

## ALARM MANAGEMENT PRODUCTS

# SER<sup>NET</sup>

## Distributed - Network Enabled Sequence of Events Recorder

### Event Recorder

SER<sup>NET</sup> is an advanced alarm management system that captures critical alarms with 1 msec precision in the sequence they occur for quick determination of the root cause. The SER<sup>NET</sup> can display your alarms in a WEB browser for easy analysis and provides real time data outputs via serial and Ethernet ports, making it ideal for monitoring your critical alarms from substation switchgear, transformers, turbines, boilers, pumps, motors, UPS, HVAC, building security and more.

Each SER<sup>NET</sup> product can work as a stand-alone system monitoring up to 48 digital inputs or multiple SER<sup>NET</sup> units can be networked together to form a larger system with all events consolidated in one chronological list as they occur. A single WEB browser screen can display alarms from several SER<sup>NET</sup> units, making it easy to see the interaction between different equipment types or processes. This flexibility makes it easy to analyze alarms across an entire site or even across multiple sites for a larger system view - much better than piecing together a list of alarms from multiple devices.

The SER<sup>NET</sup> WEB browser includes sorting and filtering functions to help with the root cause analysis. In addition to displaying alarms, the WEB browser is also used for all configuration details and downloading of events via CSV format.



The SER<sup>NET</sup> can transmit alarms as they occur with Modbus, DNP and IEC61850 protocols. It can also receive alarms from IEC61850 compatible devices with the option to time stamp the events via the GOOSE message or at the SER<sup>NET</sup> unit. Email notification of critical alarms can be provided along with SNMP for network management.

Each SER<sup>NET</sup> unit can store 40,000 events in memory for long term data storage and the unit can be supplied with a single or dual redundant hot-swappable power supply for added reliability.

### FEATURES AND BENEFITS

1	Capture alarms to 1 msec precision across entire system
2	40,000 event storage per unit
3	WEB browser configuration and display of alarms
4	Network multiple units together for "big picture" view
5	Time sync via IRIG-B, NTP and 1588
6	Modbus, DNP, IEC61850, ASCII, BACnet protocols
7	LED indicator per alarm
8	Email notification
9	Meets new NERC SER requirements
10	19" rack and surface mounting

# SPECIFICATIONS

## INPUT

### SYSTEM CAPACITY

- 16, 32, 48 inputs per unit
- 3,072 inputs per SER system

### FIELD CONTACTS

- Normally Open (N.O) or Normally Closed (N.C.)
- Wetted (voltage supplied) or dry (voltage free) contacts

### FIELD CONTACT VOLTAGE RANGE

- 20 to 150 VDC (auto-select)

### INPUT ISOLATION

- Each input is optically isolated

### INPUT RESPONSE

- 1 msec to 60 sec
- Responds to alarms as quick as 1 msec or alarms lasting up to 60 sec

### CONTACT DE-BOUNCE

- 0 to 60 sec
- Can ignore multiple alarms occurring within 0 to 60 sec from initial alarm

### DELETE FROM SCAN

- Automatic mode
  - Adjustable from 0 to 225 events per minute
  - Automatically resets itself
- Manual mode
  - Disable any input manually

## ALARM LEGENDS

- 32 character alarm legend
- 32 character normal legend

## LED INDICATORS

### ALARM STATUS

- Red LED per input
- Flash upon alarm, steady ON after acknowledged via WEB browser

### POWER, STATUS, TIME SYNC

- Green LED for "Normal"
- Red LED for "Abnormal"

## OUTPUTS

### ALARM RELAYS

- 2 form C (SPDT) relays, configurable via WEB browser for:
  - Common alarm (closes on any alarm)
  - Reflash alarm (pulses upon new alarm)
  - Horn output
  - System watchdog
- Energized or de-energized operation

## RELAY RATINGS

- 24 VDC @ 2.0 amps
- 110 VDC @ 0.2 amps
- 120 VAC @ 2.0 amps

## TIME STAMPED ALARMS

- 1 msec time stamp resolution
- 40,000 event storage (per unit)

## TIME SYNCHRONIZATION

- IRIG-B time sync input (modulated or de-modulated) accurate to +/- 1 msec real time
- NTP time sync (via Ethernet) (can sync 1-3 IP addressed sources) accuracy based on location of NTP time servers
- Internal crystal
- Primary unit can synchronize up to 24 Secondary units via RS485 (max 4,000 feet)

## COMMUNICATIONS

### SERIAL PORT

- Rs-232/485 selectable
- Modbus RTU, DNP 3.0, serial ASCII

### ETHERNET PORT 10/100

- DHCP or Fixed IP
- Modbus TCP/IP, DNP 3.0, BACNET, SNMP

### WEB SERVER

- Multi-user support
- Used for configuration of unit
- Graphical and text display of alarms
- Can combine up to 25 units on a single
- WEB browser (1,200 alarms)
- Acknowledgement of alarms
- Separate screens for active alarms and archived event log
- Email notification
- Export to CSV
- Printing of alarms (auto/manual)
- Multiple levels of security
- HTTPS encrypted username/password

## CONNECTIONS

### INPUT/OUTPUT TERMINALS

- Removable barrier terminal block
- Maximum 12 GA (2.5mm)

## MECHANICAL

### SURFACE MOUNTING

- Din rail / panel
- 17.8" (452) x 6.8" (172) x 2.3" (58)

### 19" RACK MOUNTING

- 1U
- 6.8" (172) depth
- 1U; 6.8" (172) depth

### ISM RETROFITS

- Input card rack, panel and shelf

## POWER REQUIREMENTS

### BUILT-IN POWER SUPPLIES:

- 24 VDC power supply
  - 24 VDC (19 to 29 VDC)
  - Maximum 24 watts
- AC/DC power supply
  - 85 to 300 VAC 50,60 Hz
  - 100 to 300 VDC
  - Can use 1 supply above or 2 for redundancy/dual power applications
  - Hot swappable
  - Internal 24 VDC field contact voltage supply
  - Maximum 24 watts

### EXTERNAL POWER SUPPLIES:

- System power supply
  - Input: 48 VDC (36 to 72 VDC)
  - Output: 24 VDC (requires internal 24 VDC power supply above)
- 125 VDC field contact voltage supply
  - Input: 90 to 265 VAC or 110 to 350 VDC
  - Output: 125 VDC

## ENVIRONMENTAL

### OPERATING TEMPERATURE RANGE

- -4 to 140°F (-20 to 60°C)

### HUMIDITY

- 20-95% RH

### SURGE WITHSTAND

- ANSI C37.90.1:2002

### FAST TRANSIENT

- IEC-61000-4-4

### SURGE IMMUNITY

- IEC-61000-4-5

### EMI/RFI/ESD

- IEC-61000-4-2, 4-3, 4-6, 4-8
- Emissions: CISPR 11, Class A

### ISOLATION

- 2000 VDC Power to Earth
- 3150 VDC Power to Inputs

### POWER QUALITY

- IEC 61000-3-2 harmonic current
- IEC 61000-3-3 flicker low voltage
- EN 61000-4-11 voltage variation

## CERTIFICATIONS

- UL, ULC, CE

### WORLD HEADQUARTERS

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# AMETEK®

## POWER INSTRUMENTS

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