SKF Microlog Analyzer MX series

CMXA 44

Portable maintenance instrument

A flexible platform

The concept

The SKF Microlog Analyzer MX, part of the Microlog family of products, is a flexible instrument platform designed to be a single tool for a range of service, maintenance, inspection, and diagnostic applications.

This simple, easy to use instrument has been developed with an intuitive user interface, making it ideal for use by either expert or non-expert personnel.

The SKF Microlog MX adopts a modular approach to measurement, with individual modules available for specific types of analysis. This flexibility enables you to select the combination of features you require, and an option to upgrade to full data collector firmware. These features make the SKF Microlog MX an excellent choice for machinery diagnostics, production line quality testing, or as a field service tool.

As your needs change, so does the SKF Microlog MX, ensuring your investment is protected. Simply add new firmware modules, without the need to buy a new instrument!

At the heart of the SKF Microlog MX is a cutting edge handheld computing engine combined with high performance data acquisition hardware and DSP technology.

Key hardware features include a 400 MHz XScale processor, large color display, easy operation function keys, and high speed data acquisition capability. The Windows CE operating system provides direct access to your PC environment for seamless transfer of data.

Key features

- Rugged ergonomic design
- Modular – choose your own application options
- Simple to use for non-vibration experts
- On screen user assistance
- Display real images of machinery and transducer positions[1]
- Memory upgrade using standard SD card
- Easy data transfer and seamless storage using the SKF Analysis and Reporting Module or, alternatively, Microsoft Excel
- Communications: USB, IrDA and RS232
- Firmware upgrade path to full SKF Microlog GX series data collector capability

The SKF Microlog MX has been designed for ease of use, with step by step on-screen instructions for each test. Color coding is used to highlight the status of a particular alert if invalid measurements are taken, and provide a grading of current machinery health. These features all combine to help facilitate valid data collection without the need for vibration expertise.

The SKF Microlog MX is an excellent on the spot assessment tool for personnel, such as:

- Installation engineers
- Commissioning engineers
- Fitters
- Servicing personnel
- Mechanics
- Maintenance engineers
- Inspection engineers
- Noise and vibration specialists

Rugged design

A field instrument needs to be durable. As such, the SKF Microlog MX has IP65 (dust and water) sealing and a 2 meter (MIL-STD 810 spec) multiple drop rating, allowing it to withstand the daily knocks and abuse associated with use in an industrial environment. Data integrity is also secured through our unique approach to data storage. Internal flash memory holds data securely, even in the event of a complete hard and soft reset.

Data for expert analysis

Although the SKF Microlog MX is designed to enable non-expert personnel to collect data, sometimes this data may require specialist analysis and interpretation. The recorder module enables data to be stored as a .WAV file and sent to a veteran analyst.

Specifications

Measurement parameters

- Input signal types: ICP Powered and self powered transducers
- Signal inputs: Two ICP, AC signals, DC signals
- Tachometer: Tacho input ±40 V, tacho supply +5 V
- Input channels:
  - Channel 1
  - Channel 2
- Two simultaneous:
  - ICP/AC/DC
  - ICP/AC/DC
- Transducer check: ICP open circuit check
- Auto range: Yes
- Dynamic range: >90 dB
- Frequency range: Fmax between 2 Hz and 40 kHz
- Real time rate: 40 kHz single channel
- FFT resolution: 100 to 12 800 lines
- Time block length: 256 to 32 768 samples
- Averaging: See individual SKF Microlog MX series module application specifications

Hardware details

- Size (H x W):
  - Narrowest point : 186 × 93 mm *(7.3 × 3.7 in.)*
  - Widest point : 186 × 134 mm *(7.3 × 5.3 in.)*
- Weight: 715 g *(1.6 lb.)*
- Display options: 1/4 VGA colour TFT screen
- Drop test: 2 m *(6.5 ft.)* – to MIL-STD 810 specifications
- Sealing: IP65 (dust and water proof)
- Temperature ratings:
  - Operating temperature: –10 to +50 °C *(14 to 122 °F)*
  - Storage temperature: –20 to +60 °C *(–4 to +140 °F)*
- Hazardous area: CSA – Class I, Division 2, Groups A, B, C, D (special conditions per installation drawing 090-22500-2)
- Processor: 400 MHz Intel XScale PXA255
- Operating system: Windows CE.Net v4.2 (core only)
- Battery: Li-Ion smart battery pack
- Battery recharge: Via main adaptor
- Communication: Active sync via USB, IrDA or RS232
- Internal storage: 64 Mbyte (capable of storing approximately 4 000 spectra)
- PC card: PCMCIA type II
- CF card: Compact flash type II
- MMC/SD card: MMC/SD memory card
- Printer output: PCL/Pentax pocketjet

[1] Feature currently only available on the CMXA CTC-SL conformance check module.

Expand functionality

The SKF Microlog MX enables you to build functionality by adding new modules to enhance your analysis capabilities. Should a need arise to carry out an additional form of testing, simply purchase the module required. All modules come pre-installed on the SKF Microlog MX. Upon purchase, license keys will be provided. In order to get the most from the SKF Microlog MX package, you can select from the following modules:

Conformance check module

- General machine health check using vibration measurement to appropriate standards:
  - Choose from our library of templates to test in accordance with frequently used industry standards, such as, ISO
  - Operator feedback given as actual values and health grading
- Up to 64 individual fault alarms for in depth analysis:
  - Create your own conformance test criteria
  - Select machine classes and alarm limits
  - Enable vibration limits to be set by your own vibration experts

FFT analyzer module

- Spectrum display with absolute phase
- Bearing analysis using SKF patented algorithms
- Allows simplified checks for common machine faults

Bump test – packaged with FFT analyzer

- Easy identification of a structure's natural frequency
- Can be applied to:
  - Crack detection
  - Structural mechanical integrity
  - Determination of resonant (critical) frequencies
  - Turbine blade testing

Balancing module

- High precision one or two plane
- Static or dynamic couple balancing
- On screen step by step guide to balancing
- Gives solutions through 360 degrees or fixed weight locations
- Split weight at solution

Run up Coast down module

The Run up Coast down module for the SKF Microlog MX is used to record and analyze data from machines where noise or vibration levels are changing with speed or time; such as during a run up coast down or other applications that cause transient phenomena. One of the primary objectives is to establish the critical/resonant speeds of a machine.

The user friendly interface enables the display of:

- Bode plots
- Nyquist diagrams
- Waterfall plots
- Color spectrograms
- Tables

Frequency response function module

The Frequency response function module for the SKF Microlog MX has two primary functions:

1. To establish the properties of mechanical structures (mass, stiffness and damping) by performing modal analysis using a calibrated hammer for the excitation.
2. To measure and display the transfer function (ratio) between two transducers while a machine is running. Measurements can be exported to external software to calculate and animate the Operating Deflection Shapes (ODS).

Recorder/data logger module

- Record live vibration signatures (e.g., run up, steady state, and coast down)
- Storage of two channel time data in industry standard (.WAV) format
- Log process variables over long time periods
- Email file (via PC) to base for play back, analysis, and diagnosis

Analysis and reporting module software

- Direct link to Microsoft Word for customized report generation
- Offline analysis package including overlay, polar plots, and waterfall analysis
- Graphical display allows zooming and magnification, dynamic cursor types (harmonic, power, sideband, etc.), integration, control of engineering units, and vertical scale

Ordering information

The SKF Microlog MX is supplied in four different kits:

- **CMXA 44-1A-SL** Standard kit includes the check to conformance module, standard accessories, carrying case, and a single accelerometer (CMSS 2111)
- **CMXA 44-2A-SL** Standard kit includes the analyzer and bump test modules, standard accessories, carrying case, and two accelerometers (CMSS 2111)
- **CMXA 44-BAL-SL** Standard kit includes the analyzer and bump test modules, balancing module, standard accessories, carrying case, and two accelerometers (CMSS 2111)
- **CMXA 44-TFM-SL** Fully featured kit includes all modules, standard accessories, carrying case, SKF Analysis and Reporting Module (CMSW 7311-SL) and two accelerometers (CMSS 2111)

Firmware options

- Conformance check module [CMXA CTC-SL]
- FFT analyzer and bump test modules [CMXA AAB-SL]
- Balancing module [CMXA BAL-SL]
- Run up coast down module [CMXA 44-RUCD-SL]
- Frequency response function module [CMXA 44-FRF-SL]
- Data recorder module [CMXA REC-SL]

Software options

- SKF Analysis and reporting module [CMSW 7311-EN]

Accessories

A number of accessories are available to complement the SKF Microlog MX series. For technical details or advice on any item, please contact your local SKF Reliability Systems sales representative.

- Accelerometer kit, accelerometer complete with 2 m integral cable and magnetic mount, 100 mV/g [CMSS 2111]
- Hand strap [CMAC 5020]
- Rubber boot [CMAC 5015]
- USB communication/power splitter cable [CMAC 5019]
- Battery pack [CMAC 5031]
- PSU-8 power supply connecting to the power cord [CMAC 5022]
- Signal input cable (6 pin Fischer to BNC, 1 m) [CMAC 5023]
- Instrument soft cover, requires CMAC 5112 [CMAC 5024]
- Carrying/service case (with location for portable printer) [CMAC 5026]
- Laser tachometer kit contains 2 m cable, tripod [CMAC 5030-K]
- Power/trigger splitter cable [CMAC 5032]
- SKF Microlog phase reference holder [CMSS 6156]
- Channel X signal/accelerometer extension cable 5 feet [CMAC 5036]
- Channel X signal/accelerometer extension cable 10 feet [CMAC 5037]
- Audio headphone and strobe adapter kit [CMAC 5401-K]
- Audio and strobe adapter, cables and case, ***no headphones*** [CMAC 5402]
- Audio, industrial headset [CMAC 5403]
- Tachometer extension cable 5 feet [CMAC 5043]
- Tachometer extension cable 10 feet [CMAC 5044]
- Transit case hard shell foam insert with cable pocket [CMAC 5066]
- Belt clip for use with CMAC 5024 [CMAC 5112]
- Leather neck strap [CMAC 5113]
- Trigger cable for BNC tachometer 1 m [CMAC 5211]
- Modal hammer kit includes [CMAC 5056]:
  - Accelerometer for testing masses of 210 g *(7.6 oz.)* and above
  - CMAC 5061 Accelerometer cable
  - Magnetic base
  - Non-ferrous base and petrowax
  - Carrying case
- Modal hammer kit includes [CMAC 5057]:
  - Accelerometer for testing masses of 56 g *(2.0 oz.)* and above
  - CMAC 5062 Accelerometer cable
  - Adhesive
  - Non-ferrous base and petrowax
  - Carrying case
- Modal hammer kit includes [CMAC 5058]:
  - Four interchangeable tips (hard, medium, soft, supersoft)
  - CMAC 5063 Cable
  - Carrying case

Product Support Plans (PSP)

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

Please contact:

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