

12-Port Antenna	R1	R2	Y1	Y2	Y3	Y4
Frequency Range	698-803	824-894	1695-2690	1695-2690	1695-2690	1695-2690
Dual Polarization	X	X	X	X	X	X
HPBW	65°	65°	65°	65°	65°	65°
Adjust. Electr. DT set by FlexRET	2°-12°	2°-12°	2°-14°	2°-14°	2°-14°	2°-14°



12-Port Antenna 698-803/824-894/1695-2690/1695-2690/1695-2690/1695-2690 65°/65°/65°/65°/65°/65°
15/16/16/16.5/17/16.5dBi 2°-12°/2°-12°/2°-14°/2°-14°/2°-14°/2°-14°T

Type No.		80010798	
Lowbands		R1, connector 1-2	R2, connector 3-4
		698-803	824-894
Frequency Range	MHz	698 - 803	824 - 894
Gain at mid Tilt	dBi	15.2	15.8
Gain over all Tilts	dBi	15.1 ± 0.4	15.7 ± 0.4
Horizontal Pattern:			
Azimuth Beamwidth	°	66 ± 1.6	62 ± 1.7
Front-to-Back Ratio, Total Power, ± 30°	dB	> 21	> 26
Cross Polar Discrimination at Boresight	dB	> 24	> 24
Cross Polar Discrimination over Sector	dB	> 7.0	> 7.0
Azimuth Beam Port-to-Port Tracking	dB	< 1.5	< 1.5
Vertical Pattern:			
Elevation Beamwidth	°	10.7 ± 0.6	9.6 ± 0.4
Electrical Downtilt continuously adjustable	°	2.0 - 12.0	2.0 - 12.0
Tilt Accuracy	°	< 0.4	< 0.5
First Upper Side Lobe Suppression	dB	> 16	> 18
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 16	> 18
Cross Polar Isolation	dB	> 30	> 30
Port to Port Isolation	dB	> 28 (R1 // R2) > 30 (R1 // Y1, Y2, Y3, Y4)	> 28 (R2 // R1, Y4) > 30 (R2 // Y1, Y2, Y3)
Max. Effective Power per Port	W	400 (at 50 °C ambient temperature)	
Max. Effective Power Port 1-4	W	800 (at 50 °C ambient temperature)	



Values based on NGMN-P-BASTA (version 9.6) requirements.

936.5303/a ngmn 04.24.02.04 Subject to alteration.

Left side, lower highband		Y1, connector 5-6				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	15.3	15.8	15.9	15.5	16.4
Gain over all Tilts	dBi	15.2 ± 0.6	15.7 ± 0.4	15.8 ± 0.3	15.6 ± 0.6	16.3 ± 0.6
Horizontal Pattern:						
Azimuth Beamwidth	°	66 ± 4.5	63 ± 4.5	62 ± 2.9	64 ± 6.9	56 ± 5.5
Front-to-Back Ratio, Total Power, ± 30°	dB	> 23	> 25	> 25	> 25	> 25
Cross Polar Discrimination at Boresight	dB	> 17	> 20	> 24	> 20	> 22
Cross Polar Discrimination over Sector	dB	> 6.5	> 10.0	> 10.0	> 8.0	> 8.5
Azimuth Beam Port-to-Port Tracking	dB	< 2.5	< 2.0	< 2.0	< 2.5	< 2.5
Vertical Pattern:						
Elevation Beamwidth	°	10.6 ± 0.8	10.1 ± 0.5	9.7 ± 0.8	8.4 ± 0.4	7.7 ± 0.6
Electrical Downtilt continuously adjustable	°	2.0 – 14.0				
Tilt Accuracy	°	< 0.3	< 0.4	< 0.3	< 0.4	< 0.3
First Upper Side Lobe Suppression	dB	> 20	> 21	> 19	> 16	> 15
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 20	> 20	> 19	> 16	> 15
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 30 (Y1 // R1, R2, Y2, Y3, Y4)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Port 5-6	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Left side, upper highband		Y2, connector 7-8				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	16.0	16.4	16.3	15.6	15.9
Gain over all Tilts	dBi	15.9 ± 0.7	16.3 ± 0.5	16.2 ± 0.6	15.6 ± 0.5	15.7 ± 0.6
Horizontal Pattern:						
Azimuth Beamwidth	°	59 ± 5.3	56 ± 3.9	58 ± 5.3	62 ± 4.0	65 ± 7.8
Front-to-Back Ratio, Total Power, ± 30°	dB	> 23	> 26	> 26	> 25	> 26
Cross Polar Discrimination at Boresight	dB	> 16	> 21	> 24	> 15	> 15
Cross Polar Discrimination over Sector	dB	> 7.0	> 8.5	> 9.5	> 7.0	> 7.0
Azimuth Beam Port-to-Port Tracking	dB	< 2.5	< 2.5	< 1.5	< 2.5	< 2.0
Vertical Pattern:						
Elevation Beamwidth	°	9.2 ± 0.5	8.7 ± 0.4	8.2 ± 0.7	7.3 ± 0.4	6.6 ± 0.5
Electrical Downtilt continuously adjustable	°	2.0 – 14.0				
Tilt Accuracy	°	< 0.4	< 0.4	< 0.4	< 0.5	< 0.4
First Upper Side Lobe Suppression	dB	> 17	> 19	> 19	> 20	> 18
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 16	> 16	> 16	> 18	> 14
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 30 (Y2 // R1, R2, Y1, Y3, Y4)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Port 7-8	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

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Right side, lower highband		Y3, connector 9-10				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	16.3	16.5	16.9	17.3	17.2
Gain over all Tilts	dBi	16.2 ± 0.4	16.5 ± 0.3	16.8 ± 0.5	17.1 ± 0.4	16.9 ± 0.4
Horizontal Pattern:						
Azimuth Beamwidth	°	65 ± 4.1	64 ± 3.3	63 ± 2.6	60 ± 2.0	60 ± 4.2
Front-to-Back Ratio, Total Power, ± 30°	dB	> 23	> 23	> 24	> 24	> 23
Cross Polar Discrimination at Boresight	dB	> 25	> 26	> 25	> 20	> 15
Cross Polar Discrimination over Sector	dB	> 16.0	> 16.0	> 14.5	> 8.5	> 10.0
Azimuth Beam Port-to-Port Tracking	dB	< 1.5	< 1.0	< 1.0	< 2.0	< 3.5
Vertical Pattern:						
Elevation Beamwidth	°	9.5 ± 0.7	8.9 ± 0.4	8.5 ± 0.6	7.5 ± 0.4	6.8 ± 0.5
Electrical Downtilt continuously adjustable	°	2.0 – 14.0				
Tilt Accuracy	°	< 0.4	< 0.4	< 0.5	< 0.4	< 0.3
First Upper Side Lobe Suppression	dB	> 17	> 18	> 19	> 19	> 18
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 17	> 18	> 17	> 17	> 17
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 30 (Y3 // R1, R2, Y1, Y2, Y4)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Port 9-10	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

Right side, upper highband		Y4, connector 11-12				
		1695-2690				
Frequency Range	MHz	1695 – 1880	1850 – 1990	1920 – 2180	2300 – 2400	2500 – 2690
Gain at mid Tilt	dBi	15.9	16.2	16.4	16.9	16.5
Gain over all Tilts	dBi	15.8 ± 0.4	16.1 ± 0.2	16.4 ± 0.3	16.8 ± 0.3	16.3 ± 0.4
Horizontal Pattern:						
Azimuth Beamwidth	°	63 ± 2.6	62 ± 2.5	61 ± 2.3	58 ± 3.1	58 ± 3.4
Front-to-Back Ratio, Total Power, ± 30°	dB	> 25	> 24	> 25	> 25	> 21
Cross Polar Discrimination at Boresight	dB	> 21	> 23	> 21	> 16	> 15
Cross Polar Discrimination over Sector	dB	> 13.5	> 14.5	> 12.5	> 6.5	> 8.0
Azimuth Beam Port-to-Port Tracking	dB	< 1.0	< 1.0	< 1.0	< 1.0	< 2.5
Vertical Pattern:						
Elevation Beamwidth	°	9.6 ± 0.6	9.0 ± 0.5	8.5 ± 0.6	7.5 ± 0.5	6.6 ± 0.5
Electrical Downtilt continuously adjustable	°	2.0 – 14.0				
Tilt Accuracy	°	< 0.4	< 0.4	< 0.5	< 0.4	< 0.4
First Upper Side Lobe Suppression	dB	> 18	> 18	> 17	> 17	> 16
Upper Side Lobe Suppression, 20° Sector above Main Beam	dB	> 18	> 18	> 17	> 18	> 15
Cross Polar Isolation	dB	> 28				
Port to Port Isolation	dB	> 30 (Y4 // R1, R2, Y1, Y2, Y3)				
Max. Effective Power per Port	W	200 (at 50 °C ambient temperature)				
Max. Effective Power Port 11-12	W	400 (at 50 °C ambient temperature)				

Values based on NGMN-P-BASTA (version 9.6) requirements.

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All specifications are subject to change without notice.
The latest specifications are available at www.kathreinusa.com

Electrical specifications, all systems		
Impedance	Ω	50
VSWR		< 1.5
Return Loss	dB	> 14
Interband Isolation	dB	> 28
Passive Intermodulation	dBc	< -150 (2 x 43 dBm carrier)
Polarization	$^\circ$	+45, -45
Max. Effective Power for the Antenna	W	1000 (at 50 °C ambient temperature)

Values based on NGMN-P-BASTA (version 9.6) requirements.

Mechanical specifications		
Input	12 x 4.3-10 female	
Connector Position	bottom	
Adjustment Mechanism	FlexRET, continuously adjustable	
Wind load (at Rated Wind Speed: 150 km/h)	N lbf	Frontal: 660 148 Maximal: 760 171
Max. Wind Velocity	km/h mph	241 150
Height / Width / Depth	mm inches	1995 / 377 / 169 78.5 / 14.8 / 6.7
Category of Mounting Hardware	H (Heavy)	
Weight	kg lb	37.0 / 39.2 (clamps incl.) 81.5 / 86.3 (clamps incl.)
Packing Size	mm inches	2196 / 397 / 212 86.5 / 15.6 / 8.3
Scope of Supply	Panel, FlexRET and 2 units of clamps for 42-115 mm 1.7-4.5 inches diameter	

Accessories (order separately if required)

Type No.	Description	Remarks mm inches	Weight approx. kg lb	Units per antenna
85010002	1 clamp	Mast diameter: 110 – 220 4.3 – 8.7	2.7 6.0	2
85010003	1 clamp	Mast diameter: 210 – 380 8.3 – 15.0	4.8 10.6	2
85010008	1 downtilt kit	Downtilt angle: 0° – 10°	4.3 9.5	1
86010154	Site Sharing Adapter	3-way (see figure below)	0.7 1.4	
86010155	Site Sharing Adapter	6-way (see figure below)	1.4 3.0	
86010162	Gender Adapter	Solely to be used in combination with the FlexRET module 86010153v01	0.045 0.099	1
86010163	Port Extender		0.16 0.35	1

Accessories (included in the scope of supply)

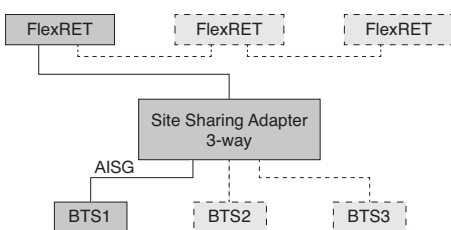
738546	1 clamp	Mast diameter: 42 – 115 1.7 – 4.5	1.1 2.4	2
86010153v01	FlexRET			1

For downtilt mounting use the clamps for an appropriate mast diameter together with the downtilt kit.
Wall mounting: No additional mounting kit needed.

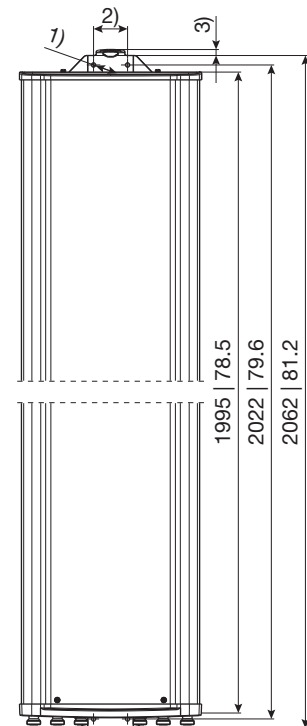
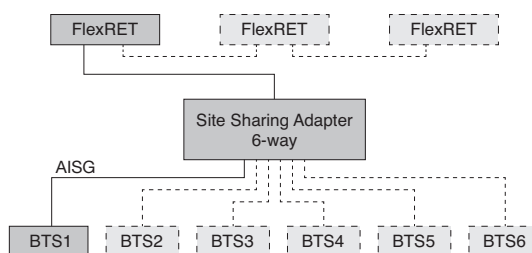
Material: **Reflector screen:** Aluminum.
Fiberglass housing: It covers totally the internal antenna components. The special design reduces the sealing areas to a minimum and guarantees the best weather protection. Fiberglass material guarantees optimum performance with regards to stability, stiffness, UV resistance and painting. The color of the radome is light grey.
All nuts and bolts: Stainless steel or hot-dip galvanized steel.

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

Configuration example with Site Sharing Adapter 86010154



Configuration example with Site Sharing Adapter 86010155

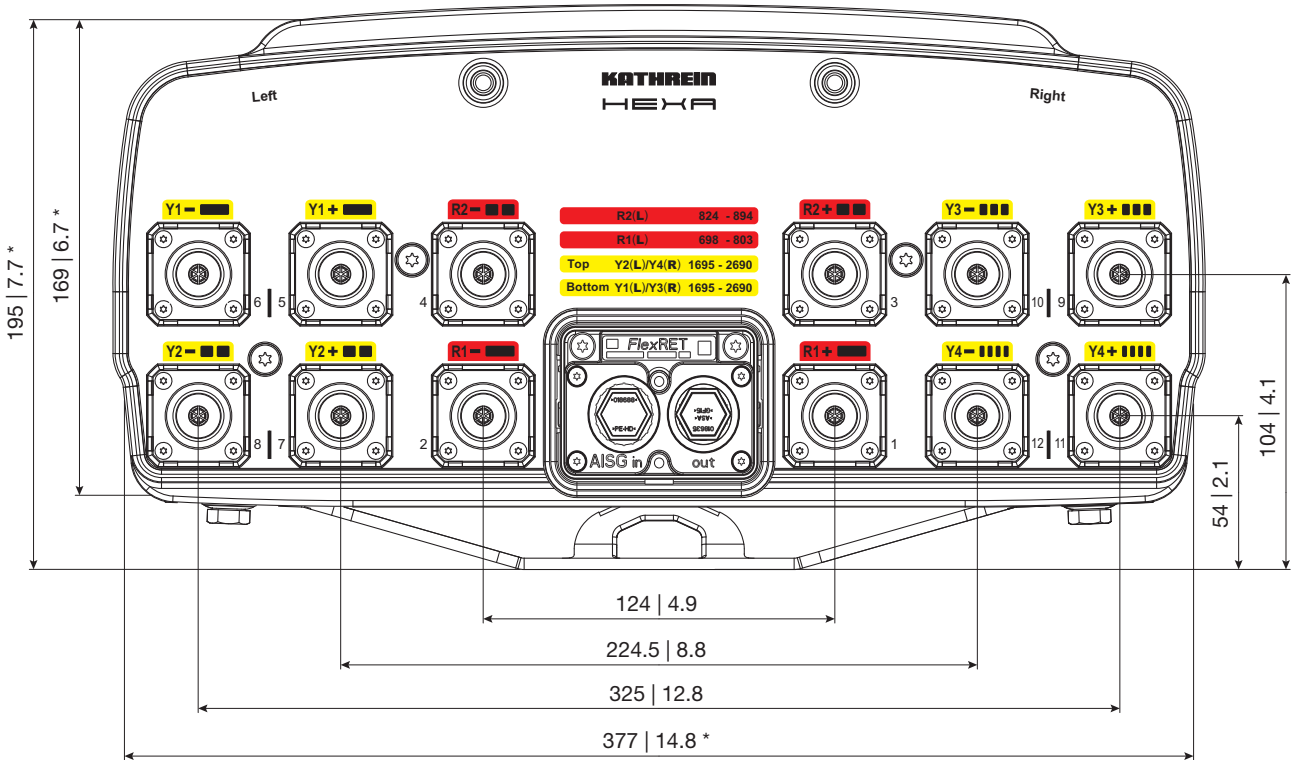


- 1) \varnothing 9 | 0.4
- 2) 72 | 2.8
- 3) 13 | 0.5

All dimensions in mm | inches

For more information please refer to the respective data sheets.

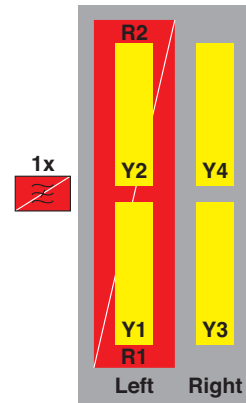
Layout of interface:



Bottom view
 * Dimensions refer to radome
 All dimensions in mm | inches

Correlation Table

Frequency range	Array	Connector
698–803 MHz	R1	1–2
824–894 MHz	R2	3–4
1695–2690 MHz	Y1	5–6
1695–2690 MHz	Y2	7–8
1695–2690 MHz	Y3	9–10
1695–2690 MHz	Y4	11–12



Order Information

Model	Description
80010798	12-Port antenna with mounting bracket
80010798K	12-Port antenna with mounting bracket and mechanical tilt bracket

Any previous data sheet issues have now become invalid.

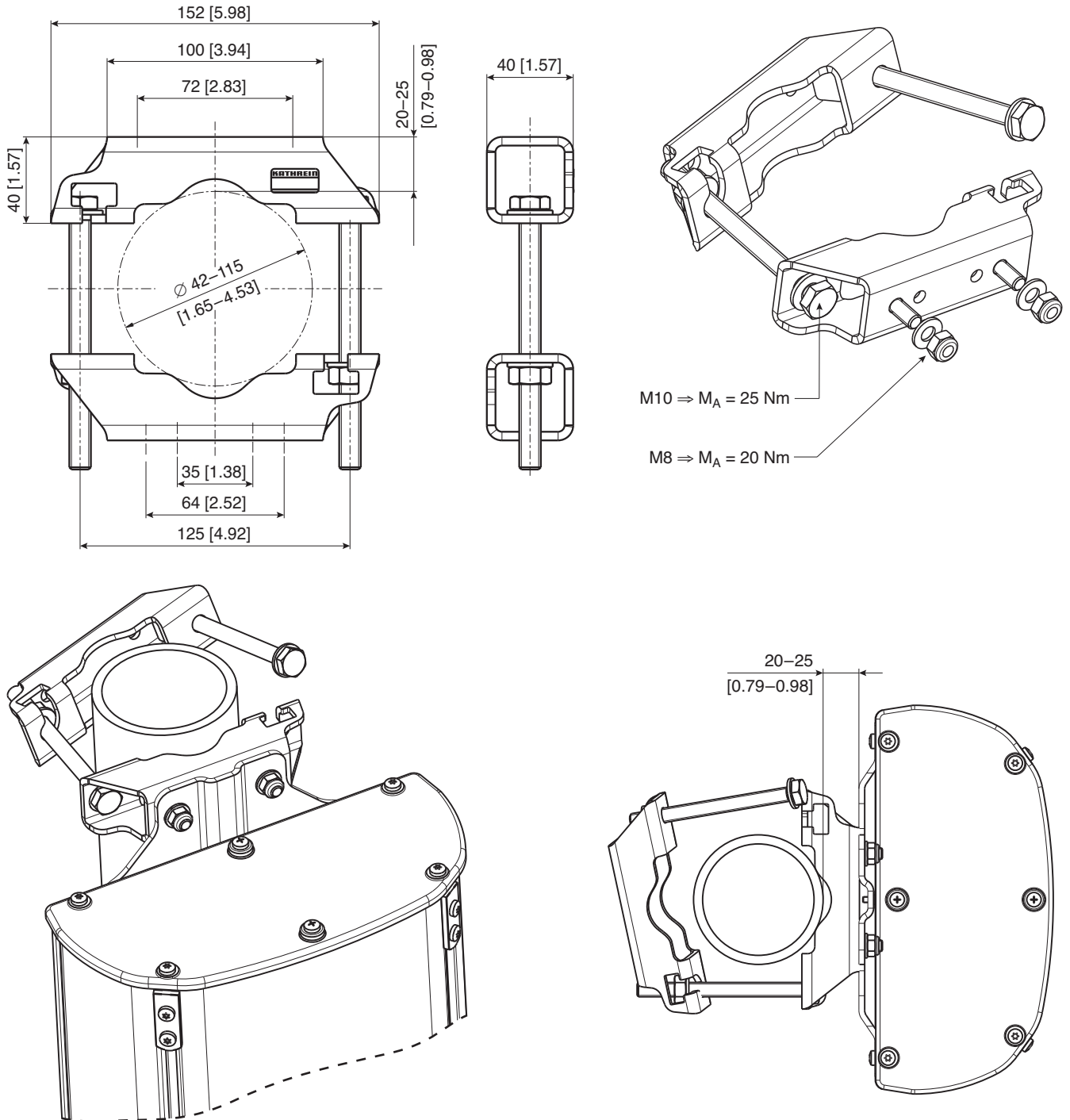
All specifications are subject to change without notice.
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Mounting Hardware

Clamp Included in the Scope of Supply

KATHREIN

Suitable for mast diameter	(mm) [inches]	42 – 115 [1.65 – 4.53]
Antenna – mast distance	(mm) [inches]	20 – 25 [0.79 – 0.98]
Material of clamp and screws		Hot-dip galvanized steel / stainless steel
Weight	(kg) [lb]	1.1 [2.43]



936.3920/c Subject to alteration.

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

All dimensions in mm and [inches]

All specifications are subject to change without notice.
The latest specifications are available at www.kathreinusa.com

738546 Page 1 of 1

A flexible, integrated solution for adjusting the electrical downtilt of Kathrein FlexRET antennas.

- Compliant to 3GPP/AISG 2.0
- Single RETs or Multi RET displayed
- Two way antenna sharing feasibility
- Daisy Chain feasibility
- Pre-configured



Type No.		86010153v01	
Protocols		compliant to 3GPP/AISG 2.0	
Logical interface ex factory		3GPP/AISG 2.0	
Operates as		Single RETs or Multi RET	
Ex factory		Single RETs	
Input voltage range	V	10 ... 30 (pin 6)	
Power consumption	W	Typically < 1; < 10 (motor activated)	
Connectors		2 x 8 pin connector according to IEC 60130-9; according to AISG-C 485 Daisy chain in: male; Daisy chain out: female	
Hardware interfaces		RS 485A/B (pin 5, pin 3); power supply (pin 6); DC return (pin 7); according to AISG / 3GPP	
Adjustment time (full range)	sec	40 (typically, depending on antenna type)	
Adjustment cycles		> 50,000	
Temperature range	°C	-40 ... +60	
Protection class		IP 24 (installed)	
Lightning protection		AISG interface (each pin) 2.5 kA (10/350 µs) 8 kA (8/20 µs) according to IEC 61000-4-5	
Housing material		Profile: Aluminum anodized; cover: Aluminum die cast coated	
Weight	g lb	350 0.77	
Packing size (H x W x D)	mm inches	245 x 93 x 102 9.6 x 3.6 x 4	
Dimensions (H x W x D)	mm inches	142 x 71 x 51 5.6 x 2.8 x 2	



Please note:

If the Primary which controls the FlexRET system does not support the default ex-factory interface setting, then the FlexRET must be switched to the appropriate standard of the Primary before installation. Please contact Kathrein for further information.

If the FlexRET of an antenna has to be replaced, the FlexRET gets the information stored in the antenna after power on automatically. It is not necessary to configure the FlexRET manually.

- Standards: EN 60950-1 (Safety)
EN 60950-22 (Safety – Equipment installed outdoor)
EN 55022 (Emission)
EN 55024 (Immunity)
ETS 300019-1-4 (Environmental)
UL 60950-1; 1st edition
- Certification: CE, FCC
- Scope of supply: FlexRET
- Optional: **Site Sharing Adapter** (86010154 or 86010155) to create independent logical interfaces at one antenna or site. Makes it possible to operate with more than one independent Node B.
- Gender Adapter** (86010162) to convert the AISG out (female) to an AISG in (male) port in order to operate one FlexRet with exactly 2 BTS. Detailed information is given in the data sheet of the Gender Adapter.
- Port Extender** (86010163) to convert the existing AISG input and output in order to operate FlexRet with exactly 2 BTS while maintaining the daisy chain capability. Detailed information is given in the data sheet of the Port Extender.

Please note:

In general, the addressing of the FlexRET is automatically performed. Only in case the FlexRET is manually addressed, the serial number has to be extended by the corresponding colour coding extension (e.g. CSG351234-**R1**). The respective information can be found on the site documentation which is included in the scope of supply.

936.5204 Subject to alteration.

Startup of FlexRET

The FlexRET module included in the antenna is preconfigured with the following information: Antenna model no., Antenna Serial no., Antenna configuration data. After connecting a control cable and scanning the antenna line devices (ALD) the used primary (e.g. NodeB, ALC, etc.) will find the FlexRET. You only need to insert your additional data.

Connecting the control cables:



Connect a control cable to the daisy chain input of the FlexRET. The tightening torque for fixing the connector must be 0.5 – 1.0 Nm ('hand-tightened').

The connector should be tightened by hand or by a special torque screw driver (order no. 85010080).

See also data sheet for Kathrein AISG-cable (86010007, ...).

Please note: To ensure the tightness of the RET System, Kathrein recommend the use of Kathrein components only.

Please note: If the daisy chain output is not used, do not remove the protection cap.



For daisy chain operation, remove the protection cap and attach a control cable to interconnect with the daisy chain input of the subsequent FlexRET or external RCU.

Please note: Do not remove the protection cap on the daisy chain output of the last FlexRET or RCU device.

FCC – Statements

FCC § 15.19

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC § 15.105

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Canada CNR-Gen Section 7.1.3

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:(1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

ICES-003

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

FCC § 15.21 (Warning Statement)

[Any] changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Compliance Information Statement (Declaration of Conformity Procedure)

Responsible Party: Kathrein USA

Address: Greenway Plaza II, 2400 Lakeside Blvd. Suite 650, 75082 Richardson, Texas

Telephone: (+01)214 238 8800

Type of Equipment:



Model Name: FlexRET
FCC ID SP3-86010153

936.5204 Subject to alteration.

Any previous data sheet issues have now become invalid.