RF *END-Node* & *HUB-Node*

Wireless system for sub-metering applications

new

RF END-Node & HUB-Node

Function

The Socomec RF system is designed to replace Ethernet LAN network infrastructure and Modbus RS485 multi-drop wiring runs with a secure local wireless network. The RF system has been designed to be networked from different locations throughout a facility or campus environment. The RF END-Node has an RS485 input to connect to any Modbus device that needs wireless communication, while the RF HUB-Node converts the wireless communication into an RS485 or Ethernet bus, making compatibility and integration seamless with all EMS/BMS systems.

Advantages

Easy installation

The Socomec RF system is designed to improve installation safety and reduce overall installation time
• Wireless RS485 network saves both time and money eliminating costly wire runs.
• The RF END-Node is self-powered by the DIRIS MCM meter and can be mounted directly on top of it.
• (1) RF HUB-Node can support up to (8) Modbus devices on a network.

Easy commissioning
• Configuration with a simple and intuitive PC application (RF-View) via a direct USB connection to RF HUB-Node.
• Visual signal strength feature guarantees optimal device placement for maximum network coverage.
• (1) RF HUB-Node can support up to (8) different Modbus devices on one network.

Rugged industrial design
• Aluminum body case.
• Extendable and multi-position antenna provides unlimited mounting options and avoids communication losses.
• Easy-access LED status lights.
• RF Encryption ensures data confidentiality.

Programmable / Customizable
• Equipped with an automatic communication retry feature to ensure no data packets go missing.
• PreFetch zone improves data reliability and response time to Modbus Host.
• Assign one RF END-Node to a specific Modbus address.
• Using Test utility allows user to see data results while both on and off site.

General Characteristics

• Behaves as a virtual (wireless) RS485 serial network
• Modbus RTU and TCP communication
• Wireless 915 MHz encrypted
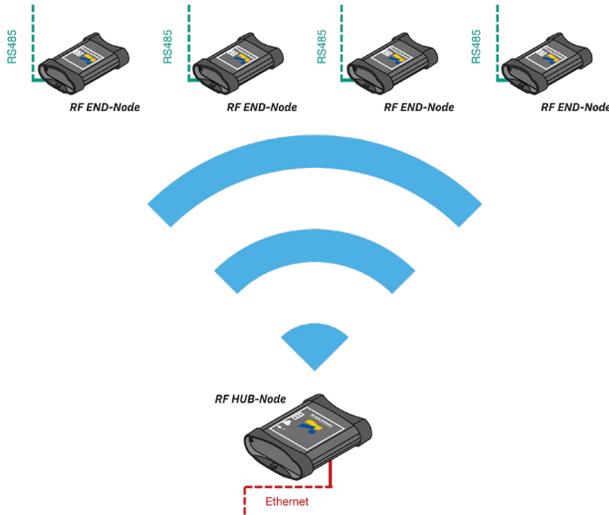• RF END-Node is directly powered from the DIRIS MCM power meter

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Typical Architecture

RS485   RS485   RS485   RS485

RF END-Node   **RF END-Node**   **RF END-Node**   **RF END-Node**

RF HUB-Node

Ethernet

Socomec RF System

Socomec RF system is a general-purpose wireless Modbus system designed to replace RS485 multi-drop wiring installations. The system is designed as a "star" network with a Modbus Master physically connected to the RF HUB-Node which remotely communicates with to up to (8) RF END-Nodes. RF END-Nodes are connected via RS485 to power meters or any Modbus enabled devices.

Simple Wireless architecture

The RF system has been designed to be plug and play compatible with the DIRIS MCM meter for wireless communication (915 MHz) of measurements. The RF END-Node is connected via RS485 to the DIRIS MCM and sends measurement via wireless link to the RF HUB-Node. No external power supply is required, as the RF END-Node is self-powered by the DIRIS MCM.

Each RF HUB-Node can communicate wirelessly with up to (8) RF END-Node. The RF HUB-Node offers RS485 (Modbus RTU) and Ethernet (Modbus TCP) communication capabilities to any third-party BMS/EMS system.

PC-based configuration software (RF-View)

The RF system is configured using a simple and Intuitive PC application (RF View) with the following features:
- Assignable (one RF END-Node per address range)
- Automatic Communication Retries
- Configurable "Prefetch" modes – up to 3
- Real Time Signal Strength Indicator

Antennas

Various types of antennas can be connected to the RF system to maximize signal strength.
Socomec has tested a range of antennas from short to high-gain to boost signal strength which make installation easy across a wide range of application environments.
Socomec's standard supplied antenna is a market tested magnetic base with Whip antenna. The lead wire for the base can be extended to optimize antenna location and maximize signal strength.
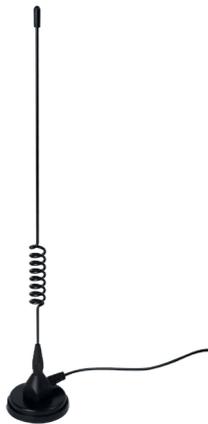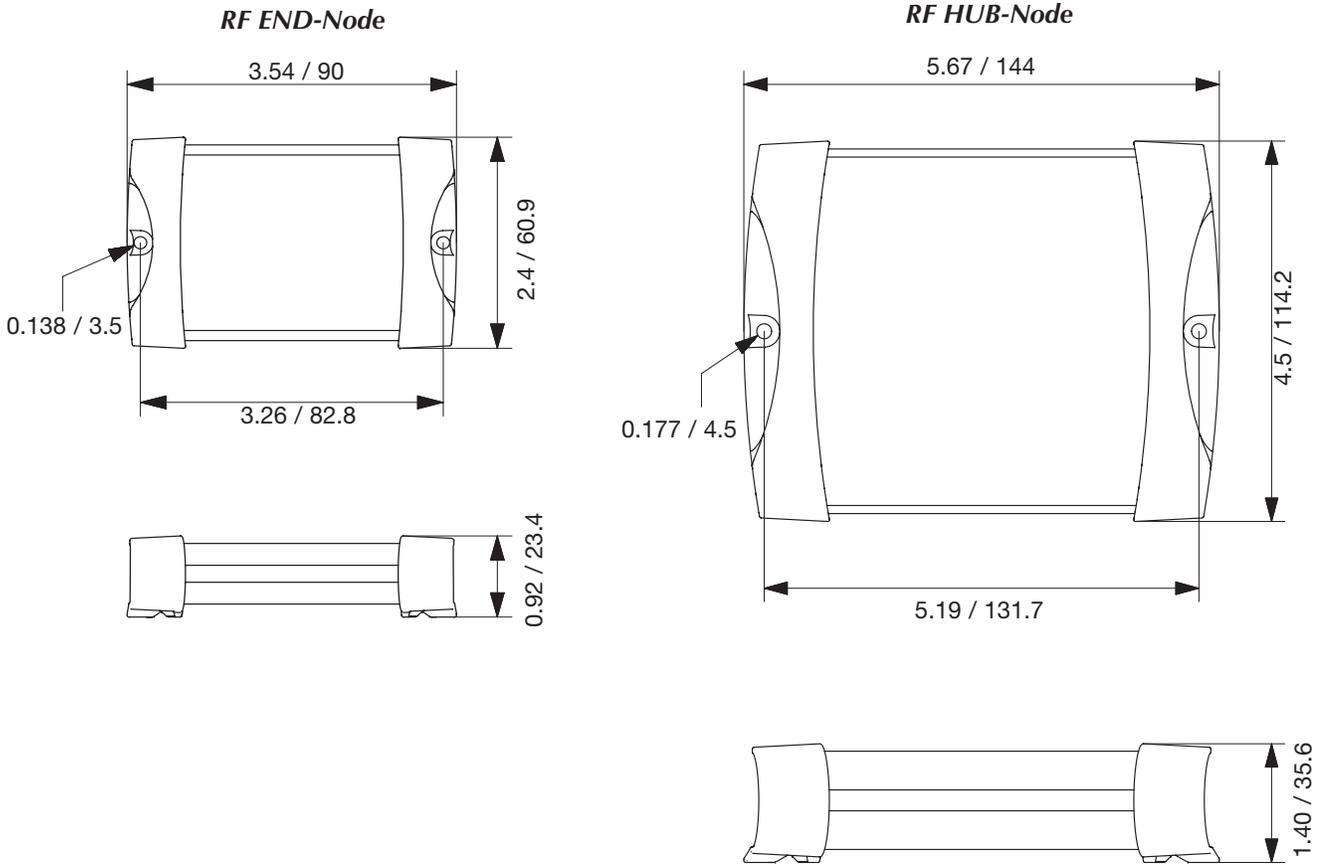
Magnetic antenna base with Omni-directional Whip antenna
(Supplied with RF END-Node and HUB-Node)

RF *END-Node* & *HUB-Node*
Wireless system for sub-metering applications

Dimensions (in/mm)

RF END-Node

3.54 / 90

2.4 / 60.9

0.138 / 3.5

3.26 / 82.8

0.92 / 23.4

RF HUB-Node

5.67 / 144

4.5 / 114.2

0.177 / 4.5

5.19 / 131.7

1.40 / 35.6

Technical Characteristics

Communication characteristics	RF END-Node	RF HUB-Node
Antenna connection	RSMA	
Frequency	902 - 928 MHZ	
Radio Power	25 dbm	
Encryption	128 Bit AES	
Modulation	FSK	
Link Budget	135 dB	
System Range(s)	5 Miles Outdoor Line of Sight 1000 feet indoor commercial	
Communications	RS485 Modbus RTU	RS485 Modbus RTU Ethernet Modbus TCP

Electrical Characteristics	RF END-Node	RF HUB-Node
Consumption	3 VA	
Power Supply	4.8 - 28 VDC	5.0 VDC
Connection	Molex Minift Jr (2x2)	USB Type B

Environmental Characteristics	RF END-Node	RF HUB-Node
Temperature	-4... +140°F /-20 +60°C	

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References

Wireless System (*)	Description	Reference
RF END-Node	Wireless End-Point interface with RS485 input (one RF END-Node per DIRIS MCM)	4899 **0800**
RF HUB-Node	Wireless Access-Point interface; RS485 & Ethernet outputs (supports up to 8 RF END-Nodes)	4899 **0801**

RF END-Node standard kit content:
(1) Molex Power & Communiaction cable
(1) Magnetic Base with 4m / 13.1ft SMA cable
(1) Whip Antenna

RF HUB-Node standard kit content:
(1) USB 1 Amp Power Supply (100 - 240 VAC)
(1) 6-ft USB Cable
(1) Magnetic Base with 4m / 13.1ft SMA cable
(1) Whip Antenna

Expert Services

Our service engineers are an essential part of our team, and they are dedicated to ensuring your power monitoring system provides accurate and reliable measurements to your EPMS software or SCADA system.

Our services include:

> Site audits to verify the proper wiring of your system
> Personnel training on how to configure, operate and maintain power monitoring equipment and associated software
> Remote and on-site commissioning to ensure that your system is up and running quickly, with peace of mind.

For further information, please contact your nearest SOCOMEC branch.