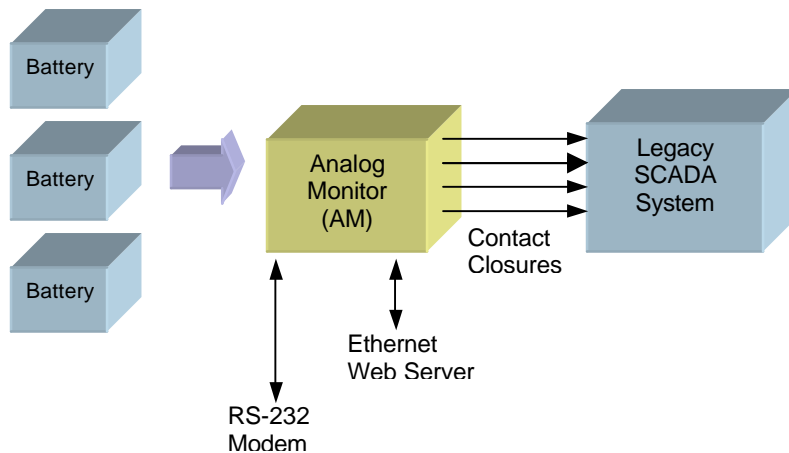


## DC Power Monitoring through Legacy SCADA System

Application Note

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### General Description

This application note describes a system that allows users of legacy SCADA system to integrate remote battery monitoring into their system, even if their system does not support the 0-50 mV, 0-60 Vdc or other analog signals commonly available from battery systems.

### Implementation

The solution involves:

1. Installing Analog Monitor (AM)
2. Connect shunts to AM
3. Connect AM to legacy SCADA system

The AM processes the analog signals received from the battery system, makes decisions regarding those signals, and outputs the decisions as relay contact closures. These relay contacts are connected to the SCADA system and result in alarms when battery condition deteriorates.

Benefits of this system include:

- Quick commissioning for low installed cost
- Reduced downtime due to unexpected battery system failure

## Communications

The system, as standard, relies on the existing SCADA system to transmit the battery data to the user. This simplifies the retrofit to the existing SCADA system.

This interface is done through contact closure signals sent from the AM to the SCADA system.

However, the system supports two other communication connections:

- Ethernet TCP/IP
- RS-232 / modem

### Ethernet

Ethernet connection provides the following features:

- Web server
- Automatic e-mail of alarms
- Remote programming

The AM includes sufficient non-volatile memory to store hundreds of alarms should the connection to the LAN fail and e-mails cannot be sent.

When the AM detects a battery problem and sends the contact closure to the legacy SCADA system, it also stores the details locally in non-volatile memory. Using the Ethernet connection and a web browser, a user can examine the history and the details of the battery deterioration.

The AM can be programmed to send an SMTP (e-mail) message to your choice of devices (cell phone, PDA, computer).

In addition, the AM provides a second connection, the serial or modem connection.

The Ethernet LAN connection can also be used to upgrade the AM firmware reducing the need to travel to a site to perform a maintenance upgrade.

### RS-232 / Modem

The RS-232 port provides the same battery information as provided on the Ethernet port. The protocol supported includes:

#### Outbound

- SMS (cell phone message)
- Pager (alphanumeric)

#### Inbound

- Dial in (Modbus)

## Specifications

### Base Unit

8 Analog Inputs:

- 0-50 mV
- 0-60 Vdc
- 0-5 Vdc

24 Contact Outputs:

- 24 Vdc, 5A
- 60 Vdc, 0.05A
- 120 Vac, 5A

Ethernet 10BASE-T port

RS-232 port

Web Server

E-mail (SMTP)

Requires 24 or 48 Vdc (0.2 / 0.1 A)

3U 19" rack or wall mount

### Expansion Options

Up to 32 analog inputs

Up to 168 contact outputs

33.6 kbps autoanswer modem

For I/O requirements beyond 32 AI and 169 DO, use additional base units.