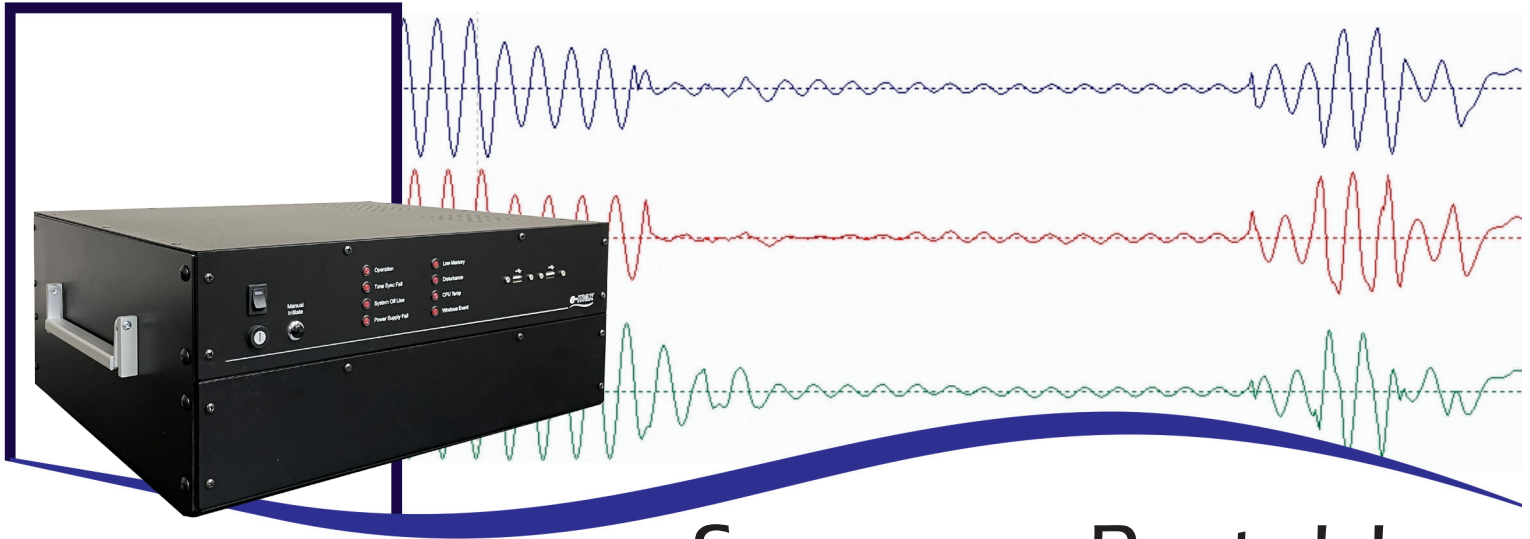




THE PORTABLE, POWERFUL SOLUTION FOR DATA ACQUISITION AND ANALYSIS



# Surveyor Portable

## Digital Fault and Disturbance Recorder

Complete Transient Fault Recording and Analysis

Long Term Disturbance Recording

Continuous Waveform Recording

Power Quality Monitoring

Standards Compliance

**IEC 61850**

**NERC - PRC-002-2**

**IEEE - C37.232**

**IEEE - C37.118-2005**





The E-MAX Portable DFR/DDR monitors voltages, currents and digital (event) inputs in an electrical power system environment to detect and record out-of-limit conditions. When such a condition is sensed, data including a specified pre-fault period is captured and stored in the recording system. The Recorder transmits the data automatically or on command to one or more locations.

The Recorder has non-volatile solid-state drive storage for data retention.

All functions are controllable at the Recorder site as well as remotely from any site with compatible equipment and software. The Recorder has security functions to restrict remote access to authorized users.

An optional accessory kit is the perfect addition to convert the E-MAX Portable quickly and easily to a standard 19" rack mount unit.



*Shown with optional screen and keyboard*

*All of the functions and performance of the standard E-MAX Director DFR in a compact package.*

#### ADVANCED DFR FEATURES

##### ***Data Sensing and Capture***

*Automated software calibration of inputs*

##### ***Non-volatile Data Storage***

##### ***Automated and On Demand Data Transmission***

*Data files*

*Direct viewing or printing*

##### ***Fault Data Summary***

*Presented On-Screen immediately after Capture*

##### ***Detailed Fault Analysis***

*Supported by an Array of Included Analysis Programs Including Automatic Fault Location.*

#### HARDWARE FEATURES

***8 to 16 Analog and 16 to 32 Digital Channels***

***High Noise Immunity Data Conversion***

***Non-Volatile Software & Data Storage Memory***

***Fanless CPU and Low Power Supporting Circuitry***



**Windows 10™-64 bit**



**Activity Notification**

User configurable email or network notification of Recorder activity



**COMTRADE & PQDIF**

Automatic or on-demand conversion of record files to COMTRADE & PQDIF



**Prefault and Postfault Data**

Prefault - Up to 99 cycles (1.6 secs)  
Postfault - Up to 999 cycles



**MIN. - MAX. Data**

MIN. - MAX. amplitude tables waveform during recording waveform included in record contents.



**Record Storage**

10,000 transient record storage plus 10,000 disturbance record storage plus up to 99 days continuous record file storage



**Directory Monitor**

For Shared Resources, features Auto-Display of Record Summary plus graphics display.



**Network and Internet Access**

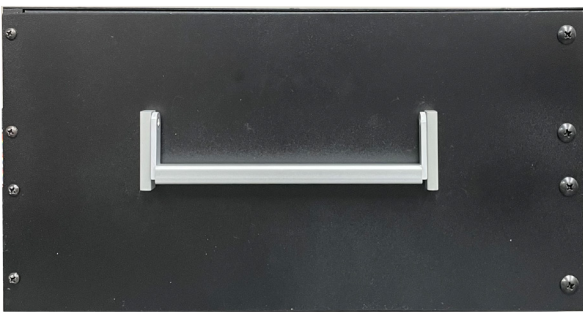
Access to stored records available across the Internet.

**Report Output**

Background transmission of Operations Summary, Recorder Data Summary including graphic output.

**DIMENSIONS IN INCHES (MM)**

**WEIGHT 24.4 LBS (11.06 KG)**



7.0 (177.80)



13.62 (345.95)

17.00 (431.80)

HDMI Port

Ethernet Port

2 USB Ports

2 USB 3 Ports

Digital Input

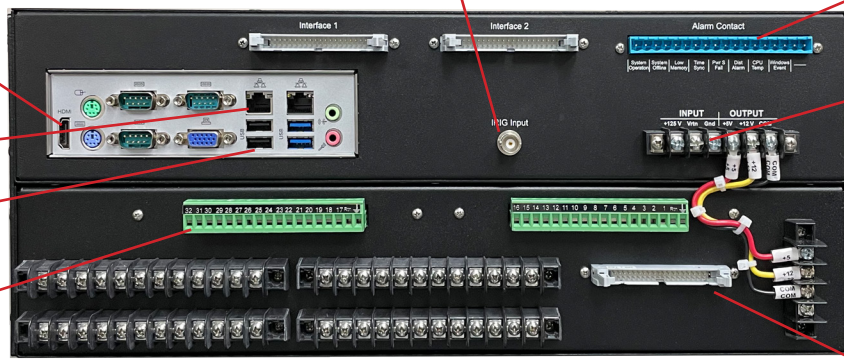
Analog Input

IRIG Input

Alarm Contacts

Input Power Terminals

Interface Cable



Analog Inputs:	8 to 16 Inputs
Analog Input Range:	Voltage: 0 to 500 Vac rms or Current: 0 to 200 Amp.
Accuracy:	Better than 0.1% of full scale
Analog Isolation:	2500 Volts rms
Sampling Rate:	Maximum Sampling Rate 15,360 samples/channel/second (256 samples/cycle)
Standard Sample Rate	5760 samples/channel/second
Digital/Event Inputs:	16 to 32 Inputs
1. Input Configuration	N.O. or N.C. (Software Selected)
2. Input Voltage	125 Vdc Nominal standard —24, 48, 250 Vdc available
3. Isolation	2500 VDC (To Ground) and between inputs
4. Resolution	1/Analog Sample Rate
1. Analog Sensors	Over-, Under- limits and Rate-of-Change software sensors on each channels
2. Operation Limiters	Symmetrical component, harmonic, frequency, swing, power sensors
3. Event Sensors	Individual Channel: Software Settable up to 15 minutes per fault
4. External Sensors	Individual Programmable (N.O., N.C., Trigger on ALARM and/or RETURN) Contact or voltage input
Continuous Recording	Complies with NERC PRC-002-2, IEEE C37.232. Default: Records up to 10 Days.
Long term Recording	Phasor recording - simultaneous with Transient recording. Sample rate is software selectable: 1 sample/cycle, 1/2 sample/cycle, 1/4 sample/cycle, 1/8 sample/cycle Programmable Record Length - 90 days maximum length Logs of signals, power, and frequency (optional)
High Speed Transient Recording:	
Prefault Period:	Up to 99 cycles. Default setting: 10 cycles.
Postfault Period:	Up to 999 cycles. Default setting: 12 cycles.
Record Storage:	Nonvolatile data storage on local solid state drive.
Resolution:	16 bit
Power Supply:	DC/DC Converter: 120-370 Vdc / 120 Vac. 28-48 Vdc and 250 Vdc Available. Current Limited / Overvoltage protected.
Controller:	Intel Quad Core 64 bit Fanless CPU. 8 Gb RAM standard 2 USB 3.0 Port, 4 USB 2.0 Ports, HDMI 2-10/100/1000 Mbps Ethernet Port
Graphic Output:	Supports color inkjet or laser printers. Graphics display on optional monitor.
Data Storage:	500 Gb or larger SATA Solid State Drive
Clock Options:	GPS Timing - IRIG-B time code (1KHz or TTL) Accuracy: Better than 20 $\mu$ NTP via Ethernet Port Internal Crystal Oscillator Backup
Communications Capability	
1. To Master Stations	Transfer of data files through Windows FTP Service Functions with multiple-Master system Windows Remote Desktop Remote Control
2. Email	Automatic reporting to multiple email addresses
3. LAN and WAN	Software supports communication via TCP/IP
Software Supplied	
1. Master Station & Recorder	Microsoft Windows 10® Complete remote control, test and data retrieval, display and screen manipulation Remote setting of program and system parameters Complete data analysis software for Recorder and Master Station included
2. Display/Analysis Software	E-MAX WinGrafDisp (Waveform Data) E-MAX Phasorview (Phasor Data)
Environmental Characteristics:	
Operating Temperature	0° To 60° Centigrade
Storage	-20° to 65° Centigrade
Relative Humidity	0 to 95% R.H. non-condensing
Surge Withstand Capability:	ANSI C37.90.1 1989
Quality Certification:	ISO 9001:2008

INTERNATIONAL STANDARDS COMPLIANCE	
Safety	Immunity
IEC 60255-2	IEC 61000-4-2
IEC 60255-4	IEC 61000-4-3
IEC 60255-5	IEC 61000-4-4
	IEC 61000-4-6

