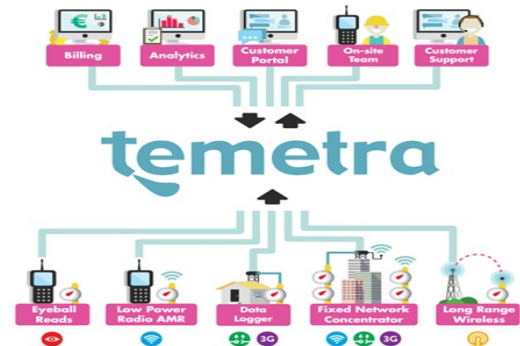




# Itron

## Mobile Reading with AMI Functionality



- ❖ Automate meter reading using drive-by or walk-by and Itron's advanced meters and endpoints for Water and Gas.
- ❖ Collect visual reads, water probe reads and other valuable meter data
- ❖ Improve meter reading efficiency with map-assisted meter reading on the mobile device

- ❖ Collect and upload meter data in real time.
- ❖ Securely and easily access, store, and manage data through the cloud.
- ❖ Quickly assign or reassign work based on meter and meter reader location via Temetra Geo-Routing
- ❖ Increase customer satisfaction and engagement by providing access to meter history via the Customer Web Portal

## DATA STORAGE AND ACCESS IN THE CLOUD

### Real Time

- ❖ Improve your operational efficiency by loading and unloading routes and photos remotely from the field. Data storage in the cloud allows employees in the field to upload their route data and receive new routes using internet connections including Wi-Fi and cellular.

### Secure

- ❖ Rest easy knowing your utility's data is safe. All data is held on secure servers which meet the ISO 27001 information security standard.

### Accessible

- ❖ Give users easy access to the information they need. Data is accessed through the Temetra Web Application, which can be configured with as many user profiles as there are departments at your utility.

### Affordable

- ❖ Reduce costs associated with deploying and maintaining servers and software. While our industry-leading IT and security professionals maintain your servers, we will also continue to provide you with regular software updates transparently through the cloud. This reduces IT costs and downtime associated with buying and setting up new hardware and installing software updates.

## INTUITIVELY ASSIGN OR REASSIGN ROUTES USING GEO-ROUTING

- ❖ Temetra Geo-Routing enables the simple creation of more efficient routes. Meter coordinates are stored in the Temetra cloud environment, allowing routes to be created and assigned based on the locations of both meters and meter readers.

# Reading Equipment 2021 for Itron Mobile Solutions



## Itron Mobile Radio

The Itron Mobile Radio is a basic, all purpose, walk-by reader, and programmer for use with Itron's smart meters and endpoint solutions.



## Itron Mobile Radio – Field Tool

Itron Mobile Radio – Field Tool provides the same basic functionality as the Itron Mobile Radio and performs meter and ERT installation and validation with the added convenience of leaving the radio in the vehicle with remote antennas.

**Itron IMR and IMR-FT** are utilized with the CN80 Handheld or smartphone apps to read meters as a walk by solution.



CN 80 Handheld

Reading devices to be used in conjunction with the Itron IMR and IMR-FT via blue tooth communications. The Honeywell CN80 handheld, Apple iPhones, and iPads along with android devices with Cellular connectivity. From reading visual meters to programming and reading ERTs, these devices in conjunction with the IMR/IMR-FT work great in Itron Mobile.



## Itron Mobile Solutions MC4 Series of Mobile Collectors

Performance and portability are combined with Itron's patented GPS mapping for meter reading, two-way wireless radio communications and compatibility with Itron's latest generation mobile collection apps. The MC4 series provides improvements in a utility's operational efficiencies, regardless of the type or size of their service – streamlining business processes and reducing costs associated with meter reading operations and service delivery, enhancing customer service, and improving employee safety.





## Temetra Table of Contents

### ❖ Temetra Software and System Overview

#### Reading Devices

- ❖ Itron MC4 Series Mobile Collector
- ❖ CN80 Honeywell Handheld
- ❖ Itron IMR-2
- ❖ Itron IMR-FT

#### Itron 100W+ Endpoints

- ❖ 100W+
- ❖ 100W+ with Leak Sensor
- ❖ Itron Leak Sensor









# Mobile Collector Generation 4

## Mobile Collection Systems

The Itron MC4 series is the latest generation in drive-by data collection and mobile command and control from Itron. The MC4 series includes multiple models designed to meet your specific needs.

### HIGH-PERFORMANCE COMMUNICATIONS FOR THE MOST DEMANDING APPLICATIONS

#### Mobile Collector 4 Max, Mobile Collector 4 Pro and Mobile Collector 4 Core

Performance and portability are combined with Itron's patented GPS mapping for meter reading, two-way wireless radio communications and compatibility with Itron's latest generation mobile collection apps. The MC4 series provides improvements in a utility's operational efficiencies, regardless of the type or size of their service – streamlining business processes and reducing costs associated with meter reading operations and service delivery, enhancing customer service and improving employee safety.

The MC4 series of mobile collectors will ensure you continue to benefit from your investment in Itron Advanced AMR meters and ERTs through their 20-year life.

Itron ERTs set the standard for automated meter reading (AMR) when they were introduced in the 1980s. Itron continues to invest in the ERT product family and provides ever increasing benefits from these modules used for both AMR and AMI. Over the years, evolutions have occurred including Itron's introduction of datalogging, enhanced security, remote disconnect, and other Advanced AMR capabilities that were all enabled through Itron's highly efficient ERT communication protocols.

The MC4 series of mobile collectors provide the following:

- » All the safety, accuracy, and efficiency benefits that come with Itron AMR
- » “Drop-in” compatibility with Temetra Mobile and Itron Mobile for FCS
- » Basic AMR data collection for Billing and Tamper/Event monitoring
- » Advanced AMR capability for Datalogging, Remote Disconnect, and more
- » Itron’s latest radio designs with improved read sensitivity and range
- » Ever increasing app features including Itron’s patented Endpoint Tracking for finding lost and stolen meters

## INTRODUCTION

Powered by Itron SRead™ radio technology, the MC4 Series can handle everything from basic consumption reads to the collection of interval data and performing other two-way communications with Itron’s advanced meters and ERTs for gas, water, and electricity. The MC4 Series eliminates the need for a dedicated vehicle by being small enough to easily transfer among drivers as necessary.

## FUNCTIONALITY PROFILE

Depending on the selected model, MC4 has the capacity to store and process up to 30,000 or 100,000 meter reads per shift. The MC4 Series can also collect out-of-route readings used to fulfill off-cycle reading requests without dispatching a technician. The potential savings are substantial when compared to the few hundred meters read per day by a typical walk-by employee. Itron SRead radio technology offers increased read sensitivity, simultaneously listens to over 80 channels and can conduct up to 50 two-way communications simultaneously all to improve range and reduce route processing times.

## GPS MAPPING

A built-in GPS receiver and on-board mapping software allow a user to see where the vehicle is in relation to the ERT modules and meters. Using the Windows apps from Itron, various icons indicate the completion status of each endpoint in addition to those accounts that take priority or require other special operations such as remote disconnect. A Microsoft Bing satellite view is available when the computer is connected to the Internet.

## MC4CORE FEATURES

The MC4Core is Itron’s entry-level mobile collector. While affordable, the MC4Core contains a complete and powerful set of features that work with Itron ERTs, meters and sensors. These features are available in all MC4 models:

- » Collect gas, water and electricity current index reads for billing
- » Read “bubble-up” endpoints
- » Extract 40 days of daily or hourly interval data from advanced gas, water and electricity meters and ERTs
- » Perform real-time demand reset and extract TOU data from CENTRON Bridge and CENTRON R450 Advanced meters
- » Remote disconnect for gas, water and electricity services
- » Collect leak data from water ERTs equipped with acoustic leak sensors
- » Fulfill special read requests such as move-ins and move-outs
- » Daily data for customer service and billing disputes
- » Monthly gas balancing reads
- » Data to facilitate load studies and conservation programs
- » Data to support mid-cycle rate changes

- » Extract 40 days of daily, hourly or 15-minute interval data from CENTRON® Bridge and CENTRON R450 Advanced meters
- » Ability to process multiple routes simultaneously
- » Up to 30,000 in-route reads per shift
- » Up to 30,000 out-of-route reads per shift
- » GPS mapping for reduced drivetimes
- » Exceptional meter reading performance in a small size
- » Wired or wireless data transfer using any Internet connection

## MC4PRO FEATURES

The MC4Pro includes all the features of the MC4Core plus these additional features:

- » Side looking radios to improve basic AMR read performance for reduced drivetimes and improved out-of-route read collection
- » Up to 100,000 in-route reads per shift
- » Up to 100,000 out-of-route reads per shift
- » GPS Endpoint Tracking for finding lost and stolen meters

## MC4MAX FEATURES

The MC4Max includes all the features of the MC4Core and MC4Pro plus this additional feature:

- » Ability to read Itron’s legacy wake-up ERT modules including 40G/40GB/40E/45E/40W/50W

Customers who only deployed bubble-up ERT modules will be get everything they need from the value priced MC4Core and MC4Pro. The MC4Max is only required by customers who continue to need the ability to read wake-up ERT modules.

## MOBILE COLLECTOR 4 FEATURE COMPARISON MATRIX

	MC4MAX	MC4PRO	MC4CORE
Basic AMR for billing	✓	✓	✓
Advanced AMR (Datalogging, etc.)	✓	✓	✓
Mapping	✓	✓	✓
Out-of-Route Reads	✓	✓	✓
Side Looker Radios	✓	✓	✗
Endpoint Tracking	✓	✓	✗
Wakeup Transmitter for 40G/40GB/40E/45E/40W/50W **	✓	✗	✗

\*\*Wakeup ERTs requiring a wakeup transmitter: All models of the 40G, 40W, 40E. These ERTs can be programmed in wakeup or bubble-up mode: All models of the 40GB, 50W, 45E

## SPECIFICATIONS

### Transmitter/Receiver Characteristics

- » Legacy wake-up transmitter: 952 or 956 MHz Licensed Frequency
- » Receiver: 908–924 MHz (ISM Band)
- » Two-way command transmitter: 908–924 MHz (ISM Band)
- » Transmitter power: 6.5 Watts peak
- » Output impedance: 50 ohms
- » Data integrity: verified in every message

### Antenna Specifications

- » 5 dBi omni-directional whip mounted on base with built-in 3 dBi GPS antenna.
- » Optional Side Looker (left+right), 9.1 dBi Linear Directional antenna

### Regulatory Information

- » Legacy wake-up transmitter, MAS band:
- » FCC Part 101 compliance
- » ISED RSS-119 compliance
- Two-way transmitter/receiver, ISM band:
- » FCC Part 15.247 compliance
- » ISED RSS-247 compliance

### Environmental

- » Operating temperature: -4°F to +122°F (-20°C to +50°C)
- » Storage temperature: -40°F to +160°F (-40°C to +71°C)
- » Humidity limits: 5 to 95% noncondensing relative humidity

### Physical Dimensions

- » MC4 Series Radio: 13"W x 11.25"L x 2.75"H
- » Sled: 13"W x 19"L x 9.5"H
- » CF-33 Laptop: 11.9"W x 11.5"L x 2.9"H

### Weight

- » MC4Max Radio: 10 lbs./ 4.5 kg
  - » Sled: 13.2 lbs. / 6 kg
  - » CF-33 Laptop: 8.2 lbs./ 3.7 kg
- MC4 Series comes complete with MC4 Series radio, mounting and wiring hardware, and optionally with Panasonic Toughbook or Toughpad computer.

### Panasonic Computer (Optional)

- » Choice of fully rugged Windows 10 Toughbook or Toughpad computer from Panasonic. For details, see the respective Panasonic datasheet.

### Power

- » Power supply: 12Volts DC vehicle power supply
- » Power consumption: 5 Amps maximum

### Wiring Options

- » Permanent – Permanent wiring includes a through-the-roof antenna base and a fuse block power cable
- » Portable – Portable wiring includes a magnetic-mount antenna base and a vehicle accessory power cable

### Mounting Options

- » Sled Mount – The Panasonic Toughpad vehicle dock comes attached to a sled that can be easily and safely installed on any seat in the vehicle.
- » Pedestal Mount – The Panasonic Toughpad comes with a vehicle dock that can be attached to a pedestal that is installed in the vehicle (note: the pedestal is not included).

### Endpoint Compatibility\*

#### All MC4 Models:

- » 100G gas ERT modules
- » Gen™5 500G Intelis Gas Meter
- » Gen™5 500G ERT® Module
- » Gen™5 500W ERT® Module
- » OpenWay Riva Intelis Gas Meter

- » OpenWay Riva 500G ERT® Module
- » OpenWay Riva 500W ERT® Module
- » 60W water ERT modules
- » 100W water ERT modules
- » Itron CENTRON Bridge electricity meters
- » Itron CENTRON R450 Advanced electricity meters
- » Itron CENTRON electricity meters equipped with R300 or R400 modules
- » Itron SENTINEL® electricity meters equipped with R300 modules

#### Additional Support with MC4Max

- » All legacy Itron ERT® modules
- » 40G / 40GB gas ERT modules
- » 40W / 50W water ERT Modules
- » 40E electric ERT modules

\* Supported endpoints will vary across applications. Please consult the capabilities of the software app and version.



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## Dolphin CN80

### Mobile Computer

Logistics, warehouse, and field mobility organizations alike are transitioning from devices built on Windows® to devices built on Android™ and from keypad-centric devices to full touchscreens. But many legacy applications have not yet been updated for this new touch-centric world and for many use cases, keys remain essential for data capture. Fortunately, there's one ultra-rugged mobile computer that helps bridge the gap. The Dolphin™ CN80 device offers both a large touchscreen and a choice of numeric or QWERTY keypad, allowing users to pick the best input method for their environment today, and also be ready for the touch-centric applications of the future.

Built on the Honeywell Mobility Edge™ platform, the Dolphin CN80 device offers an integrated, repeatable, and scalable approach based on a common hardware and software platform – unleashing customers from constraints faced today around integration and inflexible technologies without sacrificing enterprise security, reliability, performance, or management features.

Juggling multiple devices across the enterprise introduces time- and cost-intensive complexities for Enterprise IT to manage and maintain. The Mobility Edge platform enables customers to accelerate provisioning, certification, and deployment across the enterprise. The Dolphin CN80 device offers an extended product lifecycle across four generations of Android, from Android Nougat to Android Q, to maximize return on customer investment and provide a lower overall TCO. The device's advanced enterprise lifecycle tools also simplify frequently repeated tasks such as software updates, training new employees, and managing spare pools.

The ultra-rugged Dolphin CN80 mobile computer features a fast processor, advanced network connectivity, and enhanced 1D/2D scanning plus extended battery life lasting twice as long as previous generations to keep workers connected and productive throughout multiple shifts. The large, vivid, 106.7 mm (4.2 in) touchscreen display can be read easily indoors and out and used with finger, glove, or stylus – making it ideal for warehouse, cold storage, field mobility, and other challenging environments.



*Built on the Honeywell Mobility Edge platform and Android, the ultra-rugged Dolphin CN80 mobile computer combines touchscreen and keypad data input, real-time connectivity, and advanced data capture for industry-leading investment protection.*

## FEATURES & BENEFITS



The Mobility Edge hardware platform and enterprise lifecycle tools drive an integrated, repeatable, scalable approach for accelerated and secure development, deployment, performance management, and lifecycle management.



The Dolphin CN80 device provides future-proof investment protection with support for four Android generations, starting with Android 7.1 (N). Security updates are also available for up to two years past the last Google patch via the Honeywell Sentinel service plan.



The large touchscreen with a 23-key numeric or 40-key QWERTY keypad supports both legacy key-centric applications and newer touch applications. Keypads allow input in extremely harsh environments and optimize efficiency in all environments.



Ultra-rugged construction withstands multiple 2.4 m (8 ft) drops to concrete and 2,000 1.0 m (3.3 ft) tumbles. IP65/IP67 ratings against dust/water spray. Cold storage and non-incendive options support operation where other products can't be used.



Enhanced 1D/2D scanning/data capture with read ranges of 0.15 m to 15.2 m (6 in to 50 ft) typically required in today's warehouses. Optional scan handle for flexibility to switch between handheld and pistol grip operations.

# Dolphin CN80 Technical Specifications

## SYSTEM ARCHITECTURE

**Processor:** 2.2 GHz Qualcomm Snapdragon™ 660 octa-core

**Operating System:** Android 7.1 Nougat, upgradable through Android Q

**Memory:** 3 GB/4 GB RAM, 32 GB Flash

**Camera:** 13.0-megapixel color camera with autofocus and advanced software features for better image quality

**Audio:** Speaker, T3/M3 HAC-compliant, dual microphone support with noise cancellation. PTT support and Bluetooth® wireless headset support

**I/O Ports:** Custom durable I/O connector with USB 3.0 signals and power input

**Sensors:** Ambient light sensor, proximity sensor, accelerometer, gyroscope, magnetometer, pressure sensor

**Storage Expansion:** User-accessible microSD card up to 512 GB (SDXC/SDHC-compliant)

**Display:** 106.7 mm (4.2 in) FWVGA (854 x 480) bright color LCD with backlight, outdoor viewable, optically bonded to touch panel

**Touch Panel:** Rugged multi-touch capacitive touch panel, optically bonded for extra durability and better sunlight viewability. Automatic detection and configuration utilizing mutual and self-capacitance modes for water rejection and use with many off-the-shelf gloves

**Keypad:** 40-key QWERTY keypad or 23-key numeric function keypad, plus dual side scan triggers, volume up/down, camera, power on-screen keypad

**Scanning Capabilities:** Honeywell N6603ER Imager (1D/2D); Honeywell EX20 Near/Far Imager (1D/2D, 0.15 m to 15.2 m [6 in to 50 ft]); Honeywell Scanning SDKs for Android

**Battery:** Li-Ion, 3.85 V, 5800 mAh with integrated battery diagnostics

## SOFTWARE

Honeywell Power Tools and Demos

Terminal Emulator

Enterprise Browser

Application Launcher and Lockdown

Provisioning Tools

Honeywell Mobility SDKs for Android, Web, and Xamarin  
Support for Third-Party MDM Solutions

## ACCESSORIES

One-bay and four-bay desktop charging/com cradles

Vehicle cradles and holders

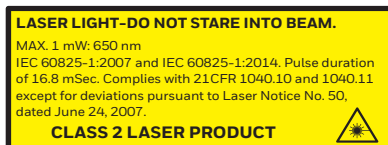
Wireless charging vehicle cradle

Snap-on communication/charging adapters

Removable scan handle, various carrying devices

## WARRANTY

One-year factory warranty



www.honeywellaidc.com

## Honeywell Safety and Productivity Solutions

9680 Old Bailes Road

Fort Mill, SC 29707

800-582-4263

honeywell.com

## MECHANICAL

### Dimensions (L x W x H):

**N6603ER Version:** 20.4 cm x 7.8 cm x 3.32 cm  
(8.03 in x 3.07 in x 1.31 in)

**Weight:** 500 grams (17.6 oz) with battery pack

**EX20 Version:** 20.53 cm x 7.8 cm x 3.97 cm  
(8.08 in x 3.07 in x 1.56 in)

**Weight:** 550 grams (19.4 oz) with battery pack

## ENVIRONMENTAL

### Operating Temperature:

**Standard Temp Unit:** -20°C to 50°C (-4°F to 122°F)

**Cold Storage Unit:** -30°C to 50°C (-22°F to 122°F)

**Storage Temperature:** -30°C to 70°C (-22°F to 158°F)

**Humidity:** 0 to 95% relative humidity (non-condensing)  
**Drop:** 2.4 m (8 ft) to concrete at room temp per MIL-STD 810G; 1.8 m (6 ft) to concrete at -20°C to 50°C (-4°F to 122°F) temperature range; 1.6 m (5 ft) to concrete down to -30°C (-22°F)

**Tumble:** Exceeds 2,000 1.0 m (3.3 ft) tumbles per IEC 60068-2-32 specification

**ESD:** ±15 kV Air and ±8 kV Direct

**Environmental Sealing:** Independently certified to meet IP67 and IP65 standards for moisture and particle intrusion

## WIRELESS CONNECTIVITY

**WWAN:** WWAN Radio (ATT/VZW/SPRINT/TMO/NA/EU) with two micro-SIM slots

- Up to 400 Mbps CAT13 LTE Downlink
- Up to 75 Mbps CAT5 LTE Uplink
  - o FDD-LTE Bands 1, 2, 3, 4, 5, 7, 8, 12, 13, 17, 19, 20, 25, 26, 28, 29
  - o TDD-LTE Bands 38, 39, 40, 41
  - o UMTS/HSPA+ (3G) Bands 1, 2, 4, 5, 6, 8, 9, 19
  - o GSM/GPRS/EDGE Quad-Band 850/900/1800/1900 MHz
  - o 1xRTT/EV-DO Bands BC0, BC1, BC10 (B26 BW)

**WLAN:** IEEE 802.11 a/b/g/n/ac; Wi-Fi certified 2x2 MIMO support

**Additional WLAN Features:** 802.11r (802.11k/mc – via future release)

**WLAN Security:** OPEN, WEP, WPA/WPA2 (Personal and Enterprise)

**Supported EAP:** TLS, PEAP, TTLS, PWD, FAST, LEAP CCX Version 4 certified

**Bluetooth:** Class 1.5 V5.0 Bluetooth and BLE

**Bluetooth Profiles:** HFP, PBAP, A2DP, AVRCP, OPP, SPP, GATT

**NFC:** Integrated Near Field Communication

**Zigbee:** Integrated Zigbee 3.0 radio for IoT compatibility

**VoIP:** Supported

**VPN:** IPSec V4/L2TP, PPTP

**Push to Talk (PTT):** Supported

**GPS Supported Protocols:** Simultaneous GNSS Receiver Support for GPS, GLONASS, Galileo, and Beidou

## NON-INCENDIVE VERSION

Suitable for use in Division 2 locations

Safety: cULus Listing – ISA/ANSI 12.12.01

Gases: Class I – Groups A, B, C, D

Dusts: Class II – Groups F, G

Fibers and Flying: Class III

\*Max Ambient: 50°C (122°F) T6

For a complete listing of all compliance approvals and certifications, please visit [www.honeywellaidc.com/compliance](http://www.honeywellaidc.com/compliance).

For a complete listing of all supported barcode symbologies, please visit [www.honeywellaidc.com/symbologies](http://www.honeywellaidc.com/symbologies).

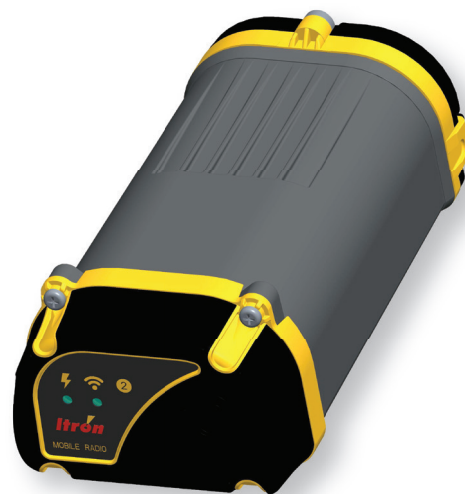
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# Itron Mobile Radio 2

Itron Mobile Radio 2 provides improved RF range and allows 40/50 Series Endpoint programming

The Itron Mobile Radio is an all-purpose, walk-by reader and programmer for use with Itron's smart meters and endpoint solutions. This lightweight, portable device utilizes Itron's proven SRead technology in a two-way 900 MHz radio for communicating with electric, gas, water and telemetry endpoints using Itron Mobile or Field Deployment Manager apps. The Itron Mobile Radio is designed to handle the rigors of a field environment, providing a reliable hardware platform for utility personnel. Additionally, the Itron Mobile Radio has been designed and tested to handle environmental elements and ensure integrity as it relates to dust, rain, shock and vibration conditions.

## INTRODUCTION

Walk-by meter reading is performed with the Itron Mobile Radio using a Bluetooth Low Energy (BLE) or Bluetooth Classic connection to a smart phone or tablet. Communications are quick and easy. The Itron Mobile Radio supports Advanced AMR two-way commands with Itron endpoints for reading consumption, extracting datalogging messages and performing secured shutoff and reconnect operations.

Field activities such as endpoint installation, programming, field investigations, unlocking and resetting devices are also performed with the Itron Mobile Radio.

The Itron Mobile Radio, coupled with a Bluetooth-enabled laptop or tablet, streamlines field activities to help make field workers more productive and efficient in their daily tasks. This is an ideal solution for utilities who already utilize mobile computing solution equipment in the field, or for those with in-house operations (such as a meter shop) where the lightweight, easy-to-use Itron Mobile Radio is a practical fit.

## DESIGNED FOR DEPENDABILITY

The Itron Mobile Radio uses an internal 2270 mAh lithium-ion rechargeable battery,

providing operating time in excess of 10 hours on a single charge (results may vary based upon usage and target endpoint types). The battery can be replaced if necessary. Recharging can be done with standard micro-USB charging cable (supplied) or commonly available micro-USB phone charger.

The Itron Mobile Radio features an integrated circuit that gauges battery life, capable of accurate battery information in the form of percent remaining life as reported to supported applications. Additionally, the power indicator (LED) lets the user know when the battery is low.

## Advanced Metering and Telemetry for Gas, Water and Electricity\*

The Itron Mobile Radio supports a variety of advanced AMR commands that work with Itron ERTs, meters and sensors.

- » Extract 40 days of daily or hourly interval data from advanced gas and water endpoints
- » Extract 40 days of daily, hourly or 15 minute interval data from CENTRON® Bridge meters
- » Perform real-time demand reset and extract TOU data from CENTRON Bridge meters
- » Remote disconnect for gas, water and electricity services
- » Extract up to 480 days of voltage readings from the 100T-CP module
- » Collect leak data from water endpoints equipped with acoustic leak sensors
- » Fulfill special read requests such as move-ins and move-outs
- » Daily data for customer service and billing disputes
- » Monthly gas balancing reads
- » Data to facilitate load studies and conservation programs
- » Data to support mid-cycle rate changes

\* Supported features vary across applications

## What's in the Box: Itron Mobile Radio Kit

Each Itron Mobile Radio package contains the following items:

- » Itron Mobile Radio with built-in antenna
- » AC power adapter
- » Micro USB cable
- » Itron Mobile Radio Quick Reference Guide

## Optional Components

- Shoulder carry strap with belt-clip feature

## SPECIFICATIONS

### Functional

- » Power source: Internal 2270 mAh, 3.7V single-cell lithium-ion battery\*
- » Operating temperature: -15°C to +50°C
- » Humidity limits: 0 to 95% relative humidity, non-condensing
- » Bluetooth 4.0
  - Bluetooth Class 1 for optimum performance to tablet /smartphone
  - Supported distances between the Itron Mobile Radio and endpoints vary across products and are rated for walk-by reading operations
  - Bluetooth is enabled when IMR is running on battery power or is connected to AC power. Bluetooth is disabled when IMR is connected to a host computer via USB

\*Lithium-ion batteries will not charge below 0°C or above 45°C

### Field Deployment Manager Laptop or Tablet Requirements

- » Microsoft® Windows 7 and Windows 10
- » Bluetooth 4.0

### Itron Mobile App Smartphone or Tablet Requirements

- » Android 6 or iOS 9.0 or Windows 10
- » Bluetooth 4.0

### Physical

- » Dimensions: 2.09 in x 2.90 in x 5.63 in (53mm x 74mm x 143mm)
- » Weight: 0.66lb or 10.6 ounces (0.3 kg)

### Regulatory

- » **USA, FCC spectrum 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.

### » Canada, ISED spectrum compliance:

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.

### » RF Exposure for FCC and ISED for IMR2:

This device has been evaluated and found to be compliant for RF Safety with regards to Specific Absorption Rate (SAR) for portable device equipment set forth in the United States and Canada. The SAR limit for wireless mobile and/or portable devices used by the public is 1.6 W per kilogram averaged over 1 g of tissue. The standard incorporates a substantial margin of safety to get additional protection for the public and to account for any variations in measurements.

### Approved Endpoints\*

- » All legacy Itron ERT® modules
- » 40G / 40GB gas ERT modules
- » 100G gas ERT modules
- » 500G OpenWay® Riva gas ERT modules in mobile mode
- » 40W / 50W water ERT Modules
- » 60W water ERT modules
- » 100W water ERT modules
- » OpenWay Riva Water modules in mobile mode
- » Itron CENTRON Bridge Polyphase electricity meters in mobile mode
- » Itron CENTRON electricity meters equipped with R300 or R400 modules
- » Itron CENTRON Polyphase electricity meters equipped with R300 or R400 modules
- » Itron SENTINEL® electricity meters equipped with R300 modules

\* Supported endpoints can vary across applications.



Join us in creating a more **resourceful world**.  
To learn more visit **itron.com**

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# Itron Mobile Radio-Field Tool

Itron Mobile Radio-Field Tool provides the ability to perform meter and ERT® installation and validation with the added convenience of leaving the radio in the vehicle.

The Itron Mobile Radio-Field Tool (IMR-FT) is a vehicle mounted radio for use with Itron's industry leading smart meters and endpoints. This device utilizes Itron's proven SRead technology in a compact 900 MHz radio that provides two-way communication with electric, gas, water and telemetry endpoints. The IMR-FT is designed to handle the rigors of a field environment including the vibration and other rough conditions encountered in field service vehicles.

## INTRODUCTION

Field activities such as endpoint installation, programming, validation, unlocking and resetting devices are performed with the IMR-FT along with a laptop or tablet running Field Deployment Manager software. Field Service Representatives (FSR) can carry their tablet to the meter and leave the IMR-FT in the vehicle. Communications are quick and easy. The tablet connects to the IMR-FT over Bluetooth® and the IMR-FT communicates with the meter/ERT using Itron's 900 MHz protocols via the external antenna. The Bluetooth 4.0 standard supports up to 300 feet of separation with clear line-of-site. The

extra freedom provided by the IMR-FT streamlines field activities to help make FSRs more productive and efficient in their daily tasks.

Additionally, while the vehicle is parked, the IMR-FT with Itron Mobile for FCS can be used to collect basic targeted contingency meter reads and execute Advanced AMR two-way commands to collect datalogging intervals, other consumption data, and perform secure remote service disconnect and connect operations. The IMR-FT is an ideal solution for utilities who already utilize mobile computing equipment in the field. Temetra Mobile can be used to collect

basic targeted contingency meter reads with additional capabilities coming in the future.

## DESIGNED FOR DEPENDABILITY

The IMR-FT uses the vehicle's accessory power, providing full-time operation throughout the day. When external power is unavailable, such as when the vehicle is parked and turned off, the IMR-FT uses an internal lithium-ion battery that is kept charged whenever the vehicle is running. The IMR-FT features a power indicator LED to let the user know if the battery is low.





## Advanced Metering and Telemetry for Gas, Water and Electricity\*

The IMR-FT supports a variety of programming, validation and Advanced AMR commands that work with Itron ERTs, smart meters and sensors. Available capabilities vary based on the software application used with the radio.

- » Program ERTs, smart meters and other endpoints
- » Validate programming and operation using Check, Read and other commands
- » Change operation modes including switch to supported network modes
- » Update the firmware of the endpoint
- » Fulfill special read requests such as move-ins and move-outs
- » Extract interval data
- » Remote disconnect for gas, water and electricity services

### What's in the Box: IMR-FT Kit

Each IMR-FT package contains the following items:

- » Itron Mobile Radio FT (IMR-FT)
- » DC power adapter for use with vehicle's accessory plug
- » Micro USB cable
- » Choice of roof mount magnetic antenna or permanent, through-the-roof mounted antenna
- » Jacket with mounting plate for multi-purpose mounting. Jacket has quick release feature should radio need to be removed
- » IMR-FT Quick Reference Guide

### Optional Components

- » None. The IMR-FT ships complete with all accessories.

## SPECIFICATIONS

### Functional

- » Power source: Both 12v DC power cable for vehicle and Internal 2270 mAh, 3.7V single-cell lithium-ion battery\*
- » Operating temperature: -15°C to +50°C
- » Humidity limits: 0 to 95% relative humidity, non-condensing
- » Bluetooth 4.0
- » USB 2.0

Lithium-ion batteries will not charge below 0°C or above 45°C

### Applications and Hardware Compatibility

NOTE: IMR-FT does not support drive-by reading but will support "park" and read operations.

- » FDM Tools/FDM Workorders 4.0 and greater (Windows 10 only)
- » Itron Mobile 2.3 and greater (All platforms)
- » Temetra Mobile (All platforms)
- » Platform support varies based on the mobile app. Refer to the mobile app documentation for specific requirements.
- » Hardware minimums are Bluetooth 4.0 or USB 2.0. Both are common in hardware built after 2014.

### Physical

- » Dimensions: 2.1 in x 2.9 in x 7.5 in (53mm x 74mm x 143mm)
- » Weight: 0.69lb (.313kg) without jacket and mounting plate, 1.07lb (.485kg) with jacket and mounting plate

### Regulatory

#### » USA, FCC spectrum 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.

#### » Canada, ISED spectrum compliance:

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.

#### » RF Exposure for FCC and ISED for IMR-FT:

This device has been evaluated and found to be compliant for RF Safety with regards to Specific Absorption Rate (SAR) for portable device equipment set forth in the United States and Canada. The SAR limit for wireless mobile and/or portable devices used by the public is 1.6W per kilogram averaged over 1g of tissue. The standard incorporates a substantial margin of safety to get additional protection for the public and to account for any variations in measurements.

### Approved Endpoints\*

- » All legacy Itron ERT® modules
- » 40G / 40GB gas ERT modules
- » 100G gas ERT modules
- » Intelis Gas Meter
- » Gen™5 500G ERT® Module
- » OpenWay Riva 500G ERT® Module
- » 40W / 50W water ERT Modules
- » 60W water ERT modules
- » 100W water ERT modules
- » OpenWay Riva 500W ERT® Module
- » Itron OpenWay CENTRON Bridge electricity meters in mobile mode
- » Itron CENTRON electricity meters equipped with R300 or R400 modules
- » Itron SENTINEL® electricity meters equipped with R300 modules

\* Supported endpoints can vary across applications. Please consult the capabilities of the software app.



Join us in creating a more **resourceful world**.  
To learn more visit **itron.com**

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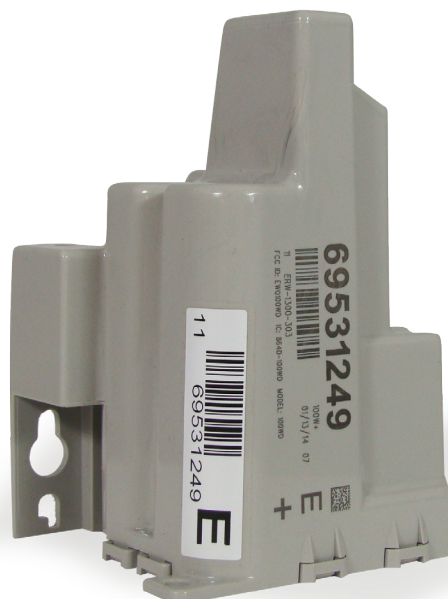
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# 100W+

Water Communication Module



The 100W+ communication module is the latest addition to Itron's portfolio of advanced metering devices for water utilities. Featuring a compact design, industry-leading battery life and technology designed to adapt and grow with your business, the 100W+ module can help you streamline your operations and maximize your resources today and into the future.

The 100W+ communication module represents the fourth evolution in Itron's line of 100 series water communication modules. This latest release includes a new message called SCM+ with more information than previous generation messages. Additionally, the 100W+ offers industry leading capabilities in security, fixed network performance and improved meter consumption resolution to 9 dials (1/100th gallon).

» 100W+ communication modules are available in two housing designs, supporting both water pit and remote installations. They are identified as follows:

- » 100W+ is to be utilized with encoder registers in a pit environment
- » 100WP+ for pulser registers in a pit environment
- » 100W-R+ for encoder registers in remote applications
- » 100WP-R+ for with pulser registers in remote applications

These communication modules offer advanced two-way meter data collection designed specifically for Itron collection systems using handheld, mobile, fixed network and hybrid solutions. 100W+ communication modules differentiate themselves from other devices on the

market by providing true two-way communications capabilities with walk-by, drive-by and fixed network collection systems. Engineered from the ground up to leverage the benefits of ChoiceConnect™ collection systems, 100W+ communication modules enable easy migration from mobile to fixed network operations as your business needs evolve. With Itron's complementary communications technology, fixed and mobile network systems can be deployed side-by-side in hybrid configurations to ensure maximum efficiency and reliability in both high and low-density meter populations.

## SCM+

SCM+ is a new message for Itron's electric, gas and water endpoints. This message transmits more information than previous generation messages, including:

- » All tampers and alarms (including extended tampers and low battery alarm)
- » Up to 1/100th gallon resolution of water meters that support 9 dials

## Itron Security Manager

The 100W+ offers optional enhanced security with the addition of authentication and encryption. In parallel to the 100W+ release, Itron released the Itron Security Manager (ISM) solution. ISM represents the initial launch of a new security application that will provide the cryptographic and key management services for Itron's Fixed Network, Field Deployment Manager (FDM) and Field Collection System (FCS) solutions. The ISM application, working in concert with these data collection systems will provide a new application layer of security. This enables authentication of commands and encryption of data communications from the reading applications to new 100 Series communication modules. These enhanced security services will provide added confidentiality, data integrity and availability that utilities require to secure their communications. Every 100W+ will ship with embedded security keys to support utilities current and future requirements for enhanced secure communications. To enable enhanced security, utilities will need Itron Security Manager v1.0, FDM Endpoint Tools Enhanced v3.3 and 100W+ security keys (part number SEC-0000-002).

## GeoMode

In order to continually improve our fixed network performance, the 100W+ has added the GeoMode feature. GeoMode is a valuable tool used to read 100W+ communication modules that are installed in RF-unfriendly environment as well as modules installed on the fringe of network coverage. This tool will allow a 100W+ that is not being heard by the fixed network to transmit its NIM (Network Interval Message) via a neighboring 100W+ that has an established link to FN. GeoMode will not impact the 100W+ industry-leading battery performance. Using the GeoMode feature

requires Network Software v5.0. Modules in GeoMode may still be read by Itron handheld and mobile systems.

## Water Meter Compatibility

The 100W+ communication module is compatible with water meters from all major manufacturers such as Badger, RG3, Kamstrup, Hersey, Master Meter, Neptune and Sensus, enabling water utilities to consolidate all their water meters under a single reading system. Powered by proven, advanced lithium battery technology; the module is designed for 20 years of battery life in both fixed network and mobile modes.

## Data Logging

The 100W+ stores 40 days of hourly consumption information, which can be collected by the fixed network system to leverage real time data collection or can be read by mobile or handheld systems. This data is presented in four basic use cases:

- » A reading from any hour 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

## Superior Performance

The 100W+ communication module utilizes 120 radio channels in fixed network and 50 radio channels in mobile and handheld modes, randomly selecting one channel for each data message. Itron's unique multi-channel solutions maximize the use of all available bandwidth, allowing more data to flow through the network and enabling faster drive-by speeds. The 100W+ will transmit the fixed network consumption message at peak radiated power greater than 1 Watt.

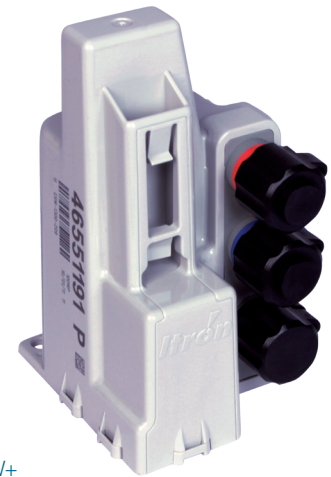
## Reliability

100W+ communication modules feature a circuit assembly and battery pack that are fully encapsulated within a specially-formulated potting material to completely protect internal components from water, contaminants, corrosion, rough handling and temperature cycling. With their straight forward, rugged design, 100W+ communication modules use substantially

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 100W+ offers peace of mind with a 20 year limited warranty.

## Lower Cost of Ownership

100W+ communication modules feature industry-leading battery life, ensuring your meter data collection investment achieves substantially better financial returns than competing products with batteries that typically last only ten or twelve years. When one considers the advancements in leak, reverse flow (absolute encoder version only) and tamper detection, 100W+ communication modules necessitate fewer field investigations and substantially lower expenditures for installation, meter reading, customer service and field service. And with a low battery alarm, these modules help utilities better plan and manage the replacement of units in the field.



100W+



100W-R+

## Leak Management

Water loss management is critical to any water utility's success. 100 Series modules can be paired with Itron's advanced acoustic Leak Sensor. The Leak Sensor collects and analyzes changes in pipe acoustics that indicate 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 use data from groups of 100W+ communication modules (District Metering) provide the utility with a highly accurate picture of the overall health of the water distribution system.

## Leak Data

The 100 Series collects and stores the data from the Leak Sensor. The Leak Sensor samples the pipe conditions every 22.5 minutes or 64 times daily. The 100 Series stores the 8 quietest analyses daily and will hold 20 days worth of data. This data is picked up during normal meter reading operations and seamlessly transfers the data to our hosted web based solution (mlogonline).

## 100W+ COMMUNICATION MODULE SPECIFICATIONS

The 100W+ is identified by its part number (ERW-1300-3XX or -4XX) and a + signifier.

## Functional

- » Power Source: Two "A" cell lithium batteries warranted for 20 years
- » 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 maximum of 1,000 hours
- » Humidity limits: 0 to 100% (Meets IP68 standards.)
- » 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: 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, as well as low battery indicator is transmitted every ten seconds in mobile mode. All this information and last 7 time synchronized consumption intervals is transmitted every six minutes along with a contingency SCM+ (Standard Consumption Message) every 60 seconds in fixed network mode.
- » Transmitter frequencies:
  - 908 - 924MHz (Standard Power) in mobile mode
  - 923 – 926.8MHz (High Power) in fixed network mode
- » Operates in bubble-up mode and does not require a license from the Federal Communications Commission (FCC) or Industry Canada (IC)
  - FCC Part 15.247
  - Industry Canada RSS-210

## Approved Network Reading Systems

- » Network system: Itron Fixed Network 100 Collectors and Repeaters (CCU 100 and Repeater 100) which offer full two-way communication capability.
- » ChoiceConnect Fixed Network software v4.1 or higher
- » If using enhanced security, Itron Security Manager (ISM) v1.0 or higher, is also required

## Approved Mobile Reading Systems for SCM+ alone

- » Mobile data collection hardware when used with software listed below:
  - Any MC3 radio with Mobile Collection Software 3.4 or higher
  - Any MC Lite radio
  - Any FC200 handheld computer with SRead radio
  - Any FC300 handheld computer with SRead radio
- » Mobile data collection software:
  - Multi-Vendor Reading System (MV-RS) v8.3 or higher
  - Field Collection System (FCS) v2.4 or higher

## Approved Mobile Reading Systems for Data Logging Reads

- » Mobile data collection hardware when used with software listed below:
  - Datalogging capable MC3 radios with Mobile Collection Software 3.4 or higher
  - Datalogging capable MC Lite radios
  - FC200 handheld computers with Datalogging capable SRead radio
  - Any FC300 handheld computer with SRead radio
- » Mobile data collection software:
  - Multi-Vendor Reading System (MV-RS) v8.4 or higher
  - Field Collection System (FCS) v2.5 or higher

## Approved Mobile Reading Systems for Enhanced Security Reads

- » Mobile data collection hardware when used with software listed below:
  - Datalogging capable MC3 radios with Mobile Collection Software 3.5 or higher
  - Datalogging capable MC Lite radios
  - FC200 handheld computers with Datalogging capable SRead radio
  - Any FC300 handheld computer with SRead radio
- » Mobile data collection software:
  - Field Collection System (FCS) v2.5 or higher
  - Itron Security Manager (ISM) v1.0 or higher

## Approved Programming Systems

- » FC200SR handheld computers
- » FC300SR handheld computers
- » 900 MHz Belt Clip Radio coupled with a laptop computer running FDM v3.3 or higher.
- » Field Deployment Manager (FDM) v3.3 or higher
- » If using enhanced security, Itron Security Manager (ISM) v1.0 or higher, is also required

The 100W+ encoder version does not require any programming—it automatically detects the register type within one hour of being connected.

Note: Neptune E-Coder registers require programming.



## Programmable Mode Options

- » Mobile/Handheld Mode
  - This is the standard mode in which all 100W+ communication modules will be shipped. This mode should be utilized when mobile or handheld meter reading will be the primary method of collecting the SCM+ or datalogging reads
  - The SCM+ will bubble-up in this mode every 10 seconds at standard power optimized for mobile read rate performance
  - The battery life for this mode is 20 years
- » Fixed Network (FN) Mode
  - This mode is to be utilized when fixed network will be the method of meter data collection
  - A high power Network Interval Message (NIM) will be transmitted every 6 minutes with a contingency SCM+ message transmitted every minute at standard power
  - FN mode can be programmed at the factory, during installation with an approved handheld device or through mobile application after initial installation and programming
  - The battery life for this mode is 20 years

## Programmable Mode Options (cont.)

- » Hard-to-Read Mobile/Handheld Mode
  - This 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
  - This mode will bubble-up an SCM+ at 30 seconds with high power output to optimize performance of these unique applications
  - The battery life of this mode is greater than 10 years
- » High Power Mobile Mode
  - This mode should be used when communication modules are installed in difficult to read environments and where standard mobile mode is not sufficient for satisfactory reading performance
  - This mode will bubble-up and SCM at 60 seconds with a higher power output to optimize performance of these unique applications
  - Battery life for this mode is 20 years

## 100W+ & 100WP+ Pit Dimensions

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

## 100W-R+ & 100WP-R+ Remote Dimensions

- » Height: 4.5 inches
- » Width: 5.05 inches
- » Depth: 1.47 inches
- » Weight: Approx. 9.6 oz.
- » Module cable length 10 inches
- » Remote models can be installed up to 300 ft from meter

## Mounting Options

The 100W+ and 100WP+ models have a compact housing and features specifically designed for water pit mounting options

- » Direct-mount for for Badger or Mueller meters
- » Rod-mount on a ½ inch diameter fiberglass or other non-metallic rods
- » Shelf-mount for pit lid manufactures that contain recessed cavity on the underside of the pit lid
- » 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

The 100W-R+ and 100WP-R+ models are designed for remote mounting applications

- » 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
- » Direct-mount for Badger meters



Itron is a global technology company. We build solutions that help utilities measure, monitor and manage energy and water. Our broad product portfolio includes electricity, gas, water and thermal energy measurement and control technology; communications systems; software; and professional services. With thousands of employees supporting nearly 8,000 utilities in more than 100 countries, Itron empowers utilities to responsibly and efficiently manage energy and water resources.

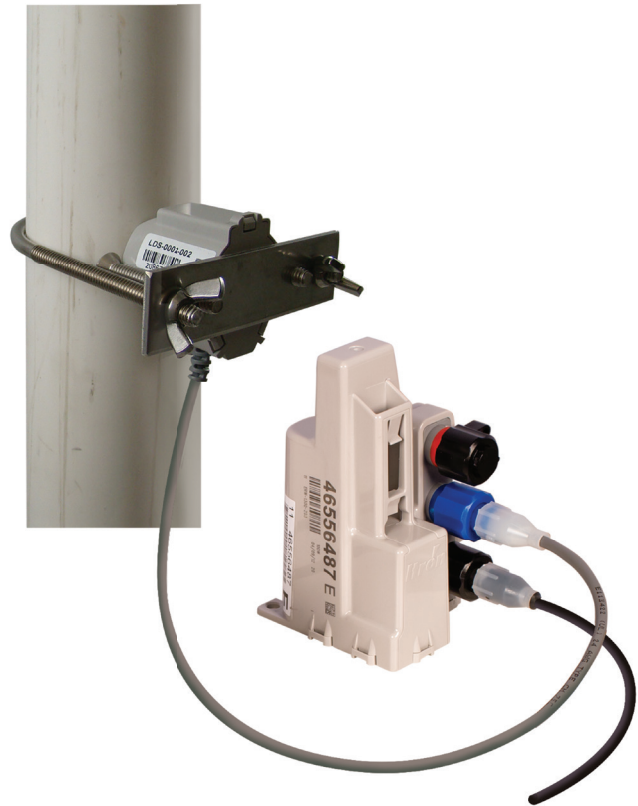
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# 100W+ with Leak Sensor+

The American Society of Civil Engineers estimates that seven billion gallons of water go unaccounted for every day in the U.S. alone. This can be attributed, in part, to the accuracy of the water meters in older systems. But more commonly, a good portion of this unaccounted for water is the result of leaking pipes and aging infrastructure.

With Itron's 100W+ communication module and an integrated Leak Sensor+, utilities now have a new approach to distribution system maintenance at their fingertips. The 100W+ communication module deployed with the integrated Leak Sensor+, monitors the utility's entire distribution system around the clock, acoustically surveying the integrity of the system.

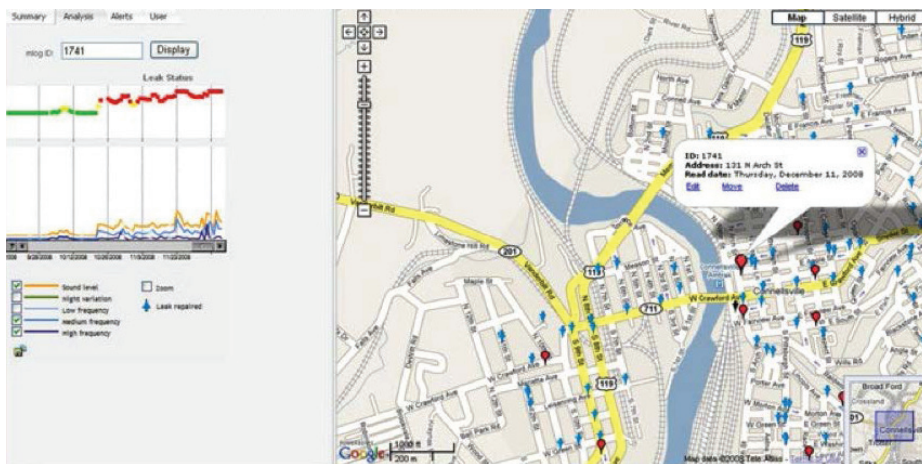
The 100W+/Leak Sensor+ helps utilities find small leaks before they become large, costly leaks for the utility.

## Integrated Technology

The 100W+ communication module offers advanced capabilities such as full two-way communications to the meter and time-synchronized interval meter data. Itron's data collection technology provides utilities with absolute flexibility, whether deployed in an Advanced Metering Infrastructure (AMI) environment, an Automated Meter Reading (AMR) environment, in walk-by situations or in environments where a hybrid solution makes the most sense depending on what best fits the utilities business needs.

The 100W+ communication module connects to a Leak Sensor+ via an in-line connector and is completely waterproof. Leak detection data can be gathered using either an FC300SR for walk-by downloading of data, Mobile Collector 3 (MC3) or Mobile Collector Lite (MCLite) for mobile AMR, or via Itron AMI fixed networks.

The level of flexibility with the 100W+ and Leak Sensor+ means the integrated pair can be used as a stand-alone leak detection system unattached to a water meter in either AMI fixed network, or AMR mobile environments.



## SPECIFICATIONS

### Leak Data

The 100W+ communication module collects and stores the data from the Leak Sensor+. The Leak Sensor+ samples the pipe conditions every 22.5 minutes or 64 times daily. The 100W+ stores the eight quietest analyses daily and will hold 20 days' worth of data. This data is picked up during normal meter reading operations and seamlessly transfers the data to our hosted Web-based solution, mlogonline™.

### Revenue Protection

Implementing a Water Loss Program gives a utility the ability to find revenue that is lost through leaks in their system. Finding and repairing these leaks provides real revenue savings by reducing the amount of water the utility either has to pump or buy.

With the 100W+/Leak Sensor+ system, utilities can protect their water revenues, with the potential to save hundreds of thousands of dollars each year.

### Water Meter Compatibility

The 100W+/Leak Sensor+ is compatible with industry-leading water meters from Itron—as well as those from all major manufacturers, enabling water utilities to consolidate all their water meters under a single system.

## Superior Performance

The 100W+/Leak Sensor+ utilizes 120 radio channels in fixed network mode and 50 radio channels in mobile and handheld modes, randomly selecting one channel for each data message. The 100W+ module will transmit the Fixed Network consumption messages at peak radiated power greater than 1 Watt.

### Reliability

100W+ modules feature a circuit assembly and battery pack that are fully encapsulated within a specially-formulated potting material to completely protect internal components from water, contaminants, corrosion, rough handling and temperature cycling.

### Lower Cost of Ownership

100 Series devices feature industry-leading 20 year battery life, ensuring your meter data collection investment achieves substantially better financial returns than competing products with batteries that typically last only 10 or 12 years.

## BENEFITS

The 100W+ with Leak Sensor+ delivers unprecedented leak detection capabilities, including:

- » Advanced acoustic leak detection monitoring and meter data collection in a compact form for easy field installation and lower cost of ownership
- » Automated capture and data transmission of actual vibration recordings to the utility for advanced analysis and applications, rather than simple yes/no flags
- » Historical leak detection data for interpretation, prioritization and leak mitigation

## 100W+ SPECIFICATIONS

### 100W+ Series ERT Module

The 100W+ ERT module is available in two housing designs, supporting both water pit and remote installations.

- » 100W+ is to be utilized with encoder registers in a pit environment
- » 100WP+ for pulser registers in a pit environment
- » 100W-R+ for encoder registers in remote applications
- » 100WP-R+ for with pulser registers in remote applications

### Functional

- » Power Source: Two "A" cell lithium batteries 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 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 Endpoint Meter Compatibility Guide (PUB-0063-002)

## Transmission Parameters

- » Data message: 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, as well as low battery indicator is transmitted every nine seconds in mobile mode.

All this information and last seven time synchronized consumption intervals are transmitted every five minutes along with a contingency SCM+ (Standard Consumption Message+) every 60 seconds in fixed network mode.

- » Transmitter frequencies:
  - 908–924 MHz (Standard Power) in mobile mode
  - 923–926.8 MHz (High Power) in fixed network mode
  - Operates in bubble-up mode and does not require a license from the Federal Communications Commission (FCC) or Industry Canada (IC)
    - FCC Part 15.247
    - Industry Canada RSS-210

## Approved Reading Devices for Collecting Datalogging Reads

- » Network system: Itron Fixed Network 100
- » Collectors and Repeaters (CCU 100 and Repeater 100) which offer full two-way communication capability
- » Drive-by system:
  - MC3 radio with Mobile Collection Software v3.4 or higher.
  - MCLite with MV-RS v8.3 or higher and FCS with v2.3 or higher
- » Walk-by system:
  - FC300 with SRead handheld computers with MV-RS v8.1 or higher and FCS with v2.3 or higher
  - FC200SR (part number FC2-0005-004 or FC2-0006-004 will support datalogging) handheld computer with MV-RS v8.1 or higher and FCS with v2.4 or higher

## Approved Reading Applications

Multi-Vendor Reading System (MV-RS) version 8.3 or higher software can read the

100W+ Standard Consumption Message+ (SCM+) and Datalogging with the following reading devices:

- » MC3 version 3.3 or higher
- » Multi-Vendor Reading System (MV-RS) version 8.3 or higher software can read the 100W+ Standard Consumption Message (SCM) and Datalogging with the following reading devices: MC3 version 3.3 or higher, FC200SR, FC300SR and MCLite
- » Field Collection System (FCS) version 2.4 or higher software
- » 900 MHz Belt Clip Radio with Field Deployment Manager (FDM) version 1.1 or higher software

## Approved Programming Devices

- » FC200SR with Field Deployment Manager (FDM) version 3.3 or higher software
- » FC300SR with Field Deployment Manager (FDM) version 3.3 or higher software
- » 900 MHz Belt Clip Radio Field Deployment Manager (FDM) version 3.3 or higher software

The 100W+ encoder version does not require any programming—it automatically detects the register type within one hour of being connected. 100W+ communication modules do not require a FCC license.

## Programmable Mode Options

- » Mobile/Handheld Mode
  - This is the standard mode in which all 100W+ communication modules will be shipped. This mode should be utilized when mobile or handheld meter reading will be the primary method of collecting the Standard Consumption Message+ (SCM+) or datalogging reads
  - The SCM+ will bubble-up in this mode every 10 sec. at standard power optimized for mobile read rate performance
  - The battery life for this mode is 20 years
- » Fixed Network (FN) Mode
  - This mode is to be utilized when fixed network will be the method of meter data collection

- A high power Network Interval Message (NIM) will be transmitted every 6 minutes with a contingency SCM+ message transmitted every minute at standard power
- FN mode can be programmed at the factory, during installation with an approved handheld device or
- through the mobile application after initial installation and programming
- The battery life for this mode is 20 years
- » Hard-to-Read Mobile/Handheld Mode
  - This 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
  - This mode will bubble-up an SCM+
  - at 30 seconds with high power output to optimize performance of these unique applications
  - The battery life of this mode is greater than 10 years
- » 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 mobile mode is not sufficient for satisfactory reading performance
  - This mode will bubble-up and SCM at 60 seconds with a higher power output to optimize performance of these unique applications
  - Battery life for this mode is 20 years

## 100W+ & 100W+P Pit Dimensions

- » Height: 4.5 inches
- » Maximum diameter:
  - Lower: 3.90 inches
  - Upper: Approx. 1.70 inches
- » Weight: Approx. 9.6 oz.
- » Module cable length without integral connector: 5 feet and 20 inches (for register direct mounting)
- » In-line connector register cables: 5 feet and 25 feet (ordered separately)
- » Pit models can be installed up to 300 Ft from meter

### 100W-R+ & 100WP-R+ Remote Dimensions

- » Height: 4.5 inches
- » Width: 5.05 inches
- » Depth: 1.47 inches
- » Weight: Approx. 9.6 oz.
- » Module cable length 10 inches
- » Remote models can be installed up to 300 ft. from meter

### 100W+ & 100WP+ Mounting Options

The 100W+ and 100WP+ models have a compact housing and features specifically designed for water pit mounting options.

- » Direct-mount for Badger, Elster and Hersey meters
- » Rod-mount on a ½ inch diameter fiberglass or other non-metallic rods
- » Shelf-mount for pit lid manufactures that contain recessed cavity on the underside of the pit lid
- » 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
- » The 100W-R+ and 100WP-R+ models are designed for remote mounting applications
- » 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
- » Direct-mount for Badger and Elster meters

\*Hardware/Software upgrades/updates may be required

- » 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 maximum of 1,000 hours
- » Humidity limits: 0 to 100% (submersible)
- » Maximum register cable length: 300 feet with Itron-approved cable and splice connectors
- » Meter compatibility: See the Water Module Meter Compatibility
- » Guide (PUB-0063-002)

### LEAK SENSOR+ SPECIFICATIONS

#### Sensing

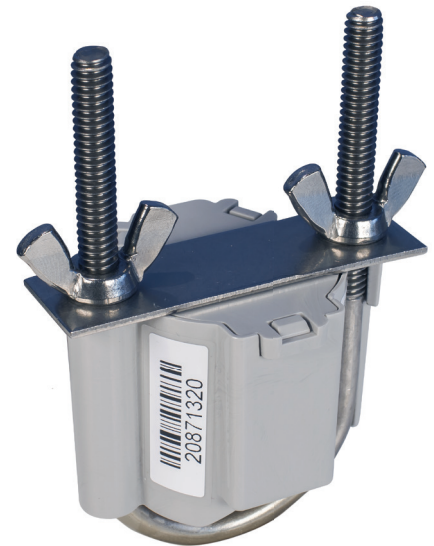
- » Sensitivity: 1V/g
- » Range: Up to ±300 linear feet of pipe
- » Bandwidth: 10Hz – 1,000Hz Power
- » Source: Powered by the 100W+ ERT module

#### 100W+ Functional Specifications

- » 100W+ Power Source: Two “A” cell lithium batteries warranted for 20 years
- » Maximum meter register pulse frequency (pulse version only): 4 Hertz

#### Leak Sensor+

- » Operating temperature: -10° to +50° Celsius



#### Leak Sensor+

- » Operating humidity: Up to 100% relative humidity
- » Product identification: Numeric and bar-coded serial number
- » Exposure rating: Sealed, water proof and submersible IP68
- » Housing: Molded glass-filled polycarbonate
- » Weight: 1.5 ounces (45g)
- » Dimensions: 1.2 x 1.5 (diameter) inches (3.0 x 3.8 cm)
- » Installation options: Sensor is installed permanently either indoors or outdoors on the water service pipe—usually near a water meter on the service line with a U-bolt, back plate and wing nuts
- » Can be mounted on service lines up to 2" in diameter



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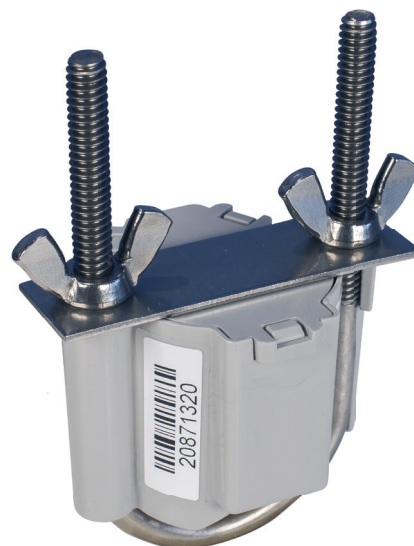
#### CORPORATE HQ

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**Phone:** 1.800.635.5461

**Fax:** 1.509.891.3355





# Leak Sensor+

It's estimated that up to 30 percent of water pumped through distribution systems is lost to leaks. In today's conservation-driven environment, water losses — and associated pumping and treatment costs — add up quickly. Distribution leak detection, and keeping system losses minimal, are important operational concerns for water providers.

The Leak Sensor+ is an advanced approach to distribution system leak detection. Part of Itron's advanced metering solution, for ChoiceConnect 100, the sensor is the result of merging the water meter module with an acoustic sensor to create a single point for collecting meter data and monitoring for distribution system leaks. The Leak Sensor+ leverages the robust network of ChoiceConnect 100. It offers unattended daily monitoring of leaks in distribution lines for proactive leak detection and timely mitigation. This reduces non-revenue water losses,

associated costs and potential service disruptions caused by major leak events. The innovation behind the Leak Sensor+ is a vibration sensor, amplifier, processor and bidirectional one-wire automated meter reading (AMR) interface. Every day the acoustic sensors analyze sound patterns in its environment, detecting new, evolving and pre-existing leaks automatically. Sensors attach to endpoints and transmit vibration recordings along with other metering information to the utility via walk-by, drive-by or fixed network data collection. An Itron web interface — mlogonline Network Leak Monitoring System — handles data interpretation and

analysis of the recordings and graphically displays all sensor locations using visual maps and satellite images, highlighting the status of leak locations.

An expanding database of historical information provides comprehensive condition assessment of the entire water distribution system.

Simple, affordable and technically superior, the Leak Sensor+ is sensible leak detection and location at optimal cost. Best of all, the Leak Sensor+ leverages the investment in fixed network meter data collection technology, often paying for itself within a few years.



## SPECIFICATIONS

### How It Works

#### Step 1:

An Itron Leak Sensor+ is deployed in the water distribution system.

#### Step 2:

The Analyze process receives readings by e-delivery to mlogonline™ (FTP or E-mail).

#### Step 3:

mlogonline™ Network Monitoring System computes a leak index for each Leak Sensor and assigns a leak status:

- No leak
- Possible leak
- Probable leak
- Out of Status

#### Step 4:

The 100W+ communication module generates messages, alerts and reports to direct leakage investigations and pinpointing activities.

mlogonline™ Network Monitoring System

The map shows leakage at a glance, overlaying leak indexes from sensors within an area of the water distribution system. The color image indicates areas of low (green) through high (red) leak index, using Leak Sensor+ advanced digital signal processing.

## TECHNICAL SPECIFICATIONS

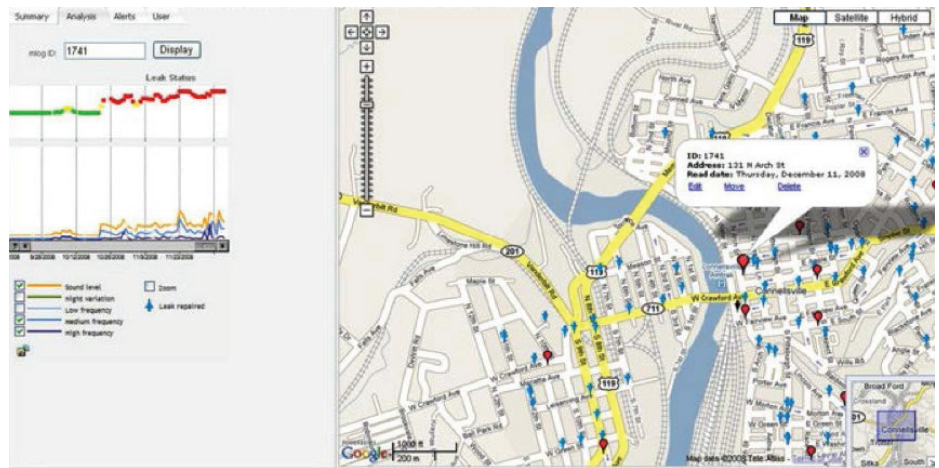
mlogonline™ Network Monitoring System

- » Operating systems: MS Windows® XP/2000/NT
- » Maximum number of sensors: Unlimited
- » Integrated water system maps

## SPECIFICATIONS BENEFITS

The Leak Sensor+ delivers unprecedented leak detection capabilities including:

- » Advanced acoustic leak detection monitoring and meter data collection in



a compact form for easy field installation and lower cost of ownership

- » Automated capture and data transmission of actual vibration recordings to the utility for advanced analysis and applications, rather than simple yes/no flags
- » Historical leak detection data for interpretation, prioritization and mitigation

### Sensing

- » Sensitivity: 1V/g
- » Range: Up to ±300 linear feet of pipe
- » Bandwidth: 10Hz – 1,000Hz

### Power

- » Source: Powered by the 100W+ communication module

### Physical/Environmental

- » Operating temperature: -10° to +50° Celsius
- » Operating humidity: Up to 100% relative humidity
- » Product identification: Numeric and barcoded serial number
- » Exposure rating: Sealed, waterproof and submersible IP68
- » Housing: Molded glass-filled polycarbonate

- » Weight: 1.5 ounces (45g)

- » Dimensions: 1.2 x 1.5 (diameter) inches (3.0 x 3.8 cm)

### Installation options:

Leak Sensor+ is installed permanently either indoors or outdoors on the water service pipe, usually near a water meter on the service line with a U-bolt, back plate and wing nuts

- » Can be mounted on service lines up to 2" in diameter

Water System Summary			
Last Updated: 1/21/2009			
573 leaks installed			
<input checked="" type="checkbox"/> 22 Probable Leak	<input checked="" type="checkbox"/> 485 No Leak Likely	<input checked="" type="checkbox"/> 225 Leaks	
<input checked="" type="checkbox"/> 41 Possible Leak	<input checked="" type="checkbox"/> 24 Out of Status	<input checked="" type="checkbox"/> 21 Noises	

mlog Devices - Summary			
ID	Address	Status	Rank
1685A	1311 W Crawford Ave	1	1
1685B	134 E Peach St	2	2
1685C	135 N Arch St	3	3
1685D	700 Rockledge Rd	4	4
1685E	114 N Prospect St	5	5
1685F	854 Marietta St	6	6
1685G	1922 Second St	7	7
1685H	400 Elm St	8	8
1685I	410 Trump Ave	9	9
1685J	100 W Blake Ave	10	10
1685K	212 E Cedar Ave	11	11
1685L	130 W Pioneer St	12	12

Leak/Noises			
Type	Details	ID	Address
Leak	10/18/2008	1724	221 S Prospect St
Leak	9/24/2008	1465	Declarer near Pula...
Leak	9/15/2008	1597	414 S. 9th Street

Leak Sensor+ information table displays all Leak Sensor+ data from one or more water distribution systems—sorting, searching and ranking all sensors by leak status:

- Probable leak
- Possible Leak
- No Leak Likely
- Out of Status

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