TR-100+ Digital Fault Recorder

FOR GENERATION, TRANSMISSION, AND DISTRIBUTION POWER SYSTEM MONITORING

DIGITAL FAULT RECORDER

ROCHESTER
SCIENTIFIC COLUMBUS

AMETEK
POWER INSTRUMENTS

The AMETEK TR-100+ is a fully-featured Digital Fault Recorder with the capability to capture and analyze short transient events, longer term disturbances and trend input quantities such as RMS, frequency, harmonics, power and power factor. The high speed, high resolution recording and flexible triggering modes make the TR-100+ ideal for monitoring protection opera tions, swing events, power quality, phasors, sequence of events, asset condition and load profiles. The TR-100+ can be scaled to almost any application to obtain the best cost for performance, with selectable architecture from 8-160 analog inputs and a complete suite of software applications.

The system can auto matically retrieve events and perform an expert analysis so you have the answers fast, saving time and money. Optimize your power system to improve reliability, shorten your fault clear
ance times and verify correct operation of your switchgear and other protection equipment. The TR-100+ is ideally suited for your generation, transmission and distribution power system monitoring.

The TR-100+ can be matched to any applica tion with models available for:

TR-108+: 8 Analog/16 Digital Inputs
TR-116+: 16 Analog/32 Digital Inputs
TR-124+: 24 Analog/48 Digital Inputs
TR-132+: 32 Analog/64 Digital Inputs
Systems up to 160 Analog/320 Digital Inputs

For portable testing and verification, we have the DL-8000+ monitor that includes the same features of the TR-100+ in 8 or 16 analog inputs, with easy access jacks for quick connections.

FEATURES AND BENEFITS

- Transient fault recorder—post fault analysis to verify protection and circuit breaker opera tions, fault clearance times and distance to fault
- Disturbance recorder—extended recording and logging for slow disturbances and steady state RMS values, harmonics and optional real power and power factor
- Power quality monitor—voltage and frequency profiles, voltage dips and surges, loss of supply, and harmonic content
- Fault locator—calculates distance to fault based on configurable line model
- Real time monitor—view analog, digital inputs and computed values in near real time
- On-line switchgear monitor—used to identify condition based service time for switchgear by accumulating contact wear

SPECIFICATIONS

INPUTS

Number of Channels
- 8, 16, 24, or 32 analog
- 16, 32, 48, or 64 digital (larger systems available)

Voltage Inputs
- 57 to120 V RMS nominal, 212 V RMS full scale

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

Frequency Response
- DC to 3,000 Hz, (+0dB, -3dB) or 1/4 sample rate

Accuracy
- Better than 0.2% full scale

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

RECORDING - FAULT

Resolution
- 16 bit A/D converter

Sample Rate
- 64, 128, and 256 samples/cycle

Pre-fault Time
- 2 to 300 cycles

Post-fault Time
- 8 cycles to 30 seconds. Fault length can optionally extend for as long as a trigger con dition exists to the maximum record length

Safety Window
- Recording time after end of triggers: 0 to 16 cycles

Maximum Record Length
- 30 seconds

Total Recording Time
- RAM: 64 MB (approx. 80 seconds at 64 sam ples/cycle with 32 channels) used as a buffer
- Minimum 40 Gb hard drive: Up to a maxi mum of 1024 records

Multi-Recorder Synchronization
- Channels between cross triggered recorders are timed to within 1 sample

RECORDING - DISTURBANCE

Sample Rate
- 100/120 samples/seconds

Pre-fault Time
- 2 to 600 seconds

Post-fault Time
- 4 to 300 sec. fault length can optionally ex tend for as long as a trigger condition exists to the maximum record length

Safety Window
- Recording time after end of triggers: 2 to 120 seconds

Maximum Record Length
- 10 to 1200 seconds

RECORDING - LOGGING

Sample Rate
- 1 or 0.1 samples/minute

Recording Time
- 16 weeks - circular buffer

Recorded Values
- Maximum, minimum and average RMS volt age, current, frequency, real power (optional), and power factor (optional)

Harmonics
- Average amplitude up to 63rd every 10 minutes (EN61000-4-7)

TRIGGERING

Analog
- Over and under limit with hysteresis, rate of change per input, zero and negative se quence, over/under/R-o-C of positive sequence, THD and over/under/R-o-C of frequency

Digital
- Alarm and return to normal, edge or level sensitive

SYSTEM TIMING

Time Synchronization
- Internal clock, synched to the 50/60 Hz line or optional IRIG-B

COMMUNICATIONS

Serial Ports
- Up to 3 x RS232 type, local and remote com munications
- DNP3

Modem
- Hayes compatible type internal or external (57.6 kbaud optional)

Phone Line Sharing
- External unit to share a single phone line with a station phone (optional)

Network
- 10Base2 (50 ohm coax and BNC), 10baseT (UTP), ST Fiber (optional)
- Network protocol: TCP/IP

STATUS RELAYS

Relay Function
- Power OK; Armed/ready; Attention; System triggered

Contact Rating
- 400 VDC/280 VAC, 1 A maximum

POWER SUPPLY

Input Voltage Options
- 88 to 300 VDC, 85 to 264 VAC, 24 or 48 VDC optional

Power Requirement
- 30 VA (16 channel) 45 VA (32 channel)

ENVIRONMENTAL/ ELECTRICAL STANDARDS

Operating Temperature
- 14^{O} to 131^{O}F (-10^{O} to 55^{O}C)

Relative Humidity
- 0 to 95% non condensing

IEEE/IEC
- Isolation, impulse voltage, RFI and ESD

CE Mark

MECHANICAL DETAILS

TR-108+, TR-116+
- 19 in. wide rack, 30 lbs. (13.7 kg) 5U high (8.73 in.)

TR-124+, TR-132+
- 19 in. wide rack, 60 lbs. (27.4 kg) 7U high (12.23 in.)

AMETEK

POWER INSTRUMENTS

Алматы (7273)495-231
Ангарск (3955)60-70-56
Архангельск (8182)63-90-72
Астрахань (8512)99-46-04
Барнаул (3852)73-04-60
Белгород (4722)40-23-64
Благовещенск (4162)22-76-07
Брянск (4832)59-03-52
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Волгоград (844)278-03-48
Вологда (8172)26-41-59
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Ижевск (3412)26-03-58
Иркутск (395)279-98-46
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