Certification Exhibit

FCC ID: SK9SNIC1

FCC Rule Part: 15.247

Project Number: 72133597

Manufacturer: Itron, Inc.
Model: SNIC1

Manual

OpenWay® Riva™ Smart Network Interface Card (NIC)

ORRN Application

OpenWay® Riva™ Routing Node ERT Gateway (ORRN)

User Guide

Identification
OpenWay® Riva™ Smart Network Interface Card (NIC) User Guide - Draft
24 March 2017 TDC-XXXX-YYY
OpenWay® Riva™ Smart Network Interface Card (NIC)

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Regulatory Compliance

Labeling

The following requirements will be applied to any products that use this module:

The end product or host label will include the following text:

- **Contains:**
- FCC ID: SK9SNIC1
  IC: 864G-SNIC1
  Model: SNIC1

ORRN(A) Label

Itron

MOD: RN-ERT Gateway STAR
CUST P/N: E011280
RN-ERT Gateway STAR P/N: 508450000-000

S/N: 322265199 **120V, 240V 60HZ**

DISCONNECT SUPPLY BEFORE SERVICING 01/2018

FCC ID: EO9ORRNA
IC:864A-ORRNA
HVIN:RN-EGS

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.

Appendix A

Label after SNic module is installed.
See C2PC of FCC ID:SK9SNIC1 for adding module to ORRN Host.

Itron

MOD: RN-ERT Gateway STAR
CUST P/N: E011280
RN-ERT Gateway STAR P/N: 508450000-000

S/N: 322265199 **120V, 240V 60HZ**

DISCONNECT SUPPLY BEFORE SERVICING 01/2018

FCC ID: EO9ORRNA CONTAINS FCC ID: SK9SNIC1
IC:864A-ORRNA CONTAINS IC:864G-SNIC1
HVIN:RN-EGS

THIS DEVICE COMPLIES WITH PART 15
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INCLUDING INTERFERENCE THAT MAY
CAUSE UNDESIRED OPERATION.

ORRN Label Location

Appendix A

Label location after SNic module is installed.
See C2PC of FCC ID:SK9SNIC1 for adding module to ORRN Host.

The user's manual for any product that contains this module will contain the following text. If the device is large enough, then this will also be placed on the label.

"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."

FCC

The user's manual for any product that contains this module will contain the following text:

FCC Part 15, Class B

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.

Changes or modifications to this device not expressly approved by Itron, Inc. could void the user's authority to operate the equipment.

Innovation, Science and Economic Development Canada (ISED)

This Class B digital apparatus meets all requirements of the Canadian Interference Causing Equipment Regulations. 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.

Cet appareillage numérique de la classe B répond à la norme Canadienne sur le matériel brouilleur. L'opération est sujette aux deux conditions suivantes: (1) ce dispositif ne peut pas causer d'interférence nocive, et (2) ce dispositif doit accepter n'importe quelle interférence reçue, y compris les interférences pouvant entraîner un fonctionnement indésirable.

Under Innovation, Science and Economic Development Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Innovation, Science and Economic Development 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.

RF Exposure (FCC/ISED)

"This equipment complies with radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter."

"Cet équipement est conforme aux limites d'exposition aux radiations dans un environnement non contrôlé. Cet équipement do it être installé et utilisé à distance minimum de 20 cm entre le radiateur et votre corps. Cet émetteur ne doit pas être co-localisées ou opérant en conjonction avec tout autre antenne ou transmetteur."

Miscellaneous

The user's manual for any product that contains this module will contain the following text:

Professional Installation

Any external antennas associated with this approval are intended for professional installation by the integrator. The OEM integrator is still responsible for the FCC compliance requirement of the end product, which integrates any antennas.

Approved antenna types that can be used for the 900 MHz radio

Customer supplied remote antennas should meet the following specifications.

Omni-directional Vertically Polarized Antenna
Frequency: 902 - 928 MHz
VSWR: 2:1 Max
Maximum Gain: 1.0 dBi

Omni-directional Vertically Polarized Antenna
Frequency: 902 - 928 MHz
VSWR: 1.5:1 or less
Maximum Gain: 2.6 dBi

Approved antenna types that can be used for the Wi-Fi

For the ORRN application the Wi-Fi antenna is a ¼ wave patch antenna which is integrated into the RF switchboard. The antenna gain is 2.15 dBi.

Modification and Repairs

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

This device contains no user serviceable parts. Attempts to repair this device by unauthorized personnel may subject the person to shock hazard if removal of protected covers is attempted. Unauthorized repair will void the warranty and/or maintenance contract with your company.

General Description

The Itron SNIC1 is a communications module which includes a 902.2 MHz to 927.8 MHz transmitter as well as Wi-Fi. The module operates on DC voltage which is supplied by an optional power board or host device.

Recycling Information

The product you have purchased contains circuit boards. At the end of the modules useful life, under various state and local laws, it may be illegal to dispose of certain components into the municipal waste system. Check with your local solid waste officials for details about recycling options or proper disposal.

About this Manual

This technical reference guide describes the installation of the SNIC1 for the ORRN.

Overview

This document provides information on the design, construction, and operation of the OpenWay Riva Smart Network Interface Card (NIC) module.

The module is a communications board and connects to an external antenna through a RF switchboard which is part of the ORRN circuitry. The sample module housing is constructed using polycarbonate material that provides protection for the internal components. Power will be supplied from optional power board or supplied from a host supply.

This module contains the cutting edge communication technology featuring IPv6 RF and Power Line Carrier Communications. OpenWay features an innovative multimedia IPv6 network that uses both RF and PLC links within a mesh to route messages and data between standards-based smart meters (DLMS/COSEM) and the head-end system. Itron's communication module also enables secure two-way communication with home energy management devices using G3 PLC, Wi-Fi and protocol stacks SEP 2.0 and ECHONET Lite.

The communication module enables utilities to deploy the network without specific network planning and segregation for RF and PLC environments. Intelligence in the module chooses the communication link quality and modulation scheme that support the best possible data rate. Data rates of up to 500kbps are achievable by this multimedia mesh. This is done automatically in real-time by the modules without any need for pre-programming or path hard-coding. The communication modules create their own multi-hop environment using the best available physical path for communication where the routing is managed by standardized IETF routing protocols that are independent of the physical link. Itron's technology offers a unique way to deploy the same communication module anywhere, regardless of traditional network design considerations, such as geography, density, or structural environment.

CHAPTER 1

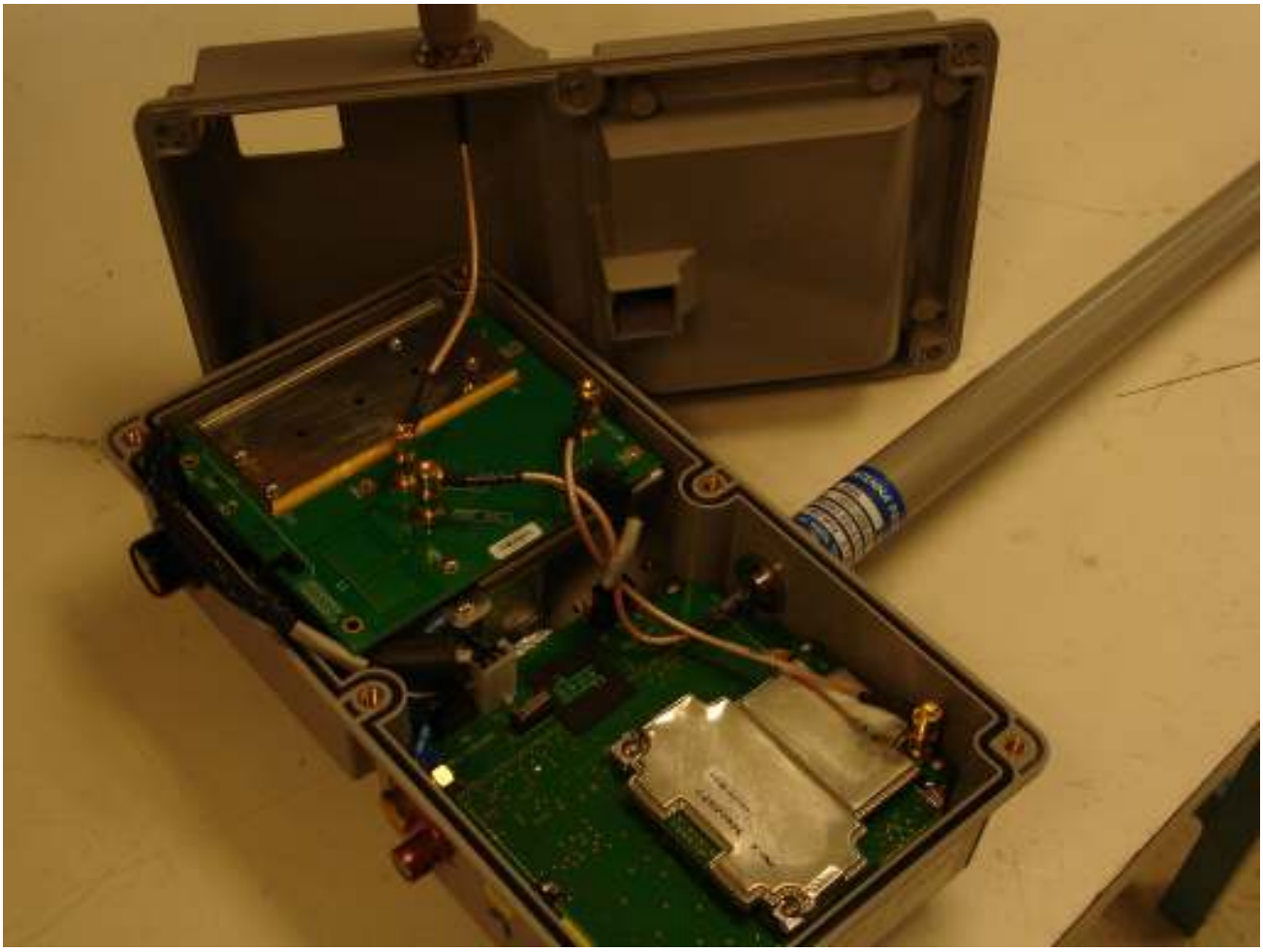
Module Description

Module board

Module (ORRN option)

The Smart NIC modules can be installed in various optional hosts.

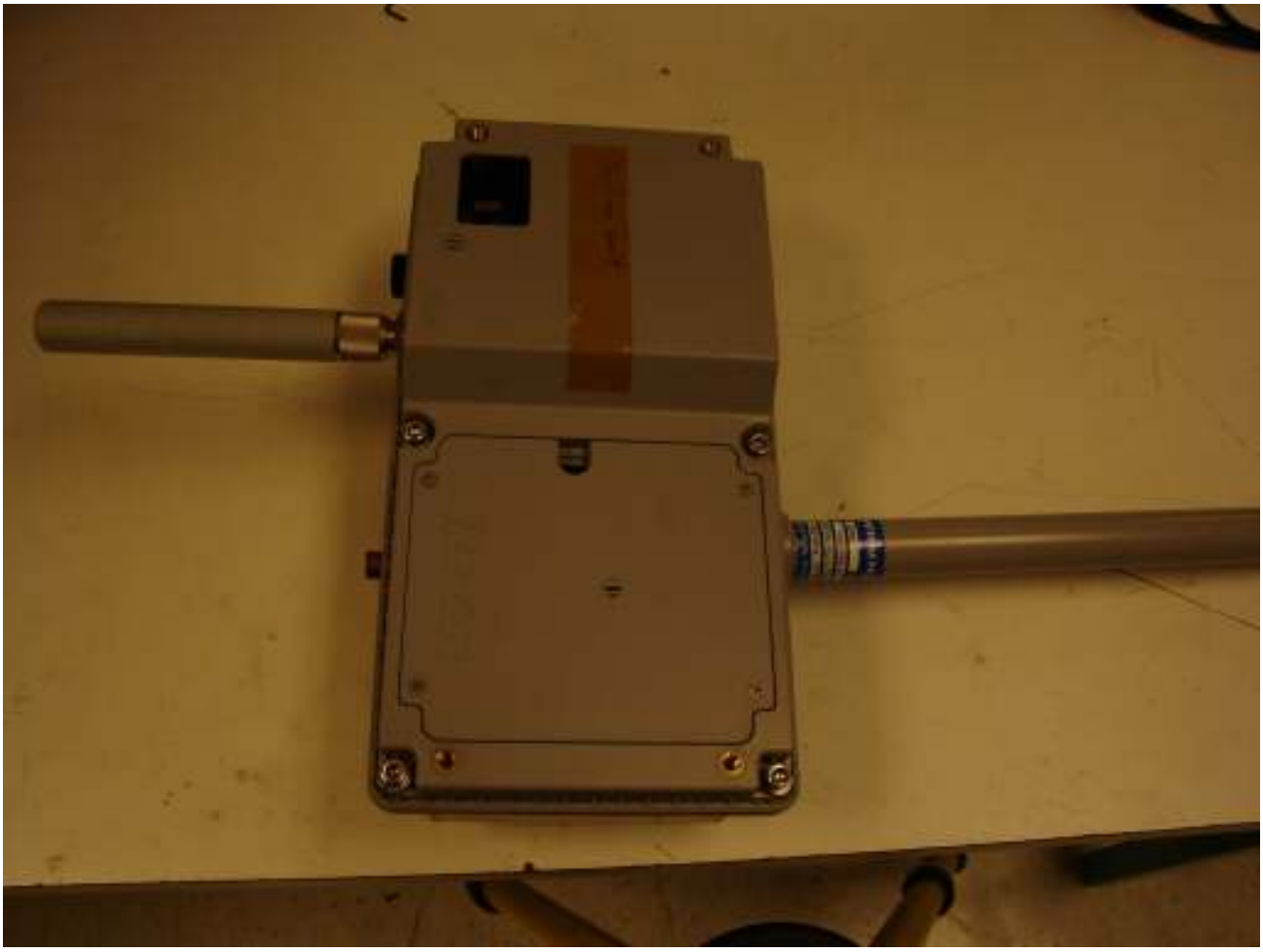
ORRN (SmartNic mounts to antenna switchboard)



SmartNic installed

SmartNic installed on switchboard (with shield)

Cover installed with antennas attached.



CHAPTER 2

Module Specifications

Power

Requirements	**Description**
Peak Power Consumption:	
Total Instantaneous Peak @ 24vdc:	13W
Long Term Thermal Average @ 24vdc:	3.5W
Idle Average (Receive Only) @ 24vdc only:	2W

Environmental

Environmental	**Description**
Operating Temperature	
-25°C to +70°C	Normal operating temperature
-40°C to +85°C	Limited operating temperature*

Note*: Limited operating temperature is defined as being type tested at temperature extremes for operation up to 16 hours.

Humidity	
5% to 95%	Noncondensing

Interfaces

Signals	**Description**
Power Line Carrier (PLC)	
Single Phase Connection	2-pin interface Protection & Coupling included on Host device/meter
Protocol	
IEEE 1901.2	Adaptive Tone Mapping, Mesh
Operational Bands(one of three bands, based on target markets)	
FCC above CENELEC	~ 155kHz to 488kHz
ARIB2	~ 155kHz to 403kHz
Modulations	Data Rates
D8PSK	200 kbps
DQPSK	165 kbps

DBPSK	100 kbps
ROBO	34 kbps
Super-ROBO	23 kbps

Radio Frequency (RF)

Embedded Antenna	For devices/meters with plastic enclosure
Optional RF Connector	For devices/meters with metal enclosure or special needs
Protocol	
IEEE 802.15.4g/e	Frequency Hopping, Mesh
Operational Bands (one of three bands, based on target markets)	
900 MHz ISM	Channels adjusted for market specific needs
870 MHz	Channels adjusted for market specific needs *(For international markets where permitted)*
Output Power	
1 Watt	Maximum EIRP. Power adjusted to meet local requirements

Modulations	Data Rates
802.15.4g OFDM option 3	200 kbps,600 kbps and 1.2Mbps
802.15.4g FSK	150 kbps (or 50 kbps mandatory mode)
Long Range mode	6.25 kbps, 12.5 kbps

Wireless

Wi-Fi	802.11 b/g/n

OpenWay® Riva Routing Node
ERT Gateway Installation Guide

Technical
Communications

knowledge to shape your future

Identification

OpenWay® Riva Routing Node-ERT Gateway Installation Guide

12 December 2017

TDC-1744-000

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Chapter 1 Important Safety and Compliance Information

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

USA, FCC Part compliance

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 installed to provide a separation distance of at least 20 centimeters (7.9 inches) from all persons to be compliant with regulatory RF exposure.

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.

Modifications and Repairs

To ensure system performance, this device and antenna shall not be changed or modified without the express 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.

Electromagnetic compatibility

⚠ **Caution**: Use only approved accessories with this equipment. All cables must be high quality, shielded, and correctly terminated. Unapproved modifications or operation beyond or in conflict with these use instructions may void the authority's authorization to operate the equipment.

Chapter 2 Getting Started: OpenWay® Riva Routing Node-ERT Gateway

The OpenWay Riva Routing Node-ERT Gateway provides a unified means of reading Itron 100G series and 100W series devices over an IPv6 network. The OpenWay Riva Routing Node ERT Gateway can be deployed in one of two network configurations designated in the firmware. The ERT Gateway Star operates over a Star network to collect the Itron 100 Series gas and water ERT module reads.

Note: The ERT Gateway does not support 100W+ Series modules operating in Extended Range Mode (Geo Mode).

The ERT Gateway Mesh (future release) will operate over a Mesh network.

The network configuration is selected on the specification form at the time the system is ordered.

The ERT Gateway communicates directly with the Connected Grid Router (CGR). The gateway utilizes RF links with optimized modulation rates. The CGR then transmits the data to the OpenWay Operations Center (a part of the head-end system) over the utility's backhaul communication solution. The ERT Gateway's flexible design provides installation options for a variety of wall-mounted or pole-mounted locations. This flexibility provides optimal communication effectiveness and range and minimizes installation costs.

Important: Installation must be completed by professional installers to ensure trouble-free operation of the Itron OpenWay system. Follow these product installation instructions to ensure proper operation of your OpenWay Riva Routing Node ERT Gateway Star.
Use the ERT Gateway shipping packaging to transport the ERT Gateway. The shipping materials protect the ERT Gateway from damage.

ERT Gateway related documents

The listed documents provide additional information for ordering and working with the OpenWay Riva Routing Node ERT Gateway Star.

Document	Itron part number
OpenWay Riva Routing Node-ERT Gateway Ordering Guide	PUB-1306-001
OpenWay Collection Manager Installation and Configuration Guide	TDC-1675-XXX

Document	Itron part number
OpenWay® Operations Center Performance Manager Integration Guide Integration Guide	TDC-1718-XXX

Installation location information

The ERT Gateway is designed for the listed installation locations:

- Wood, concrete, or metal utility pole
- Wall (indoor or outdoor)
- Pipe or mast (between 2 and 3.5" in diameter)
- Roof

  Note: Roof installation requires a 3rd-party, non-penetrating mounting kit (for example, Tessco #461587)
- Other vertical structures

Integrated mounting and coupling brackets secure the device in high winds and under heavy ice loads. Consult a professional engineer with concerns about your ERT Gateway mounting location.

The ERT Gateway consists of several components in a single, weatherproof device. Electrical components are encased in a plastic enclosure that provides optimum safety for the installer.

⚠ **Warning**: In accordance with FCC rules, unapproved modifications or operation beyond or in conflict with these use instructions could void the user's authority to operate the equipment. Only authorized Itron personnel may open the ERT Gateway. Unauthorized access or modifications to the ERT Gateway will void the warranty.

ERT Gateway components

The ERT Gateway (Star) has two antennas that are mounted directly on the gateway housing.

- Backhaul antenna
- ERT antenna

Since the ERT Gateway can be installed in outdoor environments, each component of the gateway is weather-tight and able to withstand wind speeds in excess of 100 miles per hour.

Note: Review the *ERT Gateway Ordering Guide* (PUB-1306-001) for specific part numbers and component options to determine the ERT Gateway configuration.

ERT Gateway housing

The ERT Gateway housing contains the electronic components and radio boards. The radio antennas are included with the gateway and are directly mounted to the housing.

⚠ **Caution**: Only authorized Itron personnel may open this device. Unauthorized access or modifications to this product voids the warranty. Per FCC rules, unapproved modifications or operation beyond or in conflict with the installation instructions in this guide could void the user's authority to operate the equipment.

Designator	Component	Description
1	ERT Gateway	The ERT Gateway processes data received through the antennas and relays it to the OpenWay Operations Center (OWOC). Only authorized Itron personnel may open this product housing.
2	ERT antenna	A 915MHz antenna that receives messages from the 100 series ERT modules in the network. The connection for this antenna is type N female.
3	ERT Gateway label	The label displays the identification number, model number, and other associated gateway information.
4	Power connector	The power connector supplies power to the ERT Gateway. A three-pin cable connects the ERT Gateway to the AC mains power supply.
5	Backhaul antenna	A 915MHz antenna that provides a connection to the STAR or MESH network. The connection for this antenna is a type N female.
6	Ground lug	The ground lug is optional on the ERT Gateway and is provided for utilities that require a separate earth ground. **Note**: When the ERT Gateway is powered with the light pole/photo sensor adapter, there is no ground connection. Use the ground lug in this configuration.
7	LED Status indicator	The status indicator displays the current operational status of the ERT Gateway. The LED indicator is located on the bottom of the housing. • Unpowered (off) • Initializing (green blink) • Running (green) • Error (yellow) The LED is configurable for the following display modes: • None (no light) • Error only • Normal

ERT Gateway antennas

The ERT Gateway utilizes two antennas.

- **ERT antenna** The ERT antenna is a standard, higher gain, vertically polarized antenna that mounts directly to the top of the ERT Gateway housing.

- **Backhaul antenna** The backhaul antenna is a standard, lower gain, vertically polarized antenna that mounts directly to the bottom of the ERT Gateway housing.

⚠ **Caution**: This equipment has been designed and approved per FCC rules to operate with the antennas listed. The required antenna impedance is 50 ohms. To reduce potential radio interference to other users, the antenna type and its gain were chosen so that the equivalent isotropically radiated power (EIRP) is not more than that permitted for successful communication. Antennas not included in this list and approved by Itron are strictly prohibited for use with this device. Installing the OpenWay Riva Routing Node ERT Gateway with an unapproved antenna will void the product warranty and can void the user's authority to operate this equipment.

Chapter 3 Planning an ERT Gateway Installation

This chapter describes ERT Gateway installation preparation and planning.

Installation profiles

The ERT Gateway may be installed in a variety of configurations and locations (for more information, see Installation location information on page 4). Itron identified the following profiles for ERT Gateway installations.

Location	Location description
Utility pole	The ERT Gateway is installed on a utility pole. Mount the ERT Gateway at a maximum height of 25 feet high on the utility pole for optimum reception.
Light pole/ street light	The ERT Gateway is installed on either a light pole or the davit arm of the street light. Mount the ERT Gateway at a maximum height of 25 feet high on the light pole/street light for optimum reception.
Pipe or mast	The ERT Gateway is secured/installed to a pipe or fence railing (from 2 to 3.5 inches in diameter). Mount the ERT Gateway at a maximum height of 25 feet high on the pipe or fence for optimum reception.

Siting the ERT Gateway

ERT Gateways can be installed in the field on a variety of surfaces. The listed surfaces are examples of surfaces that support the ERT Gateway.

- Wooden or metal walls
- Metal pipes
- Fence railings
- Utility poles

In determining the ERT Gateway placement, observe the following primary considerations as placement best practices.

- For optimum RF reception.
- In a location where there is a power connection.
- On a structure on in a location that can physically support the weight of the ERT Gateway (and its mounting hardware).

⚠ **Caution**: Always get permission to install the ERT Gateway at the selected site prior to installation. If you have questions or need help, contact Itron Support.

Propagation study for the ERT Gateway installation site

Prior to the ERT Gateway field installation, contact Itron. Itron performs these tasks during the propagation study to determine the exact ERT Gateway installation location and the best mounting surface.

- Evaluate the quantity and types of network endpoints.
- Assess the environmental and geographical considerations for the ERT Gateway installation.
- Optimize the ERT Gateway placement within the network to get the best possible reception.
- Assess the physical and structural implications of the selected mounting surface.

This iterative process may be repeated as the final installation parameters are determined.

AC power requirements

The ERT Gateway requires an 85-264 VAC source defined as a minimum 15-amp branch circuit (or larger). The ERT Gateway must be protected by a certified branch circuit breaker.

⚠ **Warning**: Do not connect the ERT Gateway to a circuit protected by a GFCI breaker.

The wiring must be sized in accordance with the National Electrical Code, ANSI/NFPA 70 and, where applicable, the Canadian Electrical Code, Part I, CSA C22.1 or the prevailing local code.

AC mains power

The AC mains wiring to the ERT Gateway utilizes a three-conductor cable. Terminate the cable with either a NEMA L5-15 (125V, 15A), NEMA L6-15 (250V, 15A) locking plug, or by directly splicing to the secondary power to meet electrical codes.

The ERT Gateway must be powered by an 85-264 VAC source defined as a maximum 15-amp branch circuit.

⚠ **Warning**: Verify the 85-264 VAC power source (15-amp branch circuit). Do not connect the ERT Gateway to the wrong voltage during installation. Supplying the wrong voltage could result in a fire hazard!

The ERT Gateway must be protected by a certified branch circuit breaker. Do not connect the ERT Gateway to a circuit protected by a GFCI breaker. Size the wiring in accordance with the National Electrical Code, ANSI/NFPA 70, and where applicable, the Canadian Electrical Code, Part 1 CSA C22.1 or the prevailing local code. Power wiring on the Itron-supplied power cable follows conventional color coding for AC wiring: green (ground), white (neutral), and black (hot).

Warning: Securely mount the ERT Gateway before connecting the dedicated AC mains power source. The ERT Gateway must be grounded using either the ground wire in the three-conductor cable or the grounding lug on the bottom of the ERT Gateway. For installations that use the photocell adapter, the grounding lug must be used to ground the ERT Gateway.

Mounting hardware requirements

Mounting hardware requirements are based on the installation location and your system configuration. The installer must supply the following mounting hardware to properly attach the ERT Gateway to the mounting surface.

Caution: Each installation is unique. You must ensure that the mounting hardware securely supports the ERT Gateway. The ERT Gateway without the mounting hardware weighs pounds. Itron recommends that you consult a qualified engineer to verify load requirements and safety issues. Installers must comply with local codes when the ERT Gateway is installed.

Profile	Mounting surface	Suggested hardware/sizing
Utility pole	Wood or steel pole	High-strength stainless steel straps
Light pole	Steel light pole	High-strength stainless steel straps
Pipe	2.5" to 3.5" galvanized steel pipe	Two pipe mount brackets for pipes up to 3.5" in diameter. Pipe mount brackets are available from Itron (part number FAB-0192-001). Two brackets are required for each ERT Gateway.

Chapter 4 Installing the ERT Gateway

This chapter provides the Itron-approved instructions to install an ERT Gateway in the field. The ERT Gateway can be installed in a variety of locations. This installation profile uses an AC mains power.

Note: Before the ERT Gateway installation, ensure that the selected location will support the weight of the gateway and its mounting hardware. Engage a registered engineer to conduct a structural analysis of the installation location prior to the installation. Itron is not responsible for improper installation or for installation at a site that cannot adequately support the ERT Gateway.

Installation overview

This ERT Gateway installation profile describes installation mounting the gateway to a 2-inch vertical pipe. The ERT Gateway power source is a 110V AC mains supply. During installation, the listed tasks are completed.

1. Attaching the 915MHz ERT module antenna.
2. Attaching the 915MHz backhaul antenna.
3. Attaching the ERT Gateway to the mounting surface.
4. Connecting the power cable.

   ⚠ **Caution**: Do not move or transport the ERT Gateway without first disconnecting the power. Use the ERT Gateway shipping packaging to transport the device to protect the equipment.

5. Supplying power.

Mounting the ERT Gateway antennas

Attach the 915MHz antenna prior to mounting the ERT Gateway in a permanent location.

Attaching the standard 915MHz ERT antenna

1. Remove the antenna from the shipping package.

2. Slide the black rubber boot onto the base of the antenna.

3. Thread the antenna onto the top of the ERT Gateway. Do not over-tighten.

   ⚠ **Caution**: Do not cross-thread the connection.

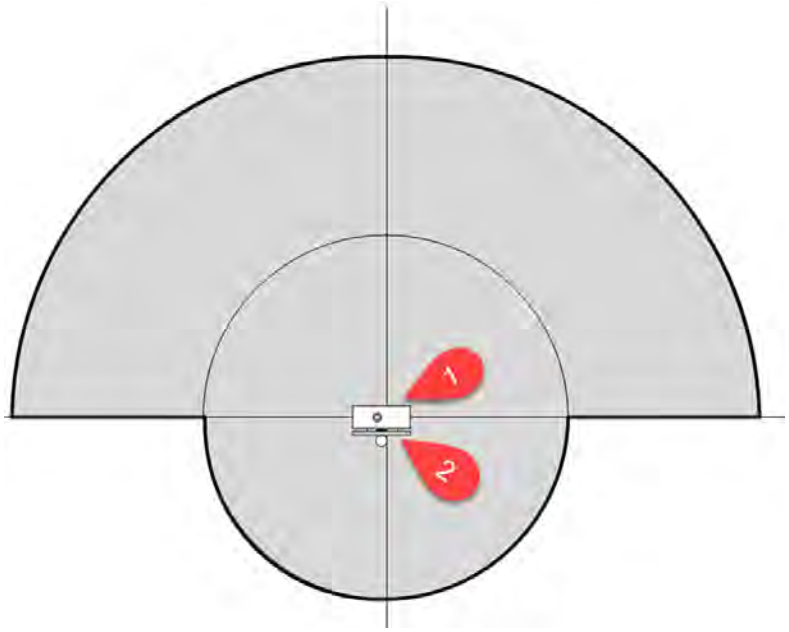
4. Push the rubber boot as close as possible to the top of the ERT Gateway.

5. Slide the antenna collar over the antenna with the font of the antenna collar to the front of the ERT Gateway. The following illustration shows the correct positioning.

6. Secure the antenna collar to the top of the ERT Gateway using screws and washers. Tighten the screws to 5 to 6 inch-pounds.

Attaching the backhaul antenna

Warning: Install *only* the provided backhaul antenna. The backhaul antenna is directional. Position the ERT Gateway observing the antenna coverage area.



The antenna effective range is approximately 100 feet from the front (1) of the ERT Gateway and approximately 50 feet to the rear (2) of the device. The shown coverage area assumes the device is mounted at a height of 25 feet with a clear line-of-sight path between the ERT Gateway and the programming device. Positioning the ERT Gateway observing the coverage area guidelines ensures safe personnel positioning for device programming.

1. Remove the backhaul antenna from the shipping box.

2. Remove the red connector protector.
3. Thread the antenna onto the N-connector (labeled WAN) on the bottom of the ERT Gateway.

   Important: Do not over-tighten or cross-thread the backhaul antenna.

Mounting the ERT Gateway

The ERT Gateway can attach to a variety of locations. This chapter provides the instructions for the listed mounting types.

- Pipe mount
- Pole mount
- Davit arm mount

Mounting hardware

The mounting hardware for the ERT Gateway can be adapted to mount the gateway in many different locations.

Pole or pipe mount profiles require the listed mounting hardware.

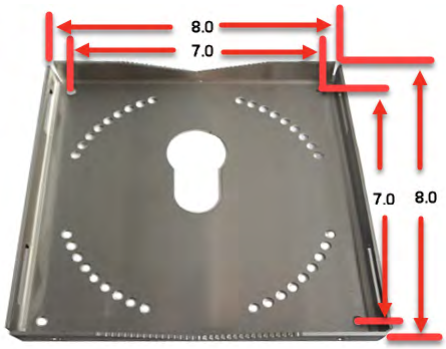
- The mounting plate
- Two mounting brackets
- Four bolts
- The set screw
- (optional) Metal bands (not provided by Itron)

  Note: If the vertical pipe or pole exceeds 6.75" in diameter, you may use metal bands instead of the mounting brackets to secure the mounting plate to the pipe or pole. Two 1.5" long slots are included on the mounting plate to accommodate the metal bands.

The following list describes the required hardware to complete the wall mount profile.

- Two metal mounting brackets
- Four mounting bolts
- Four mounting nuts
- Four lock washers

Table : Mounting Hardware

Component	Image	Description
Mounting plate		Mounting plate dimensions 
Mounting brackets		Brackets for wall-mounting
		Brackets for pipe or pole mounting (bracket dimensions are shown)
Mounting bolts		Bracket mounting bolts

Component	Image	Description
Miscellaneous		Mounting nuts, set screws, washers, split washers, and anti-seize lubricant

The integrated mounting support on the back of the ERT Gateway housing slides into the slot in the center of the mounting bracket. A set screw locks the ERT Gateway to the mounting bracket. The housing orientation can be adjusted ± 16 degrees horizontal to compensate for different angles.

Mounting the ERT Gateway on a pipe

In these instructions, the mounting plate is attached to the vertical pipe with the mounting brackets. The ERT Gateway housing is secured to the mounting plate.

1. Use the two mounting brackets and four bolts to attach the mounting plate to the pipe.

2. Place the gateway on the mounting plate with the antenna in an upright position. Insert the mounting plate disc into the mounting plate's disc opening.

3. Secure the ERT Gateway to the mounting plate using the four set screws.

Mounting the ERT Gateway on a pole

1. Follow the pipe mounting procedure for securing the mounting plate to the ERT Gateway (see Mounting the ERT Gateway on a pipe on page 15). Ensure that the ERT Gateway ERT antenna is in an upright position.
2. Attach the ERT Gateway/mounting bracket assembly to the pole using the mounting brackets or the optional metal straps.

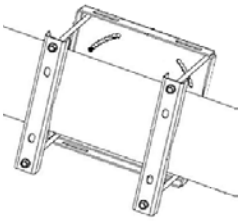
Mounting the ERT Gateway on a davit arm

These instructions describe a typical utility or street light pole installation. The ERT Gateway is mounted on a davit or street light arm.

Power is supplied on a davit or street light arm installation using a photocell adapter cable. The cable plugs into the photocell sensor of the street light. If the ERT Gateway is mounted on a davit arm without a street light, the power cable must be connected according to the local electrical codes.

Important: If a photocell adapter cable supplies power to the ERT Gateway, the gateway must be grounded through the grounding lug on the bottom of the housing.

1. Use the two mounting brackets and four bolts to attach the mounting plate to the davit arm.



2. Insert the mounting disc into the mounting plate disc opening.

3. Using the set screws, secure the gateway to the mounting plate with the antenna in an upright position.

Connecting the ground wire

Connect the ground wire to the grounding lug on the ERT Gateway.

Note: Due to variable requirements for cable length, cables are not provided by Itron.

Attach the grounding wire to earth ground. Follow local codes if earth ground is not provided through the AC power cable.

Connecting the ERT Gateway power

The final step of the ERT Gateway installation is to provide power. A three-pin (AC) cable is required.

⚠ **Warning**: Securely mount the ERT Gateway before the dedicated AC mains power source is connected. The ERT Gateway must be grounded by the ground wire in the three-wire AC mains cable or through the grounding lug on the bottom of the gateway. For installations connected to the photocell adapter, use the grounding lug to ground the gateway.

Connecting the power cable

1. Plug the power cable into the power connector on the bottom of the ERT Gateway.

   Note: The connector is keyed so the cable connects in the proper orientation.

2. Secure the cable by tightening the retaining nut on the cable.

ERT Gateway wiring diagram

Power source and grounding connection are shown in the following illustration.

Connection	Description
1	AC power source

Connection	Description
2	Ground

Chapter 5 OpenWay Riva Routing Node Communications Software

The OpenWay Riva Routing Node ERT Gateway Star communicates using the OpenWay Operations Center Collection Manager. The OpenWay Operations Center Collection Manager sends a request to the ERT Gateway Star requesting the data from the previous 8 hours. The ERT Gateway Star responds with the data that it stored over the past 8 hours. For more information, see the OpenWay Operations Center Collection Manager documentation (ERT Gateway related documents on page 3).

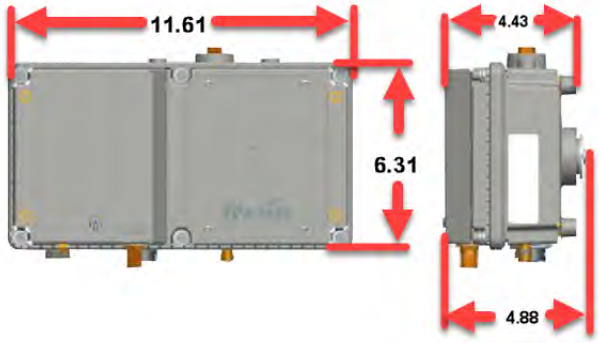
Appendix A ERT Gateway Specifications

This section provides OpenWay Riva Routing Node ERT Gateway product specifications.

Dimensions and weight

The ERT Gateway weight is listed in pounds. The dimensions are shown in inches.

Component	Weight
ERT Gateway	5.5 lbs (with antennas)
Pole mounting kit	3 lbs
Wall mounting kit	2 lbs



Antenna specifications

This section provides the specifications for the 915MHz and backhaul antennas. The ERT Gateway is designed to operate with the antennas listed here. Antennas not listed here are strictly prohibited for use with the ERT Gateway. The required antenna impedance is 50 ohms.

Specification	915 MHz ERT antenna		915 MHz backhaul antenna	
Itron part number*	MSE-0330-001	MSE-0453-001	514618-001	MSE-0452-001
Frequency range	902-932 MHz	902-928 MHz	902-928 MHz	902-928 MHz
Maximum gain	5.15 dBi	5.5 dBi	1 dBi	2.6 dBi
Horizontal beamwidth	Omnidirectional	Omnidirectional	Omnidirectional	Omnidirectional
Impedance	50 ohms	50 ohms	50 ohms	50 ohms
Termination	Type N male	Type N Male	Type N male	Type N male
Overall length	18 in.	18.8"	5.6"	8"
Radome diameter	1" OD	1" OD	0.84" OD	1" OD

*See the *OpenWay Riva Routing Node Ordering Guide* (PUB-1306-001) for availability or contact your Itron representative.

To reduce potential radio interference to other users, select an antenna type with gain such that the equivalent isotropically radiated power (e.i.r.p.) is not more than that permitted for successful communication.

Antenna Conformity

These radio transmitters have been approved to operate (with the antenna types listed previously) with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list (those having a gain greater than the maximum gain indicated for that type) are strictly prohibited for use with these devices.

Environmental specifications

The ERT Gateway meets the listed environmental specifications.

Specification	Value
Operating temperature	-40°C to 60°C
Storage temperature	-40°C to 85°C
Humidity	0 to 90% non-condensing

Transmitter

The ERT Gateway transmitter meets the listed specifications.

Specification	Value
Maximum transmit power at ERT antenna	
Maximum transmit power at backhaul antenna	
Frequency band	902 to 928 MHz (USA/Canada)

ERT Gateway power operating range

The ERT Gateway meets the listed power operating ranges.

Specification	Value
Voltage (AC)	85 VAC to 264 VAC
Frequency	47 to 63 Hz
Average power	5 watts