

SKF Multilog On-line System IMx-R

Condition monitoring and diagnostics in compliance with TSI requirements

The SKF Multilog On-line System IMx-R is the next generation of powerful, cost-effective solutions for railway vehicles. Together with SKF @ptitude Observer software, SKF Multilog IMx-R 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 machine reliability, availability and performance.

Key features

- Compliant with TSI (Technical Specifications for Interoperability for the European railway system) regulations
- SIL 2 certification on request
- Mounted in a 19 inch rack
- True simultaneous measurement of all channels
- Multi-parameter gating
- Digital Peak Enveloping (DPE) and SKF's acceleration enveloping
- Adaptive alarm levels
- Data buffering in nonvolatile memory when communication is down
- Output relay drivers
- Fully supported by SKF @ptitude Observer software



SKF Multilog IMx-R is a key component in an advanced condition monitoring system. It is a robust measurement unit designed for tough industrial environments.

Each SKF Multilog IMx-R is equipped with 20 analogue signal inputs, including eight for temperature, eight for vibration and four for general purpose (temperature, vibration, etc.). The dynamic signal inputs are configurable for a variety of sensors.

In addition to the analogue channels, four digital channels may be used for measuring speed, trigger, or digital status, such as indicating when a measurement can take place. Several measurement points may be attached to one channel and both AC and DC measurements can be measured on the same channel.

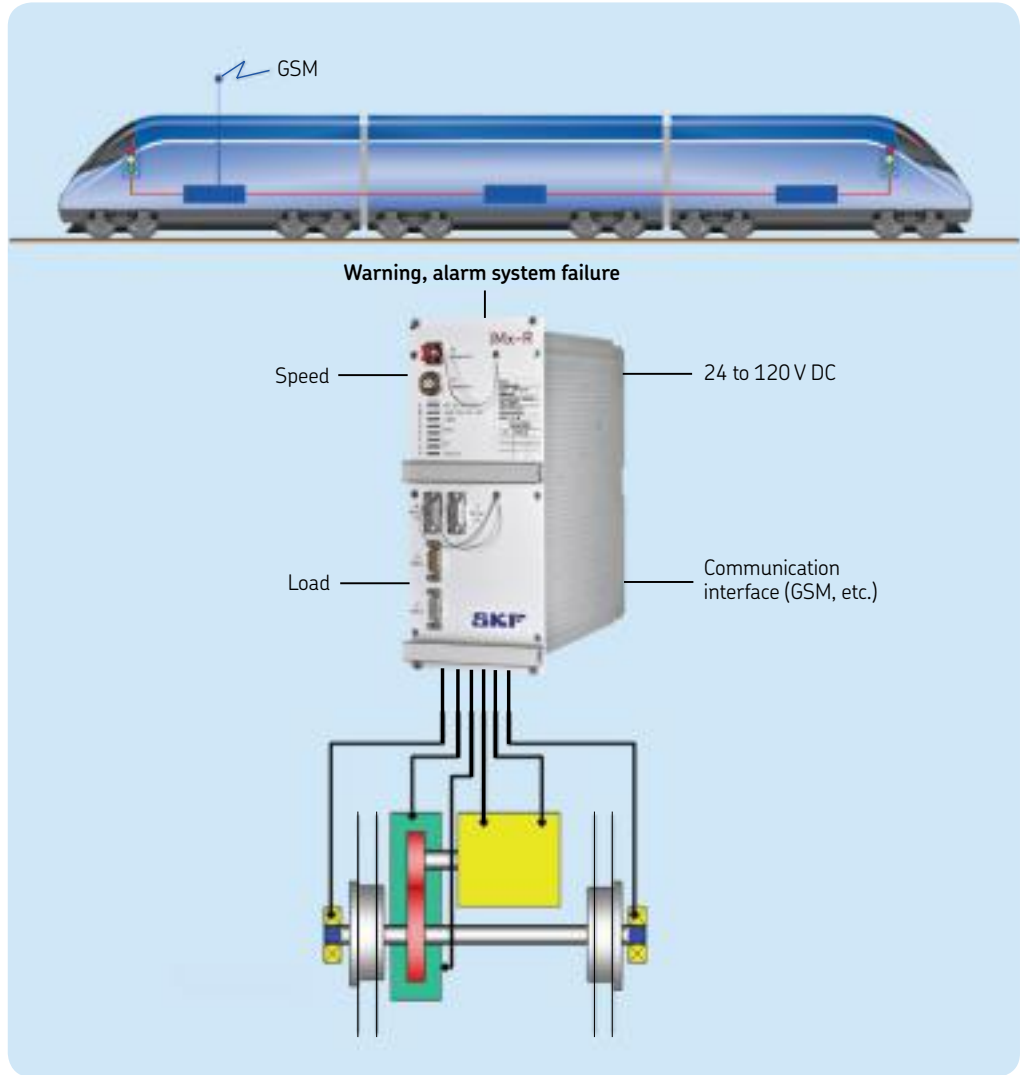


Individual conditions for warning and alarm may be set for each point. Warning and alarm levels may be controlled by machine speed or load.

The SKF Multilog IMx-R works as a machine condition monitoring and protection system with several other units together in a network with the SKF @ptitude Observer Monitor. The system can also run in an existing LAN together with other computers, printers, servers, etc., or over the internet.

The condition monitoring part of the SKF Multilog IMx-R offers early fault detection of different components to help plan maintenance accordingly. The TSI part of SKF Multilog IMx-R offers protection against bogie instability with bogie hunting criteria and protection against hot axle boxes.

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. Any malfunction triggers an alarm. In the case of system power failure, the system will automatically restart when the power returns.



Example of on-line communication setup.



Technical data

Environmental

- 19" rack mounted according to IEC 60297
- Dimensions:
 - Height: 262 mm (10.32 in.)
 - Width: 107 mm (4.21 in.)
 - Depth: 232 mm (9.13 in.)
- Weight: 3 kg (6.6 lb.)
- Ambient temperature according to EN 50155, Class TX
- EMC according to EN 50121-3-2
- Vibration and Shock According to EN 61373, Category 1B
- Encapsulation IP 20
- Humidity maximum 95% condensed according to EN 50125-1, class T3
- Altitude according to EN 50155 and EN 50125-1, usage up to 1 400 m (4,593 ft.)

Power supply

- 24 to 120 V DC according to EN 50155

Analogue inputs – TSI

- 16 analogue inputs:
 - Eight acceleration sensors
 - Eight temperature sensors
- Selectable standard accelerometer power supply (4 mA)
- Input range: 0 to 20 V
- Impedance: >40 kΩ for acceleration inputs

Analogue inputs – condition monitoring

- 20 analogue inputs:
 - Eight acceleration sensors (TSI analogue inputs)
 - Eight temperature sensors (TSI analogue inputs)
 - Four general type of sensors (vibration, temperature, voltage, current, etc.)
- Selectable standard accelerometer power supply (4 mA)
- Input range: 0 to 25 V
- Impedance: >40 kΩ for acceleration inputs

Digital inputs – TSI and condition monitoring

- Four digital isolated inputs
- Individual 24 V power supply, maximum 40 mA / channel

Outputs – TSI

- Two relay outputs for monitoring alarm
- One relay output for system status

Analogue measurement – TSI

- 16-bit AD conversion, acceleration input 0 to 2 kHz (no gain or AC/DC switching necessary)
- 10-bit AD conversion, temperature input (NTC/PT1000)

Analogue measurement – condition monitoring

- 24-bit AD conversion enabling continuous transient capture (no gain or AC/DC switching necessary)
- True simultaneous sampling of all 12 vibration channels (no multiplexing)
- Simultaneous sampling of different channels with different sampling rates
- Frequency range: 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)

Digital measurement – TSI and condition monitoring

- Frequency range: 0.1 Hz to 20 kHz
- Frequency accuracy: 0.01%
- Pulse counting

Signal processing – TSI

- BHD (Bogie Hunting Detection) according to TSI requirements
- HABD (Hot Axle Box Detection) according to TSI requirements
- Watchdog and self testing

Signal processing – condition monitoring

- Time waveform
- Vector analysis with circular alarms
- FFT: 100 to 6 400 lines
- DPE (Digital Peak Enveloping) and SKF's acceleration 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
- Data buffering in flash memory when communication link is down
- Detection of sensor and cable fault

Interface – TSI

- RS 232 service interface
- MVB

Interface – condition monitoring

- Ethernet:
 - 100 Mbit RJ45 and M12 connectors
 - TCP/IP, switch functionality, auto crossover
- RS 232 service interface
- RS 485/Modbus

Miscellaneous

- Calibration, traceable to BIPM
- CE certified according to EN61000-6-3 and EN61000-6-2
- SIL 2 certification on request

Ordering information

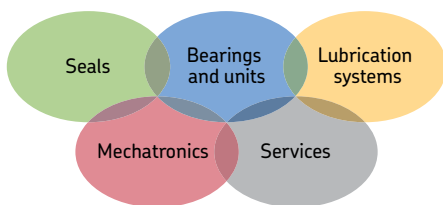
- **CMON 2004** SKF Multilog On-line System IMx-R with TSI, including MVB card
- **CMON 2008** SKF Multilog On-line System IMx-R with TSI and condition monitoring, including MVB card
- **CMON 2009** SKF Multilog On-line System IMx-R with TSI and condition monitoring, excluding MVB card

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 sales representative for additional information.



The Power of Knowledge Engineering

Drawing on five areas of competence and application-specific expertise amassed over more than 100 years, SKF brings innovative solutions to OEMs and production facilities in every major industry worldwide. These five competence areas include bearings and units, seals, lubrication systems, mechatronics (combining mechanics and electronics into intelligent systems), and a wide range of services, from 3-D computer modelling to advanced condition monitoring and reliability and asset management systems. A global presence provides SKF customers uniform quality standards and worldwide product availability.

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