



# Itron Cellular 500G Module

The Cellular 500G Module is an IPv4 open standards-based gas module featuring cellular and radio frequency (RF) capability, and is designed to be read under Itron Internet of Things (IoT) network solutions or by ChoiceConnect™ handheld and mobile readers. With features for network operation—like firmware download, high-flow alarm, sub-hourly interval data and the ability to hop to a neighboring module for hard-to-read applications and extended data storage—Cellular 500G Modules provide the highest standards while continuing to offer the highest in reliability, accuracy, battery life, security standards, and intrinsic safety.

The Itron Cellular 500G Module is built on the legacy 500G platform, leveraging the same proven mechanical housings and counting mechanism which boasts an accuracy of 99.999 percent between the index read and endpoint read—an unprecedented benchmark in Advanced Metering Infrastructure (AMI) and Automated Meter Reading (AMR). The module also achieves the industry's highest UL rating for intrinsic safety.

The Cellular 500G Module brings together the best of the old with the innovation of the new in a two-way communications module. When programmed to network mode, it uses an IPv4 open standards-based protocol and can be read point-to-point in gas network areas over next-generation cellular LTE-M Cat-M1 networks.

Alternatively, Cellular 500G Modules can be programmed to mobile mode, where they operate identically to the 500G ERT® Module and can be read by legacy

ChoiceConnect handheld or via mobile drive-by, thereby leveraging existing reader investments. This allows utilities the flexibility of intermixing AMR 500G and 100G endpoints while simultaneously setting the foundation for less network reading infrastructure and the ability to connect you to the IoT.

Battery life, the traditional hurdle to non-electric cellular solutions, is a full 20-year life, regardless of being read over cellular or RF mobile read.

## IoT FEATURES

- » IPv4 open standards based for reading flexibility
- » Downloadable firmware assures future proofing and latest features without replacing the module
- » Programmable interval data from one minute to one hour for increased granularity to support investigations and load studies, along with meter right sizing support (any interval length evenly divisible by sixty minutes)
- » Continually stores and updates the last 3,840 intervals of data (160 days of hourly data or 40 days of 15-minute data, and so on) which can be read by the network or programming device
- » AES 256 enhanced security with authentication of command and encryption of communications data
- » Narrowband 500G RF mobile support transmissions for improved range

## Features

- » Operates in bubble-up mode and does not require a license from the Federal Communications Commission (FCC) or Industry Canada (IC)
- » Designed for a 20-year battery life (cellular or RF) to ensure low operating and maintenance costs
- » Module design makes installation fast and easy, especially when gas is flowing through the meter
- » Made in the USA at Itron's facility in Waseca, Minnesota

## Residential Meters

Itron provides an extensive line of direct mount Cellular 500G Modules for use with residential diaphragm gas meters. Capacities range from 75 to 630 CFH for popular models, including:

- » Honeywell/Elster American Meter
- » Sensus/Invensys/Equimeter/Rockwell
- » Itron/Actaris/Schlumberger
- » Sprague

Direct mount modules are also available for older Sprague 1A and Sprague 175M meters. The compact design and direct engagement with the meter drive ensures the unparalleled accuracy that makes Itron gas modules the industry standard.



**Itron I-250**



**Sensus/Rockwell R275**



**Elster American AC250**



**National 250**

NOTE: A remote mount module is available for some less common meter types where a direct mount solution is not available.

## Commercial Meters

Itron also provides direct mount Itron Cellular 500G Modules for use with the following commercial diaphragm meters:

- » Honeywell/Elster American Meter, Itron/
- » Actaris/Schlumberger and Sensus
- » Invensys/Equimeter/Rockwell

The unobtrusive profile is easy to install and the direct meter drive engagement ensures the highest level of accuracy.

Honeywell/Elster American Meter and Itron/Actaris/Schlumberger commercial diaphragm meters with top-mount instrument drives utilize the same version as the commercial direct mount module. For Honeywell/Elster American Meter commercial diaphragm meters, the module mounts directly to the meter. For Itron/Actaris/Schlumberger meters, an adapter kit must be purchased.

NOTE: A remote mount module is available for some less common meter types where a direct mount solution is not available.



**Itron 1000A**



**Sensus/Rockwell 750**



**Elster American AL 800**

## Rotary Meters

Itron has several solutions for interfacing with rotary gas meters. Itron offers the American residential 500G for GE/Dresser LMMA, B3, and Romet rotary meters with Dresser or Romet supplied AMI/ AMR adapter.

For GE/Dresser rotary meters with Instrument Drive (ID), Itron offers the direct mount designed for American commercial diaphragm meters.

For GE/Dresser, Romet and Honeywell/Elster American Meter rotary meters with pulse output (version 17 or higher require for Dresser) and a military connector pin, Itron offers the remote mount 500G.

## Correctors



**Dresser B3 with Direct mount**



**Dresser LMMA with Cellular 500G Module - Remote**



**Romet with Direct Mount**

Itron offers a remote mount Cellular 500G for Honeywell/Mercury Instruments EC-AT, Mini-P, Mini-AT, Mini-Max, and TCI electronic correctors. The module can be connected to these devices for temperature- and/or pressure-corrected consumption (Form A board required).

The module attaches easily to the Mercury corrector circuit board through the terminal strip connector already installed on Mercury units (module to TCI is wired). Itron offers a remote mount Cellular 500G Module for Dresser Micro Correctors (IMC/W, MC2), Eagle (MPplus, XARTU-1) and Romet AdEM. For Mercury, Dresser, Eagle and Romet, one Cellular 500G Module can be used for uncorrected consumption and a second module can be used for corrected consumption.



**Mercury Mini-AT**



**Dresser IMC**



**Eagle MPplus**



**Romet AdEM**

## Functional Specifications

- » Power source:
  - Direct mount module: single D cell lithium (LiSOCi2) battery
  - Remote-mount module: single D cell lithium (LiSOCi2) battery
- » Radio programming parameters: utility ID, index reading, count rate, index rollover, pressure compensation, security level, datalogging interval (network mode only), output power & bubble-up rate (mobile mode only)
- » Tamper detection:
  - Direct mount module: magnetic tamper
  - Remote mount module
- » Battery counter indicator
- » Operating temperature: -22°F to +158°F (-30°C to +70°C)
- » Operating humidity: 5 to 95% non-condensing relative humidity
- » Cellular 500G Modules can be installed indoors or outdoors
- » Product identification: Numeric and bar-coded module type and up to 10-digit serial number

## Datalogging Data

- » Network mode:
  - 3,840 buckets of interval data configurable from one minute to one hour (i.e. 160 days of hourly data or 62 days of 15 minute data)

NOTE: If configured for AMI Essentials, the interval link options are limited to only 15- and 60-minutes.

  - Interval options are 5-, 15-, 30-, or 60- minutes
- » Mobile mode:
  - 960 buckets of hourly interval data (40 days of hourly data)

## Programming Mode Options

- » Network mode should be chosen when being read by cellular networks. Output power is +23 dBm (200 milliwatts) and designed to transmit 3 times a day with a 20-year battery life.
- » Mobile mode should be chosen when being read by legacy ChoiceConnect readers.

## Functional Specifications

- » FC300SR: All models along with Field Deployment Manager (FDM) 4.3.8 or later
- » IMR with FDM 4.3.8 or later

## Reading Devices

Throughout a normal day of operations, the Cellular 500G Module collects and stores meter readings until the meter reading software requests it to be uploaded. The head end system is configured to request data from the module. The Cellular 500G Module is configurable to read as many as four times per day, capturing between 6 and 24 hours worth of data per read. This results in overlapping data capture that ensures 24 hours of data are collected daily. The recommended configuration is to request 24 hours of data, twice per day.

- » Network mode:
  - OpenWay® Riva™ or Temetra network for point-to-point cellular network reading
- » Mobile mode:
  - FCS 4.0.3 when using ISM; this includes switching from mobile mode to network mode
  - MV-RS 8.7 or later

## Reading Applications

- » Network mode:
  - OpenWay® Collection Manager
  - Temetra

## Battery Life and Design Life

- » Network and mobile modes support a 20-year battery life for hourly interval data
- » All Cellular 500G Modules are designed for a 20-year product life

## Regulatory & Standards

- » FCC compliance: Part 15.247, 15.249 (programming) certified
- » ISED compliance: RSS-247, RSS-210 (programming)
- » IC:
  - 864D-500GAC: American/Rockwell
  - 864D-500GDC: Itron/Sprague Residential, American/Itron, Sensus /Rockwell Commercial
  - 864D-500C: Remote
- » FCC IDs:
  - EWQ500GAC: American/Rockwell
  - EWQ500GDC: Itron/Sprague Residential, American/Itron, Sensus/ Rockwell Commercial
  - EWQ500C: Remote
- » Safety approvals: Intrinsically safe per UL Class I, Division 1, Group D
- » Measurement Canada: Pending

## Approved Mobile Systems and Devices when using Basic Security

- » Multi-Vendor Reading System (MV-RS) 8.7.3 or later with the FC300SR, MCLite and MC3 with Mobile Collection software 3.8.1.1
- » Field Collection System (FCS) 3.0 SP1 or later with the FC300SR, MCLite and MC3 with Mobile Collection software 3.8.1.1
- » FCS 4.0 or later with Itron Mobile 1.0 or later and the Itron Mobile Radio or MC3 Radio.
- » Temetra Mobile 1.10.1 or later with MC3, MC4 or Itron Mobile Radio

## Operational

- » All Cellular 500G Modules operate with approved FCC or ISED licenses

- » Frequency Range: Cellular based on Carrier, provided upon request. RF Frequency-Hopping Spread Spectrum 903 to 926.85 MHz in the ISM band
- » Program frequency: 908 MHz
- » Data integrity: Verified in every message

## Physical

All Cellular 500G Modules have encapsulated electronics for protection against environmental hazards and tampering. All Cellular 500G Module housings are made of gray polycarbonate. For direct mount residential modules, the gasket material is molded Sevrene™ and the index cover material is clear polycarbonate.

## Meter Compatibility

Refer to the *Gas Module Compatibility Matrix* for detailed information on gas meter compatibility.

## Related Documents

The following documents can be accessed and viewed at <https://products.itron.com>.

- » *Cellular 500G Module Technical Reference Guide*
- » *Cellular 500G Module Remote Mount Installation Guide*
- » *Cellular 500G Module Direct Mount Installation Guide*
- » *500G Modules Ordering Guide*
- » *Field Deployment Manager (FDM) Endpoint Tools Mobile Application Guide*
- » *Field Deployment Manager Tools (FDM) Configuration Guide*
- » *Field Deployment Manager Endpoint Checklist and Guide*
- » *Gas Module Compatibility Matrix*



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