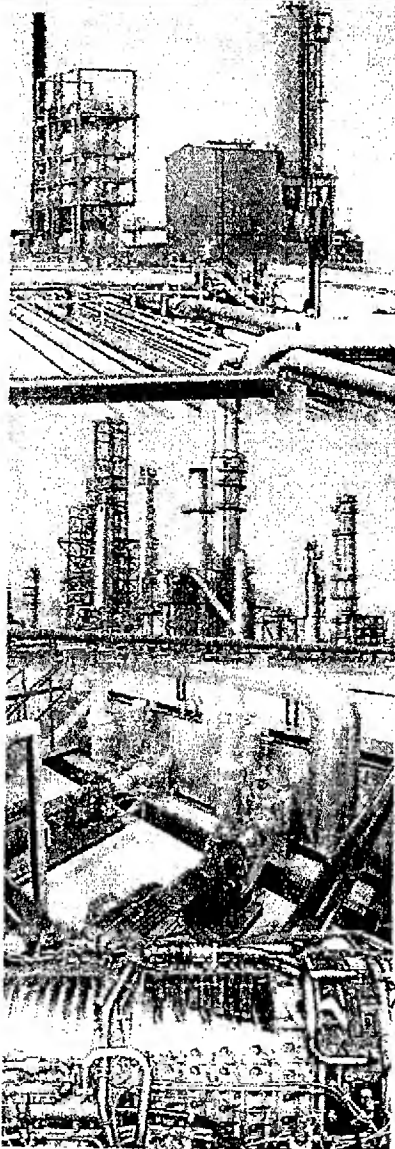


Experience the Power of AMETEK Power Instruments

MONITORING YOUR CRITICAL PROCESS NEEDS

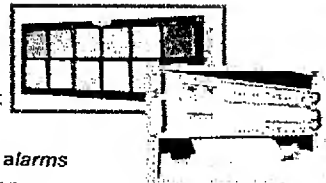
Optimize your process for maximum power efficiency and prevent costly shutdowns



* ALARM MANAGEMENT PRODUCTS

Annunciators, Sequence of Events Recorders, Distributed Alarm Management Systems, Graphical Alarm Management Software

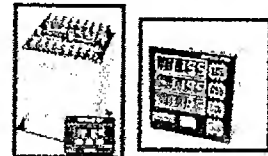
Quick visual indication of critical alarms with time-stamped alarms to quickly determine root cause and control system operation.



POWER MEASUREMENT PRODUCTS

Panel Meters, Power Transducers, Digital Power Measurement

Display and measurement of power with configurable analog outputs, Modbus communication capabilities.



PRESSURE TRANSMITTERS

High Temperature Fast Response Differential, Absolute, Gage and Nuclear Qualified

Fast response pressure transmitters for critical compressor control and fuel applications. Qualified for safety related service.



ENERGY MANAGEMENT PRODUCTS

Multi-Function Three Phase Electricity Meters

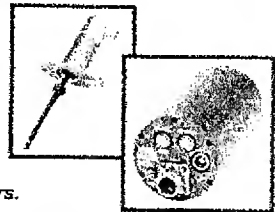
High accuracy energy measurements, site monitoring alarms, power quality recording and WEB based communications.



FLAME SENSORS AND THERMOCOUPLES

Thermocouples and Cable Harnesses for Aeroderivative and Industrial Frame Turbines, Thermocouple Cable Harnesses and Complete Engine Cable Kits for Overhauls and Maintenance, Flame Sensors for Gas Turbines, Furnace and Boiler Applications

Many models available for OEM replacements of existing sensors.



* FAULT RECORDERS AND POWER QUALITY PRODUCTS

Fault Recorders and Portable Power Quality Monitors for Capturing Sags and Swells, Outages, Harmonics, Transients and Flicker - Easy-to-Use Software with Automatic Report Generators

Quickly diagnose power quality problems to avoid costly shutdowns and to verify compliance of incoming power.



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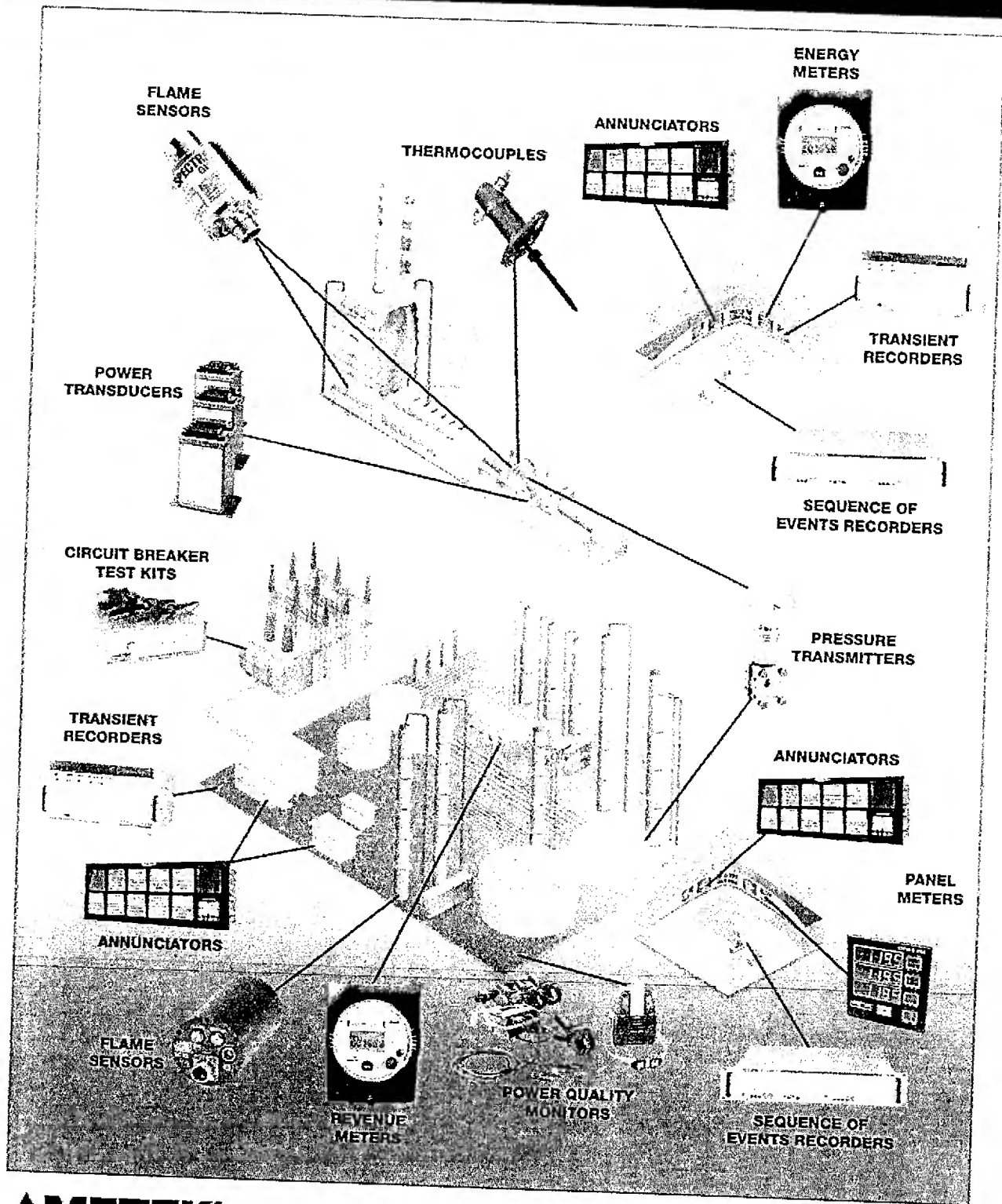
Experience the Power of AMETEK Power Instruments – a family of businesses that serves the Refining and other Process industries with a growing array of advanced sensors, instruments and monitoring systems. Power Instruments incorporates companies you have come to know and trust for your round the clock power monitoring needs such as: **Rochester Instruments**, **Scientific Columbus**, **PANALARM**, **Gulton Statham**, and most recently, **Pulsar Technologies**. AMETEK Power Instruments is a unit of AMETEK, Inc., a global leader in advanced monitoring, testing, calibrating, and display instruments with annual sales of more than \$2.1 billion.



Experience the Power of AMETEK Power Instruments

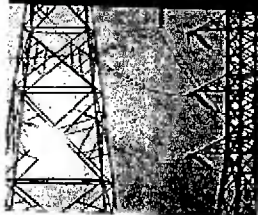
MONITORING YOUR CRITICAL PROCESS NEEDS

Optimize your process for maximum power efficiency and prevent costly shutdowns



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TR-100+ Digital Fault Recorder

FOR GENERATION, TRANSMISSION, AND DISTRIBUTION POWER SYSTEM MONITORING



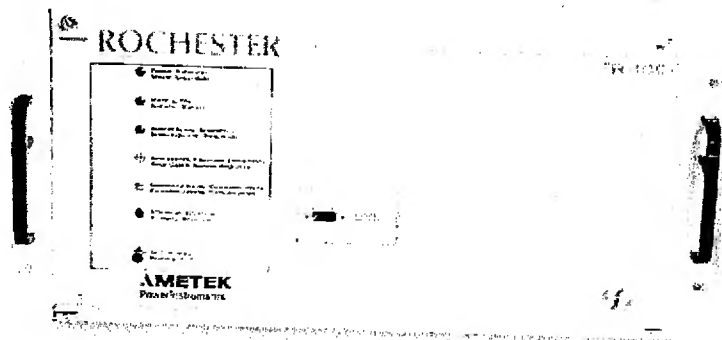
DIGITAL FAULT RECORDER

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 operations, 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 automatically 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 clearance 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 application 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 operations, 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.

AMETEK

**POWER
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SPECIFICATIONS

INPUTS

Number of channels

- 8 (4 voltage, 4 current) consult factory for other configurations

Voltage Inputs

- 150/300/600 RMS maximum, Star (wye) or delta connections

Current Inputs

- 1/5/100/200/500/1000 A RMS nominal thru external CTs. designed to record to 40% over-range

Frequency Response

- 40Hz-3kHz (+0dB, -3dB for voltages)
DC-3kHz (+0dB for currents)

Accuracy

- Better than 0.2% of full scale

RECORDING

Resolution

- 14 bits

Sample Rate

- 128 sample per cycle, 50/60 HZ (6.4/7.68k samples per second)

DATA STORAGE

Hard Disk

- 6.4 GB (up to 1000 events/surveys)

RECORDED DATA

Waveform Capture

- 4 cycles pre, 12 cycles post at 128 samples/cycle (Option for up to 2 seconds)

Disturbance Recording

- Up to 1 minute of RMS data at 2 samples/cycle

Trending (up to 16 weeks)

- Voltage, Current, Frequency, Watts—1 minute min./max./avg.
- Harmonics—10 minute min./max./avg./angle to the 50th harmonic

- Imbalance—10 minute min./max./avg.

- Flicker—10 minute Pst

Computed (at PC)

- Phase angle, power factor, and sequence components

EVENT TRIGGERING

Trigger Parameters

- Over/under level with hysteresis. Rate of Change and THD

Accuracy

- Better than 2%

External Trigger Relay Contact

- 24-120 VDC nominal

POWER SUPPLY

Input Voltage Range

- 100 to 300 VDC, 85 to 264 VAC, 50/60Hz (24 or 48 VDC nominal)

Power Requirement

- 20 VA

Battery (Optional)

- 15 minute ride-through

REAL TIME CLOCK

Clock Source

- 32,768 Hz internal crystal oscillator

Resolution

- 1 ms

Range

- Time and date (including leap year and day of the year)

Synchronization

- 50/60 Hz from voltage input

COMMUNICATIONS

Serial Port

- RS232 type. Speed up to 57.6 kBaud

Modem (optional)

- Hayes compatible internal type (up to 57.6 kBaud)

Network (optional)

- TCP/IP 10Base2 or 10BaseT

VOLTAGE WITHSTAND

Isolation, Impulse Voltage Withstand, Electrical Fast Transient (EFT), Surge Withstand (SWC), RFI and ESD to IEEE/IEC Standards

ENCLOSURE

Mounting

- Wall (internal terminals) — 11.75 in. x 16.0 in. x 8.25 in. (300 mm x 400 mm x 210 mm)
- 19" Rack Mounting — 13.25 in. x 19.0 in. x 5.25 in. (336 mm x 482 mm x 133 mm)
- Portable — 14.25 in. x 13.75 in. x 5.25 in. (362 mm x 349 mm x 133 mm)

Weight

- 13.2-17.6 lbs. (6-8 kg) depending on enclosure style

ENVIRONMENT

Operating Temperature

- 14° to 122°F (-10° to 50°C)

Storage Temperature

- -40° to 158°F (-40° to 70°C)

Humidity

- 5 - 95% RH (non condensing)

CERTIFICATION

CE

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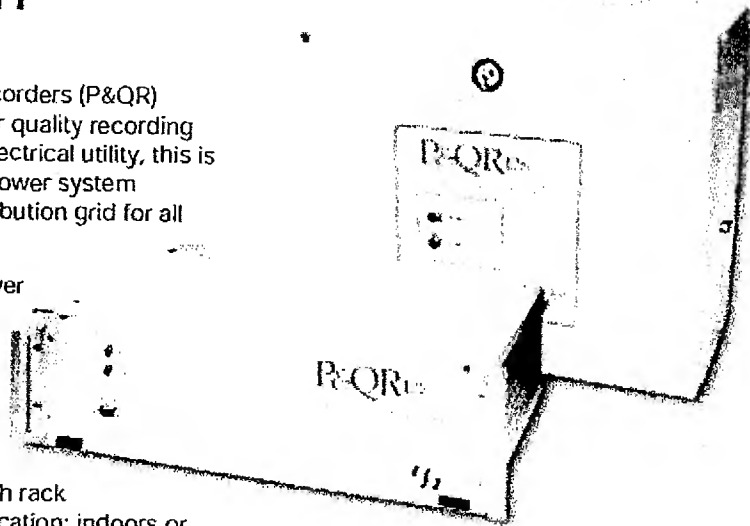
P&QR Power Quality Recorder

FOR POWER QUALITY, LOAD STUDIES, AND FLICKER ANALYSIS AT POWER PLANTS, SUBSTATIONS, AND OTHER FACILITIES

POWER AND QUALITY RECORDER

AMETEK Power and Quality Recorders (P&QR) provide high performance power quality recording at an affordable price. For the electrical utility, this is an economical way to monitor power system disturbances on the power distribution grid for all your key accounts.

For the facilities manager or power quality department, this is an excellent tool for monitoring power quality in a plant to prevent costly shutdowns and work stoppages. The versatile P&QR comes in a portable case, wall mount box or a 19-inch rack mount chassis to meet any application: indoors or outdoors; portable or permanent. The P&QR recorder has high performance 14-bit resolution with 128 samples/cycle recording. A massive 6.4 GB of memory is included for trend recording up to 16 weeks and waveform capture up to two seconds. The P&QR features high-speed Ethernet and Modem communications, battery back-up, and a suite of available software applications.



FEATURES AND BENEFITS

- Power quality monitor—measures voltage and frequency profiles, voltage dips and surges, loss of supply, harmonic content, flicker, voltage and current imbalance
- Transient fault recorder—analog inputs are sampled at up to 128 samples per cycle with a maximum record length of 2 seconds
- Disturbance Recorder/Logger—analog inputs are sampled at up to 2 samples per cycle with RMS measurements recorded up to one minute
- Trend Recording—input and computed quantities are logged as maximum, minimum, and average quantities every minute for up to 16 weeks.
- Remote Capabilities—via Ethernet or modem, and the process can be automated using the recorder's Auto-Call or Auto-Poll features
- Software—wide range of application software for communicating, configuring, downloading, displaying and analyzing recorded data. Auto-Poll/Call automates the complete process of retrieving your recorded data

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SPECIFICATIONS

INPUTS

- Number of Channels**
- 8, 16, 24, or 32 Analog
 - 16, 32, 48, or 64 Digital (larger systems available)
- Voltage Inputs**
- 57 to 120 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 condition 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 samples/cycle with 32 channels) used as a buffer
 - Minimum 40 Gb hard drive: Up to a maximum 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 extend 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 voltage, 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 sequence, 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 communications
- 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° to 131°F (-10° to 55°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.)

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Gulton
SPECIALTY EQUIPMENT

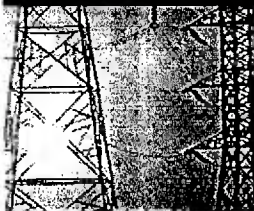
ROCHESTER
SPECIALTY EQUIPMENT

POWER & INDUSTRIAL

PAVALARM

WELER

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Platinum 2.5K Multi-Function Recorder

FOR GENERATION, TRANSMISSION, AND DISTRIBUTION POWER SYSTEM MONITORING



MULTI-FUNCTION RECORDER

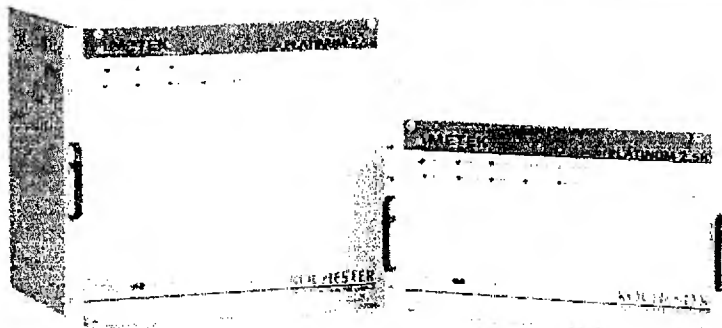
For all types of power system events, the Platinum 2.5K Multi-Function Recorder provides all the information you need to capture the complete picture. With the true integrated functionality of the Platinum 2.5K, you have one place for all your answers. Simultaneously perform: transient recording, disturbance recording, phasor measurements, power quality analysis, and sequence of events recording. The Platinum 2.5K provides answers when you need them with as much information as you need to get results quick. The system can operate automatically to retrieve events and perform an expert analysis so you have the answers fast, saving time and money. The Platinum 2.5K takes the place of several devices, integrating their functions into one unit, saving you money on equipment and installation while providing all the answers in one software platform. All of these functions are performed at the highest level so it will meet your needs of today and in the future. In a deregulated environment, the Platinum 2.5K is the best tool to provide the necessary data to increase revenues and retain your customers.

The Platinum 2.5K recorder incorporates the latest advancements in technology and low power components for ultimate reliability. No longer needing a hard drive, the unit's 8GB Flash Drive can store over 1000 fault records and over 1000 disturbance records simultaneously, providing a large volume of both high-speed sinusoid data for traditional fault analysis and slower speed data for disturbance or swing recording. The unit also includes steady-state logging of RMS and harmonic spectrum values on every channel and frequency as a standard feature.

Optimize your power system to improve reliability, shorten your fault clearance times, and verify correct operation of your switchgear and protection equipment. The Platinum 2.5K is ideally suited for your generation, transmission, and distribution power system monitoring.

The Platinum 2.5K can be matched to any application with 16 models available in one robust, utility-hardened chassis:

- 8 Analog / 16, 48, 80, 112 or 144 Digital Inputs
- 16 Analog / 32, 64, 96, 128 or 160 Digital Inputs
- 24 Analog / 48, 80 or 112 Digital Inputs
- 32 Analog / 64, 96 or 128 Digital Inputs



FEATURES AND BENEFITS

- Transient fault recorder—post fault analysis to verify protection and circuit breaker operations, fault clearance times
- Disturbance recorder/logger—analyze power system stability by recording re-close sequences, power swing, and frequency oscillations
- Trend recording—verify voltage regulation and balancing
- Power quality monitor—voltage and frequency profiles, voltage dips and surges, loss of supply, harmonic content, flicker, voltage and current imbalance
- Automatically or manually export fault, disturbance and power quality data using the IEEE P1159.3 PQDIF standard
- Phasor Measurement Unit—synchronized phasor measurements, in accordance with IEEE STD 1344
- 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
- Multiple simultaneous connections over serial, modem or Ethernet, secured with strongly encrypted passwords.
- Sequence of events recorder—1 msec or better resolution on digital contacts

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POWER

Experience the Power™

SPECIFICATIONS

INPUTS

- Number of Channels
- 8, 16, 24, or 32 Analog
 - 16, 32, 48, 64, 80, 96, 112, 128, 144 or 160 Digital

Voltage Inputs

- 63.5 or 110 V RMS nominal

Current Inputs

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

Frequency Response

- DC - 1/2 sampling rate (1/4 sampling rate for 384 samples per cycle only)

Accuracy

- Better than 0.1% of full scale

Digital Inputs

- 24/48/125/250 VDC normally open or closed wetted contact

RECORDING (TRANSIENT)

Recording Resolution

- 16 bits, 65536 levels (15 plus sign)

Sample Rate

- Up to 384 samples per cycle

Pre-fault Time

- 2 to 600 cycles

Post-fault Time

- Fault length will extend as long as a trigger condition exists. Minimum is 8 to 100 cycles

Safety Window

- Recording time after active trigger: 0 to 16 cycles

Maximum Record Length

- Maximum size 1 to 60 sec. (this prevents memory filling with a continuous trigger)

RECORDING (DISTURBANCE)

Sample Rate

- 2 x supply frequency (100/120 Hz)

Pre-fault

- 10 sec. to 10 min.

Post-fault Time

- Fault length will extend as long as a trigger point condition exists. Minimum value is 30 sec. to 5 min.

Maximum Record

- Absolute maximum: 30 minutes

Computed Values

- Voltage and current, real power, reactive power, apparent power, power factor, total harmonic distortion and frequency (x2), positive, negative and zero sequence, voltage imbalance

RECORDING (DISTURBANCE LOGGING) - OPTIONAL

Sample Rate

- 1/2 x supply frequency (25/30 Hz)

Recording Time

- 1 week (circulating buffer)
- 2 weeks for HDD option

RECORDING (TREND)

Sampling Interval

- 1 minute, or 10 minutes - data can be retrieved at up to a 60 minute interval

Record Length

- 26 weeks (circulating buffer)
- 52 weeks for HDD option

Stored Parameters

- Maximum, minimum, and average voltage, current, frequency (2), power, flicker, harmonics, and imbalance. Digital data in SER format at user defined time resolution

TRIGGERING (TRANSIENT)

Analog Channels

- Over/under RMS level, Rate-of-Change and THD. Positive, zero and negative sequence triggers, over, under and R-o-C frequency triggers, differential frequency

Digital Channels

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

TRIGGERING (DISTURBANCE)

Analog Channels

- Under/over level of fundamental and R-o-C, frequency and ROCOF, power and frequency oscillation, imbalance and impedance, cross trigger from transient recorder

SYSTEM TIMING

Time Source

- Internal GPS receiver with 1 PPS output for phasor measurement
- Optional IRIG-B

Accuracy

- Normally better than +/- 60 ns

Synchronization

- 1 pulse per second on optical port. Any number of systems can be linked together

COMMUNICATIONS

Serial Ports

- 2 x RS232 type

Default Setting

- 57.6 kbaud, 8 bits, 1 stop, no parity. Rates can be set up to 115 kbaud.

Modem

- Hayes compatible type internal or external, fax compatible

Phone Line Sharing

- External unit to share a single phone line with a station phone

Network

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

DATA STORAGE

Permanent Storage

- 8 GB Flash Disk
- 40 GB for HDD option

POWER SUPPLY

Input Voltage Options

- 100 to 300 VDC, 85 to 264 VAC, (optional 85 to 150 VDC, 85 to 264 VAC)

Power Requirement

- 60VA (16 channel), 70VA (32 channel)

VOLTAGE WITHSTAND

Isolation, Impulse Voltage, RFI and ESD per IEEE/IEC Standards

ENCLOSURE

Cabinet

- 6U TR-2508 and TR-2516
- 8U TR-2508-D1, TR-2508-D2, TR-2516-D1, TR-2516-D2, TR-2524 and TR-2532
- 9U TR-2508-D3, TR-2508-D4, TR-2516-D3, TR-2516-D4, TR-2524-D1, TR-2524-D2, TR-2532-D1, and TR-2532-D2

ENVIRONMENT

Operating Temperature

- 14° to 131°F (-10° to 55°C)

Relative Humidity

- 0 to 97% non-condensing

CERTIFICATION

CE

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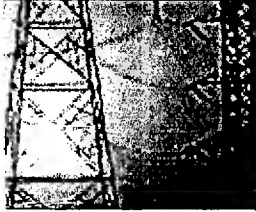
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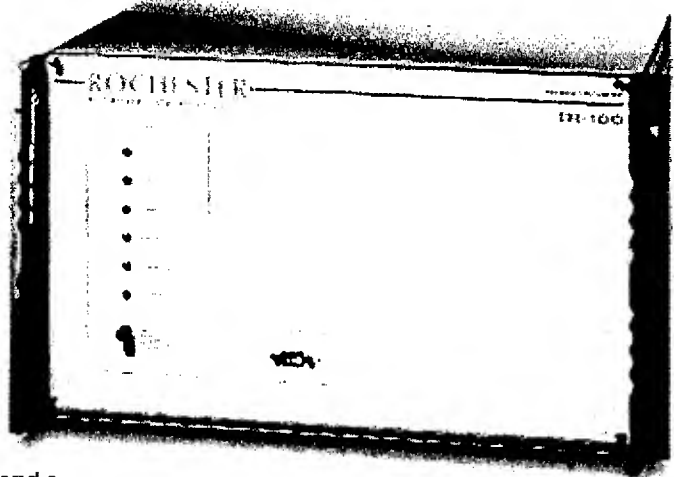
TR-100 Digital Fault Recorder

FOR GENERATION, TRANSMISSION, AND DISTRIBUTION POWER SYSTEM MONITORING



DIGITAL FAULT RECORDER

AMETEK TR-100 is a full-featured Digital Fault Recorder with the capability to capture and analyze short transient events, longer term disturbances and harmonic records. The high speed, high resolution recording and flexible triggering modes make the TR-100 ideal for capturing all forms of line transients from conductor clashes, lightning strikes to spikes and sub-cycle distortions. The TR-100 can be scaled to your application to obtain the best cost for performance, with selectable architecture from 8-128 analog inputs and options for memory, harmonic recording, long term trending and a complete suite of software applications. The system can operate automatically to 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 clearance times and verify correct operation of your switchgear and protection equipment. The TR-100 is ideally suited for your Generation, Transmission & Distribution Power System Monitoring.

The TR-100 can be matched to any application 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 128 Analog/252 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 set-up.

FEATURES AND BENEFITS

- Transient fault recorder—post fault analysis to verify protection and circuit breaker operations, fault clearance times.
- Disturbance recorder/logger—Extended logging for steady state values, harmonics and flicker.
- Power quality monitor—voltage and frequency profiles, voltage dips and surges, loss of supply, harmonic content, flicker, voltage and current imbalances.
- 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 switch gear and circuit breaker monitor—Used to identify optimum service time for switchgear operations and predictive maintenance on contact wear.

AMETEK®

**POWER
INSTRUMENTS**

Experience the Power™

SPECIFICATIONS

INPUTS

- Number of channels**
- 8, 16, 24, or 32 Analog
 - 16, 32, 48, or 64 Digital (larger systems available)
- Voltage Inputs**
- 69 to 120 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 (0) to 3,000 Hz, (+0dB, -3dB)
- Accuracy**
- Better than 0.5% full scale
- Digital Inputs**
- 24/48/125/250 VDC normally open or closed wetted contact

RECORDING

- Resolution**
- 12 bit A/D (1:4096).
- Sample Rate**
- User selected (24-192 samples/cycle)
- Pre-fault Time**
- 2 to 100 cycles
- Post-fault Time**
- 8 cycles to 10 sec. fault length can optionally extend for as long as a trigger condition exists to the maximum record length.
- Safety Window**
- Recording time after active trigger reset: 4 to 16 cycles
- Maximum Record Length**
- 15 sec.
- Total Recording Time**
- RAM: 16 MB (approx. 37 seconds at 96 samples/cycle with 32 channels)
 - 528MB Hard Drive: Up to a maximum of 1024 records.

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

TRIGGERING

- Analog**
- Over and under limit with hysteresis, rate of change, zero sequence, negative sequence, sub-cycle drop out (sinewave quality), frequency (over, under rate of change)
- Digital**
- Alarm and return to normal, edge or level sensitive

SYSTEM TIMING

- Time Synchronization**
- Internal clock, external pulse per second, minute, hour and optional IRIG-B

COMMUNICATIONS

- Serial Ports**
- Up to 2 x RS232 type, local and remote communications. DNP
- Parallel Ports**
- Local printing, Laser, Inkjet and Dot Matrix printers
- Modem**
- Hayes compatible type internal or external, fax compatible (57.6 kbaud)
- Phone Line Sharing**
- External unit to share a single phone line with a station phone
- Network**
- 10Base2 (50 ohm coax and BNC), 10baseT, Fiber
 - Network protocol: TCP/IP

STATUS RELAYS

- Relay Function**
- Power OK, Armed/ready, Attention, System triggered
- Operating Voltage**
- 24, 48, 125, or 250 VDC external coil supply
- Contact Rating**
- 125 VDC/300 VAC, 5 A maximum (minimum on time 500 mS)

POWER SUPPLY

- Input Voltage Options**
- 88 to 300 VDC, 85 to 264 VAC, 24 or 48 VDC optional
- Power Requirement**
- 20 VA (8 channel)

ENVIRONMENTAL/ELECTRICAL STANDARDS

- Operating Temperature**
- -10 to 55°C (14 to 131°F)
- Relative Humidity**
- 0 to 95% non condensing
- IEEE/IEC**
- Isolation, impulse voltage, RFI and ESD

MECHANICAL DETAILS

- TR-108, TR-116**
- 19" wide rack, 30 lbs (13.7 Kg.) 6U high (10.48")
- TR-124, TR-132**
- 19" wide rack, 60 lbs (27.4 kg) 11U high (19.23")
- DL8000 Size**
- 21 1/8"W x 11 3/4"H x 21 3/4"D
541.7mm x 301.3mm x 557.7mm
- Weight**
- 50 lbs (22.7 kg)

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 **PANALARM**

 **S LER**

ISO 9001 Certified

AN-6100C Annunciator

FOR POWER GENERATION, TRANSMISSION & DISTRIBUTION, PETROLEUM, PETROCHEMICAL AND OTHER PROCESS INDUSTRIES



ALARM MONITORING SYSTEM

AMETEK's AN-6100C Annunciator has all the features you need for an alarm monitoring system. Simple to install, configure and operate and flexible to change, expand and grow to meet future requirements. The AN-6100C has all these qualities along with reliable operation for your most critical needs. The AN-6100C is maintenance free; once installed, you will never have to worry about it.

COMPACT DESIGN

With a depth less than 4-1/2", it can be easily installed into control panels, system cabinets and consoles. It is an ideal fit for replacing older systems or for new installations. The high density design provides up to 44 alarms in just 80 square inch of panel space.

FLEXIBLE CONFIGURATION

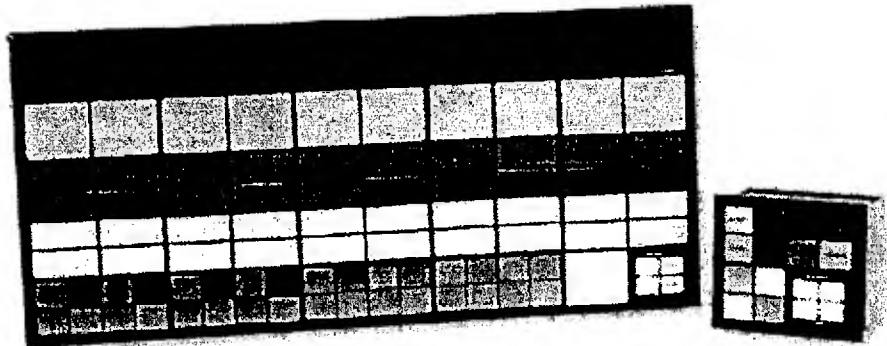
Create any system size up to 10 rows by 20 columns of windows. Four window sizes are available in several colors. The large windows can easily be converted into smaller ones, providing instant expansion for the future.

HIGH RELIABILITY

Each AN-6100C Annunciator is equipped with low power, long life white LEDs. Each alarm point uses a pair of LEDs providing ample illumination in all light conditions. You never have to worry about changing a lamp or having it fail when you need it the most.

MULTI-FUNCTION

All features and options are provided in a single model, making it easy to order or to change in the future. Our innovative software configuration tool is used to change any system parameter, such as: ISA alarm sequence, alarm grouping, input delays, or relay operation.



SERIAL COMMUNICATION

Alarm information is easily transmitted or received with the bi-directional serial Modbus communications. The RS-232/485 serial communications can act as a slave or master providing control or monitoring of the alarm information.

FIELD CHANGEABLE

The window legends are printed on standard transparency film, making it easy to change legends at any time. Even options like serial Modbus can be added in the future through a factory supplied password.

FEATURES AND BENEFITS

- Compact Design
- Minimal depth behind panel
- Bi-directional serial communications
- LED illumination
- Multi-function
- Software configured
- Laser printed legends
- Removable terminal blocks

AMETEK®

**POWER
INSTRUMENTS**

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SPECIFICATIONS

INPUT

Field Contacts

- Normally Open (N.O.) or Normally Closed (N.C.) input selection through DIP Switch
- Wet (voltage supplied) or dry (voltage free) contacts

Field Contact Voltage

- 5, 24, 48, 125 VDC, 120 VAC/DC
- 24 VDC open collector
- 24 VDC provided by annunciator power supply. Other voltage customer supplied.

Input Isolation

- Each input is optically isolated
- Inputs share common return*
*120VAC/125VDC input option provides isolation input to input

Input Response

- 50 milliseconds (nominal)
- Adjustable to 2 seconds

DISPLAY

LED

- Dual White LED, 18mA @24VDC

Window Sizes

- Small: 0.98 x 1.14 in. (25 x 30 mm)
- Medium: 0.98 x 2.40 in. (25 x 60 mm)
- Large: 2.13 x 2.40 in. (55 x 60mm)
- Extra Large: 2.13 x 4.96 in. (55 x 125 mm)

Window Color

- White, Red, Yellow, Amber, Green, Blue

Legends

- Laser printed on transparency film

ALARM SEQUENCE

Sequence Selections

- ISA-A, A4, A456, M, R12, F1A, F2M, FFAM2, F3A, R12C, F3C
- Dual color sequences
- Customized flash rates
- Up to 4 first out groups

CONTROLS

Integral Test, Acknowledge, Silence and Reset

External Pushbutton Inputs

OUTPUTS

Auxiliary Relay Option

- Individual relay per point
- Follows field contact or alarm sequence
- Energized or de-energized
- Form A or Form B (N.O. or N.C.)

Common Relays

- Four relays selectable for:
 - Critical and non-critical: horn, reflash, common alarm
 - Ringback audible, watchdog
- Energized or de-energized
- Form A or Form B (N.O. or N.C.)

Relay Ratings

- 30 VDC @ 2.0 Amps
- 110 VDC @ 0.3 Amps
- 120 VAC @ 0.5Amps

Audible

- Internal 80db audible device

SERIAL MODBUS OPTION

- RS-232 or RS-485
- Modbus RTU or ASCII
- Master or slave mode
- Monitor mode (alarm information transmitted externally)
- Actuate mode (alarm information received externally)
- Pushbutton controls

CONNECTIONS

Input/Output Terminals

- Two-part removable screw type

- Maximum wire size: 12AWG (2.5mm)
- Communication Port
- 9 Pin Female D connector

POWER REQUIREMENTS

Operating Range:

- 24 VDC +/-15%
- Burden: 7.5 VA per 8 inputs

External Power Supply Options:

- 88-264 VAC 50/60 Hz
- 72-144 VDC
- 36-72 VDC

MECHANICAL

Display Module (cell)

- 2.83" H x 5.67" W (72 x 144 mm)
- 1, 2, 4, 8 windows per cell

Weight

- 0.85 lb. per cell (0.4 kg per cell)

ENVIRONMENT

Operating Temperature Range:

- -4 to 122°F (-20 TO 50°C)

Humidity:

- 20-95% RH

Surge Withstand:

- ANSI C37.90.1

Isolation:

- 1950 VDC or 1400 VAC input to output/ case/common, output to case/common

CERTIFICATIONS

CE, UL, ULC

Annunciator Mounting Details

	Number of Cells Wide				
	1	2	3	4	5
Bezel Width	5.83 (148)	10.98 (279)	16.13 (410)	21.28 (541)	26.43 (671)
Cut-out Width	5.50 (140)	10.65 (270)	15.80 (401)	20.95 (532)	26.10 (663)
	Number of Cells High				
	1	2	3	4	5
Bezel Height	2.99 (76)	5.29 (134)	7.59 (193)	9.89 (251)	12.19 (310)
Cut-out Height	2.66 (68)	4.96 (126)	7.26 (184)	9.56 (243)	11.86 (301)

Allow 4.5" depth behind panel

AMETEK®

CE

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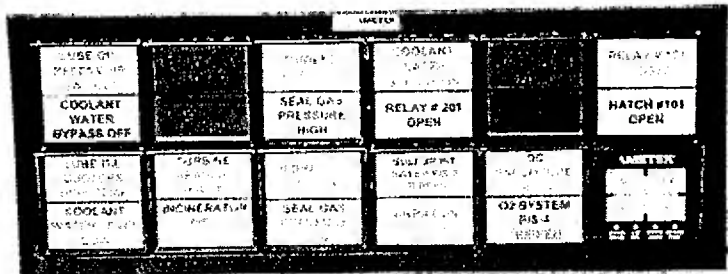
AN-3100D Annunciator

FOR POWER GENERATION, TRANSMISSION & DISTRIBUTION, PETROLEUM, PETROCHEMICAL, AND OTHER PROCESS INDUSTRIES



INNOVATIVE ANNUNCIATOR

Continuing with the widely successful AN-3100 series of annunciators, AMETEK's new AN-3100D brings alarm monitoring to new levels. Time stamped alarms and more communication options are now available. Installation and setup have been simplified making this an ideal fit for new projects or system replacements. The unique software configuration provides more features and functions a mouse click away.



Time Stamped Alarms (SER)

All of your alarms can include a time stamp, synchronized by IRIG-B or our internal clock. This can be presented through Modbus, DNP, OPC or to a local printer or terminal for viewing.

Communications

Transmit or receive alarms using our RS-232/485 serial or Ethernet port. The AN-3100D supports Modbus and DNP protocols. Communicate via OPC using our OPC Server Software.

Software Configuration

While all systems are pre-configured to your specifications, the software configuration tool unleashes the true power of the AN-3100D.

You can select any operational sequence, sort alarms by group, configure your relay outputs and more. There is never any reason to pull out the front accessible input cards as changes can be made via software.

Compact Size

The annunciator and all electronics including the communication options are self contained within a compact frame less than seven inches deep. In most cases, the power supply is included inside the system simplifying installation and wiring.

Reliability

Every AN-3100D annunciator is equipped with low power, long life LEDs. The brightness exceeds standard incandescent bulbs and they last years longer.

If a LED needs replacement, our automatic detector provides notice so critical alarms are not missed. A built-in ground fault detector is available for indicating ground faults in your field wiring.

Flexible Design

The window legends are printed on standard transparency film, making it easy to change legends at any time. The annunciator capacity can be increased with built-in expansion. All features and options are field selectable and upgradeable.

FEATURES AND BENEFITS

- Timed Stamped Alarms (SER)
- LED Illumination (Standard)
- Serial and Ethernet Communications: Modbus, DNP, OPC Protocols
- Software Configurable
- Laser Printed Legends
- Internal Self Diagnostics
- Compact Size

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POWER INSTRUMENTS

EXPERIENCE THE
POWER

SPECIFICATIONS

INPUT

Field Contacts

- Normally Open (N.O.) or Normally Closed (N.C.) input selection through software or hardware
- Wetted (voltage supplied) or dry (voltage free) contacts

Field Contact Voltage

- 12, 24, 48, 125 VDC, 120 VAC jumper selectable (.0018mA per input)

Input Isolation

- Each input is optically isolated

Input Response

- 50 milliseconds (standard)
- 1 millisecond fast response (opt)
- 50 milliseconds to 250 seconds software adjustable

DISPLAY

LED

- White LED, minimum 2 per window

Window Sizes (h x w)

- Quad: 1.5 x 1.5 inch (38 x 38 mm)
- Third: 1.0 x 3.0 inch (25 x 76 mm)
- Half: 1.5 x 3.0 inch (38 x 76 mm)
- Full: 3.0 x 3.0 inch (76 x 76 mm)

Window Color

- White, red, yellow, amber, green, blue

Legends

- Laser printed on transparency film or engraved windows

ALARM SEQUENCE

Sequence Selections

- A, A4, M, R, R12, F1A, F3A, F2M1, FFAM2, F3C and R12C
- Software configurable
 - Dual color sequences
 - Customized flash rates
 - Up to 4 first out groups

CONTROLS

- Integral test, acknowledge, silence and reset with LED status lights
- External push button inputs
- Configurable switch inputs (inhibit LEDs, horns, relays)

OUTPUTS

Auxiliary Relay Option

- Individual or dual relay per point
- Follows field contact or alarm sequence
- Software configurable
- Energized/de-energized operation
- Form A or form B (N.O. or N.C.)
- Form C (SPDT)

Common Relays

- 2 relays included for: critical and non-critical horn; ringback audible
- 2 relays available for: critical and non-critical reflash, common alarm; watchdog, power fail, ground fault
- Software configurable
- Energized or de-energized operation
- Form A or form B (N.O. or N.C.)

Relay Ratings

- 24 VDC @ 3.0 amps
- 110 VDC @ 0.1 amps
- 120 VAC @ 3.0 amps

Audible

- Internal 80db @ 30cm audible device
- external horns available

COMMUNICATION

Serial Modbus

- Master or slave
- Transmit or receive alarms
- RS-232/485 or Ethernet
- Pushbutton controls

DNP 3.0

- Slave mode
- Transmit alarms
- RS-232/485 or Ethernet
- Pushbutton controls

OPC Server Software

- Ver. 2.0 OPC DA

Serial ASCII

- RS-232/485 or Ethernet
- For local terminal/printer

TIME STAMPED ALARMS

- 1 or 4 msec time stamp resolution
- IRIG-B time sync input or internal clock
- Point #, alarm status, time and date
- Modbus, DNP, ASCII outputs
- 500 event storage

CONNECTIONS

Input/Output Terminals

- Fixed barrier terminal block, 12 GA (2.5mm) maximum, ring, spade or bare wire termination.

Communication Ports

- Serial: 9 pin female D connector
- Ethernet: RJ45 connector
- IRIG-B: BNC connector

POWER REQUIREMENTS

Internal or External Power Supplies

- 230 VAC (176-264 VAC 50 Hz)
- 120 VAC (88-132 VAC 60 Hz)
- 125 VDC (100-250 VDC)
- 48 VDC (38-58 VDC)
- 24 VDC (19-29 VDC)

Max. 1.7 watts/input @ power input

MECHANICAL

Mounting

- Semi-flush panel mounting
- 19 inch rack mounting
- Wall (surface) mounting
- NEMA enclosures

Weight

- 1.2 lbs per cell (0.34 kg per cell)

ENVIRONMENT

Operating Temperature Range:

- -4 to 122°F (-20 to 50°C)

Humidity:

- 20-95% RH

Surge Withstand:

- ANSI C37.90.1 (oscillatory)

Fast Transient:

- IEC-61000-4-4

Surge Immunity:

- IEC-61000-4-5

EMI/RFI/ESD:

- IEC-61000-4-3, 4-6, 6-3, 4-8, 4-2

Isolation:

- 1950 VDC or 1400 VAC input to output, logic, case

CERTIFICATIONS

UL, ULG, CE

FM Class 1, Div 2, FMC

Semi-flush Mounting Details inches (mm)		
Cells H or W	Overall H or W	Panel Cut-Out H or W
1	5.0 (127)	4.06 (103)
2	8.47 (215)	7.53 (191)
3	11.94 (303)	11.00 (279)
4	15.40 (391)	14.47 (368)
5	18.88 (479)	17.94 (456)
6	22.34 (568)	21.41 (544)
7	25.81 (656)	24.88 (632)
8	29.28 (744)	28.34 (720)
9	32.75 (832)	31.81 (808)
10	36.22 (920)	35.29 (896)
11	39.69 (1008)	38.75 (984)
12	43.16 (1096)	42.22 (1072)
13	46.63 (1184)	45.69 (1160)

Depth behind panel: 6.75", 8" with rear cover

Example: 2 H x 3 W has a cut-out height of 7.53 (191) and a cut-out width of 11.0 (279)

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