Wireless Remote Monitoring Over the Internet

The ScadaNET Network™ is a wide-area, wireless communications system designed for remote alarm monitoring, data acquisition and control. Combining the wireless reach of the existing cellular telephone network with Internet information delivery and a powerful back-end administrative database, ScadaNET is a low cost, highly reliable solution for alarm and status monitoring of railroad crossings, pipelines, oil and gas compressors and other remote equipment.

Monitored Channels
- Power and Battery Voltage
- Gate Position and Timing
- Flow, Level, Temperature, Pressure, Analog and Digital Inputs

Serial Connection
- CellularRTUs
- CellularRTU Configuration Application
- Internet Access Using a Standard Web Browser
- Email Alarm Notification
- Alpha Numeric Pager Alerts
- Facsimile Alarm Reports

Digital Control Channels of the Cellular Network
- Internet, VPN or Frame Relay Connections
- ScadaNET Network

Remote Site Equipment
- Status Monitoring and Control
- Notification and Delivery

The ScadaNET Network™ is a unique and innovative remote communication network for wide-area industrial monitoring and control applications. Providing a proven solution where costly and inflexible private radio communication networks cannot, the ScadaNET Network offers the economy and reliability of a shared access, fully managed and maintained network. Based on a seamless integration of proven telecommunications and network technologies, the ScadaNET Network is the only wireless transport solution available with wireless coverage in place and fully supported throughout North America.

For monitoring a small number of remote sites in a local area or for consolidating the status of thousands of units distributed over entire regions, the ScadaNET Network’s automated alert and network management functions are unmatched for flexibility and ease of use.
The CellularRTU

The CellularRTU™ is a family of multiple-channel, Internet-accessible remote terminal units engineered for monitoring and alarm reporting from highway-rail grade crossings, cathodic protection rectifier installations, water lift stations, tank farms, gas and oil well equipment, and other remote sites. The Cellular RTU is available in a number of models and configurations — from two-channel to ten-channel units, all featuring user-selectable digital and analog inputs, plus specially provisioned models that specifically meet the requirements for applications like monitoring railroad crossing equipment or reading pipe-to-soil potentials in pipeline cathodic protection applications.

Ideally Suited for Wide-Area, Remote Monitoring Applications

The rugged CellularRTU has been engineered specifically for the demanding requirements of remote monitoring and control applications. All input and output circuitry is fully isolated and able to withstand extreme transient conditions. Optional battery backup systems ensure that critical functions will be continuously monitored despite primary power malfunctions.

Using the existing cellular telephone network for wireless communications, installation of a CellularRTU is simple and setup is virtually automatic. No radio site surveys or special antennas are necessary, the licensed channels are already present, and there is no threat of frequency re-allocation. All wireless communication is in digital format, ensuring that reliable communication is available even in areas where voice cellular coverage may be marginal.

The Cellular RTU is Flexible and Intelligent

All operating characteristics of each input and output can be easily configured and permanently stored in the unit’s memory. By connecting a laptop or desktop computer to the unit’s built-in serial port and using ConfigRTU™, a Microsoft® Windows®-based application, all configuration options of the CellularRTU can be viewed, simulated, and modified. An automatic audit feature even checks the validity of your selections to help ensure that the CellularRTU will perform as intended.

The configuration parameters for a CellularRTU can be saved to and loaded from a disk file, permitting easy replication of a given behavior at multiple sites and/or as an archive backup of an individual unit. This feature also allows a CellularRTU configuration to be reviewed and modified “offline” then transported to the site for upload.

ConfigRTU also supports a comprehensive suite of diagnostic and trouble-shooting tools that are useful to verify the correct operation and installation of the CellularRTU.

The ScadaNET Network

The CellularRTU is the field component of the ScadaNET Network, a wireless communication system deployed throughout North America. This advanced network seamlessly integrates several common, proven communication technologies in everyday use — the cellular telephone network, the Internet, email, fax, pocket pagers — to create a powerful, yet low-cost, solution for alarm notification and periodic measurement applications.

Advanced Management and Control

The current status of each CellularRTU is available from its own secure web page, visible only to authenticated users. This secure Internet access is also used to configure the operation of the entire system, including the definition of site names, locations and alarms, establishing the recipients of alarm notifications and the administration of authorized users such as passwords, permissions, restrictions and organizational structure. No special software is necessary to access the ScadaNET Network in this manner — a standard web browser such as Microsoft® Internet Explorer® is the only host application required.

Powerful Notification and Alert Functions

The ScadaNET Network can provide notification of alarm conditions and events to multiple recipients over a variety of media — both public and private. Event notification can take the form of an email message, a facsimile report and/or an alphanumeric page. The operation of this function can be readily tailored to a specific application. Alarm triggers, reporting delays, notification recipients, methods, priorities, message content, and system advisory alert participation are all user-configurable via the ScadaNET web interface.

In addition, the ScadaNET Network can exchange information directly with an organization’s existing Intranet or enterprise data network using standard inter-networking technologies such as a Virtual Private Network (VPN) or a frame relay backbone. In this manner, the remote CellularRTUs virtually become part of the private computer network, allowing data to be directly accessed by existing dispatching applications or trouble ticket systems.

Reliable and Secure

The ScadaNET Network is at work 24 hours a day. Designed, operated and managed to meet the performance demands of critical alarm and status monitoring applications, redundant equipment, facilities and connections ensure continuous access to the field of CellularRTUs. Permanent buffers are maintained at every critical node, so no data is ever lost. The network itself triggers alert procedures if any operational or communication abnormalities are sensed.

Information is as safe from tampering as it is from loss. The ScadaNET Network employs many layers of security, including address validations, self-administered user authentication, and challenge/response encryption for all inter-networking traffic. Data is secure and fully protected from unauthorized access.
CellularRTU Specifications

Model P2S Monitor

Sensor Input
Range: -5.0 to +5.0 Volts
Resolution: 1 mVolt
Accuracy: 20 mVolts (-20 C to 70 C, 5 years)
Input Impedance: 20 Megohms

Data Logging
500 Measurements, Non-Volatile Memory (FRAM)
Real-Time Clock Date and Time Stamp (Y2K Compliant)
Average, Minimum, and Maximum Values
Circular Buffered (LIFO) Data

Internal Alarm and Diagnostics
Battery Status
Tamper Alarm
Radio Communication Metrics and Message Audit

Power Requirements
Lithium/Sulphur Dioxide Battery, 10-Year Life, Nominal Operation

Communications Specifications
Transport: Cellular Control Channel, Cellemetry
RF Power Output: 3 W Peak
FCC ID: APV0896

Physical and Environmental Specifications
Sealed Tamper-Proof Enclosure
Size: 5" L x 4" W x 5" H
Mounting: Flange Wall Mount or Pipe Mount, ¾ “ to 2” Diameter
Weight: 4 lb
Operating Temperature: -40 C to +70 C
Storage Temperature: -40 C to +85 C

Regulatory Compliance
Class I, Division 2, Factory Mutual 3611 (Pending)
ESD: EN 61000-4-2, 4 kV Contact, 8 kV Air Discharge
Radiated Immunity: EN 61000-4-3, 10 V/m 80 MHz to 2 GHz
Conducted Immunity: EN 61000-4-6, 10 Vrms 150 kHz to 80 MHz
Radiated Emissions: FCC Part 15 Class B, EN55022 Class A
Conducted Emissions: EN55022 Class B
Voltage Deviation Immunity: EN 61000-4-11
Surge/Lightning Immunity: EN 61000-4-5, 2 kV
Electrical Fast Transient: EN 61000-4-4, 2 kV

Specifications contained herein are preliminary.

The new PS2 Monitor is designed for one- and two-channel, battery-powered monitoring and data acquisition applications.

Model cRTU-5, cRTU-6, cRTU-10

CRTU-5 Inputs & Outputs
4 Channels, Convertible Digital/Analog
1 Channel, Relay Output, SPST 6 A@120 VAC, 6 A@24 VDC

CRTU-6 Inputs & Outputs
5 Input Channels
- Internal Power Input Monitor, 0-30 VDC
- 3 Convertible Digital/Analog (Option 2AN)
- 1 Fixed Analog 0-30 VDC Input (Option 2AN)
- 4 Convertible Digital/Analog (Option 1AN)
1 Channel, Relay Output, SPST 6 A@120 VAC, 6 A@24 VDC

CRTU-10 Inputs & Outputs
8 Channels, Convertible Digital/Analog
2 Channel, Relay Output, SPST 6 A@120 VAC, 6 A@24 VDC

General Input Specifications
All Analog and Digital Input Channels Optically Isolated to 2500 V

General Power Requirements
12 to 20 VAC or VDC @ 40 W (cRTU-5)
8 to 30 VDC @ 40 W (cRTU-6, cRTU-10)
Optional Standby Battery Capacity: 24 hours

General Communications Specifications
Transport: Cellular Control Channel, Cellemetry and Microburst
RF Power Output: 3 W Peak
FCC ID: APV0896

General Physical and Environmental Specifications
CRTU-5 and cRTU-6 Size: 8” L x 5” W x 1.75” H Weight: 5 lb
CRTU-10 Size: 12” L x 5” W x 1.75” H Weight: 6 lb
Mounting: Flange Mount
Operating Temperature: -40 C to +70 C*
Storage Temperature: -40 C to +85 C

General Regulatory Compliance
ESD: EN 61000-4-2, 4 kV Contact, 8 kV Air Discharge
Radiated Immunity: EN 61000-4-3, 10 V/m 80 MHz to 2 GHz
Conducted Immunity: EN 61000-4-6, 10 Vrms 150 kHz to 2 GHz
Radiated Emissions: FCC Part 15 Class B, EN55022 Class A
Conducted Emissions: EN55022 Class B
Voltage Deviation Immunity: EN 61000-4-11
Surge/Lightning Immunity: EN 61000-4-5, 2 kV
Electrical Fast Transient: EN 61000-4-4, 2 kV

Optional Equipment
Power Supplies
- 120 VAC/240 VAC Transformer
- 12 V External Battery Backup System

Antennas
- Exterior Surface Mount, Radome Style
- External Yagi

Analog Input and Signal Conditioning Modules
- 0-5/30/300 VDC, Single Channel, External
- 0-100m VDC, High Impedance, Single Channel, External
- 0-3 VDC, High Impedance, Single Channel, External
- AC Input Filter Module

For more information, contact:

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Product specifications are subject to change without notice. Patents pending.