

RFN-430sL Radio Frequency Node

Technical Support: 1-800-815-2258

Instructional Leaflet

This instructional leaflet contains general installation information for the RFN-430sL Radio Frequency Node (RFN). No special test equipment or programming is required to install the RFN-430sL in the field.

Based on the Itron SENTINEL® meter, the RFN-430sL uses two-way Radio Frequency (RF) mesh communications to provide low cost remote meter reading and advanced data collection.

Once powered up, the RFN-430sL will initiate communication with neighboring nodes and join the RF mesh network.

Make sure the RFN being installed matches the service type, current class, and capacity required. If the RFN is installed outdoors, make sure the socket is weatherproof.

Changes to the meter programming require Itron's PC-PRO+® Advanced software.

For advanced SENTINEL programming questions, contact your local Itron representative or contact Itron Technical Support at 1-877-487-6602 in the US, 1-866-246-5995 in Canada or at www.itron.com.



WARNING Dangerous voltages are present. Equipment damage, personal injury, and death can result if safety precautions are not followed. Use authorized utility procedures to install, test, and service the RFN-430sL.

Cooper Power Systems
by **I·T·N**



SAFETY FOR LIFE



Eaton’s Cooper Power Systems™ products meet or exceed all applicable industry standards relating to product safety. We actively promote safe practices in the use and maintenance of our products through our service literature, instructional training programs, and the continuous efforts of all Eaton’s Cooper Power Systems employees involved in product design, manufacture, marketing, and service.

We strongly urge that you always follow all locally approved safety procedures and safety instructions when working around high voltage lines and equipment and support our “Safety For Life” mission.

SAFETY INFORMATION

The instructions in this manual are not intended as a substitute for proper training or adequate experience in the safe operation of the equipment described. Only competent technicians who are familiar with this equipment should install, operate, and service it.

A competent technician has these qualifications:

- *Is thoroughly familiar with these instructions.*
- *Is trained in industry-accepted high- and low-voltage safe operating practices and procedures.*
- *Is trained and authorized to energize, de-energize, clear, and ground power distribution equipment.*
- *Is trained in the care and use of protective equipment such as flash clothing, safety glasses, face shield, hard hat, rubber gloves, hotstick, etc.*

Following is important safety information. For safe installation and operation of this equipment, be sure to read and understand all cautions and warnings.

Safety Instructions

Following are general caution and warning statements that apply to this equipment. Additional statements, related to specific tasks and procedures, are located throughout the manual.

Hazard Statement Definitions

This document may contain four types of hazard statements:



DANGER: Indicates a hazardous situation which, if not avoided, will result in death or serious injury.



WARNING: Indicates a hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION: Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury or equipment damage.

CAUTION: Indicates a potentially hazardous situation which, if not avoided, may result in equipment damage only.



DANGER: Hazardous voltage. Contact with hazardous voltage will cause death or severe personal injury. Follow all locally approved safety procedures when working around high and low-voltage lines and equipment.

G103.3



DANGER: Before installing, operating, maintaining, or testing this equipment, carefully read and understand the contents of this document. Improper operation, handling, or maintenance can result in death, severe personal injury, and equipment damage.

G101.0



DANGER: This equipment is not intended to protect human life. Follow all locally approved procedures and safety practices when installing or operating this equipment. Failure to comply may result in death, severe personal injury, and equipment damage.

G102.1



DANGER: Power distribution and transmission equipment must be properly selected for the intended application. It must be installed and serviced by competent personnel who have been trained and understand proper safety procedures. These instructions are written for such personnel and are not a substitute for adequate training and experience in safety procedures. Failure to properly select, install, or maintain power distribution and transmission equipment can result in death, severe personal injury, and equipment damage.

G102.1



RFN-430sL Regulatory Notices

NOTICE The Original Equipment Manufacturer (OEM) must ensure that FCC Labeling requirements are met. This includes a clearly visible label on the outside of the OEM enclosure specifying the Cooper Power Systems FCC identifier (FCC ID: P9X-430SL) and IC Number (IC: 6766A-430SL) as well as the FCC Notice below.

NOTICE This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: As such, the radio component of this device is intended only for OEM integrators under the following two conditions:

1. This device may not cause harmful interference, and
2. The transmitter module may not be co-located with any other transmitter or antenna.

NOTICE Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTICE This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

NOTICE The installer of this radio equipment must ensure that the antenna is located or pointed such that it does not emit RF field in excess of Health Canada limits for the general population; consult Safety Code 6, obtainable from Health Canada's Web site: www.hc-sc.gc.ca.

NOTICE To comply with FCC RF exposure compliance requirements, the antenna used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operate in conjunction with any other antenna or transmitter.

As such, the radio component of this device is intended only for OEM integrators under the following two conditions:

- The antenna must be installed such that 20 cm is maintained between the antenna and users.
- The transmitter module may not be co-located with any other transmitter or antenna.

As long as the two conditions above are met, further transmitter testing will not be required. However, the OEM integrator is still responsible for testing their end product for any additional compliance requirements required with this module installed (e.g., digital device emissions, PC peripheral requirements).

In the event that these conditions cannot be met (for example, co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID cannot be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

End Product Labeling

This transmitter module is authorized only for use in devices where the antenna may be installed such that 20 cm may be maintained between the antenna and users (for example access points, routers, wireless ASDL modems, certain laptop configurations, and similar equipment). **The final end product must be labeled in a visible area with the following: "Contains FCC ID: P9X-430SL, IC: 6766A-430SL".**

The radio component is an integral part of the RFN-430sL and it cannot be removed.

RFN-430sL Installation

Complete the following steps to install an RFN-430sL:

1. Verify that the RFN being installed matches the service type, current class, and capacity required. This information can be found on the label on the front of the RFN.
For example, the RFN shown in this instructional leaflet has the following specs:
CL20 120-480V 4WY TA2.5 kH1.8
FM46S (6S) 60 Hz
2. If necessary, remove the old meter from the meter socket.
3. Line up the bottom blades of the RFN with the socket jaws of the meter socket.
4. Gently push the bottom blades of the RFN into the socket.



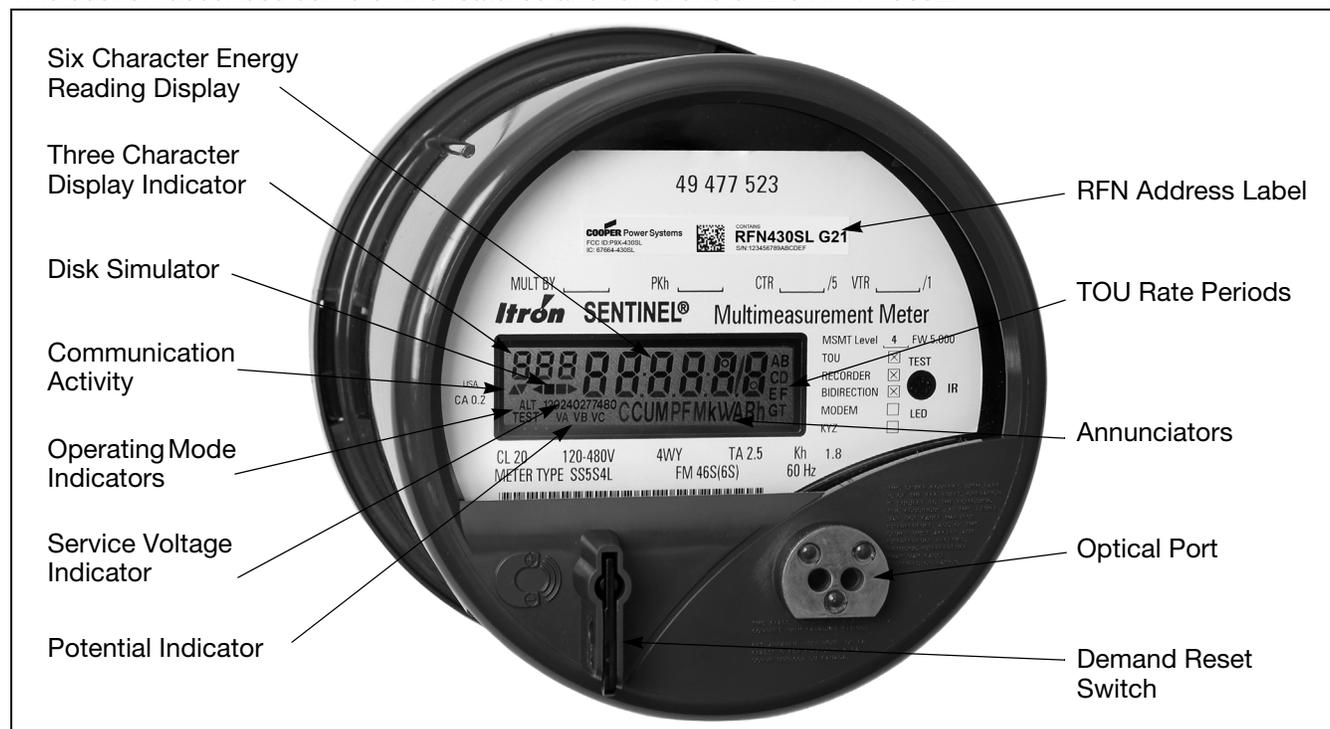
5. Gently rock the top blades of the RFN into place.



6. Verify that the LCD operates and that it shows the display sequences programmed in the meter.
The disk simulator should move from left to right when load is applied.
7. Apply a meter seal and record the meter serial number and other necessary information.

RFN-430sL Features and Functions

This section describes some of the features and functions of the RFN-430sL.



Feature	Function
Six Character Energy Reading Display	Displays either metered quantities or other pertinent information. The meter can be configured to display various types of data by using Itron's PC-PRO+ Advanced software.
Three Character Display Indicator	Identifies the displayed quantity as programmed in the meter. The meter scrolls through several different displays, which can include kWh usage, date, time, and other system information.
Disk Simulator	Imitates mechanical disk movement. The disk simulator moves from left to right when usage occurs. In reverse power conditions, the disk simulator moves from right to left.
Communication Activity	Illustrates when the RFN is transmitting or receiving a message. The Up arrow ▲ indicates that the meter is transmitting a message. The Down arrow ▼ indicates that the meter is receiving a message, addressed to the meter.
Operating Mode Indicators	Describes the mode in which the meter is operating: No Indicator – Normal Mode. Test – In this mode, the meter displays test mode quantities. Alt – In this mode, the meter scrolls through its alternate display settings.
Service Voltage Indicator	Identifies the service voltage being applied to the meter.
Potential Indicator	Indicates if the service is polyphase and if potential is applied to the respective phase (Va, Vb, Vc).
RFN Address Label	Contains the serial number for the RFN-430sL Radio Frequency Node.
TOU Rate Periods	Identifies the TOU rate that is currently in use.
Annunciators	Identifies the reading being displayed (kW, kWh, kVARh, Vrms, etc.).
Optical Port	Allows the meter to be programmed and meter data to be recorded.
Demand Reset Switch	Activates the demand reset sequence.

RFN-430sL Specifications

Communications

Radio Frequency Mesh Network

Operating Frequency:
902 MHz to 928 MHz
License Free Band

RF Output Power:
30 dBm (1 W) Maximum

Data Rates:
38.4 kbps, 76.8 kbps and 153.6 kbps

Receiver Sensitivity:
-104 dBm (@ 1% PER, +25 °C, 38.4 kbps)
-101 dBm (@ 1% PER, +25 °C, 76.8 kbps)
-98 dBm (@ 1% PER, +25 °C, 153.6 kbps)

Mode:
Frequency Hopping Spread Spectrum (FHSS)

Operating Requirements

Voltage:
120 V to 480 V
(Depending on the style of the RFN)

Frequency:
60 Hz
Temperature:
-40 °F to +185 °F (-40 °C to +85 °C)
Humidity:
0% to 95%, non-condensing

Dimensions
6.95 in. H x 6.95 in. W x 7.3 in. D
(17.65 cm H x 17.65 cm W x 18.54 cm D)

Electrostatic Discharge
15 kV through Air per ANSI C12.1 (IEC 61000-4-2)

Surge Withstand Capability

Oscillatory:
6 kV @ 100 kHz waveform per
ANSI C12.1 (IEEE C62.41)

Fast Transient:
6 kV @ 1.2x50 µs - 8x20 µs waveform per
ANSI C12.1 (IEEE C62.41)



FCC COMPLIANCE STATEMENT

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

These devices operate under Part 15 of the FCC rules. Modifications to these devices not expressly authorized by Eaton's Cooper Power Systems may affect your ability to legally operate these devices.

DISCLAIMER OF WARRANTIES AND LIMITATION OF LIABILITY

THERE ARE NO UNDERSTANDINGS, AGREEMENTS, REPRESENTATIONS, OR WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OTHER THAN THOSE SPECIFICALLY SET OUT BY ANY EXISTING CONTRACT BETWEEN THE SELLER AND BUYER. ANY SUCH CONTRACT STATES THE ENTIRE OBLIGATION OF SELLER. THE CONTENTS OF THIS INFORMATION LEAFLET SHALL NOT BECOME PART OF OR MODIFY ANY SUCH PRIOR OR EXISTING AGREEMENT.

The information, recommendations, descriptions, and safety notations are based on Eaton's Cooper Power Systems experience and judgment. THIS INFORMATION SHOULD NOT BE CONSIDERED AS ALL-INCLUSIVE OR COVERING ALL CONTINGENCIES. If further information is required, Eaton's Cooper Power Systems should be consulted. In no event will Eaton's Cooper Power Systems be responsible to the user in contract, in tort (including negligence), strict liability or otherwise for any special, indirect, incidental, or consequential damage or loss whatsoever; or claims against the user by its customers resulting from use of information, recommendations, descriptions, or safety notations.