

4-Port Antenna

Frequency Range

Dual Polarization

Half-power Beam Width

Integrated replaceable Remote Control Unit

Adjustable Electrical Downtilt

4-Port Antenna iRCU 698–894/1710–2170 65°/65° 17/18.5dBi 0°–10°/0°–10°T

R1

B1

698–894

1710–2170

X

X

65°

65°

iRCU

iRCU

0°–10°

0°–10°



Type No.		80010766v01			
Antenna specifications		R1, connector 1–2		B1, connector 3–4	
		698–894		1710–2170	
Frequency range	MHz	698 – 806	824 – 894	1710 – 1755 2110 – 2170	1850 – 1990
Polarization	°	+45, –45	+45, –45	+45, –45	+45, –45
Gain	dBi	16.4	16.8	18	18.5
Horizontal Pattern:					
Half-power beam width	°	68	65	63	62
Front-to-back ratio	dB	Copolar: > 30 Average: 34	Copolar: > 30 Average: 34	Copolar: > 27 Average: 34	Copolar: > 27 Average: 34
Cross polar ratio	dB	Typically: > 25 > 10, Avg. 15	Typically: > 20 > 10, Avg. 12	Typically: > 25 > 8, Avg. 15	Typically: > 30 > 10, Avg. 15
Maindirection Sector	0° ±60°				
Tracking, Avg.	dB	1.0		1.5	
Squint	°	±2.5		±3.0	
Vertical Pattern:					
Half-power beam width	°	9.5	8.7	5.8	5.8
Electrical tilt	°	0–10, continuously adjustable		0–10, continuously adjustable	
Min. sidelobe suppression for first sidelobe above main beam:	°T	0 ... 5 ... 10	0 ... 5 ... 10	0 ... 5 ... 10	0 ... 5 ... 10
Average:	dB	16 ... 16 ... 16	18 ... 18 ... 16	18 ... 18 ... 18	18 ... 18 ... 18
	dB	18 ... 20 ... 18	20 ... 20 ... 20	20 ... 22 ... 20	20 ... 22 ... 20
Impedance	Ω	50			
VSWR		< 1.5			
Isolation, between ports	dB	Intrasystem: > 30, Intersystem: > 35			
Intermodulation IM3	dBc	< –150 (2 x 43 dBm carrier)			
Max. effective power per port	W	400 (at 50 °C ambient temperature)		250 (at 50 °C ambient temperature)	
Max. effective power for the antenna		900 (at 50 °C ambient temperature)		900 (at 50 °C ambient temperature)	



iRCU specifications (86010149)*

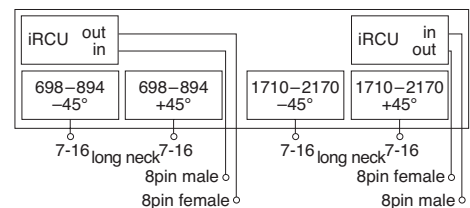
Field replaceable without dismantling the antenna	
Logical interface ex factory ¹⁾	3GPP/AISG 2.0
Protocols	Compliant to AISG 1.1 and 3GPP/AISG 2.0
Hardware interface ²⁾	2 x 8pin connector acc. IEC 60130-9; according to AISG: – iRCU in (male): Control / Daisy chain in – iRCU out (female): Daisy chain out
Power supply	10 ... 30 V
Power consumption	< 1 W (stand by) < 8.5 W (motor activated)
Adjustment time (full range)	40 sec.
Adjustment cycles	> 50,000
Certification	CE, FC ³⁾

* See mounting instructions and warnings.

¹⁾ The protocol of the logical interface can be switched from 3GPP/AISG 2.0 to AISG 1.1 and vice versa with a vendor specific command. Start-up operation of the iRCU 86010149 is possible in a RET system supporting AISG 1.1 or supporting 3GPP/AISG 2.0 after performing a layer 2 reset before address assignment. The protocol can also be changed as follows: *AISG 1.1 to 3GPP*: Enter „3GPP“ into the additional data field „Installer's ID“ and perform a layer 7 reset or a power reset. *3GPP to AISG 1.1*: Enter „AISG 1“ into the additional data field „Installer's ID“ and perform a layer 2 reset or a power reset. After switching the protocol any other information can be entered into the „Installer's ID“ field.

²⁾ The tightening torque for fixing the connector must be 0.5 – 1.0 Nm ('hand-tightened'). The connector should be tightened by hand only or using the torque screwdriver (85010080) as described in the connecting cable data sheet (85010007, ...)!

³⁾ Tested to comply with FCC Standards. 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.



Accessories

General Information

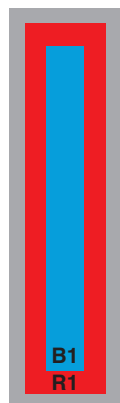
KATHREIN

Mechanical specifications					
Input		4 x 7-16 female (long neck) iRCU in: 1 x 8pin male iRCU out: 1 x 8pin female			
Connector position		Bottom			
Wind load	N lbf	Frontal:	1270 286 (at 150 km/h)	3170 713 (at 150 mph)	
		Lateral:	470 106 (at 150 km/h)	1160 261 (at 150 mph)	
		Rearside:	1320 297 (at 150 km/h)	3310 744 (at 150 mph)	
Max. wind velocity	km/h mph	241 150			
Height/width/depth	mm inches	2438 / 300 / 152 96.0 / 11.8 / 6.0			
Category of mounting hardware		H (Heavy)			
Weight	kg lb	26.5 / 28.7 (clamps incl.) 58.3 / 63.3 (clamps incl.)			
Packing size	mm inches	2656 x 320 x 190 99.88 x 12.6 x 7.5			
Scope of supply		Panel, 2 units of iRCU and 2 units of clamps 42–115 mm 1.7–4.5 inches diameter			

Material:
Reflector screen: Aluminum. **Radiator:** Tin-plated zinc.
iRCU housing: Coated aluminum.
Fiberglass radome: The grey fiberglass radomes of these antennas are very stable and extraordinarily stiff. They are resistant to ultraviolet radiation and can also be painted to match their surroundings.
All screws and nuts: Stainless steel.

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

Environmental tests:
iRCU additionally fulfils the standards:
EN 60950-1 (Safety), EN 55022 (Emission) and EN 55024 (Immunity)

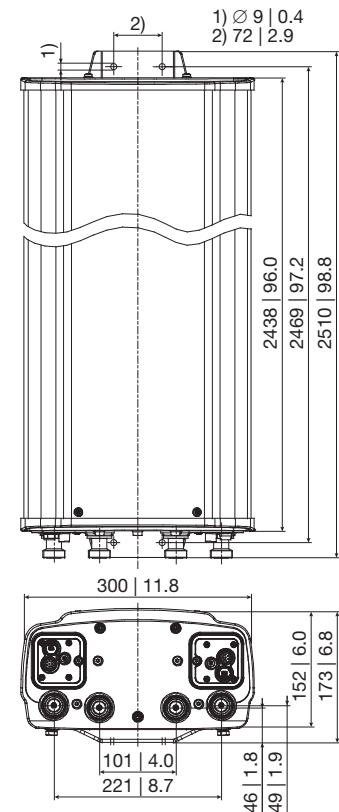


Correlation Table

Frequency range	Array	Connector
698– 894 MHz	R1	1–2
1710–2170 MHz	B1	3–4

Order Information

Model	Description
80010766V01	Dualband antenna with mounting bracket
80010766V01K	Dualband antenna with mounting bracket and mechanical tilt bracket



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

Accessories

Type No.	Description	Remarks mm inches	Weight approx. kg lb		Units per antenna
738546	1 clamp	Mast diameter: 42 – 115 1.7 – 4.5	1.1	2.4	2 (included in the scope of supply)
86010149	1 iRCU		0.5	1.2	2 (included in the scope of supply)
85010002	1 clamp	Mast diameter: 110 – 220 4.9 – 8.7	2.7	6.0	2 (order separately if required)
85010003	1 clamp	Mast diameter: 210 – 380 8.3 – 15.0	4.8	10.6	2 (order separately if required)
85010008	1 downtilt kit	Downtilt angle: 0° – 8°	4.3	9.5	1 (order separately if required)

Wall mounting: No additional mounting kit needed.

Any previous data sheet issues have now become invalid.

Kathrein's 86010149 integrable Remote Control Unit (iRCU) allow operators to control the electrical tilt of compatible antennas without direct access to the antenna.

- Compliant to AISG 1.1 and 3GPP/AISG 2.0
- Field replaceable without dismantling the antenna
- Daisy Chain feasibility
- Allow control of the antenna either locally through a laptop computer, on site desktop computer, the optional central control unit; remotely via an ethernet network or over the internet



Type No.	86010149
Protocols	Compliant to AISG 1.1 and 3GPP/AISG 2.0
Logical interface ex factory ¹⁾	AISG 2.0/3GPP
Input voltage range	10 ... 30 V (pin 1, pin 6)
Power consumption	< 1 W (stand by); < 10 W (motor activated)
Connectors ²⁾	2 x 8 pin connector according to IEC 60130-9; according to AISG Daisy chain in: male; Daisy chain out: female
Hardware interfaces	RS 485A/B (pin 5, pin 3); power supply (pin 1, pin 6); DC return (pin 7); according to AISG / 3GPP
Adjustment time (full range)	40 sec (typically, depending on antenna type)
Adjustment cycles	> 50,000
Temperature range	-40 °C ... +60 °C
Protection class	IP 24
Lightning protection	AISG interface (each pin); 2.5 kA (10/350µs); 8 kA (8/20µs)
Weight	480 g (1.16 lbs), 1.0 G lbs
Packing size	245 x 93 x 102 mm, (9.6 x 3.6 x 4 inches)
Dimensions (H x W x D)	170 x 68.5 x 66 mm, (6.68 x 2.7 x 2.6 inches)

¹⁾ The protocol of the logical interface can be switched from 3GPP/AISG 2.0 to AISG 1.1 and vice versa with a vendor specific command.

Please note:

If the Primary of the RET system doesn't support the standard of the 'logical interface ex factory', the iRCU must be switched to the appropriate standard of the Primary before installation. Please contact Kathrein for further information.

²⁾ The tightening torque for fixing the connector must be 0.5 – 1.0 Nm ('hand-tightened'). The connector should be tightened by hand only!

Standards
 EN 60950-1 (Safety)
 EN 55022 (Emission)
 EN 55024 (Immunity)
 ETS 300019-1-4 (Environmental)

Certification: CE, FCC15.107 class B

Scope of supply: Integrable Remote Control Unit



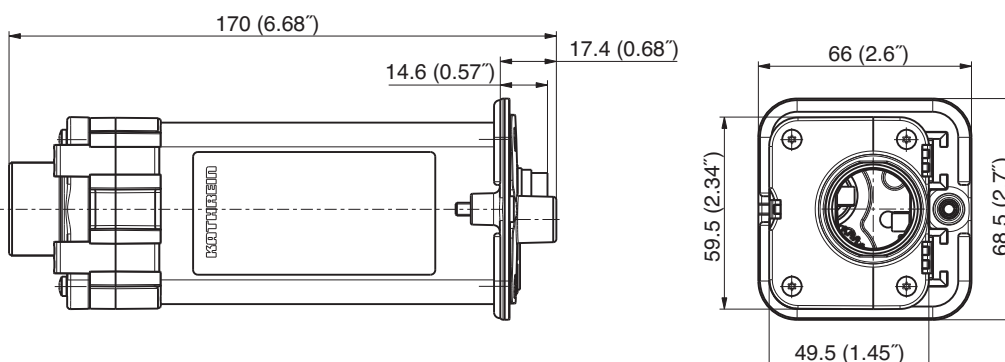
Daisy chain in (male) Daisy chain out (female)



Retaining Screw Torx 20

Bottom view of RCU

936.4054/b Subject to alteration.



Please note:

Additional grounding of the iRCU is not required if the iRCU is fixed to an antenna with proper grounding. Please assure that grounding of the antenna has been carried out according to all relevant local regulations.

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.
2. This device must accept any interference received, including interference that may cause undesired operation.

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 and thereby respects the static mechanical load imposed on an antenna by wind at maximum velocity. Wind loads are calculated according to DIN 1055-4. 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 installation team must be properly qualified and also be familiar with the relevant national safety regulations. The details given in our data sheets have to be followed carefully when installing the antennas and accessories. The limits for the coupling torque of RF-connectors, recommended by the connector manufacturers must be obeyed.

Any previous datasheet issues have now become invalid.

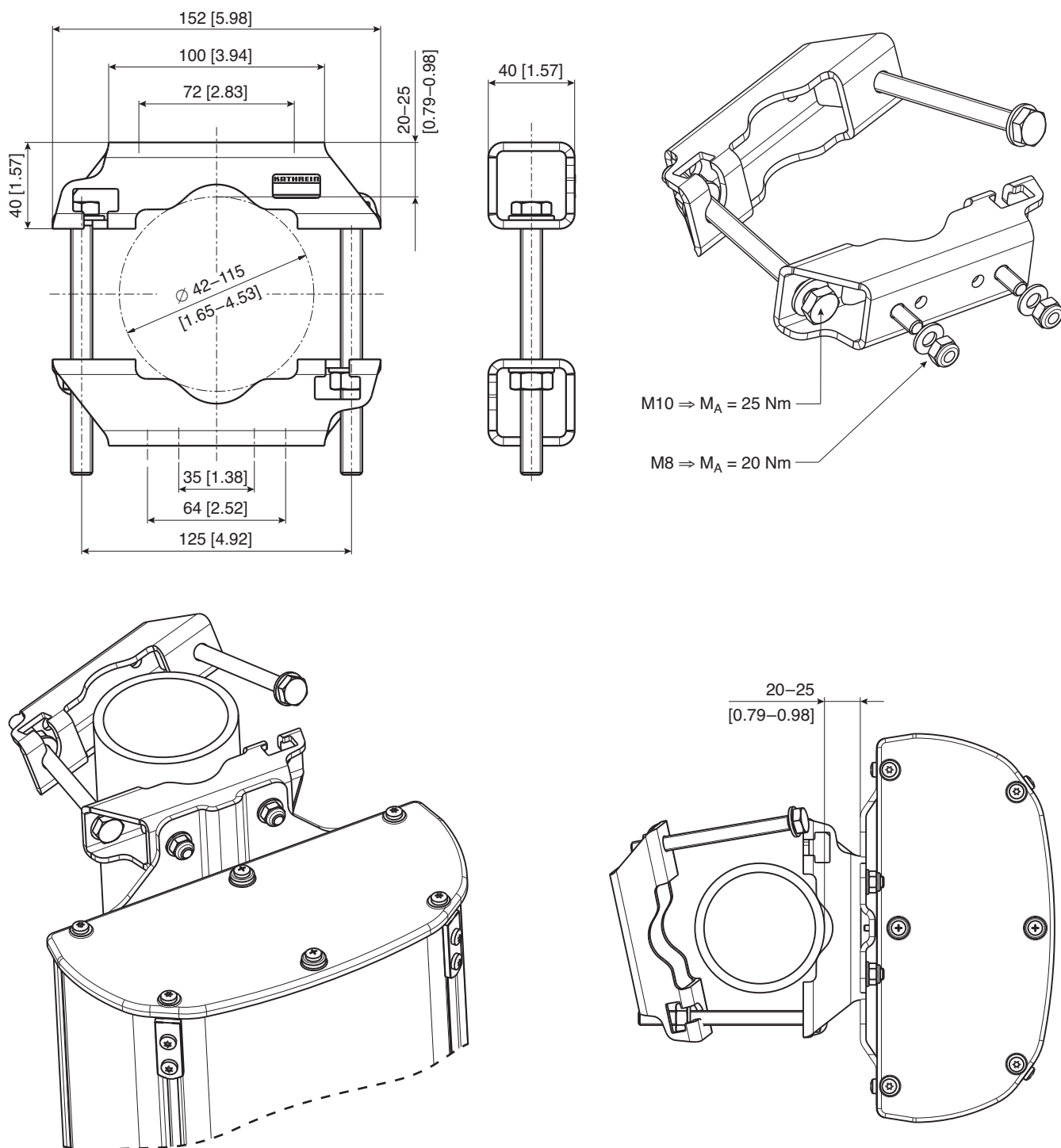


Mounting Hardware

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

Kathrein USA Greenway Plaza II, 2400 Lakeside Blvd., Suite 650, Richardson TX 75082
Phone: 214.238.8800 Fax: 214.238.8801 Email: info@kathrein.com

Connecting the control cables:



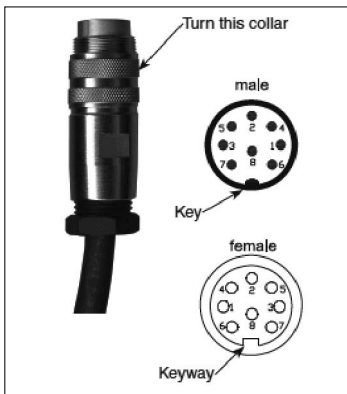
Connect a control cable to the daisy chain input of the iRCU.
The tightening torque for fixing the connector must be 0.5 – 1.0 Nm ("hand-tightened").
The connector should be tightened by hand only!

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 next iRCU.

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



Caution!

When installing or removing cables, turn only the threaded collar indicated and not the body of the connector. Rotating the connector body can result in permanent damage to the connector and the device being installed. Note that the connectors have keyways which must be carefully aligned before insertion. Insert the connector fully until well seated before tightening.
Hand tighten connectors (0.5 – 1.0 Nm).
Avoid tightening connectors with wrenches or pliers.
Over tightening connectors may permanently damage the iRCU.

Instructions for iRCU Replacement:



Remove the AISG control cables by following the above Control Cable installation instructions. Use a TORX T20 Screwdriver to loosen the retaining screw.
When the retaining screw is completely released the screw will hang free but will not fall from the iRCU housing.



Carefully slide the iRCU out of the antenna housing.



Install the new iRCU by sliding the iRCU into the empty cavity with the correct orientation.



When the iRCU is inserted all the way into the antenna housing use the TORX Screwdriver to tighten the retaining screw. Torque: $M_A = 2.5 \dots 3.0 \text{ Nm}$. Reattach the AISG control cable using the Control Cable Installation instructions.

Warning!

Take care that the iRCU does not fall from the antenna housing when the retaining screw is not tightened. The falling iRCU can cause injury or death and may permanently damage equipment.

Important:
Application of the correct torque on the screw is mandatory as earthing of the iRCU to the reflector screen is otherwise endangered.

General Instructions for Feederline Installation for Single- and Dual-band Antennas with iRCU

KATHREIN
Antennen · Electronic

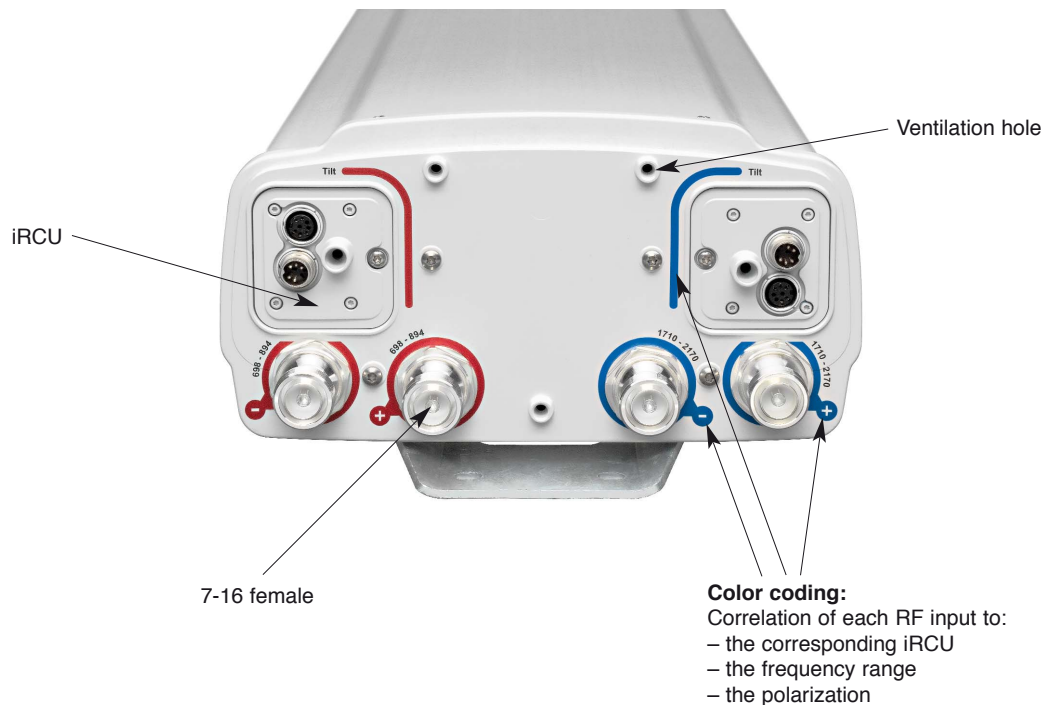
Please note: To avoid any damage to the interfaces, please ensure that only the right tools are used.

Description of bottom end cap:

Single-band Antennas with iRCU



Dual-band Antennas with iRCU



Installation of the feederline connector:

Carefully place the connector and fix the nut using a torque-wrench (according to the manufacturers guidelines).