



Itron Cellular 500W Module

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

INTRODUCTION

Itron Cellular 500W modules offer advanced two-way communications, over cellular and RF, designed specifically for Itron's industry-leading network and mobile solutions. Itron Cellular 500W modules enable easy migration from mobile to network operations as your business needs evolve. They feature the ability to perform firmware and configuration, ensuring utilities have the latest features available without having to visit each device. With Itron's complementary communications technologies, network and mobile system can be deployed side-by-side in hybrid configurations to

ensure maximum efficiency and reliability in both high- and low-density meter populations.

Itron Cellular 500W modules can be read point-to-point over next generation cellular LTE-M Cat-M1 and NB-IOT Cat-NB1 networks, or via RF in mobile mode. 500W 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 automatic sensing technology allows the Itron Cellular 500W Module to detect what

register model it is attached to, removing the need to program the endpoint at installation. Itron Cellular 500W 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 and third-party sensors to monitor pressure and water quality.



SUPERIOR PERFORMANCE

The Itron cellular 500W Module utilizes narrowband, low power wide area cellular (LTE-M Cat-M1, NB-IOT Cat-NB1) and RF transmission to minimize interference, improve range and delivers higher read integrity. The Itron Cellular 500W Module transmits smaller and more efficient data transitions for less time, lower cost communications. Peak radiated power is less than one quarter watt.

RELIABILITY

Itron Cellular 500W 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, Itron Cellular 500W 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 Itron Cellular 500W Module offers peace of mind with a 20-year limited warranty.

LOWER COST OF OWNERSHIP

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

WATER METER COMPATIBILITY

The Itron Cellular 500W Module is compatible with water meters from all major manufacturers such as Badger, Elster AMCO, Hersey, Master Meter, Neptune, Kamstrup and Sensus—enabling water utilities to consolidate all their 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 network and mobile modes.

DATA LOGGING

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

OpenWay Riva Cellular 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:

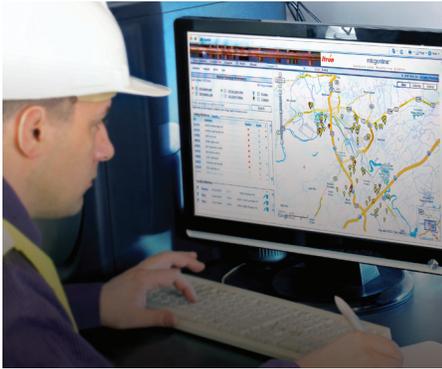
Itron Mobile Mode

- » 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 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 water module collects and stores meter readings and waits for an interrogation request to arrive from the headend. The headend system is configured to request data from the module. The recommended configuration is to request eight hours of data, three times per day. This will result in getting 24 hours of data each day from the endpoint. The system can also request all 24 hours of data once a day, or up to four times a day, six hours of data. You may choose whichever configuration best matches your business process.

Data does not need to be requested in an overlapping fashion. This type of redundancy is not needed in the OpenWay Riva solution. For example, the headend doesn't need to request 24 hours of data, three times a day, where each request overlaps the previous request. The request/ response process, or the interrogation process as it is sometimes called, is an acknowledged process. This means that the headend will know if the data was not received. It will then trigger an automatic retry process that will continue attempting to retrieve the missing data for a configurable time frame.



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.

Leak Sensor

The Itron Cellular 500W Module collects and stores the data from the OpenWay Riva Leak Sensor. The leak sensor samples the pipe conditions during the quietest usage periods (usually at night). The recording period is adaptive and will depend on the sound profile at each location making the sure the 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 (www.mlogonline.com). The leak sensor threshold can be adjusted to account for different environments where background noise may be high, it also allows the utility to target specific-sized leaks to be more efficient in their operations.

The 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 Itron Leak Sensor the most flexible solution on the market. The Itron Leak Sensor comes with a market-leading 5-year warranty.

Extended Meter Alarms

The Itron Cellular 500W Module will be able to relay the extended meter alarms provided by new solid state and electronic meters. These alarms will include:

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

ITRON CELLULAR 500W MODULE SPECIFICATIONS

Functional

Power Source: single "D" cell lithium (LiSOCl₂) battery warranted for 20 years

- » Maximum meter register pulse frequency (pulse version only): 4 Hertz
- » Operating temperature:
 - -40°C to +70°C for remote applications
 - -20°C to +60°C for pit applications
- » Storage temperature: -40°C to + 75°C for a maximum of 1,000 hours
- » 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 (PUB-0063-002)

TRANSMISSION PARAMETERS

Data message:

The Itron Cellular 500W Module is an IPv6 device. Cellular and RF transmissions of meter register value, cut cable and or communication error tamper(s), reverse flow (encoder version only) and system leak status messages, as well as low battery indicator are transmitted point to point over cellular or bubble up over RF in mobile read mode.

For Cellular Network mode:

Up to four interrogation cycles per day, each collects six hours of intervals and events data over cellular LTE-M (Cat-M1) or NB-IOT (Cat-NB1) networks

For Itron Mobile mode:

A Local Access Beacon message is sent out that allows the user to gather RF mobile contingency readings locally if needed.

Transmitter frequencies:

- » Cellular transmit frequency are carrier dependent and available upon request. Supported frequencies range from 400MHz to 2500MHz.
- » 908 - 924 MHz (Standard Power) in mobile / ChoiceConnect mobile mode
- » 903 - 924 MHz (Low Power) in OpenWay Riva Network mode for Local Access Beacon

All Itron Cellular 500W modules operate with approved FCC or IC licenses for cellular; RF operates in ISM frequency band and do not require licensed spectrum

Approved Mobile Systems and Devices when using Basic Security

- » Multi-Vendor Reading System (MV-RS) v8.7.3 or higher with the FC300SR, MCLite and MC3 with Mobile Collection software v3.8.1.1
- » Field Collection System (FCS) v3.0 SP1 or higher with the FC300SR, MCLite and MC3 with Mobile Collection software v3.8.1.1
- » Field Collection System (FCS) v4.0 or higher with Itron Mobile v1.0 or higher 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 higher with Itron Mobile v1.0 or higher and the Itron Mobile Radio or MC3 Radio or FC300SR, MCLite or MC3 with Mobile Collection software v3.8.1.1

Approved IoT Reading Systems offer full two-way communication capability.

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

Programmable Mode Options

OpenWay Riva Cellular Network Mode

- » This mode is to be utilized when the OpenWay Riva Cellular network will be the method of meter data collection
- » A Local Access Beacon message is sent out that allows the user to connect locally to module if needed.
- » OpenWay Riva Network mode can be programmed at the factory, during installation with an approved handheld device or after initial installation and programming with a handheld device.
- » The battery life for this mode is 20 years

Itron Mobile Read Mode

- » This mode should only be used when communication modules are installed in difficult-to-read cellular locations where Cellular Network mode is not sufficient for satisfactory reading performance
- » This mode will bubble-up an SCM+ at varying intervals starting at 30 seconds to optimize battery life & performance
- » The battery life of this mode is greater than 15 years with variable bubble up model
- » This mode is not targeted as long term operation mode.

Itron Cellular 500W Module Pit Dimensions

- » Height: 4.5 inches
- » Maximum diameter:
 - Lower: 3.90 inches
 - Upper: Approx. 1.70 inches
- » Weight: Approx. 9.6 ounces.
- » In-line connector register cables:
 - » 5 feet and 25 feet (ordered separately)
- » Pit models can be installed up to 300 feet from a meter

Itron Cellular 500W Module Remote Dimensions

- » Height: 4.5 inches
- » Width: 5.05 inches
- » Depth: 3 inches
- » Weight: Approx. 9.6 ounces.
- » Module cable length: 10 inches
- » Remote models can be installed up to 300 feet from a meter

Mounting Options

Itron Cellular 500W modules have a compact housing and features specifically designed for water pit mounting options

- » Rod-mount on a ½ inch diameter fiberglass or other non-metallic rods. This installation requires a Remote Through the Lid Antenna
- » Through-the-lid mounting with a pre-drilled 1.75-inch hole and up to 2.5-inch 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 up to 4-inch



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