

RADIOMODEM TRANSMITTER 868 MHz

RS-485 Serial Interface (RS-232 or USB)

for field mounting and 85...265 Vac power supply

RMT-1000

Desin
Instruments

DESCRIPTION

The **RMT-1000** radiotransmitters are devices destined for data transmission via radio in the ISM unlicensed 868 MHz band with RF power up to 500 mW. Appropriate to be used in industrial applications of control, data supervision and in any application requiring wireless data transmission with high reliability and speed, for devices equipped with RS-485 (or RS-232/USB) serial ports.

- **SERIAL RS-485 COMMUNICATION RADIO TRANSMITTER**
- **HALF DUPLEX COMMUNICATION IN TRANSPARENT MODE**
- **SELECTABLE 25 mW, 100 mW or 500 mW TRANSMISSION POWER**
- **UP TO 5 Km UNDER APPROPRIATED CONDITIONS**
- **LOCAL ANTENNA WITH SMA CONNECTOR FOR EXTERNAL ANTENNA**
- **RS-485 MODBUS COMMUNICATION AS STANDARD**
- **STANDARD RMT-1000 OR REPEATER RMT-1000/RP VERSIONS**
- **ENCLOSURE RATING IP65 FOR FIELD MOUNTING**
- **POWER SUPPLY 85...265 Vac or 12 / 24 Vdc (OPTION)**
- **MOUNTING ON WALL OR ON PIPES UP TO 2" (50 mm)**
- **CONFIGURABLE BY RS-485 OR RADIO LINK FROM PC**



868 MHz

IP-65



FEATURES

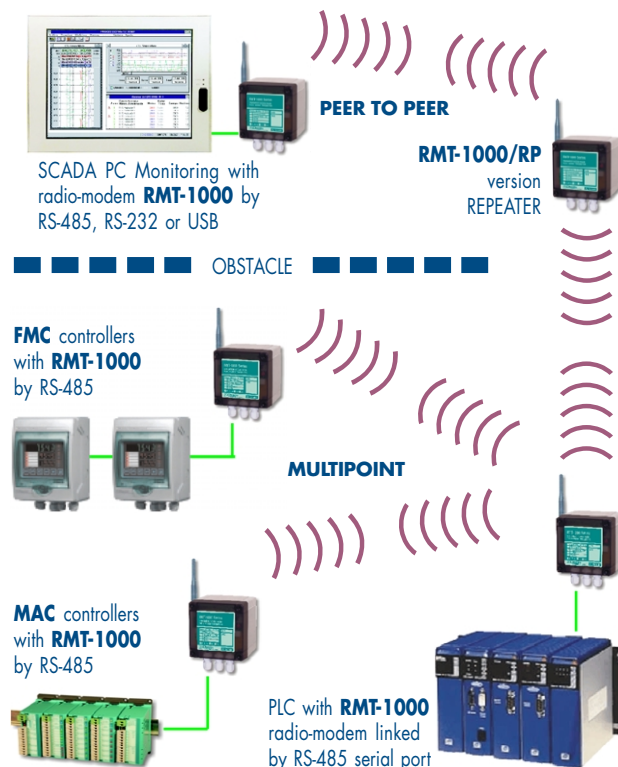
The **RMT-1000** Module is based on a FSK Half Duplex transmitter working in unlicensed ISM 868 MHz band. It has a RS-485 (RS-232 or USB under request) serial port communication, working in transparent mode allows an easy integration with wireless networks in applications of data transmission.

The **RMT-1000** includes a local antenna of 1/4 wave with a SMA connector to mount it in the module or remote by means of a coaxial cable (not provided).

The receiving system has a -100 dBm sensitivity at 38.4 Kbps transmission speed. The transmitter generates a power output up to 500 mW. The maximum range is up to 500 m. in in-door areas and up to 5 km in open-field under appropriate conditions, being able to be increased using an high gain antenna Yagi, or using a **RMT-1000/RP** repeater module.

The data transmission speed of the **RMT-1000** can work within the range of 4.8 ... 38.4 Kbps based on the selected type of transmission. These parameters can be selected by means of the Hyperterminal application included as standard on all Windows operating systems.

Within the same range, with denomination **RDT-4000**, there are versions with analog or pulses inputs for specific applications for Counter, RPM, Temperature, Humidity, Chemical Variables, Electrical Variables, Flow, Vibration, Level, Pressure, Weight, etc.



135.162

SPECIFICATIONS

RADIO TRANSMITTER:

- Carrier Frequency: 868 - 870 MHz (915 MHz in USA)
- Channels: 10 Multi C. and 1 Single C. (standard)
- Radio Power: according work mode:
25 mW, 500 mW (standard) and 100 mW
- Baud-rate:selectable 4.8 Kbps to 38.4 Kbps
- Work mode: selectable as:
Single Channel (#10 standard) max. 38.4 Kbps and 500 mW
Single Channel (#0 to #9) fixed to 4.8 Kbps and 100 mW
- Reach: from 100 m to 5 Km in appropriated conditions
- Sensibility: (BER<10-3) -100 dBm
- Modulation: GFSK

CONFIGURATION:

- Type: proprietary AT instructions

-ANTENNA:

- Type: included 1/4 wave (for 100 mW max.)
- Connection: connector SMA
- Sensibility: -5 dBi to +5 dBi acc. position
- Optional Antennas: (for 500 mW) 1/2 wave omnidirect.
or unidirectional type Yagi

RADIOMODEM VERSION:

- Transparent: Retransmitting the frames received as it is

DIGITAL COMMUNICATIONS:

- Type: RS-485 Modbus RTU
- Baud rate: 4.8 - 9.6 - 38.4 Kbps

REPEATER VERSION (RMT-1000/RP):

- Retransmitter Mode: ... Retransmitting the frames to the next radiomodem (only in its channel).
Used to overcome obstacles or to increase the distance.

ANTICROSS SYSTEM:

- Modern version: It allows to select between 10 channels to use several networks in the same area operating exclusively at 4.8 Kbps and 100 mW max.

POWER SUPPLY OUTPUT:

- Type and output values: switched 24 Vdc max. 40 mA

ENVIRONMENTAL LIMITS:

- Operating Temp. and %RH: -20 to 50 °C and 99 %RH max.

CE STANDARDS:

- EN 61000-6-3 Emis., EN 61000-6-2 Inmun., EN 61010 Elect. Safe

POWER:

- Operating voltage: 85 to 265 Vac/dc max. 10 VA
(optional 12 or 24 Vac/dc)

ENCLOSURE:

- Type: Polycarbonate
- Front protection: IP65 acc/IEC60529 and IK09 EN50102
- Ambient Resistance: acc/IEC 695-2-1 and IEC 439-3

IMPORTANT NOTE ABOUT THE TRANSMISSION RANGES:

Besides the Frequency and the Power transmission, the effectiveness of a radio link depends on several factors that can affect the distance of transmission: Heights of the antenna over the ground level; Propagation losses (Walls, Metallic Beams, Rain, etc.); Losses in the cable of the antenna; Types of antenna (it depends if is Inside, Outside, Yagi, etc.); Losses by badly polarized antennas; and the sensitivity of the receiver. Consult for each case. (See table of losses in Data Sheet of RMT-1000 transmitter).

ORIENTATIVE VALUES OF A RADIO LINK ATTENUATION

Obstacle	Glass	Pladur	Wood	Wall	Rain
W/o metal	1-2 dB	3-4 dB	5-8 dB	9-11 dB	25-30 dB
With metal	5-6 dB	8-9 dB	9-11 dB	12-15 dB	50-80 dB

ORIENTATIVE RANGES OF RADIOLINKS WITHOUT OBSTÁCLES

On sight Installation	Antenna 1/4 at 100 mW	Antenna 1/2 at 500 mW	Antenna Yagi at 500 mW
Ground Level	0,5 - 2 Km	1 - 3 Km	2 - 7 Km
12 m elevation	1 - 3 Km	2 - 5 Km	4 - 15 Km

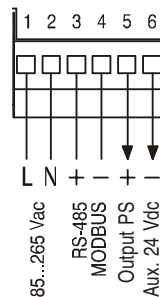
Note: The presence of fog or rain reduce these distances in 70%

MAXIMUM RADIOLINKS RANGES WITH OBSTACLES

Installation through:	Antenna 1/4 at 100 mW	Antenna 1/2 at 500 mW
Glass/Pladur	200 m	500 m
Wall/Floor	100 m	200 m
Metal Structure	50 m	100 m

Note: with several obstacles, consider the one of smaller distance

WIRING DIAGRAM



1	—	Mains Power Supply 85...265 Vac/dc
2	—	(Optionally 12 or 24 Vac/dc)
3	+	RS-485 MODBUS Communication port
4	—	
5	+	Auxiliary Power Supply Output
6	—	24 Vdc 40 mA

HOW TO ORDER

Factory configured standard versions:

RMT-1000 Serial RS-485 - Channel 10 - 100 mW - 38.4 Kbps

RMT-1000/RP Radio-Repeater - 100 mW - 38.4 Kbps

Other serial supports add suffix of type:

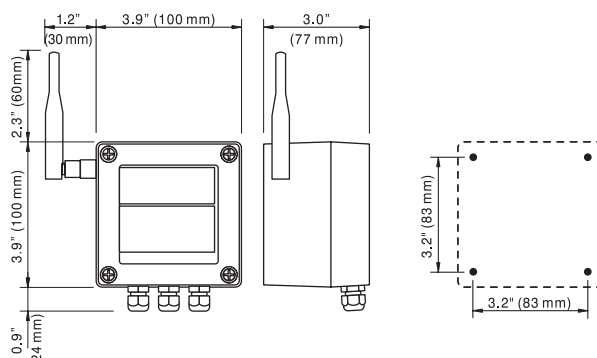
RMT-1000/232 Serial RS-232 - Features same as standard

RMT-1000/USB Same as the standard including USB-485 adapter

The standard power supply is 85 ... 265 Vac. For 12 or 24 V supply put **12 or 24** before the version suffix, i.e.: **RMT-4000/24/...**

IMPORTANT: Although these transmitters emit in a unlicensed band, is recommendable to make sure that in the area there are no other equipment with which might interfere.

DIMENSIONS



Weight: with antenna 390 g. ; with packing 466 g.

Mounting SS flange for up to 2" pipes can be supplied, optional.

Weight: add 120 g

It is provided with local antenna 1/4 wave with SMA connector