

# Sensus TC032 MicroRTU™

Remote Capacitor Bank Control

## Description

The Sensus Distribution Automation TC032 MicroRTU™ is a cost effective solution for monitoring and controlling fixed or switched capacitor banks. The TC032 integrates the Sensus FlexNet two-way radio module for communications over the IP-enabled Sensus FlexNet™ private radio network. Units can be monitored and controlled from central Volt/Var applications or utility SCADA systems through the Sensus SCADA-Xchange™ application. Engineers, planners, and field technicians can simultaneously check status and configure the TC032 MicroRTU using the Sensus AutomationControl™ application suite.



## 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.

Models with FlexNet radios communicate using packet data over Sensus FlexNet private networks. The units can be installed on any FlexNet system that is configured to support the AutomationControl™ application platform.

FlexNet enabled models incorporate all of the standard system security features. Units can be monitored and controlled from central Volt/Var applications or utility SCADA systems through SCADA-Xchange™ using DNP3/IEEE 1815 or IEC 60870-5-101/105 protocols. Engineers, planners, and field technicians can simultaneously check status using AutomationControl™ 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
- Includes AutomationControl applications to provide monitoring, control and configuration options. The AutomationControl applications can be used simultaneously with SCADA-Xchange.
- All setpoints and operating parameters are user programmable from remote

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## FEATURES AND BENEFITS

*Continued*

locations using a standard PC browser through the AutomationControl 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 AutomationControl applications or from a SCADA system

### Remote Control and User Notification

- AutomationControl 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 email or text messaging with data from the TC032 (future feature)

### AutomationControl™ Applications

- The AutomationControl application is a powerful and flexible suite of tools for managing communications and distribution system equipment.
- Access equipment status from any PC using a standard browser
- Each customer has a secure account that provides access to their equipment
- Data is secure and password protected

- No master software is required
- Manage equipment, communications and users
- Monitor and control field equipment
- Automated user notifications (by email or text message) provide immediate information on events such as a recloser lockout or low voltage/outage conditions (future feature)
- Device history logs all communications with equipment
- Request equipment status and analog values at any time (future feature)
- Tools for communications diagnostics and data volume monitoring
- Encryption and key rotation. Sensus uses industry-standard Advanced Encryption Standard (AES) 256-bit key encryption to secure data in transit over the FlexNet™ system.
- Sensus offers AutomationControl as a flexible and secure cloud-based Software as a Service (SaaS) solution

### SCADA Interface

With Sensus Automation SCADA-Xchange, a SCADA system or other application can communicate with the TC032 using DNP3/ IEEE 1815 or IEC 60870-5-101/105 protocols. 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.

## Specifications

### Point Count

- 0 Digital inputs
- 3 Analog inputs
  - voltage
  - ambient temperature
  - neutral current
- 2 Digital outputs
- 1 Battery monitor

### 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
  - Configurable over/under voltage thresholds and trigger times

### Communications

#### Local Serial Ports

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

#### FlexNet Network

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

### Operating Power

- 100 – 135 VAC, 60 Hz

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## SPECIFICATIONS

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### Environmental Data

- Operating Temperature Range: -40° to +70° C
- 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 included in standard product configuration
- A variety of antenna options
- Neutral Current Sensor, 0.750" or 0.850"

## Models

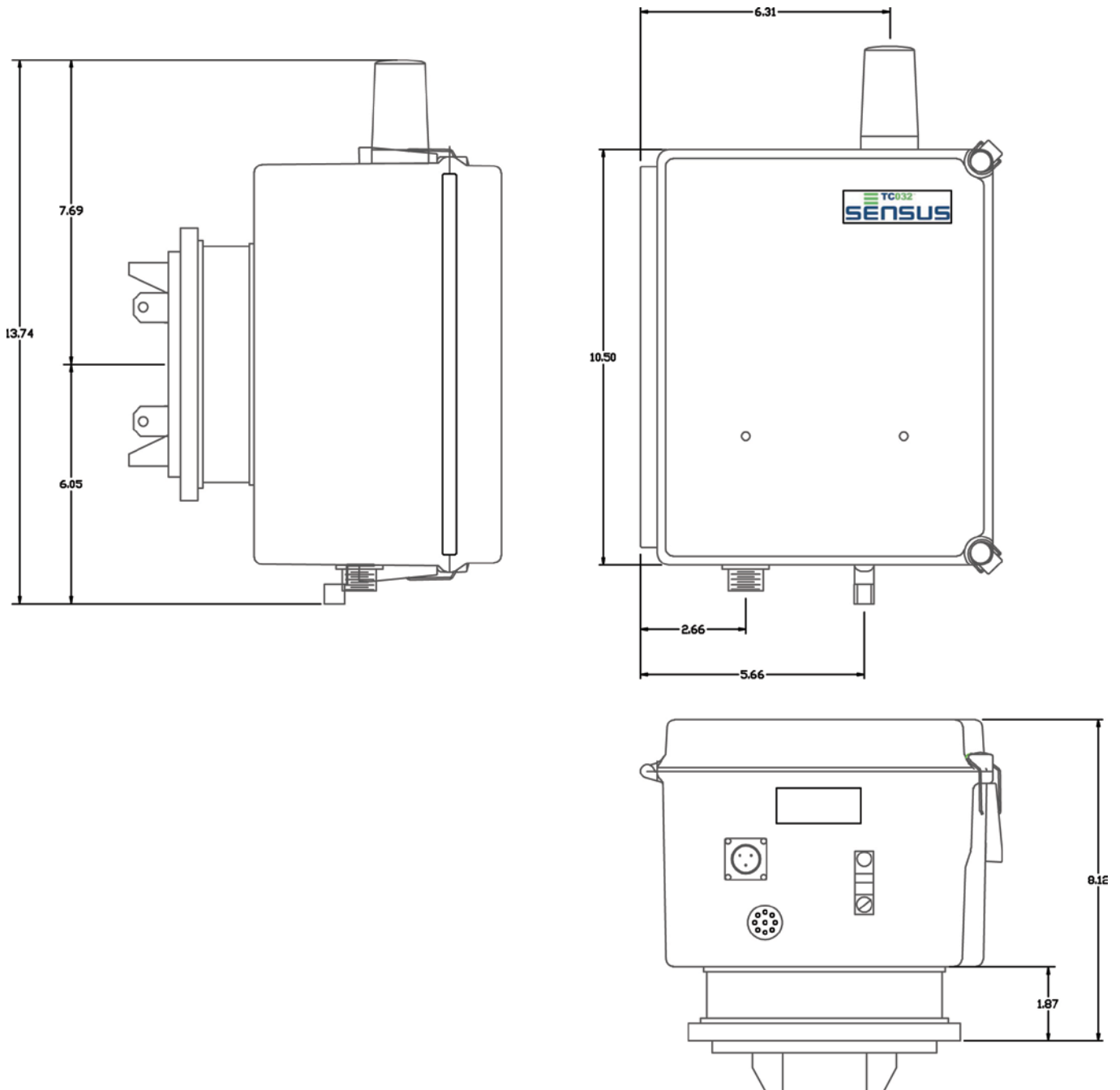
Model	Radio	Frequency	Protocol
TC032-FLX9-FRP	FlexNet	900MHz	DNP

Models with FlexNet radios communicate using packet data over Sensus FlexNet private networks. The units can be installed on any FlexNet system that is configured to support the AutomationControl™ application platform.

See device drawings on next page.

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For more information, visit us at [www.sensus.com](http://www.sensus.com)

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