



**UTILITY
SYSTEMS
INC.**

A Magnetic Instrumentation, Inc. Company

MODEL 3002 SEQUENCE OF EVENT RECORDER

Benefits

- ~ Quality
- ~ Reliability
- ~ Easy Expansion
- ~ Windows Based Software
- ~ DSP/USB Based Hardware
- ~ Designed & Manufactured By USI
- ~ Free Technical Support
- ~ Long Term Support
- ~ Competitive Pricing
- ~ Five Year Warranty



Key Features

- User Friendly Windows™ Based Software
- Master Station Software Useable For SER and DFR
- Dial-Up Or Network Communications Ready
- Settings Changeable Locally Via An RS232 Port, Optional Keyboard & Monitor, Or From The Master Station
- Scan Rates Up To 0.14ms
- Capacity Up To 2048 Event Points Or More With Cascaded Systems
- Auto Or Manual “Delete From Scan” And Restore
- Software Debounce Setting
- Retrieve a Quick List Of Event Dates Or Events For a Particular Date
- Retrieve Events That Are Currently Abnormal Or In A Stopped Condition
- Automatic And Immediate Printing Of Each Input Change Of State
- Easy Interfacing To The Model 2002 DFR
- Turn-Key Cabinet Configuration
- Modular Configuration
- Distributed Architecture Options

General Overview

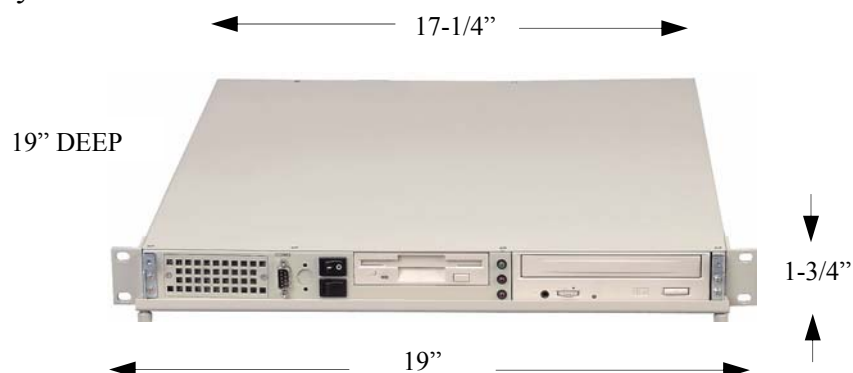
The Sequence Of Event Reorder (Remote)

The Model 3002 Sequence Of Event Recorder is a state of the art data collection system. It is suitable for application in an electrical utility substation or plant environment to record contact openings and closing of field devices such as electromechanical and microprocessor controlled relays. The system continually monitors all event input signals. Upon detection of a change in state, event information is added to a daily file. Event information includes date, time (micro-second time stamping capability), event number, normal state, recorded state, and event descriptor. The Model 3002 SER can communicate with the Master Station Software via dial up modem or LAN/WAN Ethernet connection.

Chassis

Computer Chassis

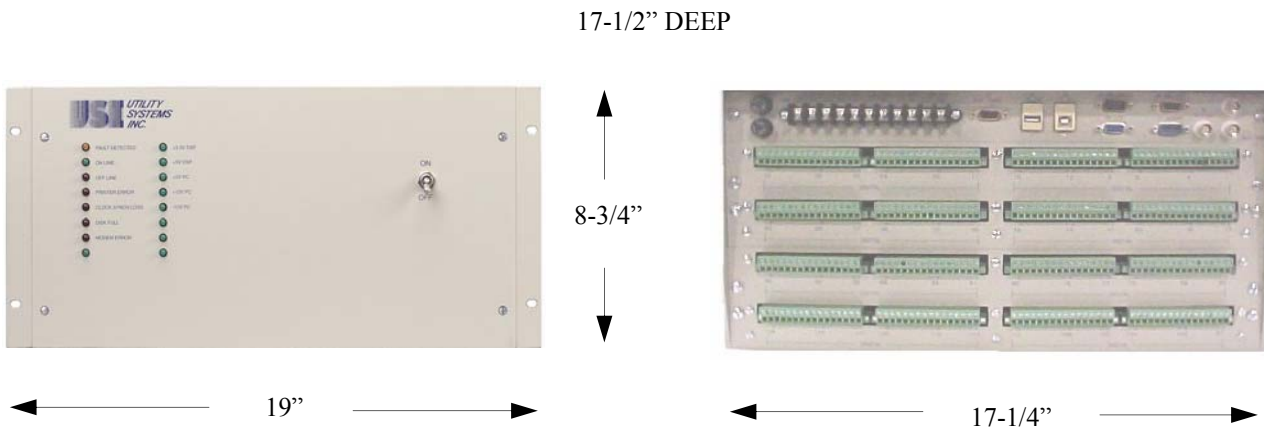
As shown below and on the next page, the base system consists of a computer chassis and primary chassis. The Computer Chassis utilizes Windows™ 2000 Professional as its operating system and includes an internal 56K modem, on board Ethernet, floppy drive, CD drive (CD burner optional), parallel port, serial ports and USB ports. The Computer Chassis is powered via a DC source in the Primary Chassis. Commands and data are transferred between the Computer Chassis, Primary Chassis, and Add-On Chassis via Universal Serial Bus (USB). Communication between this chassis and the Master Station Computer can be via modem or network connection. The Computer Chassis comes preloaded and tested with programs such as Remote, WinDFR, DAS, and pcAnywhere. SER files are conveniently stored in a SER folder.



Chassis

Primary Chassis

The Primary chassis houses up to 128 event inputs. Channels are configured in increments 32. Each channel is set-up for 125VDC as standard, input configurations of 250VDC, 48VDC and 24VDC are also available. Isolated channels are standard. Jumpers can be installed internally to tie channel returns together. The Primary Chassis houses high voltage event boards, low voltage event boards, DSP/USB board, I/O Board, and power supply that supplies DC power to the Computer Chassis and Add-On chassis, and optional satellite clock. To insure fast, flexible arithmetic calculations, each 128 event channels utilize a dedicated high performance 32-bit DSP circuit board. Input channels utilize industrial grade 16 position plug-in/screw down Phoenix terminal blocks.



Add-On Chassis:

Add-On Chassis mount below the Primary Chassis and house up to 128 event channels. Fifteen or more Add-On Chassis can be added to as system. Power and timing cables are simply daisy chained and data is transferred back to the Computer Chassis via USB. Like the primary chassis isolated channels are standard. Jumpers can be installed internally to tie channel returns together. The Add-On chassis houses high voltage event boards, low voltage event boards, and DSP/USB board. To insure fast, flexible arithmetic calculations, every 128 event channels use a dedicated high performance 32-bit DSP circuit board. Input channels utilize industrial grade 16 position plug-in/screw down Phoenix terminal blocks.



Configurations



COMPUTER & PRIMARY CHASSIS
128 EVENTS

ADD-ON CHASSIS
128 EVENTS

ADD-ON CHASSIS
128 EVENTS

MODULAR (Example)
384 EVENTS SHOWN



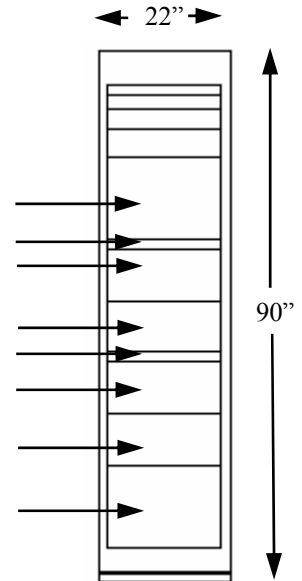
PORTABLE
128 EVENTS SHOWN

Monitor (option)
Computer Chassis
Primary Chassis

Add-On Chassis
Keyboard (option)
Add-On Chassis

Add-On Chassis

Printer (Option)



TURN-KEY CABINET CONFIGURATION

Options

- GPS Satellite-Controlled Clock
- Non-volatile Storage Media
- Seiko Thermal Printer DPU-414 , Paper Width 4.4"
- Star Dot Matrix Printer SP216FC42-120, Paper Width 3", Star
- Turn-Key Cabinet Configuration With
 - Event Sliding Link Terminal Blocks
 - Convenience Lights and Receptacles
 - Complete Wiring
 - Monitor - For Convenient On-Site Data Viewing
 - Lockable Keyboard and Mouse Drawer - For Convenient On-Site Setting Changes
- Distributed Architecture
- Portable Configuration
- Multi-User Master Station License
- Extended Warranty
- Service Contract
- Leasing

Specifications

Event (Digital) Inputs:

- Groups of 32
- Expandable To 2048 Event Points Or More
- Trigger on rising edge, falling edge, or both
- Software debounce timer, auto stop, auto re-store
- Isolated channels or common return
- Standard input 125VDC, other input voltages available upon request (24VDC, 48VDC, 250VDC)
- Bandwidth 20MHz Minimum
- Isolation– 3500Vrms Channel-to-System Ground, 3500Vrms Channel-to-Channel

Computer Features (Minimum):

- Pentium III 1GHz w/Ethernet
- 128MB RAM
- 20GB HDD
- 3.5" Floppy Drive
- 48X CD Drive
- RS232 Ports, Parallel Port, USB
- Windows 2000™ Professional OS
- 56K Internal Hardware Modem

Alarm Outputs and Indicators:

- Recording
- On Line
- Off Line
- Printer Error
- Clock Synch Loss
- Disk Full
- Communications Error
- Power Good
- Front panel indicators are all those listed above plus 3.3V DSP, 5V DSP, 5V PC, +12V PC, and –12V PC

Physical:

- All Chassis 19" Rack Mount
- Computer Chassis 1 $\frac{3}{4}$ "H x 19 $\frac{3}{8}$ "D, 21 Lbs
- Primary Chassis 8 $\frac{3}{4}$ "H x 17 $\frac{3}{8}$ "D, 29 Lbs
- Add-On Chassis 8 $\frac{3}{4}$ "H x 17 $\frac{3}{8}$ "D, 24 Lbs
- Portable SER With 128 Digital....., 57 Lbs

Recording:

- Selectable Scan Rates:
 - ~0.1ms
 - ~0.2ms
 - ~0.4ms
 - ~0.8ms

Power Requirements

- 125VDC standard, other input voltages available upon request (48VDC, 250VDC, 120VAC)
- Current draw dependent on number of channels
 - 256 Events @125VDC = 1A
 - 512 Events @125VDC = 1.3A

Time Synchronization:

- IRIG-B Input
- 1PPS Input
- Micro-second time stamp capability
- Optional built-in OncoR satellite clock
- Custom programming available to work with specific satellite clock RS-232 and 1PPS

Environmental:

- Operating temperature 5 to 50°C
- Humidity up to 85% non condensing

Standards:

- ANSI/IEEE C37.90.1-1989
- IEC 60255-5

General:

- Minimum master station requirement is Windows™ 95
- Communication TCP/IP
- Input state normally or normally closed can be set on a point by point or group bases

Master Station Data Analysis Software (DAS)

The master station program is included in the price of the SER. The program will run on Windows™ 95, 98, NT, 2000, or XP. It allows an operator to retrieve a quick list of dates in which events occurred, retrieve events for a particular day, upload/download calibration records, edit the SER configuration, retrieve SER and computer trace files, perform SER diagnostics, reinitialize the SER computer, reboot the SER computer, get the SER time, and activate the SER to operate its pcAnywhere program. The pcAnywhere program gives you a virtual presents at the SER, allowing you to manipulate files in explorer and much more. Also, a list of SER inputs that are currently in an abnormal or stopped condition can be retrieved. The Master Station Software can be configured to automatically backup records to various drives. Display data for a specific date, range of dates, and display specific input point numbers. By clicking on the display menu, you can instantly use the Master Station to communicate with our Model HT-2000W or Model 2002 Digital Fault Recorders, or view any files in proper COMTRADE format.

The screenshot shows the 'USI Master Station' application window. The title bar includes the application name and standard window controls. The menu bar contains 'File', 'Edit', 'Communication', 'Services', and 'Help'. A dropdown menu for 'Display:' is open, showing options: 'SER only', 'DFR & SER', 'DFR only', and 'SER only' (highlighted). The main window is divided into several sections:

- Station ID:** R01 : Station ABC
- Latest Dates:** 10/09/2002, 09/24/2002, 09/20/2002
- Files Retrieved:** 10/09/2002, 09/24/2002, 09/20/2002
- Event Data Table:**

DATE-TIME	Event	Now	Normal	Sync	Description
10/09/2002-09:57:40.628917	E20	C	A	U	Event Channel 20
10/09/2002-09:57:40.628917	E2	C	A	U	Event Channel 2
10/09/2002-09:57:40.628917	E19	C	A	U	Event Channel 19
10/09/2002-09:57:40.628917	E18	C	A	U	Event Channel 18
10/09/2002-09:57:40.628917	E17	C	A	U	Event Channel 17
10/09/2002-09:57:40.628917	E16	C	A	U	Event Channel 16
10/09/2002-09:57:40.628917	E15	C	A	U	Event Channel 15
10/09/2002-09:57:40.628917	E14	C	A	U	Event Channel 14
10/09/2002-09:57:40.628917	E13	C	A	U	Event Channel 13
10/09/2002-09:57:40.628917	E12	C	A	U	Event Channel 12
10/09/2002-09:57:40.628917	E11	C	A	U	Event Channel 11
10/09/2002-09:57:40.628917	E10	C	A	U	Event Channel 10
10/09/2002-09:57:40.628917	E1	C	A	U	Event Channel 1
10/09/2002-09:57:19.476209	E9	O	N	U	Event Channel 9
10/09/2002-09:57:19.476209	E8	O	N	U	Event Channel 8
10/09/2002-09:57:19.476209	E7	O	N	U	Event Channel 7
10/09/2002-09:57:19.476209	E6	O	N	U	Event Channel 6
10/09/2002-09:57:19.476209	E5	O	N	U	Event Channel 5
10/09/2002-09:57:19.476209	E4	O	N	U	Event Channel 4
10/09/2002-09:57:19.476209	E32	O	N	U	Event Channel 32
10/09/2002-09:57:19.476209	E31	O	N	U	Event Channel 31
10/09/2002-09:57:19.476209	E30	O	N	U	Event Channel 30
10/09/2002-09:57:19.476209	E3	O	N	U	Event Channel 3
10/09/2002-09:57:19.476209	E29	O	N	U	Event Channel 29
10/09/2002-09:57:19.476209	E28	O	N	U	Event Channel 28

Buttons at the bottom: Retrieve Files, Retrieve Dates, Ok, Print Preview, Print ...

Display This Event(s) Only: E2,E8-40
e.g. E2,E8-40

For help, press F1 | Income call monitor off.



A Manufacturer Of Fault Recording Equipment For The World

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(1) Five year warranty applies to primary chassis, add-on chassis, and cabinet components.
Computer chassis and computer peripherals have a two year warranty.

Utility Systems, Inc. is a Magnetic Instrumentation, Inc. Company
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