2110 MONITORING SYSTEM SPECIFICATION OPTIONS

Performance Characteristics

1. Inputs: Up to 248 transducer inputs including:
   Vibration (acceleration transducers, velocity transducers and noncontact probes)
   Axial position (noncontact probes)
   Temperature (RTD's and thermocouples)
   Pressure (pressure transducers, voltage or current ouput)
   Speed (noncontact probe or speed transducers)
   Eccentricity (noncontact probes)
   Differential expansion (extended range displacement probes or LVDT)
   Case expansion (extended range displacement probes or LVDT)
   Thrust (noncontact probes)
   Valve position (RVDT)
   Mega watt level (mega watt to mVDC transducer)
   Process variables (0 to 10 VDC or 4 to 20 mA DC transducers)
2. Modes: Acceleration (g or m/sec^2), velocity (in/sec or mm/sec), displacement (mils or μm), temperature (F or C), pressure (PSI), speed (RPM), valve position (%), mega watt level (MW), etc.
3. Full Scale Ranges:
   1. 0.0 to higher number, e.g., to 1.0, to 9,000
   2. Low to higher number, e.g., 1.0 to 50.0, 500 to 10,000
   3. Negative low to positive number, e.g., -2.0 to 8.0, -40 to 40

   Units are based on transducer type, see example Inputs above.
4. Filters For Vibration Inputs, Customer Specified Frequencies:
   High-pass
   Bandpass
   Low-pass
5. Frequency Response Range and Accuracy:
   20 to 1,500 Hz ±5% with the 4033-400 & 4033-500 velocity transducer input
   12 to 1,000 Hz ±10% with the 4034 velocity transducer input
   1.0 to 1,500 Hz ±5% with the 4060 acceleration transducer input
   1.0 to 600 Hz ±5% with the 4064 acceleration transducer input
   2.1 to 3,500 Hz ±5% with the 4071 acceleration transducer input
   1.7 to 6,000 Hz ±10% with the 4073 acceleration transducer input
   DC to 10,000 Hz ±5% with the noncontact probe
6. Repeatability: ±2%
7. Temperature Range:
   32 to 122 F for the 2110 electronics
   -20 to 400 F for the 4033-400 velocity transducer
   -20 to 500 F for the 4033-500 velocity transducer
   -30 to 160 F for the 4034 velocity transducer
   -100 to 400 F for the 4060 acceleration transducer
   -100 to 550 F for the 4064 acceleration transducer
   -58 to 180 F for the 4071 acceleration transducer
   -65 to 250 F for the 4073 acceleration transducer

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Performance Characteristics (continued)

8. Relay Quantity:
   2 standard - transducer malfunction and power loss
   1 alarm and 1 trip relay per input channel, up to 496 relays
9. Number of Relay Setpoints: 8 to 496 - one alarm and one trip per input channel
10. Function of Relay Setpoints: Alarm and trip, both field adjustable
11. Range of Setpoint Limits: 0 to 100% of full scale
12. Relay Configuration:
    Transducer malfunction - normally energized or normally de-energized, Customer specified, and nonlatching
    Power loss - normally energized and nonlatching
    Alarm and trip - normally energized or normally de-energized and latching or nonlatching, Customer specified
13. Start-up Limit: 2 to 1 Attenuation of alarm and trip setpoints
14. Relay Time Delay: 1 to 15 Seconds, individually adjustable per alarm and trip relay
15. Relay Inhibit: Individual inhibit switch for each relay in the relay module
16. First Out: Indicates the channel which was first to alarm or trip when multiple channels have exceeded their limits
17. System Interrogation: Touch control keypad allows for accessing parameters for each channel including monitor point identification, digital display of measured value, alarm and trip limits, system reset, first-out reset and gap

Physical Characteristics

1. Size: 19 x 8.75 x 14 Inches for each master or slave rack
2. Weight: 15 to 25 Pounds per rack, depending on number and type of modules
3. Mounting: 17.22 x 8.06 Inches panel cutout, four 0.25 inch-20 UNC, 8.16 x 5.75 inches bolt pattern
4. Environmental Rating: NEMA 1 with NEMA 4 and NEMA 12 enclosures optional
5. Calibration Requirements: None
6. Control Module / Power Supply Front Panel: 32 Character backlit LCD display, 16 button lexan keypad, orange LED for transducer malfunction, yellow LED for alarm, 2 red LED's for trip and first out, BNC connector for AC signal output, 4 knurled and slotted screws for module mounting
7. Signal Conditioning Module Front Panel: Four 50 segment LCD bargraphs with blinking segments for alarm and trip setpoint levels, LCD indication for OK (transducer malfunction), A (alarm) and T (trip) for each channel, yellow LED for alarm, red LED for trip, green LED for OK, eight 20 turn potentiometers for setting alarm and trip setpoints, engraved plastic setpoint cover, 2 knurled and slotted screws for module mounting
8. Speed Module Front Panel: 4 Digit LCD display, toggle switch for selecting alarm, trip or running speed, yellow LED for alarm, red LED for trip, green LED for phase lock, 2 knurled and slotted screws for module mounting
9. Relay Module Front Panel: Six 20 turn potentiometers for time delay adjustment, 6 DIP switches for relay inhibit, time delay potentiometers and inhibit switch cover, 2 knurled and slotted screws for module mounting

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Physical Characteristics (continued)

10. Key Phase Module Front Panel: 4 BNC connectors, engraved panel for BNC designations, 2 knurled and slotted screws for module mounting
11. Mounting Rack Back Panel:
    Master: Seven 16 point terminal blocks, six 14 point terminal blocks, one 4 point terminal block, one 2 point terminal block, two 16 pin DIP sockets
    Slave: Eight 16 point terminal blocks, eight 14 point terminal blocks, one 4 point terminal block, two 16 pin DIP sockets

Material Characteristics

1. 2110 Material: Epoxy coated aluminum front panels, zinc plated steel rack, G-10 epo-glass rear terminal board, LED and LCD displays, metal and plastic switches, connectors and terminal blocks
2. Transducer Material:
    Anodized aluminum for the 4034, 4033-400 and 4033-500 velocity transducers
    Stainless steel for the 4060, 4064, 4071 and 4073 acceleration transducer and noncontact probes

Electrical Characteristics

1. Supply Voltage: 120 VAC, 50/60 Hz or 105 to 150 VDC, optional
2. Relay Type and Rating: Dry contact, single pole double throw, 5 A at 150 VDC noninductive
3. Transducer Input:
    200 mV/in/sec with the 4033-400 and 4033-500 velocity transducers
    460 mV/in/sec with the 4034 velocity transducer
    1,050 pC/g with the 4060 and 4064 acceleration transducers
    100 mV/g with the 4071 and 4073 acceleration transducers
    200 mV/mil with the noncontact probes
4. Analog Output: 0 to 5 VDC or 4 to 20 mA DC
5. AC Signal Output:
    100 mV/g with the acceleration transducer input
    100 mV/in/sec with the velocity transducer input
    200 mV/mil with the noncontact probes

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