

DRAFT

OpenWay
2.4ZR-IPP Range Extender
Installation Guide

NOT FOR PUBLIC RELEASE

Putting knowledge to work.

Identification

OpenWay Batter-powered Gas Range Extender Installation Guide
09/22/2009 TDC-0832-000

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Suggestions

If you have comments or suggestions on how we may improve this documentation, send them to TechnicalCommunicationsManager@itron.com

If you have questions or comments about the software or hardware product, contact Itron Technical Support:

Contact

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Compliance Statement

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

- This device may not cause harmful interference.
- This device must accept any interference that may cause undesirable operation.

This device must be permanently mounted such that it retains a distance of 20 centimeters (7.9 inches) from all persons in order to comply with FCC RF exposure levels.

UL Hazardous Locations

This device is certified under Electrical Equipment for use in Class 1, Division 2, Groups C and D, UL Standard 1604.

Transportation Classification

The Federal Aviation Administration prohibits operating transmitters and receivers on all commercial aircraft. When powered, the is considered an operating transmitter and receiver and cannot be shipped by air. All product returns must be shipped by ground transportation.

Modification and Repairs

To ensure system performance, this device and antenna shall not be changed or modified without the expressed approval of Itron. Any unauthorized modification will void the user's authority to operate the equipment.



Warning Only authorized Itron personnel should attempt repairs on Itron equipment. Attempts to do so by others might void any maintenance contract with your company.

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Before You Begin

Before beginning the installation, verify that you have the following equipment and tools available.

Equipment Provided by Itron

- 2.4ZR-IPP Range Extender (OWR-1000-001).
- Itron magnet (MSE-0159-003).
- Bluetooth-enabled FC200 handheld computer (or laptop computer) loaded with Endpoint-Link or Endpoint-Link Pro software version 5.4 or higher.
- OpenWay Belt Clip Radio (AMI-0100-001).
- *2.4GZ OpenWay Gas Module Installation Guide* (TDC-0816-xxx).

Equipment Provided by You

- Location and serial number of the 2.4GZ OpenWay Gas Module needing mitigation.
- Two #8 screws – the type of screw depends on the mounting surface.
- Screwdriver – the type of screwdriver depends on the screws.

CHAPTER 1

Introduction

Itron's OpenWay® 2.4ZR-IPP (Itron Private Profile) Range Extender is installed when data is not being exchanged between an OpenWay CENTRON® electric meter and a 2.4GZ OpenWay Gas Module. If both the CENTRON meter and the gas module are working properly, there may be radio frequency (RF) signal constraints preventing the meter and the module from communicating with one another. RF signal constraints may be caused by physical barriers between the components or there may be too great a distance between the meter and the gas module. The range extender is strategically placed between the meter and the gas module, providing an extension to the gas module's RF range that enables data flow.

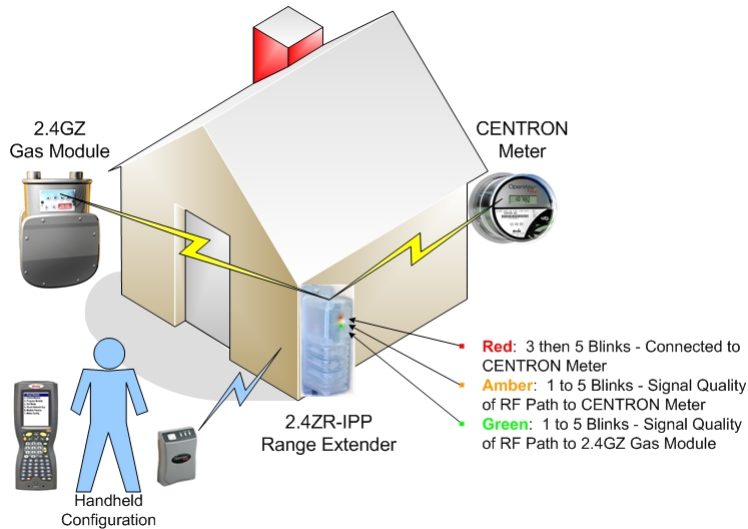


Note The 2.4ZR-IPP Range Extender is not a signal amplifier.

The range extender is small and easy to install. Its electronic components, radio antenna, and group of A-cell batteries are all enclosed in a translucent, polycarbonate weather-proof casing that is mounted and secured to a stationary object with two screws. The batteries are designed to last for the life of the product and do not need replacing.



The 2.4ZR-IPP Range Extender is configured with the same Itron tools used for programming the 2.4GZ OpenWay Gas Module. When mitigation and installation is complete, a reliable signal path is established between the gas module and the CENTRON meter.



Specifications

The 2.4ZR-IPP Range Extender (model OWR-1000-001) is designed for outdoor installation and operation. The functional and operational specifications are listed below.

Functional specifications	Description
Power source	Two A-cell lithium batteries
Tamper detection	None
FCC compliance	Part 15 certified
Intrinsic safety	UL Class I, Division 1, Groups C and D
Product identification	Numeric, bar-code, and serial number
Construction materials	Translucent polycarbonate cover, encapsulated electronics
Operational specifications	Description
Operating temperatures	-40° to 158° F (-40° to +70° C)
Operating humidity	5 to 95% relative humidity
Frequency band	2.4 to 2.475 GHz ISM (industrial, scientific, and medical) band
Modulation	Direct sequence spread spectrum
Data integrity	Verified in every data message

Meter compatibility	Description
Electric meters	OpenWay CENTRON Hardware version 1.5 only System release firmware version SR1.6-SR2.0 SP5.1
Gas meters	2.4GZ OpenWay Gas Module Model OWG-5001-xxx or later with IPP

Related Documents

- *2.4GZ OpenWay Gas Module Installation Guide – Direct Mount (TDC-0816-xxx)*
- *Endpoint-Link Pro Server Software User's Guide (TDC-0737-xxx)*
- *Endpoint-Link Pro Field Service Representative's Guide (TDC-0735-xxx)*
- *Endpoint-Link Endpoint Programming Guide (TDC-0744-xxx)*
- *OpenWay Belt Clip Radio User Guide (TDC-0791-xxx)*

CHAPTER 2

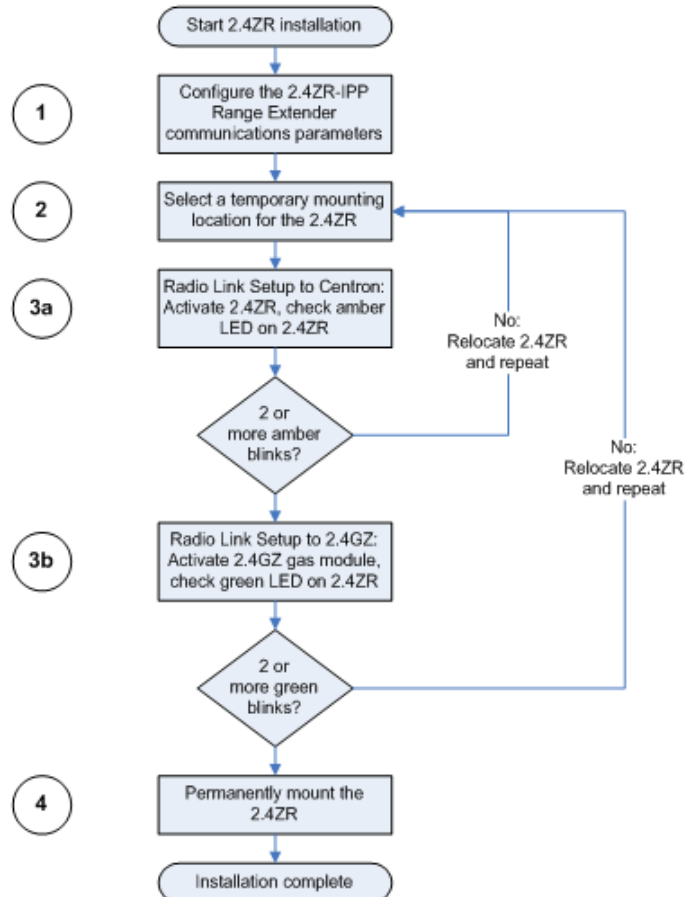
Installation

To set up and install the 2.4ZR-IPP Range Extender, perform all of the procedures in the Installation Checklist in the order listed.

Installation Checklist

Step	Procedure	
1	Configure the 2.4ZR-IPP Range Extender on page 6.	<input type="checkbox"/>
2	Select a Mounting Location on page 8.	<input type="checkbox"/>
3	Link to a CENTRON Meter on page 8.	<input type="checkbox"/>
4	Link to the 2.4GZ OpenWay Gas Module on page 10.	<input type="checkbox"/>
5	Mount the Range Extender on page 12.	<input type="checkbox"/>

Installation Flowchart



Configure the 2.4ZR-IPP Range Extender

The range extender and the gas module must have the same configuration settings. This can be performed before the range extender is deployed into the field and must be done before the final field installation.

Configure the range extender communications parameters with a Bluetooth-enabled FC200 handheld computer (or a laptop computer) loaded with Endpoint-Link or Endpoint-Link Pro software, the OpenWay Belt Clip Radio, and the same configuration files used to program the 2.4GZ OpenWay Gas Module during installation. See the *Endpoint-Link Endpoint Programming Guide* (TDC-0744-xxx) for more complete programming information. An Itron magnet is also required to initiate communication between the range extender and other devices.



To configure the 2.4ZR-IPP Range Extender

1. Position and hold the Itron magnet over the label on the side of the range extender for approximately five seconds and then remove the magnet.



2. Watch the red LED blink pattern to verify that the range extender is searching for the configuration devices.

LED color	# of blinks	Description
Red	3	The range extender is scanning for the Belt Clip Radio and a computer running Endpoint-Link software.
None	0	Communication failed. Retry step 1.

The range extender should now be exchanging data with the handheld computer running Endpoint-Link software.

3. Using Endpoint-Link, verify successful configuration of the range extender.

Note If the 2.4GZ OpenWay Gas Module is not yet programmed, then it should be programmed at this time. Refer to the *2.4GZ OpenWay Gas Module Installation Guide* (TDC-0816-xxx) for complete instructions.

Reconfigure an Installed 2.4ZR-IPP Range Extender

The initial configuration of the range extender with Endpoint-Link software is performed to prepare it for communication prior to setting up the RF links and the final installation.

Reconfiguring a range extender that is installed and operating resets its parameters and requires that you repeat the radio link setup and verification procedure before the range extender will operate.

Read an Installed 2.4ZR-IPP Range Extender

Endpoint-Link may be used to read diagnostic information from a range extender that is already installed and operating. When Endpoint-Link is used to read diagnostic information, the range extender is returned to normal operation with its previously configured communication parameters and continues scheduled communications with the CENTRON meter and the gas module.

Select a Mounting Location



Note Perform each procedure in the order listed in the [Installation Checklist](#) on page 5.

Following the general guidelines below should ensure successful results when selecting a mounting location for the range extender.



Important Mounting is only temporary at this time because the range extender may need to be moved to a different location during the procedures to [Link to a CENTRON Meter](#) on page 8 and [Link to the 2.4GZ OpenWay Gas Module](#) on page 10. Do not drill holes or use any method that damages any surfaces until the final location is verified.

- If the range extender can be mounted within sight of the meter and the gas module, the location is probably adequate.
- Select a location for the range extender where physical barriers and obstructions (buildings, bushes, vehicle parking, and so on) between the electric meter and the gas module are minimal. If possible, choose a location for the range extender so that it is above any obstructions.
- Determine the best mounting position for the device based on available mounting surfaces.
- Consult and follow your company's guidelines for installing equipment. If it is necessary to install the device on private property, request permission from the property owner before permanently installing it.

Link to a CENTRON Meter



Important Perform each procedure in the order listed in the [Installation Checklist](#) on page 5.

The radio link from the range extender to the CENTRON meter must be established before you establish a link to the gas module.

The Itron Private Profile 2.4GZ OpenWay Gas Module does not need to be pointed to a specific CENTRON meter. Any CENTRON meter may be joined to the range extender.

The range extender searches for CENTRON meters and attempts to join the meter with the best signal quality. The meter with the best signal quality should typically be the CENTRON meter on the same premise as the 2.4GZ OpenWay Gas Module but it could be a different meter depending on the relative locations of all nearby meters.

To set up and verify the radio link to the CENTRON meter

1. If this is a new installation, temporarily mount the range extender in close proximity to the location selected in [Select a Mounting Location](#) on page 8.
 - The arrow on the label must be pointing up.
 - Remember that mounting is temporary at this time because the range extender may need to be moved.
2. To activate the radio joining process, hold the Itron magnet on the side of the range extender over the label for approximately five seconds and then remove the magnet.



The range extender searches for CENTRON meters and attempts to join the meter with the best signal quality.

3. Watch the red LED to verify that the range extender has successfully joined to a CENTRON meter.

The status of the connection with the CENTRON meter is indicated by the blink pattern of the red LED visible through the range extender's case.

LED color	# of blinks	Definition	Action
Red	3	The range extender is scanning for a CENTRON meter to join.	No action is needed.
Red	5	The range extender is joined to a CENTRON meter.	No action is needed.
None	0	The range extender could not join to a CENTRON meter.	Repeat step 2. If the range extender still does not join a CENTRON meter, relocate the range extender and repeat step 2.

4. Watch the amber LED to verify the signal quality of the connection between the range extender and the CENTRON meter.

To maintain a reliable connection, the radio link between the range extender and the CENTRON meter must have sufficient signal quality. After the establishing a connection, the range extender indicates the relative signal quality by the number of amber LED blinks.

LED color	# of blinks	Definition	Action
Amber	1	Poor signal quality.	Relocate the range extender and return to step 2.
Amber	2-5	Acceptable signal quality.	No action is needed. Three to five blinks are the best signal quality, but two blinks is usually acceptable.

5. Perform the procedure [Link to the 2.4GZ OpenWay Gas Module](#) on page 10.

Link to the 2.4GZ OpenWay Gas Module



Important Perform each procedure in the order listed in the [Installation Checklist](#) on page 5.

The radio link from the range extender to the CENTRON meter must be established before you establish a link to the gas module.

You have a limited period of time to complete the setup and verification of the radio link between the range extender and the gas module. The time available depends on the time setting configured in the range extender's install window parameter. The install window parameter default setting is 10 minutes.

To set up and verify the radio link to the gas module

1. Go to the gas meter with the 2.4GZ OpenWay Gas Module and use the Itron magnet to activate the gas module's radio joining process. Refer to the *2.4GZ OpenWay Gas Module Installation Guide* for complete instructions.

LED color	# of blinks	Definition	Action
Red	3	The gas module is scanning for a device to join.	No action is needed.
Red	5	The gas module is joined to the range extender.	No action is needed.

LED color	# of blinks	Definition	Action
None	0	The gas module could not join to the range extender.	<ul style="list-style-type: none"> • If the range extender's install window has not yet expired, retry step 1. • If the install window has expired, repeat the procedure Link to a CENTRON Meter on page 8. After verifying the signal quality on the range extender, immediately return to this section and repeat step one. • If the gas module still does not join the range extender, the range extender should be relocated to a more suitable location, either away from physical barriers and obstructions to provide a clearer path to the gas module or physically closer to the gas module. Afterwards, repeat the procedure Link to a CENTRON Meter on page 8.

2. After establishing a connection between the gas module and the range extender, return to the range extender and verify the signal quality.

The status of the connection with the gas module is indicated by the blink pattern of the green LED. The green LED repeats its blink pattern every minute for the duration of the install window.

LED color	# of blinks	Definition	Action
Green	1	Poor signal quality.	Relocate the range extender and repeat the install process from the procedure Link to a CENTRON Meter on page 8.
Green	2-5	Acceptable signal quality.	No action is needed. If the signal quality is two blinks or better, an acceptable radio link has been established between the range extender at its temporary mounting location and both the CENTRON meter and the gas module.

Mount the Range Extender



Note Perform each procedure in the order listed in the [Installation Checklist](#) on page 5.

To permanently mount the range extender, perform the following procedure.

To mount the range extender

1. If the permanent mounting location is significantly different from the location first attempted, you may need to perform the procedures [Link to a CENTRON Meter](#) on page 8 and [Link to the Gas Module](#) on page 10 again to verify that the radio links are satisfactory for the exact location where the device is going to be mounted permanently.
2. Position the range extender in the optimum location determined by the procedures [Link to a CENTRON Meter](#) on page 8 and [Link to the Gas Module](#) on page 10.
3. Using two screws, mount the device to a stationary object.

Caution Do not over-tighten the screws as this may damage the range extender's polycarbonate case.

4. Record the range extender location, according to your company asset management requirements.



Note Any additional magnet activations or configuration changes performed on either the gas module or the range extender after the range extender is permanently mounted require you to perform all of the steps in [Link to a CENTRON Meter](#) on page 8 and [Link to the 2.4GZ OpenWay Gas Module](#) on page 10. Performing these procedures reestablishes the radio paths between all the devices.

Troubleshooting

If communication stops or you cannot establish communication between the range extender and the CENTRON meter or the gas module, try one or all of the following solutions.

- Use Endpoint-Link software to check the configuration settings of the gas module and the range extender. These settings should match.
- Repeat the steps in [Configure the 2.4ZR-IPP Range Extender](#) on page 6.
- Repeat the steps in [Link to a CENTRON Meter](#) on page 8.

Important The order in which you perform the magnet swipes when setting up RF paths is critical. The path between the range extender and the electric meter must be established first. Then, during the install window, the gas module must have a magnet swipe to establish its connection to the range extender.

- If communication continues to fail, contact Itron to replace the 2.4ZR-IPP Range Extender.

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