

RET

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- Service Tools
- RET System Components
- RET Control Cables

RET

Mounting Accessories

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- Downtilt Kits
- Azimuth Adjustment Kits
- Offsets
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Mounting Accessories

RET

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RET

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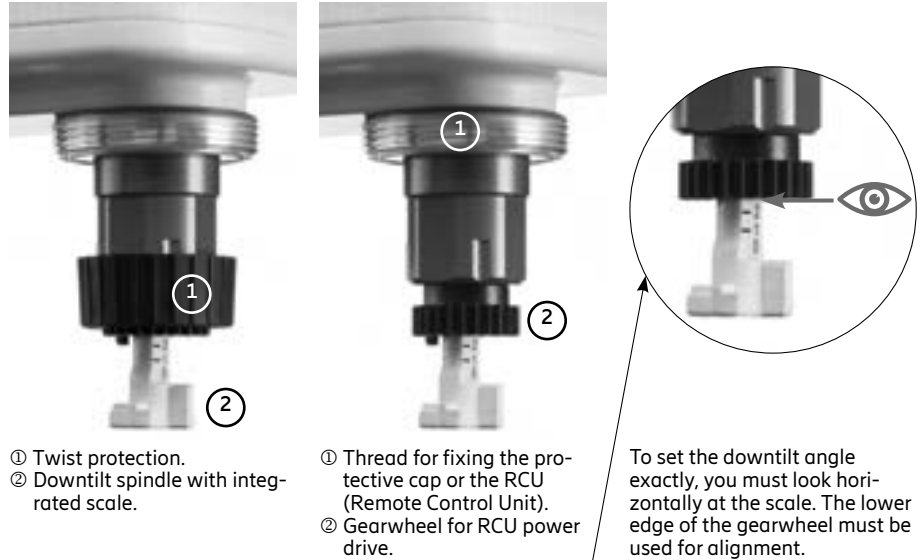
Downtilting of Antennas with external RCU: Downtilt Possibilities

Mechanical downtilt

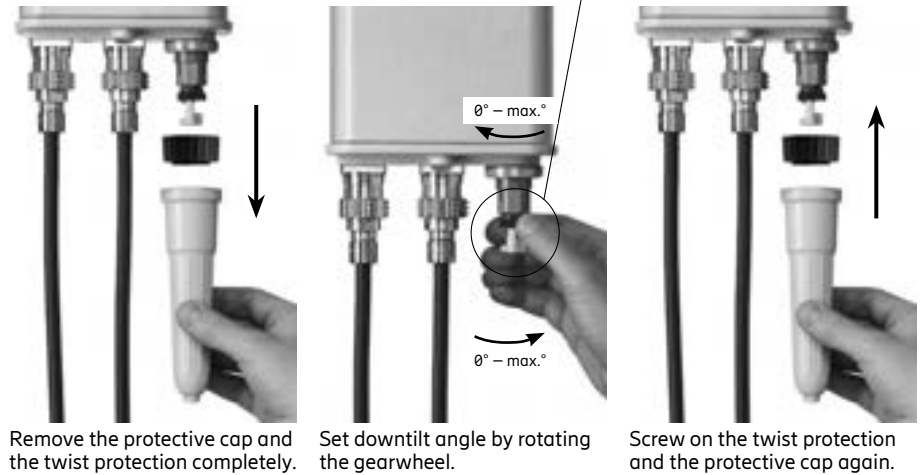
For further technical information please see "Mounting Accessories", pages 862 and 863.

Electrical downtilt

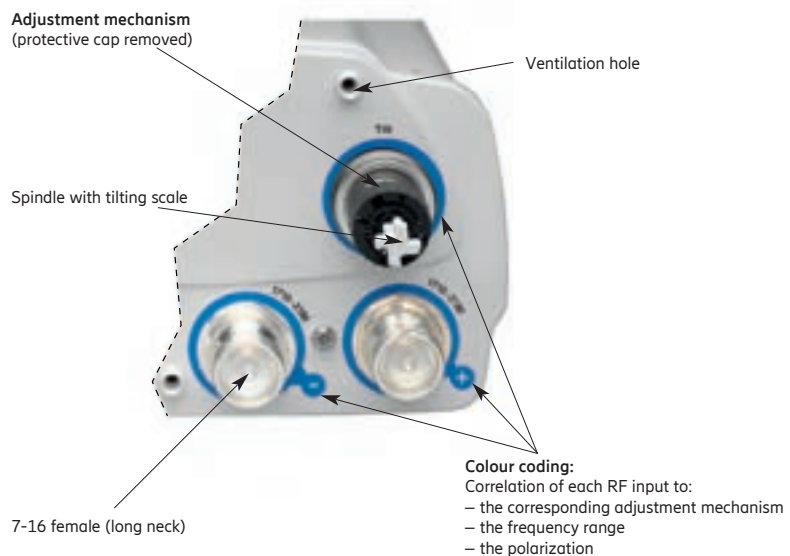
Description of the adjustment mechanism (protective cap removed):



Manual adjustment procedure:



Description of bottom end cap (exemplary picture):



Remote Electrical Tilt System Functionality of different RET Technologies



Ericsson's overall RET system works in accordance with the AISG (Antenna Interface Standards Group) standard and 3GPP (3rd Generation Partnership Project).

RCU with RFID Feature

- External RCU 86010148V01 includes a RFID reader
- Antenna spindles are equipped with RFID tags
- The antenna specific data is stored on this tag:
 - Type number
 - Serial number
 - Configuration File
- With power on, the data is read out automatically from the tag by the RCU



FlexRET

- Integrated RET module inside the antenna (86010153V01 / 86010165 / 86010165RAE / 86010167*)
- Pre-configured with the antenna specific parameters:
 - Type number
 - Serial number
 - Configuration file
- Calibrated ex-factory
- The FlexRET module is exchangeable
 - Automatic data transfer in case of exchange with internal RFID tag
 - Only calibration is necessary
- Daisy chain possibility with FlexRET antennas and / or external RCUs
- Same module for all antennas
- SingleRET or MultiRET selection possible
- Array allocation possible with special Site Sharing Adapter or Gender Adapter / Port Extender



AISG standard compliancy overview for the Ericsson FlexRET modules

	AISG2		AISG3		RAE
	3GPP / AISG2 v2.0		AISG3 v3.0.2.1	ADB vADB3.1.3.1	AISG-ES-RAE-v2.2.0
86010153V01	✓	X	X	X	X
86010165	✓	✓	✓	✓	X
86010165RAE	✓	✓	✓	✓	✓
86010167*	✓	✓	✓	✓	X

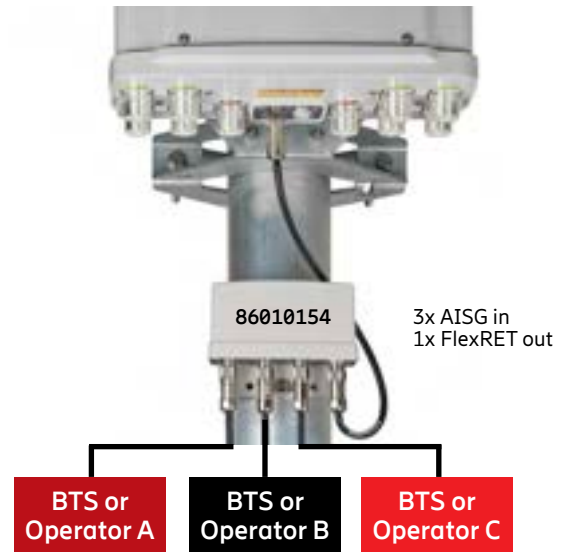
* 86010167 is without RFID tag. In case of exchange, the antenna data has to be loaded manually to the FlexRET. Gender Adapter and Port Extender are not supported

Remote Electrical Tilt System

Functionality of different RET Technologies

Site Sharing Adapter

- Needed whenever the AISG control of a FlexRET antenna shall be performed by a higher number of base stations (BTS)
- 2 different realizations available
 - 3-way Site Sharing Adapter: Product No. 86010154 – FlexRET control with up to 3 BTS
 - 6-way Site Sharing Adapter: Product No. 86010155 – FlexRET control with up to 6 BTS
- Daisy chaining of up to 3 FlexRET antennas
- Additional ALDs can be mounted prior to the Site Sharing Adapter
- Flexible allocation of antenna arrays to the different BTS units using a special software application via PC
- Each BTS can act independently
- Individual password protection of configuration possible
- Configuration can be sent to the Site Sharing Adapter with every AISG control device (BTS or e.g. Ericsson ALC)



Gender Adapter (86010162)

- Can be used if 2 base stations (BTS) are interconnected to one common FlexRET antenna
- Mounted on the FlexRET output of the module
- Converts the AISG output to an AISG input
- The allocation of the antenna arrays can easily be performed during the commissioning process via the BTS or flexible allocation of antenna arrays to the different BTS units using a special software application via PC



Port Extender (KRY 121 108/1)

- Can be used if 2 BTS are interconnected to common FlexRET antennas in daisy chain
- Mounted on the FlexRET module by 2 screws
- Converts 1 FlexRET input and output to 2 FlexRET inputs and outputs
- Daisy chaining with further FlexRET antennas and / or external RCUs
- The allocation of the antenna arrays can easily be performed during the commissioning process via the BTS or flexible allocation of antenna arrays to the different BTS units using a special software application via PC



Manuals for all our AISG control devices and for the Site Sharing Adapter as well as the corresponding software downloads can be found on our website ericsson.com/antenna-system



External RET

86010148V01



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Remote Control Unit (RCU) for Ericsson base station antennas with adjustable electrical down-tilt and appropriate mechanical interface.

- Compliant to AISG 1.1 and 3GPP/AISG 2.0
- Compact size
- Prepared for automatic configuration and calibration
- Daisy Chain feasibility
- Suitable for operation under outdoor conditions

Product No.		86010148V01
Protocols		compliant to AISG 1.1 and 3GPP/AISG 2.0
Logical interface ex factory ¹⁾		3GPP/AISG 2.0
Input voltage range	V	10 ... 30 (pin 1, pin 6)
Power consumption	W	< 1 (stand by); < 10 (motor activated)
Connectors ^{2) 3)}		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)	sec	40 (typically, depending on antenna type)
Adjustment cycles		> 50,000
Temperature range	°C	-40 ... +60
Protection class		IP 24
Lightning protection		AISG interface (each pin) 2.5 kA (10/350 µs) 8 kA (8/20 µs)
Housing material		Profile: Aluminum anodized; cover: Aluminum die cast coated
Weight	kg lbs	0.5 0.99
Packing size	mm inches	245 x 93 x 102 9.6 x 3.6 x 4
Dimensions (H x W x D)	mm inches	177.5 x 59.5 x 49.5 7.0 x 2.3 x 1.9

¹⁾ The protocol of the logical interface can be switched from 3GPP/AISG 2.0 AISG 1.1 to with a vendor specific command. Start-up operation of the RCU is only possible in a RET system supporting 3GPP/AISG 2.0!
The protocol can also be changed as follows: 3GPP to AISG 1.1: Enter "AISG1" into the additional data field "Installer's ID" and perform a layer 2 reset or a power reset. AISG 1.1 to 3 GPP: Enter "3GPP" into the additional data field "Installer's ID" and perform a layer 7 reset or a power reset. After switching the protocol any other information can be entered into the "Installer's ID" field.

Please note:

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

²⁾ The tightening torque for fixing the connector must be 0.5 – 1.0 Nm. The connector should be tightened by hand or using the torque screwdriver (85010080) as described in the connecting cable data sheet (only valid for 860... cables)

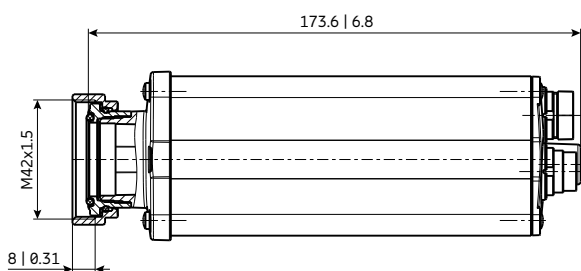
³⁾ The RCU gets the information stored in the antenna after power on automatically if a corresponding antenna is used. In this case, it is not necessary to configure the RCU manually.

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

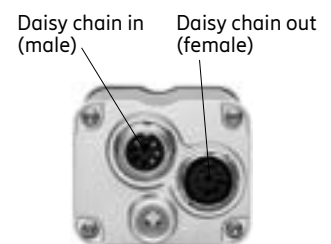
EU-RED
Hereby, Ericsson declares that the radio equipment type 86010148v01 is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: mobilcom.eag@ericsson.com

Certification: CE, FCC

Scope of supply: Remote Control Unit, Assembly paste



All dimensions in mm | inches



Bottom view of RCU



FlexRET 6-fold

86010153V01

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



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Product 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		2x 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

This device is not compatible to antennas with other FlexRET versions. These FlexRET devices can not be replaced by 86010165, 86010165RAE or 86010167.

Non-observance can damage the antenna and the RET device.

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 Ericsson 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

EU-RED: Hereby, Ericsson declares that the radio equipment type 86010153V01 is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available and can be requested at the following address: mobilcom.eag@ericsson.com

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 (KRY 121 108/1) 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.



FlexRET 8-fold

86010165

- Compliant to 3GPP / AISG 2.0 – AISG 3
- Daisy Chain feasibility
- Single RETs or Multi RET displayed
- Pre-configured
- Individual user-specific configuration possible:
 - Antenna sharing-assignment of certain RET-subunits to RET-ports
 - Antenna tilt consolidations for RET control of several arrays by one RET-subunit



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Product No.		86010165
Protocols		compliant to 3GPP / AISG 2.0 – AISG 3
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

This device is not compatible to antennas with FlexRET 86010153 or 86010153V01. These FlexRET devices can not be replaced by 86010165.

Non-observance can damage the antenna and the RET device.

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 or higher installation. Please contact Ericsson for further information.

For support of AISG3 features ADB and MALD FW_V03.01.01 is needed. The latest firmware is available via our customer portal on www.ericsson.com/antenna-system

The FlexRET needs to be powered by a LPS (Limited Power Source, Class: P2) according to IEC/EN 62368-1.

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 62368-1 (Safety)
EN 60950-22 (Safety – Equipment installed outdoor)
ETSI EN 301489-1 (EMI)
ETSI EN 301489-3 (EMI)
ETS 300019-1-4 (Environmental)
ETSI EN 300330 (Radio equipment)
EN 50364 (Health)

EU-RED: Hereby, Ericsson declares that the radio equipment type 86010165 is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available and can be requested at the following address: mobilcom.eag@ericsson.com

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. Operation in AISG 2.0 mode only.

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 (KRY 121 108/1) 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.



FlexRET 8-fold RAE

86010165RAE

- Compliant to 3GPP / AISG 2.0 – AISG 3
- Daisy Chain feasibility
- Single RETs or Multi RET displayed
- Pre-configured
- Separate RAE device integrated
- Individual user-specific configuration possible:
 - Antenna sharing-assignment of certain RET-subunits to RET-ports
 - Antenna tilt consolidations for RET control of several arrays by one RET-subunit



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Product No.		86010165RAE
Protocol		compliant to 3GPP / AISG 2.0 – AISG 3 – AISG-ES-RAE-v2.2.0
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		2x 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

This device is not compatible to antennas with other FlexRET. Non-observance can damage the antenna and the RET device.

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 Ericsson for further information.

The FlexRET needs to be powered by a LPS (Limited Power Source, Class: P2) according to IEC/EN 62368-1.

Standards: EN 62368-1 (Safety)
EN 60950-22 (Safety – Equipment installed outdoor)
ETSI EN 301489-1 (EMI)
ETSI EN 301489-3 (EMI)
ETS 300019-1-4 (Environmental)
ETSI EN 300330 (Radio equipment)
EN 50364 (Health)

EU-RED: Hereby, Ericsson declares that the radio equipment type is in compliance with Directive 2014/53/EU.
The full text of the EU declaration of conformity is available and can be requested at the following address:
mobilcom.eag@ericsson.com

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. Operation in AISG 2.0 mode only.

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 (KRY 121 108/1) 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.



FlexRET 8-fold

86010167

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

- Compliant to 3GPP / AISG 2.0 – AISG 3*
- Daisy Chain feasibility
- Single RETs or Multi RET displayed
- Pre-configured
- Individual user-specific configuration possible:
 - Antenna tilt consolidations for RET control of several arrays by one RET-subunit



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Product No.		86010167
Protocols		compliant to 3GPP / AISG 2.0 – AISG 3*
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		> 20,000
Temperature range	°C	-40 ... +60
Protection class		IP 24 (installed)
Lightning protection		AISG interface (each pin) 8 kA (8/20 µs) according to IEC 61000-4-5
Housing material		Profile: Aluminum anodized; cover: Aluminum die cast coated
Weight	g lb	380 0.84
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

This device is not compatible to antennas with FlexRET 86010153 or 86010153v01. These FlexRET devices can not be replaced by 86010167.

Non-observance can damage the antenna and the RET device.

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 Ericsson for further information.

The FlexRET needs to be powered by a LPS (Limited Power Source, Class: P2) according to IEC/EN 62368-1.

If the FlexRET of an antenna has to be replaced, it is necessary to configure the FlexRET manually.

*FlexRET 86010167 does not support AISG 3 feature MALD.

Standards: EN 62368-1 (Safety)
EN 60950-22 (Safety – Equipment installed outdoor)
ETSI EN 301489-1 (EMI)
ETS 300019-1-4 (Environmental)
EN 50364 (Health)

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. Operation in AISG 2.0 mode only.

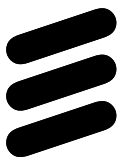
Please note:

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.



Torque Screwdriver for RET Cable, 1 N, (only for 860... cables)

85010080



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With the torque screwdriver, Ericsson connecting cables can be easily fixed with the recommended torque of 1 Nm.

Product No.		85010080
Connectors		Usable for connectors with longitudinal knurl
Tightening torque for fixing the connectors		1 Nm Signal as soon as the specified torque is reached
Factory setted torque		1 Nm
Length	mm in	205 8.1
Weight	g lb	113 0.24
Scope of supply		Torque screwdriver, assembly bit



Portable Control Adapter (PCA)

86010046



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Portable Control Adapter

Product No.		86010046	
Connector * to RCU/TMA		1x 8-pin connector according to IEC 60130-9, female, conforming to AISG RF-connector (SMB male)	
Input voltage of PCA	V DC	24	
Output voltage to RCU's/TMA's	V DC	AISG female pin 6 (24 V DC): 24 ±10% AISG female pin 1 (12 V DC): 14 ±7% RF male (at 24 V DC): 24 ±10% *** RF male (at 12 V DC): 14 ±7% ***	
Output power (power supply to RCU's/TMA's)	W	AISG female pin 6 (24 V DC) without load on pin 1 (12 V DC) and on RF-plug: ≤ 60 AISG female Pin 1 (12 V DC) with max. 30 W load on pin 6 (24 V DC) and/or on RF plug: ≤ 30	
Current monitoring measurement level	mA	Per branch (12 V, 24 V, RF): 10 – 2500	
Over-current protection		Per branch (12 V, 24 V, RF): < 2500	
Interface to RCU/TMA		RS 485 / power supply / RF connector (SMB male)	
Protocol to RCU/TMA		HDLC hex-coded command set, conforming to AISG 1.1 and 3GPP / AISG 2.0	
Interface to PC		USB 1.1/2.0	
Max. number of RCU's/TMA's		27/3 pcs., depending on system configuration and length of control cable	
Max. length of control cable	m ft	9 RCU's (in daisy chain configuration): 200 656.17 6 RCU's (in splitter configuration): 150 492.13	
Weight	g lb	535 1.2 (incl. external power adapter)	
Temperature range	°C	0 ... +55 ambient temperature	
Height x width x depth	mm inches	40 x 95 x 160 1.57 x 3.74 x 6.29	
External power supply **		Input: 90 – 264 V AC, 47 – 63 Hz 24 V DC / 3.0 A	

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

** If powered via AISG-interface, no external power supply is required.

*** Switchable with software

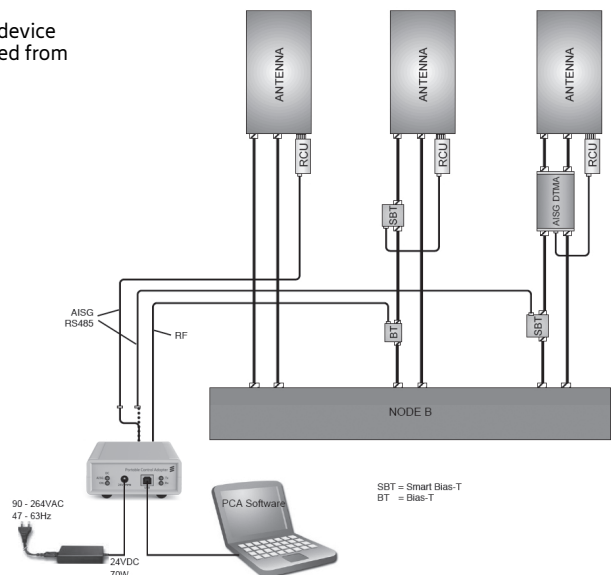
Certificate: CE
FCC part 15 class B
UL (for external power adapter)

Standards: EN 60950-1
EN 55022
EN 55024

System requirements for PCA Software: Windows XP or later version

Scope of supply: PCA
External power supply (24 V DC / 70 W)
USB cable
AC power cable
Installation guide

Please note: The latest PCA application software, the device driver and PCA manual can be downloaded from www.ericsson.com/antenna-system





Antenna Line Configurator (ALC)

86010158

- AISG 2 / AISG 3
- HDLC-logging feature
- High-resolution display
- Wi-Fi and USB interface



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Antenna Line Configurator

Product No.	86010158	
Connector* to RCU/TMA	1 x 8-pin connector according to IEC 60130-9, female, conforming to AISG RF-connector (SMB male)	
Input voltage of ALC	24 V DC	
Display	High-resolution display, sunlight visible	
Tiltensor	Measuring range $\pm 80^\circ$, accuracy $\pm 1^\circ$	
Output voltage to RCU's/TMA's	AISG female pin 6: 24 \pm 1 V DC	RF-plug: 24 \pm 1 V DC
Output power (power supply to RCU's/TMA's)	RF-plug + AISG female pin 6 \leq 15 W	
Current monitoring measurement level	AISG female pin 6, RF-plug: 10 – 650 mA	
Over-current protection	AISG female pin 6, RF-plug: < 650 mA	
Interface to RCU/TMA	RS 485 / power supply / RF connector (SMB male)	
Protocol to RCU/TMA	HDLC hex-coded command set, conforming to 3GPP / AISG 2 and AISG 3	
Interface	W-LAN (802.11g), USB 2.0	
Max. number of RCU's/TMA's	9/1 pcs., depending on system configuration and length of control cable	
Max. length of control cable	200 m / 9 RCU's (in daisy chain configuration) 150 m / 6 RCU's (in splitter configuration)	
Internal memory	MB	512
Weight	kg lb	1 2.2
Protection class	IP 54	
Temperature range (operating)	$^\circ\text{C}$	-20 ... +45 ambient temperature
Temperature range (charging)	$^\circ\text{C}$	10 ... +40 ambient temperature
Dimensions (H x W x D)	mm in	265 x 102 x 37 10.4 x 4.0 x 1.5
Packing size	mm in	405 x 290 x 105 15.9 x 11.4 x 4.1
Power supply	LiPo-battery (16.6 V, > 1850 mAh)	

* 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:

The user manual can be downloaded from our website: www.ericsson.com/antenna-system

Certificate:

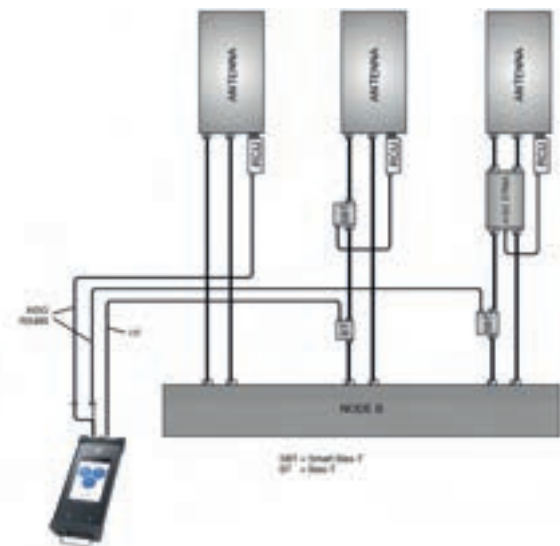
CE
FCC
UL (for external power adapter)

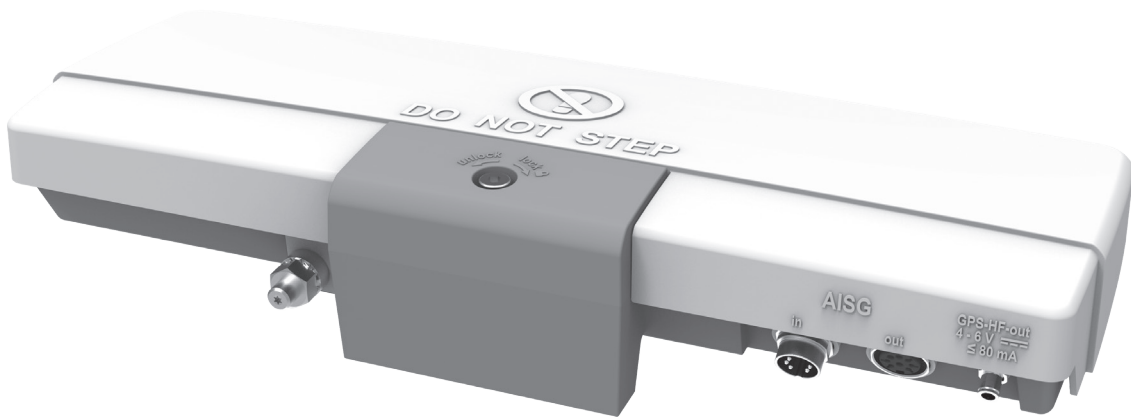
Standards:

EN 60950-22
EN 62368-1
EN 62479
EN 50581
ETSI EN 301489-1
ETSI EN 301489-17
ETSI EN 300328 2.1.1

Scope of supply:

ALC
Charging device (can also be used as external power supply)
USB cable
RET cable
HF cable (SMB / 7-16)
Transport case
Screen cover





Antenna Monitoring Unit AMU

86010129



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GPS/GLONASS based Antenna Monitoring Unit to monitor base station antennas in the field.

- Compatible to most Ericsson passive antennas (see incompatibility list here)
- Compact size
- Easy to adapt onto an antenna
- BTS time sync via GPS clock
- AISG 2.0 device according to AISG Extension AISG-ES-ASD v2.2.0 and AISG-ES-GLS v2.2.0.

Antenna Monitoring Unit AMU

Product No.		86010129
Monitoring Unit		
Receiver Type		L1, C/A code
Channels		72 channel, GPS and GLONASS parallel tracking
Used Geodetic System		WGS 84
Horizontal Accuracy	m	± 10
Azimuth Accuracy*	°	± 5
Tilt- Roll Accuracy*	°	± 2
Altitude Accuracy*	m	± 5
First start (after installation)	h	3 – 12
Connector		2x 8 pin connector according to IEC 60130-9; according to AISG C485; Daisy chain in: male; Daisy chain out: female
Hardware Interfaces		RS 485 A/B (pin 5, pin 3); power supply (pin 6); DC return (pin 7); according to AISG / 3GPP
Input Voltage Range	V	10...30 DC (pin 6)
Power Consumption	W	< 2
Protocols		AISG 2.0
Protection Class		IP 65
Environmental Temperature Range	°C	-40 – +55
Lightning Protection		AISG interface (each pin) 2.5 kA (10/350 µs) 8 kA (8/20 µs)
BTS Time Sync		
Frequency Range	MHz	1572 – 1608 (GPS and GLONASS)
LNA Gain	dB	27 ± 3
Noise Figure	dB	Typ. 3
Supply Voltage	V	4 – 6 V DC
DC Current	mA	< 80
Non-destruction Supply Voltage	V	-32 ... +32 V DC
Lightning Protection	kA	2.5 (10/350 µs) 8 (8/20 µs)
Connector		SMA female
Housing Material		
Housing Material		ALU, ASA
Weight	kg lb	1.6 3.5
Packing Size	mm inches	400 x 190 x 136 15.7 x 7.5 x 5.4
Dimensions (H x W x D)	mm inches	65.8 x 355.7 x 143.2 2.6 x 14.0 x 5.6
Scope of Supply		
AMU		1 pc.
Adapter Plate		1 pc.

* Depends on multipath environment, number of satellites in view; satellite geometry, ionospheric activity and use of SBAS.

Please note: Please follow the user manual for installation and operating details. The AMU needs to be powered by a LPS (Limited Power Source, Class: PS2) according to IEC/EN 62368-1.

Standards: IEC/EN 62368-1 (Safety),
EN 60950-22 (Safety – Equipment installed outdoor),
EN 55024 (Immunity),
ETS 300019-1-4 class 4.1 and 4.2 H (Environmental).

EU-RED: Hereby, Ericsson declares that the radio equipment type 86010129 is in compliance with Directive 2014/53/EU.
The full text of the EU declaration of conformity is available and can be requested at the following address: mobilcom.eag@ericsson.com

Certification: CE, FCC



Site Sharing Adapter 3-way

86010154

- Compliant to AISG 1.1 and 3GPP/AISG 2.0
- Selectable arrangement of arrays
- Single RETs or Multi RET displayed
- Possible for up to three FlexRETs (daisy chain)



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Product No.		86010154
Protocols		compliant to AISG 1.1 and 3GPP/AISG 2.0
Logical interface ex factory		3GPP/AISG 2.0
Input voltage range	V	10 ... 30 (pin 1, pin 6)
Power consumption	W	< 3 (stand by); < 12 (motor activated)
Connectors		4x 8 pin connector according to IEC 60130-9; according to AISG In: male; 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
Temperature range	°C °F	-40 ... +60 -40 ... +140
Protection class		IP 54 (installed)
Lightning protection		AISG interface (each pin) 2.5 kA (10/350 µs) 8 kA (8/20 µs)
Max. cable length (Site Sharing Adapter to last FlexRET Antenna)	m ft	150 492
Housing material		Cover: Aluminum die cast coated
Weight	g lb	650 1.4 lb
Dimensions (H x W x D)	mm inches	123 x 166 x 62 4.8 x 6.5 x 2.4
Packing size	mm inches	160 x 250 x 100 6.3 x 9.8 x 3.9 inches

Please note:

The Site Sharing Adapter can exclusively be used with FlexRET antennas. The FlexRET output of the Site Sharing Adapter needs to be directly connected to the FlexRET antenna. For selecting the arrangement of the antenna arrays, a separate software application is available.

The Site Sharing Adapter expands the AISG interface of max. three FlexRETs up to three AISG interfaces for three independent AISG primaries. The alignment of antenna arrays can be configured individually.

For site sharing with antennas which have 7 or 8 arrays, Site Sharing Adapter Firmware from version FW_V02.03.00 is needed. The latest firmware and update information for the Site Sharing Adapter are provided via our customer portal on www.ericsson.com/antenna-system

Only FlexRET devices from firmware version FW_V02.01.00 are suitable for operation with the Site Sharing Adapter.

- The firmware version can be queried through the AISG command "get information".
- The latest firmware version for FlexRET can be downloaded at www.ericsson.com/antenna-system
- FlexRET Antennas with firmware version FW_V02.00.XX must be updated before the initial setup of the Site Sharing Adapter. The FlexRET device will not be detected otherwise.
- A firmware update can be performed with a corresponding primary (e.g. Node B) or Controller (e.g. Ericsson ALC, -PCA).

Standby power for Site Sharing Adapter and FlexRET system is taken by the BTS with the highest DC input voltage. When the motor is in operation, the electrical power is allocated fairly to the base stations, according to the individual input. The Site Sharing Adapter can not be used in combination with an AISG splitter. For the connection of the Site Sharing Adapter and the FlexRETs, a standard AISG cable shall be used.

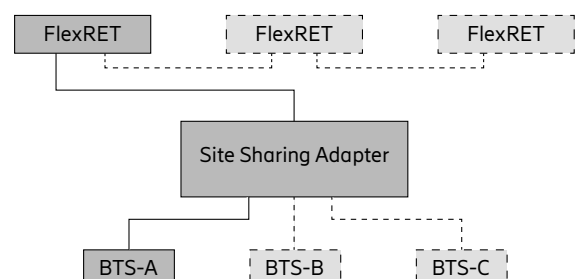
The latest configuration software and the manual with detailed configuration information are provided via our customer portal on www.ericsson.com/antenna-system

Additional earthing may be needed depending on the used installation. Please follow the guidelines given in the manual.

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: Site Sharing Adapter, tension band





Site Sharing Adapter 6-way

86010155

- Compliant to AISG 1.1 and 3GPP/AISG 2.0
- Selectable arrangement of arrays
- Single RETs or Multi RET displayed
- Possible for up to three FlexRETs (daisy chain)



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Product No.	86010155	
Protocols	compliant to AISG 1.1 and 3GPP/AISG 2.0	
Logical interface ex factory	3GPP/AISG 2.0	
Input voltage range	V	10 ... 30 (pin 1, pin 6)
Power consumption	W	< 3 (stand by); < 12 (motor activated)
Connectors	7x 8 pin connector according to IEC 60130-9; according to AISG In: male; 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	
Temperature range	°C °F	-40 ... +60 -40 ... +140
Protection class	IP 54 (installed)	
Lightning protection	AISG interface (each pin) 2.5 kA (10/350 µs) 8 kA (8/20 µs)	
Max. cable length (Site Sharing Adapter to last FlexRET Antenna)	m ft	150 492
Housing material	Cover: Aluminum die cast coated	
Weight	g lb	1350 3.0 lb
Dimensions (H x W x D)	mm inches	156 x 265 x 65 6.1 x 10.3 x 2.6
Packing size	mm inches	195 x 360 x 110 7.7 x 14.2 x 4.3

Please note:

The Site Sharing Adapter can exclusively be used with FlexRET antennas. The FlexRET output of the Site Sharing Adapter needs to be directly connected to the FlexRET antenna. For selecting the arrangement of the antenna arrays, a separate software application is available.

The Site Sharing Adapter expands the AISG interface of max. three FlexRETs up to three AISG interfaces for six independent AISG primaries. The alignment of antenna arrays can be configured individually.

For site sharing with antennas which have 7 or 8 arrays, Site Sharing Adapter Firmware from version FW_V02.03.00 is needed. The latest firmware and update information for the Site Sharing Adapter are provided via our customer portal on www.ericsson.com/antenna-system

Only FlexRET devices from firmware version FW_V02.01.00 are suitable for operation with the Site Sharing Adapter.

- The firmware version can be queried through the AISG command "get information".
- The latest firmware version for FlexRET can be downloaded from the Ericsson website.
- FlexRET Antennas with firmware version FW_V02.00.XX must be updated before the initial setup of the Site Sharing Adapter. The FlexRET device will not be detected otherwise.
- A firmware update can be performed with a corresponding primary (e.g. Node B) or Controller (e.g. Ericsson ALC, -PCA).

When the motor is in operation, the electrical power is allocated fairly to the base stations, according to the individual input. The Site Sharing Adapter can not be used in combination with an AISG splitter. For the connection of the Site Sharing Adapter and the FlexRETs, a standard AISG cable shall be used.

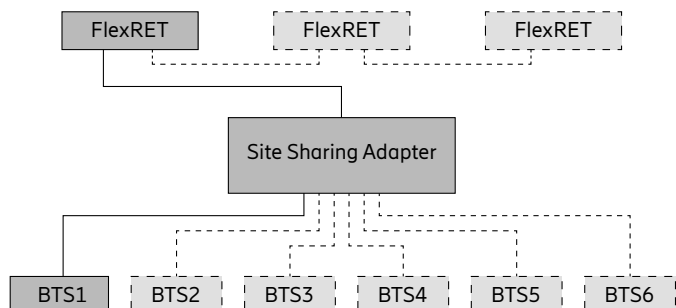
The latest configuration software and the manual with detailed configuration information are provided via our customer portal on www.ericsson.com/antenna-system

Additional earthing may be needed depending on the used installation. Please follow the guidelines given in the manual.

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: Site Sharing Adapter, tension band





Gender Adapter for FlexRET

86010162



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Converts the AISG out (female) to an AISG in (male) port in order to operate the FlexRET with two BTS.
Not compatible with 86010167.

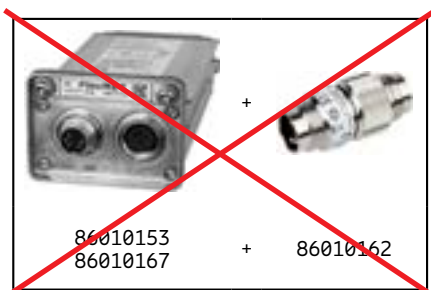
Product No.	86010162	
Protocols	compliant to 3GPP/AISG 2.0	
Input voltage range	V	10 ... 30 (pin 6)
Connectors	1x 8 pin connector (male) according to IEC 60130-9; according to AISG C485 1x 8 pin connector (female) according to IEC 60130-9; according to AISG C485 Female mates with FlexRET	
Hardware interfaces	RS 485A/B (pin 5, pin 3); power supply (pin 6); DC return (pin 7); according to AISG / 3GPP	
Temperature range	°C	-40 ... +60
Protection class	IP 67 (installed)	
Surge current capability	AISG interface (each pin) in combination with FlexRET 2.5 kA (10/350 µs) 8 kA (8/20 µs) according to IEC 61000-4-5	
Housing material	Connector shell: Zinc die cast Ni plated; Contacts: Ag plated	
Weight	g lb	45 0.099
Packing size (H x W x D)	mm inches	43 x 20 x 20 1.7 x 0.78 x 0.78
Dimensions (H x W x D)	mm inches	43 x 20 x 20 1.7 x 0.78 x 0.78

Standards: EN 60950-1 (Safety)
EN 60950-22 (Safety – Equipment installed outdoor)
ETS 300019-1-4 (Environmental)
UL 60950-1; 1st edition

Certification: CE

Scope of supply: Gender Adapter

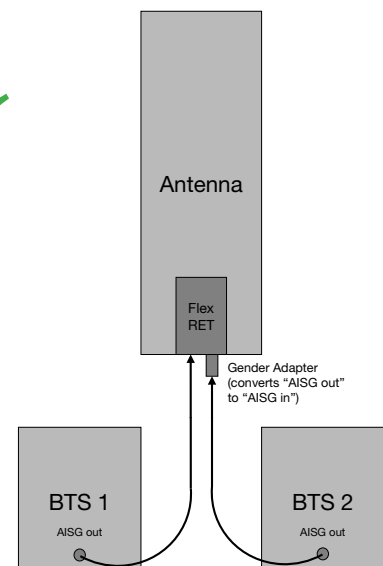
Notice: The Gender Adapter is solely to be used in combination with the FlexRET modules. A combination with the FlexRET module 86010153 and 86010167, must be avoided since this could lead to unexpected behaviour in the FlexRET module and could cause overvoltage in the primary power supply.
For avoidance of doubt, the combination with 86010153 or 86010167, with exception of the FlexRET modules 86010153V01, 86010165 and 86010165RAE, could lead to a damage. In no event will Ericsson, its affiliates and/or subsidiaries be liable for direct, incidental, consequential, special, indirect damages arising from or relating to the combination with another module except FlexRET modules 86010153V01, 86010165 and 86010165RAE. These limitations will apply even if Ericsson has been advised of the possibility of such damages and whether such damages are foreseeable or not.



In combination with 86010153 and 86010167:
Gender Adapter is not usable.



In combination with 86010153V01, 86010165 and 86010165RAE:
Gender Adapter can be used.





Port Extender for FlexRET

KRY 121 108/1



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Port Extender allows daisy chaining of FlexRET 86010153V01, 86010165 and 86010165RAE when the FlexRET operates with two BTS. G-in and G-out is converting the AISG-out (female) of FlexRET to an AISG-in while maintaining the daisy chain capability on this port. Not compatible with 86010167.

Product No.		KRY 121 108/1
Protocols		compliant to 3GPP/AISG 2.0; AISG 3
Input voltage range	V	10 ... 30 (pin 6)
Connectors		4x 8 pin connector according to IEC 60130-9; according to AISG C485 Daisy chain in: male; Daisy chain out: female Daisy chain G-in: male; Daisy chain G-out: female
Hardware interfaces		RS 485A/B (pin 5, pin 3); power supply (pin 6); DC return (pin 7); according to AISG / 3GPP
Temperature range	°C	-40 ... +60
Protection class		IP 67 (installed)
Surge current capability		AISG interface (each pin) in combination with FlexRET 2.5 kA (10/350 µs) 8 kA (8/20 µs) according to IEC 61000-4-5
Weight	g lb	150 0.33
Dimensions approx. (H x W x D)	mm inches	50.5 x 70 x 54 1.9 x 1.5 x 2.1

Standards: EN 60950-1 (Safety)
EN 60950-22 (Safety – Equipment installed outdoor)
ETS 300019-1-4 (Environmental)
UL 60950-1; 1st edition

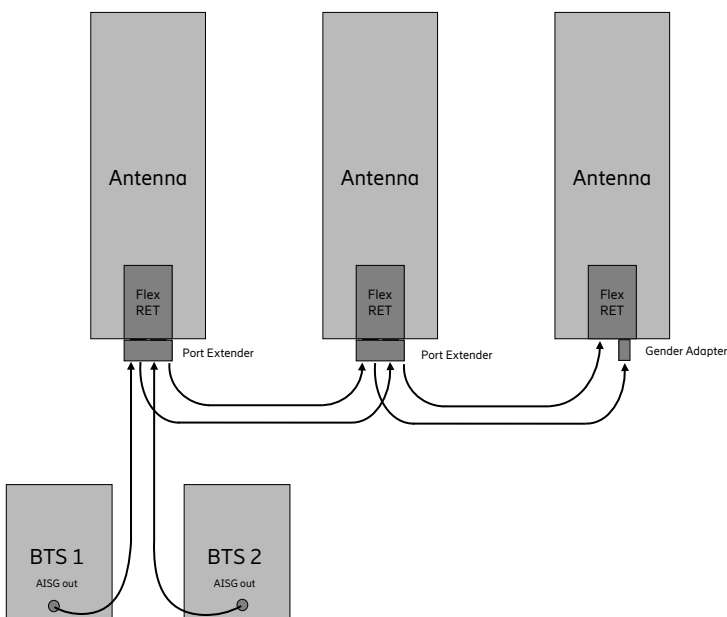
Certification: CE

Scope of supply: Port Extender

Notice:

The Port Extender is solely to be used in combination with the FlexRET modules. A combination with the FlexRET module 86010153 and 86010167, must be avoided since this could lead to unexpected behaviour in the FlexRET module and could cause overvoltage in the primary power supply.

For avoidance of doubt, the combination with 86010153 or 86010167, with exception of the FlexRET modules 86010153V01, 86010165 and 86010165RAE, could lead to a damage. In no event will Ericsson, its affiliates and/or subsidiaries be liable for direct, incidental, consequential, special, indirect damages arising from or relating to the combination with another module except FlexRET modules 86010153V01, 86010165 and 86010165RAE. These limitations will apply even if Ericsson has been advised of the possibility of such damages and whether such damages are foreseeable or not.





Lightning Protection Device (LPD) for Remote Electrical Tilt (RET)

86010030



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The device is designed for lightning protection of control cables carrying partial lightning currents up to 25 kA (shield) and 2.5 kA (inner conductor), according IEC 61643-1, IEC 61312-3. Each pin is protected individually.

Lightning Protection Device for RET

Product No.	86010030	
Connectors ¹⁾	2x 8 pin connector according IEC 60130-9, input: male, output: female	
SPD-Type	8 x bipolar gas tube	
Max. impuls current	25 kA (housing, shield) (10/350 μ s) inner conductors: 2.5 kA/pin (10/350 μ s)	
Max. dynamic overvoltage at spark gap (1 kV/ μ s)	V	< 700
Static overvoltage (100 V/s)	V	< 100
Grounding	Via mounting plate / clamps at metallic surfaces or via separate cable, min. cross-section 5 mm ² Cu (screw M6)	
Max. operation current	A	4 at 50 °C
Max. operation voltage	V	60
Protection class	IP 55	
Weight	g lb	250 0.55
Packing size	mm in	114 x 117 x 117 4.5 x 4.7 x 4.7
Dimensions (w x h x d)	mm in	91 x 103 x 72 3.5 x 4.05 x 2.9

¹⁾ The tightening torque for fixing the connector must be 0.5 – 1.0 Nm ('hand-tightened'). The connector should be tightened by hand only!

Material: Connector plate: Aluminum.
Cap: Plastic.

Mounting: Mast mounting (50 – 145 mm diameter) by clamp.
Wall mounting by screws (not supplied).

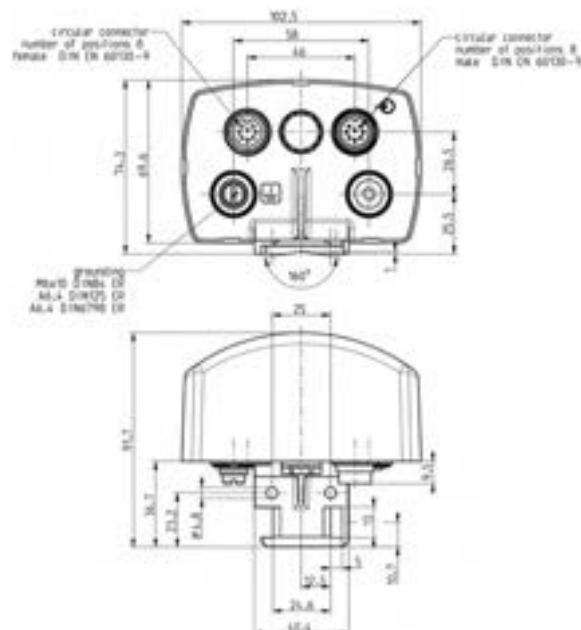
Note: No decoupling elements are integrated. The coordination with additional LPD's (device input) should be checked according to IEC 61312.

Grounding of the device via the mounting plate at metallic surfaces or via additional grounding cable (not included in the delivery extend).

Connectors must be situated at the bottom. No inverted mounting possible.

Important: A control cable with a minimum length of 2 meters is required between Lightning Protection Device and Central Control Unit at the BTS to achieve the required decoupling.

Scope of supply: Lightning Protection Device
Clamp (50 ... 145 mm)





RET control cable

86010011, ...



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For indoor and outdoor use

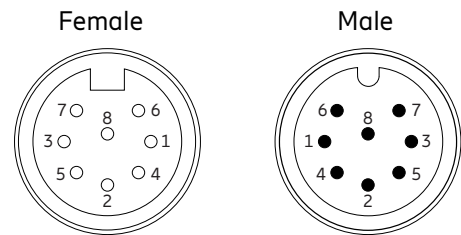
RET Cable for power supply and control

Product No.	86010011, ...
Connectors	2x 8 pin connector according IEC 60130-9, female/male
Tightening torque for fixing the connectors	0.5 – 1 Nm (The connector should be tightened by hand or by special torque scredriver)
Construction	Screen 1x twisted pair 100 Ω/1 MHz 2x power supply, 1x ground AWM style 20317 I/II A/B + 20549 + 20233
Rated current	4 A (power supply) (at 50 °C air temperature)
Temperature range	-40 °C to +80 °C, (fixed position)
Protection class	IP 67 (connected)
Cable diameter	8 mm
Flammability	VL 1581 VW-1 CSA FT 1
Color	Black, similar to RAL 9005

Minimum bending radius: One time 60 mm,
several times 120 mm.

The male and female connectors of all Ericsson RET products are compatible components which are designed to operate under the environmental conditions as described in ETS 300 019-1-4 class 4.1 E.

Length	Color	Product No.
0.5 m	black	86010054
20 m	black	86010032
25 m	black	86010011
40 m	black	86010012
50 m	black	86010033
60 m	black	86010013
80 m	black	86010014
100 m	black	86010015



PIN assignment according AISG:

- 1 +13 V DC (+12 V DC nominal)
- 2 not connected
- 3 RS485 B
- 4 not connected
- 5 RS485 A
- 6 +29 V DC (+24 V DC nominal)
- 7 DC Return
- 8 not connected



Optional:
Torque screwdriver for AISG connecting cable
(Product No. 85010080).
With the torque screwdriver, Ericsson connecting
cables can be easily fixed with the recommended
torque of 1 Nm.



Old style connector:
Torque screwdriver not
usable



New style connector:
Torque screwdriver usable

RET control cable

1/TSR48421/xxxx, black

1/TSR48422/xxxx, grey



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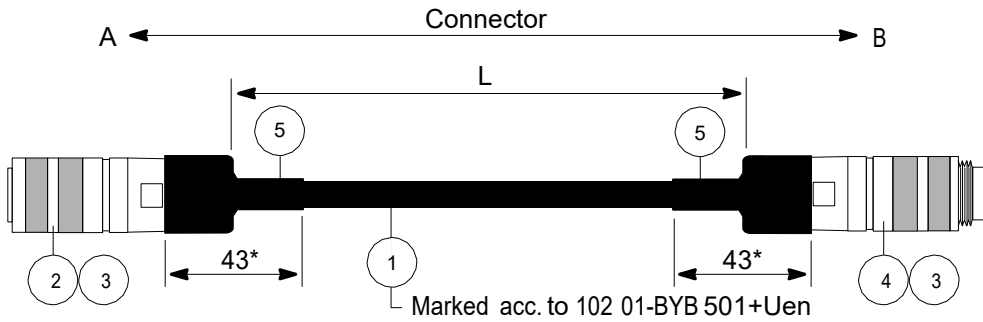
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Vital Safety Requirements

This Assembly Shall Be Approved As A Recognized Wiring Harness According To Ericsson Specification.

Mechanical Design

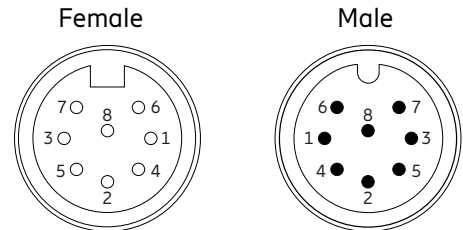
Length L, See Product Number And R-State (Clause 4) Length Tolerances Acc. To 1030-Tsr 101 + Uen



*) The max. length after shrinkage (molding) is 43±3 mm.

NOTE! It is important to secure that item 5 shrinks down on the cable completely and its adhesive melts and makes a waterproof sealing.

Length	Color	Product No.
1 m	black	1/TSR48421/1000
1 m	grey	1/TSR48422/1000
10 m	black	1/TSR48421/10M
15 m	black	1/TSR48421/15M
15 m	grey	1/TSR48422/15M
2 m	black	1/TSR48421/2000
2 m	grey	1/TSR48422/2000
3 m	black	1/TSR48421/3000
3 m	grey	1/TSR48422/3000
5 m	black	1/TSR48421/5000



PIN assignment according AISG:

- 1 not connected
- 2 not connected
- 3 RS485 B
- 4 not connected
- 5 RS485 A
- 6 +29 V DC (+24 V DC nominal)
- 7 DC Return
- 8 not connected

NOTE! ALL THE DIMENSIONS OF THE INCLUDED CONNECTORS (RNT 148 07/x AND RPT 148 07/x) SHOULD BE IN ACCORDANCE WITH THE DIMENSIONS STATED IN IEC 60130-9 STANDARD.

1/TSR 484 21/==== R==

