Installation guide
ARM-SE

Advanced Radio Modem
Serial + Ethernet

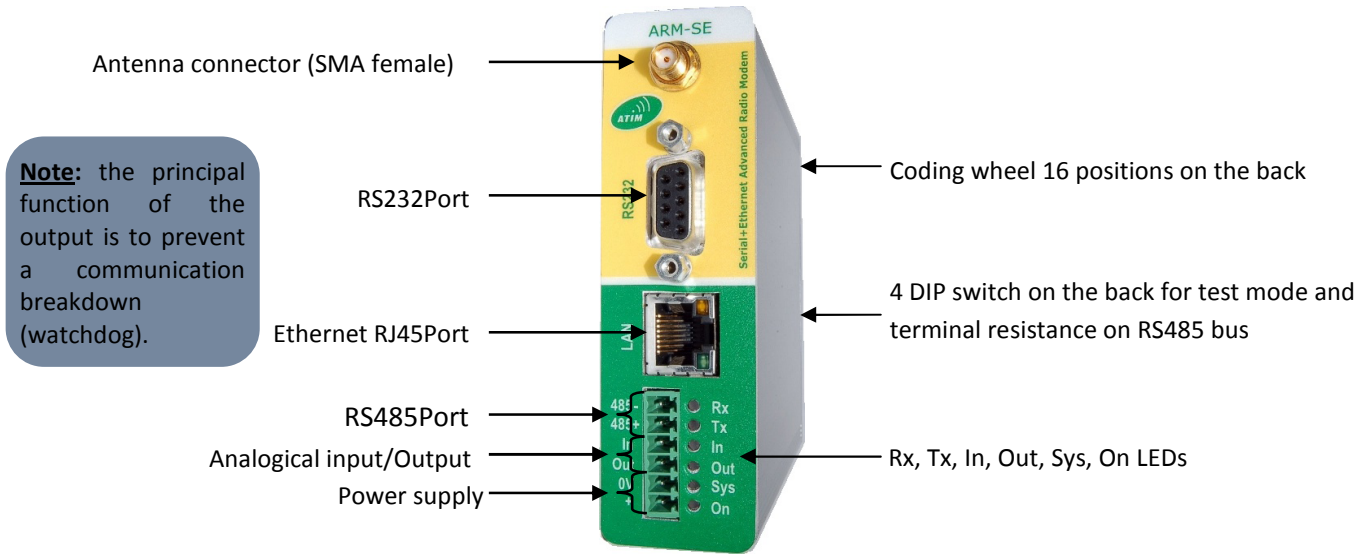
Configuration:

- Via web page
  - **192.168.0.20**
  - Login: admin
  - Password: default

Before installation, please observe the following instructions:

- ✓ Don't use ARM Manager Utility to configuration changes. Use Web-embedded setup.
- ✓ Use the same functioning mode for the two modems, the same baudrate and the same channel.
- ✓ Do not connect the modem to a 110 V or 220 V mains power supply!
- ✓ The power supply for ARM radio modems must be in the range 10 – 30 V DC (min and max values).
- ✓ For safety, the connection to the power supply must be made with the power off. Check that the power supply to the module is turned off before working on it.
- ✓ Do not use the radio box outside; it is not watertight and is designed for fitting inside a protective case or an electrical cabinet (optional on request).
- ✓ Before connecting or disconnecting the antenna, make sure that you have earthed yourself to discharge any static electricity, as the antenna input is very sensitive.
- ✓ Connect the DIN Rail mounting to the earth so that the radio box is earthed. If a mast mounted external antenna is used, this must also be earthed and a lightning arrester fitted if appropriate (see diagram below).
- ✓ Observe current standards by using only the recommended cables and antennae; this will ensure you do not exceed the authorized effective radiated power (ERP).

1. Description



2. Installation

2.1. Antenna

We recommend to use our antennas range:

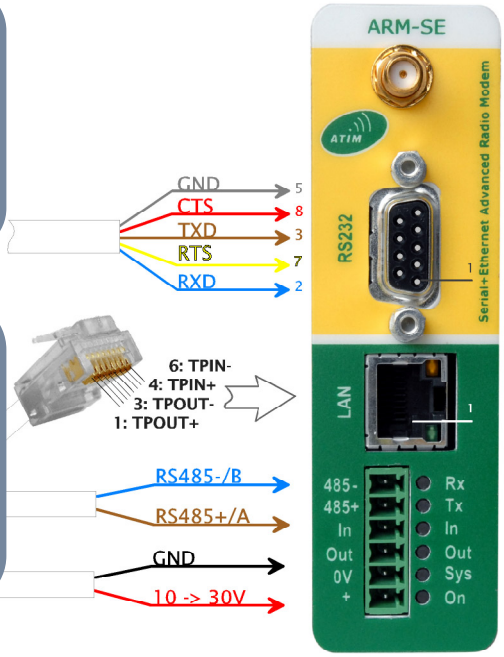
- ✓ ANT868-14-L (1/4 wave antenna): for an optimal functioning, this antenna needs a metallic floor plan. It can be mounting over an electric closet, or over a vehicle roof.
- ✓ ANT868-12S-L (½ wave antenna): no metallic floor plan needed to function. It can be mounting directly on a polyester support of a vehicle or over a PVC case. The ANT868-12FSC version can be directly mounting on the radio modem.
- ✓ ANT868-BZ (Bazooka): this antenna can be installed outside on a pole (provided with fixation kit). Foresee a low loss cable CFP10-NM-NM and a CFP5-NFC-SMAM adapter.

The radio waves propagation is highly influenced by the antenna height. We recommend to install the 2 antennas in line of sight (without obstruction on the line of sight between the 2 modems) and to place it as high as possible.
Use a coaxial cable as short as possible (for example: with 25m of CFP10 cable, the attenuation is around 3dB (the powerful is divided by 2).

2.2. Serial link

The ARM-SE is a DCE equipment. The RS232 must has at least the 5 signals Rx, Tx, Cts, Gnd for the automatic recognition of the RS232 interface. Use a straight cable for a PC connection (DTE) or crossed cable for a DCE equipment connection.

The ARM-SE modem must be connected to the network with with a CAT3 or CAT5 straight cable (via switch or hub) or crossed cable (directly on the peripheral on which it is connected).
At the power up, the orange light on the RJ45 connector must be light.



IMPORTANT :

Connect the RS232 cable before the power up for consideration (configuration in auto mode by default).

The RS485 bus needs a 120Ω resistance placed on each device connected on end of line (in the case of long bus or in disturbed areas).

Be careful to the serial link format (by default: 19200bps, 8 bits, without parity). Configurable with webpage, arm Manager, or AT commands.

Channel choice with coding wheel

DIP Switch

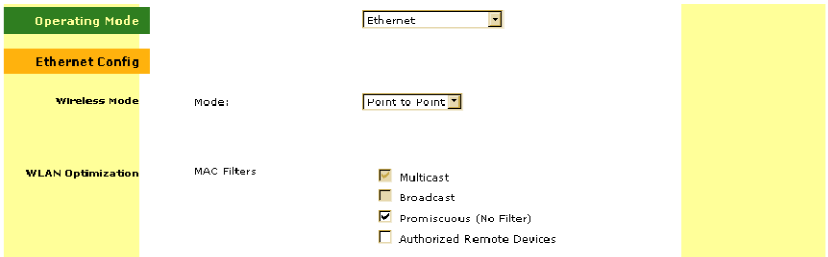
Disabled ↔ Enabled
4 : 120Ω terminal
3 : pull-down 2,7K
2 : pull-up 2,7K
1 : test mode

1.1. Ethernet connection

To access to the configuration or make a radio TCP/IP connection, the modem IP address and the one of communicating modems must be from the same class. If you have to renew your PC IP address, it is impossible, at the end of the address, to use the 0 and the 255, and we recommend not to use the 1 (often already use).

By default, the modem address class of the ARM-SE is 192.168.0.

Control panel > Network connections > Local network connections > Properties > General tab > TCP/IP protocol > properties > IP Address



The default configuration corresponding to a point to point communication. In this case, if the class addresses are respected, no more setting is needed.

1.1. Radio channel choice

Channel	Frequency (Mhz) <19,2KBps	Frequency (Mhz) >19,2KBps	Default powerful	Duty Cycle	Range
0	869, 800	869,850	5 mW	100%	< 1 km
1	868, 075	868,075	25 mW	1% 0,1%	< 2 km
2	868, 125	868,750			
3	868, 175	868,175			
4	868, 225	868,850			
5	868, 275	868,275			
6	868, 325	868,950			
7	868, 375	868,375			
8	868, 425	869,050			
9	868, 475	868,475			
A (10)	868, 525	869,150			
B (11)	868, 850	869,850	5 mW	100%	< 1 km
C (12)	868, 900				
D (13)	868, 475	869,525	500 mW	10%	≈5 km
E (14)	868, 525				
F (15)	868, 575				

2. TECHNICAL CHARACTERISTICS

ARM-SE	CHARACTERISTICS
Interfaces	RS232 : 9-pins SUB-D female RS485 : 2 wires on box Ethernet : point to point, access point, client Serial link transfer rate : 1200bps to 115000bps Output digital T-MOS: +10V to +30V DC (V_{PS})
Operating modes	Serial mode : transparent, secured, routing, slave Modbus, mirror mode, with extension slot Ethernet mode: point to point, access point, client Server Modbus TCP mode : gateway to Modbus RTU Error report system by e-mail
Configuration	Web page embedded or AT commands (Hayes)
Updates	With Bootloader and utility « LIA Loader Utility » via Ethernet
Power supply	10 – 30Vcc
Maximal consumption	150mA (reception) – 400mA to 500mW (emission)
Emission powerful	5mW, 25mW, 500mW, depending on the radio channel
Frequency	From 868,000 to 869,900MHz
Modulation	FSK
Radio debit	9600bps / 19200bps / 38400bps
Number of channels	16 channels, bandwidth 50kHz to 9600bps 12 channels, bandwidth 100Hz to 38400bps
Range	Up to 5km in outdoor
Digital output	MOSFET protection, max current : 0,5A
Digital input	Opto-insulated (common ground)
Connection	6 points (3,96mm)
Box	Aluminum (IP40) : 105x105x31mm (without antenna) Rail DIN mounting
Functioning / storage temperature	From -30°C to +60°C / from -40°C to+70°C
Conformity	ETS300-220-3 v1.1.1 / EN 301 489-3 v1.4.1