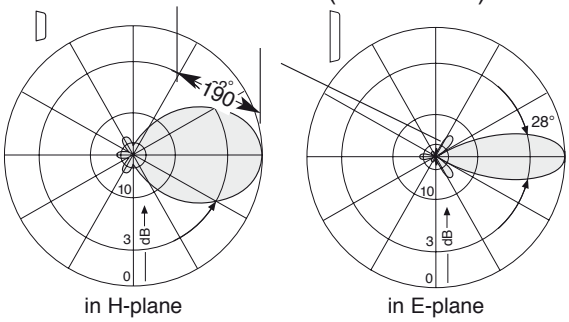
Grounding: Via mounting parts.

Ice protection: The dipoles remain fully functioning even in icy conditions as the fiberglass cover protects the whole antenna and also the antenna is of a very robust design.

Combinations: The antenna is particularly suitable for use in combinations in order to achieve various radiation patterns.

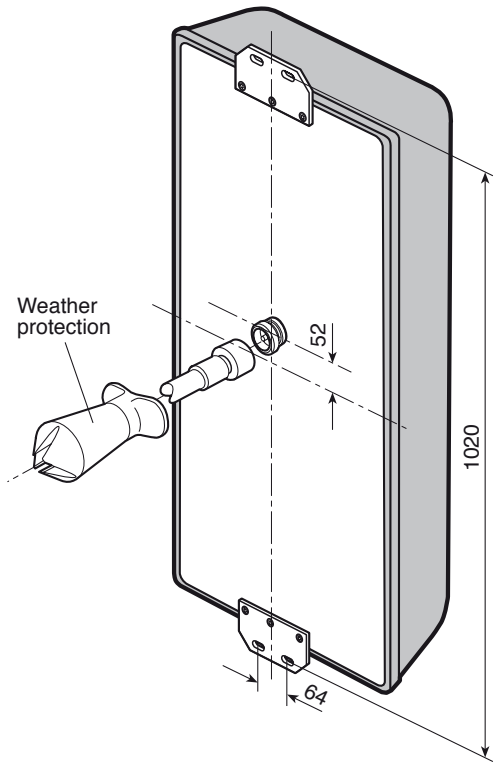
Scope of supply: The 7-16 female connector is supplied with a weather protection unit.

Radiation Patterns (at mid-band)



in H-plane
Horizontal Pattern

in E-plane
Vertical Pattern

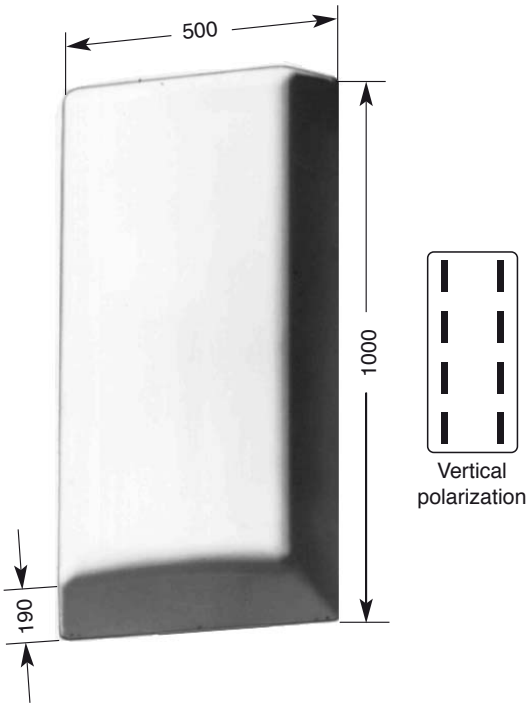


All dimensions in mm

K 73 31 4. .
Directional Antenna
470 – 860 MHz

KATHREIN
Antennen · Electronic

- **Vertically polarized broadband directional antenna made of aluminum and protected by a fiberglass cover.**



Type No. / Order No.	**white** / **orange**
	750 10082 / **750 10083**
Input	7/8″ EIA flange
Frequency range	470 – 860 MHz
VSWR	s < 1.12
Gain (ref. λ/2 dipole)	11 dB at mid-band
Impedance	50 Ω
Polarization	Vertical
Max. power	1.5 kW
Weight	12 kg
Wind load (at 160 km/h)	Frontal: 565 N
	Rearside: 815 N
	Lateral: 250 N
Max. wind velocity	225 km/h
Packing size	1062 x 562 x 294 mm
Height/width/depth	1000 x 500 x 190 mm

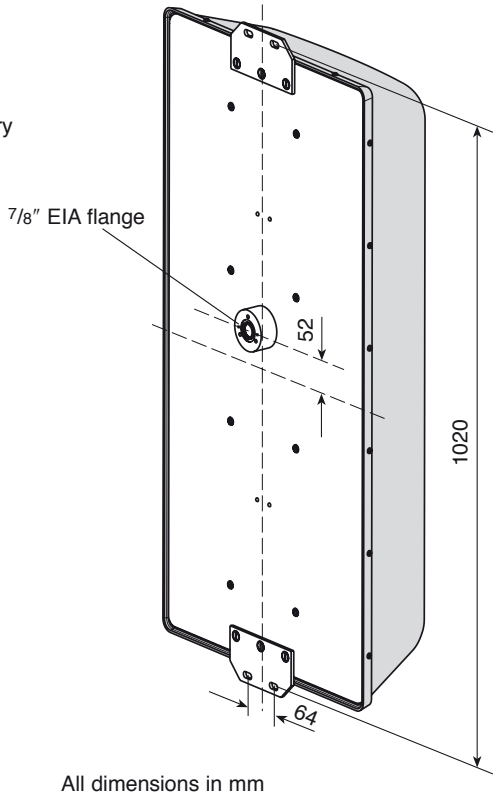
Material: Reflector screen and dipoles: Weather-resistant aluminum.
Protective cover: Fiberglass.
Attachment plate: Hot-dip galvanized steel.

Attachment: Using M8 x 35 screws (supplied) to suitable attachment construction.
Mounting dimensions upon request.

Grounding: Via mounting parts.

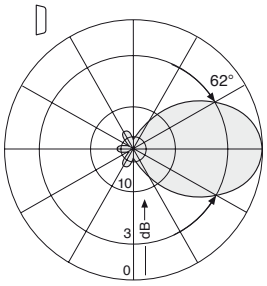
Ice protection: The dipoles remain fully functioning even in icy conditions as the fiberglass cover protects the whole antenna and also the antenna is of a very robust design.

Combinations: The antenna is particularly suitable for use in combinations in order to achieve various radiation patterns.

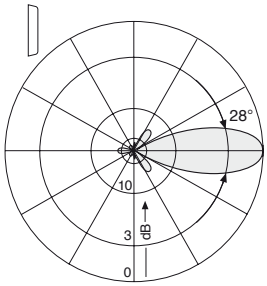


All dimensions in mm

Radiation Patterns (at mid-band)



in H-plane
Horizontal Pattern



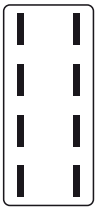
in E-plane
Vertical Pattern

K 73 31 4. .
Directional Antenna
470 – 860 MHz

KATHREIN
Antennen · Electronic

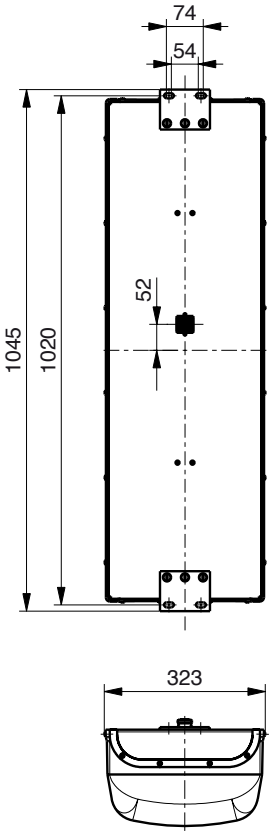
- **Vertically polarized broadband directional antenna made of aluminum and protected by a fiberglass cover.**
- **Especially suitable for ortogonal steel spines.**

Type No. / Order No.	**grey** / **white** / **orange**
	750 10045 / **750 10046** / **750 10047**
Input	7-16 female
Frequency range	470 – 860 MHz
VSWR	< 1.15
Gain (ref. λ/2 dipole)	10.5 dB at mid-band
Impedance	50 Ω
Polarization	Vertical
Max. power	1 kW
Weight	10 kg
Wind load (at 160 km/h)	Frontal: 410 N Lateral: 250 N
Max. wind velocity	225 km/h
Packing size	1140 x 330 x 240 mm
Height/width/depth	1045 x 323 x 193 mm



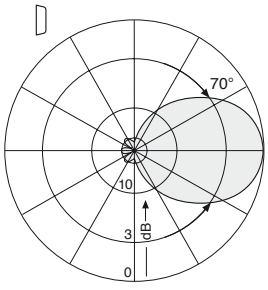
Vertical polarization

Material:	Reflector screen and dipoles: Weather-resistant aluminum. Protective cover: Fiberglass. Attachment plate: Hot-dip galvanized steel.
Attachment:	Using M 8 x 35 screws (supplied) to suitable attachment construction.
Grounding:	Via mounting parts.
Ice protection:	The dipoles remain fully functioning even in icy conditions as the fiberglass cover protects the whole antenna and also the antenna is of a very robust design.
Combinations:	The antenna is particularly suitable for multi-panel arrangements.

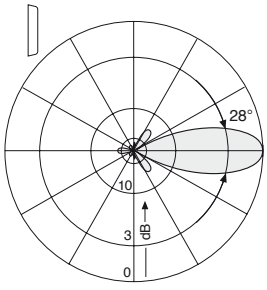


All dimensions in mm

Radiation Patterns (at mid-band)



Horizontal Pattern

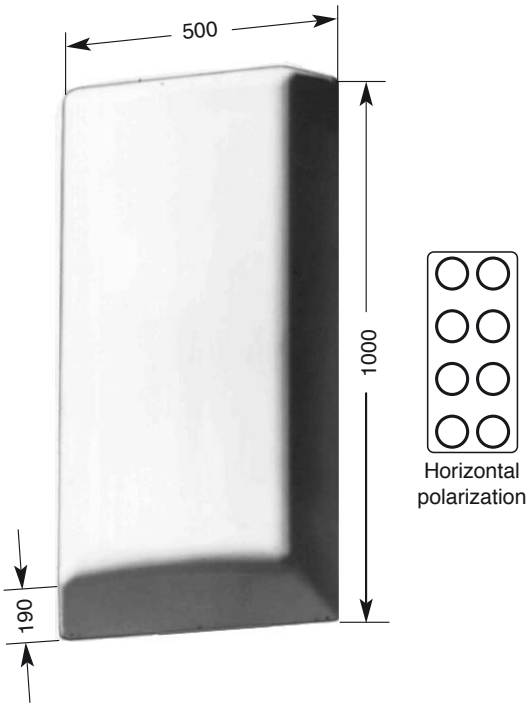


Vertical Pattern

K 72 32 4. .
Directional Antenna
470 – 860 MHz

KATHREIN
Antennen · Electronic

- **Horizontally polarized broadband directional antenna made of aluminum and protected by a fiberglass cover.**



Horizontal polarization

Type No. / Order No.	**white** / **orange**	**750 10031** / **750 10032**	**750 10016** / **750 10017**
Input		7/8″ EIA flange	1 5/8″ EIA flange
Frequency range		470 – 860 MHz	
VSWR		s < 1.1	
Gain (ref. λ/2 dipole)		11 dB at mid-band	
Impedance		50 Ω	
Polarization		Horizontal	
Max. power		1.5 kW	3 kW
Weight		10 kg	10.5 kg
Wind load (at 160 km/h)		Frontal: 565 N	
		Rearside: 815 N	
		Lateral: 250 N	
Max. wind velocity		225 km/h	
Packing size		1062 x 562 x 294 mm	
Height/width/depth		1000 x 500 x 190 mm	

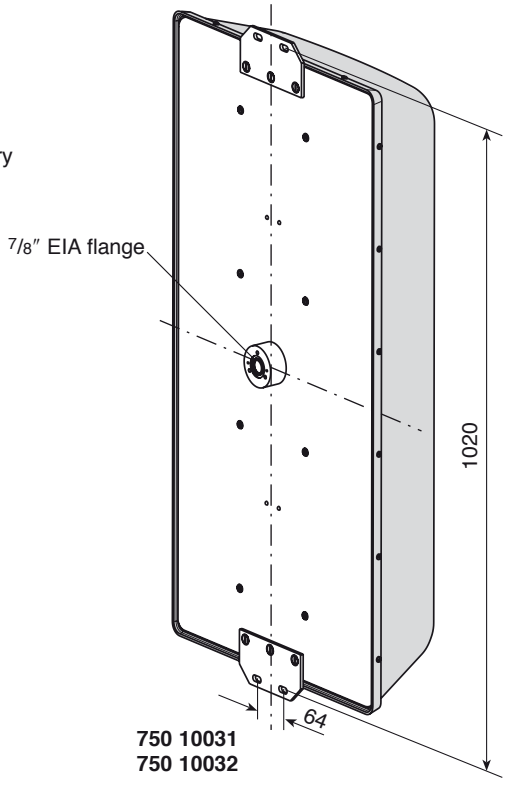
Material: Reflector screen and dipoles: Weather-resistant aluminum.
Protective cover: Fiberglass.
Attachment plate: Hot-dip galvanized steel.

Attachment: Using M 8 x 35 screws (supplied) to suitable attachment construction.
Mounting dimensions upon request.

Grounding: Via mounting parts.

Ice protection: The dipoles remain fully functioning even in icy conditions as the fiberglass cover protects the whole antenna and also the antenna is of a very robust design.

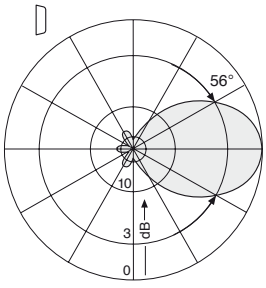
Combinations: The antenna is particularly suitable for use in combinations in order to achieve various radiation patterns.



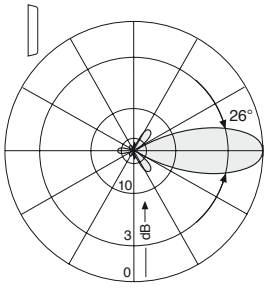
750 10031
750 10032

All dimensions in mm

Radiation Patterns (at mid-band)



in E-plane
Horizontal Pattern



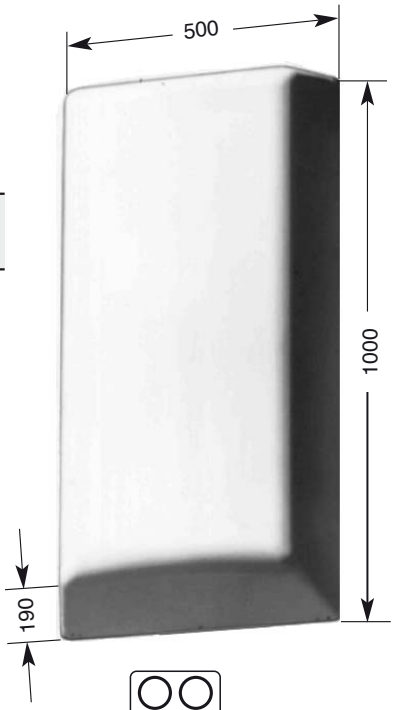
in H-plane
Vertical Pattern

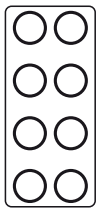
K 72 32 4. .
Directional Antenna
470 – 860 MHz

KATHREIN
Antennen · Electronic

- **Horizontally polarized broadband directional antenna made of aluminum and protected by a fiberglass cover.**

Type No. / Order No.	**white** / **orange**				
		772 549 / **772 550**	**750 10012** / **750 10013**	**773 000** / **772 999**	**773 333** / **773 332**
Input (from below)		7-16 female	7/8″ EIA flange	13-30 female	1 5/8″ EIA flange
Frequency range		470 – 860 MHz			
VSWR		s < 1.1			
Gain (ref. λ/2 dipole)		11 dB at mid-band			
Impedance		50 Ω			
Polarization		Horizontal			
Max. power		1 kW	1.5 kW	2 kW	3 kW
Weight		9.5 kg		10 kg	
Wind load (at 160 km/h)		Frontal: 565 N Rearside: 815 N Lateral: 250 N			
Max. wind velocity		225 km/h			
Packing size		1062 x 562 x 294 mm			
Height/width/depth		1000 x 500 x 190 mm			





Horizontal polarization

Material: Reflector screen and dipoles: Weather-resistant aluminum.
Protective cover: Fiberglass.
Attachment plate: Hot-dip galvanized steel.

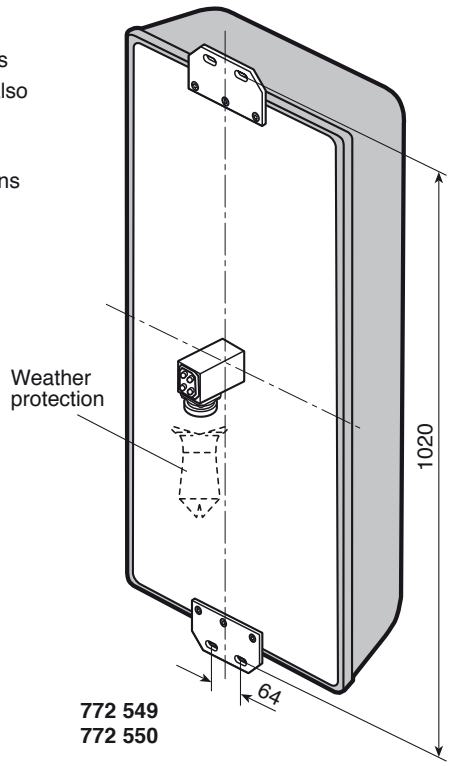
Attachment: Using M 8 x 35 screws (supplied) to suitable attachment construction.
Mounting dimensions upon request.

Grounding: Via mounting parts.

Ice protection: The dipoles remain fully functioning even in icy conditions as the fiberglass cover protects the whole antenna and also the antenna is of a very robust design.

Combinations: The antenna is particularly suitable for use in combinations in order to achieve various radiation patterns.

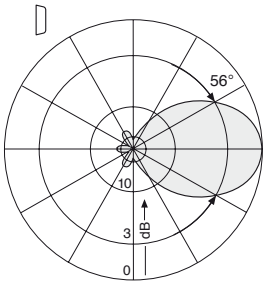
Scope of supply: The 7-16 female connector is supplied with a weather protection unit.



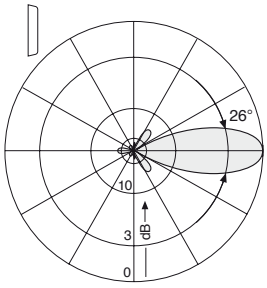
772 549
772 550

All dimensions in mm

Radiation Patterns (at mid-band)



in E-plane
Horizontal Pattern



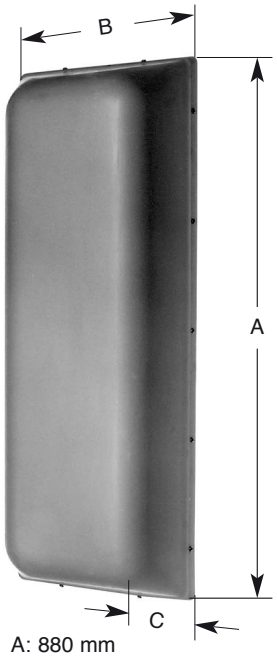
in H-plane
Vertical Pattern

K 72 31 5.
Directional Antenna
675 – 860 MHz

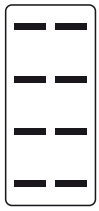
KATHREIN
Antennen · Electronic

- Horizontally polarized broadband directional antenna made of aluminum and protected by a fiberglass cover.

Type No. Order No.	**K 72 31 57** 602 204	**776 015**
Input	7-16 female	13-30 female
Frequency range	646 – 860 MHz	646 – 860 MHz
VSWR	< 1.1	
Gain (ref. λ/2 dipole)	10 dB at mid-band	
Impedance	50 Ω	
Polarization	Horizontal	
Max. power	1 kW	2 kW
Weight	8 kg	
Wind load (at 160 km/h)	Frontal: 315 N Rearside: 500 N Lateral: 160 N	
Max. wind velocity	225 km/h	
Packing size	970 x 410 x 240 mm	



A: 880 mm
B: 315 mm
C: 150 mm



Horizontal polarization

Material: Reflector screen and dipoles: Weather-resistant aluminum. Radome: Fiberglass, colour: White, upon request orange.
Fittings: Hot-dip galvanized steel.

Attachment: (please order separately) E.g. by using clamps K 61 14 0… to tubular masts of 40 – 521 mm diameter.
Further attachment parts and mounting dimensions upon request.

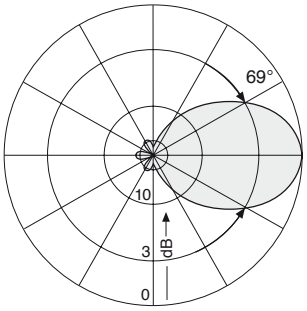
Ice protection: Even under severe icy conditions the antenna is still functional due to its heavy-duty construction and the fiberglass covers for the feeding points.

Grounding: Via mounting parts.

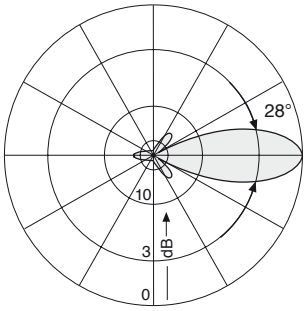
Combinations: The antenna is particularly suitable for use in combinations in order to achieve various radiation patterns.

Scope of delivery: Directional antenna with one weather protection unit each for straight connectors and elbow connectors.

Radiation Patterns (at mid-band)



Horizontal Radiation Pattern



Vertical Radiation Pattern

K 72 23 4.
Directional Antenna
470 – 860 MHz

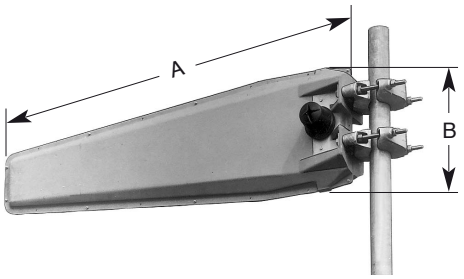
KATHREIN
Antennen · Electronic

- Logarithmic-periodic broadband directional antenna in fiberglas radome.
- High side-lobe suppression.

Type No. Order No.	**761 327**	**K 72 23 47** 601 584	**K 72 23 41** 601 695
Input	7-16 female	7-16 female	N female
Frequency range	470 – 860 MHz		
VSWR	< 1.25		
Gain (ref. to λ/2 dipole)	9 dB at mid-band		
Impedance	50 Ω		
Side-lobe suppression	> 23 dB at 470 – 500 MHz > 25 dB at 500 – 860 MHz		
Polarization	Either horizontal or vertical by repositioning two clamps		
Max. power	100 W	30 W	30 W
Weight	9 kg		
Wind load (at 160 km/h)	For horizontal pol.: frontal/lateral: 63 / 102 N For vertical pol.: frontal/lateral: 63 / 500 N		
Max. wind velocity	For horizontal pol.: 225 km/h For vertical pol.: 180 km/h		
Packing size	1172 x 372 x 224 mm		

For horizontal polarization

A: 1153 mm
B: 353 mm
C: 180 mm



For vertical polarization

Material: Radiator: Weather-resistant aluminum.
Radome: Fiberglass, colour: Grey.
Mounting kit: Aluminum.
All screws and nuts: Stainless steel.

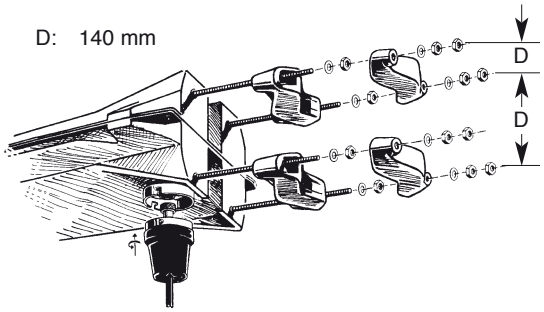
Mounting: To tubular masts of 48 – 115 mm diameter using supplied clamps.

Ice protection: Since radiating system is fully protected by the radome and due to its very sturdy construction, the antenna remains fully operational even under heavy icy conditions.

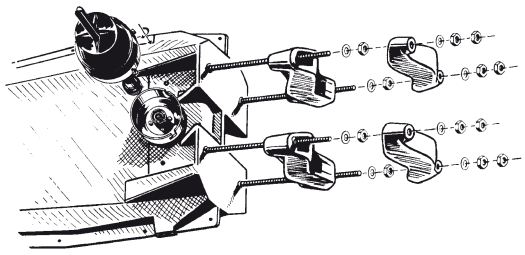
Grounding: Via mounting parts.

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

D: 140 mm

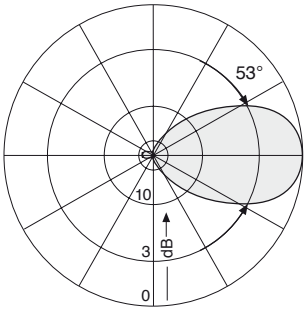


For horizontal polarization

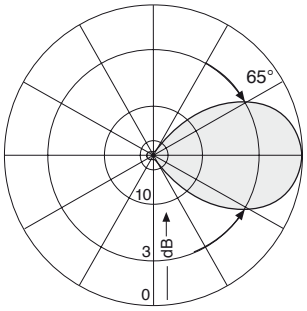


For vertical polarization

Radiation Patterns (at mid-band)



In E-Plane

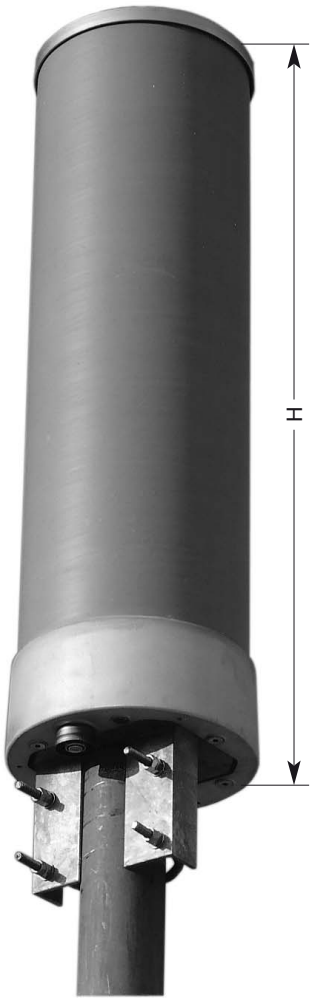


In H-Plane

K 72 20 4. .
Omnidirectional Antenna
470 – 860 MHz

KATHREIN
Antennen · Electronic

- Broadband omnidirectional antenna.



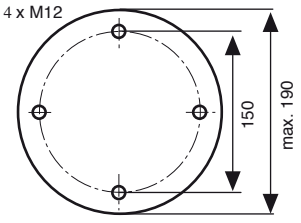
Type No. / Order No.	**767 006**	**770 881**
Number of bays	1	2
Input	7-16 female	7/8″ EIA
Frequency range	470 – 860 MHz	
VSWR	< 1.1	
Gain	5 dB at mid-band	8 dB at mid-band
Vertical 3 dB beam width	22°	11°
Impedance	50 Ω	
Polarization	Horizontal	
Max. power	1 kW (at 40 °C ambient temperature)	2 kW
Weight	20 kg	40 kg
Wind load (at 160 km/h)	285 N	570 N
Max. wind velocity	225 km/h	
Height H	1.15 m	2.3 m

Material: Omnidirectional antenna in protective fiberglass radome with a diameter of 300 mm. Flange: Aluminum.

Attachment: To tubular masts with a diameter of 100 – 160 mm by using the attachment accessories 768 853 (see photo) or on a flange (see draft).

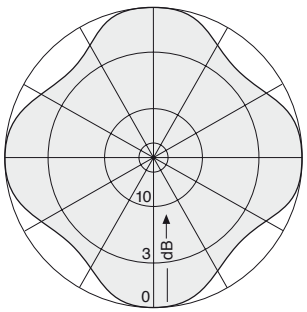
Grounding: Via mounting parts.

Upper side

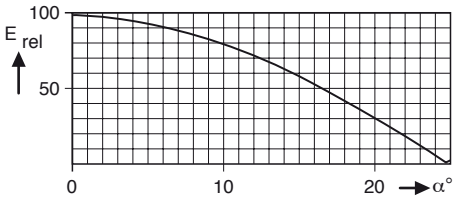


Base flange

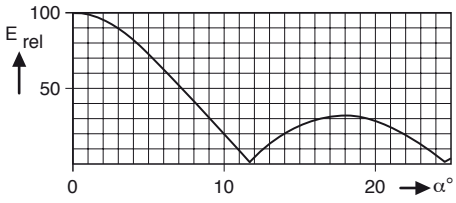
Radiation Patterns (at mid-band)



Horizontal Radiation Pattern



Vertical Radiation Pattern
1 bay (767 006)



Vertical Radiation Pattern
2 bays (770 881)

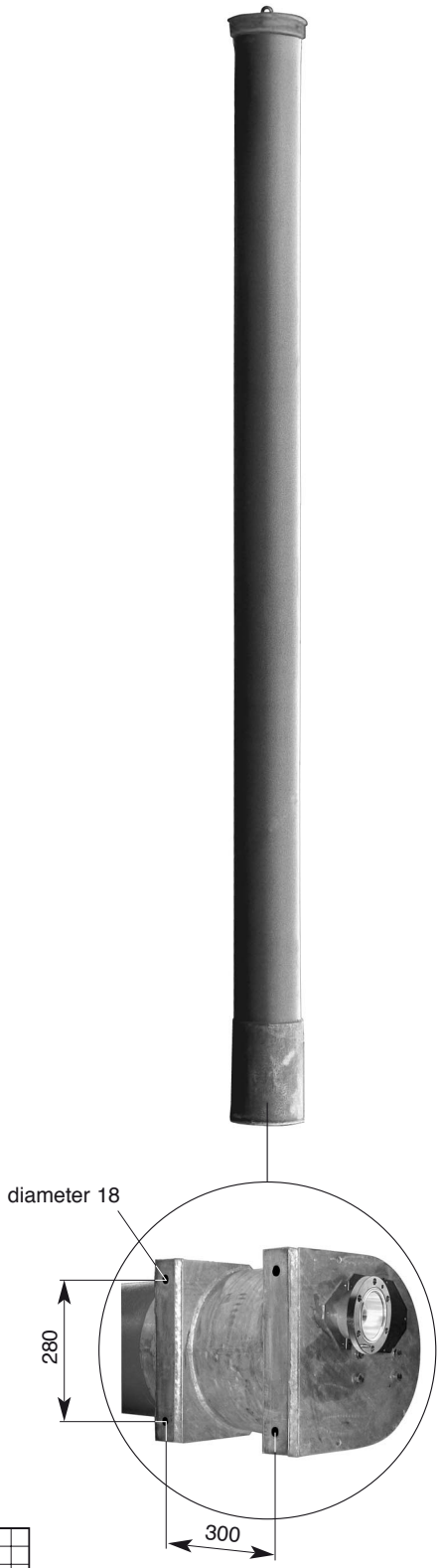
K 72 20 4. .
Omnidirectional Antenna
470 – 860 MHz

KATHREIN
Antennen · Electronic

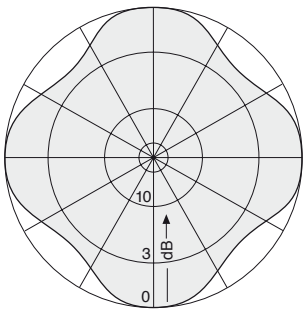
● **Broadband omnidirectional antenna**

Type No. / Order No.	**771 304**	**775 861**
Number of bays	4	4
Input	1 5/8″ EIA flange	1 5/8″ EIA flange
Input feed by	Coupler	Splitter
Frequency range	470 – 860 MHz	
VSWR	1.1 in the whole frequency range < 1.05 in the operating channel (optimization by tuning)	
Gain (ref. to λ/dipole)	11 dB at mid-band	
Vertical 3 dB beamwidth	5.5°	
Impedance	50 Ω	
Polarization	Horizontal	
Max. power	4 kW (average) (at 40 °C ambient temperature)	
Weight	170 kg	
Windload (at 160 km/h)	1.45 kN	
Max. wind velocity	225 km/h	
Height	5.1 m	
Packing size	5400 x 500 x 600 mm	

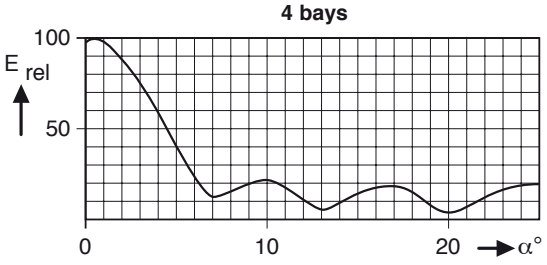
Material:	Omnidirectional antenna in protective fiberglass radome with a diameter of 300 mm.
Mounting:	On top of existing structure by means of an adapter. Mounting dimensions upon request.
Grounding:	Continuous earth connection between antenna tip and base.
Special features: (only 775 861)	Antenna is equipped with a special power splitter including tuning section to allow optimization of VSWR < 1.05 within operating channel.



Radiation Patterns (at mid-band)



Horizontal Radiation Pattern



Vertical Radiation Pattern

K 73 20 4. .
Omnidirectional Antenna
470 – 702 MHz

KATHREIN
Antennen · Electronic

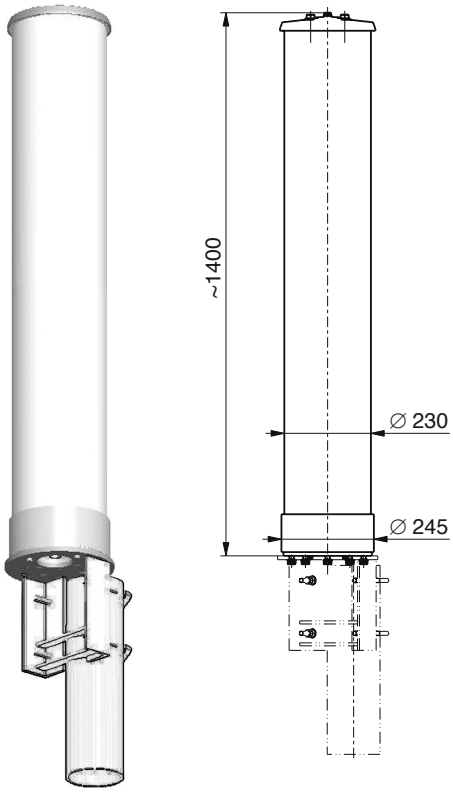
- Broadband omnidirectional antenna

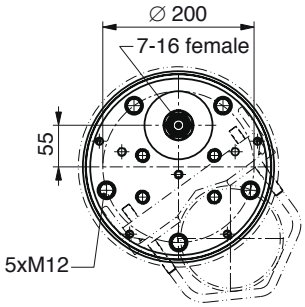
Type No. / Order No.	**750 10060**
Input	7-16 female
Frequency range	470 – 702 MHz
VSWR	< 1.3 (better VSWR values upon request)
Gain (ref. λ/2 dipole)	3.0 – 4.5 dB
Vertical 3 dB beam width	20° – 30°
Impedance	50 Ω
Polarization	Vertical
Max. power	750 W (at 40 °C ambient temperature)
Weight	16 kg
Wind load (at 160 km/h)	225 N
Max. wind velocity	225 km/h
Height	1400 mm

Material: Omnidirectional antenna in protective fiberglass radome with a diameter of 230 mm. Flange: Hot-dip galvanized steel.

Attachment: Onto a fitting counterflange or to tubular masts by using the steel adapter 753 10237 (weight 9 kg, suitable for tube diameters 100 – 160 mm).

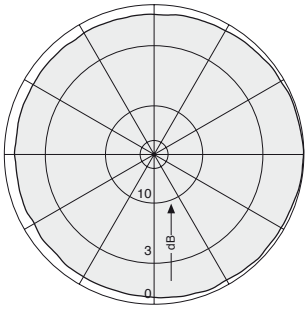
Grounding: Via mounting parts.



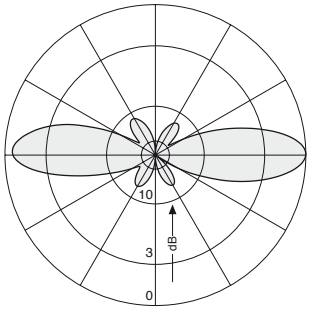


Bottom view with attachment accessories

Radiation Patterns (at mid-band)



Horizontal Radiation Pattern



Vertical Radiation Pattern

K 73 20 4. .
Omnidirectional Antenna
470 – 702 MHz

KATHREIN
Antennen · Electronic

- Broadband omnidirectional antenna

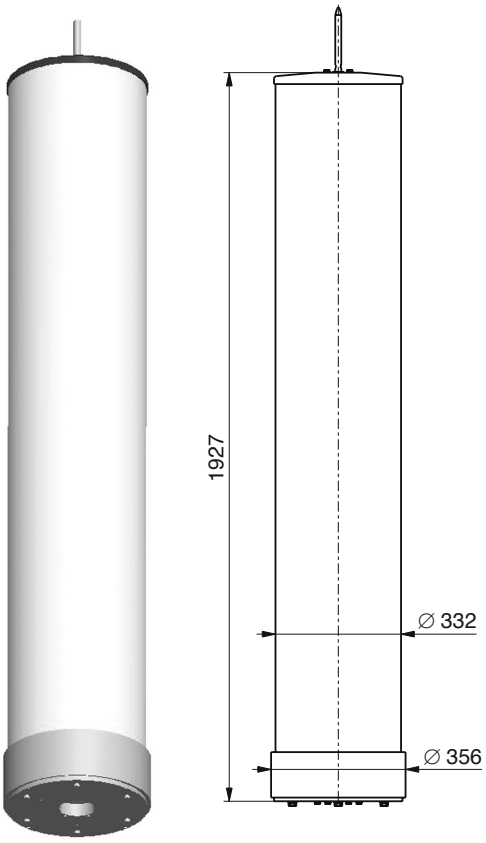
Type No. / Order No.	**750 10062**
Input	7-16 female
Frequency range	470 – 702 MHz
VSWR	< 1.3
Gain (ref. λ/2 dipole)	5.5 – 7 dB
Vertical 3 dB beam width	11° – 22°
Impedance	50 Ω
Polarization	Vertical
Max. power	1 kW (at 40 °C ambient temperature)
Weight	40 kg
Wind load (at 160 km/h)	490 N
Max. wind velocity	225 km/h
Height	1927 mm

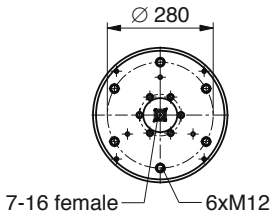
Material: Omnidirectional antenna in protective fiberglass radome with a diameter of 332 mm. Flange: Hot-dip galvanized steel.

Attachment: Onto a fitting counterflange or to tubular masts by using the steel adapter 753 10232 (weight 13.5 kg, suitable for tube diameters 100 – 160 mm).

Lightning protection: Lightning rod

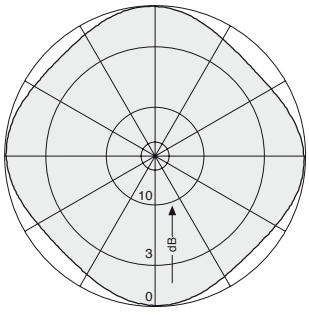
Grounding: Via mounting parts.



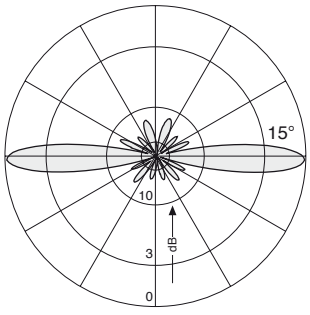


Bottom view

Radiation Patterns (at mid-band)



Horizontal Radiation Pattern



Vertical Radiation Pattern
1 ° electrical downtilt

K 73 20 4. .
Omnidirectional Antenna
470 – 750 MHz

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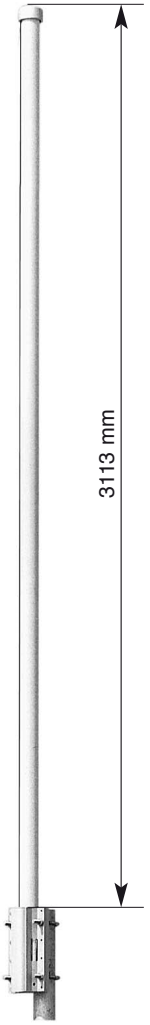
- Center fed collinear antenna

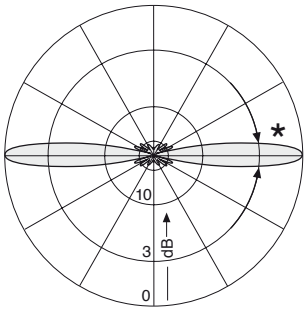


Vertical Polarized Omni Antenna for Ch 21 – Ch 55

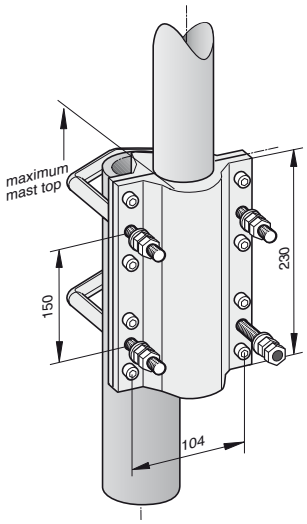
Type No. / Order No.	**Frequency range**	**Channel**	**Gain** (ref. λ/2 dipole)	**Half-power beam width**
750 10112	470 – 502 MHz	Ch 21 – Ch 24	6.5 dB	13°
750 10113	502 – 534 MHz	Ch 25 – Ch 28	7 dB	12°
750 10114	534 – 574 MHz	Ch 29 – Ch 33	7.5 dB	11°
750 10115	574 – 614 MHz	Ch 34 – Ch 38	7.5 dB	10°
750 10116	614 – 662 MHz	Ch 39 – Ch 44	8 dB	9.5°
750 10117	654 – 702 MHz	Ch 44 – Ch 49	8 dB	9°
750 10118	694 – 750 MHz	Ch 49 – Ch 55	8.5 dB	8.5°

Input	7-16 female connector
VSWR	1.4
Impedance	50 Ω
Polarization	Vertical
Max. power	400 W (at 50 °C ambient temperature)
Weight	8.0 kg
Radome diameter	51 mm
Wind load (at 150 km/h)	220 N
Max. wind velocity	180 km/h
Packing size	3379 x 206 x 1522 mm
Length	3113 mm

Material:	Radiator: Copper and brass. Radome: Fiberglass, colour: Grey Antenna base: Aluminum. Mounting kit, screws and nuts: Stainless steel.
Mounting:	The antenna can be attached laterally at the tip of a tubular mast of 50 – 94 mm diameter (connecting cable runs outside the mast).
Grounding:	Earthing cross-section of 22 mm² copper between antenna tip and base.



Vertical Pattern
Half-power beam width:
* see table above



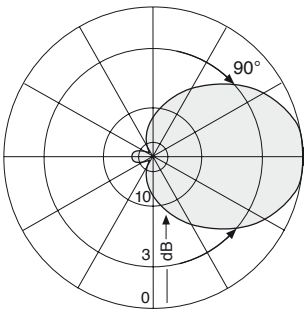
K 73 33 4. .
Directional Indoor Antenna
470 – 750 MHz

KATHREIN
Antennen · Electronic

Vertical Polarized Indoor Antenna for DVB-H

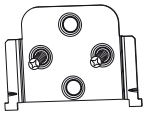
Type No. / Order No.	**750 10120**	**750 10122**	**750 10124**	**750 10125**
Frequency range	470 – 534 MHz Ch 21 – Ch 28	534 – 614 MHz Ch 29 – Ch 38	614 – 702 MHz Ch 39 – Ch 49	702 – 750 MHz Ch 50 – Ch 55
Input	N female connector			
VSWR	< 2.0			
Gain (ref. λ/2 dipole)	Approx. 5 dB			
Half-power beam width	Horizontal: Approx. 90°			
Impedance	50 Ω			
Polarization	Vertical			
Max. power	50 W (at 50 °C ambient temperature)			
Protection class	IP 30			
Weight	1390 g			
Packing size	315 x 252 x 62 mm			
Height/width/depth	302 x 243 x 50 mm			

Material:	Reflector: Brass. Radome: High impact polystyrol, colour: White. Additional painting is possible. Mounting plates: Stainless steel.
Mounting:	Two holes of 6 mm diameter in the mounting plate. Screws are not supplied
Grounding:	All metal parts inclusive the inner conductor are DC grounded.

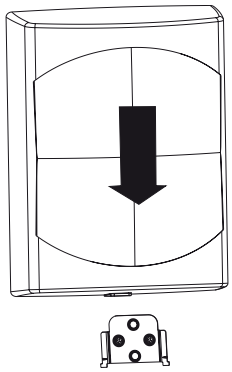


Horizontal Pattern

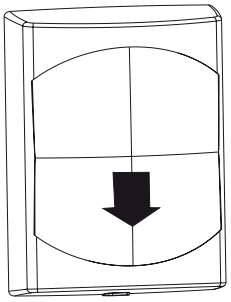
Mounting:



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



Align the antenna over the attachment plate.



Pull the antenna down to the stop.

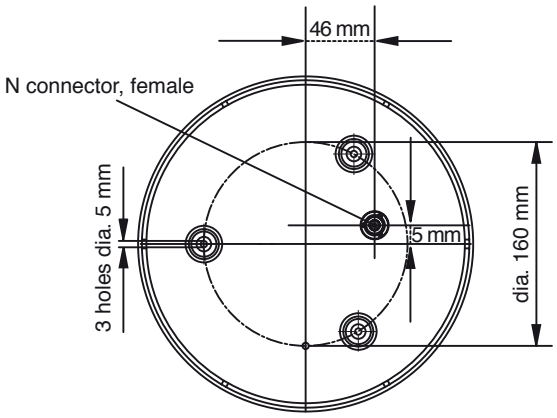
K 73 20 4. .
Indoor Omnidirectional Antenna
470 – 750 MHz

KATHREIN
Antennen · Electronic

Vertical Polarized Indoor Antenna for DVB-H

Type No. / Order No.	**750 10130**	**750 10131**	**750 10132**
Frequency range	470 – 574 MHz Ch 21 – Ch 33	526 – 670 MHz Ch 28 – Ch 45	598 – 750 MHz Ch 37 – Ch 55
Input	N female connector		
VSWR	< 2.0		
Gain (ref. λ/2-dipole)	Approx. 0 dB		
Impedance	50 Ω		
Polarization	Vertical		
Max. power	50 W (at 50 °C ambient temperature)		
Protection class	IP 30		
Weight	450 g		
Packing size	267 x 267 x 114 mm		
Diameter	258 mm		
Height	77 mm (without connector)		

Material:	Reflector: Aluminum. Radome: High impact polystyrol, colour: White. Additional painting is possible.
Mounting:	Three holes in the base enable a mounting on the ceiling. Two types of screws are supplied. For the N connector a hole in the ceiling with a diameter of 35 mm is required.
Grounding:	All metal parts including the inner conductor are DC grounded.

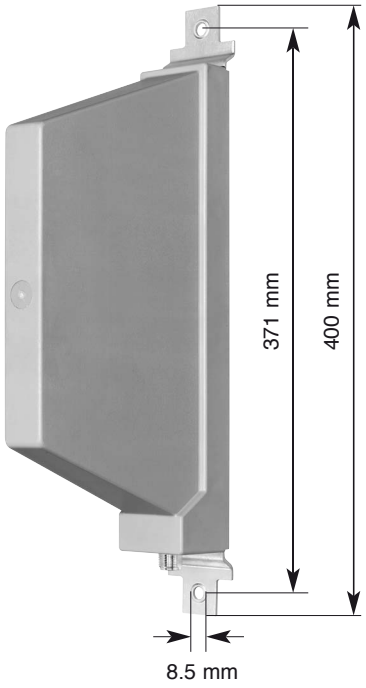


K 73 21 4. .
Bidirectional Antenna
470 – 702 MHz

KATHREIN
Antennen · Electronic

- Particulary suitable for DVB-H

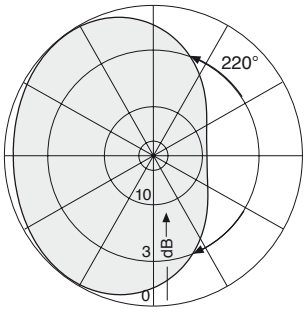
Type No. / Order No.	**750 10128**
Input	N female
Frequency range	470 – 860 MHz
VSWR	470 – 750 MHz: < 1.7
	750 – 860 MHz: < 2.2
Gain (ref. λ/2 dipole)	2 dB
Impedance	50 Ω
Polarization	Vertical
Max. power (total)	250 W (at 50 °C ambient temperature)
Protection class	IP 33
Weight	0.8 kg
Wind load	Frontal: 25 N (at 150 km/h)
	Lateral: 65 N (at 150 km/h)
	Rearside: 35 N (at 150 km/h)
Max. wind velocity	200 km/h
Packing size	422 x 212 x 95 mm
Height/width/depth	310 / 55 / 190 mm



Material:	Radiator: Tin plated brass. Reflector: Weather-proof aluminum. Radome: High impact plastic, colour: Grey. All screws and nuts: Stainless steel.
Mounting:	Wall mounting: No additional mounting kit needed. For pipe mast mounting use clamps listed below (order separately).
Ice protection:	The radiating system is protected by the radome. Due to its very sturdy construction, the antenna remains operational even under icy conditions.
Grounding:	All metal parts of the antenna as well as the inner conductor are DC grounded.

Accessories (order separately)

Type No.	Description	Remarks	Weight approx.	Units per antenna
734 360	2 clamps	Mast: 34 – 60 mm diameter	60 g	1
734 361	2 clamps	Mast: 60 – 80 mm diameter	70 g	1
734 362	2 clamps	Mast: 80 – 100 mm diameter	80 g	1
734 363	2 clamps	Mast: 100 – 120 mm diameter	90 g	1
734 364	2 clamps	Mast: 120 – 140 mm diameter	110 g	1
734 365	2 clamps	Mast: 45 – 125 mm diameter	80 g	1



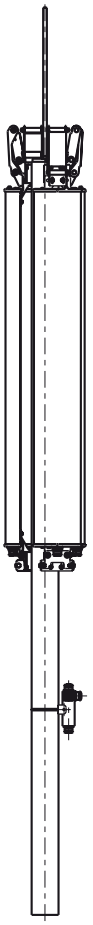
Typical Horizontal Pattern

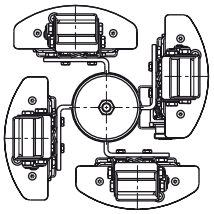
Antenna Systems
1452 – 1492 MHz

Transmitting Antenna with panels K 83 30 6. . 1452 – 1492 MHz

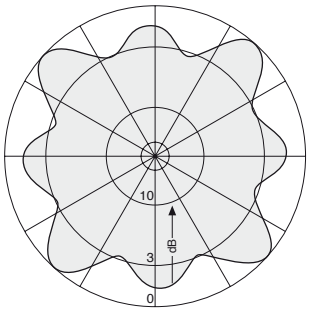
KATHREIN
Antennen · Electronic

Type No. / Order No.	**759 13851**
Input connector	7-16 female
Frequency range	1452 – 1492 MHz
VSWR	< 1.2
Gain (ref. λ/2 dipole)	10.5 dB
Impedance	50 Ω
Input power	800 W (RMS)
Polarization	Vertical
Half-power beam width	Vertical: 9°
Height	3.000 mm (incl. lightning rod)
Weight	125 kg
Windload (at 160 km/h)	0.8 kN
Max. wind velocity	200 km/h





Material:	Reflector screen and radiators: Copper. Radomes: Fiberglass, colour: Grey. Panel pipe: Hot-dip galvanized steel. All screws and nuts: Stainless steel.
Mounting:	Panel pipe mounted with suitable clamps or additional flange on existing mast structures. A version supplied with fixing flange is available upon request.
Grounding:	The metal parts of the antenna are DC grounded. Also the inner conductors of the antenna panels are DC grounded.
Packing infomation:	Wooden crate: 2.700 x 800 x 900 mm Total weight: 400 kg



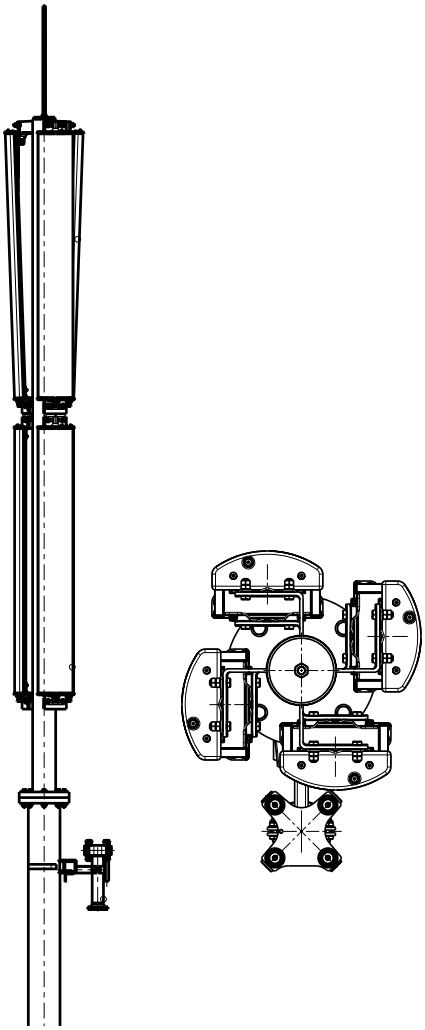
Horizontal Radiation Pattern

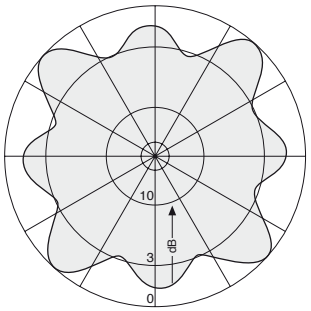
Transmitting Antenna with panels K 83 30 6. . 1452 – 1492 MHz

KATHREIN
Antennen · Electronic

Type No. / Order No.	**759 13232**
Input connector	1 5/8″ EIA-flange
Frequency range	1452 – 1492 MHz
VSWR	< 1.2
Gain (ref. λ/2 dipole)	13 dB
Impedance	50 Ω
Input power	max. 3 kW (RMS)
Polarization	Vertical
Half-power beam width	Vertical: 4.5°
Downtilt	on request
Height	4.900 mm (excl. lightning rod)
Weight	160 kg
Windload (at 160 km/h)	0.1 kN
Max. wind velocity	200 km/h

Material:	Reflector screen and radiators: Copper. Radomes: Fiberglass, colour: Grey. Panel pipe: Hot-dip galvanized steel. All screws and nuts: Stainless steel.
Mounting:	Panel pipe mounted with suitable clamps or additional flange on existing mast structures. A version supplied with fixing flange is available upon request.
Grounding:	The metal parts of the antenna are DC grounded. Also the inner conductors of the antenna panels are DC grounded.
Packing infomation:	2 wooden crate: approx. 2.700 x 800 x 900 mm Total weight: 180 kg, each



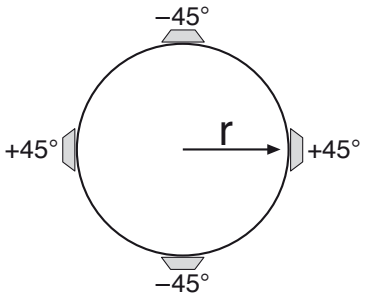


Horizontal Radiation Pattern

Transmitting Antenna for large structures with panels K 83 30 6. .
1452 – 1492 MHz

KATHREIN
Antennen · Electronic

Type No. / Order No.	**759 14152**
Input connector	1 5/8″ EIA-flange
Frequency range	1452 – 1492 MHz
VSWR	< 1.2
Gain (ref. λ/2 dipole)	9.5 dB
Impedance	50 Ω
Input power	max. 2 kW (RMS)
Polarization	Mixed polarized (+45° and –45°)
Beam tilt	3° or on request
Distance of panels	10.000 mm
Height	1302 mm per unit
Weight	approx. 180 kg
Windload (at 160 km/h)	1.1 kN
Max. wind velocity	200 km/h

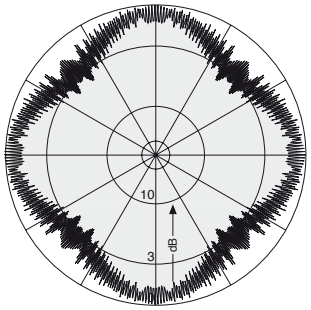


Material: Reflector screen and radiators: Copper.
Radomes: Fiberglass, colour: Grey.
Panel pipe: Hot-dip galvanized steel.
All screws and nuts: Stainless steel.

Mounting: Panel pipe mounted with suitable clamps or additional flange on existing mast structures.
A version supplied with fixing flange is available upon request.

Grounding: The metal parts of the antenna are DC grounded.
Also the inner conductors of the antenna panels are DC grounded.

Models: Models 750 10094 (+45°) and 750 10194 (–45°)
L-Band Antenna Panel with 70° half-power beamwidth, 3° electrical downtilt,
max. power 500 W, height 1302 mm



Horizontal Radiation Pattern

Antennas for DAB in L Band
1452 – 1492 MHz

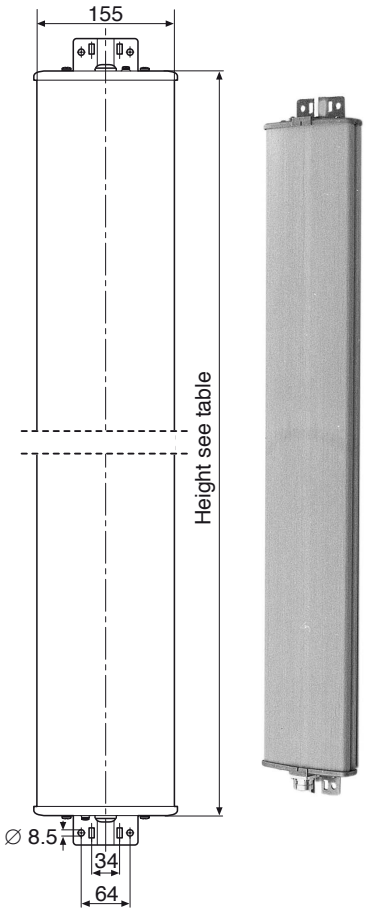
Model Types:
K 83 20 6. ., K 83 30 6. .

Type No.	Description	Frequency range	Gain	Polarization	Page
770 732	Dipole Panel 65°	1452 – 1492 MHz	8.0 dB	vertical	120
770 733	Dipole Panel 65°	1452 – 1492 MHz	10.5 dB	vertical	120
770 793	Dipole Panel 65°	1452 – 1492 MHz	13.5 dB	vertical	120
770 794	Dipole Panel 65°	1452 – 1492 MHz	15.0 dB	vertical	120
770 795	Dipole Panel 65°	1452 – 1492 MHz	16.0 dB	vertical	120
770 652	Dipole Panel 90°	1452 – 1492 MHz	12.5 dB	vertical	121
770 947	Dipole Panel 90°	1452 – 1492 MHz	15.5 dB	vertical	122
770 948	Dipole Panel 160°	1452 – 1492 MHz	14.0 dB	vertical	123
770 653	Dipole Panel 160°	1452 – 1492 MHz	11.0 dB	vertical	124
772 310	Dipole Panel 180°	1452 – 1492 MHz	13.5 dB	vertical	125
771 917	Dipole Panel 180°	1452 – 1492 MHz	10.5 dB	vertical	126
750 10190	Dipole Panel 70°	1452 – 1492 MHz	14.0 dB	+45°	127
750 10191	Dipole Panel 70°	1452 – 1492 MHz	14.0 dB	–45°	127
750 10094	Dipole Panel 70°	1452 – 1492 MHz	14.0 dB	+45°	128
750 10194	Dipole Panel 70°	1452 – 1492 MHz	14.0 dB	–45°	128
770 721	Omnidirectional Antenna	1452 – 1492 MHz	7.0 dB	vertical	129
770 722	Omnidirectional Antenna	1452 – 1492 MHz	10.0 dB	vertical	129
771 870	Omnidirectional Antenna	1452 – 1492 MHz	11.5 dB	vertical	129
771 038	Omnidirectional Antenna	1452 – 1492 MHz	10.0 dB	vertical	130

K 83 30 6. .
Panel for DAB in L Band
65° Half-power Beam Width

KATHREIN
Antennen · Electronic

Type No. / Order No.	**770 732**	**770 733**	**770 793**	**770 794**	**770 795**
Connector position	Bottom or top				
Input	7-16 female connector				
Frequency range	1452 – 1492 MHz				
VSWR	< 1.3	< 1.25	< 1.25	< 1.25	< 1.25
Gain (ref. λ/2 dipole)	8 dB	10.5 dB	13.5 dB	15 dB	16 dB
Impedance	50 Ω				
Polarization	Vertical				
Half-power beam width					
Horizontal plane	65°				
Vertical plane	55°	27°	13°	9°	6.5°
Max. power	200 W (at 50 °C ambient temperature)				
Width	155 mm				
Depth	49 mm				
Height	210 mm	405 mm	795 mm	1185 mm	1575 mm
Weight	1.5 kg	2 kg	3 kg	4.5 kg	5.5 kg
Wind load (at 160 km/h)					
Frontal:	40 N	80 N	160 N	240 N	320 N
Lateral:	15 N	30 N	60 N	100 N	140 N
Rearside:	45 N	90 N	180 N	280 N	380 N
Max. wind velocity	200 km/h				

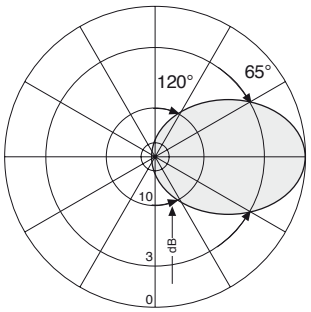


Material: Reflector screen and radiator: Copper.
Radome: Fiberglass, colour: Grey.
All screws and nuts: Stainless steel.

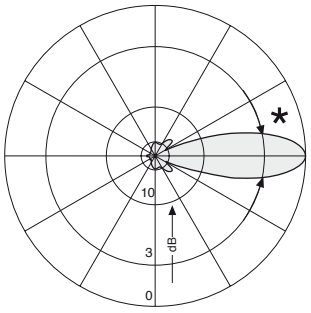
Mounting: Walls: Using two mounting plates already attached to the antenna.
Masts: Using two clamps suitable for the mast diameter (order separately).

Ice protection: Since the radiating system is protected by the radome and due to its very sturdy construction, the antenna remains operational even under icy conditions.

Grounding: The metal parts of the antenna, including the mounting kit, are DC grounded.
The inner conductor is also DC grounded.



Horizontal Pattern



Vertical
Half-power beam width:
* see table above

Accessories for Antennas
770 732, 770 733, 770 793, 770 794 (order separately)

Type No. Order No.	**Description**	**Remarks**	**Units per antenna**
734 360	2 clamps	34 – 60 mm diameter	1
734 361	2 clamps	60 – 80 mm diameter	1
734 362	2 clamps	80 – 100 mm diameter	1
734 363	2 clamps	100 – 120 mm diameter	1
734 364	2 clamps	120 – 140 mm diameter	1
734 365	2 clamps	45 – 125 mm diameter	1

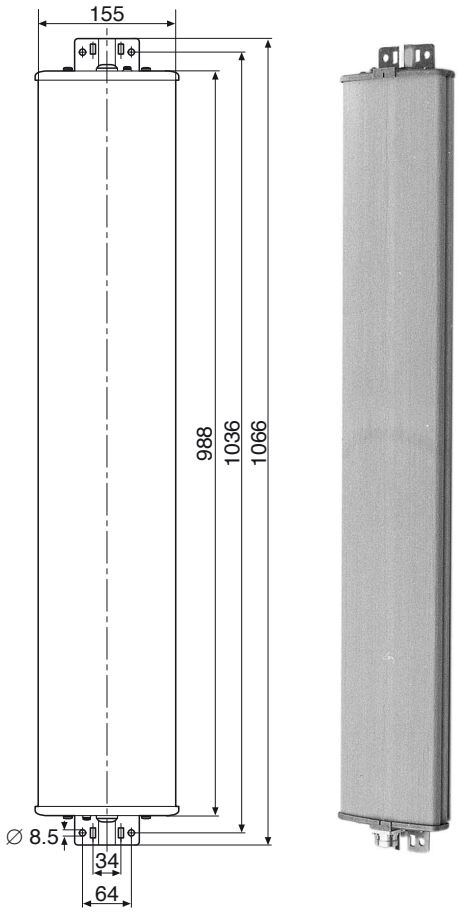
Accessories for Antenna 770 795 (order separately)

738 546	1 clamp	50 – 115 mm diameter	2
850 10002	1 clamp	110 – 220 mm diameter	2
850 10003	1 clamp	210 – 380 mm diameter	2

K 83 30 6. .
Panel for DAB in L Band
90° Half-power Beam Width

KATHREIN
Antennen · Electronic

Type No. / Order No.	**770 652**
Connector position	Bottom or top
Input	7-16 female connector
Frequency range	1452 – 1492 MHz
Gain (ref. λ/2 dipole)	12.5 dB
VSWR	< 1.25
Impedance	50 Ω
Polarization	Vertical
Half-power beam width	Horizontal: 90°/ Vertical: 12°
Max. power	500 W (at 50 °C ambient temperature)
Weight	3.7 kg
Windload (at 160 km/h)	Frontal: 200 N Lateral: 80 N Rearside: 230 N
Max. wind velocity	200 km/h
Packing size	1087 x 172 x 259 mm
Height/width/depth	988 / 155 / 49 mm

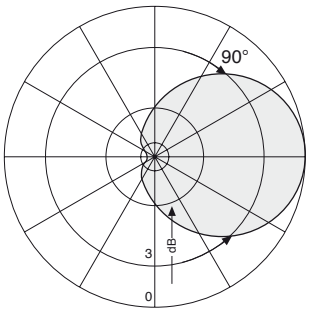


Material: Reflector screen and radiator: Copper.
Radome: Fiberglass, colour: Grey.
All screws and nuts: Stainless steel.

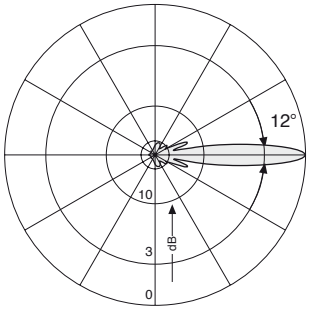
Mounting: Walls: Using two mounting plates already attached to the antenna.
Masts: Using two clamps suitable for the mast diameter (order separately).

Ice protection: Since the radiating system is protected by the radome and due to its very sturdy construction, the antenna remains operational even under icy conditions.

Grounding: The metal parts of the antenna, including the mounting kit, are DC grounded.
The inner conductor is also DC grounded.



Horizontal Pattern



Vertical Pattern

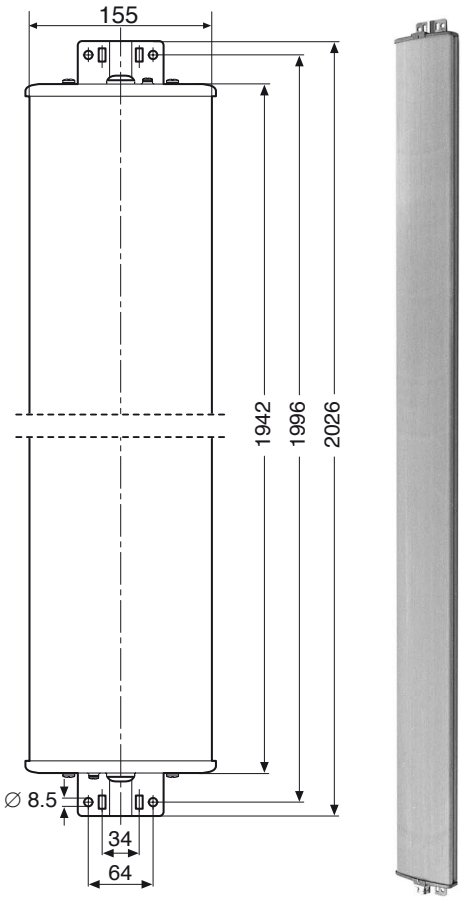
Accessories (order separately)

Type No. Order No.	**Description**	**Remarks**	**Units per antenna**
734 360	2 clamps	34 – 60 mm diameter	1
734 361	2 clamps	60 – 80 mm diameter	1
734 362	2 clamps	80 – 100 mm diameter	1
734 363	2 clamps	100 – 120 mm diameter	1
734 364	2 clamps	120 – 140 mm diameter	1
734 365	2 clamps	45 – 125 mm diameter	1

K 83 30 6. .
Panel for DAB in L Band
90° Half-power Beam Width

KATHREIN
Antennen · Electronic

Type No. / Order No.	**770 947**
Connector position	Bottom
Input	7-16 female connector
Frequency range	1452 – 1492 MHz
VSWR	< 1.25
Gain (ref. λ/2 dipole)	15.5 dB
Impedance	50 Ω
Polarization	Vertical
Half-power beam width	Horizontal: 90°/ Vertical: 5.5°
	1° electr. downtilt
Max. power	500 W (at 50 °C ambient temperature)
Weight	6.9 kg
Windload (at 160 km/h)	Frontal: 400 N
	Lateral: 180 N
	Rearside: 480 N
Max. wind velocity	200 km/h
Packing size	2044 x 172 x 72 mm
Height/width/depth	1942 / 155 / 49 mm

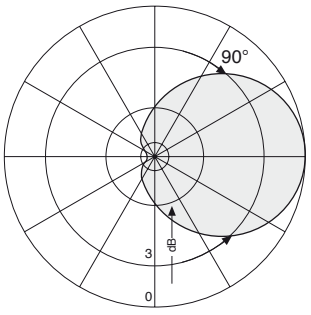


Material: Reflector screen and radiator: Copper.
Radome: Fiberglass, colour: Grey.
All screws and nuts: Stainless steel.

Mounting: Walls: Using two mounting plates already attached to the antenna.
Masts: Using two clamps suitable for the mast diameter (order separately).

Ice protection: Since the radiating system is protected by the radome and due to its very sturdy construction, the antenna remains operational even under icy conditions.

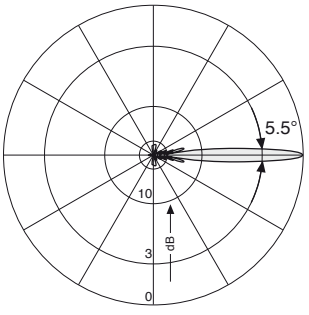
Grounding: The metal parts of the antenna, including the mounting kit, are DC grounded.
The inner conductor is also DC grounded.



Horizontal Pattern

Accessories (order separately)

Type No. Order No.	**Description**	**Remarks**	**Units per antenna**
738 546	1 clamp	50 – 115 mm diameter	2
850 10002	1 clamp	110 – 220 mm diameter	2
850 10003	1 clamp	210 – 380 mm diameter	2

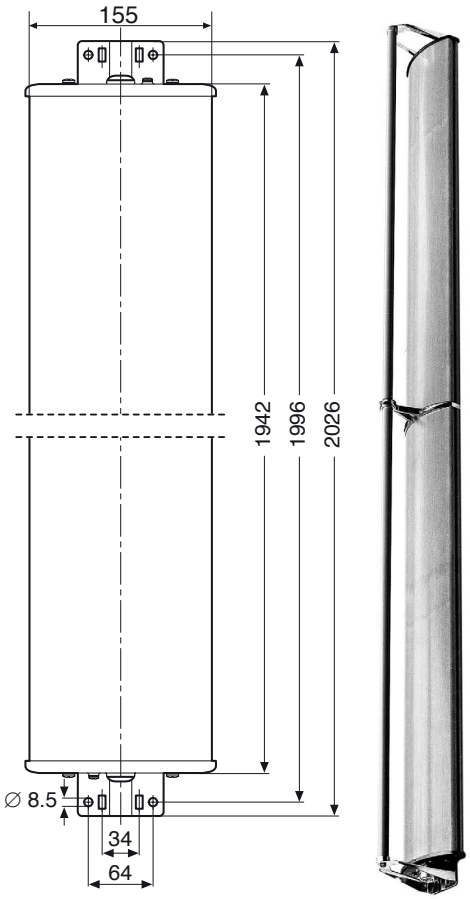


Vertical Pattern
1° electrical downtilt

K 83 30 6. .
Panel for DAB in L Band
160° Half-power Beam Width

KATHREIN
Antennen · Electronic

Type No. / Order No.	**770 948**
Connector position	Bottom
Input	7-16 female connector
Frequency range	1452 – 1492 MHz
Gain (ref. λ/2 dipole)	14 dB
VSWR	< 1.25
Impedance	50 Ω
Polarization	Vertical
Half-power beam width	Horizontal: 160° / Vertical: 5.5°
	1° electrical downtilt
Max. power	500 W (at 50 °C ambient temperature)
Weight	7.3 kg
Windload (at 160 km/h)	Frontal: 440 N
	Lateral: 230 N
	Rearside: 480 N
Max. wind velocity	200 km/h
Packing size	2047 x 172 x 259 mm
Height/width/depth	1942 / 155 / max. 168 mm

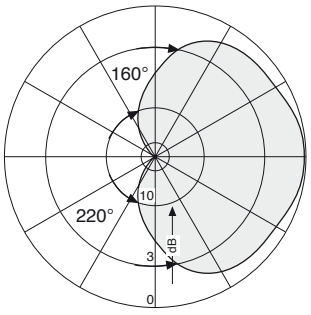


Material: Reflector screen and radiator: Copper.
Radome: Fiberglass, colour: Grey.
All screws and nuts: Stainless steel.

Mounting: Walls: Using two mounting plates already attached to the antenna.
Masts: Using two clamps suitable for the mast diameter (order separately).

Ice protection: Since the radiating system is protected by the radome and due to its very sturdy construction, the antenna remains operational even under icy conditions.

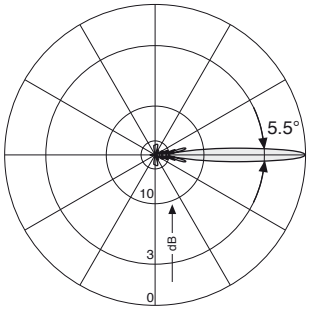
Grounding: The metal parts of the antenna, including the mounting kit, are DC grounded.
The inner conductor is also DC grounded.



Horizontal Pattern

Accessories (order separately)

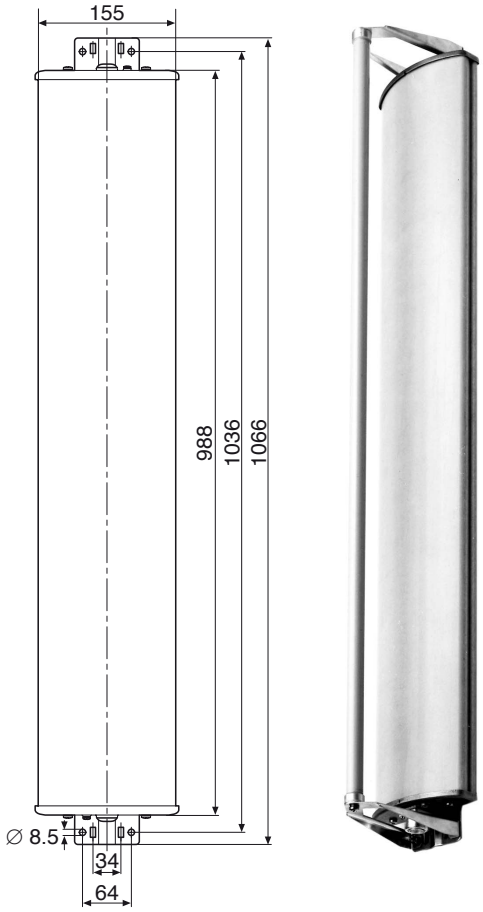
Type No. Order No.	**Description**	**Remarks**	**Units per antenna**
738 546	1 clamp	50 – 115 mm diameter	2
850 10002	1 clamp	110 – 220 mm diameter	2
850 10003	1 clamp	210 – 380 mm diameter	2



Vertical Pattern
1° electrical downtilt

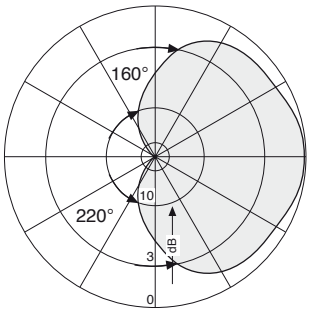
K 83 30 6. .
Panel for DAB in L Band
160° Half-power Beam Width

KATHREIN
Antennen · Electronic

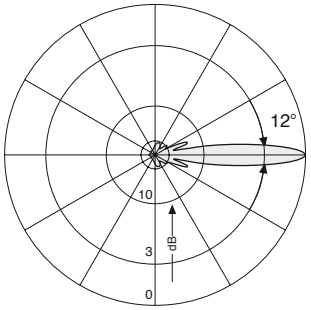


Type No.	770 653
Connector position	Bottom or top
Input	7-16 female connector
Frequency range	1452 – 1492 MHz
Gain (ref. λ/2 dipole)	11 dB
VSWR	< 1.25
Impedance	50 Ω
Polarization	Vertical
Half-power beam width	Horizontal: 160°/ Vertical: 12°
Max. power	500 W (at 50 °C ambient temperature)
Weight	4 kg
Windload (at 160 km/h)	Frontal: 220 N Lateral: 130 N Rearside: 280 N
Max. wind velocity	200 km/h
Packing size	1087 x 172 x 259 mm
Height/width/depth	988 / 155 / max. 168 mm

Material:	Reflector screen and radiator: Copper. Radome: Fiberglass, colour: Grey. All screws and nuts: Stainless steel.
Mounting:	Walls: Using two mounting plates already attached to the antenna. Masts: Using two clamps suitable for the mast diameter (order separately).
Ice protection:	Since the radiating system is protected by the radome and due to its very sturdy construction, the antenna remains operational even under icy conditions.
Grounding:	The metal parts of the antenna, including the mounting kit, are DC grounded. The inner conductor is also DC grounded.



Horizontal Pattern



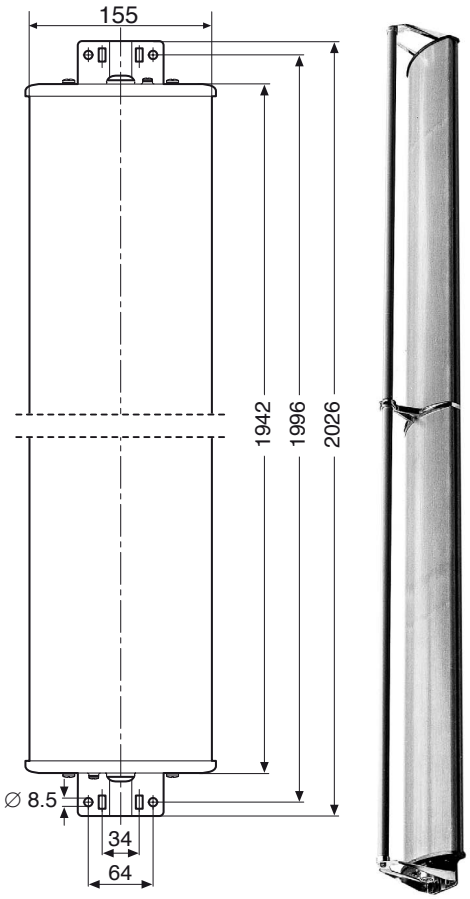
Vertical Pattern

Accessories (order separately)

Type No. Order No.	Description	Remarks	Units per antenna
734 360	2 clamps	34 – 60 mm diameter	1
734 361	2 clamps	60 – 80 mm diameter	1
734 362	2 clamps	80 – 100 mm diameter	1
734 363	2 clamps	100 – 120 mm diameter	1
734 364	2 clamps	120 – 140 mm diameter	1
734 365	2 clamps	45 – 125 mm diameter	1

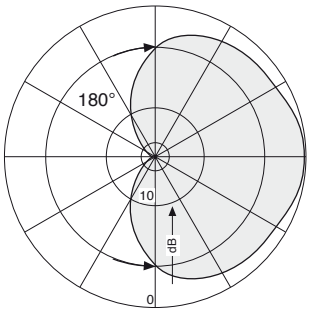
K 83 30 6. .
Panel for DAB in L Band
180° Half-power Beam Width

KATHREIN
Antennen · Electronic



Type No. / Order No.	**772 310**
Connector position	Bottom
Input	7-16 female connector
Frequency range	1452 – 1492 MHz
Gain (ref. λ/2 dipole)	13.5 dB
VSWR	< 1.25
Impedance	50 Ω
Polarization	Vertical
Half-power beam width	Horizontal: 180° / Vertical: 5.5°
	1° electrical downtilt
Max. power	500 W (at 50 °C ambient temperature)
Weight	7.3 kg
Windload (at 160 km/h)	Frontal: 440 N
	Lateral: 230 N
	Rearside: 480 N
Max. wind velocity	200 km/h
Packing size	2047 x 172 x 259 mm
Height/width/depth	1942 / 155 / max. 168 mm

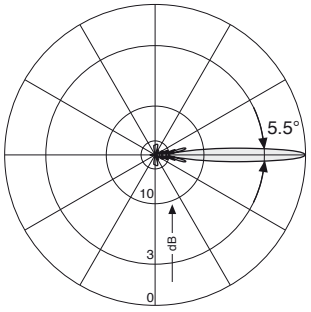
Material:	Reflector screen and radiator: Copper. Radome: Fiberglass, colour: Grey. All screws and nuts: Stainless steel.
Mounting:	Walls: Using two mounting plates already attached to the antenna. Masts: Using two clamps suitable for the mast diameter (order separately).
Ice protection:	Since the radiating system is protected by the radome and due to its very sturdy construction, the antenna remains operational even under icy conditions.
Grounding:	The metal parts of the antenna, including the mounting kit, are DC grounded. The inner conductor is also DC grounded.



Horizontal Pattern

Accessories (order separately)

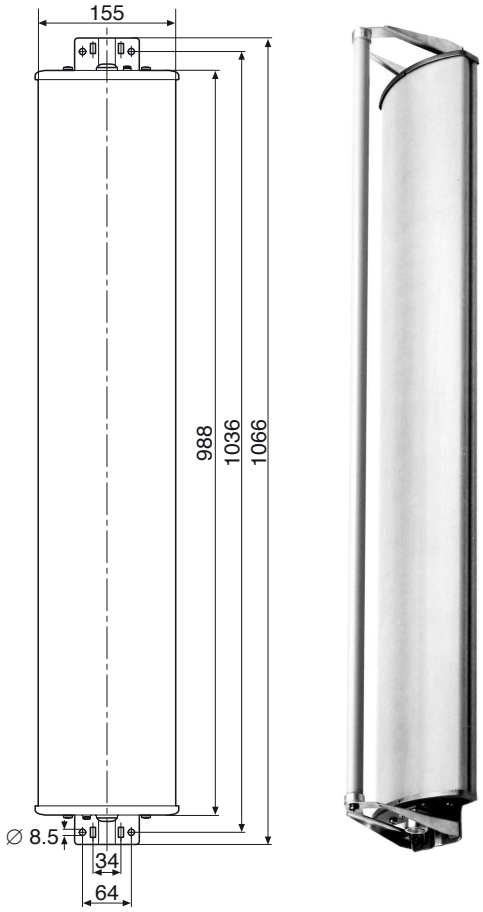
Type No. Order No.	**Description**	**Remarks**	**Units per antenna**
738 546	1 clamp	50 – 115 mm diameter	2
850 10002	1 clamp	110 – 220 mm diameter	2
850 10003	1 clamp	210 – 380 mm diameter	2



Vertical Pattern
1° electrical downtilt

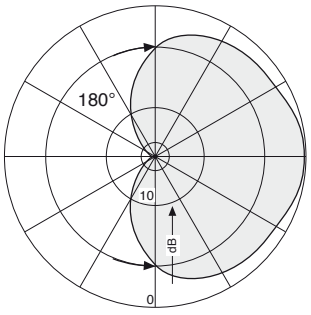
K 83 30 6. .
Panel for DAB in L Band
180° Half-power Beam Width

KATHREIN
Antennen · Electronic

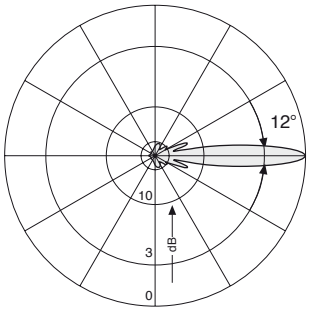


Type No. / Order No.	**771 917**
Connector position	Bottom or top
Input	7-16 female connector
Frequency range	1452 – 1492 MHz
Gain (ref. λ/2 dipole)	10.5 dB
VSWR	< 1.25
Impedance	50 Ω
Polarization	Vertical
Half-power beam width	Horizontal: 180°/ Vertical: 12°
Max. power	500 W (at 50 °C ambient temperature)
Weight	4 kg
Windload (at 160 km/h)	Frontal: 220 N Lateral: 130 N Rearside: 280 N
Max. wind velocity	200 km/h
Packing size	1087 x 172 x 259 mm
Height/width/depth	988 / 155 / max. 168 mm

Material:	Reflector screen and radiator: Copper. Radome: Fiberglass, colour: Grey. All screws and nuts: Stainless steel.
Mounting:	Walls: Using two mounting plates already attached to the antenna. Masts: Using two clamps suitable for the mast diameter (order separately).
Ice protection:	Since the radiating system is protected by the radome and due to its very sturdy construction, the antenna remains operational even under icy conditions.
Grounding:	The metal parts of the antenna, including the mounting kit, are DC grounded. The inner conductor is also DC grounded.



Horizontal Pattern



Vertical Pattern

Accessories (order separately)

Type No. Order No.	**Description**	**Remarks**	**Units per antenna**
734 360	2 clamps	34 – 60 mm diameter	1
734 361	2 clamps	60 – 80 mm diameter	1
734 362	2 clamps	80 – 100 mm diameter	1
734 363	2 clamps	100 – 120 mm diameter	1
734 364	2 clamps	120 – 140 mm diameter	1
734 365	2 clamps	45 – 125 mm diameter	1

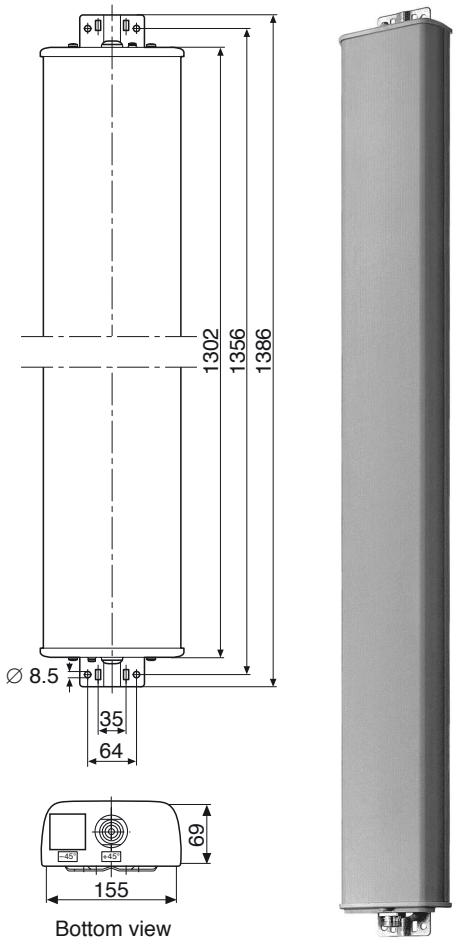
K 83 31 6.
Panel for DAB/DMB in L Band
70° Half-power Beam Width

KATHREIN
Antennen · Electronic

- **+45° or –45° Polarization**

Type No. / Order No.	**750 10190**	**750 10191**
Connector position	Bottom	
Input	7-16 female	
Frequency range	1452 – 1492 MHz	
VSWR	< 1.3	
Gain (ref. λ/2 dipole)	14 dB	
Impedance	50 Ω	
Polarization	+45° | –45°	
Half-power beam width	Horizontal: 70°/ Vertical: 8°	
Max. power	500 W (at 50 °C ambient temperature)	
Weight	6.5 kg	
Wind load	310 N (bei 150 km/h)	
Max. wind velocity	200 km/h	
Packing size	1404 x 172 x 92 mm	
Hight/width/depth	1302 / 155 / 69 mm	

750 10190



Bottom view

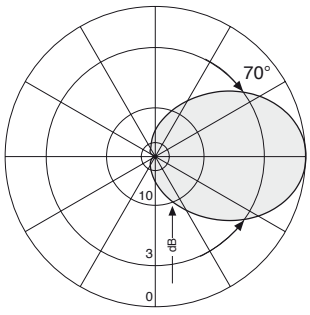
Material: Reflector screen: Tin-plated copper,
Radiator: Tin-plated zinc.
Radome: Fiberglas, colour: Grey.
All screws and nuts: Stainless steel.

Mounting: Walls: Using two mounting plates already attached to the antenna.
Masts: Using two clamps suitable for the mast diameter (order separately).

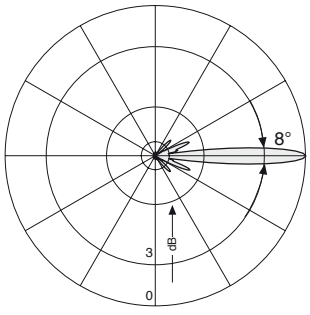
Ice protection: Since the radiating system is protected by the radome and due to its very sturdy construction, the antenna remains operational even under icy conditions.

Combinations: In combination with the other polarized antenna, both antennas are particularly suitable as a component in large distance multipanel configurations. No deep minima will show up in the overlapping zone between different dual polarized antennas.

Grounding: The metal parts of the antenna, including the mounting kit, are DC grounded.
The inner conductor is also DC grounded.



Horizontal Pattern



Vertical Pattern

Accessories (order separately)

Type No.	**Description**	**Remarks**	**Units per antenna**
734 360	2 clamps	34 – 60 mm diameter	1
734 361	2 clamps	60 – 80 mm diameter	1
734 362	2 clamps	80 – 100 mm diameter	1
734 363	2 clamps	100 – 120 mm diameter	1
734 364	2 clamps	120 – 140 mm diameter	1
734 365	2 clamps	45 – 125 mm diameter	1

K 83 31 6.
Panel for DAB/DMB in L Band
70° Half-power Beam Width

KATHREIN
Antennen · Electronic

- **+45° or –45° Polarization**
- **3° electrical downtilt**

Type No. / Order No.	**750 10094**	**750 10194**
Connector position	Bottom	
Input	7-16 female	
Frequency range	1452 – 1492 MHz	
VSWR	< 1.3	
Gain (ref. λ/2 dipole)	14 dB	
Impedance	50 Ω	
Polarization	+45° | –45°	
Half-power beam width	Horizontal: 70°/ Vertical: 8° 3° electrical downtilt	
Max. power	500 W (at 50 °C ambient temperature)	
Weight	6.5 kg	
Wind load	310 N (bei 150 km/h)	
Max. wind velocity	200 km/h	
Packing size	1404 x 172 x 92 mm	
Hight/width/depth	1302 / 155 / 69 mm	

Material: Reflector screen: Tin-plated copper,
Radiator: Tin-plated zinc.
Radome: Fiberglas, colour: Grey.
All screws and nuts: Stainless steel.

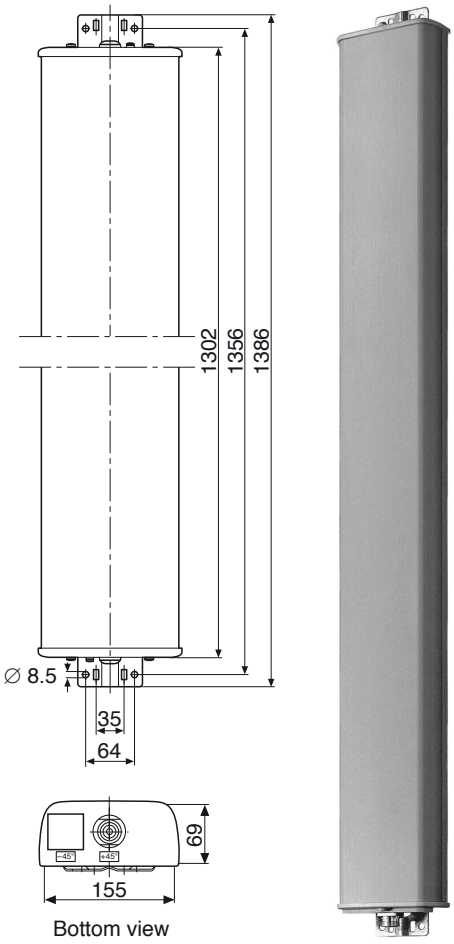
Mounting: Walls: Using two mounting plates already attached to the antenna.
Masts: Using two clamps suitable for the mast diameter (order separately).

Ice protection: Since the radiating system is protected by the radome and due to its very sturdy construction, the antenna remains operational even under icy conditions.

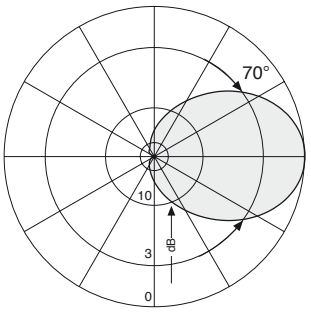
Combinations: In combination with the other polarized antenna, both antennas are particularly suitable as a component in large distance multipanel configurations. No deep minima will show up in the overlapping zone between different dual polarized antennas.

Grounding: The metal parts of the antenna, including the mounting kit, are DC grounded.
The inner conductor is also DC grounded.

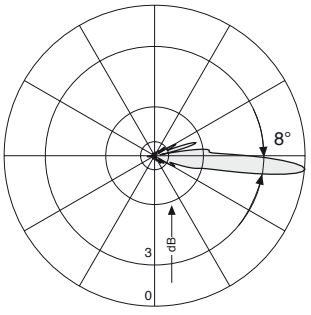
750 10094



Bottom view



Horizontal Pattern



Vertical Pattern
3° electrical downtilt

Accessories (order separately)

Type No.	Description	Remarks	Units per antenna
734 360	2 clamps	34 – 60 mm diameter	1
734 361	2 clamps	60 – 80 mm diameter	1
734 362	2 clamps	80 – 100 mm diameter	1
734 363	2 clamps	100 – 120 mm diameter	1
734 364	2 clamps	120 – 140 mm diameter	1
734 365	2 clamps	45 – 125 mm diameter	1

K 83 20 6. .
Omnidirectional Antenna for DAB in L Band 1452 – 1492 MHz

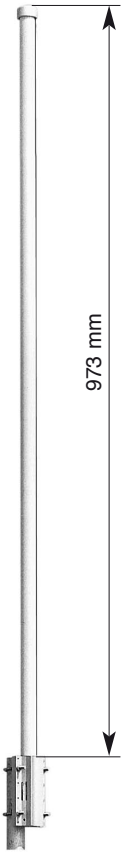
KATHREIN
Antennen · Electronic

- Center fed collinear antennas with 7 dB, 10 dB and 11.5 dB gain.

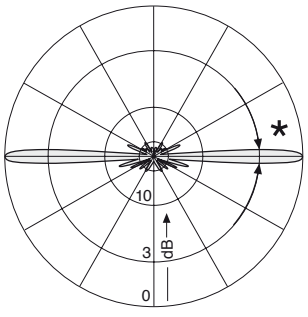
Omni 1470 360° 7dB/10dB/11.5dB

Type No. / Order No.	**770 721**	**770 722**	**771 870**
Input		7-16 female connector	
Frequency range		1452 – 1492 MHz	
VSWR		< 1.25	
Gain (ref. λ/2 dipole)	7 dB	10 dB	11.5 dB
Impedance		50 Ω	
Polarization		Vertical	
Vertical half-power beam width	13°	6.5°	4°
Max. power		200 W (at 50 °C ambient temperature)	
Weight	4.5 kg	6.0 kg	8.0 kg
Radome diameter		51 mm	
Wind load (at 160 km/h)	114 N	171 N	239 N
Max. wind velocity		200 km/h	
Packing size	188 x 102 x 1246 mm	188 x 102 x 2216 mm	148 x 112 x 3316 mm
Length	973 mm	1944 mm	2994 mm

Material:	Radiator: Copper and brass. Radome: Fiberglass, colour: Grey Antenna base: Aluminum. Mounting kit, screws and nuts: Stainless steel.
Mounting:	The antenna can be attached laterally at the tip of a tubular mast of 50 – 94 mm diameter (connecting cable runs outside the mast).
Grounding:	Earthing cross-section of 22 mm² copper between antenna tip and base.



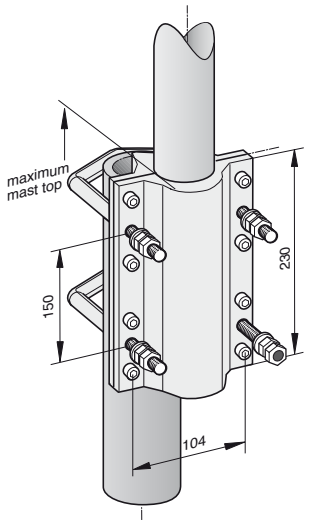
770 721



Vertical Pattern at mid-band.

Half-power beam width:
* see table above.

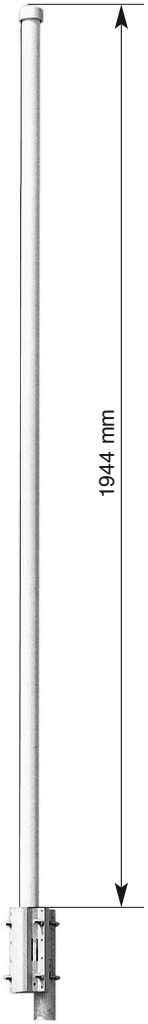
1° electrical downtilt



K 83 20 6. .
Omnidirectional Antenna for DAB in L Band
1452 – 1492 MHz

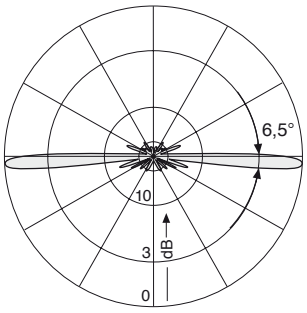
KATHREIN
Antennen · Electronic

- Center fed collinear antenna with 10 dB gain and 3° downtilt.

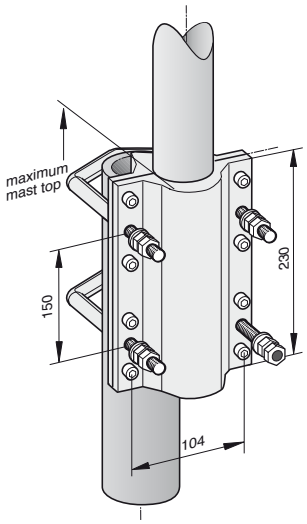


Type No. / Order No.	**771 038**
Input	7-16 female connector
Frequency range	1452 – 1492 MHz
VSWR	< 1.25
Gain (bez. λ/2 dipole)	10 dB
Impedance	50 Ω
Polarization	Vertical
Vertical half-power	6.5°
beam width	3° electr. downtilt
Max. power	200 W (at 50 °C ambient temperature)
Weight	6.0 kg
Radome diameter	51 mm
Wind load (at 160 km/h)	171 N
Max. wind velocity	200 km/h
Packing size	188 x 102 x 2216 mm
Length	1944 mm

Material:	Radiator: Copper and brass. Radome: Fiberglass, colour: Grey Antenna base: Aluminum. Mounting kit, screws and nuts: Stainless steel.
Mounting:	The antenna can be attached laterally at the tip of a tubular mast of 50 – 94 mm diameter (connecting cable runs outside the mast).
Grounding:	Earthing cross-section of 22 mm² copper between antenna tip and base.



Vertical Pattern at mid-band.
Half-power beam width 6.5°
3° electrical downtilt



MMDS (Wireless Cable)
2500 – 2700 MHz

KATHREIN
Antennen · Electronic

Wireless Cable (also known as MMDS) systems are used to distribute up to 31 channels of television programming throughout a city or urban area.

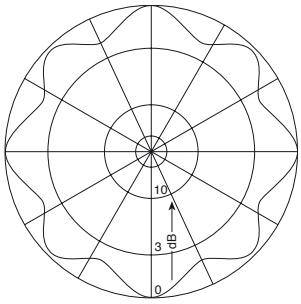
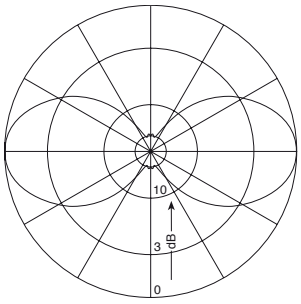
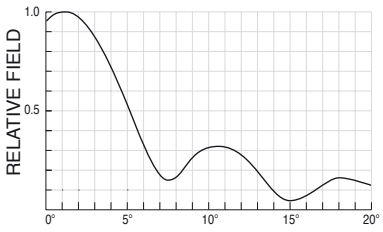
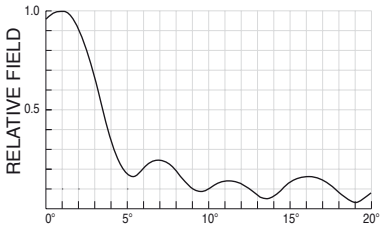
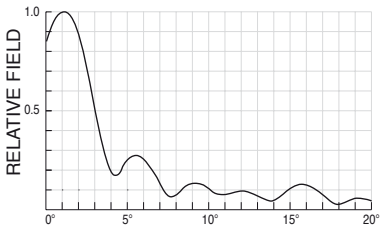
KATHREIN offers a selection of 40 models of professional transmitting antennas for Wireless Cable services, with a choice of horizontal or vertical polarization, five different horizontal radiation patterns and gain options to meet your specific requirements.

All antennas are composed of similar dipole modules housed in a robust GRP radome for weather protection.

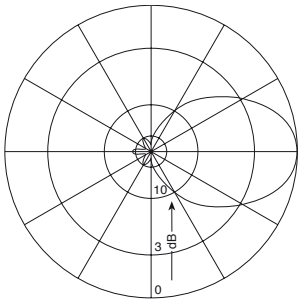
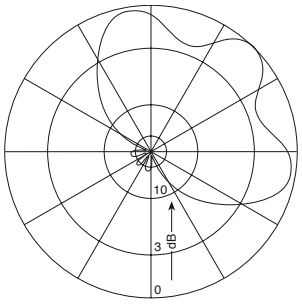
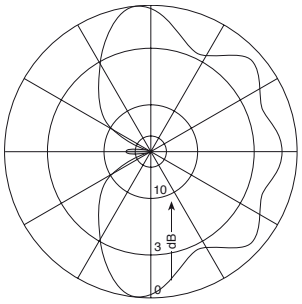
The use of parallel-fed elements assures constant vertical patterns across the full band and allows the use of beamtilt and null fill to optimize coverage.

This new product line offers a number of advantages, including:

- VSWR is 1.2:1 (or better) across full 200 MHz bandwidth.
- 1.2 kW input power rating is standard for all models.
- Full selection of patterns & gain to optimize coverage.
- Parallel feed system provides maximum stability.
- Electrical beamtilt and null fill for coverage enhancement.
- Designed for severe environments. No pressurization is required.
- Superb performance and long-term reliability.

MECHANICAL PROPERTIES	HORIZONTAL PATTERNS / VERTICAL PATTERNS	Omnidirectional Pattern	Bidirectional Pattern
			
4 MODULES Weight: 27 kg Height: 1704 mm Windload: 225 N		Gain: 12.4 dBi MMH-4/O *(765 537)* MMV-4/O *(767 194)*	Gain: 16 dBi MMH-4/H *(767 230)* MMV-4/H *(767 234)*
6 MODULES Weight: 35 kg Height: 2212 mm Windload: 330 N		Gain: 14.1 dBi MMH-6/O *(766 393)* MMV-6/O *(767 195)*	Gain: 17.7 dBi MMH-6/H *(767 231)* MMV-6/H *(767 235)*
8 MODULES Weight: 43 kg Height: 2880 mm Windload: 430 N		Gain: 15.2 dBi MMH-8/O *(766 394)* MMV-8/O *(767 196)*	Gain: 18.8 dBi MMH-8/H *(767 232)* MMV-8/H *(767 236)*

Windload at 160 km/h

70° Pattern	150° Pattern	240° Pattern
		
Gain: 18.5 dBi	Gain: 15.5 dBi	Gain: 14.1 dBi
MMH-4/C *(766 404)*	MMH-4/B *(766 400)*	MMH-4/A *(766 396)*
MMV-4/C *(767 206)*	MMV-4/B *(767 202)*	MMV-4/A *(767 198)*
Gain: 20.2 dBi	Gain: 17.2 dBi	Gain: 15.8 dBi
MMH-6/C *(766 405)*	MMH-6/B *(766 401)*	MMH-6/A *(766 397)*
MMV-6/C *(767 207)*	MMV-6/B *(767 203)*	MMV-6/A *(767 199)*
Gain: 21.3 dBi	Gain: 18.3 dBi	Gain: 16.9 dBi
MMH-8/C *(766 406)*	MMH-8/B *(766 402)*	MMH-8/A *(766 398)*
MMV-8/C *(767 208)*	MMV-8/B *(767 204)*	MMV-8/A *(767 200)*

Horizontal Polarization

Vertical Polarization

MMDS (Wireless Cable)
2500 – 2700 MHz

KATHREIN
Antennen · Electronic

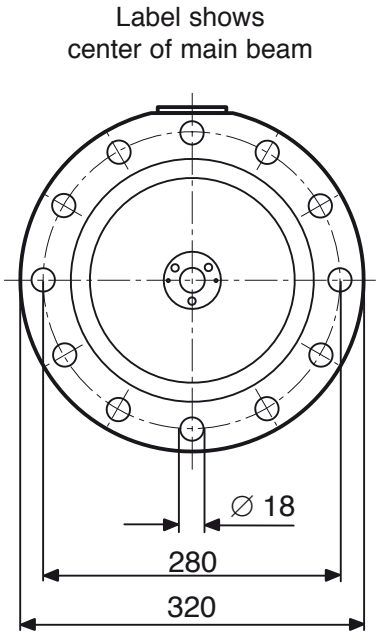
Type No. / Order No.	**See Type No. on page 132 and 133**
Connector	7/8″ EIA flange
Frequency range	2500 – 2700 MHz
VSWR	1.2 : 1 maximum across the full 200 MHz bandwidth
Impedance	50 Ω
Polarization	Choise of horizontal or vertical polarized models.
Vertical radiation patterns	1° electrical downtilt and 15% null fill are standard. Other values available as options.
Max. power	1.2 kW (at 50 °C ambient temperature)
Max. wind velocity	225 km/h

Material: Radome: Fiberglass, brown.
Antenna base: Aluminum.

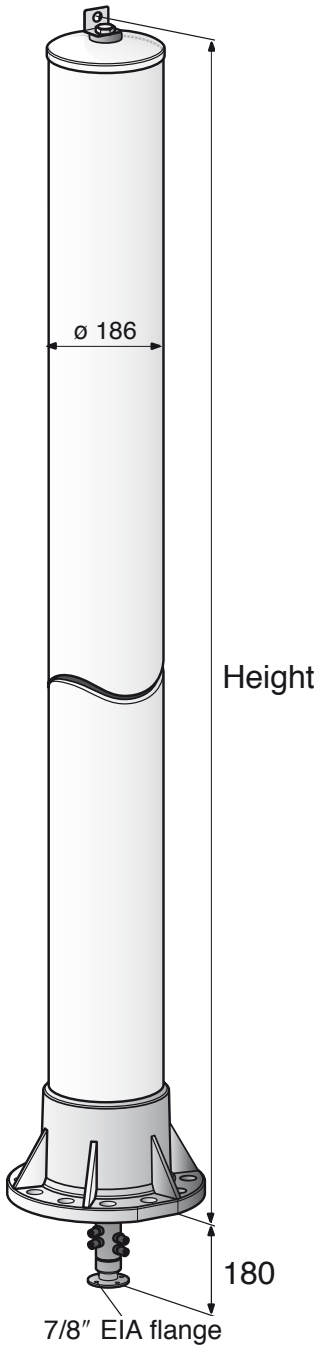
Mounting: Flange mount to top of support structure. Directional models may be side-mounted using a bracket.

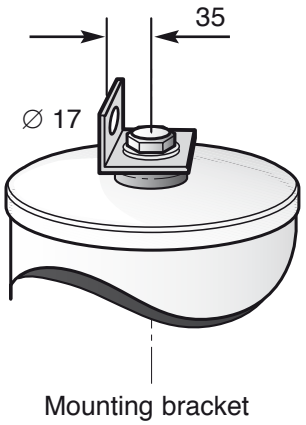
Attention:
The aluminum flange may only be mounted to a flat base-plate (max. uneveness 0.5 mm) with a drilled hole of 100 mm diameter in the center for the 7/8″ EIA flange connector.

Grounding: Via mounting parts.



All dimensions in mm





MMDS (Wireless Cable)
2500 – 2700 MHz
776 012

KATHREIN
Antennen · Electronic

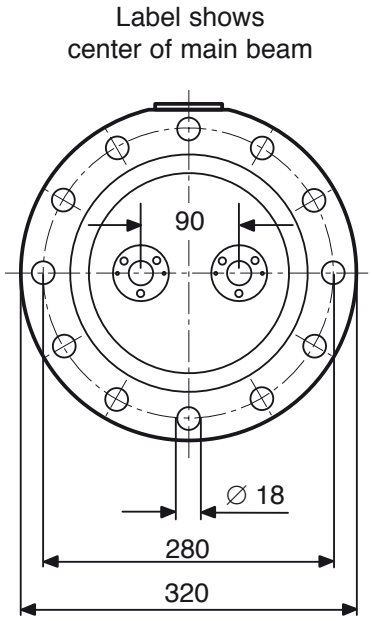
Type No. / Order No.	**776 012**
Connector	2 x 7/8″ EIA flange
Frequency range	2500 – 2700 MHz
VSWR	1.2 : 1 maximum across the full 200 MHz bandwidth
Impedance	50 Ω
Polarization	vertically polarized
Vertical radiation patterns	3° electrical downtilt 25% null fill on the first lobe and 15% on the second lobe
Max. power	1.2 kW (at 50 °C ambient temperature)
Max. wind velocity	225 km/h

Material: Radome: Fiberglass, brown.
Antenna base: Aluminum.

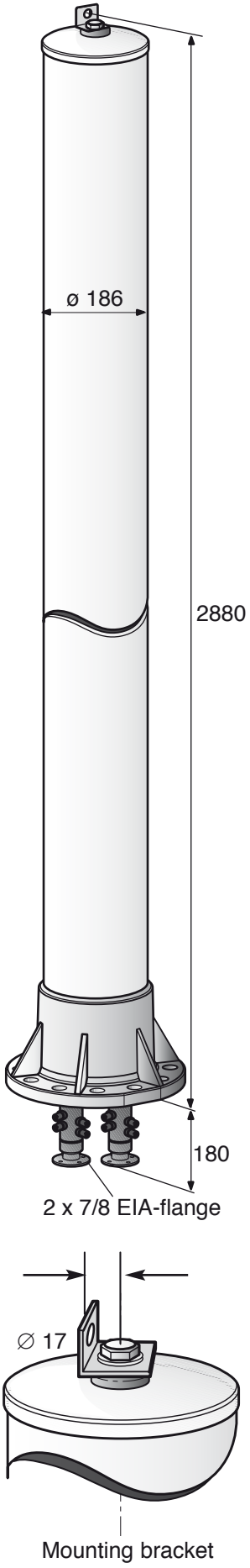
Mounting: Flange mount to top of support structure. Directional models may be side-mounted using a bracket.

Attention:
The aluminum flange may only be mounted to a flat base-plate (max. unevenness 0.5 mm) with a drilled hole of 180 mm diameter in the center for the two 7/8″ EIA flange connectors.

Grounding: Via mounting parts.



All dimensions in mm



Relay Receiving Antennas and Special Antenna Systems

Relay Receiving Antennas for TV and FM Broadcasting

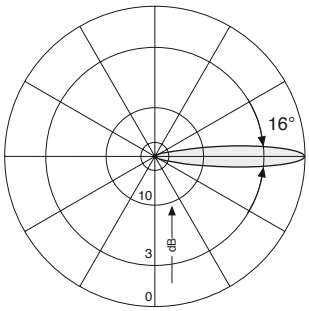
KATHREIN
Antennen · Electronic

Receiving antenna systems with high side-lobe suppression and notches for the suppression of interference can significantly improve the signal quality of the relay receiving systems.

Due to ever-increasing transmitter density, relay receiving systems can suffer difficulties due to co-channel or adjacent channel interference. In mountainous regions additional interference may be caused by reflected signals that arrive delayed.

In order to suppress such interference, several individual antennas can be combined. Optimization of both the mechanical array and the electrical feeder system results in notches in the direction of the disturbance. Array patterns with notches in two different directions can also be produced to suppress interference coming from a variety of sources.

To solve interference problems Kathrein offers receiving antennas with high side-lobe suppression for all frequency ranges.



Horizontal radiation pattern
Half-power beam width: 16°
Side-lobe suppression: > 30 dB

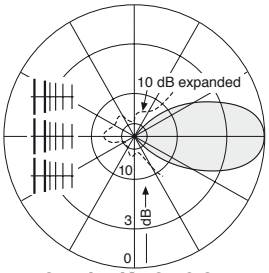
If high quality individual antennas are used, array patterns with particularly high side-lobe suppression can be produced.

Kathrein's log.-per. antennas have been specially developed for such purposes. For example over the whole TV Band III range they achieve a side-lobe suppression value of more than 25 dB in both the horizontal and the vertical patterns. A further advantage of our log.-per. antennas is that their excellent radiation characteristics are hardly affected at all by very heavy ice formation.

The following examples show measured radiation patterns of antenna arrays for all VHF and TV transmitting ranges (the side-lobes were enlarged by a factor of 10 to ease identification).

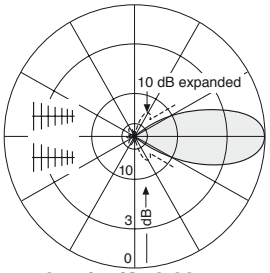
Examples for Horizontal Radiation Patterns

47 … 88 MHz



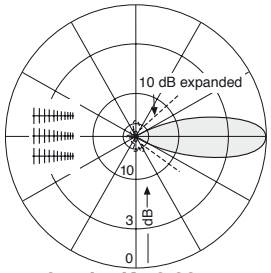
3 units K 52 16 8..

87.5 – 108 MHz



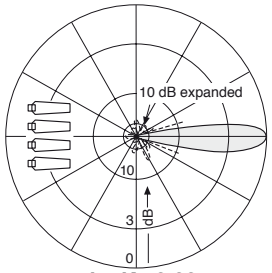
2 units K 52 22 1..

174 – 230 MHz

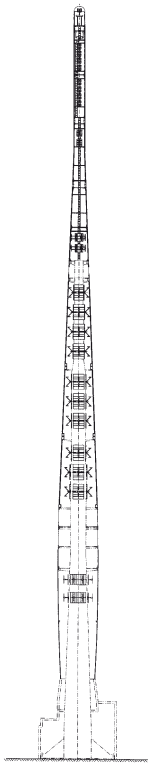


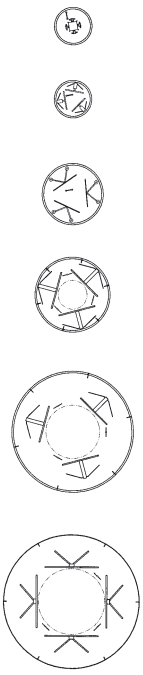
3 units K 52 22 5..

470 – 860 MHz



4 units K 72 23 4..





Säntis transmitter in Switzerland
VHF and TV antenna systems completely enclosed in a heated GRP radome.

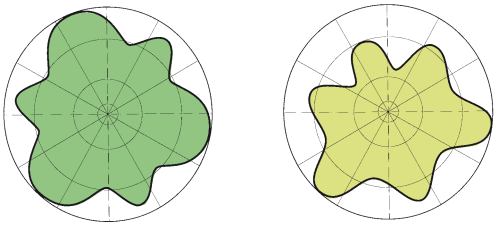
Kathrein's sales range includes antennas and accessories for

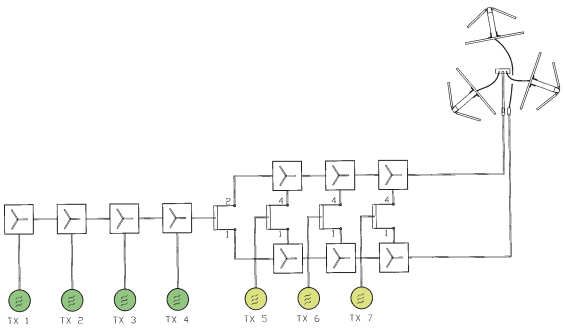
- all frequency ranges from 47 MHz to 2700 MHz
- transmitter power ratings from 100 W to 200 kW and
- various mast types (round, triangular, square or reinforced fibre-glass material).

Furthermore, Kathrein will design and put together special constructions to solve all problems related to a specific site and to fulfil customers' special requests.

Typical examples:

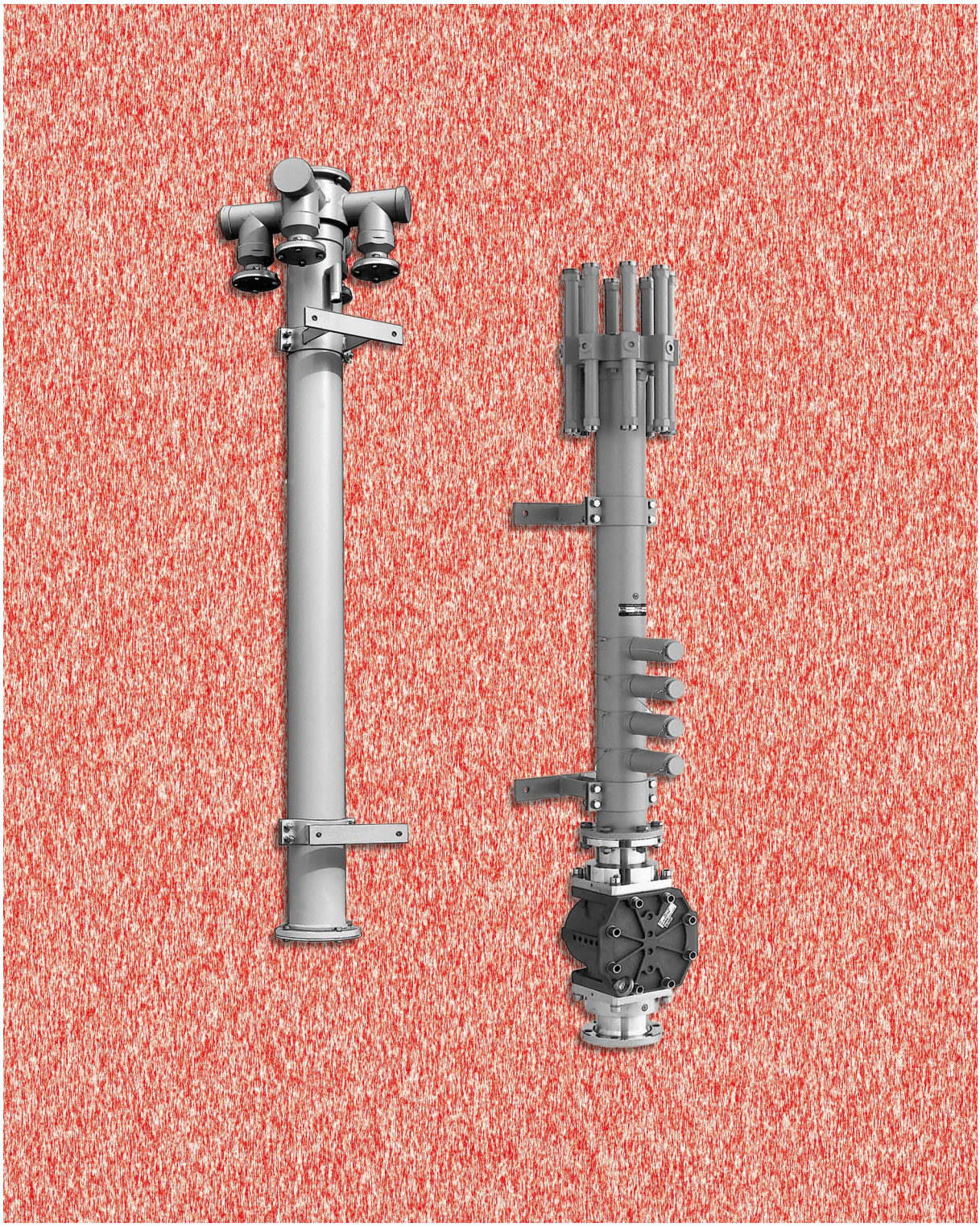
- Antennas and power splitters with an extended frequency range.
- Antennas suitable for withstanding extreme weather conditions both on the coast and on the top of high mountains (see Säntis photo, Switzerland).
- Antennas with a heated surface to eliminate damage to people through falling ice.
- Multi-pattern systems for transmitting several channels with different horizontal patterns via one signal antenna system to make optimum use of the available mast height (see Marlow photo).





Combiners and layout for Marlow transmitter in Germany.
Multi-pattern antenna system for 7 FM channels.

Power Splitters



High Power Splitters
47 … 88 MHz, 87.5 – 108 MHz, 174 – 230 MHz, 470 – 862 MHz

KATHREIN
Antennen · Electronic

- All power splitters are matched in the whole frequency range with VSWR < 1.05.
- The additional tuning unit can be used to optimize the input impedance of the antenna system on site.
- Special versions with unequal power splitting, alternative connectors or up to 16 outputs are available on request.

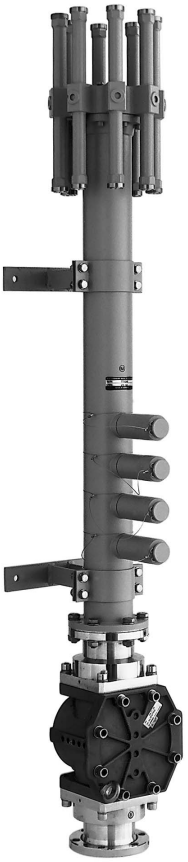
Frequency range	**47 ... 88 MHz**	**87.5 – 108 MHz**	**174 – 230 MHz**	**470 – 862 MHz**
Length approx.	2400 mm	1700 mm	850 mm	700 mm
with tuning unit approx.	2600 mm	–	1500 mm	1000 mm
Input power	1 – 200 kW	1 – 200 kW	1 – 150 kW	1 – 70 kW
Connectors	7-16, 13-30, 7/8″, 1 5/8″, 3 1/8″, 4 1/2″, 6 1/8″ EIA flange (or other connectors upon request)			
Impedance	50 Ω			
VSWR	< 1.05 in each frequency range			
Insertion loss	< 0.05 dB			

Material: Outer conductor: Brass with protective grey paint.
Inner conductor: Brass or aluminum.

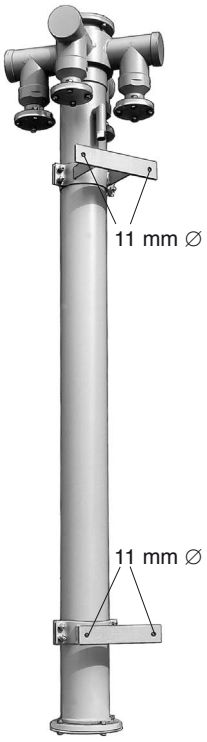
Mounting: On flat surfaces using the standard mounting equipment consisting of 2 bracket arms (supplied) or steel frame (order separately).

Pressurization: The pressurization-tight transformer casing has an opening to balance out excess pressure.
For pressurized operation (typically at 300 mbar) this opening 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)

Weather protection: The RF connectors can be additionally protected with the sealing tape (please order separately).



Example:
Tunable 16-way splitter with different power splitting and with a measuring link.

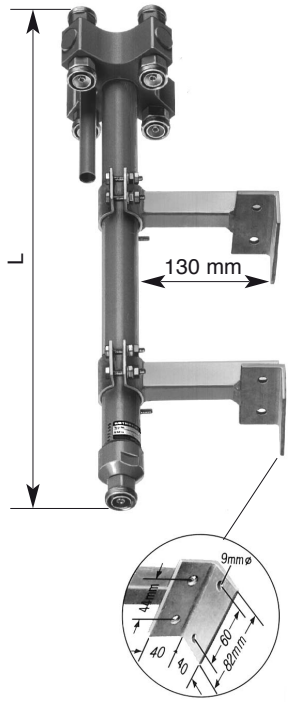


Example:
4-way splitter with standard-attachment.

Medium Power Splitters
47 … 88 MHz, 87.5 – 108 MHz, 174 – 230 MHz, 470 – 862 MHz

KATHREIN
Antennen · Electronic

- All power splitters are matched in the whole frequency range with VSWR < 1.05.
- The additional tuning unit can be used to optimize the input impedance of the antenna system on site.
- Special versions with unequal power splitting, alternative connectors or up to 12 outputs are available on request.
- Power splitters for 66 – 72 MHz, 76 – 82 MHz, 82 – 88 MHz are available on request.

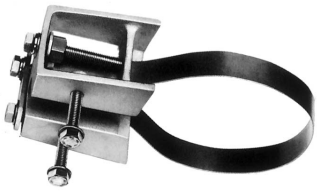


Frequency range	47 ... 88 MHz	87.5 – 108 MHz	174 – 230 MHz	470 – 862 MHz
Length approx.	2400 mm	1650 mm	845 mm	560 mm
with tuning unit approx.	2600 mm	–	1500 mm	860 mm
Input power	3 kW	2.5 kW	2 kW	1 kW
Connectors	7-16 female (other connectors upon request)			
Impedance	50 Ω			
VSWR	< 1.05			
Insertion loss	< 0.05 dB			

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. 759 044 (please order separately).

759 044



Pressurization: The pressurization-tight transformer casing has an opening to balance out excess pressure.
For pressurized operation (typically at 300 mbar) this opening 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)

Weather protection: The RF connectors can be additionally protected with the sealing tape (please order separately).

Number of outputs	Type No. (Order No.) of available power splitters – without tuning unit						– with tuning unit	
	47 – 54 MHz	54 – 61 MHz	60 – 68 MHz	87.5 – 108 MHz	174 – 230 MHz	470 – 862 MHz	174 – 230 MHz	470 – 862 MHz
2	765 814	765 814	765 814	770 144	770 510	764 485	770 516	764 493
3	765 815	765 820	765 825	770 145	770 511	764 486	770 517	764 494
4	765 816	765 821	765 826	770 146	770 512	764 487	770 518	764 495
5	765 817	765 822	765 827	770 147	770 513	764 488	770 519	764 496
6	765 818	765 823	765 828	770 148	770 514	764 489	770 520	764 497
8	765 819	765 824	765 829	770 149	770 515	764 491	770 521	764 499

Low Power Splitters
174 – 230 MHz, 470 – 862 MHz and 1452 – 1492 MHz

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174 – 230 MHz

Type No. / Order No.	**768 343**	**768 334**	**768 344**	**768 335**	**768 345**	**768 336**
Connector (female)	N	7-16	N	7-16	N	7-16
Max. power (at 50 °C ambient temp.)	1 kW	2 kW	1 kW	2 kW	1 kW	2 kW
Number of outputs	2		3		4	
Frequency range	174 – 230 MHz					
Impedance	50 Ω					
VSWR	< 1.07					
Insertion loss	< 0.05 dB					
Max. size	800 / 82 / 82 mm					

768 332

470 – 862 MHz

Type No. / Order No.	**768 340**	**768 331**	**768 341**	**768 332**	**768 342**	**768 333**
Connector (female)	N	7-16	N	7-16	N	7-16
Max. power (at 50 °C ambient temp.)	500 W	1 kW	500 W	1 kW	500 W	1 kW
Number of outputs	2		3		4	
Frequency range	470 – 862 MHz					
Impedance	50 Ω					
VSWR	< 1.07					
Insertion loss	< 0.05 dB					
Max. size	520 / 82 / 82 mm					

1452 – 1492 MHz

Type No. / Order No.	**751 10281**	**751 10282**	**751 10283**
Number of outputs	2	3	4
Connector (female)	7-16		
Max. power (at 50 °C ambient temp.)	700 W		
Frequency range	1452 – 1492 MHz		
Impedance	50 Ω		
VSWR	< 1.1		
Insertion loss	< 0.05 dB		
Max. size	160 / 82 / 82 mm		

Material: Case: Aluminum.
Inner conductor: Brass.

Mounting: Bracket included for wall mounting.
May be attached to tubular masts using clamps listed below (order separately).

Type No. Order No.	**Description**	**Remarks**
736 801	1 clamp	Mast: 34 – 60 mm diameter
736 802	1 clamp	Mast: 60 – 80 mm diameter
736 803	1 clamp	Mast: 80 – 100 mm diameter
736 804	1 clamp	Mast: 100 – 120 mm diameter
736 805	1 clamp	Mast: 120 – 140 mm diameter

Low Power Splitter
87.5 – 108 MHz

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Antennen · Electronic

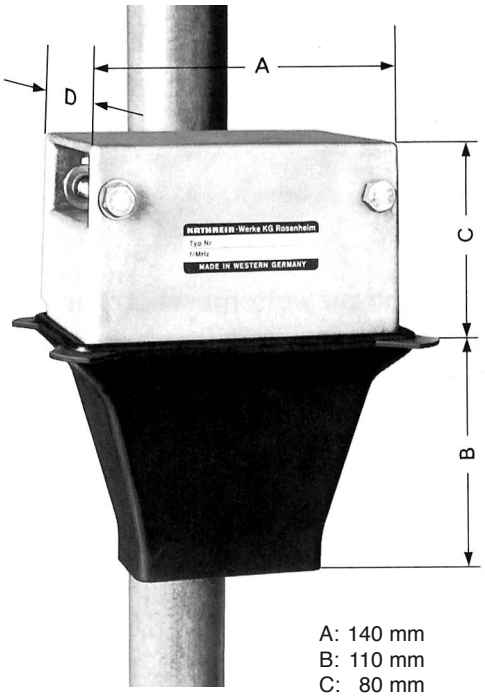
Low power splitters for connecting several antennas

Typ No. / Order No.	**751 10215**	**751 10216**	**751 10217**
For connecting ... antennas	2	3	4
Input	7-16 female (equipment and antenna side)		
Frequency range	87.5 – 108 MHz		
VSWR	> 1.07		
Impedance	50 Ω		
Max. power	400 W (at 50 °C ambient temperature)		
Insertion loss	< 0.15 dB		
Maximum cable diameter	For equipment and antenna side: $^{7}/_{8}''$		
Packing size	200 x 170 x 115 mm		

Material: Housing: Weather-resistant cast aluminum. Weather protection: UV-resistant weather-proof housing.

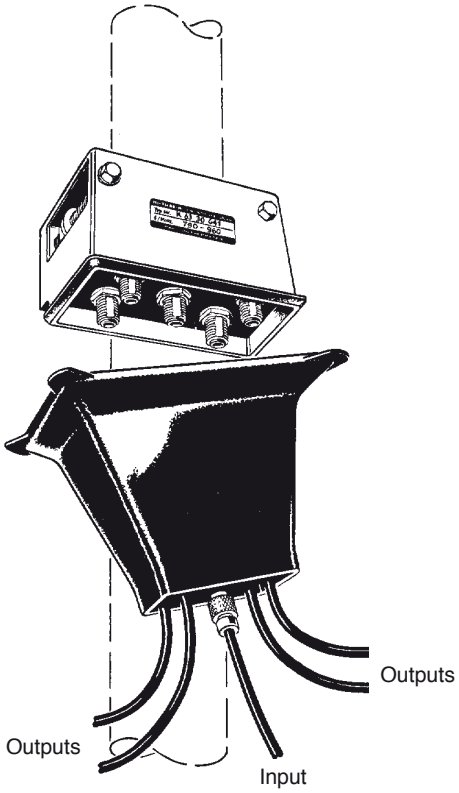
Attachment: To tubular masts of 60 – 320 mm diameter using supplied non-corrosive clamp strap (1020 x 20 x 1 mm).

Compact broadband power splitter for low-loss connection of several antennas:



A: 140 mm
B: 110 mm
C: 80 mm
D: 100mm

Example 4-way antenna splitter



Components for Antenna Systems

Filters and Combiners

Measuring Links

Patch Panels

Coaxial Cables

Dehydrators

Mounting Hardware

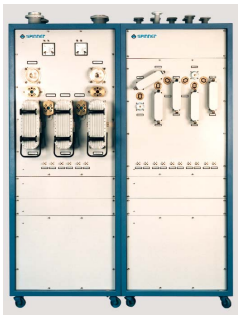
Transmitter
Rohde & Schwarz

Further accessories available for completing antenna systems:

– Probe Sections

– Mechanical Oscillation Dampers

– Obstruction Lights



Patch Panel
Spinner

Combiner Network
Kathrein

Kathrein offers a full range of filters and combiners to complete or extend FM and TV antenna systems.

Combiner units of starpoint, stretchline and directional filter design and filters as well as any combinations thereof are available for all frequency ranges from 47 – 860 MHz and for any power levels from 10 Watt – 100 kW.

Special designs can be offered on request, e.g.:

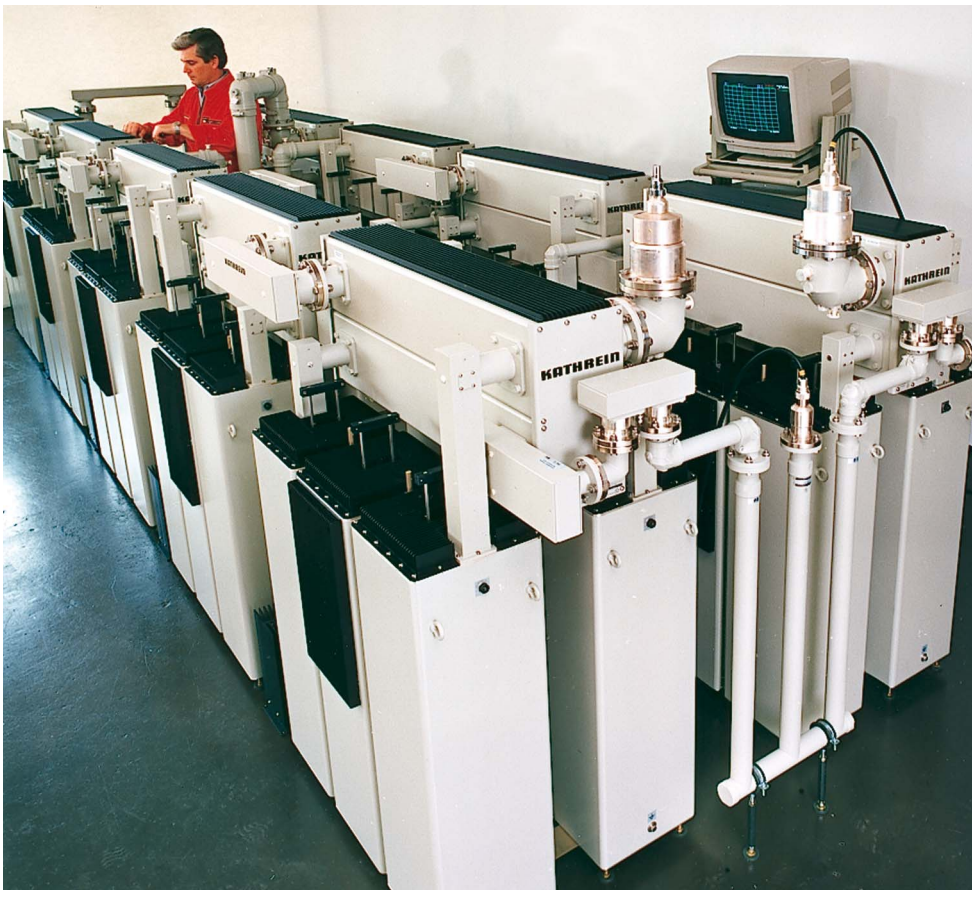
– Filters for the reduction of spurious emissions, especially for DAB.

– Filters for the suppression of IM products.

– OIRT-CCIR multiplexers for combining signals in the OIRT (66 – 73 MHz) and the CCIR (87.5 – 108 MHz) frequency ranges.

– Multi pattern antenna systems consisting of a sophisticated arrangement of combiners, power splitters, feeder lines and antenna panels allowing the multiple use of the antenna aperture.

A separate catalogue “Filters and Combiners” is available from Kathrein.



FM combiner of multi-pattern antenna system Marlow.

Devices for non-mechanical opening of cables for measurement purposes

Applications

Measuring links are devices that are connected into RF cable runs. Thus it is possible to open the cable run in an electrical (non-mechanical) way, allowing to measure into the cable in both directions.
When closed (in its operating condition), the measuring link is a completely homogeneous, uniform section of the transmission line and does not affect the cut-off frequency of the transmission line system.

Measuring Heads

To permit cable measurements to be performed, 3 measuring heads are available to each size of measuring links:

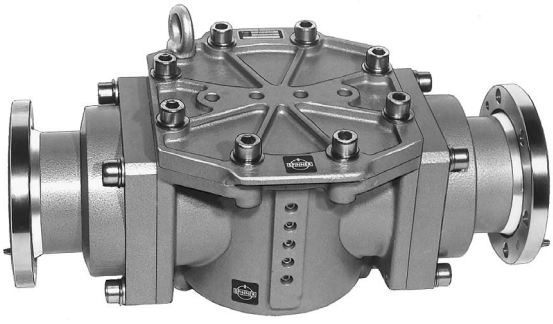
1. A measuring head allowing measurements to be taken in one of both directions with the cable section not measured being short-circuited.
   Connectors: 7-16 or N female.
2. A measuring head with 2 test connectors allows to measure in both cable directions.
   Connectors: 7-16 or N female.
3. A measurement head for cases where the measuring link is used for providing an emergency cable connection. Measuring heads of this type can be used to couple out the full incoming RF energy.

Design Features

The measuring links are completely watertight and weatherproof. They are manufactured of red brass and are therefore resistant to corrosive environments of any nature.
The measuring links are available in versions with cable connections from 6 1/8″ to 1 5/8″ EIA-flange or connectors 13-30 and 7-16.

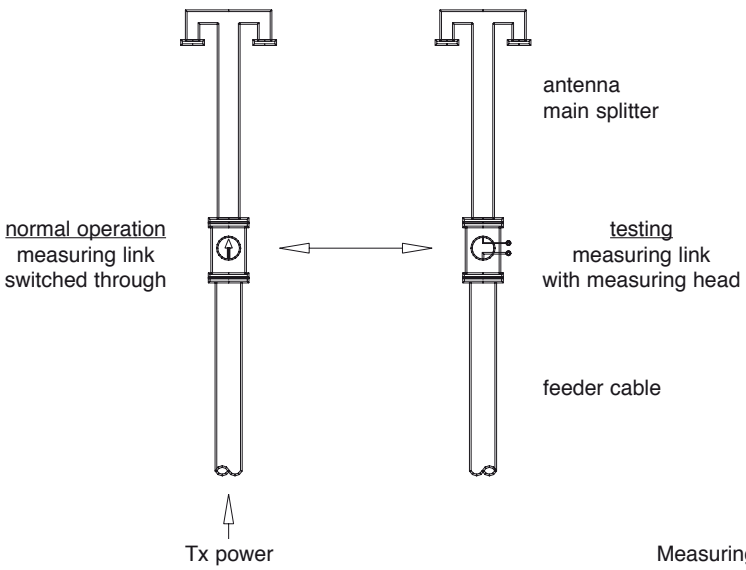
Technical details are available upon request.

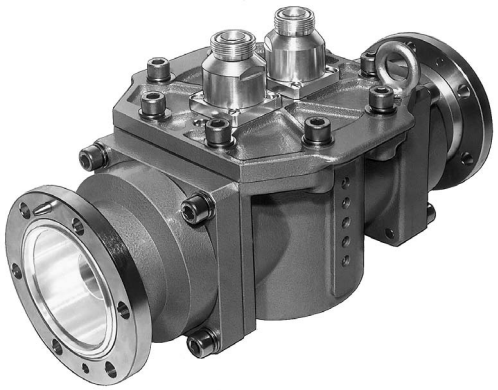
Measuring link in a cable run



Measuring link with 3 1/8″ EIA-flanges

Typical Use of Measuring Links





Measuring link with 3 1/8″ EIA-flanges and 7-16 measuring head

Switching device for providing a spare connection between transmitter and antenna

Applications

If required, patch panels can be used to provide an instant replacement of non-operational transmission line connections between transmitters and antennas or half antennas. To meet different requirements, customer-specified patch panels are available with virtually any connector type and switching capability.

Design Features

Normally, a patch panel consists of a frontpanel made of aluminum that contains switching points and connectors with locking brackets. Each patch panel can be equipped with a duplex power splitter and with a simultaneous combining filter, if required. Typically, patch panels are intended to be installed into rack cabinets.

Operation

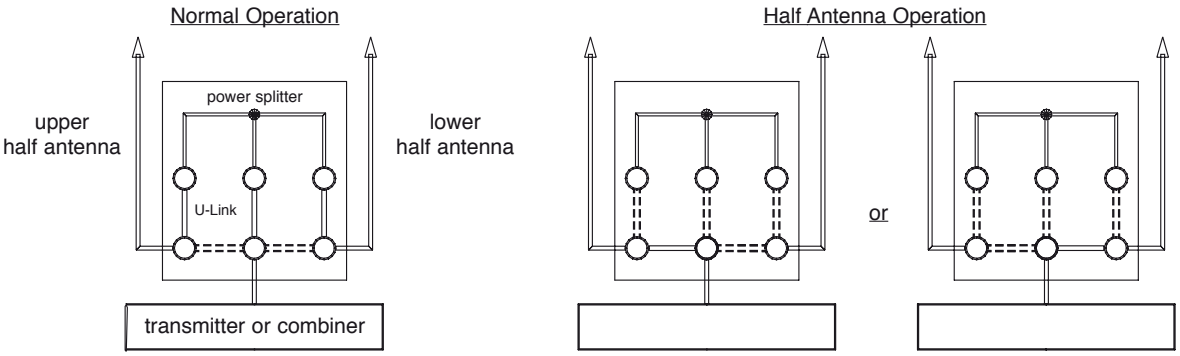
The connectors with quick-release locking brackets have been proven in applications where spare connections must be established within just a few seconds.

Upon request, the switching points of the quick-release connectors can be equipped with safety contacts to avoid the connection of transmitters to unload switching points.

Connections

The connections for transmitter cables or rigid transmission lines to the antennas or transmitters are available with straight, or when equipped with angle flanges, with backwards, downwards or upwards orientation.

Typical Application
(Example: Half Antenna Patch Panel)



A wide variety of coaxial cables, connectors, cable clamps, earthing kits, hoisting sockets and other accessories are available for main and branch feeders.

All components are of broadband type.

The minimum size of coaxial components is determined by the power handling requirements and environmental conditions.

Oversized coaxial cables are often used to reduce cable losses.

Coaxial cables

The power handling capacity and the attenuation vary greatly with the frequency. The cables are semi-flexible due to the use of corrugated copper tubes as outer conductors. The inner conductor is centered using a polyethylene helix or polyethylene foam.

Air dielectric cables are available in following dimensions:
3/8″ 5/8″ 7/8″ 1 1/8″ 1 5/8″ 2 1/4″ 3″ 3 1/8″ 4″ 4 1/8″ 5″ 6 1/8″
Air dielectric cables can be filled with dry air or nitrogen of 0.1 – 0.3 bar excess pressure.

Foam dielectric cables are available in following dimensions:
3/8″ 1/2″ 5/8″ 7/8″ 1 1/4″ 1 5/8″

Special versions:
Cables with fire retardent jacket or super-flexible types for narrow bends or improved power handling capacity are available on request.

Connectors

Coaxial connectors for semi-flexible cables or rigid lines and adaptors are available in following sizes:

N 7-16 13-30 7/8″ EIA 1 5/8″ EIA 3 1/8″ EIA 4 1/2″ EIA 6 1/8″ EIA

Coaxial Cables
Typical Installation Approach

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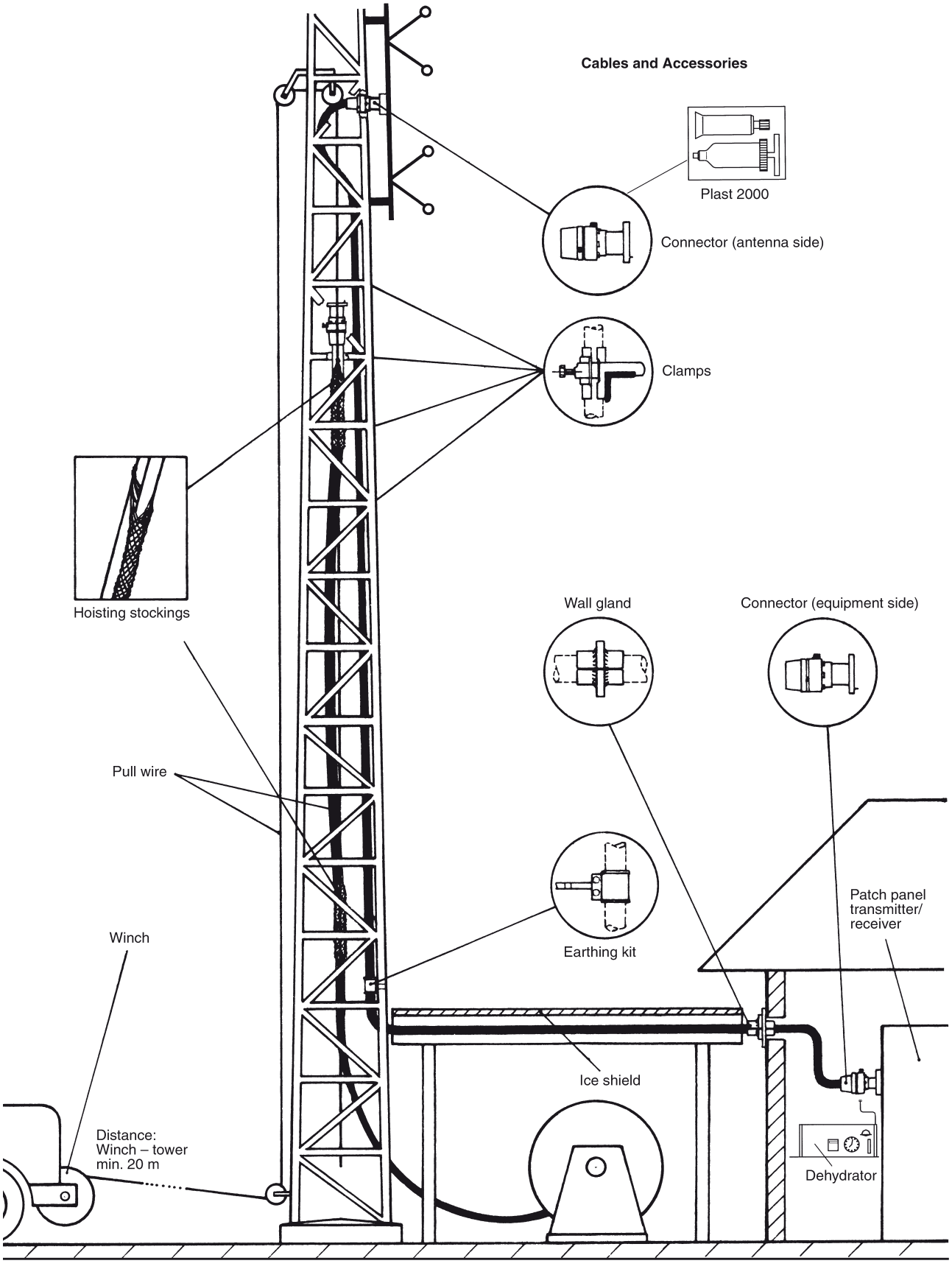
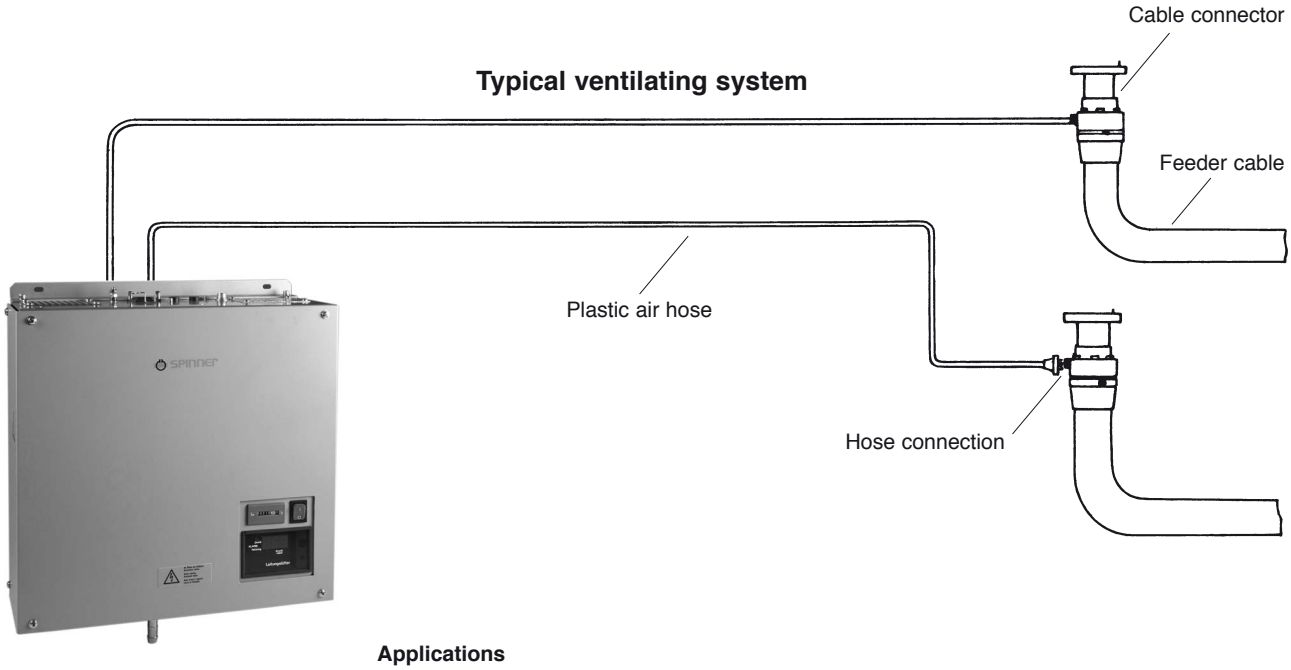


19″ rack version

Wall-mounted version

Equipment for maintaining continous air pressure within RF transmission lines and antenna systems



Applications

Transmitting and receiving antenna systems whose RF transmission lines such as coaxial cables and power splitter assemblies are filled with dehydrated air operate with increased reliability.

Operation

It is recommended to use dehydrators with fully automatic regeneration of the desiccant that allow to continously maintain and monitor the air pressure within RF transmission and antenna systems.

Design features

Maintenance-free dehydrators for virtually any application are available in different versions such as wall-mounted units or rack-mount units for installation into standardized racks with various levels of compressor power and pressure categories.
Technical details are available upon request.

Mounting hardware for UHF panels

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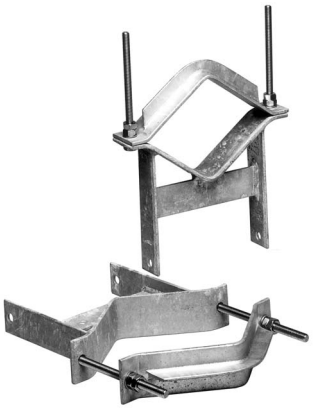
Components for mounting UHF panels to pipe masts.

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

Pair of clamps for one UHF panel

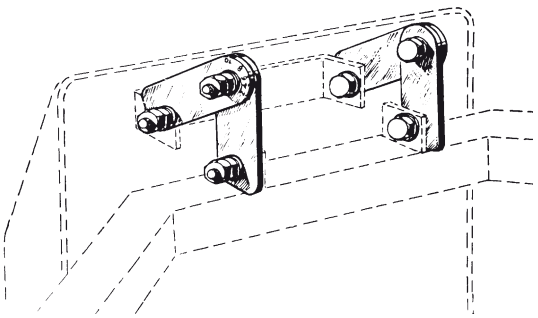
Type No.	Order No.	Suitable for pipe masts of mm ∅	Weight kg
K 61 14 01	600 481	40 – 95	1.6
K 61 14 02	600 482	60 – 115	1.6
K 61 14 03	600 483	115 – 210	4.0
K 61 14 04	600 484	210 – 380	7.2
K 61 14 05	600 821	380 – 521	10.2



Pair of clamps K 61 14 03

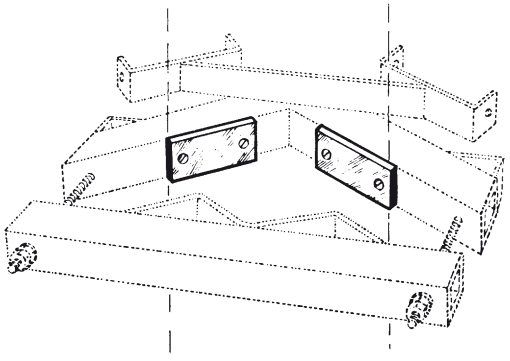
Tilt brackets (pair)
Type No. K 61 30 1
Order No. 600 504

For beam tilt down to 10°



Slant compensation kit
Type No. K 61 30 2
Order No. 600 505

Pair of plates for compensating the slant
(15 mm per m) on tapered masts



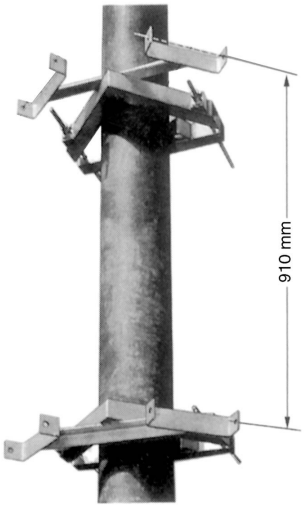
Mounting hardware for UHF panels

KATHREIN
Antennen · Electronic

Components for mounting UHF panels to pipe masts.

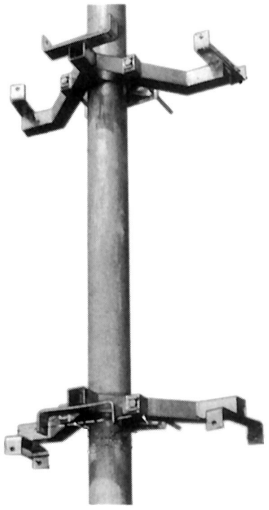
Material: Hot-dip galvanized steel.
Stainless steel bolts and nuts are supplied.

Remark: The radius from the center of the array to the reference point of the panel is given by the distance A.



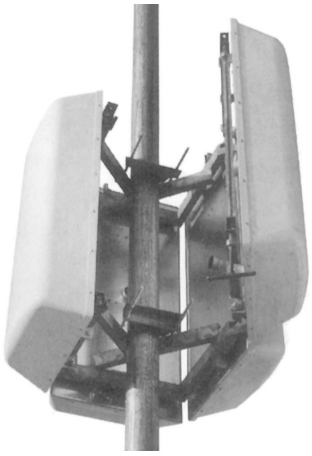
Pair of clamps for two UHF panels

Type No.	Order No.	Suitable for pipe masts of mm ∅	Weight kg	Distance A/mm	Angle α between directions of the two UHF panels
K 61 15 11	600 869	70 – 150	6.4		
K 61 15 12	600 870	150 – 300	8.8	308	80°
K 61 15 13	600 871	300 – 400	8.8		
K 61 15 21	600 843	70 – 150	6.4		
K 61 15 22	600 844	150 – 300	8.8	266	90°
K 61 15 23	600 845	300 – 400	8.8		



Pair of clamps for three UHF panels

Type No.	Order No.	Suitable for pipe masts of mm ∅	Weight kg	Distance A/mm	Angle α between directions of the three UHF panels
K 61 15 31	600 846	70 – 150	8.4		
K 61 15 32	600 847	150 – 300	9.2	308	80°
K 61 15 33	600 848	300 – 400	9.2		
K 61 15 41	600 849	70 – 150	8.4		
K 61 15 42	600 850	150 – 300	9.2	266	90°
K 61 15 43	600 851	300 – 400	9.2		



Pair of clamps for four UHF panels

Type No.	Order No.	Suitable for pipe masts of mm ∅	Weight kg	Distance A/mm	Angle α between directions of the four UHF panels
K 61 15 52	600 875	150 – 300	27	308	80°
K 61 15 61	600 991	70 – 150	26	258	90°
K 61 15 62	600 874	150 – 260	26	258	90°

Special features: A part of the mount can be swivelled out for easier mast climbing.

Mounting hardware for L Band panels

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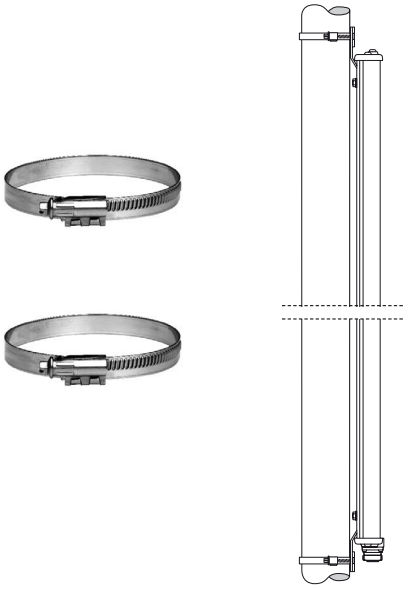
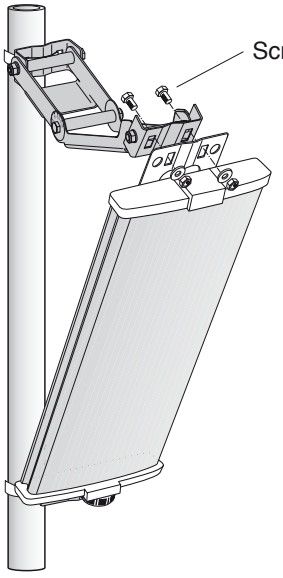
Components for mounting L Band panels to pipe masts.

Material: Stainless steel.
Bolts and nuts are supplied.



Pair of clamps for one L Band panel

Type No. / Order No.	**Suitable for pipe masts of mm ∅**	**Weight g approx.**
734 360	34 – 60	60
734 361	60 – 80	70
734 362	80 – 100	80
734 363	100 – 120	90
734 364	120 – 140	110
734 365	45 – 125	80

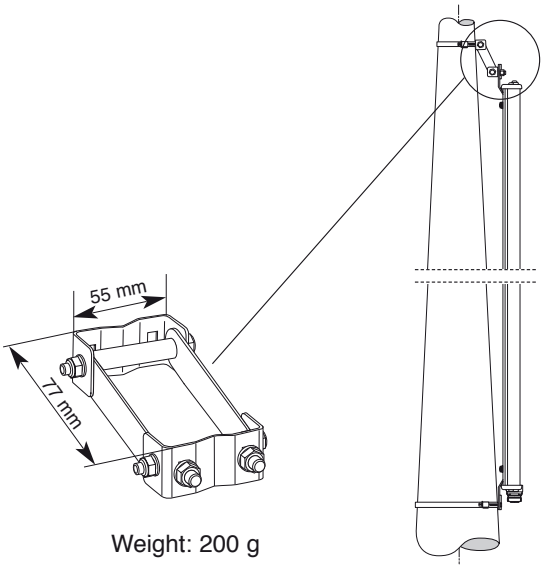


Downtilt kit
Type No. / Order No. **732 327**

(additional clamps are required for mounting, see table)

Slant compensation kit
Type No. / Order No. **732 319**

is used for compensating conical masts (additional clamps are required for mounting, see table)

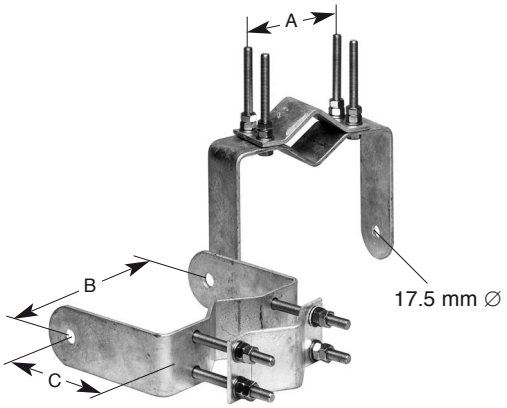


Weight: 200 g

Components for mounting antennas or splitters to pipe masts.

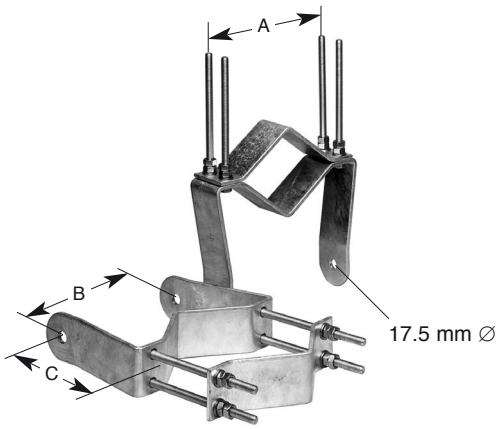
Stainless steel bolts and nuts are supplied.

Type No.	Order No.	Suitable for pipe masts of mm ∅	Weight kg	Dimensions mm
K 61 12 0 (pair of clamps)	600 479	60 – 115	3.4	A: 140 B: 250 C: 150



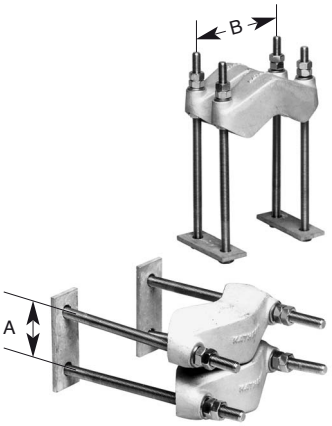
Mast clamps for panels
K 52 30 5. and K 52 34 5..

Type No.	Order No.	Suitable for pipe masts of mm ∅	Weight kg	Dimensions mm
K 61 13 0 (pair of clamps)	600 480	115 – 210	4.5	A: 240 B: 250 C: 180



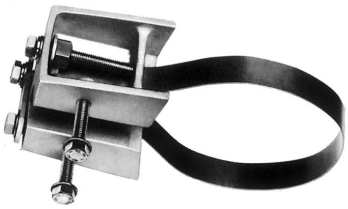
Mast clamps for panels
K 52 30 5. and K 52 34 5..

Type No.	Order No.	Suitable for pipe masts of mm ∅	Weight kg	Dimensions mm
K 61 16 01 **(without picture)**	601 647	77 suitable for panels K 52 33 5.	5.8	
K 61 16 02	602 052	60 – 125	5.6	A: 50 B: 125



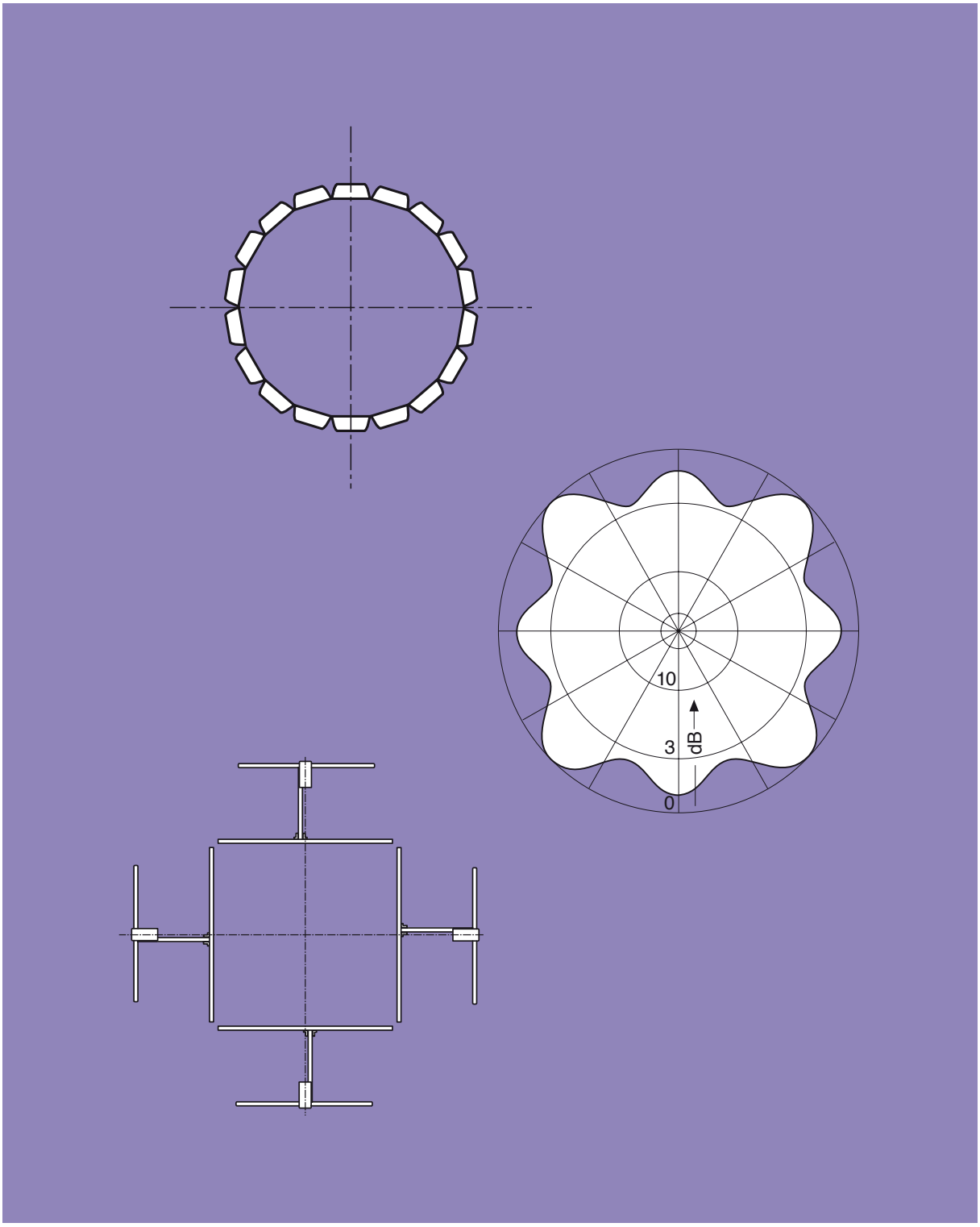
Mast clamps for panels
K 52 33 5.

Type No. / Order No.	Suitable for pipe masts of mm ∅	Weight kg	Dimensions mm
759 044	30 – 340	0.65	



Tension band for mounting of the
medium power splitters to pipe masts

Technical Annex



Antenna System Configurations

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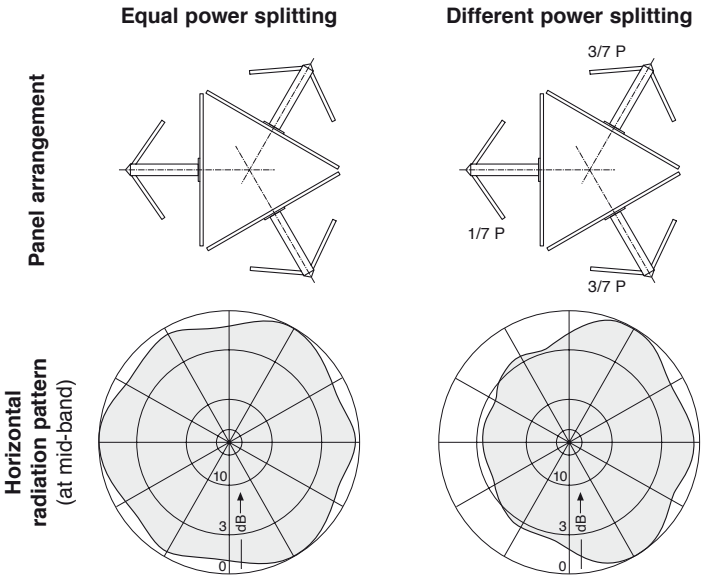
Kathrein offers a wide variety of antenna systems, allowing the broadcaster to select the optimum configuration for each station.
Following is an overview of various arrays and their typical characteristics and advantages.

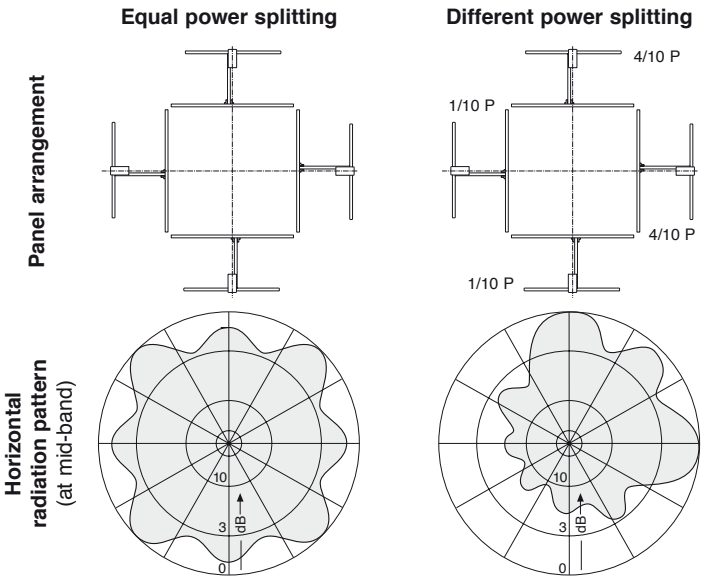
Three-sided Panel Array

The individual panels are designed to cover an azimuth sector of 120 degrees and three panels fed with equal power will result in an omni-directional pattern.
Directional horizontal radiation patterns can be achieved by using a different panel arrangement and/or feeding the panels with unequal power levels.
This arrangement is especially suitable for triangular and round towers or masts.
These broadband systems are available with horizontal or circular polarization.



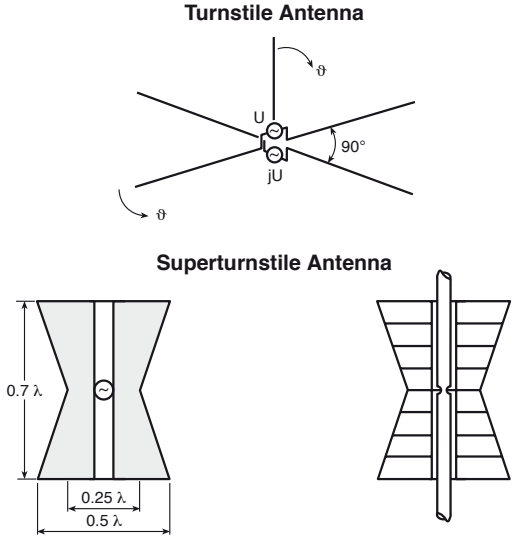
Four-sided Panel Array

The individual panels are designed to cover an azimuth sector of 90 degrees so that four panels fed with equal power will produce an omni-directional pattern.
Again, directional horizontal radiation pattern can be produced with other panel arrangements and unequal power fed to various panels in the array.
This configuration is especially suitable for square towers or masts.
These broadband systems can be supplied for any polarization.



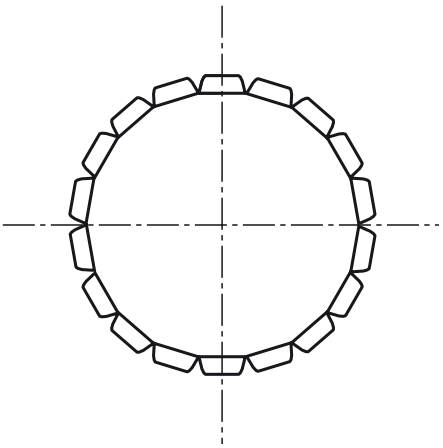
Turnstile and Superturnstile-Antennas

This type of antenna (also known as a “batwing”) produces an excellent horizontally polarized omni-directional pattern.
A metal mast can be placed in the center of a turnstile-antenna as long as the mast has a small diameter relative to the wave-length of the signal.



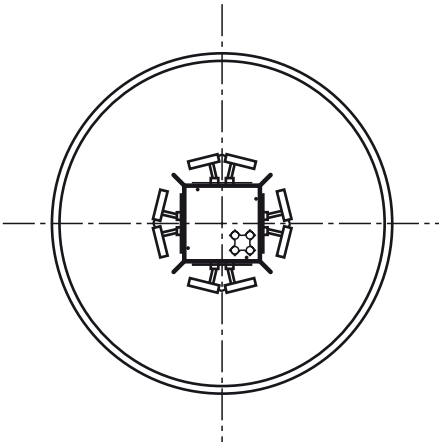
Multi-panel Array

If the cross section of the mast or tower is more than one wavelength it is impossible to obtain a satisfactory omni-directional horizontal radiation pattern using three or four panels per bay. However, an omni pattern can be achieved by increasing the number of panels per bay.
The horizontal patterns of these “multi-panel” arrays will vary with frequency, but they can be designed for excellent omni performance over limited bandwidths.
Multi-panel arrays are available with horizontal or vertical polarization.



Special Antenna Systems Inside Self-supporting GRP Towers

A large-diameter GRP (Glass Reinforced Plastic) pipe can be utilized to substitute a metal support structure and enclose an antenna system.
The GRP pipe is transparent to RF energy and it allows the antenna engineer to use an optimized antenna design with a small cross-section at the center of the pipe. Antenna elements may be dipoles or turnstiles.
The GRP pipe also provides excellent protection against severe environmental conditions such as rain, ice, snow, wind and corrosive agents and it allows access for inspections and maintenance at any time.
Horizontally and vertically polarized systems can be supplied.



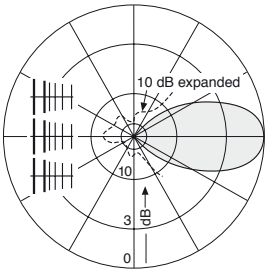
Relay Receiving Antennas

For professional receive applications such as transposer/translator inputs Kathrein offer a full range of antennas including yagis and logarithmic-periodic types.
UHF models are equipped with radomes to assure reliable operation in icing conditions and to protect the antennas against weather damage.

Arrays of these antennas are available to provide very high gain, extremely narrow main lobes, and high rejection of co-channel and other interfering signals coming into the rear and sides of the array. Receiving antennas and arrays are available with either horizontal or vertical polarization.

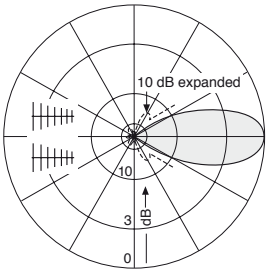
Examples for Radiation Patterns

47 … 88 MHz



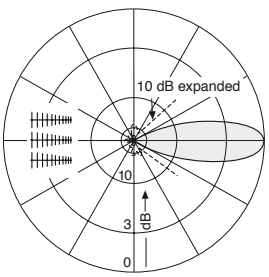
3 units K 52 16 8..

87.5 – 108 MHz



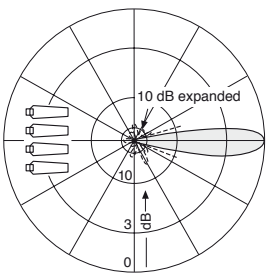
2 units K 52 22 1..

174 – 230 MHz



3 units K 52 22 5..

470 – 860 MHz



4 units K 72 23 4..

Antenna Gain

The gain of an array describes the increase of signal in the main radiation direction which is produced by reducing radiation in all other directions and concentrating it in the main beam. The gain of a broadcast antenna system is normally increased by using a larger number of vertical bays (increasing the vertical aperture) and thereby forming a more narrow vertical radiation pattern.
In the case of a directional antenna system the gain is increased by reducing or eliminating radiation toward azimuth segments and re-directing it toward the areas where coverage is desired.

When calculating the gain of an array the losses in the feeder cables and the power splitters must be taken into account.

Downtilt in Panel Arrays

When transmitting antennas are located on elevated sites it is often beneficial to tilt the main beam of the vertical radiation pattern downward to provide higher signal levels in the areas to be served. There are two ways to accomplish downtilt (also known as “beam tilt”). The panels can be mechanically tilted to direct the beam downward, or phase differences can be introduced into the array feeder system to achieve electrical tilt.

Impedance Tuning

While the VSWR of a well-designed antenna system can be optimized by the use of tuning devices it is not possible to achieve broad bandwidth by compensating for poor components with tuners.
The characteristics of a truly high quality antenna system are established in many ways, beginning with proper component design and manufacture followed by competent system design and installation.

Mast or Tower Dimensions for Panel Arrays

The radiation pattern of a panel array depends on the relative positions of the individual panels in space and the relative amplitude and phase of the RF energy fed to each panel. Therefore it is necessary to have exact dimensional information about the supporting tower or mast if one is to optimize an array design.

The cross section of the mast or tower should be less than one wavelength for a good omni pattern. As the cross section increases beyond one wavelength nulls in the horizontal radiation pattern will rapidly become deeper.

Measurement Links

When large-diameter coax lines are used in an antenna system it is not possible to easily connect measurement equipment without disassembly of the coax system. In these cases it is advisable to install measurement links in the coax feeders to allow convenient connection of test equipment to the antenna system.

Mismatch Compensation

In a broadcast panel array the impedance match of individual panels can be disturbed by mutual coupling, icing and the presence of nearby obstacles. For this reason it is necessary to design the feed system so as to cancel reflections within the array and thereby minimize the presence of reflected signal at the antenna system input. This technique is also known as impedance compensation.

Null Fill

Panel arrays with multiple vertical bays will exhibit deep nulls in the vertical radiation pattern if all bays are fed with equal phase and amplitude.
It is important to fill these nulls for proper signal coverage.
For TV systems it is not sufficient to provide the minimum signal level, but it is necessary to make the direct signal bigger than any reflexion to avoid ghost pictures.

There are three methods of introducing null fill in a panel array:

– Mechanically tilting some panels downward
– Using a non-linear phase taper between bays
– Using an unequal power split between bays

Since some energy is taken from the main beam to fill the null, the maximum gain of the antenna system will be reduced, typically 0.5 to 1.5 dB, when null fill is introduced.

Polarization

The polarization is defined as the direction of the electrical vector, in practice the plane of the dipoles.
The electric field of an antenna system can be split into a horizontal and a vertical component. If there is only one component, the polarization is pure horizontal or vertical (plane polarized). If there are two components which are not in phase, the polarization is elliptical.
For slant polarization both must exist and they must be in phase.
When an antenna produces vertically and horizontally polarized fields with equal amplitude and with a phase difference of exactly 90 degrees, the resulting signal is circularly polarized.

Power Rating of Components

Generally, the power rating of components refers to the maximum CW power (or mean power) level that can be applied to the input.
The maximum mean power output of a TV transmitter occurs during transmission of a black picture and it is typically equal to 70 % of the peak sync power level.

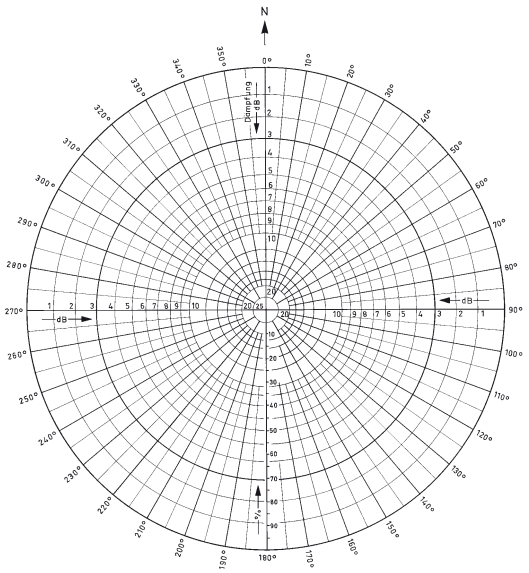
Split Antenna Systems

An antenna system can usually be divided into upper and lower halves which can be operated separately.
This arrangement allows the use of one half for broadcast operations while the other half is available for painting or maintenance or other work that must be performed in close proximity to the antenna.

The signal level will be reduced by 6 dB if one half of the antenna is fed with one half of the normal transmitter power. If the full transmitter power is available, the use of one half of the antenna will reduce the signal level by only 3 dB.

It will be necessary to climb the mast or tower to perform antenna switching unless a coax patch panel is installed at the transmitter output with two main feeders up to the antenna inputs.

The following information is required to design an optimum antenna system for you:						
customer address phone FAX						
station name:						
location:						
frequency (MHz) or channels						
transmitter power (kW)						
min. power rating for system (kW):					☐ analog	☐ digital
antenna gain or ERP or number of bays:						
polarization: horizontal or vertical or slant						
horizontal radiation pattern omni or directional (if directional specificy requirements)						
vertical radiation pattern	beam tilt:					
	null fill:					
tower	square or triangular or round			side length or diameter:		
	azimuth direction of tower face:			vertical antenna aperture:		
feeder	air or foam			half antenna mode	no	
	size				half power	
	connectors				full power	
	length				1 feeder	
	dehydrator				2 feeders	
patch panel	combiner			measurement link		
special climatic conditions						



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9981.0510/0607/3/ZW/PF Subject to alteration.

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