OpenWay® Riva™ Remote Water Module
Installation Guide

knowledge to shape your future

Identification

OpenWay Riva Remote Water Module Installation Guide

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Suggestions

For more information about Itron or Itron products, see www.itron.com.

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

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For technical support contact information by region, go to www.itron.com and select your country and language.

Contents

Chapter 5 Using the Itron Cable Armor..31

Chapter 6 Troubleshooting..33

Chapter 1 Important Safety and Compliance Information

This section provides important information for your safety and product compliance.

FCC Part 15 Rules

This device complies with Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

Operation 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.

USA, FCC Class B-Part 15

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 or TV technician for help.

Compliance Statement Canada
This device complies with Innovation, Science and Economic Development Canada (ISED) license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Déclaration de Conformité
Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Under Innovation, Science and Economic Development Canada (ISED) regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

Modifications and Repairs
To ensure system performance, this device and antenna shall not be changed or modified without the expressed approval of Itron. Per FCC rules, unapproved modifications or operation beyond or in conflict with these instructions for use could void the user's authority to operate the equipment.

Lithium battery safety

⚠️ **Warning**: Follow these procedures to avoid injury to avoid injury to yourself or others:
- The lithium battery may cause a fire or chemical burn if it is not disposed of properly.
- Do not recharge, disassemble, heat above 100° Celsius (212° Fahrenheit), crush, expose to water, or incinerate the lithium battery.
- Keep the lithium battery away from children.
- Fire, explsion, and severe burn hazard.

Modifications and repairs

⚠️ **Warning**: This unit cannot be modified and is not repairable. Attempts to modify or repair this module will void the warranty.

Disconnecting power

⚠️ **Warning**: Qualified technicians: during service, disconnect power to prevent ignition of flammable or combustible atmospheres.

Electromagnetic compatibility

⚠️ **Warning**: ELECTROMAGNETIC COMPATIBILITY
Use only approved accessories with this equipmemt. Unapproved modifications or operation beyond or in conflict with these instructions for use may void authorization by the authorities to operate the equipment.

Electrostatic discharge

⚠️ **Warning**: Internal circuit card components can be sensitive to electrostatic discharge. Before installation, discharge electrostatic buildup by touching a metal water pipe or other earth-grounded metal object prior to touching the meter body, register housing, or water module.

Drop height limitation

⚠️ **Warning**: ERT modules contain sensitive electronic components which can be damaged if the module is dropped from heights greater than 36 inches. Product warranty coverage is contingent on not exceeding this drop height limitation.

Chapter 2 About the OpenWay Riva Remote Module

OpenWay Riva remote modules are high-power radio frequency transmitting modules that attach to water registers/meters to collect consumption usage and tamper data. The OpenWay Riva remote module is an IPv6-compliant endpoint designated to communicate over the ItronOpenWay Riva multi-purpose IoT solution; Itron Riva Network or the legacy ChoiceConnect network. The Riva Water module transmits in ChoiceConnect Mobile, ChoiceConnect Hard-to-Read Mobile, ChoiceConnect High Power Mobile, or OpenWay Riva Network mode.

The OpenWay Riva remote modules ship from the factory in Factory Mode which prevents unwanted radio transmissions during transit. After installation, the OpenWay Riva module automatically detects the attached register model elimating the need to program the module. Over-the-air firmware downloads allow the utility access to the latest features without the need to visit each installation.

The remote water modules support protocols for a variety of major meter manufacturer's registers. Refer to the *Water Meter and Telemetry Module Compatibility List* (PUB-0063-002), for the list of supported meters and registers.

OpenWay Riva remote water modules feature the following capabilities:

- Datalogging The Riva Water module stores 160 days of hourly data in network system mode.
- Leak Detection and Reverse Flow Detection. OpenWay Riva remote modules feature robust algorithms that provide Leak and Reverse Flow Detection.
- (Optional) OpenWay Riva Leak Sensor
  - The optional Riva Leak Sensor analyzes water flow sound patterns to detect water leaks. Leak sensor analysis data is uploaded to the mlogonline Network Leak Monitoring online portal. Systems with optional Riva Leak Sensor devices access leak information through a utility-specific, secure mlogonline portal (for more information, see the mlogonline Network Leak Monitoring System User Guide TDC-0792-XXX).
- (Optional) Telemetry Devices
  - Optional remote water disconnect valves provide water utilities with a non-intrusive means of managing customer disconnects and reconnects that traditionally required on-site visits. The remotely-controlled disconnect valve helps lower the utility's costs by eliminating routine move-in/move-out service calls.

Note: Remote water disconnect operation requires an OpenWay Riva remote module with Itron Security Manager (ISM) enabled. To learn more about enabling enhanced security, see the Field Deployment Manager Endpoint Tools Mobile Application Guide (TDC-0934-XXX).

OpenWay Riva remote module description

OpenWay Riva remote module description	Itron part number
10-inch flying lead	ERW-1601-002

Related documents

Document description	Itron part number
OpenWay Riva Water Remote Module Installation Guide	TDC-1687-XXX
OpenWay Riva Water Pit Module Installation Guide	TDC-1666-XXX
OpenWay Collection Manager Operational Guidelines	
OpenWay Riva Events and Exceptions Reference Guide	
Field Deployment Manager Endpoint Tools Mobile Application Guide	TDC-0934-XXX
Field Deployment Manager Field Representative's Guide	TDC-0936-XXX
900 MHz Belt-Clip Radio User's Guide	TDC-0889-XXX
FC300 Getting Started Guide	TDC-0898-XXX
FC200 Series Getting Started Guide	TDC-0598-XXX
Itron Mobile Radio Quick Reference Guide	
Water Module Products Ordering Guide	PUB-0063-001
Water Meter and Telemetry Module Compatibility List	PUB-0063-002
mlogonline™ Network Leak Monitoring System User Guide	TDC-0792-XXX

Note: XXX designates the document revision and is subject to change without notice.

Itron Security Manager (ISM)

Users have the option of enabling enhanced security in remote water modules. Itron Security Manager (ISM) is a feature of the OpenWay Riva system that ensures certain water module commands are controlled through secure radio communications between the handheld computer or Mobile Collector and the remote water module.

There are two fundamental security processes used in the ChoiceConnect system to ensure confidentiality and validity of secured commands.

- **Authentication**. Authentication is the process of confirming that an artifact is genuine or valid. Authentication in the OpenWay Riva remote module is the process of verifying a request is from a valid source and in its original form.
- **Encryption**. Encryption is the process of transforming information to make it unreadable to anyone who does not have a valid security key. There are two types of encryption, symmetric and asymmetric. Symmetric encryption uses a shared key to decrypt or encrypt information. Asymmetric encryption uses a private key to encrypt and a public

key to decrypt. Data transmissions over the network are protected using AES-256 encryption.

Enabling OpenWay Riva remote module security

Each OpenWay Riva remote module ships from the Itron factory with a utility factory security key. The presence of this utility factory key does not enable security. To utilize the module's security feature, the installer must use an Itron programming device (FC200SR, FC300) that is configured with the corresponding security key for that particular OpenWay Riva remote module. Initial key exchange commands are secured using the utility factory key. For more information about programming the water module, see the FDM Endpoint Tools Mobile Application Guide (TDC-0934).

Battery life

Powered by four non-replaceable, long-life lithium batteries, the OpenWay Riva remote module has an expected battery life of 20 years. OpenWay Riva water modules include a battery replacement alarm that helps utilities plan and manage field module replacements.

OpenWay Riva remote module transmission modes

The OpenWay Riva water module is an IPv6 Wisun compliant device that operates in ChoiceConnect mobile or OpenWay Riva Network mode.

In ChoiceConnect mobile mode, the module transmits every nine seconds over mulitple RF channels to report on:
- meter register value
- cut cable or communication error tamper(s)
- reverse flow (encoder version selected)
- system leak status
- low battery indicator

In OpenWay Riva Network mode, the module reports four interrogation cycles daily. Each interrogation collects six hours of interval and event data. The OpenWay Riva water module also sends a local access beacon message every 60 seconds that allows users to gather contingency readings locally when needed.

The OpenWay Riva water module uses the 908-924 MHz ISM frequency band and does not require an FCC license to read OpenWay Riva remote modules.

Operating modes

The OpenWay Riva remote module has three standard operating modes.