SKF Microlog Analyzer AX series

CMXA 80

Advanced data collector/FFT analyzer

SKF Microlog AX is a full-featured, four channel, high performance route and off-route portable data collector/FFT analyzer.

The SKF Microlog Analyzer AX is the most advanced large screen analyzer offered by SKF today. The SKF Microlog AX's features allow you to capture a wide range of vibration data quickly.

The analyzer provides the flexibility to support the applications that are most important to your company's specific predictive maintenance program.

Key features

- Simultaneous triaxial or four channel measurements for fast data collection
- 806 MHz XScale Intel processor means faster real time rate and display updates
- Rugged, dust/waterproof IP 65 design for reliability in industrial environments
- Rechargeable lithium battery supports eight hours of continuous data collection
- Large 6.4 in. VGA color display for easy viewing and analysis in any light

Combines with SKF @ptitude software for in-depth analysis and reporting

SKF Microlog AX connects seamlessly with SKF @ptitude Analyst 4.1 software for single users and can be networked facility-wide using SKF @ptitude Monitoring Suite. The addition of SKF @ptitude Decision Support allows communication with your facility's CMMS or EAM system and automates reliability maintenance decision making by identifying probable faults and prescribing appropriate action.

Application modules to customize SKF Microlog AX

The SKF Microlog AX has a modular design to allow users to select application modules to suit their individual requirements.

AX-M model

Four channel off-route/two channel or simultaneous triaxial route Analysis and two channel Balancing modules are already installed. The AX-M is upgradable to the AX-S or AX-F.

AX-S model

All the features of the AX-M with the Bump Test and Data Recorder modules added.

AX-F model

Further enhances capability by adding Run up Coast down (RuCd), Frequency Response Function (FRF) and Check to Conformance modules.

All modules can also be ordered separately.

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SKF Microlog Analyzer AX

The SKF Microlog AX takes the difficulty out of performing condition monitoring by analyzing vibration signal and process variables using four channel off-route measurements and one or two plane static or dynamic couple balancing applications over a range of 10 CPM (0,16 Hz) to 4 800 000 CPM (80 kHz). Bearing assessments are carried out using the industry proven SKF Acceleration Enveloping (gE) technology. The SKF Microlog AX utilizes the latest advances in analog and digital electronics, including digital signal processing (DSP) and high resolution sigma-delta A/D converters, to provide both speed and accuracy in the data collection process.

SKF Microlog AX provides fast data collection and analysis. The large screen facilitates viewing in any light.

Powerful software to complete your analysis system

SKF @ptitude Analyst provides fast, efficient and reliable storage, analysis and retrieval of complex machine data and makes the information accessible throughout your organization.

- Easy to learn and use for novice or experienced users
- Inter-connectivity with other software programs and systems
- Preference options let SKF @ptitude Analyst work the way you work

SKF @ptitude Analyst is part of the SKF @ptitude Monitoring Suite, a comprehensive software suite that integrates data from a wide range of SKF portable and on-line acquisition devices.

Specifications

Performance

- Signal input: Accelerometer, velocity, displacement (from hand-held or installed transducers), AC/DC sensors, pressure sensors, temperature sensors, tachometer and manual entry
- Measurement parameters: Acceleration, velocity, displacement, gE, temperature, phase, voltage, user specified
- Measurement types: Overall, spectrum, time waveform, phase, orbits, shaft centerline
- Input channels:
  – CH1: 6 pin Fischer CH1, CH2, CH3, CH4 (labeled R) (ICP/AC/DC input), strobe out
  – CH2: 6 pin Fischer CH2 and CH3 (ICP/AC/DC input), +5 V tacho out
  – USB HOST/CH R/: 7 pin Fischer R (ICP/AC/DC input), USB HOST, audio out
  – USB DEV/TRIG/PWR: 7 pin Fischer USB DEV, charger, external trigger aux, +5 V tacho out
- Input signal range: ±25 V maximum
- Signal: RMS/Peak/Pk-Pk/True Peak/True Pk-Pk
- Transducer check: Bias Voltage Integrity (O/C and S/C detection)
- Auto range: Yes
- Dynamic range: >90 dB
- Frequency range: DC to 80 kHz
- Bearing condition: gE
- gE filters:
  – 5 to 100 Hz
  – 50 to 1 kHz
  – 500 Hz to 10 kHz
  – 5 to 40 kHz
- FFT resolution: 100 to 25 600 lines
- Time block length: 256 to 65 536 samples
- Averaging: RMS, Time, Peak Hold
- Alarms: Overall and Spectrum (Peak and RMS level)

Enclosures

- Size:
  – Width: 220 mm (*8.7 in.*)
  – Height: 220 mm (*8.7 in.*)
  – Depth: 71 mm (*2.8 in.*)
- Weight: 1,54 kg (*3.4 lb.*)
- Display: 6.4 in. TFT VGA, backlit color LCD, (640 × 480 resolution, 18 bit color)

Environmental

- Sealing: EN60529 IP 65 (Dust- and waterproof)
- Drop test: 1,2 m (*4 ft.*), to MIL STD 810F (with stand retracted)
- Temperature ratings:
  – Operating temperature: –10 to +60 °C (*14 to +140 °F*)
  – Storage temperature: –20 to +60 °C (*–4 to +140 °F*)
  – Humidity: 10 to 90% relative humidity, non-condensing at 0 to +50 °C (*32 to +122 °F*)
- Vibration: MIL STD 810 transportation
- Certification:
  – CE rated
  – CSA Class I, Division 2, Groups A, B, C, D, temperature Code T4A@Ta=50C

System

- Communication:
  – USB 1.1 (rear panel and docking station)
  – SKF Microlog protocol and Microsoft ActiveSync
- User indicators: Blue, Green, Amber, and Red LED's
- Battery: Li-ion 6 600 mA/hr with integral gas gauging (eight hours continuous operation minimum)
- Battery recharge: Internally via docking station or external charger
- Operating system: Microsoft Windows Embedded CE 6.0
- Processor: Marvell 806 MHz PXA320
- DSP: Freescale DSP56311

Memory

- Internal RAM:
  – 128 MB DDR SDRAM
 – 128 MB NAND Flash
- SD card: Can support up to 4 GB

Host software

- The SKF Microlog AX series requires SKF @ptitude Analyst version 4.1 or later, and USB communication

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Application modules

Bump test module

A bump or rap test is an impact test carried out to excite the machine and measure its natural frequencies. This helps to determine if resonance is responsible for high noise or vibration levels or if there is a potential machinery problem.
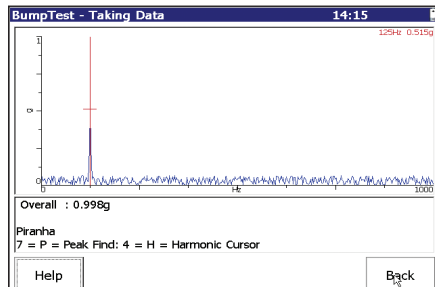

Recorder module

Signals from sensors connected to the AX are digitally recorded and stored as standard WAV files. These files can be sent via email or transferred directly to SKF @ptitude Analyst for post-processing. Using the storage capacity of SD cards allows a user to record many hours of continuous raw data.
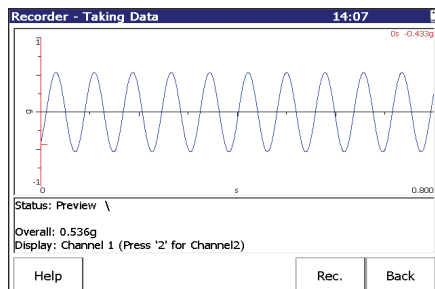
Run up Coast down (RuCd) module

This module analyzes data from machines where noise or vibration levels are changing with speed, time or load (applications that
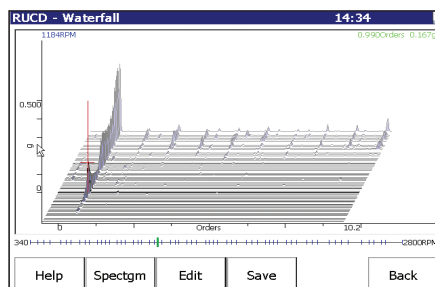
cause transient phenomena) to establish the critical/resonant speeds of a machine. The module simultaneously acquires a noise or a vibration signal plus a tachometer signal and stores the data as a time waveform (a WAV file) for further analysis.

Check to Conformance module

The conformance check functionality transforms the AX into a tool for everyday inspection and maintenance routines. An automated assessment compares vibration levels with established limits and a pass or fail indication is displayed to check that the product complies with predefined quality indicators or required standards.


Frequency response function (FRF) module

The FRF module establishes properties of mechanical structures (mass, stiffness and damping) by performing modal analysis using a calibrated hammer. Measurements can be exported to calculate and animate the mode shapes. The module also measures the transfer function (ratio) between two transducers while a machine is running. Measurements can be exported to calculate and animate the Operating Deflection Shapes (ODS).
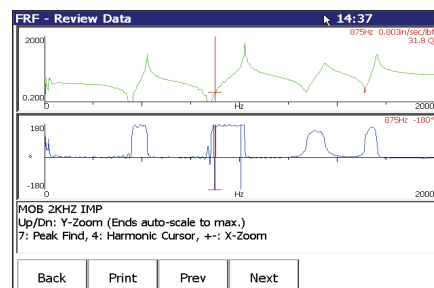
Ordering information

SKF Microlog AX-F model Data Collector/ FFT Analyzer

The SKF Microlog AX-F [CMXA 80-F-K-SL] standard kit includes:

- CMXA 80-F-SL unit, programmed for four channel off-route measurements, two channel or simultaneous triaxial route and one or two plane static or dynamic couple balancing application, Bump Test, Data Recorder, Run up Coast down, Frequency Response Function, and Check to Conformance modules.
- CD-ROM, user manuals, utilities, asset information page and literature
- USB/power splitter cable [CMAC 5019]*
- USB/A to B cable [CMAC 5082]
- SD slot/dock connector cover [CMAC 5083]
- Docking station [CMAC 5068]*
- Battery pack [CMAC 5070]*
- Cable, power cord, UL 110, US [CMVA 3351]*
- Power adapter [CMAC 5022]
- Two (2) accelerometer, low profile, Non-NI certified [CMSS 2200]*
- Two (2) cable, sensor, coiled [CMAC 5209]*
- Two (2) magnetic base accelerometer, medium duty, 3,81 cm *(1.5 in.)* diameter [CMSS 908-MD]*
- Hard service carrying case [CMAC 5069]*
- Soft case [CMAC 5071]*
- Two (2) hand straps [CMAC 5072]*
- Shoulder strap [CMAC 5073]*
- Two (2) screen protectors [CMAC 5074]*
- Fischer connector dust covers [CMAC 5075]*
- 1 GB SD Card [CMAC 5077]

* Also available as separate accessory.

SKF Microlog AX-S model

Four channel off-route/two channel route or simultaneous triaxial route, Balancing, Bump Test and Recorder modules.

SKF Microlog AX-M model

Four channel off-route/two channel route or simultaneous triaxial route and Balancing modules.

Ordering information

Field upgrades to SKF Microlog AX series

- AX series Bump Test field upgrade [CMXA 80-BMP-SL]
- AX series Data Recorder field upgrade [CMXA 80-REC-SL]
- AX series Run up Coast down field upgrade [CMXA 80-RUCD-SL]
- AX series Frequency Response Function (FRF) field upgrade [CMXA 80-FRF-SL]
- AX series Check to Conformance field upgrade [CMXA 80-CTC-SL]
- AX-M to AX-S series field upgrade [CMXA 80-AXM/S-SL]
- AX-M to AX-F series field upgrade [CMXA 80-AXM/F-SL]
- AX-S to AX-F series field upgrade [CMXA 80-AXS/F-SL]

Optional Accessories

A number of accessories are available to complement the SKF Microlog AX series.

Hardware

- Laser Tachometer Kit [CMAC 5030-K]
- SKF Microlog Phase Reference Holder [CMSS 6156]
- SKF Microlog Field Balancing Kit (with Optical Sensor) [CMCP 850-01]
- SKF Microlog Field Balancing Kit (with Laser Sensor) [CMCP 850-02]
- SKF Microlog Field Balancing Kit (with Laser Sensor) [CMCP 850-03]
- AC / DC Current Clamp [CMAC 5208]
- Infrared Temperature Gun [CMAC 4200-SL]

- Optical Phase Reference Kit [CMSS 6155X-K-CE]
- Laser Phase Reference Kit [CMSS 6195AX-K-CE]
- Modal Hammer Kit with accelerometer to measure masses of 210 g and above [CMAC 5056-GXHK-1]
- Modal Hammer Kit with accelerometer to measure masses of 56 g and above [CMAC 5057-GXHK-2]
- Modal Hammer Kit only [CMAC 5058]
- Strobe Light [CMSS 6165K-AX]

Accelerometers

- Triax Accelerometer Kit [CMAC 4370-K]
- Accelerometer, small footprint, integrated 2 meter cable, supplied with magnetic mount [CMSS 2111]
- Accelerometer, high frequency [CMSS 2114]
- Accelerometer, CSA rated [CMSS 797-CA]

Cables

- BNC tachometer input (1 meter) [CMAC 5211]
- CH X Signal input extension cable (5 meter) [CMAC 5026]
- CH X Signal input extension cable (10 meter) [CMAC 5037]
- Tachometer (CMAC 5030-K) extension cable (5 meter) [CMAC 5043]
- Tachometer (CMAC 5030-K) extension cable (10 meter) [CMAC 5044]
- Cable converter, 2 pin Mil/BNC [CMAC 3715]
- Triaxial accelerometer cable for use with triax accelerometer kit CMAC 4370-K [CMAC 5009]

- Audio headphone cable [CMAC 5023]
- Four channel splitter cable, quantity two (2) required for taking four channel measurements with the SKF Microlog AX. Additional accelerometer and/or triax cables will be required [CMAC 5079]
- Output from Strobe Light cable [CMAC 5406]
- Input to Strobe Light cable [CMAC 5404]

International Accessories

Note
The North American cord sets will be shipped with all new units.

International power cord accessories, two (2) cord sets will be provided, the standard North American power cord and the requested International power cord.

- Power cord, Australia [CMAC 4222-AU]
- Power cord, Switzerland [CMAC 4222-CH]
- Power cord, Denmark [CMAC 4222-DK]
- Power cord, European [CMAC 4222-EUR]
- Power cord, Israel [CMAC 4222-IL]
- Power cord, Italy [CMAC 4222-IT]
- Power cord, Japan [CMAC 4222-JP]
- Power cord, United Kingdom [CMAC 4222-UK]

Product Support Plans

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