QUICK INSTALLATION GUIDE

ARM-IOD / -IOA

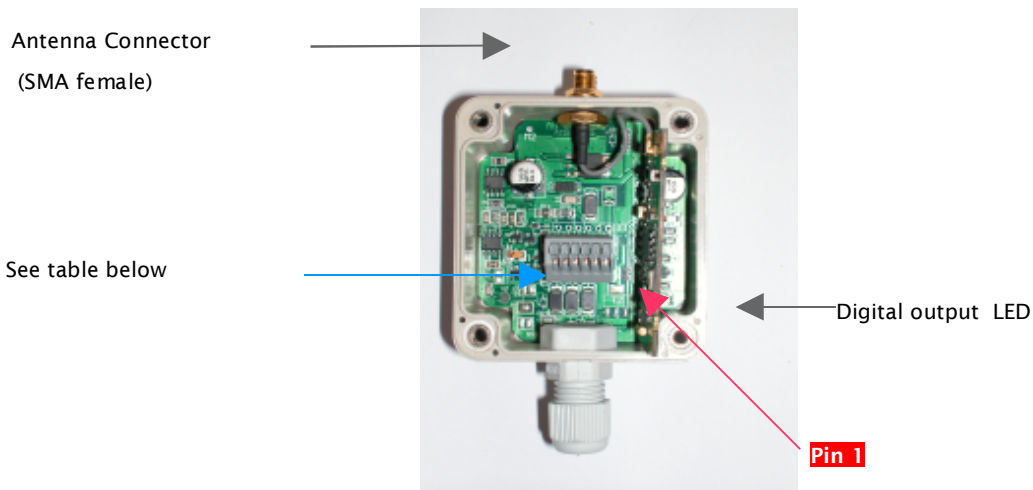**Advanced Radio Modem®   Digital / Analog**

Configuration:

- Automatic
- or by radio with
ARM Manager
or Hayes commands

Before installation, please observe the following instructions:

✔ Do not connect the modem to a 110 V or 220 V mains power supply!

✔ The power supply for ARM-IO radio modems must be in the range 5 – 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.

✔ When you open the case to connect the cables, do it in a dry environment to avoid humidity and condensation when you close the case.

✔ 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.

✔ If a mast-mounted external antenna is used, this must also be earthed and a lightning arrester fitted if appropriate.

✔ Observe current standards by using only the recommended cables and antennae; this will ensure you do not exceed the authorised effective radiated power (ERP).

Complete User Guide available on: www.atim.com/Documentation?10

1 DESCRIPTION

Antenna Connector

(SMA female)

See table below

Digital output LED

Pin 1

No	Pin	Input / Output	Name
1	Vdc	Input (Power)	5–30Vdc (min/max)
2	Gnd	Ground	0V
3	INP A	Input	Analogical Input 0-20mA or 0-10V
4	OUT	Output	Logical output
5	INP 1	Input	Logical input 1
6	INP 2	Input	Logical input 2

Note: This type of cable must be used: diameter 0,4 to 0,8mm (AWG26-20), strip the wire at 9mm.

2 INSTALLATION

## 2.1 Antenna

The ARM-IO is supplied with a small ¼ wave shorten antenna, if you need better performance you can use one of these antennae:

✔ ANT868-12FSC (Antenna ½ wave): this antenna can be mounted directly on the ARM-IO.

✔ ANT868-12S-L (Antenna ½ wave): require no ground-plan to work fine and can therefore be fitted directly to a non-metallic surface. It can be fitted directly in a plastic box.

✔ ANT868-BZ (Bazooka): This antenna must be mounted outside on a mast (provide with fitting bracket) and a low loss cable such as CFP10-NM-NM with CFP5-NFC-SMAM adaptor

Choosing the wrong antenna can have a considerable effect on the quality of the radio link. It is important to use a suitable antenna and, if necessary, a low loss cable. The antenna must be mounted vertically (upwards and downwards, depending on area to be covered).

✔ For optimal results, it is recommended to place it high up any and away from any metallic obstacles within a radius of one meter if possible (see picture).

No metallic obstacle in this area

1m

2m (recommended)

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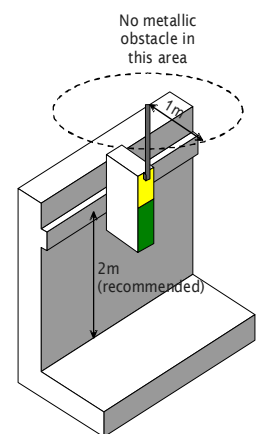
2.2 Communication modes

The ARM-IOD has 3 modes:

- Mirror Mode

- Modbus Slave

- Sensor Mode (Datalogging)

For more information please consult the user guide.

The ARM-IO have a powerful sleep mode (setup only by Modbus commands, see the user guide).

The **mirror mode** allows the reporting of digital I/O or analogical inputs to a distant radio module, this one can be an ARM-X which will be able to centralize the values of several remote ARM-IOD or -IOA.

The **Modbus mode** is often used with a PLC in Master Modbus or with a SCADA connected to an ARM-IOS (serial link) or ARM-SE (serial / Ethernet TCP/IP)

The **sensor mode** works with a master radio modem ARM-SE, this one fetching automatically and cyclically the datas coming from the ARM-IO (datalogging), then these datas can be read by Modbus requests directly into the ARM-SE.

IMPORTANT:
If not specified with the order, by default the mirror mode is selected. During the first power up, the radio modules will pair together automatically.

In Modbus Slave, the ARM-IO registers can be read and write, then it is easy to setup them remote.
By default, the Modbus address is the last byte of the Serial Number (in hexa).

You can use ARM-IO with other ARM radio modems as ARM-SE, ARM-D, ARM-DA, ARM-X, etc...
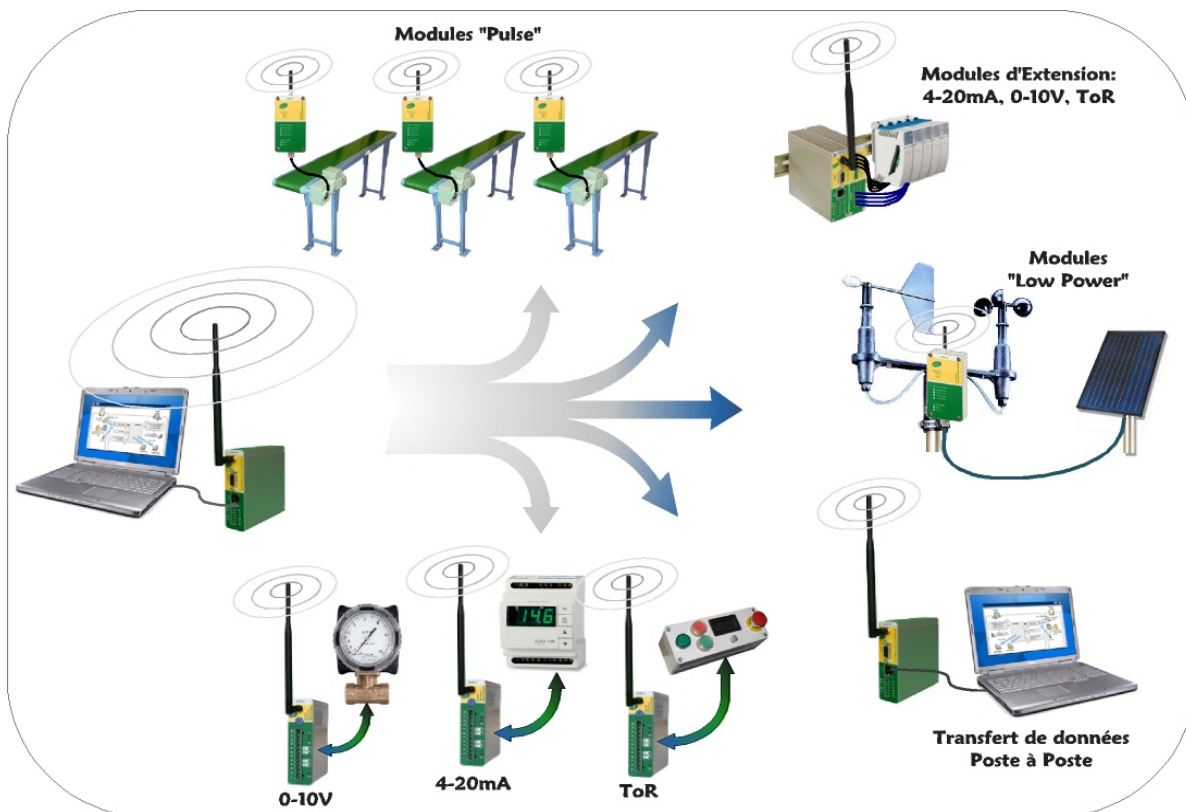
2.3 Frequencies table

CHANNEL	FREQ(MHz)	STANDARD POWER	DUTY CYCLE	ACHIEVABLE RANGE
0	869,800	5mW	100%	<1km
1	868,075	25mW	1%	<2km
2	868,125			
3	868,175			
4	868,225			
5	868,275			
6	868,325			
7	868,375			
8	868,425			
9	868,475			
A (10)	868,525			
B (11)	869,850	5mW	100%	<1km
C (12)	869,900			
D (13)	869,475	25mW	10%	>2km
E (14)	869,525			
F (15)	869,575			

3 TECHNICAL CHARACTERISTICS

ARM-IOD / IOA	CHARACTERISTICS
Interfaces	-IOD: 1 Digital input + 1 Digital output (Vmos, max: 0,1A) -IOA: 2 Digital inputs + 1 analogical 4-20mA ou 0-10V (10bits)
Operating Modes	Mirror Mode / Modbus / Sensor mode
Configuration	Automatic or with ARM MANAGER Utility or Hayes commands
Power Supply	5–30Vdc (min/max values !)
Max consumption	25mA (Rx) – 100 mA @50mW (Tx) – 270µA (sleep mode)
Power of emission	5mW, 25mW according to radio channel
Frequency	868,000 to 869,900MHz
Modulation	FSK
Radio throughput	9600bps
Number of channels	16 channels with 25kHz spacing @9600bps
Range	Up to 2kms outdoor
Connection	6 points (2,54mm)
Casing	ABS casing (IP65): 65*60*40mm (Excluding antenna)
Operating temperature / Storage	- 20˚C to + 55˚C / -40˚C to +70˚C
Conformity	ETS300-220-3 v1.1.1 / EN 301 489-3 v1.4.1