

TC032 MicroRTU™ (TC032)

Capacitor Bank Monitoring and Control

Description

The Sensus Distribution Automation (DA) TC032 MicroRTU™ system is a cost effective solution for monitoring and controlling fixed or switched capacitor banks. The TC032 system includes an integrated two-way radio module for communications. Models are available that communicate using GSM cellular networks or Sensus FlexNet™ private radio networks. Units can be monitored and controlled from central Volt/Var applications or utility SCADA systems through Sensus' SCADA-Xchange™ application. Engineers, planners and field technicians can simultaneously check status using Sensus' PowerVista™ applications.



Features

APPLICATIONS

The units are ideally suited for smart grid distribution automation applications such as Volt-Var optimization or central control applications for switched capacitor banks.

The Sensus DA TC032 MicroRTU system with the GSM cellular module transmits data using General Packet Radio Service (GPRS) technology over the AT&T cellular data network. The units can be installed anywhere AT&T GSM/GPRS service is available, including their roaming partners. No license or local cellular account is required.

Models with FlexNet radios communicate using packet data over Sensus FlexNet private networks. The units can be installed on any FlexNet system using RNI software version 2.1 or higher.

FlexNet enabled models incorporate all of the standard system security features. Cellular models use standard cellular authentication and encryption which is augmented with additional security features from Sensus.

Units can be monitored and controlled from central Volt/Var applications or utility SCADA systems through Sensus' SCADA Xchange™ using DNP3.0/IEEE 1815 protocol. Engineers, planners and field technicians can simultaneously check status using PowerVista™ applications.

FEATURES AND BENEFITS

- Includes local voltage and temperature switching strategies
- SCADA override of local strategies
- Provides capacitor bank control through two 30 Amp relays. After a switching operation, the acknowledgement report includes the AC line voltage, open/close status and the capacitor bank neutral current.
- Capacitor bank neutral current is measured with a 0-100A current sensor. A neutral current of zero indicates that the installation is switched out of service. Normal neutral current (a nominal value above zero) when the bank is closed indicates the bank is in service and the installation is operating as expected. A neutral current that is higher than average, but below a predefined limit, indicates the presence of high harmonic current or abnormal conditions, which may indicate a potential problem. A higher, pre-defined level of current indicates a blown fuse or other serious problem.
- Neutral current alarm retry capability
- Easily accessible local/remote switch disables remote operation; the position of the switch is reported when changed
- Local control delay gives operators time to move a safe distance from the equipment before the capacitor bank is switched
- Pending operation indication warns operators of any pending bank switching operations
- An Amphenol connector allows easy neutral current sensor installation
- Reports under and over voltage conditions, as well as momentary and continuing power outages

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FEATURES AND BENEFITS

Continued

- Includes PowerVista applications to provide monitoring, control and configuration options. The PowerVista applications can be used in simultaneously with SCADA-Xchange.
- All setpoints and operating parameters are user programmable from remote locations using a standard PC browser through the PowerVista application.

Communication is initiated in three ways:

- Automatic report upon status change
- Time-scheduled reports from once every minute to once every 1000 hours in 1 minute increments
- User requests reports through PowerVista applications or from a SCADA system

Remote Control and User Notification

- PowerVista applications can be used to configure rule-based actions and user notifications that are performed based on the TC032 reports. Examples include:
 - Notify a designated person of a status change
 - Send pre-determined control commands back to the TC032, or to a different MicroRTU
 - Notify a customer by e-mail, pager or text messaging with data from the TC032.

POWERVISTA APPLICATIONS

- Each customer has a secure account that provides access to their equipment

- Data is secure and password protected
- Server authentication using 128-bit encryption key validated by VeriSign Trust Certificate
- E-mail, text messages and pager notifications are included at no extra cost

SCADA INTERFACE

With Sensus DA SCADA-Xchange, a SCADA system or other application can communicate with the TC032 using DNP3.0/IEEE 1815 protocol. This allows the SCADA system to monitor the TC032 line voltage, neutral current and capacitor bank switch position, and send control commands to open or close the capacitor bank. (See *the SCADA-Xchange datasheet for more details.*)

Specifications

Point Count

- 0 Digital inputs
- 3 Analog inputs
 - voltage
 - ambient temperature
 - neutral current
- 2 Digital outputs
- 1 Battery monitor (with optional battery)

Digital I/O

Digital Outputs

- Two Form "A" mechanical relays, 30-Amp, 240 VAC inductive; 20-Amp, 30 VDC
- Momentary operation
- Local/remote switch enables/disables remote control

Analog Input

- 12-bit A/D conversion
- 0 – 10 VAC, true RMS
- Three set points and trigger times
- 120 VAC control power monitor is standard

- Over and under voltage monitoring
- Outage reporting (with optional battery)
- Configurable over/under voltage thresholds and trigger times

Communications

Local Serial Ports

- USB 2.0 compliant, full speed
- Supports a Windows based local configuration and test program that is included

Cellular Data Network

- Two-way communications – all commands are acknowledged
- Transmit power: 1mW to 1.2W
- Dual-band, supporting GSM/GPRS 850/1900MHz
- End-user license/local cellular account not required
- Phantom omni-directional antenna

FlexNet Network

- Two-way communications – all commands are acknowledged
- Transmit power: 2 W
- Frequency: 900 MHz band, Primary licensed
- Phantom omni-direction antenna

Operating Power

- 100 – 135 VAC, 60 Hz

Environmental Data

- Operating Temperature Range: -30° to +70°C (cellular) -40° to +70° C (FlexNet)
- Electrical Transient Immunity: ANSI/IEEE C37.90.1; ANSI/IEEE 62.41, 6kV
- Surge Suppression: EN61000-4-4 & EN61000-4-5
- Radiated Emissions: FCC Part 15 Class B, EN 55022

Enclosures

The standard enclosure features include:

- 4-jaw socket mounting
- Fiberglass reinforced polyester, NEMA 3R rating

- Hinged door with padlocking hasps
- Dimensions: 10.5”H x 8.5”W x 8.5”D
- Weight: 13 lbs

Additional Product

Configurations

- 4.5 AH battery backup option – only required for outage reporting
- Metal enclosure (not available with optional battery)
- A variety of antenna options

| Model | Radio | Frequency | Protocol |
|----------------|----------|-------------|----------|
| TC032-GSM-FRP | GSM/GPRS | 850/1900MHz | DNP |
| TC032-FLX9-FRP | FlexNet | 900MHz | DNP |

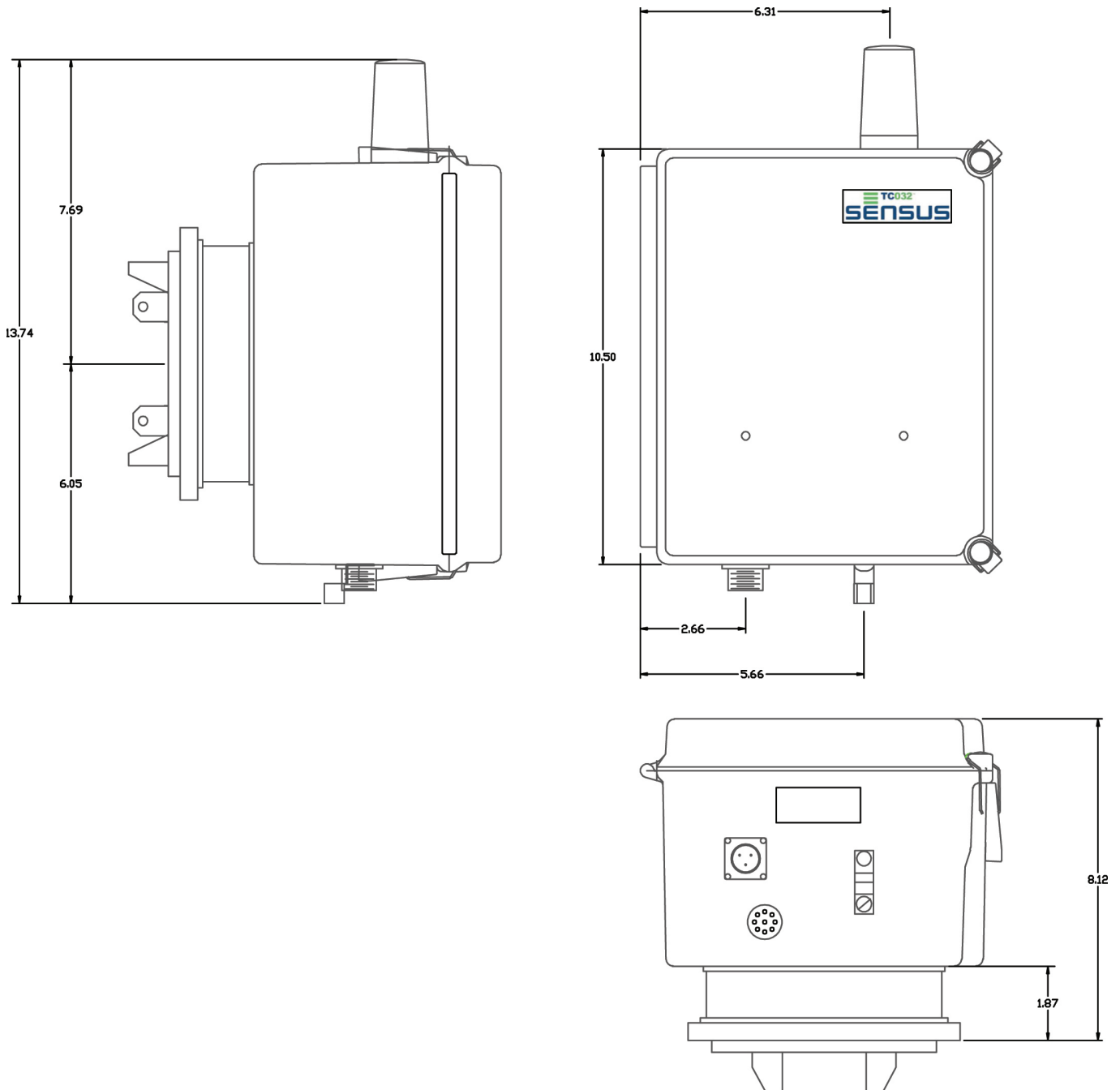
Models

- Models with GSM/GPRS radios communicate using General Packet Radio Service (GPRS) over the AT&T GSM cellular data network. The units can be installed anywhere AT&T GPRS service is available, including their roaming partners.
- Models with FlexNet radios communicate using packet data over Sensus FlexNet private networks. The units can be installed on any FlexNet system using RNI software version 2.0.1 or higher.

See device drawings on next page.

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For more information, visit us at www.sensus.com

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