SKF Multilog On-line System IMx-W

24/7 condition monitoring to improve wind turbine reliability

The SKF Multilog On-line System IMx-W is the next generation of powerful, cost-effective solutions dedicated to wind turbine condition monitoring. Together with SKF @ptitude Observer software, the SKF Multilog IMx-W provides a complete system for early fault detection and prevention, automatic advice for correcting existing or impending conditions and advanced condition-based maintenance to improve reliability, availability and performance.

SKF Multilog On-line System IMx-W equipped with 16 dynamic or DC inputs and 2 digital inputs.

Key features

- Lightning protection
- Wall-mounted
- 16 dynamic or DC inputs and two digital inputs
- Simultaneous measurement of all channels
- Multi-parameter gating
- Digital Peak Enveloping (DPE)
- Adaptive alarm levels
- Data buffering in non-volatile memory when communication is down
- Output relay driver
- Fully supported by SKF @ptitude Observer software

General description

SKF Multilog IMx-W is an advanced condition monitoring system dedicated for use in wind turbines. It is a robust measurement unit designed for installation in wind farms on- and off-shore.

Each SKF Multilog IMx-W is equipped with 16 analogue signal inputs. The dynamic signal inputs are configurable for a variety of sensors. Signals, such as acceleration, velocity and displacement or other parameters are easily adopted. Each input can be configured for standard accelerometers, proximity probes, 4 to 20 mA or ±25 V. In addition to the analogue channels, two digital channels can be used for measuring speed, trigger or digital status e.g. indicating when a measurement can take place. Several measurement points can be attached to one channel and both AC and DC measurements can be measured on the same channel.

Individual conditions for warning and alarm can be set for each point. Warning and alarm levels may be controlled by machine speed or load.

General description (continued)

The SKF Multilog IMx-W works as a machine condition monitoring system with other SKF Multilog IMx units together in a network with the SKF @ptitude Observer Monitor. The system can run in an existing LAN combined with other equipment, communicate over UMTS (3G), GPRS, GSM, etc. or over the Internet.

The unit's unique built-in hardware auto-diagnosis system continuously checks all sensors, cabling and electronics for any faults, signal interruption, shortcuts or power failure and any malfunction triggers an alarm. In the case of system power failure, the system will automatically restart when the power returns.

Technical data

Environmental

- Dimensions:
  - Height: 500 mm *(19.69 in.)*
  - Width: 400 mm *(15.75 in.)*
  - Depth: 100 mm *(3.94 in.)*
- Weight: 12 kg *(26.46 lb.)*
- IP rating: IP 65
- Temperature range (On-line): –20 to +60 °C *(–4 to +140 °F)*
- Temperature range (Off-line): –40 to +70 °C *(–40 to +158 °F)*
- Humidity: 95% (relative) non-condensing
- Installation location: Inside nacelle use only

Power supply

- Power supply: 100 to 240 V AC, 50 to 60 Hz, 0,75 A maximum

Analogue inputs

- 16 analogue differential inputs
- Software controlled power supply for standard accelerometers (4 mA constant current) for each individual channel
- All channels are measured simultaneously
- Input range: ±25 V
- Impedance: >100 kΩ

Digital inputs

- Two digital opto-isolated inputs
- Individual 12 V power supply, maximum 40 mA / channel
- Phase voltage range: 3 to 14 V
- Can interface with most standard sensors

Outputs

- Two relay driver outputs

Analogue measurement

- 24-bit AD conversion enables continuous data capture without gain or AC/DC switching necessary
- Simultaneous sampling of all 16 channels (no multiplexing), one A/D converter for each channel
- Simultaneous sampling of different channels with different sampling rates
- Frequency range: from DC to 40 kHz
- Dynamic range: 120 dB
- Signal to noise ratio: 90 dB
- Cross-talk rejection: 100 dB
- Accuracy amplitude: ±2% (up to 20 kHz), ±5% (20 to 40 kHz)
- Accuracy phase: ±3° (up to 100 Hz)
- Automatic detection of sensor fault and cable fault

Digital measurement

- Frequency range: 0,1 Hz to 12,5 kHz
  - Required pulse width:
    - >4 µs for electrical positive
    - >40 µs for electrical negative
- Accuracy frequency: 0,05% of measurement value (typically 0,01% up to 2,5 kHz)
- Pulse counting

Signal processing

- Time waveform
- Vector analysis with circular alarms
- FFT: 100 to 6 400 lines
- DPE (Digital Peak Enveloping)
- Integration / Derivation in frequency domain
- Window function: Hanning
- Customer formulated mathematical equations
- Dynamic alarm levels, active range determined on multiple parameters
- Data storage on time, event or alarm condition
- Detection of sensor and cable fault
- Watchdog and self testing

Interface

- Ethernet: 100 Mbit RJ45, TCP/IP (two ports)
- Ethernet switch for daisy chaining
- RS232 service interface
- CAN bus interface for data sharing with other systems
- RS485 (Modbus) interface for data sharing with other systems

Miscellaneous

- Calibration, traceable to BIPM
- CE certified according to EN61000
- Lightning protection: EN61000-6-2:1999, EN61000-4-5: 4 kV (On-line)

Installation and training

Installation and training available through your local SKF supplier or representative.

Product Support Plans (PSP)

A range of Product Support Plans is available to protect your investment. Contact your local SKF Reliability Systems sales representative for additional information.

Please contact:

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