

SKF Microlog Analyzer AX series

CMXA 80

Advanced data collector / FFT analyzer

The SKF Microlog Analyzer AX is the most advanced large screen route based 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 applications that are most important to your company's specific predictive maintenance program. Developed for use in a wide range of industries, the SKF Microlog AX series is approved for use in hazardous environments requiring ATEX, IECEx and Class I Division 2 certifications.

Key features

- Simultaneous triaxial or four channel measurements for fast data collection
- Marvell 806 MHz PXA320 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

SKF Microlog Analyzer AX series

The SKF Microlog AX facilitates easier, more powerful condition monitoring by analyzing vibration signals and process variables using four channel non-route measurements and one or two plane static or dynamic couple balancing applications over a range of 0,16 Hz to 80 kHz (10 to 4 800 000 CPM). 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 is a full-featured, four channel, high performance route and non-route portable data collector/FFT analyzer.

Modular approach offers seamless expansion

The modular design of the SKF Microlog AX series offers customers the option to upgrade and expand functionality without having to buy another instrument. Accessories are inter-changeable between models. The SKF Microlog AX is shipped with the full SKF Microlog suite of modules installed. To add additional functionality, units can be upgraded to more advanced models, simply purchase the module and enter the supplied license key.

The SKF Microlog AX-M includes multiple routes, and non-route data collection, four channel FFT analysis, three channel simultaneous triax and the Balancing module.

Additional features are added to create the SKF Microlog AX-F model, which includes all modules. The SKF Microlog AX-M can also be upgraded to any of the other modules including Run up Coast down module that is used to record and analyze data from machines where noise or vibration levels are changing with speed or time, and the Frequency Response Function (FRF) module, which uses a modal hammer to establish the properties of mechanical structures.

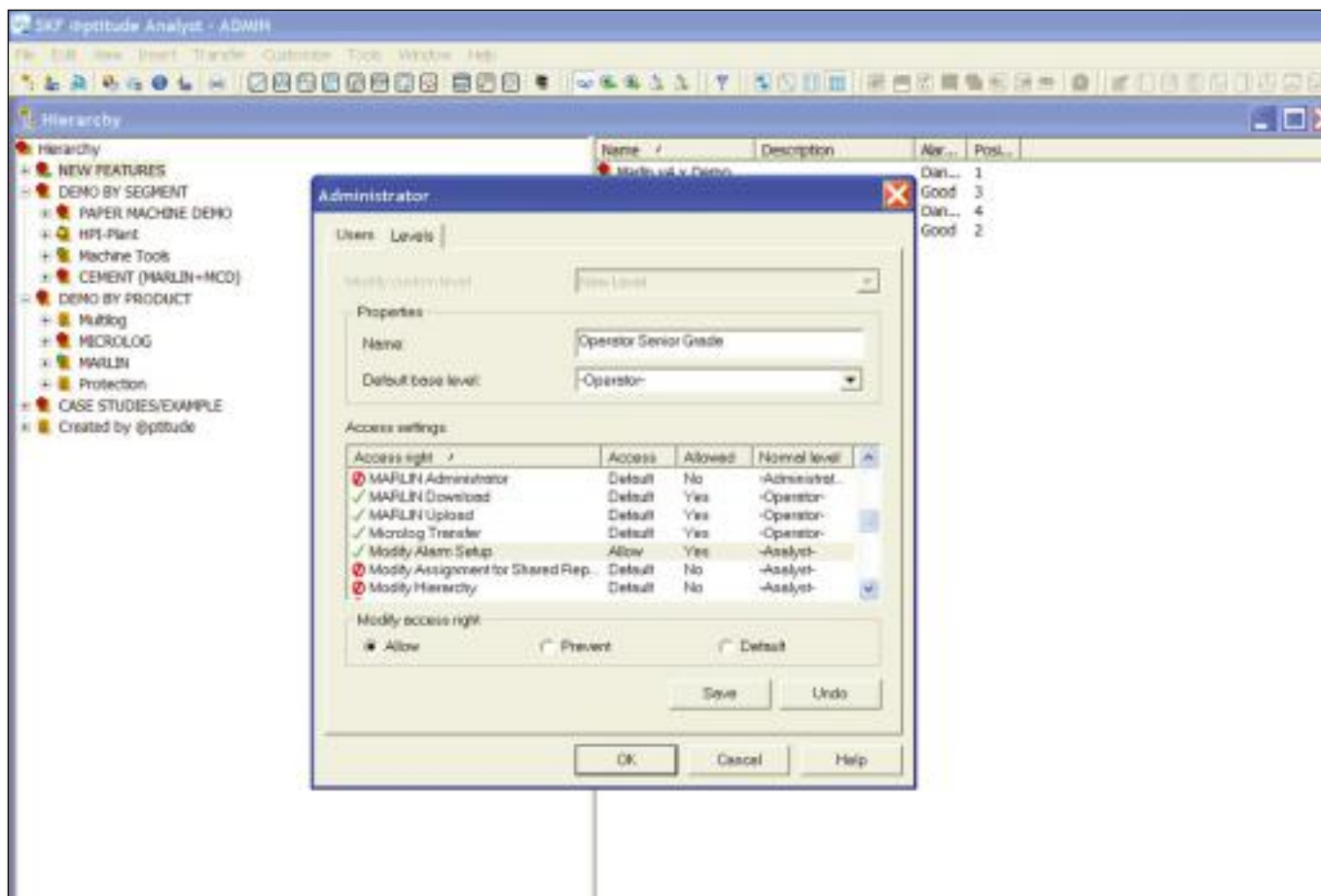
SKF @ptitude Monitoring Suite

Asset data available fast, enterprise wide and in the formats you want

The route based SKF Microlog AX transfers data to SKF @ptitude Analyst software, a comprehensive software solution with powerful diagnostic and analytical capabilities. SKF @ptitude Analyst provides fast, efficient and reliable storage, analysis, and retrieval of complex asset information and makes the information accessible throughout your entire organization. With this powerful analysis tool, you are in complete control – from how you set up hierarchies, filtered workspaces, routes, and analysis parameters, to the customized format for reporting. You can collect information based on location, machine type, frequency, or other selections. SKF @ptitude Analyst allows you to determine the appropriate limits for alarm conditions and how alarms are categorized, so you receive consistent, reliable data in the format that suits you best. SKF @ptitude Analyst can incorporate data from other sources, such as OPC servers, and seamlessly interface with your organization’s Computerized Maintenance Management System (CMMS), Enterprise Resource Planning (ERP) or other information management systems.

Key features

- One software program to manage asset condition data from portable and on-line devices
- Easy for novice or experienced users to learn and use
- Interconnectivity with multiple enterprise-wide software programs and systems
- Scalable and flexible to meet your unique needs
 - Start with one of three base models and expand functionality according to your needs
 - Easy personalization for individual users
 - Application add-ons extend core functionality without migration to other base models
 - User access control to support functional roles and department needs
 - User programmable functions compute your company’s KPIs (Key Performance Indicators)
- Supports Oracle and Microsoft SQL Server database managers
- Compliance reporting and scheduling direct tasks and workforce



Specifications

Performance characteristics

Acceleration, velocity, and displacement from hand-held or installed vibration sensors or monitoring systems:	<ul style="list-style-type: none"> • AC / DC sensors • Pressure sensors • Temperature sensors • Keyboard entry: Measurements read from indicators or installed instruments entered in engineering units • Universal tachometer • Visual inspections: Added to measurement as coded notes
Envelope (demodulator):	With four selectable input filters for enhanced bearing and gear mesh fault detection
gE filter selections:	<ul style="list-style-type: none"> • 5 Hz to 100 Hz • 50 Hz to 1 kHz • 500 Hz to 10 kHz • 5 kHz to 40 kHz
Input parameters:	<ul style="list-style-type: none"> • Tachometer: TTL / analogue programmable to ± 25 V • RPM range 1 to 99 999 • Tachometer power supply output +5 V at 100 mA
Input over-voltage protection:	<ul style="list-style-type: none"> • AC ± 50 V peak • DC ± 50 V sustained
Dynamic range:	>90 dB (24 bit ADC sigma-delta)
Input connectors:	<ul style="list-style-type: none"> • CH1: Six pin Fischer CH1, CH2, CH3, CH4 (labeled R) (ICP/AC/DC input), strobe out • CH2: Six pin Fischer CH2 and CH3 (ICP/AC/DC input), +5 V tachometer out • USB HOST/CHR: Seven pin Fischer R (ICP/AC/DC input), USB HOST, audio out • USB DEV/TRIG/PWR: Seven pin Fischer USB DEV, charger, external trigger aux, +5 V tachometer out
Input signal range:	± 25 V maximum
Signal:	RMS/Peak/Peak-Peak/True Peak/True Peak-Peak
Transducer check:	Bias Voltage Integrity (O/C and S/C detection)
Auto range:	Yes
Frequency range:	DC to 80 kHz
Bearing condition:	gE
FFT resolution:	100 to 25 600 lines
Time block length:	256 to 65 536 samples
Alarms:	Overall, Spectrum and Exponential (Peak and RMS level)

Measurement

Range:	<ul style="list-style-type: none"> • Route measurements: DC to 80 kHz • Non-route measurements: DC to 80 kHz
Averaging:	1 to 255 time averages, 1 to 4 096 spectral averages
Averaging type:	RMS, Time, Peak Hold, Exponential
Cursor:	Fixed and cursor lock. Single, harmonic and peak pick.
Trigger modes:	Free run or external trigger (trigger slope and amplitude)

Measurement

Resolution:	Programmable 100, 200, 400, 800, 1 600, 3 200, 6 400, 12 800 and 25 600 lines
Measurement windows:	Hanning, flat top, hamming and rectangular
Measurement parameters:	Acceleration, velocity, displacement, gE, temperature, phase, voltage, user specified
Measurement types:	Overall, spectrum, time waveform, cross phase, orbits, shaft centerline
Multi-point automation:	Up to 12 measurements can be listed for one button push automated data collection at each measurement location
Accuracy:	$\pm 0.25\%$ of full scale range
Data display:	<ul style="list-style-type: none"> • Single and dual channel spectrum, single and dual channel time, phase table, process, orbit, cross channel phase • Simultaneous spectrum, time waveform, peak hold averaging • Simultaneous spectrum, time waveform, peak hold averaging • Up to 12 bands (fixed or order base) downloadable from host software

Power AX

Battery:	<ul style="list-style-type: none"> • Li-ion 6 600 mAh with integral gas gauging • Eight hours continuous operation minimum
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Physical data

Dedicated keys:	Up, down, right, and left two enter keys for right and left hand operation, four function keys
Hot keys:	Peak find, harmonic, expand
LCD screen:	6.4 in. VGA color transfective TFT LCD screen for indoor and outdoor use, 640 x 480 pixels resolution, 16-bit color
Case:	EN60529, IP 65 (dust- and waterproof)
Weight:	1, 6 kg (3.5 lb.)
Size (height x width x depth):	220 x 220 x 71 mm (8.7 x 8.7 x 2.8 in.)
Drop test:	1.2 m (4 ft.), to MIL STD 810F specifications (with stand retracted)

Environmental

Certifications:	<ul style="list-style-type: none"> • Special conditions per certifications • ATEX: II 3 G Ex ic IIC T4 Gc (Ta = -10 °C to +50 °C) • IECEx: Ex ic IIC T4 Gc (Ta = -10 °C to +50 °C) • CE rated • CSA, Class I, Division 2, Groups A, B, C, D, temperature code T4@Ta = 50 °C
IP Rating:	IP 65
Temperature ratings:	<ul style="list-style-type: none"> • Operating temperature: -10 to +50 °C (14 to +122 °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



Specifications

System, data processing and storage

Operating system:	Microsoft Windows Embedded CE 6.0
Processor:	Marvell PXA320 806 MH
DSP:	Freescale DSP56311
Internal RAM:	<ul style="list-style-type: none"> • 128 MB DDR SDRAM • 128 MB NAND Flash
Internal storage:	120 MB (capable of storing approximately 4 000 spectra)
SD card:	Can support up to 16 GB
Communication:	<ul style="list-style-type: none"> • USB 1.1 rear panel and docking station) • Microsoft ActiveSync
User indicator:	Blue, green, amber and red LED's

Host software

Software:	<p>The SKF Microlog GX series connects directly to SKF @ptitude Analyst for SKF Microlog software.</p> <p>The Analysis and Reporting Manager plug-in to SKF @ptitude Analyst provides support for the SKF Microlog application modules.</p> <p>The Analysis and Reporting Manager can also be purchased as a stand alone version for non-route based SKF Microlog Analyzers.</p>
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SKF Microlog AX provides fast data collection and analysis. The large screen facilitates viewing in any light.

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 unit, programmed for four channel non-route measurements, two channel or simultaneous triaxial route analyzer with FFT Analyzer, Balancing, Recorder, Run up Coast down, Frequency Response Function, Spindle Assessment, Sensor Setup, Idler Sound Monitor and Conformance Check modules installed
- Two (2) accelerometers, general purpose, low profile, side exit, industrial, non-NI, with 1/4-28 and M6 mounting studs [CMSS 2200]
- For additional components available for this kit, see "Kit Components"

SKF Microlog AX-M model data collector / FFT analyzer

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

- CMXA 80-M unit, programmed for four channel non-route, two channel or simultaneous triaxial route analyzer with FFT Analyzer and Balancing modules
- Two (2) accelerometers, general purpose, low profile, side exit, industrial, non-NI, with 1/4-28 and M6 mounting studs [CMSS 2200]
- For additional components available for this kit, see "Kit Components"

SKF Microlog AX-A model data collector / FFT analyzer

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

- CMXA 80-A unit, this kit must be purchased with additional modules or application bundles.
- One (1) accelerometer (CMSS 2111) with 2 m integrated cable and magnetic mount (CMSS 908-LD)
- For additional components available for this kit, see "Kit Components"

Hazardous environments

ATEX (II 3 G Ex ic IIC T4 Gc) and IECEx (Ex ic IIC T4 Gc) Zone 2 certified kits

CMXA 80-F-K-SL-Z2 kit includes:

- CMXA 80-F unit, programmed for four channel non-route measurements, two channel or simultaneous triaxial route analyzer with FFT Analyzer, Balancing, Recorder, Run up Coast down, Frequency Response Function, Spindle Assessment, Sensor Setup, Idler Sound Monitor and Conformance Check modules installed
- Kit components the same as the CMXA 80-F-K-SL standard kit with two (2) accelerometer, ATEX approved, top exit 100 mVg [CMSS 793-EE] replacing the two CMSS 2200 accelerometers

CMXA 80-M-K-SL-Z2 kit includes:

- CMXA 80-M unit, programmed for four channel non-route / two channel or simultaneous triaxial route analyzer with FFT Analyzer and Balancing modules
- Kit components the same as the CMXA 80-M-K-SL standard kit with two (2) accelerometer, ATEX approved, top exit 100 mVg [CMSS 793-EE] replacing the two CMSS 2200 accelerometers

CSA, Class I, Division 2, Groups A, B, C, D certified kits

CMXA 80-F-CP-SL kit includes:

- CMXA 80-F unit, programmed for four channel non-route measurements, two channel or simultaneous triaxial route analyzer with FFT Analyzer, Balancing, Recorder, Run up Coast down, Frequency Response Function, Spindle Assessment, Sensor Setup, Idler Sound Monitor and Conformance Check modules installed
- Kit components the same as the CMXA 80-F-K-SL standard kit with two (2) accelerometer, CSA approved, general purpose, industrial [CMSS 793-CA] replacing the two CMSS 2200 accelerometers

CMXA 80-M-CP-SL kit includes:

- CMXA 80-M unit, programmed for four channel non-route, two channel or simultaneous triaxial route analyzer with FFT Analyzer and Balancing modules
- Kit components the same as the CMXA 80-M-K-SL standard kit with two (2) accelerometer, CSA approved, general purpose, industrial [CMSS 793-CA] replacing the two CMSS 2200 accelerometers

Kit components (included for all kits except as noted)

- CD-ROM, user manuals, utilities, asset information page and literature
- USB communication / power splitter straight cable, 2 m (6.6 ft.) [CMAC 5095]
- Two (2) accelerometer coiled cables, 1,8 m (6 ft.) [CMAC 5209]¹⁾
- Two (2) medium duty magnetic bases, 35 mm (1.5 in.) diameter [CMSS 908-MD]¹⁾
- USB/A to B straight cable [CMAC 5082]
- SD slot / dock connector cover [CMAC 5083]
- Docking station [CMAC 5068]
- Battery [CMAC 5070]
- Universal power supply [CMAC 5090]
- Carry case [CMAC 5069]
- Soft case [CMAC 5071]^{1, 2)}
- Two (2) hand straps [CMAC 5072]
- Shoulder strap [CMAC 5073]
- Two (2) screen protectors [CMAC 5074]^{1, 2)}
- Fischer and audio connector cover set [CMAC 5075]
- 4 GB SD Card [CMAC 5077]

Field upgrades to SKF Microlog AX series

- Frequency Response Function (FRF) module [CMXA MOD-FRF-SL]
- Run up Coast down module [CMXA MOD-RUCD-SL]
- Data Recorder module [CMXA MOD-REC-SL]
- Conformance Check module [CMXA MOD-CTC-SL]
- Balancing module [CMXA MOD-BAL-SL]
- FFT Analyzer module [CMXA MOD-ANL-SL]
- Spindle Test module, requires Balancing and Run Up Coast down modules and Spindle accessories [CMXA MOD-MTX-SL]
- SKF Idler Sound Monitor module [CMXA MOD-ISM-SL]
- SKF Microlog CMXA 80 AX-M to CMXA 80 AX-F field upgrade [CMXA 80-M/F-SL]
 - Full module upgrade for -M variants
- SKF Microlog CMXA 80 AX-A to CMXA 80 AX-F field upgrade [CMXA 80-A/F-SL]
 - Full module upgrade for -A variants
- SKF Microlog CMXA 80 AX-A Route field upgrade [CMXA 80-A/R-SL]
- SKF Microlog CMXA 80 AX-A to CMXA 80 AX-M field upgrade [CMXA 80-A/M-SL]
 - Route, Balancing and Analyzer module upgrade for -A variants
- Four channel kit description [CMXA 4CH-K-SL]
 - Accelerometer kit: four (4) accelerometers, general purpose, low profile, side exit, industrial, non-NI, with 1/4-28 and M6 mounting studs [CMSS 2200], four (4) accelerometer coiled cables, 1,8 m (6 ft.) [CMAC 5209], and two (2) splitter cable to allow 4 channels [CMAC 5079]

¹⁾ Not included in the SKF Microlog AX-A kit.

²⁾ Not included in ATEX kit.

SKF Microlog AX series application bundles

- SKF Microlog Conformance Test kit [CMXA CTC-K-SL]
 - Conformance Check module
 - ISO test standard templates
 - Analysis Reporting Manager [CMSW 7311-SL]
- SKF Microlog FFT Analyzer and Bump Test kit [CMXA ANL-K-SL]
 - FFT Analyzer module
 - Accelerometer kit (accelerometer with integral 2 m cable and magnetic mount)
- SKF Microlog Balancing kit [CMXA BAL-K-SL]
 - Balancing and FFT Analyzer modules
 - Laser tachometer kit [CMAC 5030-K]
 - Gooseneck clamp with magnetic base [CMSS 6156]
 - Analysis Reporting Manager [CMSW 7311-SL]
- SKF Microlog Spindle Assessment kit [CMXA MTX-K-SL]
 - Spindle Test, Balancing and Run up Coast down modules
 - Laser tachometer kit [CMAC 5030-K]
 - Gooseneck clamp with magnetic base [CMSS 6156]
 - Run out gauge
 - Belt tension checker [CMAC 5139 and CMAC 5140]
 - Spindle test quick start guide
- SKF Microlog Idler Sound Monitor Kit [CMXA ISM-K-SL]
 - SKF Idler Sound Monitor and FFT Analyzer modules
 - Microphone [CMAC 5084]
 - Cable [CMAC 5093]
 - Parabola [CMAC 5141 and CMAC 5142]
 - Wind baffle [CMAC 5143]
 - Headphone cable [CMAC 5078]
 - Headphone set [CMAC 5403]
- SKF Microlog Marine Monitoring Kit [CMXA MX-K-SL]
 - Conformance check module with container ship templates
 - Laser tachometer kit [CMAC 5030-K]
 - Gooseneck clamp with magnetic base [CMSS 6156]
 - Service case
 - Quick connect adaptor [CMAC 5220]
 - Quick connect studs
 - Pre-printed labels [CMAC 5222]
- SKF Microlog Marine Monitoring Kit [CMXA MXP-K-SL]
 - Conformance check module with container ship templates
 - Laser tachometer kit [CMAC 5030-K]
 - Gooseneck clamp with magnetic base [CMSS 6156]
 - Service case
 - Quick connect adaptor [CMAC 5220]
 - Quick connect studs
 - Pre-printed labels [CMAC 5222]
 - Analysis Reporting Manager [CMSW 7311-SL]

Optional accessories

A number of accessories are available to complement the SKF Microlog AX. For technical details or information on any item, please contact your local SKF sales representative. Specifications and photographs of the SKF Microlog series accessories are available in the SKF Microlog Analyzer accessories catalog (*SKF publication CM/P1 11643 EN*).

Hardware

- Infrared thermometer [CMAC 4200-SL]
- Infrared thermometer, CE compliant [CMAC 4200-CE-SL]
- Triax accelerometer kit [CMAC 4370-K]
- Laser tachometer kit [CMAC 5030-K]
- Laser tachometer kit with ATEX certified tachometer [CMAC 5030-K-Z2]
- Modal hammer kit for use on structures with a mass of 210 g (7.6 oz.) and above [CMAC 5056]
- Modal hammer kit for use on structures with a mass of 56 g (2.0 oz.) and above [CMAC 5057]
- Modal hammer kit without accelerometers [CMAC 5058]
- ICP Microphone with integral preamplifier kit [CMAC 5084]
- AC / DC current clamp [CMAC 5208]
- SKF Microlog Analyzer field balancing accessory kit (with optical sensor) [CMCP 850-01]
- SKF Microlog Analyzer field balancing accessory kit (with laser sensor) [CMCP 850-02]
- SKF Microlog Analyzer field balancing accessory kit (with laser tachometer) [CMCP 850-03]
- Optical phase reference kit [CMSS 6155XK-U-CE]
- Optical phase reference magnetic holder [CMAC 6156]
- Strobe light [CMSS 6165K-AX]
- Smart laser sensor tachometer kit [CMSS 6195AX-K]
- SKF Idler Sound Monitor accessory kit [CMAC 5411]

Battery and power supply

- Universal power supply [CMAC 5090]
- Battery [CMAC 5070]
- Battery for use in ATEX units [CMAC 5092]

Accelerometers

- Accelerometer, general purpose, low profile, side exit, industrial, non-NI, with 1/4-28 and M6 mounting studs [CMSS 2200]
- Accelerometer, general purpose, low profile, side exit, industrial, non-NI, with M8 mounting stud [CMSS 2200-M8]
- Accelerometer, ATEX approved, general purpose, industrial [CMSS 793-EE]
- Accelerometer, CSA approved, general purpose, industrial [CMSS 793-CA]
- Accelerometer with integral cables and magnets [CMSS 2111]
- High frequency accelerometer kit [CMSS 2114-K]
- Medium duty magnetic base, 35 mm (1.5 in.) diameter [CMSS 908-MD]

Cables

Accelerometer cables

- Triaxial accelerometer coiled cable [CMAC 5009]
 - for use with triax accelerometer kit CMAC 4370-K
- Splitter, four channel, two (2) required [CMAC 5079]
- Accelerometer coiled cable, 1,8 m (6 ft.) [CMAC 5209]
- Accelerometer coiled cable with safety breakaway, 1,8 m (6 ft.) [CMAC 5209-06S]
- Accelerometer coiled cable, 3 m (10 ft.) [CMAC 5209-10]

Tachometer cables

- BNC tachometer straight cable, 1 m (3.3 ft.) [CMAC 5211]
- Laser tachometer kit, straight cable, 24 cm (9.5 in.) [CMAC 5213]
 - for laser tachometer kit CMAC 5030-K (sold with kit only)
- Laser tachometer kit, straight cable, 2 m (6.6 ft.) [CMAC 5214]
 - for laser tachometer kit CMAC 5030-K (sold individually)

Extension cables

- CHX signal input straight extension cable, 5 m (16.4 ft.) [CMAC 5036]
- CHX signal input straight extension cable, 10 m (32.8 ft.) [CMAC 5037]
- Tachometer straight extension cable, 5 m (16.4 ft.) [CMAC 5043]
 - for use with laser tachometer kit CMAC 5030-K
- Tachometer straight extension cable, 10 m (32.8 ft.) [CMAC 5044]
 - for use with laser tachometer kit CMAC 5030-K

Miscellaneous cables

- Cable converter, two pin MIL to BNC [CMAC 3715]
- USB communication / power splitter straight cable, 2 m (6.6 ft.) [CMAC 5019]
- Fischer to BNC signal input straight cable, lightweight for hammer kits, 1 m (3.3 ft.) [CMAC 5023]
- Fischer to BNC signal input cable [CMAC 5088]
- Audio headphone straight cable [CMAC 5078]
- USB / A to B straight cable [CMAC 5082]
- Infrared thermometer gun cable [CMAC 5087]
- Input to strobe light cable [CMAC 5404]
- Output from strobe light cable [CMAC 5406]

Miscellaneous accessories

- Docking station [CMAC 5068]
- Carry case [CMAC 5069]
- Soft case [CMAC 5071]
- Hand strap [CMAC 5072]
- Shoulder strap [CMAC 5073]
- Screen protector [CMAC 5074]
- Fischer and audio connector cover set [CMAC 5075]
- Audio headset, hard hat compatible [CMAC 5403]
- 4 GB SD card [CMAC 5077]