

# Communications Module

## For PRI Meters



### Adding two-way wireless communications to already feature-rich meters

- » Offers one-watt transmitter to provide full, two-way wireless NAN communications
- » Supports 2.4 GHz HAN communications
- » Enables over-the-air firmware upgrades to reduce cost
- » Supports advanced metering and demand response functions
- » Provides full security and encryption to meet rigorous industry standards
- » Offers compact, cost-effective construction to save space and simplify installation and handling
- » Provides highly accurate energy metering
- » Offers large, easy to read LCD display and simple push button operation

### Bringing the utility and the customer closer together—to benefit both

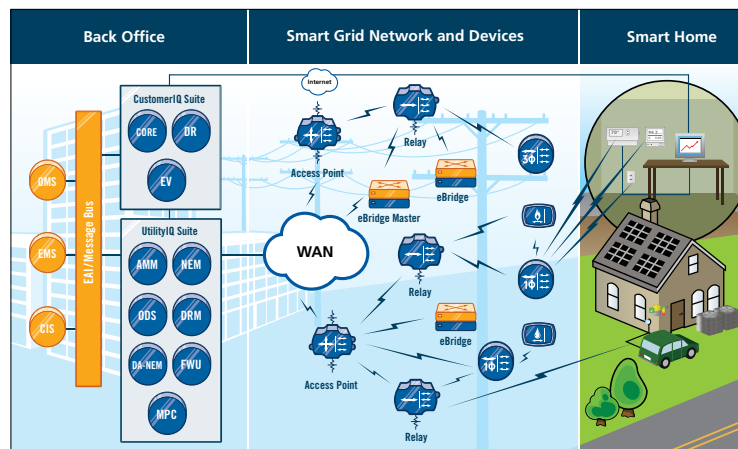
The Silver Spring Smart Energy Platform combines network infrastructure, software, and professional services to enable a range of smart grid applications. Communication with next-generation electricity meters is a fundamental building block of the smart grid.

Silver Spring has integrated its Communications Module into the PRI family of integrated meters, including the ICM500, Sprint200 and Premier. The combination offers a wealth of features and functions essential for the smart grid.

Advanced metering functions such as active and reactive energy, net metering, demand, TOU, LP, and multiple tariff support are fundamental to PRI meters. Both the meter and the Silver Spring Communications Module are configurable via the secure optical port or over the air.

The Communications Module dynamically discovers and self-heals routes within the Neighborhood Area Network (NAN) and notifies the Smart Energy Platform of outages and restorations. This design ensures greater efficiency while improving customer satisfaction with a scalable platform for adding services — both today and tomorrow.

Demand response is core to the PRI meter and Silver Spring Communications Module. In addition to a Service Switch, PRI meters support a Load Control Switch. The Communications Module is ZigBee Pro compliant and supports the Smart Energy clusters. The combination enables advanced services such as prepayment, load curtailment, remote service disconnect, and price signaling.



*An advanced, IP-based network enables the smart grid—from the data center to the customer premise.*

### About Silver Spring Networks

Silver Spring Networks is a leading Smart Grid solution provider that enables utilities to achieve operational efficiencies, reduce carbon emissions and empower their consumers with new ways to monitor and manage their energy consumption. Silver Spring provides the hardware, software and services that allow utilities to deploy and run multiple advanced solutions, including Smart Metering, Demand Response, Distribution Automation and Distributed Generation, over a single, unified network. The Silver Spring Smart Energy Platform is based on open, Internet Protocol (IP) standards, allowing continuous, two-way communication between the utility and devices on the grid. Silver Spring has numerous deployments with leading utilities in the US and abroad, including Florida Power & Light, Pacific Gas & Electric, Pepco Holdings, Inc., Jemena Electricity Networks Limited and United Energy Distribution, among others. For additional information, please visit [www.silverspringnetworks.com](http://www.silverspringnetworks.com).

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## Communications Module Features

- » Full, two-way 915-928 MHz FHSS communications
- » Dynamic network discovery and self healing
- » Scheduled and on-demand meter reads
- » Over-the-air firmware upgrades, meter programming, and tariff changes
- » Robust security and RF link encryption
- » Alarm detection and clearing
- » Time synchronization and management
- » Support for a wide range of meter types
- » Continuous link monitoring and route calculation
- » Low meter burden
- » Power outage and restoration notification
- » Auxillary second comms port
- » Selectable internal or external antenna

## PRI Meter Features

- » Full four-quadrant measurement
- » Load survey storage
- » Up to 38,400 baud ANSI and RS-232 comms ports
- » Optional GSM / GPRS modem (in ETBC)
- » Enhanced QoS Features
- » Optional customer display unit
- » Service disconnect relay 100 A
- » Local and remote disconnection, connection, and arm control
- » Optional integrated relay for external load control and/or 2 A relays
- » Up to 255 on/off switching times
- » Authenticated Billing Codes (ABC)
- » Historical recording
- » Load profile recording
- » Maximum demand registration
- » Time-of-use support

## Specifications: Communications Module

NAN Communications	Data rate: 100 kbps Frequency: 915-928 MHz Spread spectrum technology: FHSS Channels: 43 Receiver sensitivity: -97 dBm for 1% PER Modulation: Binary FSK Transmitter output: 30 dBm
HAN Communications	Protocol: ZigBee Smart Energy Profile 1.0 Data rate: 250 Kbps Frequency: 2.4 GHz ISM Band Spreading technology: Direct Sequence PHY/MAC: 802.15.4 Transmitter output: 20 to 23 dBm (200 mW) Receiver sensitivity: -97 dBm for 1% PER Power, Transmit: 1.6 W (1.8 W max.)
Physical Interfaces	Antenna Connector: Internal Antenna: Self-contained, Inverted F Serial: RS-232
Environmental/Mechanical	Operating Temperature: -40°C to +85°C (-40°F to +185°F) Humidity: 0% to 95%, non-condensing Voltage Range: 4.0V (± ), 1.4 A max., continuous Power, receiver on: 0.5 W (0.6 W max.) Power, transmit: 5.2 W (5.6 W max.)
Security	Image Security: Secure bootloader Integrity: Secure Hash Algorithm 256 bit (SHA-256) Confidentiality: Advanced Encryption Standard 256 bit (AES-256) by default. AES-128 optional Authentication: RSA-1024 for UtilOS, otherwise ECC-256

## Specifications: PRI Meter

Meter Types	Single phase single element Single phase single element with 31.5A load control Three phase with no load control Three phase with 31.5A load control Three phase with 31.5A and 2A load control Three phase CT connect Three phase CT and VT connect
Accuracy Class	Class 1.0 (IEC62053.21/AS62053.21)
Meter Services	Load profile – 440 days Time of Use – 5 per channels Demand Rolling/Block Stores up to 12 tariffs
Approvals	Australia Certification Office: Type Testing (Safety Compliance AS62052.11-2005 and AS62052.21-2006) Type Examination Certificate; C-Tick Level 3; Australian Pattern Testing.