

Microlog[®]

MX series

Portable maintenance instrument





A flexible platform

The concept

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

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

At the heart of the 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 colour display, easy operation function keys and high speed data acquisition capability. The Windows CE operating system provides direct access to your PC environment for the 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 positions¹⁾.
- Print directly from the instrument to a portable printer while still in the field.
- Easy data transfer and seamless storage using Excel®.
- Communications: USB, IrDA and RS232
- Firmware upgrade path to full GX series data collector capability.

¹⁾ Feature currently only available on the CMXA-CTC-EN conformance check module

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

The 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 MX has IP65 (dust and water) sealing and a 2 metre (Mil-Std 810 spec) multiple drop rating, making sure it can 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 re-set.

Data for expert analysis

Although the 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.

Expand functionality

The 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 choose the module required and upload it to the handheld. In order to get the most from the 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 test templates in accordance with frequently used industry standards, i.e. ISO, BS.
 - Operator feedback given as actual values and health grading.
- User definable module for custom test templates:
 - Create bespoke conformance tests.
 - Select machine classes and alarm limits.
 - Enable vibration limits to be set by your own vibration experts.

FFT analyser module

- Single spectrum display with absolute phase.
- Bearing analysis.
- Allows simplified checks for common machine faults.
- Live display of single spectrum.
- Phase reading shown as a simple vector diagram – no need for a tachometer signal.

Bump test – packaged with FFT analyser

- 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 1 or 2 planes.
- Static or dynamic couple balances.
- On screen step by step guide to balancing.
- Balance fans and impellers.

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

- Batch exporting into Excel – consolidate multiple worksheets into a single workbook.
- Offline analysis package including overlay, polar plots and waterfall analysis.
- Graphical display allows zooming and magnification, dynamic cursor types (harmonic, power, side-band etc), integration, control of engineering units and vertical scale.



Measurement parameters

Input signal types:	ICP™ Powered and self powered transducers
Signal inputs:	2 ICP™, AC signals, DC signals
Tachometer:	Tacho input ±40 V, tacho supply +5 V
Input channels:	Channel 1 Channel 2
2 simultaneous:	ICP™/AC/DC ICP™/AC/DC
Transducer check:	ICP™ open circuit check
Auto range:	Yes
Dynamic range:	>90 dB
Frequency range:	F _{max} 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 MX series module application specifications

Hardware details

Size (mm):	186 × 93 (narrowest point) 186 × 134 (widest point)
Weight:	700 g (1,5 lbs)
Display options:	1/4 VGA colour TFT screen
Droptest:	2 metres (6,5 feet) – to MIL-STD 810 specifications
Sealing:	IP65 (dust & water proof)
Temperature ratings:	-10 to +50 °C operating temperature -20 to +60 °C storage temperature
Hazardous area:	CSA – class I, division 2, groups A, B, C, D
Processor:	400 MHz X-scale – Intel PXA255
Operating system:	Windows CE.Net v4.2 (core only)
Battery:	Li-Ion smart battery pack
Battery recharge:	Via mains adaptor or desktop cradle
Communication:	Active sync via USB, IrDA or RS232
Internal storage:	64 Mbyte (capable of storing approx 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

Ordering information

- CMXA44 – portable maintenance instrument

The CMXA44 includes

- USB comms cable
- Power supply
- Hand strap
- User manual
- Quick start guide

Software options¹⁾

- CMXA-CTC-EN – Conformance check module
- CMXA-AAB-EN – Analyser with bump test module
- CMXA-BAL-SL – Balancing module
- CMXA-REC-SL – Recorder module
- CMSW-ANR-EN – Analysis and reporting module

Accessory details are listed on the “MX series accessory ordering information” data sheet.

¹⁾ User must purchase at least one software module with the CMXA44 instrument



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