ACCUMETRICS
AN AMPHENOL COMPANY

M O D E L **A T - 8 3 0 0**

ROTOR HEALTH MONITOR

- RTD monitoring for specific location temperatures

- Temperature monitoring of the field winding

- Continuous on-line resistance trending of ground faults

- Fault location indicator for ease of diagnosis and repair

- Field voltage and current monitoring

- Alarm relay and trending outputs

- Location-specific temperature measurements with RTDs, allowing greater control of motor/ generator rotor temperature

- Continuous monitoring for ground faults

TYPICAL APPLICATIONS

- Rotor protection through condition based maintenance

- Predictive maintenance for large motors and generators

- Increasing production throughput control by improved overtemperature monitoring

CONTINUOUS ON-LINE MONITORING

Combining advanced innovations in measurements with digital telemetry for brushless synchronous generators/motors, the Rotor Health Monitor provides predictive maintenance trending data for temperature measurements and rotor field ground fault resistance for condition based monitoring (CBM).

For Temperature Measurements, if a motor or generator has installed RTD's (PT100 style), the AT-8300 can monitor up to 12 of 3-wire RTD's, with readings updated every 10 seconds. Up to 24 of 2-wire RTD's can alternatively be measured (contact Accumetrics at time of order). If a current shunt is installed at the field negative potential, then the system can measure field current. Using the ratio of the field voltage to the field current, a calculated average copper temperature is then provided. (The shunt is not included.)

Ground resistance measurement technology: By using 16-bit digital rotor telemetry technology, Accumetrics allows users to monitor fault resistance trends over time and track the progression of ground faults from their onset. This provides the possibility of early warning of impending failure and allows for predictive maintenance. Two adjustable- threshold alarm relay contacts, 4-20 mA, and digital data output of all measured parameters are provided, allowing warning, shutdown, and predictive maintenance tracking for ground faults.

SPECIFICATIONS

Performance

RTD Measurements

General Information	PT100 RTD's (installed by user), Up to 12 RTD 3-wire sensors (Also available: 24 of 2-wire RTD's), Approximate 10 second duration to read all RTDs
Measurement range	-58 to 572 ºF (50 to +300 ºC)
Accuracy	±1.5 ºC
Average Field Winding Temperature	Calculated from directly measured field voltage divided by directly measured field current

Field Voltage

Measurement range	0 to 500 VDC (Contact factory for other ranges)
Maximum Transient without Damage	1000 V for 5 seconds
Field Current Measurement Range	Measured by a low level differential voltage from a customer supplied 0-100 mV current shunt installed at the negative terminal so that common mode voltage is within ± 0.75 Volts of Vf Negative connection. Two redundant channels are provided.

Ground Fault Resistance Measurement

Measurement Range	0 to 80 MegOhms
Accuracy	± 250 Ohms ± 2% of reading 0 to 500 kOhms (exclusive of AC content and noise effects from the excitation system)

Ground Fault Location Factor

Range	0 to 100% representing the ratio of the potential at the ground fault to that of the total field voltage (0 if the fault is at negative terminal; 100% at positive terminal)
Accuracy	± 1% for a 10 kOhm fault and field excitation ≥ 25 V

Receiver Alarm Outputs

Outputs	Two independent relay alarm contacts with user programmable configurations and thresholds. Alarm 1 is always ground fault resistance threshold. Alarm 2 is user selectable for either ground fault resistance threshold or for average field winding temperature.
Malfunction	Active upon detection of a malfunction in monitor operation or loss of receiver power
Alarm Interfaces	Form C relay: 6 A, 250 VAC
Receiver Analog Outputs Standard Outputs	Two channels of 4-20 mA current loop, configurable for scale and parameter. Parameters: Earth Fault Resistance (log scale), Field V, Shunt Field I, Field Resistance, Field Average Temperature, Shunt mV

Receiver Digital Interface

Computer Interfaces	RS232, Ethernet interfacing to PC based RHM Console Software; full documentation provided for user-developed software

SPECIFICATIONS (continued)

Output Data	CSV data and Ethernet streamed readings of ground fault resistance, RTD readings, field voltage and currents, field winding resistance and resultant winding temperature, ground fault location factor, alarm status.
User Settings	Earth Fault Alarm Resistance Thresholds, Alarm Dwell Time, Field Current Settings, Analog output 1 and 2 configuration, Alarm 2 threshold settings (Earth fault or Field Temp), Network Settings, Archive setup.
RHM Console Software Features	Control of User Settings (see above) Fault resistance trend graph; numeric display of fault resistance & location, field voltage, currents, resistance & average winding temperature; RTD temperatures; system status. Archival data storage in .csv files for importing into MS Excel.

Physical

Rotor Connections	Field positive and negative terminals, rotor ground, RTD inputs, and connections to current shunts (located at the field negative terminal)
Transmitter Mounting Information	End of shaft mounted transmitter, approximately 150 mm diameter, contact Accumetrics for special adapters or other mounting requirements.

Environment

Ambient Temperature	32 to 185 ºF / 0 to 85 ºC at rotor transmitter, 32 to 122 ºF / 0 to 50 ºC maximum at receiver
Rotor Speed	4320 RPM max (3600 RPM with up to 20% overspeed)
Receiver Power	85 to 250 VAC 50 / 60 Hz, <20 W
Receiver Ambient Temperature	32 to 122 ºF / 0 to 50 ºC; thermoelectric cooling is available as an option

System Components

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