



FEATURES

- Economical SCADA and Telemetry
- Up to 44 I/O Points per RTU
- Report-by-Exception
- Programmable Polling
- Operates on Lease Lines, Conventional or Trunking Radios
- Use with Licenseless Spread Spectrum Data Radios
- Store and Forward

INTRODUCTION

Zetron SCADA (Supervisory Control and Data Acquisition) and telemetry system offers practical, economical monitoring and control remote sites via radio. The SCADA System is comprised of 3 parts: Remote Terminal Units (RTUs), System Controller, and Control Program.

Zetron RTUs such as the Model 1708 and Model 1716, are units typically installed at remote sites to collect data from contact closures, pulse counters, and analog voltage or current signals. RTUs also offer digital and analog outputs for remote control of process variables. The inputs/outputs can monitor and control level, pressure, temperature, security, power etc. from switches or transducers.

Zetron RTUs detect changes in input signals and transmit exception reports immediately, when polled by the Controller, or both. Once the Control Program sees a data change, it can initiate corrective action by sending output commands to the same or different RTU.

The Model 1700 system controller is located at the central site and is connected between the central radio and a PC. The controller sends and receives data between the central PC and the remote sites.

The MODBUS system software is the brain of the SCADA system and allows the user to monitor, control, display, log, print, poll, etc. system data from the PC.

FEATURE DESCRIPTION

Store and Forward

Model 1708 and 1716 RTUs can rebroadcast data sent from other RTUs and the Model 1700 controller. (Conventional or Trunked Radio only)

This augments installations that do not have 100% radio coverage from the central office, any RTU can relay information between the Model 1700 controller and an out of range RTU.

User Configurable

Features such as key delay, channel busy indication, I/O parameters are all definable by the user.

Zetron SCADA can operate on simplex, half-duplex, full-duplex, trunking or conventional radios, and through repeaters.

Optional MODBUS Firmware

The M1708 and M1716 RTUs can communicate with spread spectrum radios via the RS-232 ports.

The system can use licensee free radios that result in a faster exchange of data between the PC or PLC and the RTUs. It also eliminates the need for a M1700 interface.

All Call

A second ID number can be assigned to a group or groups of RTUs.

This allows for the rapid control of a large number of RTU's outputs. This is ideal for siren control.

Trunked Operation

A software switch enables the SCADA system to operate over trunked radio systems.

Since each Remote has its own unit number, a single trunking ID code is all the Zetron SCADA needs. Trunked system operators can now offer their customers security and control functions.

Fast, Accurate Reporting

All communications are two-way using fast frequency shift keying, FFSK. Each data burst lasts less than a second, yet contains all the data, plus an advanced error detection scheme.

The FFSK protocol operates on any voice radio (true digital or NRZS modulation capability is not required). This eliminates the falsing common to DTMF and minimizes usage of valuable airtime.

SCADA SOFTWARE

The Zetron SCADA System can communicate with and be controlled by process control applications or programmable logic controllers (PLC) via the MODBUS communications protocol. MODBUS is an industrial industry standard communications protocol allowing devices from different manufacturers to communicate. The MODBUS protocol can control and monitor the M1700 control hardware, which in

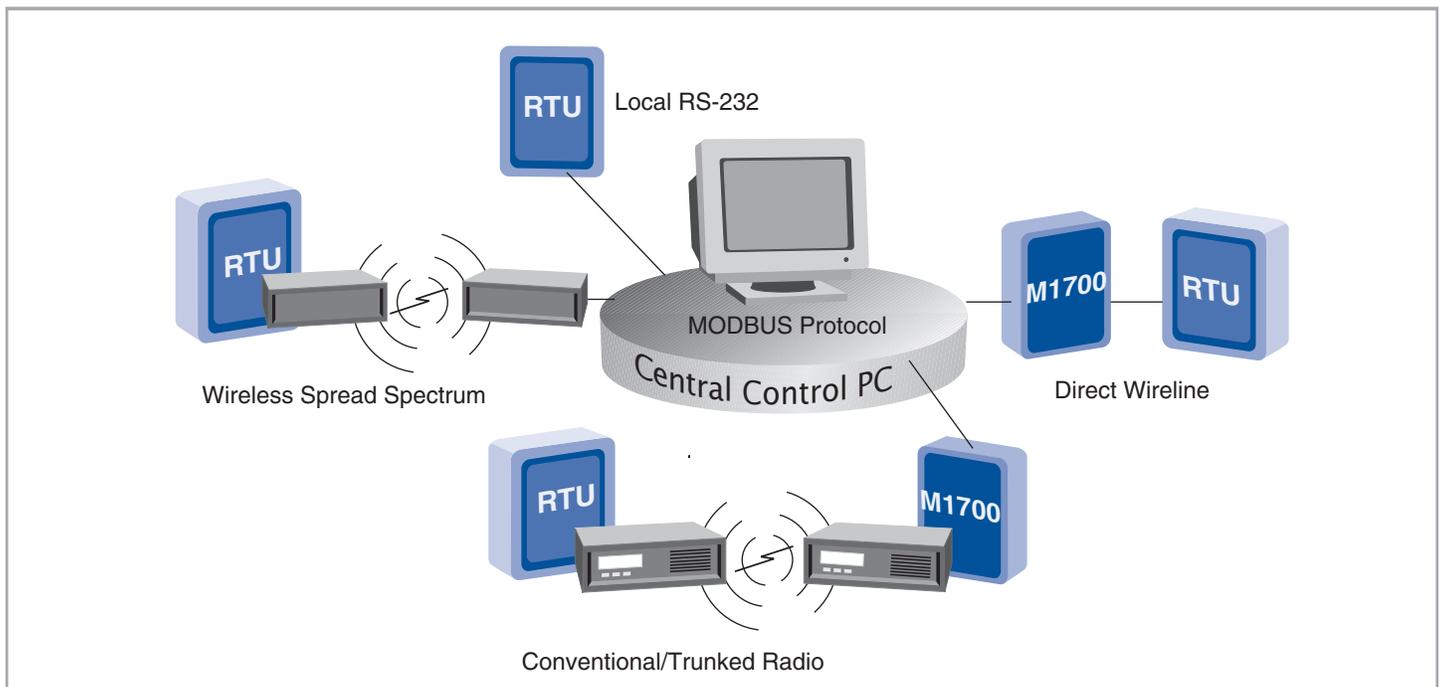
turn communicates with the remote terminal units, M1708 and M1716s. Existing SCADA systems or PLCs utilizing MODBUS can also control the M1700.

There are a number of highly productive automation software packages that can be used to control, monitor, analyze, or report on your industrial automation applications. These include an extensive library of graphics, Internet connection with the web client feature, trending data display, dial out alarms to a commercial paging service and much more.

CONNECTIONS/INSTALLATIONS

The 1700 controller connects to the RS-232 serial port of the PC or terminal using transmit, receive, and ground. Both the M1708 and M1716 RTUs and the M1700 Controller connect to the radio using PTT, transmit, receive, ground and carrier detect (COR). The units operate from 12VDC, usually supplied by the radio's power source. The sensors being monitored by the M1708/1716 RTUs at the remote site should provide 0-5VDC, 0-20mA, or Form C contact closure to ground or open to 100Kohms impedance. Higher voltages can be controlled via the appropriate industrial relay. The control software requires a dedicated PC with hard disk. A printer is not required since all information is logged on disk.

FLEXIBLE COMMUNICATIONS OPTIONS



STANDARD CONNECTIONS

Radio

Transmit Data
Receive Data
Push-to-Talk
Channel Busy

Power

Ground
+12 Volts DC

Serial Port

RS-232 Data In
RS-232 Data Out



BATTERY BACKUP

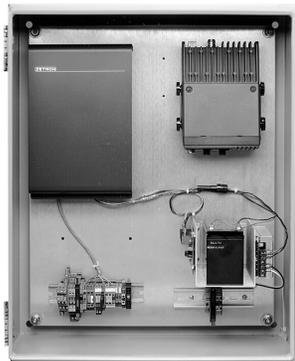
Users can order the RTUs integrated with NEMA cases and battery backup. This option features:

- 7 AH 12 volt lead acid cell battery for power loss backup operation
- Battery charger
- 2-amp power supply
- Wiring cables connecting battery, supply, RTU, radio (radio and antenna are not included)

INDUSTRIAL NEMA CASES

Order one of the three models of NEMA cases:

- Model 1795 is a steel NEMA 4 case, size 20" x 24" x 8", wiring cables, backplane size 17" x 21", 7AH battery, 2 amp charger/supply.
- Model 1796 is a fiberglass NEMA 4X case, size 20" x 24" x 8", wiring cables, backplane size 17" x 21", 7AH battery, 2 amp charger/supply.
- Model 1797 is a fiberglass NEMA 4X case, size 13" x 15" x 6", wiring cables, backplane size 11" x 13", 7AH battery, 2 amp charger/supply.



The RTUs are attached to a custom metal backplane with a mounting area for mobile or handheld radios, heaters, industrial relays, signal conditioners, or other industrial electronics required for the application. The customer only needs to drill and mount an external antenna, drill and connect external power, and install radio to the metal backplane via mounting holes.

	M1700	M1708	M1716
DIGITAL INPUTS	—	8	16
Pulse Counter			
CONTROL OUTPUTS	4	8	16
ANALOG INPUTS	—	4	8
Accumulator			
ANALOG OUTPUTS	—	—	4

SPECIFICATIONS

Model 1708/1716 RTU

8 Digital inputs:	16 for M1716 Dry contact closure
8 Control outputs:	16 for M1716 Open collector type VCC minus 1 volt @ 100mA 100mA typical sink current
4 Analog inputs:	8 for M1716 0-5VDC or 4-20mA 8 bit, 256 level AD converter
4 Analog outputs:	Model 1716 only 0-5VDC
Model 1700:	4 Control outputs Open collector type

Communication Specifications

Radio Interface:	PTT, COR Input levels from 20mV to 3Vpp Input impedance > 30Kohm @ 1KHz Output level 3Vpp maximum with 10Kohm load Output impedance < 1Kohm @ 1KHz Flat audio in and flat audio out Transmit audio adjustable from 20mv to 2V p-p COR adjustable from 0.1 to 4.5VDC PTT output relay to ground < 300mA max, NO or NC position Signaling at 1200 Baud FFSK
------------------	---

RS-232 Interface:	TX, RX & ground 4800 baud 8 bit with one stop bit and no parity VT100 or similar monitor compatible No hardware or software flow control
Power:	13.8VDC nominal, 10.5-16VDC 75mA typical, 150mA max @ 16VDC

Optional Power Supply:	Battery 12V, 12amp-hr, lead-acid cell Charger 500mA float charge, 2-amp max fast charge Short circuit protected AC power: 115VAC, 0.7 Amp max
---------------------------	---

Physical Specifications

1700/1708/1716 Standard Case	
Size:	7.55" W x 10.5" D x 2.25" H
Weight:	2 lbs

Temperature Specifications

Operating:	0-60 degrees Celsius
------------	----------------------

Approvals

FCC Part 15
Lookout Software Requirements
Pentium class PC running at 90MHZ or faster
32 MB RAM
Windows 95 or later, includes NT and XP
45 MB free disk space

Power

-13.8VDC nominal, 10.5-16VDC
-75mA typical, 150mA max @ 16VDC
Optional Battery/Charger/Power Supply
-Battery 12V, 12amp-hr, lead-acid cell
-Charger 500mA float charge,
2-amp max fast charge
-Short circuit protected

-AC power: 115VAC, 0.7 Amp max

Physical Specifications

1700/1708/1716 Standard Case	
Size	7.55" W x 10.5" D x 2.25" H
Weight	2 lbs

Temperature Specifications

Operating	0-60 degrees Celsius
-----------	----------------------

Approvals

FCC Part 15



ZETRON AMERICAS

PO Box 97004, Redmond, WA USA 98073-9704

(P) 1 425 820 6363

(F) 1 425 820 7031

(E) zetron@zetron.com

ZETRON EMEA

27-29 Campbell Court, Bramley, Hampshire RG26 5EG, United Kingdom

(P) +44 1256 880663

(F) +44 1256 880491

(E) uk@zetron.com

ZETRON AUSTRALASIA

PO Box 3045, Stafford Mail Centre, Stafford QLD 4053, Australia

(P) +61 7 3856 4888

(F) +61 7 3356 6877

(E) au@zetron.com

©Zetron, Inc. All rights reserved.
Zetron® and Zetron and Design® are
registered trademarks of Zetron, Inc.
All other trademarks are properties of
their respective owners.

See Zetron price list for option pricing.
Specifications subject to change
without notice.