

## RTU-1 Data Logger / Wireless RTU for Remote Site Monitoring and Control

### Features

- o Long battery life and flexible communications
- o Report by exception on analog and discrete inputs
- o Low DC power: 80 uA from 12 volt source
- o Supports cellular, spread spectrum, telemetry & dial-up
- o RF, ESD and current overload protected all I/O
  - 1 - 4 analog inputs; expandable via Modbus
  - 0 - 4 digital inputs; expandable via Modbus
  - 0 - 2 contact closure outputs; expandable via Modbus
- o CMOS multiprocessor design
- o -40°C to +70°C operating temperature range
- o Solid state non-volatile logger memory (up to 64K)
- o Battery powered with optional solar or AC
- o 1 or 2 Serial ports
- o Optional Modbus port

### Overview

The RTU-1 places a level of intelligence at your remote site – featuring data logging, flexible communications and database reporting from sites located worldwide. Economical, unattended reliable operation – for long periods of time – is standard for the gear

The RTU-1 module operates with very low power and has unique radio, analog / digital sensor and solar panel - connect capability. Low power consumption is realized with a multiprocessor CMOS design and smart power management features. Operating simultaneously as an RTU and data logger, the RTU-1 can communicate field exceptions or be polled periodically while data is logged in a 52-day deep non-volatile memory. A wide range of NEMA style packaging, sensor interfaces, communications systems, and power systems are available as options.

### Communications

The RTU-1 is compatible with dial-up modems, 2-way (voice) telemetry radios, cellular, unlicensed spread spectrum, serial (RS232/485), 10BaseT (Ethernet), and worldwide satellite. Up to 10,000 units may be deployed with any mix of communications and managed by a digital communications protocol within each unit and the host RadioLog software. If communications fails, data is not lost - local logging continues to internal memory at the affected remote site.



### Applications

Gas Pipeline and Storage  
Wellhead Monitoring  
Corrosion Systems  
Structure Monitoring  
Water / Wastewater  
Gas / Electric Utility  
Environmental

### Modbus Port at Remote Site

The RTU-1M is a Modbus capable version of the standard RTU-1. A second RS-232 serial support on the unit provides the Modbus interface. The port operates as a Modbus slave, allowing external data at the site to be logged into the unit using Modbus protocol from a PLC or other site device.

Contact Synetcom in CA at  
(310) 379-2000 for more  
information.

## Applications

The RTU-1 is applied at remote sites where analog and digital status is to be monitored and reported. Routinely, daily average, high, and low readings for each analog channel are automatically calculated and reported back to a host PC.

Sensors with standard industrial current, voltage or serial digital interfaces drive each RTU-1 channel. Site remote control is achieved using two site switch closures (dry contact) - commanded from host PC application software.

Analog and digital exceptions (alarms) initiate automatic dial-out / host contact. Sites can also be polled continuously via host software.

Cabling between RTU-1 and site sensors is eliminated using the RTU-1 compatible "WISE" Wireless Sensor Link. WISE accommodates up to 8 remote analog/digital sensors operating from 1000' to 10 miles away.

A network of RTU-1 field units is monitored and controlled by host PC Windows "RadioLog" software. Field history and status data is logged to Access - formatted database files which facilitate MIS operations including report generation, LAN data access and archival functions. No custom software is required.

## Simplified.Site.Maintenance

At the remote site, service personnel verify RTU-1 unit operations and remote communications by pressing a single "Test" pushbutton located on the unit. The button also clears an "Alarm" LED, allowing the operator to confirm that all site parameters are within tolerance - no PC required.

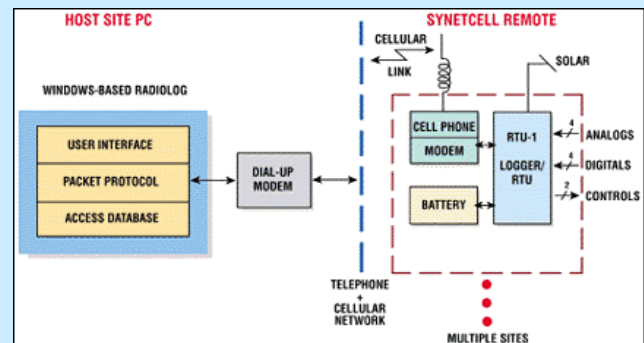
## Other Built-In Features

- Up to four analog input channels, 16 bit delta-sigma A/D
- Up to Four discrete input channels
- Real-time calendar / clock
- Battery voltage monitor
- Logger Memory % full monitor
- Two contact closure (dry contact) output channels
- User-defined alarm limits - independent for each channel
- User-defined switch sense for alarm - four switch inputs independent for each input

## SynetCell© – RTU-1 with Cellular Communications



- Operates wherever AMPS (analog) cellular service is available
- Industrial temperature range with NEMA 4X enclosure
- Solar panel, battery, antenna options
- Long-term unattended operation – low power consumption

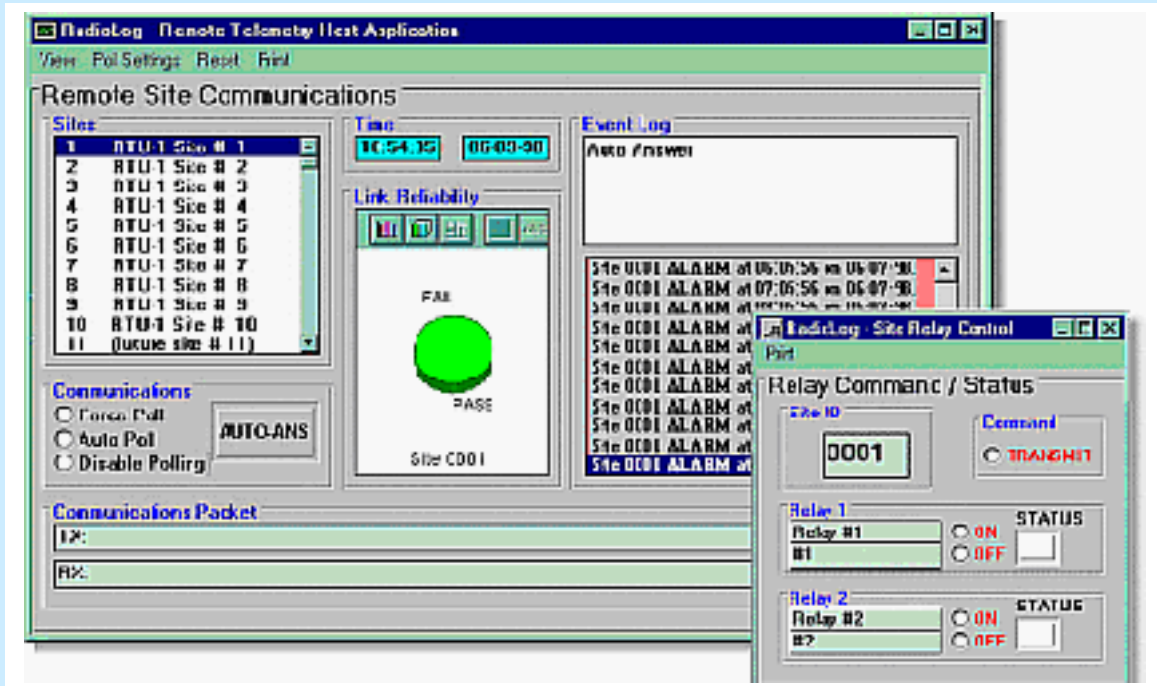


**Host and Remote SynetCell system** - Remote site draws <100uA from 12V battery when not communicating.

- User-defined radio / wireline parameters
- Solar panel voltage regulator / battery charger
- ESD, current overload protection, all I/O
- Integral RFI filters - designed to work in strong RF fields
- Gated power (12 VDC ~ 1A) for external sensors and accessories
- Peripheral expansion port
- Standard Software 'RadioLog'

### Windows Base Application (RadioLog)

Provides 24 hour field unit monitoring and user control. Also plots logger data collected from field units. Logs data to an Access database file.



### Specifications

#### Temperature Range (operating)

-40°C to +70°C (-40°F to +158°F) standard  
-40°C to +85°C (-40°F to +185°F) extended

#### DC Power

Battery Input: 10 – 16 VDC (12V nominal)  
RTU-1 Current: <80 uA quiescent / 99%  
<1 mA sensor read / .5%  
<80 mA data logging / .5%  
Solar Panel In: 0-20VDC @ 2.5A

#### Analog Inputs (1 to 4 channels)

Accuracy-current: 4-20 mA +/- .5% full scale  
voltage: 100 mV-10V +/- .5% full scale

#### Discrete Inputs (0 to 4 channels)

External closure sense – opto-isolated

#### Relay Outputs (0 to 2 channels)

Dry contact SPDT: NO / COM / NC

#### Serial Ports

#1: Maintenance / communications RS232-C  
#2: Modbus (RTU-1M Units) RS232-C

#### Sensor Power Gate

12 VDC @ 1A Standard, optional 5-25 VDC @ .4A

#### Radio / Modem / Cellular Power Gate

12 VDC @ 2.5A

#### Data Logger Memory

32 K byte non-volatile stores up to 8K readings per analog channel. Default logging interval is once every 10 minutes - >40 day capacity.

Also retains unit configuration and all data if battery is disconnected. Memory requires no battery or voltage applied to retain readings.

#### Special Event Memory

32 K byte non-volatile contains up to 8K readings per analog channel. Records during exception condition with default logging interval of 15 seconds - >24 hour capacity.

#### Mechanical

RTU-1 Module: 8.1" x 10.5" x 1.4" (W x H x D)

**Synetcom**  
Your Industrial Wireless Source

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