

GPRS SmartMeter CENTRON®

introduction

CENTRON® GPRS SmartMeter

The Itron CENTRON solid-state electricity meter is available with a SmartSynch communications module for GPRS and Wi-Fi network communications. The SmartSynch module is integrated “under-the-glass” in the CENTRON electricity meter. This solution provides utilities with real-time access via public wireless networks to all critical data monitored and measured by the meter. The CENTRON GPRS SmartMeter communicates with a server running SmartSynch’s Transaction Management System™ (TMS) and complies with ANSI C12.19 protocols for data storage and transmission.

features

Key Functions and Features

- > Flexible Two-Way Data Retrieval
- > Scheduled and On-Demand Reads
- > Automated Interval Read Retrieval
- > Real-Time Interval Reads
- > Automated Register, Self-Read and TOU Retrieval
- > Demand Resets
- > Real-Time Meter Event and Alarm Retrieval
- > Real-Time Power Outage and Power Restoration Alarms
- > Service Diagnostics and Tamper Detection
- > Tilt Detection
- > Meter Clock Synchronization
- > SmartMeter Display Status
- > Automated Meter Registration
- > Secure and Encrypted Data Transmissions
- > Over-The-Air SmartMeter Module Firmware Upgrade

The SmartMeter module is a fully integrated under-the-cover option inside the CENTRON meter. The CENTRON GPRS SmartMeter is shipped as one complete unit, ready for field deployment.



features and benefits

Flexible Two-Way Data Retrieval and Scheduled Data Collection

- > Users can execute all appropriate TMS functionality using user configurable SmartMeter-controlled schedules and TMS-controlled schedules and as well as on an on-demand basis.

Automated Interval Data/Energy Usage Retrieval

- > The CENTRON SmartMeter module retrieves and transmits interval data for 1 unique energy value for intervals as small as 5 minutes. Recorded events and exceptions with each interval are also transmitted to the TMS, which interprets them and logs appropriate messages (e.g. time adjustments).

Real-Time Interval Reads

- > Real-time interval data acquisition enables utilities to implement Load Curtailment and Real Time Pricing (RTP) programs. With this functionality, the user can configure the SmartMeter module to transmit load profile data as often as every 15 minutes at interval completion.

Automated Register, Self-Read and TOU Retrieval

- > The CENTRON SmartMeter module is configured by the TMS to read and transmit all or a subset of enabled registers including totals, self-reads, maximum demand and time-of-use values.

Demand Resets

- > The CENTRON SmartMeter module executes Demand Resets using one of three methods: SmartModule-initiated schedules, TMS-initiated schedules or TMS on-demand requests.

Real-Time Meter Event and Alarm Retrieval

- > The CENTRON SmartMeter provides automatic real-time alarm reporting of all events defined in the ANSI C12.19 standard including history and event codes, ANSI Standard status and Manufacturer status alarms. Additionally, alarms received by TMS can be automatically routed via e-mail to a specific user or group of users using the TMS Message Routing Interface.

Real-Time Power Outage and Restoration Alarms

- > With built-in ultracapacitor energy storage, the CENTRON SmartMeter module will transmit a real-time "last gasp" notification when detecting an AC power outage without requiring the use of less reliable batteries. The CENTRON SmartMeter also notifies the TMS when the AC power is restored and provides full configuration of these alarms based on user-defined durations.

Service Diagnostic and Tamper Detection Alerts

- > The CENTRON SmartMeter can report power service and wiring errors detected by the meter, including reverse polarity, cross-phase and energy flow, phase voltage deviation, inactive phase current, phase angle displacement and current waveform distortion. In addition, the SmartMeter can detect and report exceptions for the following tamper events: number of Demand Resets, Loss of AC power, and reported power outages.

The TMS configures a specific filter in the SmartMeter for each of these events enabling the transmission of a corresponding alert only after the event is repeated a minimum number of times within a specific duration. The TMS can also configure the SmartMeter to reset the event counter when the alert message is transmitted.

Tilt Detection

- > The CENTRON SmartMeter can detect and report tilt events that occur when the SmartMeter is moved from its installation position.

Meter Clock Synchronization

- > If enabled, the SmartModule automatically adjusts the meter clock when the time deviation falls within user-defined lower and upper deviation boundaries based on a reference clock provided by the TMS. If the deviation exceeds the upper boundary, the module reports the deviation via an alarm but does not correct the meter clock. If the deviation is less than the lower boundary, the module ignores the deviation.

features and benefits

SmartMeter Status Display

- > The CENTRON SmartMeter supports an optional LCD status sequence to display important SmartMeter indicators periodically. This status sequence includes the meter site coverage status, SmartModule firmware state and any SmartModule firmware warnings/errors enabling technicians to ensure proper installation of the CENTRON SmartMeters and allow field troubleshooting without any other tools.

Automated Meter Registration

- > The SmartMeter module automatically transmits a registration message to the TMS when the meter is installed without requiring user intervention. This message permits the TMS to create or update the meter record with validated information ensuring accurate and automated record entries without user intervention.

Secure and Encrypted Data Transmissions

- > 128-bit encryption is applied to all messages exchanged between the TMS and the SmartMeter module, utilizing a unique meter specific encryption key.

Over-The-Air SmartMeter Module Firmware Upgrade

- > TMS users with administrator privileges can remotely upgrade the CENTRON SmartMeter module firmware for one or multiple communication modules.

Transmission Efficiency

- > In addition to support for allowing users to filter the number of meter channels and types of diagnostics that are returned, all wireless messages are converted to binary and optimally compressed before transmission to ensure the most economical data processing rates. The compression ratio can be as high as 50% and overall data usage can be as little as 5% of the total usage of other wireless systems.

Automated ID Tracking

- > Barcode labels and important identifiers (e.g. ICC-ID / MS-ISDN) are attached to the integrated SmartMeter for tracking and troubleshooting purposes.

On-Demand Data Reads For Virtual Disconnect

- > Customers can perform virtual disconnects through the TMS by retrieving a final read for one end-user and an initial read for a subsequent end-user. This function is also utilized to perform meter "switch-outs."

specifications

Regulatory and Industry Specifications

- > FCC Part 15 Class B
- > FCC Part 90 and FCC Part 1 (MPE)
- > ANSI C37.90.1 - 1989: (SWC)
- > ANSI C12.20 (Class 0.5) – 1998
- > PTCRB approval (in process)

Supported Meter Forms

- > Class 20: 3S, 4S
- > Class 100: 1S
- > Class 200: 2S, 12S, 25S
- > Class 320: 2S

specifications

Hardware Component	Description
Radio Control Module board (RCM)	Includes 32-bit ARM processor, 256K RAM, 512K flash
Capacitor Storage Bank (CSB)	Supplies peak power for data transmissions and all functions during power outages – no batteries required
Wireless modem	Modem communicates with the TMS
Internal Antenna	Flexible dual frequency antenna for the modem
External Antenna kit (optional)	External antenna & isolation circuit for the modem

Input/Output Signal or Interface	Definition / Values
Module Power Input Voltage	120 VAC
Meter Serial Interface	3.3V / TTL compatible asynchronous

SmartSynch TMS: Software version 5.0 or higher

PC-PRO+ Advanced: Version 7.20 or higher (Optical Programming)

Temperature

- > Operating: -40°C – +85°C
- > Transmission (GPRS): -40°C – +80°C

Humidity

- > 0% to 95% non-condensing

Accuracy

- > Meets ANSI 12.20 for accuracy class 0.5%

profile

Itron Inc.

Itron is a leading technology provider and critical source of knowledge to the global energy and water industries. Nearly 3,000 utilities worldwide rely on Itron technology to deliver the knowledge they require to optimize the delivery and use of energy and water. Itron delivers value to its clients by providing industry-leading solutions for electricity metering; meter data collection; energy information management; demand response; load forecasting, analysis and consulting services; distribution system design and optimization; web-based workforce automation; and enterprise and residential energy management.

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