



SER

SEQUENCE OF EVENTS RECORDER

A POWERFUL, HIGH-SPEED RECORDING SYSTEM

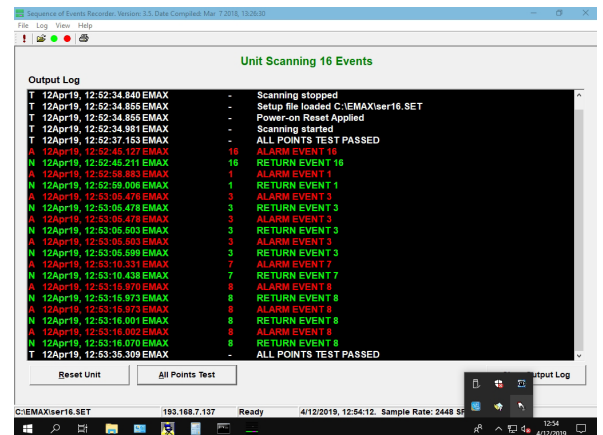
The E-MAX Sequence of Events Recorder (SER) is a high-speed, high-resolution system which records relay and power system equipment alarms and status contacts. The E-MAX SER uses a fully isolated 16-point input card. The 16-point layout isolates individual points from each other and from the system electronics by opto-couplers.

A remote fiber optic Input Module is available. The direct wire module is designed for individual enclosure installations while the fiber optic design allows for remote point installations. Fiber optics give this system a 1600 meter (multi-mode) and 19,000 meter (single-mode) capability and result in lower installed costs over multipair wire installations. The SER fiber optic design provides electrical isolation and is immune to electrical noise and ground potential rise. The E-MAX SER is designed to monitor 16 up to 2048 events. Contact type (NO or NC) is configured in software.

Scanning of the inputs is in groups of 16 points. The SER is triggered by changes of state in the digital inputs. Event logs are created and stored in chronological order.

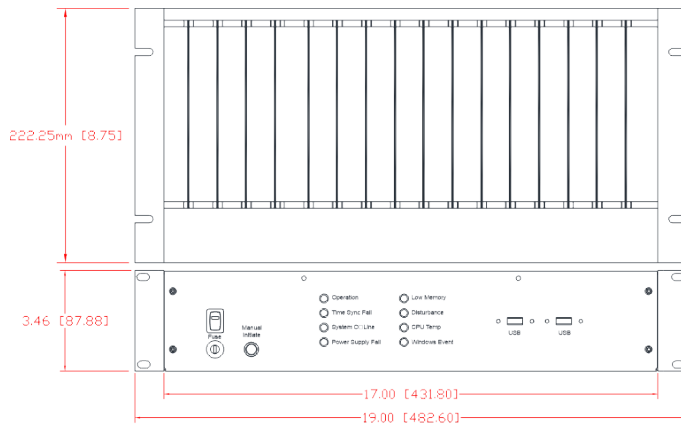
Scanning, control and communications functions are managed by an Intel Atom based single-board computer running Windows 10[®]. The SER can be controlled remotely using the included **SER Console** software. Utilizing a network connection, configuration settings and reports may be remotely monitored and controlled.

The E-MAX SER includes ethernet and USB ports. The SER can be controlled remotely using Windows Remote Desktop from any connected PC.

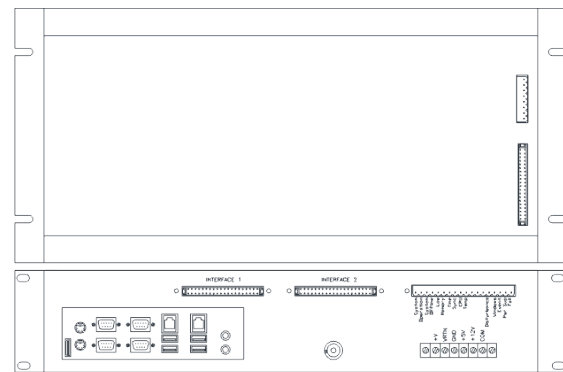


NERC - PRC-002-2 IEEE C37.232

DIMENSIONS & SPECIFICATIONS



FRONT VIEW



REARVIEW

Input Points	16 isolated or 32 non-isolated per Input Card. 16 isolated points for Fiber Optic Input Module. 2048 points maximum per recorder.
Input Point Configuration	N.O. or N.C. Software Selectable
Wetting Voltage	125 Vdc nominal ◆ 48 Vdc, 250 Vdc, 120 Vac available
Event Resolution	Better than 1 millisecond
Debounce Noise Filtering	Up to 32 milliseconds maximum (Factory default 1 millisecond)
System Power Input	DC/DC Converter: 90-320 Vdc / 120 Vac. 28-48 Vdc and 250 Vdc Available. Current Limited / Overvoltage protected.
Event Input Module Power	24 Vdc - 3.4 mA/point ◆ 48 Vdc - 1.2 mA/point 125 Vdc - 4.0 mA/point ◆ 250 Vdc - 1.67 mA/point. Fiber Optic Event Module Supply Power - 5W
Operating System	Windows 10®
Processor	Intel Quad Core 64 bit Fanless CPU.
Data Storage	SATA or Solid State Disk
Memory	8 Gb RAM standard
Programming Input	Keyboard and LCD display (Optional)
Display	Color LCD screen (Touchscreen Optional)
I/O Ports	1 USB 3.0 Port, 5 USB 2.0 Ports
Local Printer	Any Windows® Compatible Printer (Optional)
Time of Event	IRIG-B synchronized Clock, Crystal oscillator backup
Clock	IRIG-B Time Code (1KHz or TTL) Accuracy: Better than 20 µs.
Surge Withstand Capability	ANSI/IEEE C37.90-1989
Environment	Operating Temperature -20° to 60° C Storage Temperature -40° to 70° C Humidity 95 % R.H. maximum non-condensing
Configuration	19 inch rack mount.
Burn-in Test	100 hour minimum
Reporting Capability	Periodic or on Demand /Local or Remote Selection Event Summary Period Activity Summary Historical Summary Period Capability (1 min-1 yr)
Communications Capability	Auto Reporting ◆ Respond to Polling Multiple Station Reporting Ethernet
Communications Protocol	LAN - TCP/IP, or Serial Connect via E-MAX SER Proprietary Software Remote Control - Windows Remote Desktop