

Introduction

For the remote control of the electrical downtilt of our standard VET antennas according to different protocols: **AISG v1.1, 3GPP/AISG v2.0, Ericsson.**

The unit is totally housed inside the antennas with no parts protruding out of the antenna housing.

The tilt indicator rod on the antenna stay visible when RET Units are installed and manual tilt changes are still possible.

It is easy to install due to the captive screws.



Product Codes and Control Protocols

The following pages provide the list of applicable RET unit product codes in regards with antenna types.

Any RET unit can be delivered already configured as AISGv1.1 compatible or as AISGv2.0/3GPP compatible or in a dual mode configuration that allows either AISGv1.1 or Ericsson compatibility.

One letter in the part number is used to define which configuration is to be delivered, as explained below:

Typical P/N → **RETU-CA01**



This letter is: **A** for AISG1.1 compatibility

G for 3GPP/AISGv2.0 compatibility

D for dual-mode Ericsson/AISG1.1 (see last section of this document)

Table 1 provides the relationship between actual part numbers and previous ones:

Actual P/N	Previous P/N (Depending on the tilt range of the antenna)
RETU-CA01	0900081/00 or 0900081/01 or 0900081/02 or 0900081/03
RETU-CA11	0900083/00 or 0900083/03
RETU-CA02	0900085/00 or 0900085/03
RETU-CA12	0900087/00 or 0900087/03

Table 1. Relationship Between Actual and Previous P/N



Technical Data

Term	Description
Input Control Port	Male AISG 8 pin connector for control data and power supply of the unit. Note This connector is not present on all the units – see photographs on the next page.
Daisy Chain Port	Female AISG 8 pin connector. All the 8 pins are wired to the corresponding pins of the input control connector. Note This connector is not present on all the units – see photographs on the next page.
Connector Type	IEC60130-9 Ed 3.0
Power Supply	+12V (pin1) or +24V (pin 6) DC. If both voltages are supplied, the unit is powered by the 24V line. Compatible with the 10V...30V on pin 6.
Power Consumption	Stand by: 0.5 W During tilt change: 4 W typical / 10 W max
Data Lines	RS485
Control Protocol	HDLC (level 2) and commands/responses (level 7) as per various standard, including software upgrade by the download functionality
Data Rate	9.6 kbps for AISG, 115 kbps for Ericsson
Tilt Change Duration	Typically less than 15 seconds (may depend on antenna type)
Tilt Change Capability	50,000 minimum
Dimensions (single unit)	Depth: 130 mm Width: 83 mm Height: 58 mm Note: approximate and excluding front plate and connectors
Weight (single unit)	≈ 420 g
Installation	The unit is fitted inside the antenna and fixed with captive screws. Before inserting the unit inside the antenna, there is no need of prior registration or either the unit or the antenna mechanism to a dedicated position. This is because the position sensor is directly conducted by the tilt indicator rod. For the same reason, a calibration procedure is not needed before using the RET unit the first time.

Table 2. Technical Data

NOTE VET = Variable Electrical down Tilt

MET = Manual control of the Electrical down Tilt

RET = Remote control of the Electrical down Tilt

Our VET antennas can be delivered with the RET unit already fitted in place. The unit can also easily be installed in MET antennas on the field. In this document the underlined antenna codes are antennas delivered with the RET unit fitted in it (quantity depending on antenna type). The non-underlined antenna codes are MET antennas upgradable to RET.

RET Control Unit Codes and Related Antenna Codes

Table 3 provides the RET unit part numbers which depend on the antenna types. The table provides a front view of each version for easy identification.

NOTE All our RET units are built from the same hardware, except the front plate.

In Table 3, the provided part numbers for the RET units are the ones for the **AISGv1.1** protocol. **Change the letter A to letter G or letter D** according to above to order the proper needed version.

Table 3 also provides the list of the antennas that are using the corresponding RET unit.

The RET unit(s) fitted in antennas delivered as RET are already configured for the antenna and are loaded with the model number and serial number of the antenna in which they are fitted in.


The RET units delivered apart from antennas **MUST** be loaded with the configuration data that fits the antennas in which they will be used.

- We configure the RET units **before** delivery if antenna types are provided at time of order.
- Otherwise user can always load them from available configuration files by using its Primary Controller.
- User will also have to load the antenna model number and serial number in such RET units if he needs it.

Most of the RET units are fitted with an additional female control connector to allow connection of other units in daisy chain without the need for a splitter.

For antennas with AISG complaint integrated MHA, the RET control signals reach the antenna by the coaxial cable and the RET unit is internally connected to the MHA- there is no multi-pin connector on the unit

NOTE An AISG connector is usually available on the MHA fitted in the antenna.

Front aspect	Product Code (AISGv1.1)	Antenna code using this RET unit					
	RETU-CA01	5152100	<u>5152000</u>	5162100	<u>5162000</u>		
		5164100	<u>5164000</u>	5182100	<u>5182000</u>		
		5135100	<u>5135000</u>				
		5142100	<u>5142000</u>	5146100	<u>5146000</u>		
		5235100	<u>5235000</u>	5232100	<u>5232000</u>		
		5121000	<u>5121000</u>	5178100	<u>5178000</u>		
		5170100	<u>5170000</u>	5230100	<u>5230000</u>		
		5176100	<u>5176000</u>				
		Two units per antenna (see Note 1 below Table 3):					
		5157100	<u>5157000</u>	5157120	<u>5157020</u>		
5257100	<u>5257000</u>	5177100	<u>5177000</u>				

To ease the upgrade to the RET for antennas that need two RET units, the following kits are available:

RETKIT-CA01/00: includes 2 x RETU-CA01 configured for 0° - 10° tilt range and a 50 cm daisy chain cable

RETKIT- CA01/03: includes 2 x RETU-CA01 configured for 4° – 14° tilt range and a 50 cm daisy chain cable

Front aspect	Product Code (AISGv1.1)	Antenna code using this RET unit			
	RETU CA11	5183100 <u>5183000</u> 5264100 <u>5264000</u> 5265101 <u>5265001</u> 5290100 <u>5290000</u> Two units per antenna (see Note 1 below Table 3): 5130100 <u>5130000</u> 5133100 <u>5133000</u> 5160100 <u>5160000</u> 5163100 <u>5163000</u> 5165100 <u>5165000</u> 5231100 <u>5231000</u>		5264102 <u>5264002</u> 5265102 <u>5265002</u> 5363100 <u>5363000</u> 5133110 <u>5133010</u> 5160110 <u>5160010</u> 5163110 <u>5163010</u> 5165110 <u>5165010</u> 5233100 <u>5233000</u>	
To ease the upgrade to RET for antennas that need two RET units, the following kits are available:					
RETKIT-CA11/00: includes 2 x RETU-CA11 configured for 0° – 10° tilt range and a 50 cm daisy chain cable					
RETKIT-CA11/03: includes 2 x RETU-CA11 configured for 4° – 14° tilt range and a 50 cm daisy chain cable					
	RETU-CA02	<u>51873yz</u> 51874yz <u>52303yz</u> 52304yz Two units per antenna: <u>51573yz</u> 51574yz <u>52323yz</u> 52324yz			Note RET units for antennas with integrated MHA
	RETU-CA12	5265300z 5265400z 5265301z 5265401z 5290300z 5290400z 5290301z 5290401z Two units per antenna: Note The antenna includes the daisy chain wiring of the two units. <u>51603yz</u> 51604yz <u>51633yz</u> 51634yz <u>52313yz</u> 52314yz <u>52333yz</u> 52334yz			Note RET units for antennas with integrated MHA
	RETU-CA41	Three units per antenna (See Note 2 below Table 3): 5162703 5162603 5276703 5176603 5230703 5230603			Note RET units for tri-sector antennas





Front aspect	Product Code (AISGv1.1)	Antenna code using this RET unit
	RETU-CA51	Three units per antenna (See Note 2 below Table 3) 5176903 5176803 5230903 5230803 Note RET units for tri-sector antennas
	RETU-DCA01 RETU-DCA02	Dual RET units for tri-sector antennas: Three units per antenna (See Note 2 below Table 3): 5363703 5363603 Same as above, but with only one motor fitted to control the electrical tilt on the high band only.
	RETU-DCA11	Dual RET units for tri-sector antennas: Three units per antenna (See Note 2 below Table 3): 5363903 5363803
	RETU-DCA21	Dual RET units for tri-sector antennas: Three units per antenna (See Note 2 below Table 3): 5177703 5177603

Table 3. RET units codes and related antenna codes

NOTE Dual Band antennas and Side-by-Side antennas need two RET units for independent tilt control of each sub-antenna.

- A short control cable is **needed** to daisy chain the two RET units; our cable CC-08-C50-FM (0.5 m) is adequate for this.
 - This cable is **included when** antenna is **delivered** with the two RET units fitted in it.

NOTE Tri-sector antennas need three RET units for independent tilt control of each sector.

The RET units for dual band or side by side tri-sector antennas are dual units.

- The assembly includes the two motors needed per sector
- Each dual RET is **provided** with a short control cable CC-08-C30-FM (0.3 m) to daisy chain the two motors **within** a sector.
- Cables for daisy chain **between** the sectors are **not provided** with a tri-sector antenna

Antenna Codes and Related Unit Product Codes

The antennas are listed in numerical order. Change codes depending on protocol as described in previous section.

MET	RET	Tilt range	Qty	RET
5121100	5121000	2° to 16°	1	RETU-CA01
5130100	5130000	0° to 10°	2	RETU-CA11
5133100	5133000	0° to 10°	2	RETU-CA11
5133110	5133010	0° to 10°	2	RETU-CA11
5135100	5135000	0° to 10°	1	RETU-CA01
5142100	5142000	2° to 10°	1	RETU-CA01
5146100	5146000	2° to 10°	1	RETU-CA01
5152100	5152000	0° to 10°	1	RETU-CA01
5157100	5157000	0° to 10°	2	RETU-CA01
5157120	5157020	0° to 10°	2	RETU-CA01
51574yz	51573yz	0° to 10°	2	RETU-CA02
5160100	5160000	0° to 10°	2	RETU-CA11
5160110	5160010	0° to 10°	2	RETU-CA11
51604yz	51603yz	0° to 10°	2	RETU-CA12
5162100	5162000	0° to 10°	1	RETU-CA01
5162703	5162603	0° to 10°	3	RETU-CA41
5162903	5162803	0° to 10°	3	RETU-CA51
5163100	5163000	0° to 10°	2	RETU-CA11
5163110	5163010	0° to 10°	2	RETU-CA11
51634yz	51633yz	0° to 10°	2	RETU-CA12
5164100	5164000	0° to 10°	1	RETU-CA01
5165100	5165000	0° to 10°	2	RETU-CA11
5165110	5165010	0° to 10°	2	RETU-CA11
5170100	5170000	4° to 14°	1	RETU-CA01
5176100	5176000	2° to 14°	1	RETU-CA01
5176703	5176603	2° to 14°	3	RETU-CA41
5176903	5176803	2° to 14°	3	RETU-CA51
5177100	5177000	2° to 14°	2	RETU-CA01

MET	RET	Tilt range	Qty	RET Code
5177703	5177603	2° to 14°	3	RETU-DCA21
5178100	5178000	2° to 16°	1	RETU-CA01
5182100	5182000	0° to 10°	1	RETU-CA01
5183100	5183000	0° to 10°	1	RETU-CA11
51874yz	51873yz	0° to 10°	1	RETU-CA02
5230100	5230000	4° to 14°	1	RETU-CA01
52304yz	52303yz	4° to 14°	1	RETU-CA02
5230703	5230603	4° to 14°	3	RETU-CA41
5230703	5230603	4° to 14°	3	RETU0CA51
5231100	5231000	4° to 14°	2	RETU-CA11
52314yz	52313yz	4° to 14°	2	RETU-CA12
5232100	5232000	4° to 14°	2	RETU-CA01
52324yz	52323yz	4° to 14°	2	RETU-CA02
5233100	5233000	4° to 14°	2	RETU-CA11
5233110	5233010	4° to 14°	2	RETU-CA11
52334yz	52333yz	4° to 14°	2	RETU-CA12
5235100	5235000	2° to 10°	1	RETU-CA01
5257100	5257000	2° to 10°	2	RETU-CA01
5264100	5264000	0° to 10°	1	RETU-CA11
5264102	5264002	0° to 10°	1	RETU-CA11
5265101	5265001	0° to 10°	1	RETU-CA11
5265102	5265002	0° to 10°	1	RETU-CA11
5265103	5265003	0° to 10°	1	RETU-CA11
5290100	5290000	0° to 10°	1	RETU-CA11
5363100	5363000	0° to 10°	2	RETU-CA11
5363703	5363603	0° to 10°	3	RETU-DCA01
5363903	5363803	0° to 10°	3	RETU-DCA11

Table 4. Antenna Codes and Related Unit Product Codes

NOTE For any antenna with type number 58xxxxx, please refer to the datasheet for the RET-MDCU control device.

Ericsson Specific Protocol

Our RET units can be delivered as **dual-mode** which are capable to run either the AISG1.1 protocol or the Ericsson specific protocol.

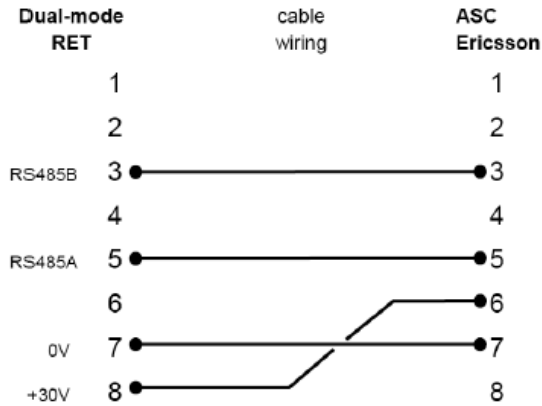
The implementation of the Ericsson protocol has been based on the Ericsson specification “Remote Electrical Tilt Unit, Control Interface”, No 1/155 19-Can 160 267/1 Uen, dated 2004.03.22, rev E1 and has been validated on the RBS3202 Node-B.

The dual-mode unit selects the protocol to be run **at power on** by the way the DC voltage is supplied to the unit.

It starts in AISG1.1 mode when it is connected in the usual way to an AISG controller or AISG TMA.

It starts in Ericsson mode when it receives the DC voltage on pin 8 of the male multi-pin control connector (

- **NOTE** This pin 8 is not used in AISG mode.
- This is obtained by a specific cable installed between the Ericsson ASC and the RET unit. The wiring of this cable is shown below:



Once connected this way to an Ericsson ASC, the dual-mode unit will always start in the Ericsson mode.

We can provide this cable in various lengths, with part numbers as below:

P/N	Cable length	P/N	Cable Length
XDG58460	0.15 m cable	XDG58464	1.00 m cable
XDG58470	0.40 m cable	XDG58465	3.00 m cable
XDG58462	0.50 m cable	XDG58466	5.50 m cable
XDG58463	0.70 m cable		

Table 5. Cable P/N and Length

NOTE With the Ericsson protocol a RET Control Unit has always the same address for the HDLC protocol.

There is NO daisy chain capability for connecting SEVERAL RET units to a UNIQUE ASC.

Also this protocol **DOES NOT** provide a mean to upgrade the RET firmware by a download process.

The dual-mode RET units are delivered already configured for the antenna type in which they will be used (to be specified at time of order).

There is **NO** configuration parameter to be set through the Node-B prior to start using the RET antenna.

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