



OpenWay® Riva 500W ERT® Module

The OpenWay Riva 500W ERT Module is the latest addition to Itron's portfolio of advanced metering devices for water utilities. OpenWay Riva 500W ERT Modules are IPv6 endpoints designed to operate on Itron's OpenWay Riva multi-purpose IoT solution. Featuring a compact design, industry-leading battery life, firmware download and technology designed to adapt and grow with your business, the OpenWay Riva 500W ERT Module can help you streamline your operations and maximize your resources today while also connecting to the Internet of Things.

INTRODUCTION

OpenWay Riva modules offer advanced two-way communications designed specifically for Itron's OpenWay Riva solution as well as Itron's industry-leading ChoiceConnect solutions. OpenWay Riva 500W ERT Modules enable easy migration from mobile to network operations as your business needs evolve. The ability to perform firmware downloads over the network allows the utility to ensure they have the latest features available without having to visit each account. With Itron's complementary communications technology, network and mobile systems can be deployed side-by-side in hybrid configurations to ensure maximum efficiency and reliability in both high- and low-density meter populations.

OpenWay Riva 500W ERT Modules are available in two housing designs, supporting both water pit and remote installations. Both pit and remote modules support encoder and pulsar register types. One single endpoint will support both register types. Itron's auto sensing technology allows the OpenWay Riva endpoint to detect what register model it is attached to, removing the need to program the endpoint at installation. OpenWay Riva pit modules include an integral connector port and a telemetry port standard. A single pit SKU is compatible for both encoders and pulsers; and one remote SKU is compatible for both encoders and pulsers. The integral port allows for the

use of Itron's Through-The-Lid antenna and the telemetry port enables the use of Itron's acoustic leak sensor, third-party remote disconnect valves.

WATER METER COMPATIBILITY

The OpenWay Riva 500W ERT Module is compatible with water meters from all major manufacturers, including — Badger, Elster AMCO, Hersey, Master Meter, Neptune, Kamstrup and Sensus—enabling water utilities to consolidate all water meters under a single communications platform. Powered by proven, advanced lithium battery technology, the module is designed for 20 years of battery life in both fixed network and mobile modes.



SUPERIOR PERFORMANCE

The OpenWay Riva 500W ERT Module utilizes multiple radio channels. This multi-channel approach delivers higher read integrity over competing products by reducing the effect of interfering signals from other radio frequency (RF) signals in the area. The OpenWay Riva 500W ERT Module transmits the fixed network consumption messages at peak radiated power greater than one watt.

RELIABILITY

OpenWay Riva 500W ERT Modules feature a circuit assembly and battery pack that are fully encapsulated within a specially formulated potting material to protect internal components from water, contaminants, corrosion, rough handling and temperature cycling.

With their straightforward, rugged design, OpenWay Riva 500W ERT Modules use significantly fewer components than most competing products, resulting in greater reliability. The advanced, integrated antenna operates effectively in a wide range of meter box installations. The OpenWay Riva 500W ERT Module offers peace of mind with a 20-year limited warranty.

LOWER COST OF OWNERSHIP

OpenWay Riva 500W ERT Modules feature industry-leading battery life, ensuring your meter data collection investment achieves substantially better financial returns than competing meters with batteries that typically last only 10 to 12 years. When factoring the advancements in leak, reverse flow (absolute encoder version only) and tamper detection, OpenWay Riva 500W ERT Modules necessitate fewer field investigations and lower expenditures for customer and field service. OpenWay Riva 500W ERT Modules include a battery replacement alarm that helps utilities to plan and manage module replacements in the field.

DATA LOGGING

The OpenWay Riva 500W ERT Module stores 160 days of hourly data when in network system mode. There are two modes available for collecting data:

ChoiceConnect Mobile Mode

- » Any hourly reading within the last 40 days
- » A set of 24 consecutive hourly readings
- » A set of 40 daily readings
- » A set of 40 days of hourly interval data are available even in mobile mode

OpenWay Riva Network Mode

- » Any hourly reading within the last 160 days
- » Any 15 minute interval within the last 40 days
- » A set of 24 consecutive hourly readings
- » A set of daily readings over 160 days
- » A set of 160 days of hourly readings
- » A set of 40 days of 15 minute interval readings
- » Additional data logging options:

OpenWay Riva offers configurable intervals for data storage for any interval length evenly divisible into 60 minutes (1, 2, 3, 4, 5, 6, 10, 12, 15, 30, and 60 minutes) when operating in FN mode. Intervals are configurable and re-configurable via the OpenWay Riva network.

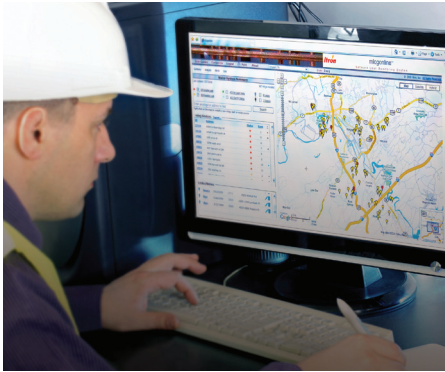
Throughout a normal day of operations, the 500W ERT Module collects and stores meter readings and waits for an interrogation request to arrive from the head end. The head end system is

configured to request data from the module. The recommended configuration is to request eight hours of data, three times per day. This results in 24 hours of data each day from the endpoint. The system can also request all 24 hours of data once a day, or six hours of data four times a day. You can choose whichever configuration best matches your business process.

Data does not need to be requested in an overlapping fashion. This type of redundancy is unnecessary in the OpenWay Riva solution. For example, the head end doesn't need to request 24 hours of data, three times a day, where each request overlaps the previous request. The request/ response process, also known as the interrogation process, is an acknowledged process. This means that the head end knows if the data was not received. It then triggers an automatic retry process that continues attempts to retrieve the missing data for a configurable time frame.

Additionally, as part of the full two-way communications network, the module supports other value-added capabilities including:

- » on-demand reads
- » real-time leak
- » tamper and reverse flow flags
- » remote disconnect capabilities
- » time synchronized data
- » meter right sizing functions
- » exception reporting
- » firmware upgrades



LEAK MANAGEMENT

Non-revenue water management is critical to any water utility's success. Modules can be paired with Itron's OpenWay Riva Leak Sensor which collects and analyzes changes in pipe acoustics. This data indicates probable leaks in the distribution system environment to detect both new and pre-existing leaks automatically. Leak sensor technology, coupled with the module's internal customer-side leak detection algorithm and the option to compare data from groups of OpenWay Riva 500W ERT Modules to the utility's production meters, provides the utility with a highly accurate picture of the overall health of the water distribution system.

OpenWay Riva Leak Sensor

The OpenWay Riva 500W ERT Module collects and stores the data from the OpenWay Riva Leak Sensor. The OpenWay Riva Leak Sensor samples the pipe conditions during the quietest usage periods (usually at night). The recording period is adaptive and depends on the sound profile at each location making it sure the OpenWay Riva Leak Sensor is recording at the most optimum time to hear a leak. This sensor data is picked up during normal meter reading operations and seamlessly transfers the data to our hosted web-based solution. The OpenWay Riva Leak Sensor threshold can be adjusted to account for different environments where background noise may be high, and allows the utility to target specific-sized leaks.

The OpenWay Riva Leak Sensor is built to last 20 years in the harshest environments. It can be installed in the meter box on either the meter setter or coupler. Additionally, it can be installed on mains valves, placing the sensor closer to the critical non-revenue water leaks. These installation options make the OpenWay Riva Leak Sensor the most flexible solution on the market. The OpenWay Riva Leak Sensor comes with a market-leading 5-year warranty.

Extended Meter Alarms

The OpenWay Riva 500W ERT Module relays the extended meter alarms provided by new solid state and electronic meters. These alarms include:

- » Empty Pipe
- » Temperature
- » High Flow
- » Meter Low Battery
- » Meter Tampering
- » Reverse Flow
- » Zero Consumption

OPENWAY RIVA 500W ERT MODULE SPECIFICATIONS

Functional

- » Power Source: Four "A" cell lithium batteries warranted for 20 years
- » Maximum meter register pulse frequency (pulse version only): 4 Hertz
- » Operating temperature:
 - -104°F to +158°F (-40°C to +70°C) for remote applications
 - -68°F to +140°F (-20°C to +60°C) for pit applications
- » Storage temperature: -104°F to +158°F (-40°C to +70°C)
- » Humidity limits: 0 to 100% (submersible)
- » Maximum register cable dimension: 300 feet with Itron-approved cable and splice connectors
- » Meter compatibility: See Water Module Meter Compatibility Guide

TRANSMISSION PARAMETERS

- » Data message:
 - The OpenWay Riva 500W ERT Module is a Wisun compliant IPv6 device. Multiple RF channel transmissions of meter register value, cut cable, and/ or communication error tamper(s) reverse flow (encoder version only) and system leak status messages. A low battery indicator is transmitted every nine seconds in ChoiceConnect mobile mode.
- » OpenWay Riva Network mode:
 - Four interrogation cycles per day, each collecting six hours of intervals and events data.
 - A Local Access Beacon message is sent every 60 seconds that allowing the user to gather contingency readings locally if needed.
- » Transmitter frequencies:
 - 908 - 924 MHz (Standard Power) in ChoiceConnect mobile mode
 - 903 - 924 MHz (Low Power) in OpenWay Riva Fixed Network mode for Local Access Beacon
- » Operates in ISM frequency band (does not require a licensed spectrum)

Approved Mobile Systems and Devices when using Basic Security

- » Multi-Vendor Reading System (MV-RS) v8.7.3 or later with the FC300SR, MCLite and MC3 with Mobile Collection software v3.8.1.1 (Note: MV-RS does not support the OpenWay Riva Leak Sensor)
- » Field Collection System (FCS) v3.0 SP1 or later with the FC300SR, MCLite, and MC3 with Mobile Collection software v3.8.1.1
- » Field Collection System (FCS) v4.0 or later with Itron Mobile v1.0 or later and the Itron Mobile Radio or MC3 Radio.

Approved Mobile Systems and Devices when using Enhanced Security

- » Field Collection System (FCS) v4.0.3 or later with Itron Mobile v1.0 or later and the Itron Mobile Radio or MC3 Radio or FC300SR, MCLite or MC3 with Mobile Collection software v3.8.1.1

Compatible Communication Applications

The following software applications are approved IoT Reading Systems Cisco Connected Grid Routers (CGR's) offering full two-way communication capability:

- » OpenWay Operations Center
- » Collection Manager
- » ISM
- » Network Manager

Programmable Mode Options

- » ChoiceConnect Mobile Mode
 - Should be used when mobile or handheld meter reading is the method for collecting the Standard Consumption Message (SCM+) or data logging reads
 - The SCM+ bubbles up in this mode every 9 seconds at standard power optimized for mobile read rate performance
 - Supports a 20-year battery life
- » OpenWay Riva Network Mode
 - Should be used when OpenWay Riva network is the method of meter data collection
 - A high power Network Interval Message (NIM) is typically transmitted up to four times per day
 - Can be programmed at the factory during installation with an approved handheld device or after initial installation via programming using a handheld device.
 - Supports a 20-year battery life

- » ChoiceConnect Hard-to-Read Mobile Mode
 - Should only be used when communication modules are installed in difficult-to-read locations where standard mobile mode is not sufficient for satisfactory reading performance
 - Bubbles up an SCM+ at 30 seconds with high power output to optimize performance of unique applications
 - Supports a 10+ year battery life
- » ChoiceConnect High Power Mobile Mode
 - This mode should be used when communication modules are installed in difficult-to-read environments where there is a high concentration of unfriendly RF and where standard ChoiceConnect mobile mode is not sufficient for satisfactory reading performance
 - Bubbles up an SCM+ at 60 seconds with a higher power output to optimize performance of these applications
 - Supports a 20-year battery life

OpenWay Riva 500W ERT Module Pit Dimensions

- » Height: 4.5 inches (11.4 centimeters)
- » Maximum diameter:
 - Lower: 3.9 inches (9.9 centimeters)
 - Upper: Approximately 1.7 inches (4.3 centimeters)
- » Weight: approximately 9.6 ounces (272.2 grams).
- » In-line connector register cables: 5 feet and 25 feet (1.5 meters and 7.6 meters) - ordered separately
- » Pit models can be installed up to 300 feet (91.4 meters) from a meter

OpenWay Riva 500W ERT Module Remote Dimensions

- » Height: 4.5 inches (11.4 centimeters)
- » Width: 5.05 inches (12.8 centimeters)
- » Depth: 3 inches (7.6 centimeters)
- » Weight: Approximately 9.6 ounces (272.2 grams)
- » Module cable length: 10 inches (25.4 centimeters)
- » Remote models can be installed up to 300 feet (91.4 meters) from a meter

Mounting Options

OpenWay Riva 500W ERT Modules are designed with compact housing and features meant to be highly compatible with the water pit mounting options. These features include the following:

- » Rod-mount on a ½ inch (1.3 centimeter) diameter fiberglass or other non-metallic rods; requires a Remote Through the Lid Antenna
- » Through-the-lid mounting with a pre-drilled 1.75 inch (4.4 centimeters) hole and up to 2.5 inch (6.4 centimeters) maximum lid thickness
- » Direct-mount to any flat surface with screw kit
- » Wall-mount for installation to the side of residence or building using screw kit
- » Pipe-mount for installation on pipe sizes from ¾ inch to 4 inch (1.9 to 10.2 centimeters)

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