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Якутск (4112)23-90-97
Ярославль (4852)69-52-93

Россия +7(495)268-04-70

Казахстан +7(7172)727-132

Киргизия +996(312)96-26-47

<https://renishaw.nt-rt.ru/> || rwe@nt-rt.ru

XM-60 and XM-600 multi-axis calibrators

Measure six degrees of freedom in any orientation from a single set-up

Unique technology, optical roll measurement and fibre optic launch

XM laser measurement systems are capable of measuring errors in six degrees of freedom along a linear axis, simultaneously from a single set-up. They are powerful diagnostic tools that measure all geometric errors in the axis from a single capture.

For users of volumetric compensation or error mapping, XM laser systems provide a quick and accurate method of data population. All measurements are made optically allowing use in any orientation.

XM system overview

Flexible

Separate laser unit enables flexible mounting options and minimises the impact on the measurement volume.

Thermal stability

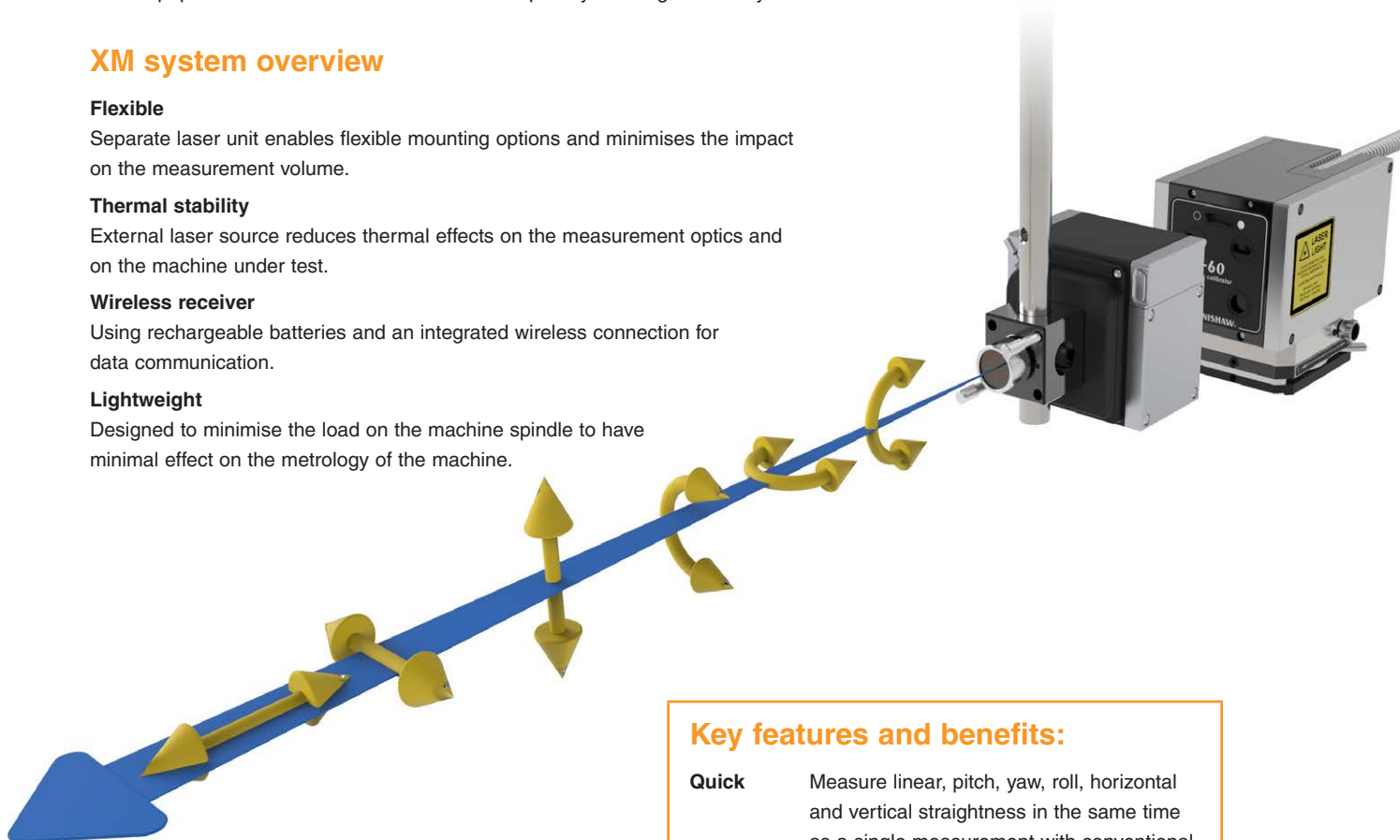
External laser source reduces thermal effects on the measurement optics and on the machine under test.

Wireless receiver

Using rechargeable batteries and an integrated wireless connection for data communication.

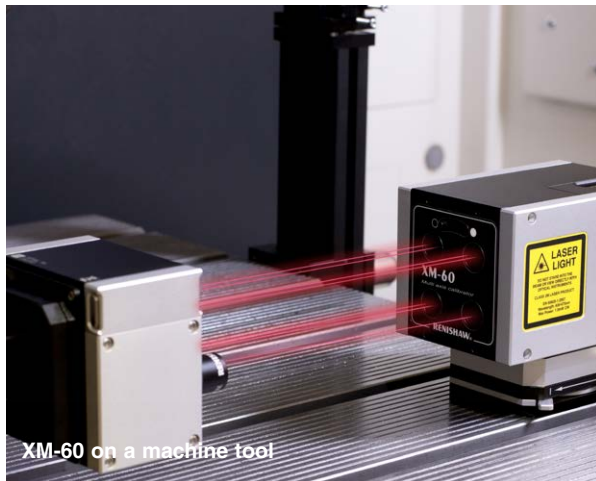
Lightweight

Designed to minimise the load on the machine spindle to have minimal effect on the metrology of the machine.



Key features and benefits:

- Quick** Measure linear, pitch, yaw, roll, horizontal and vertical straightness in the same time as a single measurement with conventional laser techniques.
- Simple** Easy set-up, familiar to users of other interferometric systems. Automatic sign detection and graphical alignment minimise human errors.
- Reassuring** Measuring all errors directly allows the user to see results as the test is in progress.
- Capable** Unique optical roll measurement system provides roll measurement in any orientation.



XM-60 on a machine tool

XM-60

Provides users with a powerful machine diagnostic capability through the measurement of all degrees of freedom from a single capture. By capturing six degrees of freedom, users can discover the source of their errors rather than only their effects as is often an issue when performing linear measurement alone.

The CARTO software suite works with XM-60 to allow easy and fast data capture with its automated functionality for machine sign convention detection. Combining this with the comprehensive analysis software allows for comparisons of error types and time frames, creating a detailed view of the machine's performance.



XM-600 on a CMM

XM-600

Designed with additional functionality, the XM-600 can communicate directly with Renishaw's UCC controllers and also works with CARTO software. This provides the ability to easily create an accurate error map for each linear axis of a CMM.

This functionality is supported from within UCC suite V5.4.1 and onwards, enabling the complete error mapping of a CMM within half a day.

Compatibility

Software	XM-60	XM-600
CARTO suite	Yes	Yes
UCC suite	No	Yes

Performance specification

	Accuracy	Resolution	Range
Linear	±0.5 ppm (with environmental compensation)	1 nm	0 m to 4 m
Angular (pitch/yaw)	±0.004A ±(0.5 µrad +0.11M µrad)	0.03 µrad	±500 µrad
Straightness	Typical range: ±0.01A ±1 µm Extended range: ±0.01A ±1.5 µm	0.25 µm	±50 µm ±250 µm
Roll	±0.01A ±6.3 µrad	0.12 µrad	±500 µrad

Note: Accuracy values are reported to a statistical confidence of 95% (k=2). They do not include the errors associated with the normalisation of the readings to a material temperature of 20°C.

A = displayed error reading

M = measured distance in metres

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