



ITRON CENTRON® GPRS SMARTMETER

The combination of Itron's CENTRON® Meter with the GPRS SmartMeter Module from SmartSynch® introduces a powerful residential communication solution for utilities. SmartSynch's Transaction Management System (TMS™) manages all meters integrated with the SmartMeter module including the CENTRON GPRS SmartMeter. The integrated CENTRON GPRS SmartMeter utilizes ANSI communication standards to retrieve data and events for all the ANSI C12.19-1997 tables and standard manufacturer procedures.



Itron

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

SUPPORTED METER FORMS

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

HARDWARE COMPONENTS

- ◆ Radio Control Module Board (RCM)
- ◆ Capacitor Storage Bank (CSB)
- ◆ GSM Modem (Siemens MC56)
- ◆ Internal Antenna
- ◆ Tilt Detector
- ◆ Temperature Sensor

OPERATING RANGES

TEMPERATURE

- Operating: [-40°C, +85°C]
- Transmission (wireless): [-40°C, +80°C]

HUMIDITY

- 0% to 95% non-condensing

ACCURACY

- Meets ANSI I2.20 for accuracy class 0.5%

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)

SmartSynch, Inc.
1-888-362-1780
www.smartsynch.com



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FUNCTIONS AND FEATURES

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 GPRS 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 GPRS 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 GPRS 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 GPRS 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 Ultra Capacitor energy storage, the CENTRON GPRS 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 GPRS 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 GPRS 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 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 GPRS 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.

SMARTMETER STATUS DISPLAY

The CENTRON GPRS 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 GPRS 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 GPRS SmartMeter module firmware for one or multiple GPRS 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.”



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HARDWARE 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 |
| Siemens MC56 modem | GSM/GPRS modem communicates with the TMS using GPRS and SMS services |
| Internal Antenna | Flexible dual frequency GSM antenna for the MC56 modem |
| External Antenna kit (optional) | External GSM antenna & isolation circuit for the MC56 modem |

TEMPERATURE RANGES

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REGULATORY & INDUSTRY CERTIFICATIONS

FCC Part 15 Class B

FCC Part 90 and FCC Part I (MPE)

ANSI C37.90.1 – 1989: Surge Withstand Capability (SWC)

ANSI C12.20 (Class0.5) – 1998

PTCRB approval (in process)

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

INTEGRATION

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

VERSION AND COMPATIBILITY INFORMATION

CENTRON meter hardware: Supported meter forms, classes, and types equipped with battery.

CENTRON meter firmware: TBD

Module: CENTRON GPRS SmartMeter module Rev 1.0, FW - CENTRON GPRS 9.0 or higher

SmartSynch TMS: Software version 5.0 or higher

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