DR-300 Digital Fault Recorder

FOR DISTRIBUTION POWER SYSTEM MONITORING

ROCHESTER SCIENTIFIC COLUMBUS

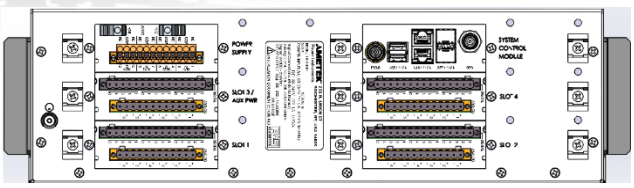
MULTI-FUNCTION RECORDER

The DR-300 is designed specifically for Distribution market and the only tool you need to capture and diagnose power system anomalies. With multiple recording modes and continuous transient oscillography, you will never miss an event. The DR-300 captures high speed transients and long-term system disturbances with enough memory to give you a complete view of the system disturbance.

Multi-Function Capability The DR-300 is packaged in a compact 3U - 19" rack mount chassis. It takes the place of several devices, by providing fault and disturbance recording, continuous logging, power quality monitoring and sequence of events recording. All recording modes operate simultaneously and independently to provide a complete picture of your system events.

Ease of Use
The DR-300 is easy to configure, install and operate using the same field proven display station software used in other AMETEK Fault Recorders. The compact modular architecture is suited for small or large applications by adding up to 4 input modules to the chassis to fit your needs.

High Reliability
The DR-300 is a highly reliable solid-state design that incorporates a low-power fan-less operation with no moving parts and a 64 GB solid state drive for long term storage. Each chassis can be equipped with up to 4 Input Modules, each configured with 6 Analog and 12 Digital inputs, for a maximum 24 Analog and 48 Digitals inputs, multiple time sync options, 3 programmable contact outputs and optional battery backup. Input Modules each have their own dedicated processor for independent monitoring.



Multiple independent ethernet ports support simultaneous connections for reliable network communications and secure data transfers.

Field Proven Technology - Never Miss An Event
The core strength of AMETEK Recorders is the extensive triggering and recording capabilities to ensure you never miss an event. The flexible triggering options make it easy to capture a simple fault or uncover a complex system anomaly. Independent of any triggers, the transient oscillography feature provides continuous waveform recording for 4* days to capture events that are too sensitive for your triggers or to extend your pre- and post-fault data recorded.

FEATURES AND BENEFITS

- Multiple Recording Modes—capture high speed transient faults and long-term disturbances
- Never miss an event—flexible triggering, continuous transient oscillography, longer recording times
- Ease of Use—**100%** software configurable - no jumpers or switches
- High Reliability—**64 GB** solid state memory, no moving parts,
- Field Proven Display Station Software—single software platform for all products
- Synchrophasor (PMU) C37.118.1a-2014*
- IEC 61850 (edition 2) MMS & GOOSE*
- DNP 3.0*
- PQ standards (IEC 61000-4-30 Class A)*

*Additional Licensing Required

AMETEK®

EXPERIENCE THE POWER™

SPECIFICATIONS

INPUTS

Analog Inputs
- Built in DSP for computations
- 16 bits, 32768 levels (15 plus sign)
- Fixed 256 samples/cycle (26KHz/31KHz)
- Accuracy better than 0.1% of reading down to 3% of full scale

Voltage Input Ranges
- 1.414, 10, 150, 300V RMS full-scale or custom range (AC or DC compatible)

Current Input Ranges
- 1 A or 5 A RMS nominal (thru current shunts/ CICT's)

Frequency Response
- DC-1/2 sampling rate

Digital Inputs
- 24 to 250 VDC normally open or closed wetted contact

Input Modules – up to 4 IMs
- Fixed 6 Analog (current or voltage)
- Fixed 12 Digital

System Capacity
- 6, 12, 18 or 24 Analog (current or voltage)
- 12, 24, 36 or 48 Digital
- (multiple units tied together for larger systems)

TRIGGERING (TRANSIENT/DISTURBANCE)

Analog Channels
- Voltage/current: over/under, rate of change (R-o-C)
- Harmonics: THD and individual harmonics (2 per channel)

Phase Group Sequence Triggers
- Over zero, over negative, over/under and R-o-C) positive sequence

Frequency
- Frequency channels 1 & 2, frequency differential, over/under, R-o-C

Digital Channels
- Normal to alarm state and return to normal state. Edge or level sensitive

TRIGGERING (DISTURBANCE)

Analog Channels
- Over/under level of fundamental and R-o-C, frequency and R-o-C-o-F

Line Group Triggers
- Over/under, R-o-C
- Impedance, power factor, power factor displacement, power oscillation, power (Watts, VARs, VA)

RECORDING (TRANSIENT)

Recording Rate
- 32, 64, 128 & 256 SPC (samples/cycle)
- 1.6, 3.2, 6.4, 12.8 & 25.6 kHz (50Hz)
- 1.9, 3.8, 7.7, 15.6 & 30.7 kHz (60Hz)

Pre-fault Time
- 2 to 300 cycles

Post-fault Time
- 8 to 50 cycles. Fault length extends as long as trigger condition exists.

Safety Window
- 0 to 8 cycles recording time after active trigger

Recording Duration
- 0 to 30 sec. (prevents memory filling with a continuous trigger

RECORDING (DISTURBANCE)

Recording Rate
- 0.5, 1.0 & 2.0 SPC
- ½, 1 or 2 X supply frequency (25/50/100Hz or 30/60/120Hz)

Pre-fault
- 10 sec. to 5 min

Post-fault Time
- 30 sec. to 2 min.
- Fault length extends as long as trigger point condition exists.

Safety Window
- 30 sec. to 1 min. Recording time after active trigger

Recording Duration
- 60 sec. to 20 min.

Recorded Values
- Voltage and current phasor and RMS values and frequency (x2)

CONTINUOUS RECORDING (LOGGING)

Recording Rate • 1 min **Recording Time** • 52 weeks **Stored Parameters**
- Voltage and current per channel, Watts (per circuit)
- Frequency (2 channels)

CONTINUOUS RECORDING (POWER QUALITY)

Recording Rate • 10 min **Recording Time** • 52 weeks **Stored Parameters**
- Voltage imbalance, Flicker, individual harmonics to 128th

SER RECORDING

- 1 msec. recording of all digital inputs

CONTINUOUS RECORDING (TRANSIENT OSCILLOGRAPHY)

Recording Interval
- 8, 16, 32 samples/cycle
- 400, 800, 1,600 Hz (50Hz)
- 480, 960, 1,440 Hz (60 Hz) **Recording Duration**
- 1 to 4* Days (depending on Sample Rate)
  * additional licensing required

CONTINUOUS RECORDING (DISTURBANCE LOGGER)

Recording Rate
- ½ or 1 x supply frequency
- (25/50Hz or 30/60Hz)

Recording Time
- 14-28 days (based on recording rate) **Stored Parameters**
- Voltage and current phasors and RMS values and frequency (x2)

SYSTEM TIMING

Time Synchronization Accuracy
- Internal GPS receiver
- IRIG-B (Mod & TTL)
- Network Time Protocol (NTP)

COMMUNICATIONS

Network Protocol: TCP/IP
- 10/100 Base-TX, (1 - Front 2 - Rear)
- 3 X RJ/45 type (1 - Front 2 - Rear)

USB Serial Ports
- 3 x USB -2 (1 - Front 2 - Rear)

DATA STORAGE

Solid State Storage
- 64GB internal solid-state memory

POWER SUPPLY

Input Voltage Options
- 88 to 240 VDC, 85 to 264 VAC,

Power Requirement
- 65 Watts

ENCLOSURE

Chassis
- Cabinet mount (11.75 in. x 16.0 in. x 8.25 in.) (300 mm x 400 mm x 210 mm)
- 3U (7") 19" chassis mount

ENVIRONMENT

Operating Temperature
- 14 °F to 131 °F (-10°C to 55°C) **Relative Humidity**
- 0 to 97% non-condensing

CERTIFICATIONS

CE

STANDARDS

Complies with Power Industry Substation Standards Including:

Vibration Tests for Relays and Protection Equipment
- IEC 60255-21-(1,2,3)
- **Measuring Relays and Protection Equipment, Electromechanical Compatibility – For Class B Installation.**
- IEC 60255-26-(IEC 61000-4-(2-12), 16-18, 29 CISPR11, 22

Electrical Equipment for Measurement, Control and Laboratory Use - EMC
- EC 61326 -1 (IEC 61000-4-(2-6,8,11)
- Environmental Testing
- IEC 60068-2-(1,2,14,30)

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