

Manual

Agrònic Radio Link (EAR) 433 MHz + GPRS gateway

CODES 06580094



Equipment for activating solenoid valves and reading remote sensors and metres via radio in a free band of 433 MHz.

The Agrònic Radio Link (EAR) manages the information that goes from the PC to the Agrònic Radio Modules (MAR) and vice versa.

Up to 60 MARs of different models can be connected to an EAR and communication with each of them is every 1 minute. A distance of 2.4 km to the last MAR can be reached (depending on conditions).

Communication between the EAR and the PC is carried out through an RS-485/GPRS Gateway and with the modBus protocol.

The EAR base has LEDs that indicate whether there is communication with the MAR modules and with the PC. The Gateway module also has an LED that indicates coverage and communication status.

The set is powered by 12 Vdc and has a range of 99 channels to communicate with the MARs where, in addition, they can have autonomous programming.

The equipment is installed in a hermetically-sealed box with an opaque front cover. To maintain the tightness, leave the cover closed and ensure the cable glands are well adjusted.

Technical specifications

Power supply		
Power supply:	+12 Vdc -10% +25%	
	Power supply without protection against current surges at the output of the supply	Voc ≤ 30 V Isc ≤ 8 A S ≤ 100 Va
	Power supply with protection against current surges at the source output (5 A)	Voc ≤ 20 V Isc ≤ 1000/Voc S ≤ 100 Va
Average consumption	325 mA	
Fuse	3.15 A	
Insulation	RS485 port with 500 volt galvanic isolation	

Environment		Weight and dimensions	
Temperature	-10°C to +70°C	Weight	2'2 kg.
Humidity	< 85%	High	254 mm
Altitude	2000 m	Width	360 mm
Pollution	Grade II	Depth	110 mm

Statement of compliance

The system conforms to the standards and other regulatory documents listed below:



Electrical safety	UNE EN 60950-1:2007 + CORR:2007 + A11:2009	Information technology equipment. Safety. Part 1: General requirements
	UNE EN 60215:1995 + A2:1995	Safety rules for radio-electric emission equipment
EMC	ETSI EN 301 489-3 V1.4.1 (2002-08) based on ETSI EN 301 489-1 v1.7.1 ElectroMagnetic Compatibility and Radio spectrum Matters (ERM) Electro-magnetic Compatibility (EMC) standard for radio equipment and services Part 3: Specific conditions for Short-Range Devices (SRD) operating on frequencies between 9 kHz and 40 GHz. <ul style="list-style-type: none"> • UNE-EN 55016-2-3:2007 • UNE-EN 61000-4-2:1995 + A1:1999 + A2:2001 • UNE-EN 61000-4-3:2007 + A1:2008 • UNE-EN 61000-4-4:2005 • UNE-EN 61000-4-5:2005 • UNE-EN 61000-4-6:2008 	
Radio-electric spectrum protection	ETSI EN 300 220-1 v1.1.1 ETSI EN 300 220-3 v1.1.1	

Operation

The Agrónic Radio 433 + Gateway system is made up of an Agrónic Radio Link (EAR) plus an RS-485/GPRS Gateway.

The EAR communicates periodically via radio with the Agrónic Radio Modules (MAR) exchanging the information needed for its operation.

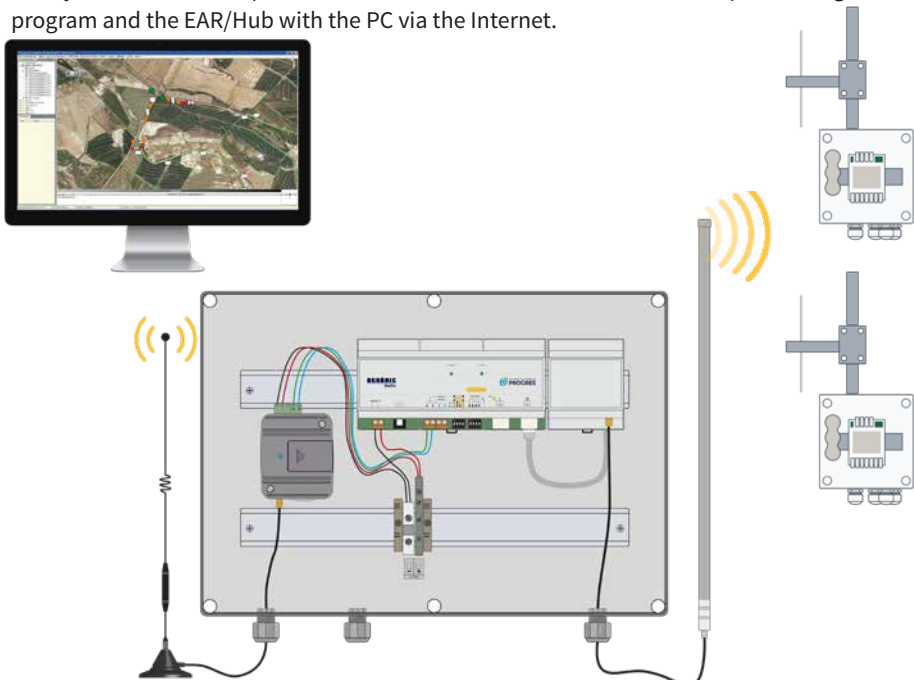
The communication between the EAR and the MAR (via radio) is carried out completely independently of the communication between the PC and the EAR (via GPRS). In other words, the EAR can continue to communicate with the MAR even if it is not connected to the PC (according to configuration).

Valves, sensors and meters are connected to MARs:

- The valves is activated or deactivated within a maximum time of 1 minute, after the PC sends the order to the EAR and this to the MAR.
- The status of the digital inputs is sent every 1 minute.
- The accumulated reading is sent to the PC every 2 minutes.
- The reading of the analogue inputs is sent each time the module powers the sensor (configurable time from 1 minute).

The Gateway connects to the RS-485 serial port of the EAR with ModBus protocol and sends the information to the PC via GPRS using a data SIM card.

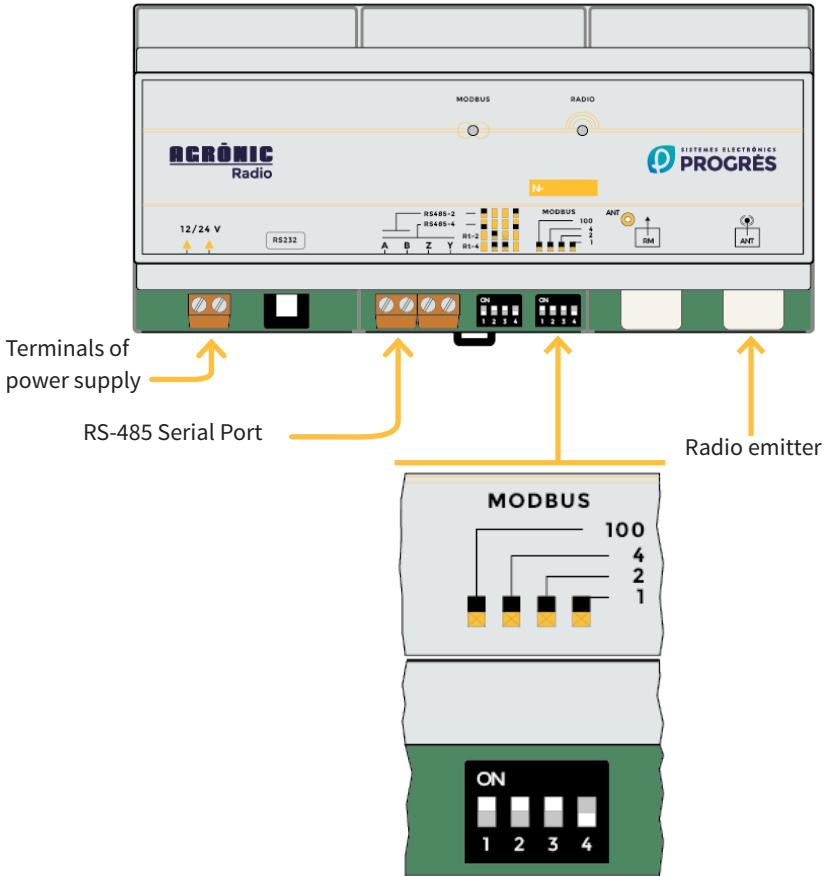
Software (VSPE) is installed on the PC that enables it to communicate with the Gateway as if it were just another serial port on the PC. This software emulates a virtual port linking the NET II program and the EAR/Hub with the PC via the Internet.



Configuration

CONFIGURATION IN THE EAR

It is important to configure a ModBus address in the EAR so that it can communicate with the PC. This address must be the same on both sides and is configured through switches found in the EAR base. Possible addresses can be:



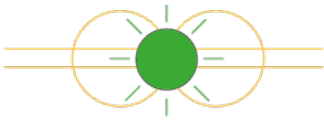
ModBus Switch	1	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON	ON	ON
	2	OFF	OFF	OFF	OFF	ON	ON	ON	ON	OFF	OFF	OFF	OFF	ON	ON	ON	ON
	3	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF	ON	ON	OFF	OFF	ON	ON
	4	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON	OFF	ON
Direction	000	001	002	003	004	005	006	007	100	101	102	103	104	105	106	107	

Invalid address

There are 2 green LED lights on the cover of the EAR base that represent communication with the PC and with the MAR modules. It has one meaning or another depending on the flashing speed.

For the ModBus LED:

MODBUS



- If the flashing is fast and uniform, it indicates that the communication with the Agrónic is correct.
- If the flashing is slow and irregular, it indicates that there is a communication problem with the Agrónic.

For the Radio LED:

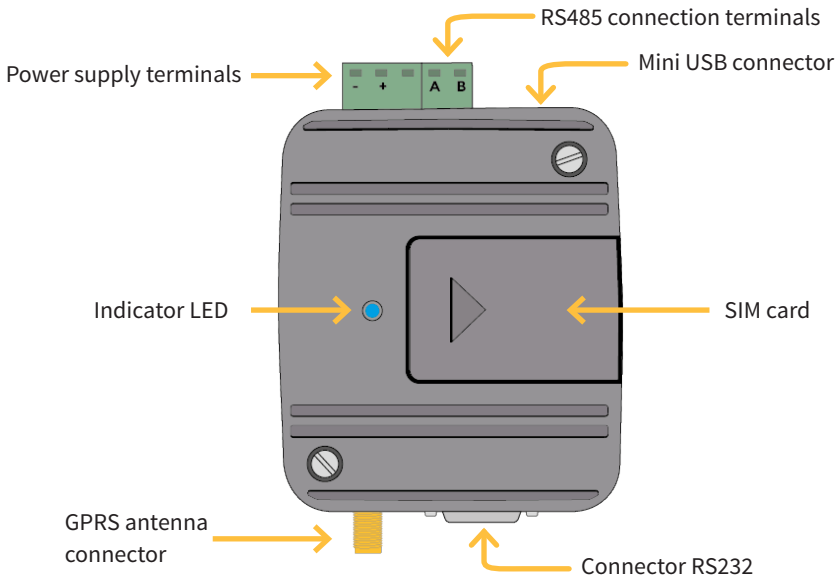
RADIO



- If it is flashing every 1 second, it is communicating correctly with the MAR modules.
- If the LED remains permanently on or off, the internal transmitter is not working correctly.

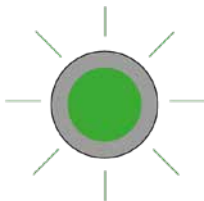
CONFIGURATION IN THE GATEWAY

The Gateway MTX is already pre-configured from the factory ready to connect to the EAR. The different parts of the Gateway are detailed below:



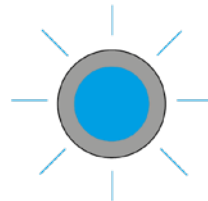
There is an LED at the base that has one meaning or another depending on the colour (green or blue) and the rate at which it flashes.

For the green LED:



- If the flashing is slow, the Gateway is searching for a network.
- If the flashing is fast, with 1 flash every 4 seconds, there is coverage

For the blue LED:



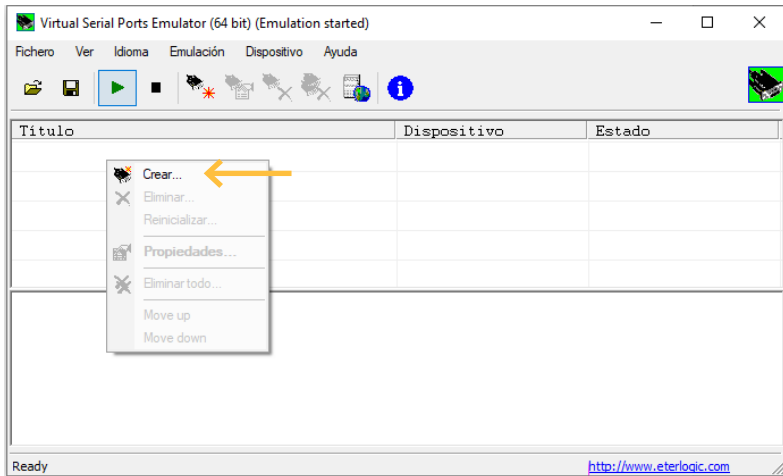
- If the light remains on steadily, the Gateway has connected to the 2G/3G/4G network with the IP address of the server.

VIRTUAL PORT CONFIGURATION ON THE PC

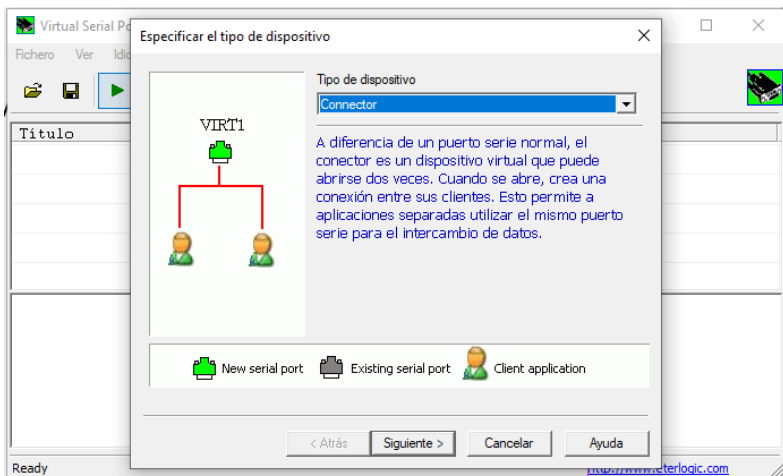
In order for the Agrónic NET II communications program to communicate with the Gateway, software must be installed (Virtual Serial Ports Emulator) that enables a virtual COM port to be created and redirected to the IP address of the SIM card.

Once the software is installed, follow the steps below to configure the necessary settings:

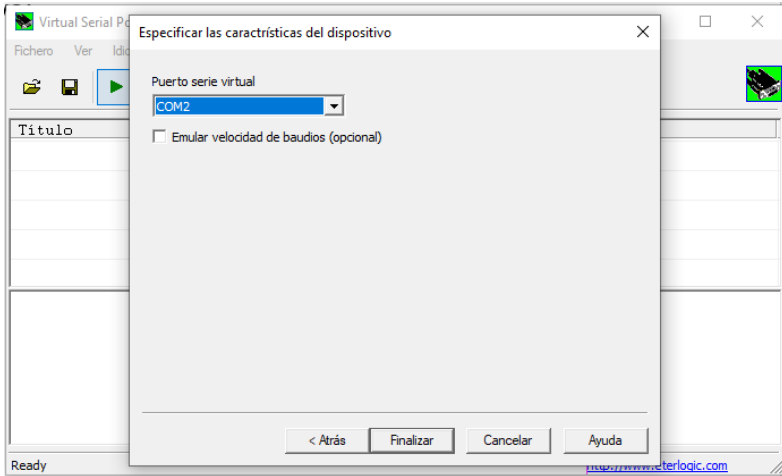
1. From the top menu, select the "**Language**" option and choose "English".
2. Right click and, in the menu that appears, select the "**Create**" option.



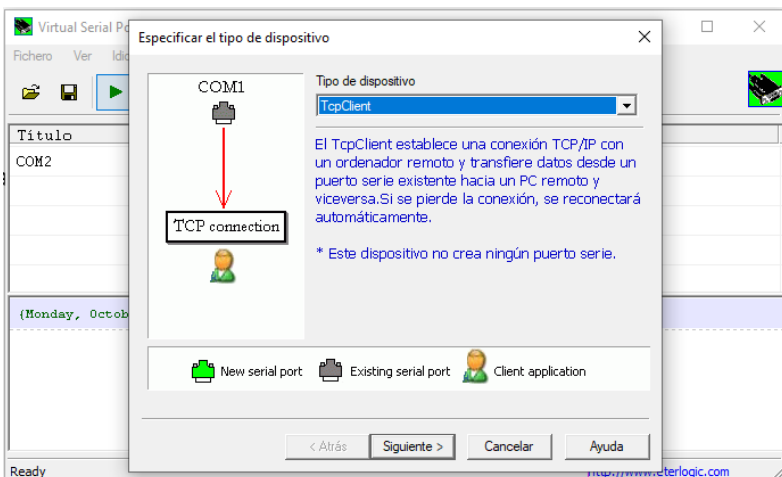
3. Select the "**Connector**" option in the "**Device Type**" drop-down menu.



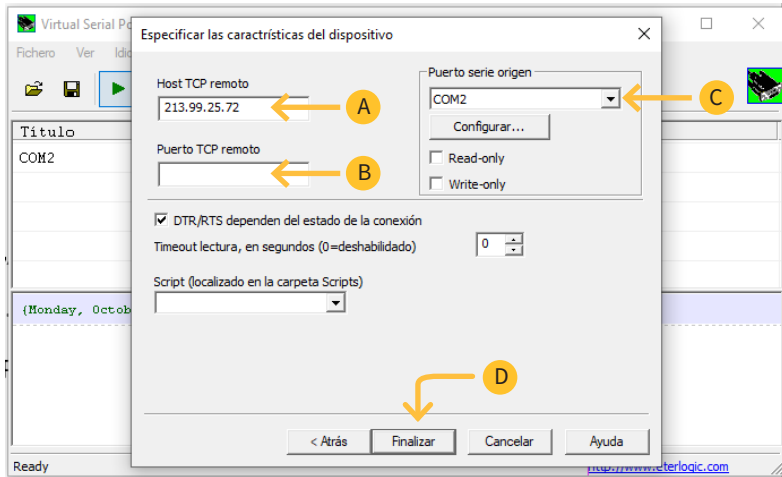
4. Select one of the virtual COM ports that appears in the "**Virtual Serial Port**" list (any one that is free), then select "**Finish**" to create the port.



5. Now configure the public IP address and the TCP port of the SIM card supplied by Progrés. Repeat steps 2 and 3 but this time select "**TcpClient**" under "**Device type**".



6. Set the IP address 213.99.25.72 in "**Remote TCP Host**". This is the address that corresponds to the public IP of the SIM provided by Progrés. **A**
- In "**Remote TCP Port**" enter the number supplied by Progrés. **B**
- In the question "**Source serial port**", choose the same virtual COM port that was selected in step 4. **C**
- After entering the settings, click the "**Finish**" option. **D**

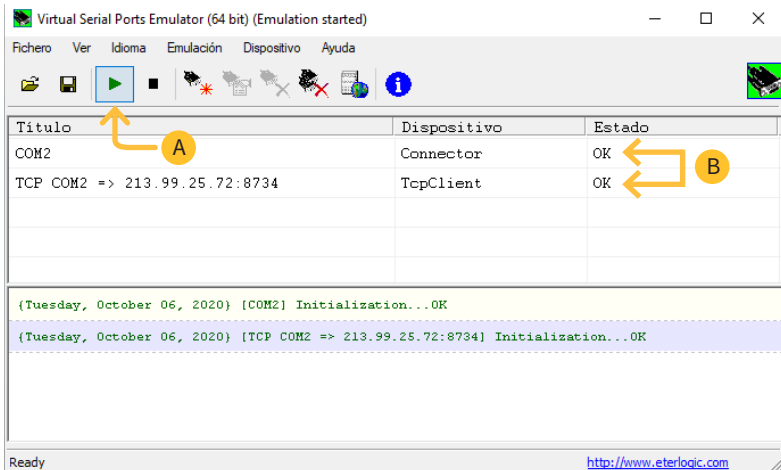


IMPORTANT

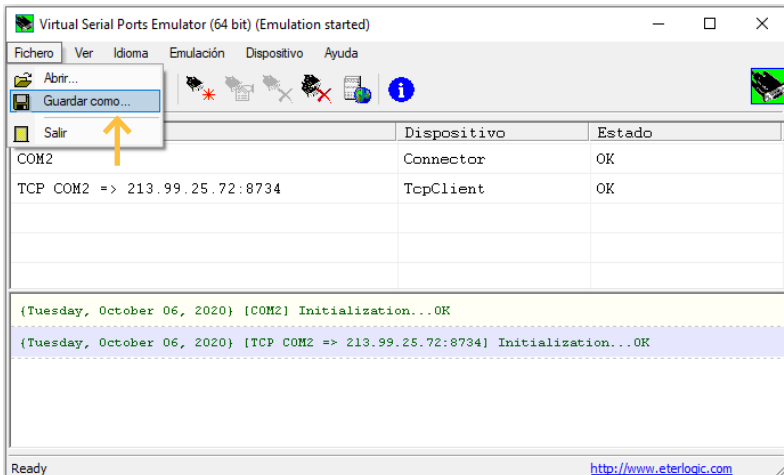
This program must be started before the Agrónic NET II communications program. Once started, it can be minimised, being located at the bottom right, next to the clock.

7. Select the arrow icon to communicate with the Gateway. **A**

The PC will be connected to the EAR as long as the "**Estado/Status**" column shows the value "**OK**" in all the devices. **B**

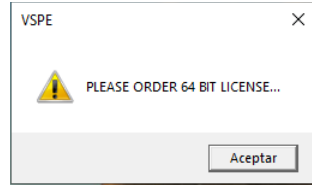
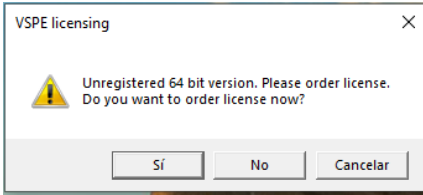


8. It is recommended to save the configuration to a file to avoid having to configure the communication settings again. To do so, select the "**File**" - "**Save as**" option and save it on the desktop with the desired name.



The downloaded version of the VSPE software is open and when executing the program, it requires the validation of 2 fields in order to continue using it.

To avoid this, there is the option of paying the program license (approximately €30), so that the software runs automatically when the session is started on the PC.



Antenna installation

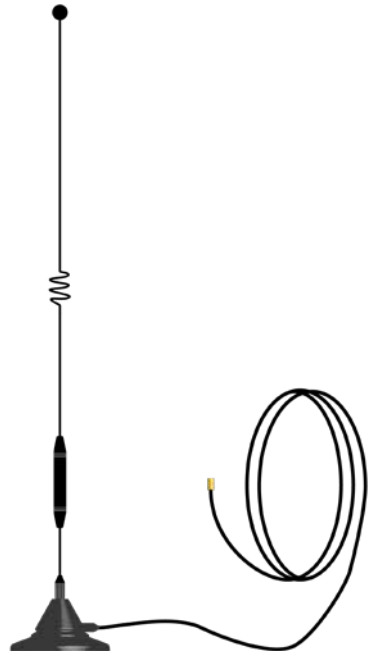
Along with the controller, two2 wired antennas are supplied: one for GPRS communication and the other for radio communication.

GPRS ANTENNA

This quad band antenna has a gain of 7dBi and a cable length of 3 metres.

It should be plugged into the Gateway with the cable fully stretched and outside of any cabinet that might attenuate the signal.

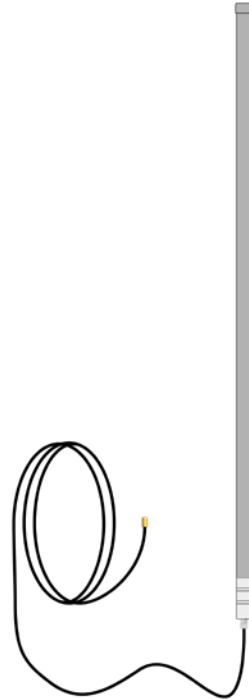
The minimum coverage needed is 40%. If this level is not reached, it is recommended to locate the antenna outside of the cabin or change it for a directional antenna (ask Progrés customer service).



RADIO ANTENNA

This antenna is supplied with a 10 metre cable (optionally 15 metres) and must be installed together with the EAR and on a mast, or flat surface. In the case of a mast, it must have a maximum diameter of 50 mm. The antenna must be located at a minimum height of 6 metres above the ground and with direct visibility to the antennas of the radio modules (MAR) that have to communicate.

The minimum coverage that is needed is 40%. If the level is lower, raise the antenna more.



NOTE

The EAR should only be powered at 12 Vdc when the GPRS and radio antennas are connected, otherwise its circuit could be damaged.