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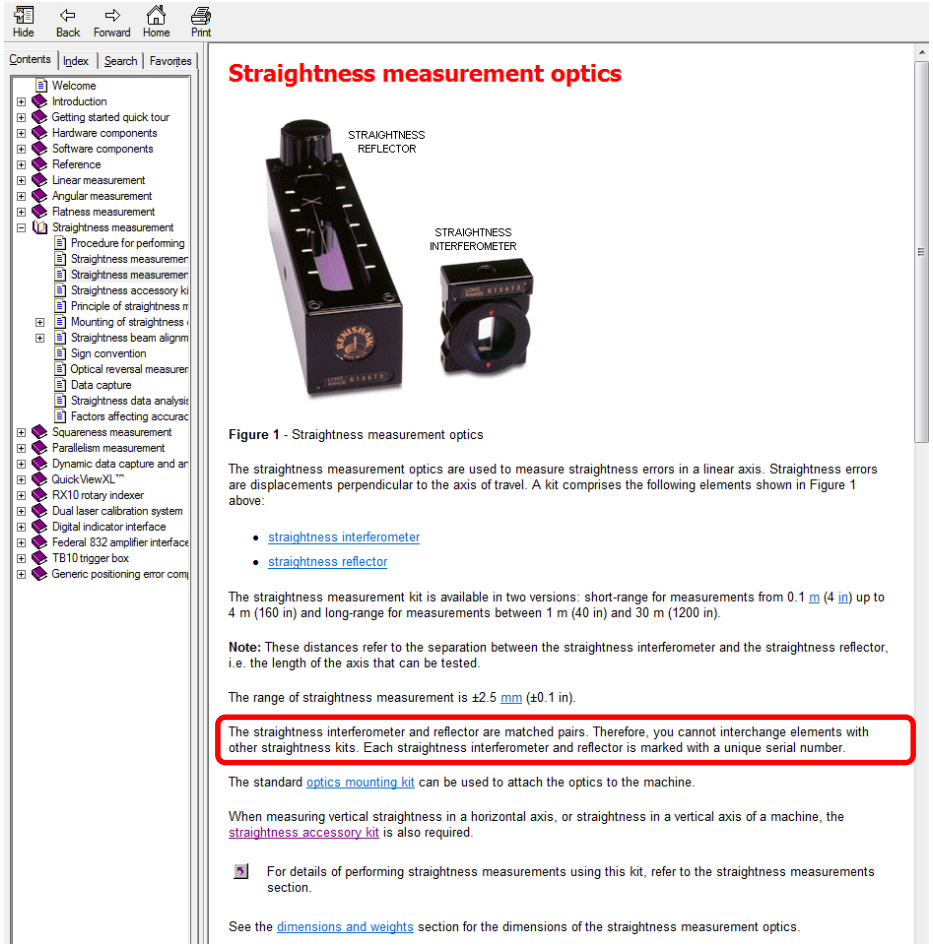
Manual amendments detail document

Title of manual:	LaserXL
Document number:	M-9908-9137-04
Date:	May 2017

Matched straightness pairs

Section – Straightness measurement, Straightness measurement optics



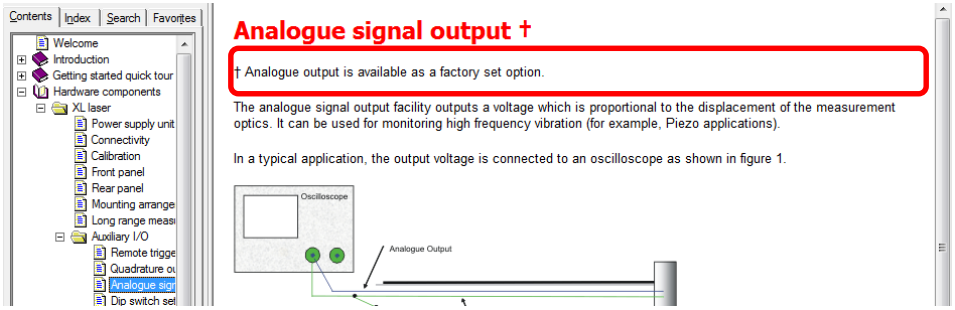
If the straightness interferometer and reflector are manufactured before 2002 they **are a matched pair**.

All straightness interferometers and reflectors manufactured after 2002 **are not matched pairs** as the manufacturing process was improved.

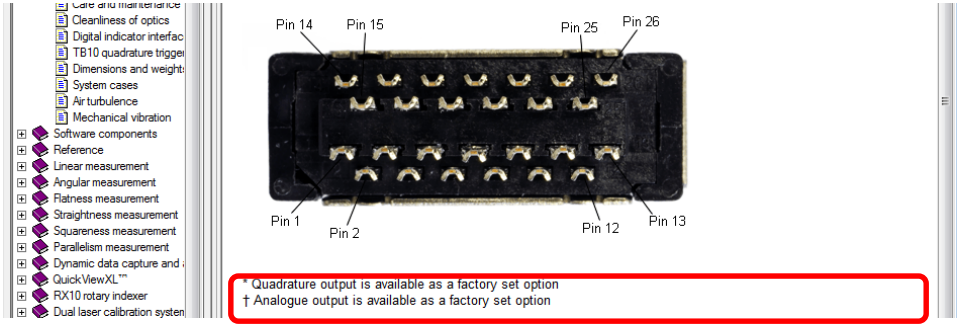
Therefore, it is possible to interchange post 2002 elements with other straightness kits manufactured after this date.

Analogue signal output

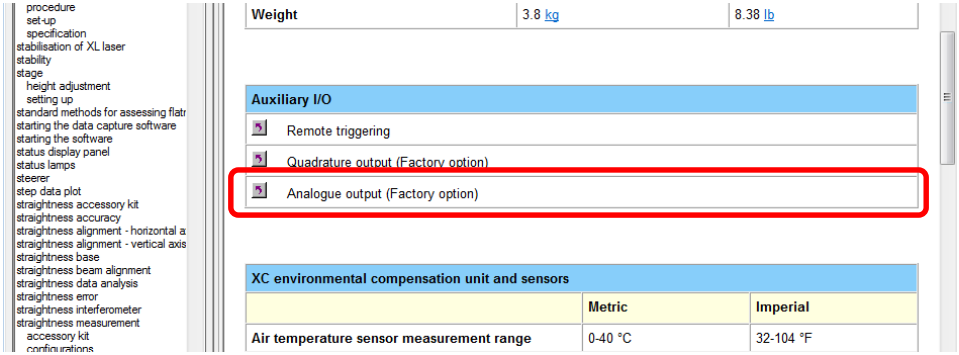
Analogue output is now standard on all units and is no longer an ‘option’.



Section – Hardware components,
XL laser,
Aux I/O,
Analogue signal output



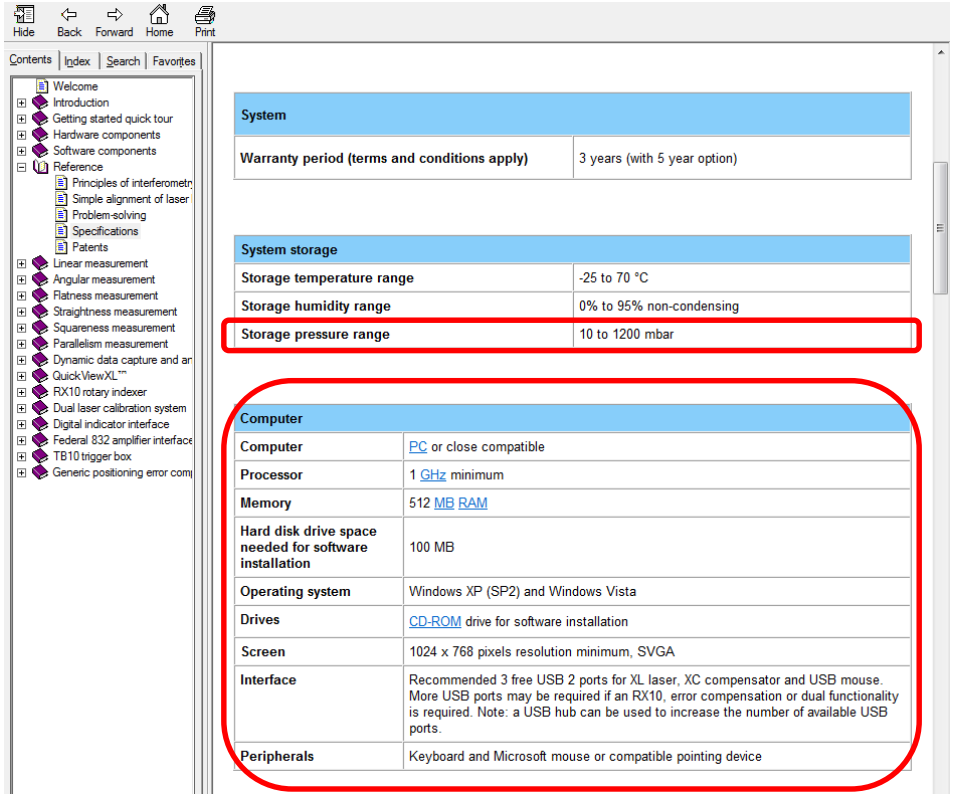
Section – Hardware components,
XL laser,
Auxiliary I/O,



Section – Reference,
Specifications

Specification updates

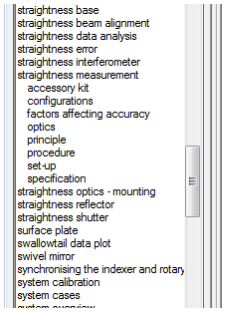
Section – Reference, Specifications



System	
Warranty period (terms and conditions apply)	3 years (with 5 year option)

System storage	
Storage temperature range	-25 to 70 °C
Storage humidity range	0% to 95% non-condensing
Storage pressure range	10 to 1200 mbar

Computer	
Computer	PC or close compatible
Processor	1 GHz minimum
Memory	512 MB RAM
Hard disk drive space needed for software installation	100 MB
Operating system	Windows XP (SP2) and Windows Vista
Drives	CD-ROM drive for software installation
Screen	1024 x 768 pixels resolution minimum, SVGA
Interface	Recommended 3 free USB 2 ports for XL laser, XC compensator and USB mouse. More USB ports may be required if an RX10, error compensation or dual functionality is required. Note: a USB hub can be used to increase the number of available USB ports.
Peripherals	Keyboard and Microsoft mouse or compatible pointing device



XC environmental compensation unit and sensors		
	Metric	**Imperial**
Air temperature sensor measurement range	0-40 °C	32-104 °F
Air temperature sensor measurement accuracy	±0.2 °C	±0.36 °F
Air pressure sensor measurement range	650-1150 mbar	22-34 in Hg
Air pressure sensor measurement accuracy	±1.0 mbar#	±0.03 in Hg#
Relative humidity sensor measurement range	0-95% (non-condensing)	
Relative sensor measurement humidity accuracy	±6%	
Wavelength compensation accuracy	±0.5 ppm †*	
Material temperature sensor measurement range	0-55 °C	32-104 °F

Storage pressure range updated:
650 mbar- 1150 mbar

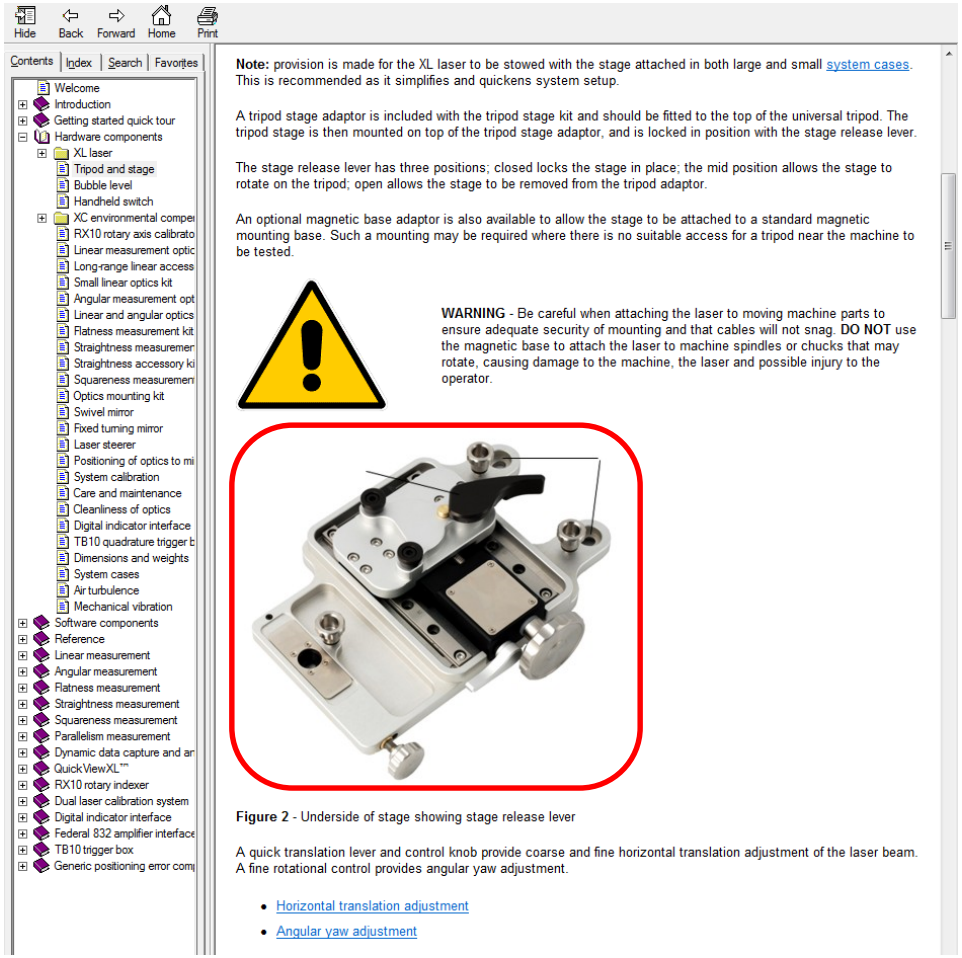
We no longer quote minimum PC requirements for our Laser calibration products in help manuals.

For an up to date minimum PC specification please go to the XL-80 Calibration software page on the website.

Correction to match degrees celcius:
32 – 131°F

Tripod stage text

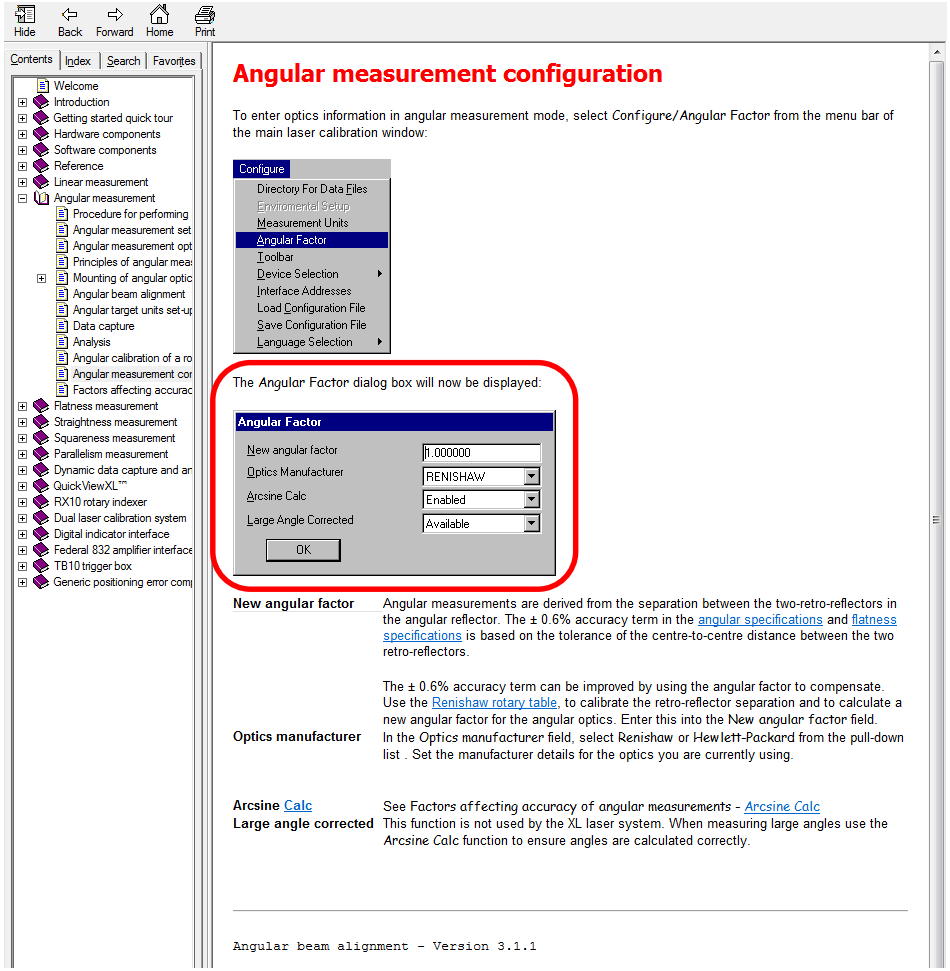
Section – Hardware components, Tripod and stage



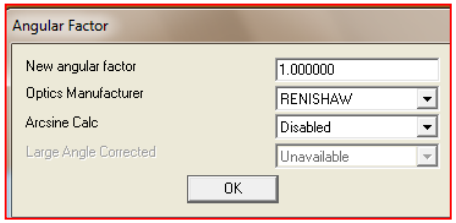
Labelling lines removed

Angular factor

Section – Angular measurements, Angular measurement configuration

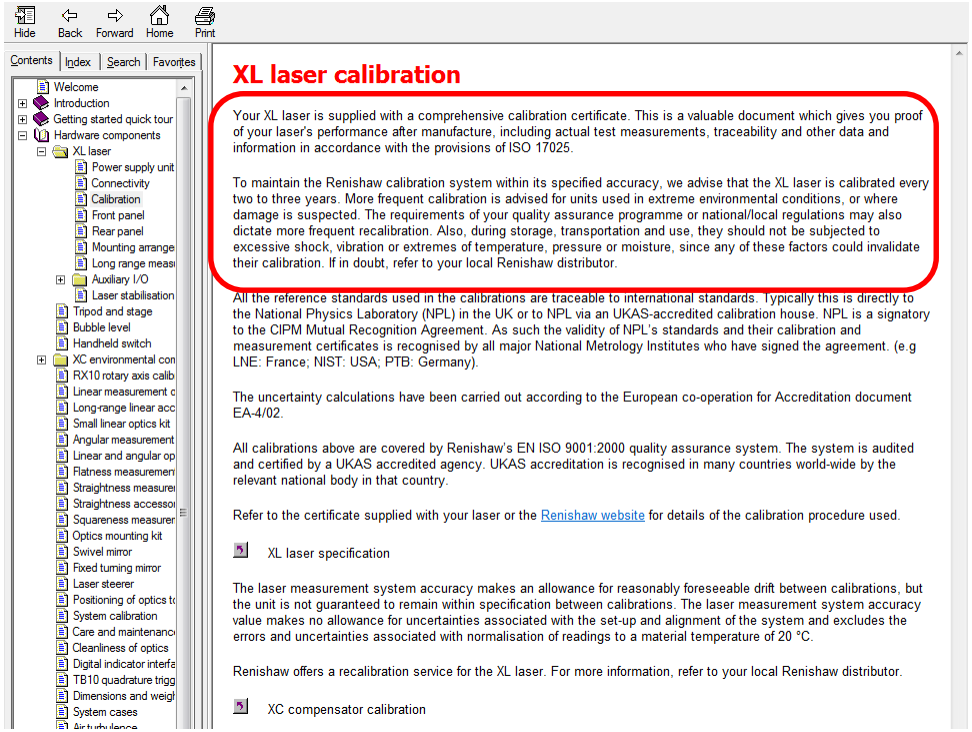


‘Arcsine Calc’ is now disabled:



Calibration periods

Section – Hardware components,
XL laser,
Calibration

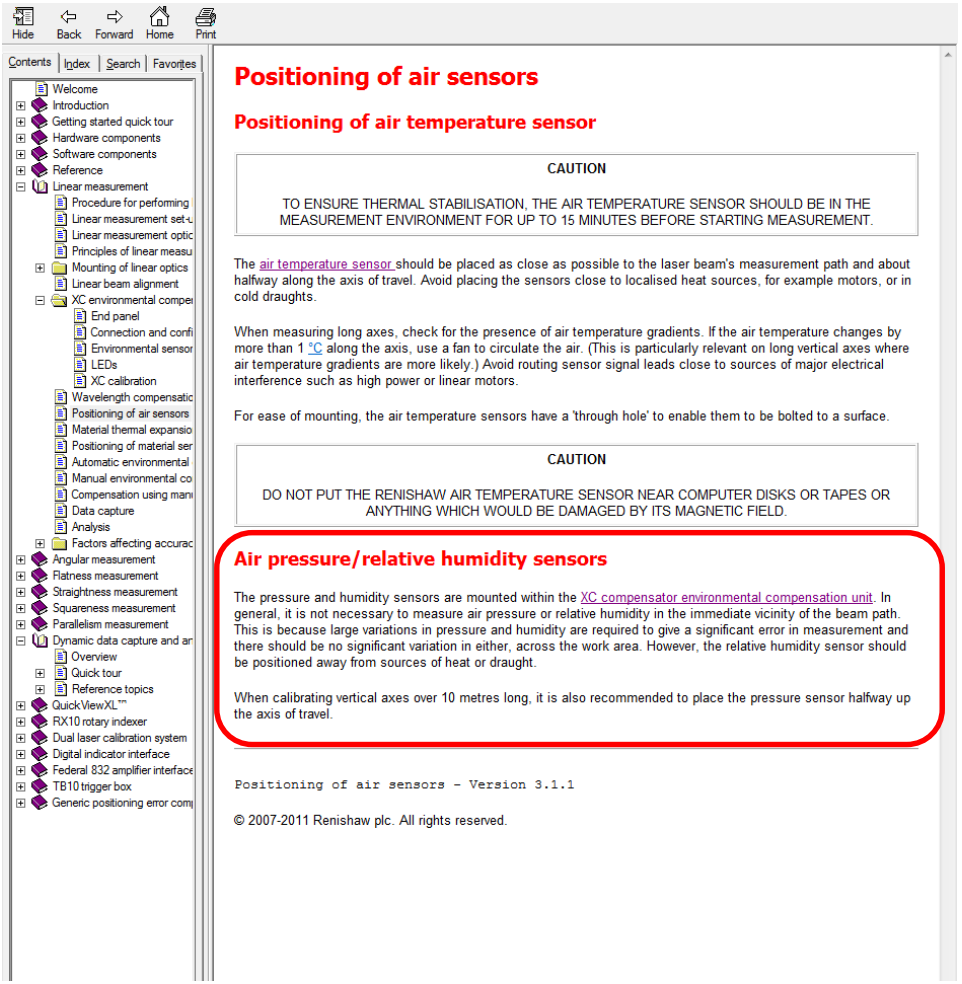


Additional clarification:

Renishaw recommends that XL-80 is recalibrated every three years. This is defined as three years from sale rather than from the calibration date on the certificate. This is because the units are stored under controlled conditions by Renishaw prior to sale.

Positioning of humidity sensors

Section – Linear measurements,
Positioning or air sensors

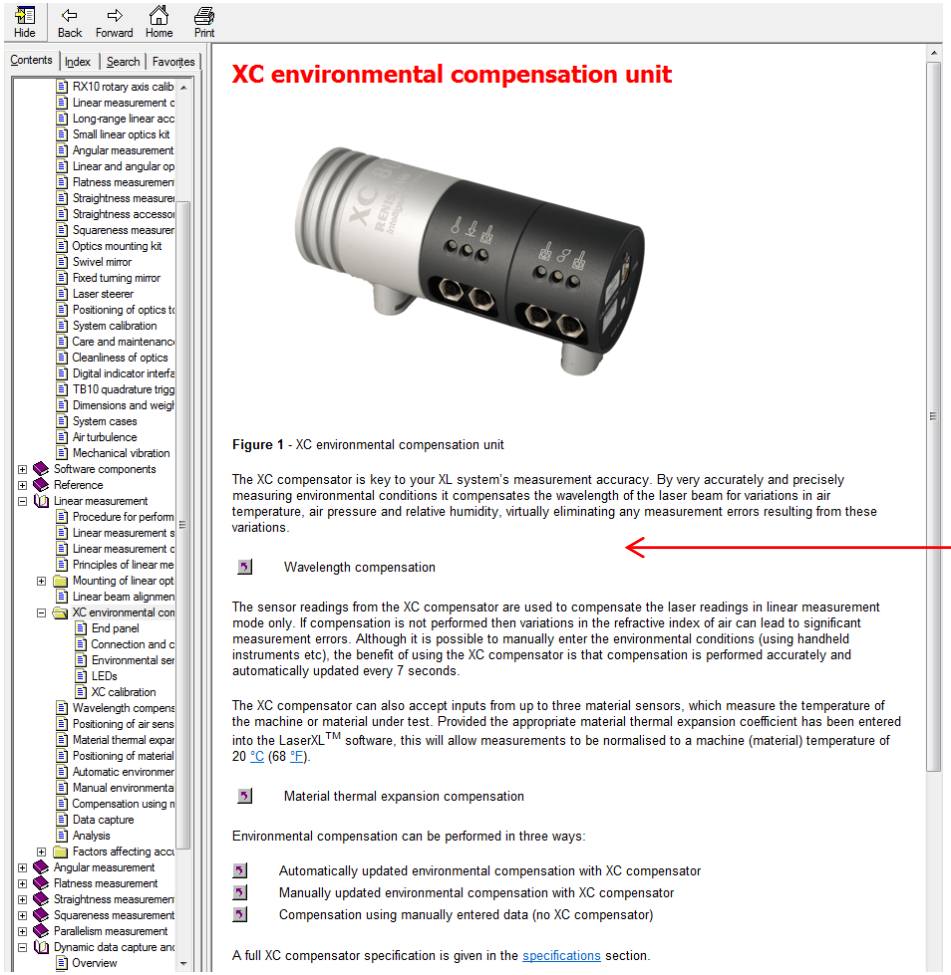


Additional statement added:

It is important to ensure the humidity sensor in not obstructed when mounting.

Positioning of XC-80 sensors

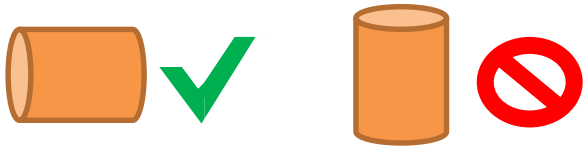
Section – Linear measurements,
XC environmental compensation unit



Additional CAUTION statement:

CAUTION

THE XC-80 SHOULD BE MOUNTED WITH THE CYLINDER IN A HORIZONTAL ORIENTATION TO BE ACCURATE WITHIN QUOTED SPECIFICATION.



Power supply connecter dimensions

Section – Hardware components, Dimensions and weights

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    - Long-range linear access
    - Small linear optics kit
    - Angular measurement opt
    - Linear and angular optics
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    - Squareness measuremen
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- Dual laser calibration system
- Digital indicator interface
- Federal 832 amplifier interface
- TB10 trigger box
- Generic positioning error com

Weight = 0.49 kg

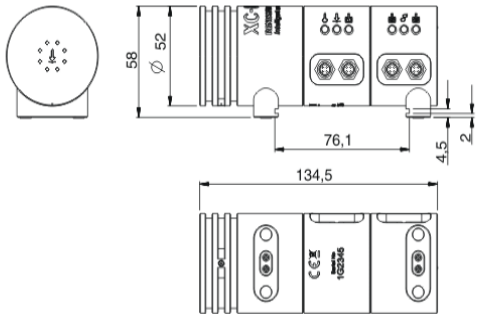


Figure 3 - XC environmental compensation unit (dimensions in mm)

Sensor weights		
Air temperature sensor	48 g	1.69 oz
Material temperature sensor	45 g	1.59 oz

Power supply connector

Linear measurement optics

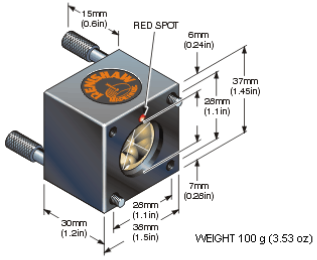
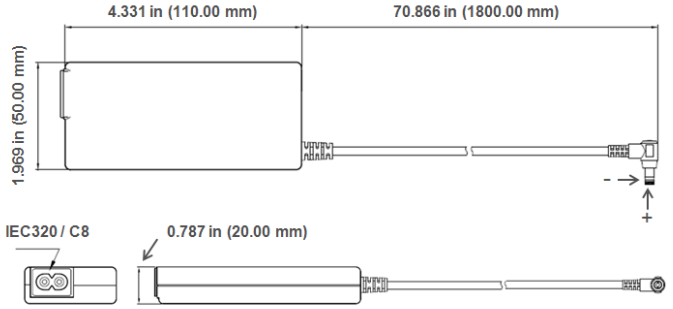


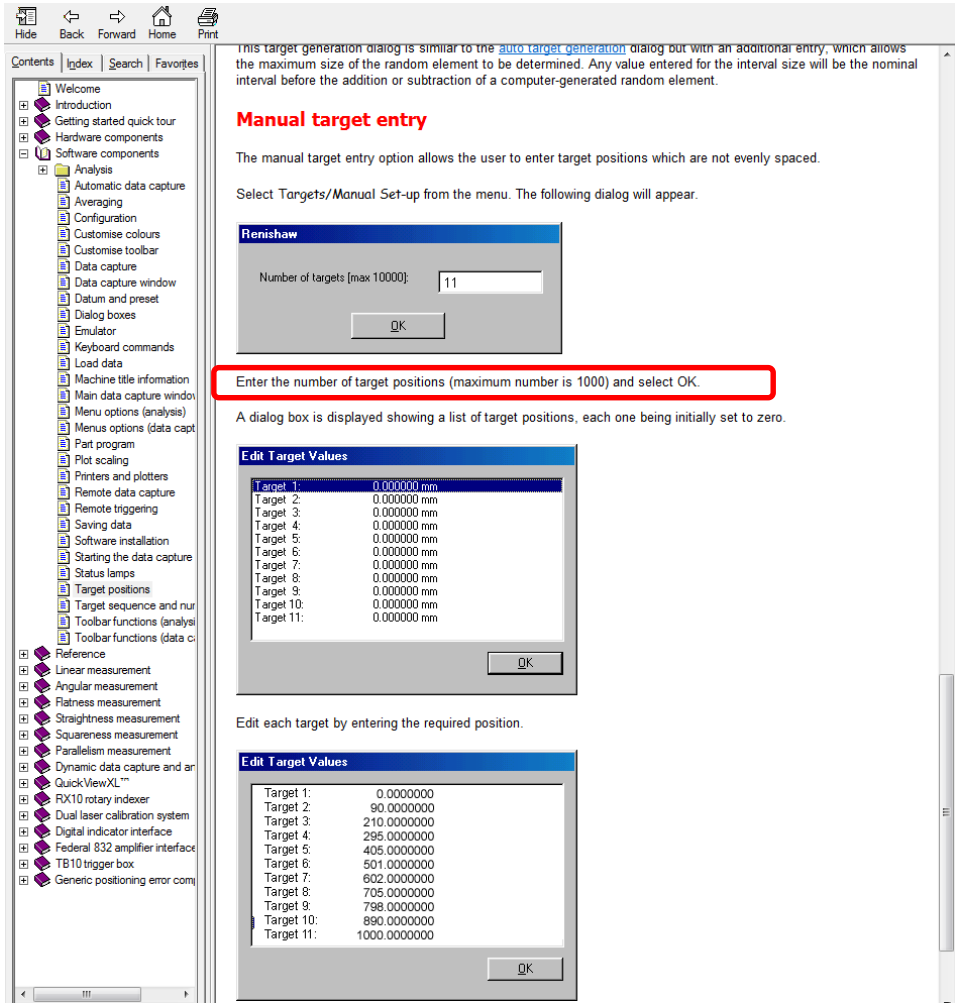
Figure 4 - Linear reflector

Missing information added:



Maximum manual target positions

Section – Software components
Target positions

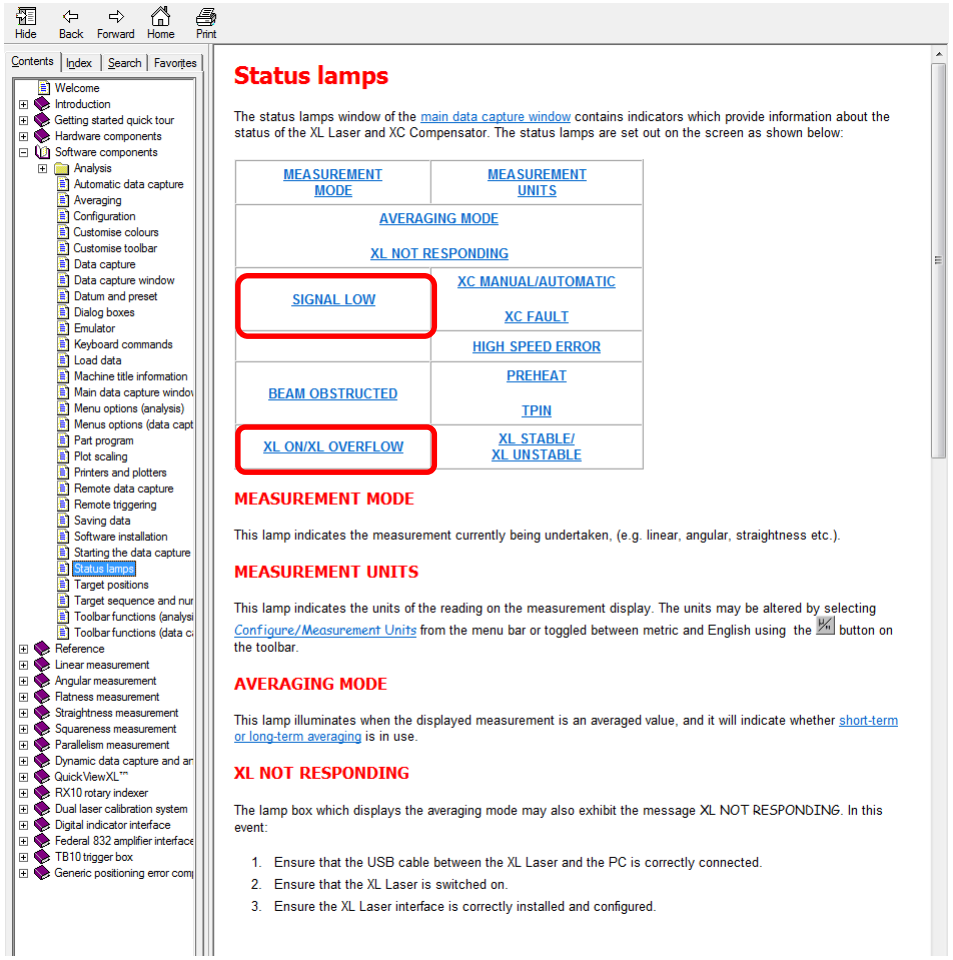


Correction:

Maximum number of target positions is 10000 as documented in the image above.

Error status lamps

Section – Software components
Status lamps



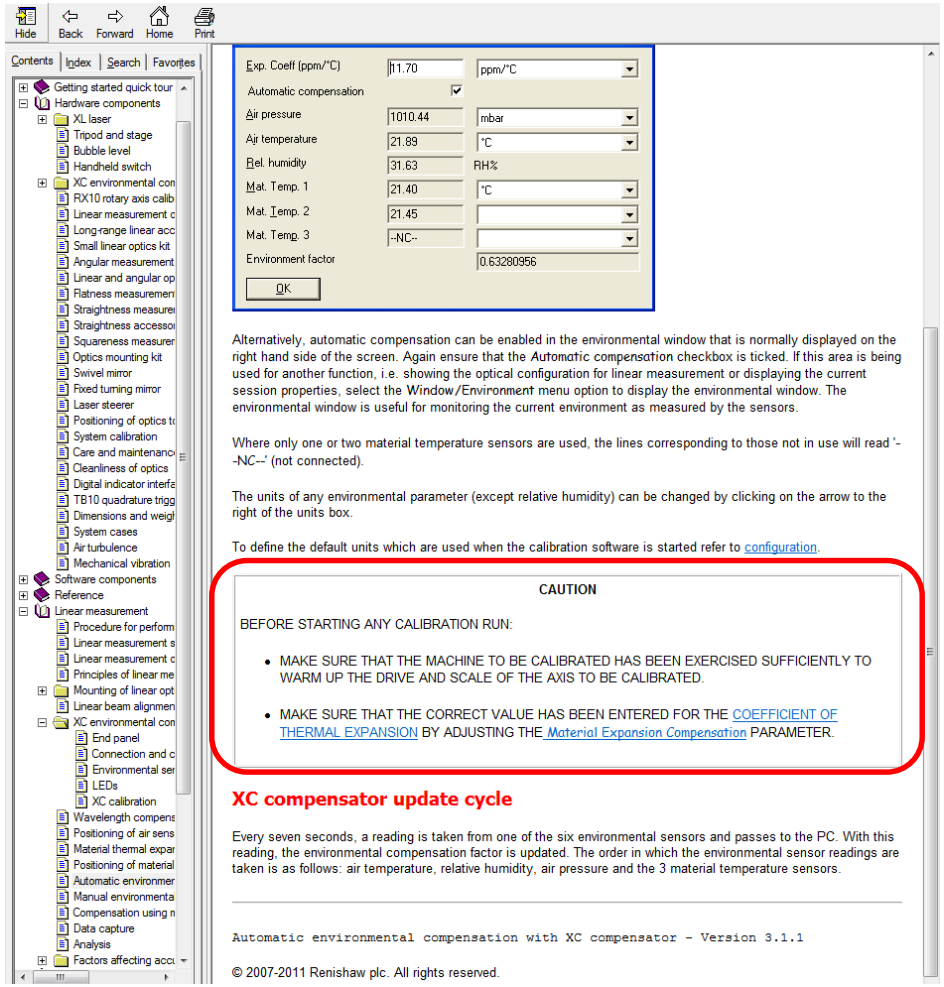
Correction:

Signal low
XL overflow

XL on

Thermal compensation on a test machine

Section – Linear measurement,
Automatically updated environmental compensation with XC compensator



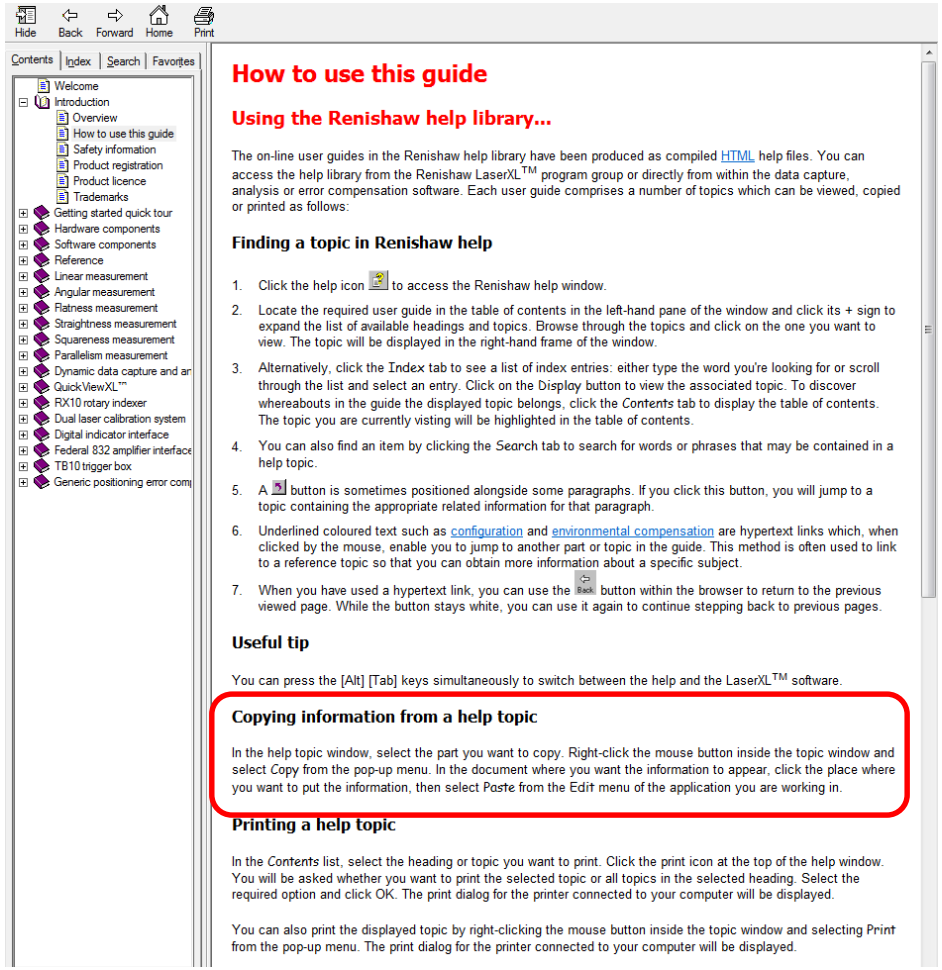
Additional CAUTION statement:

CAUTION

IF A MACHINE UNDER TEST HAS ENVIRONMENTAL COMPENSATION TURNED "ON" THEN ENSURE LASERXL COMPENSATES THE RESULTS USING AN IDENTICAL COEFFICIENT OF THERMAL EXPANSION AND SIMILAR TEMPERATURE READING. THE PLACEMENT OF THE XC-80 MATERIAL SENSOR SHOULD REFLECT THE TEMPERATURE OF THAT INTENDED BY THE TEMPERATURE SENSOR USED TO CORRECT THE MOVEMENT OF A MACHINE.

Copying information from a help topic

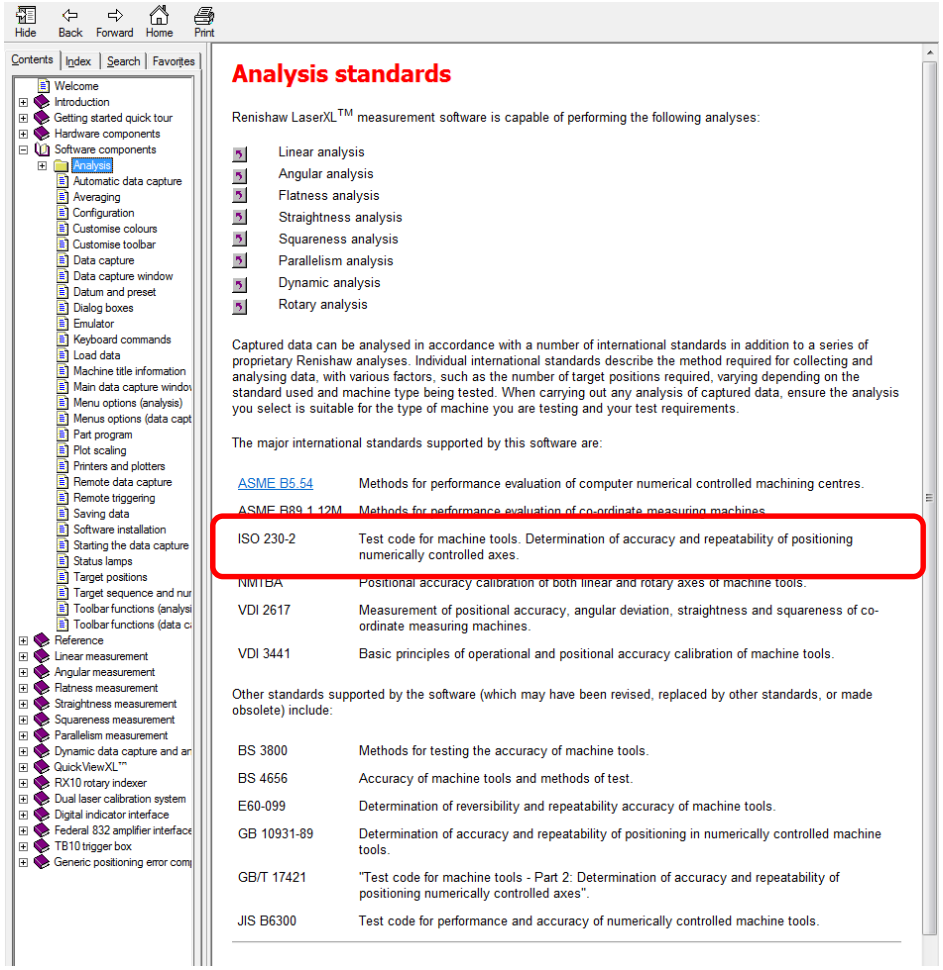
Section – Overview,
How to use this guide



This information is obsolete as copying is consistent with all Windows platforms.

ISO 230-2 2006 clarification

Section – Software,
Analysis,
Analysis standards



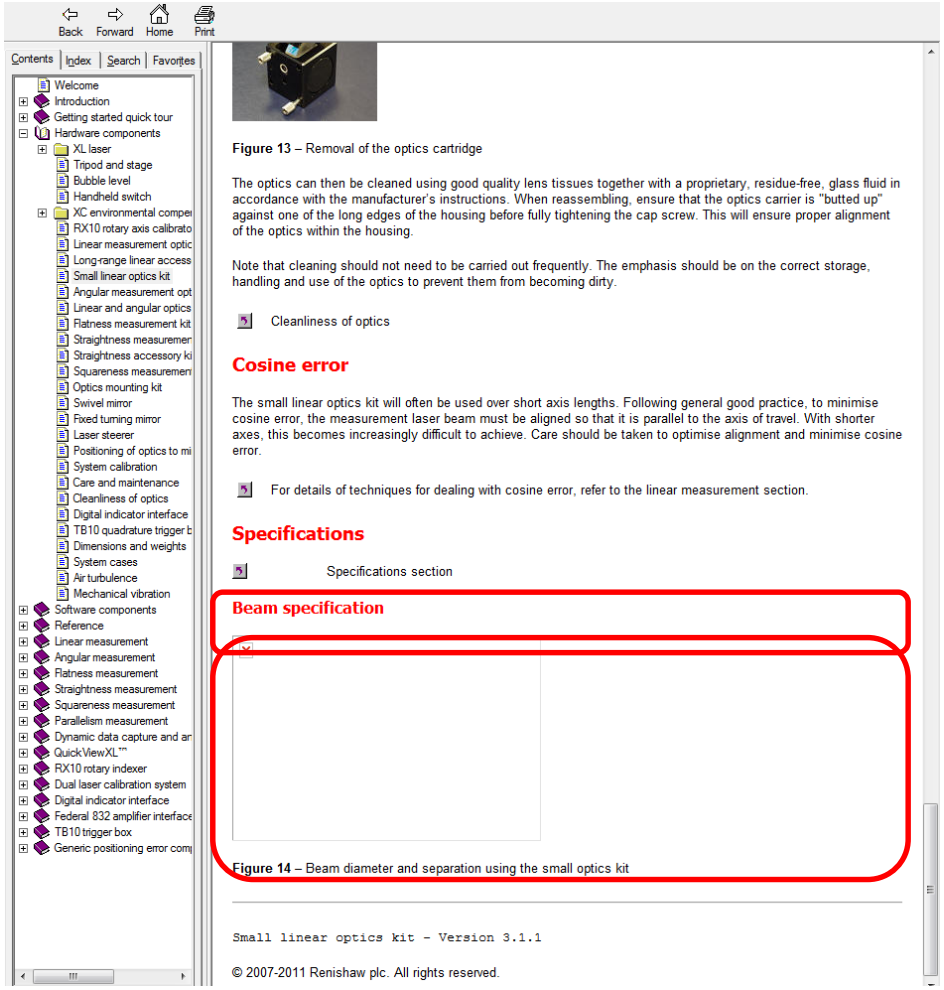
Additional statement added:

LaserXL analysis software was designed to meet ISO 230-2 1997. The current standard (ISO 230-2 2006) altered the analysis of the data by introducing the determination and reporting of a value for measurement uncertainty, which is not reported in LaserXL analysis software. There has been no change to the data capture process or to the previous analysis calculations from ISO 230-2 1997.

It is up to the user to define and complete a range of tests for the uncertainty parameters specified in ISO 230-2 2006. Once a total measurement uncertainty value has been calculated, the new Renishaw analysis software (XCal-View) provides the user the space to manually enter it into reporting.

Small optics kit specification

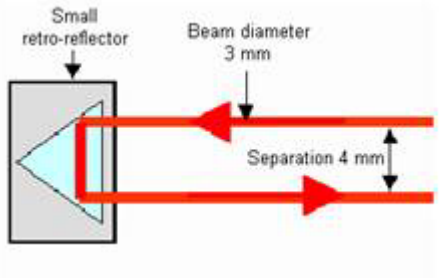
Section – Hardware components, Small linear optics kit



Missing specification:

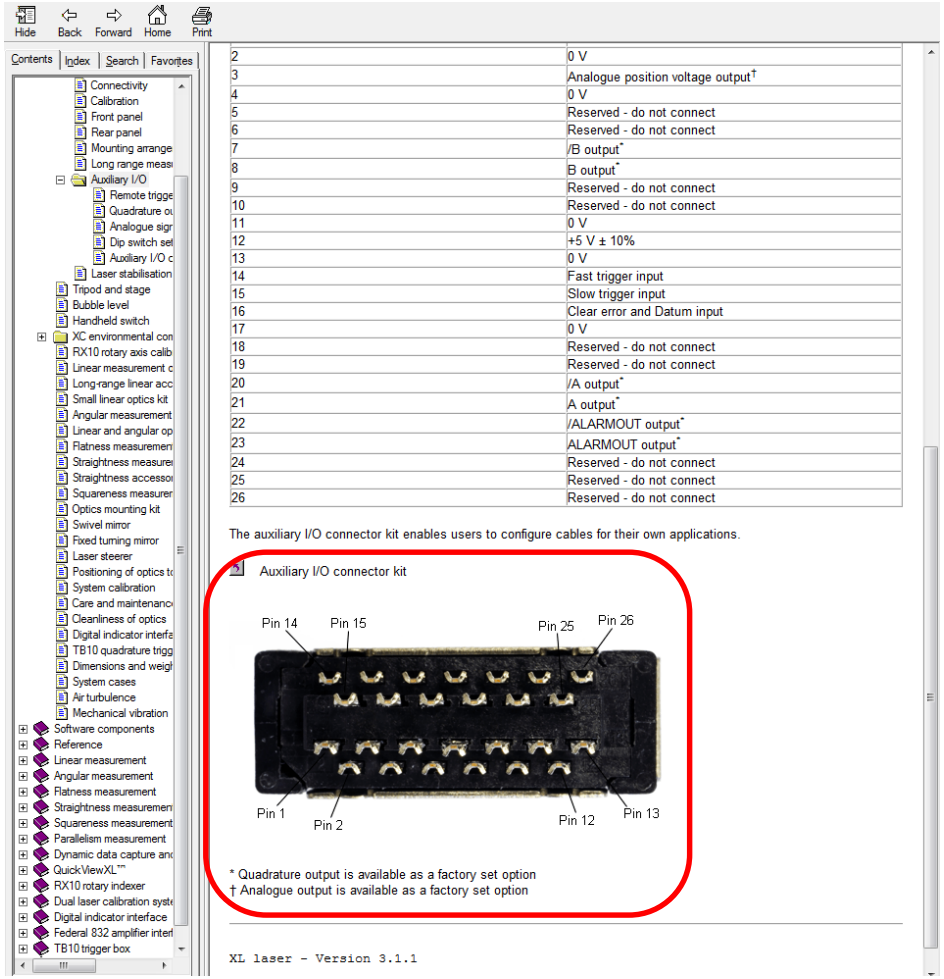
Small linear optics kit	
Maximum measurement range	4 m

Missing picture:

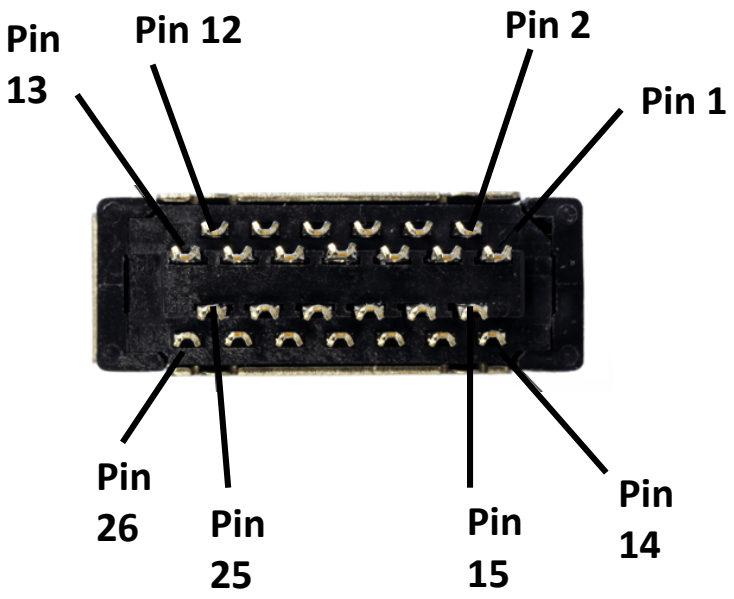


Aux I/O connector

Section – Hardware components,
XL laser,
Auxiliary I/O,

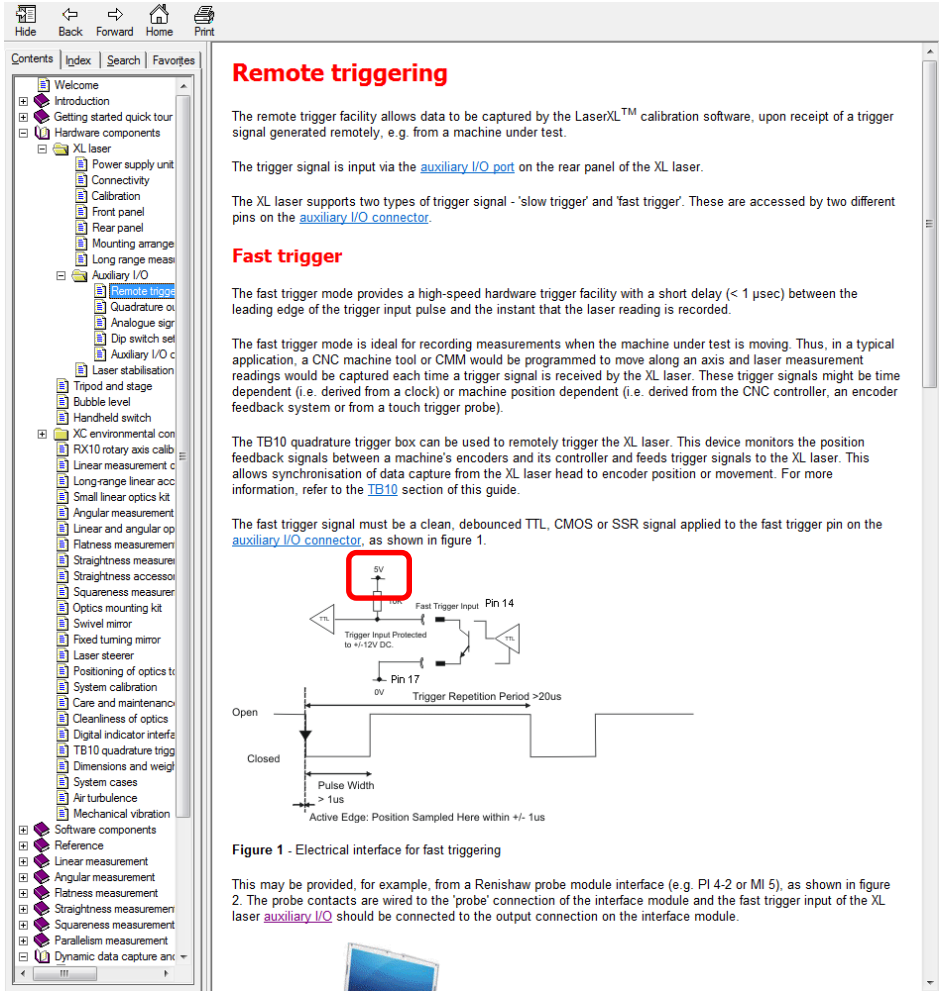


The connector picture was incorrectly oriented by 180 degrees. Corrected image below:



Electrical interface for TPin fast triggering

Section – Hardware components,
XL laser,
Auxiliary I/O,
Remote triggering

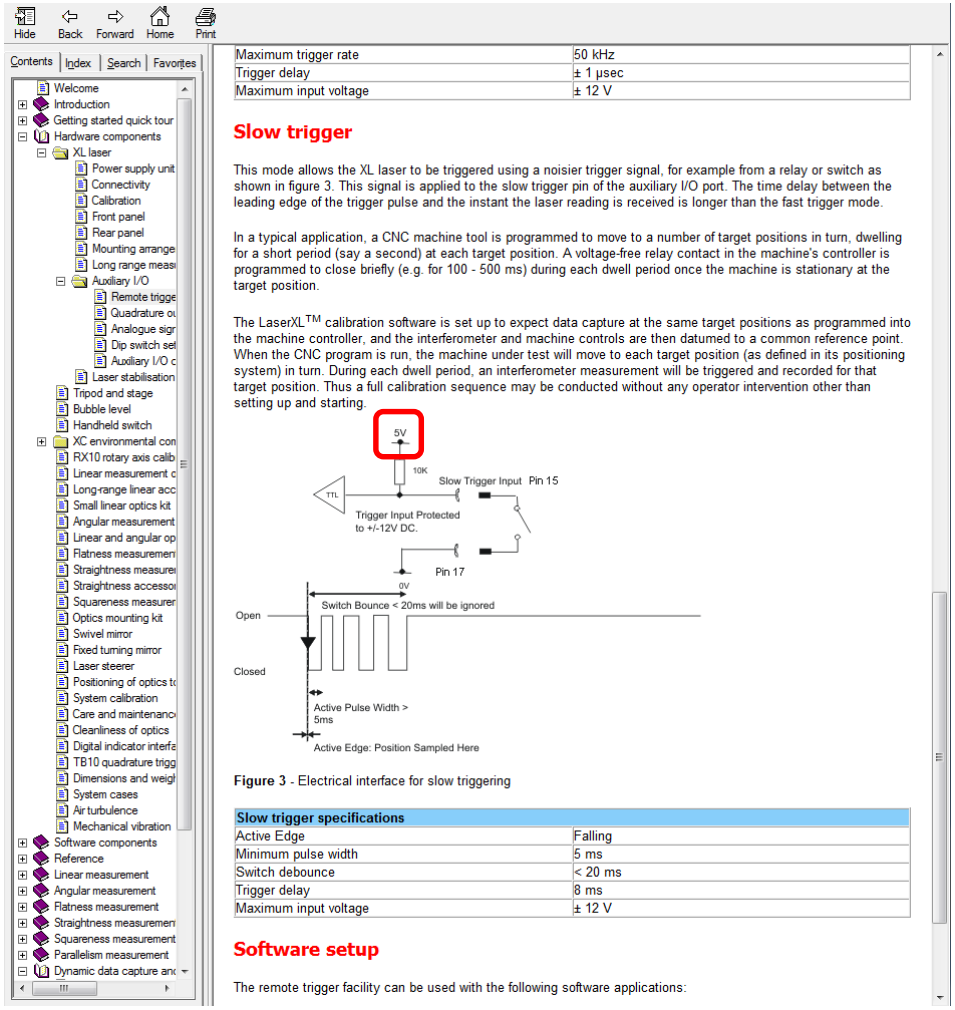


Correction:

The supply voltage is +3.3V

Electrical interface for TPin slow triggering

Section – Hardware components
XL laser
Auxiliary I/O
Remote triggering



Correction:

The supply voltage is +3.3V

Removal of ML10 laser engraving

Section – Hardware components, Small linear optics kit

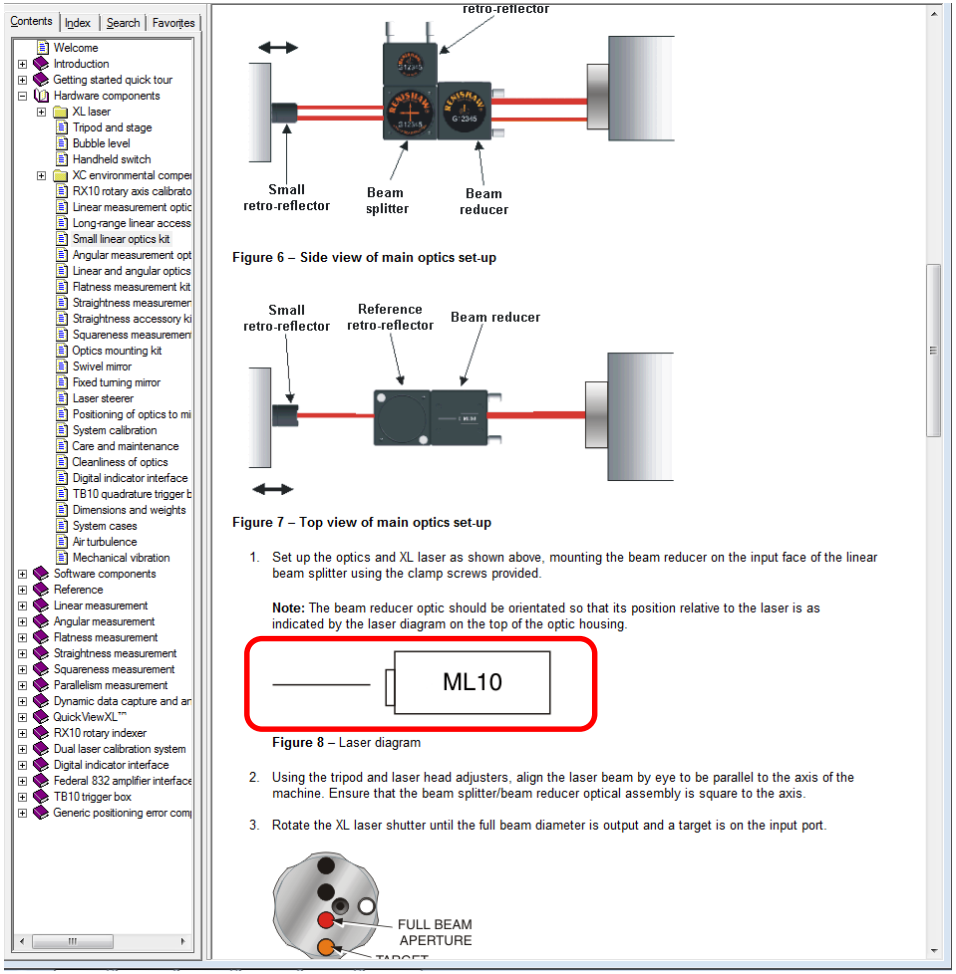
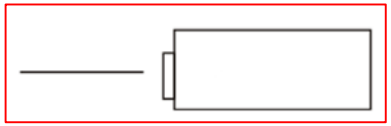
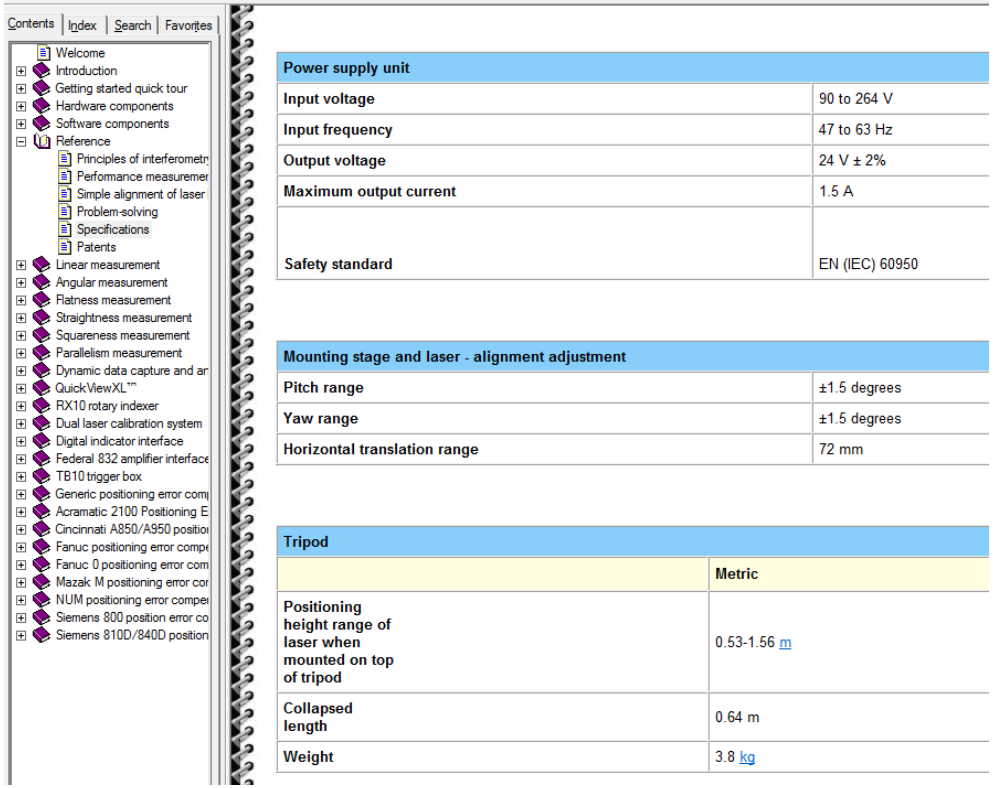


Diagram update:



Power supply input voltage

Section – Reference, Specifications



Power supply unit	
Input voltage	90 to 264 V
Input frequency	47 to 63 Hz
Output voltage	24 V ± 2%
Maximum output current	1.5 A
Safety standard	EN (IEC) 60950

Mounting stage and laser - alignment adjustment	
Pitch range	±1.5 degrees
Yaw range	±1.5 degrees
Horizontal translation range	72 mm

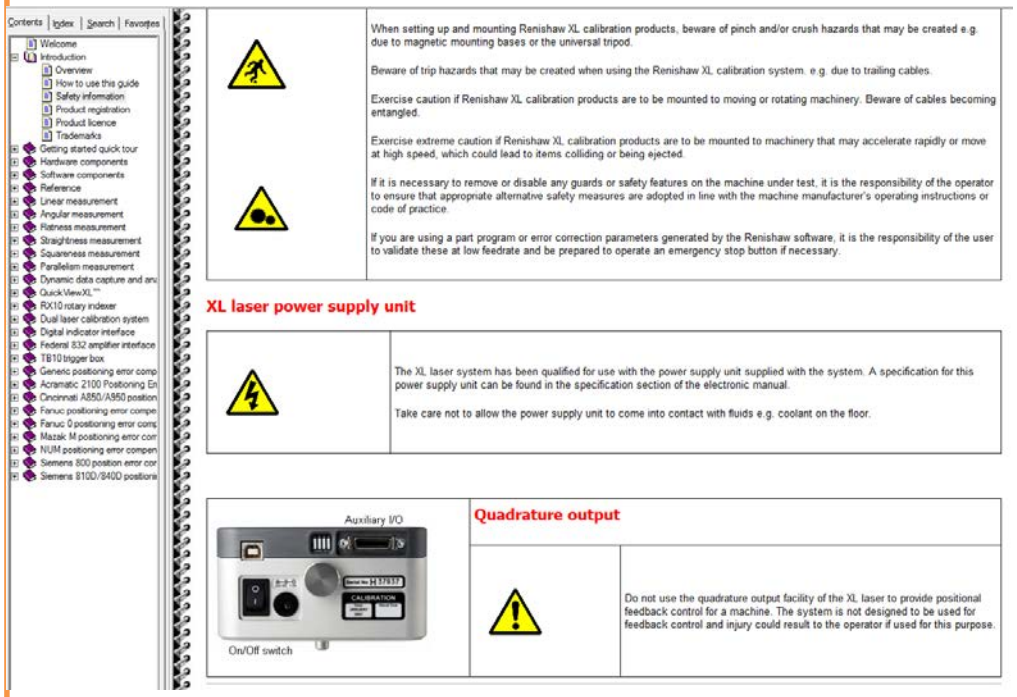
Tripod	
	Metric
Positioning height range of laser when mounted on top of tripod	0.53-1.56 m
Collapsed length	0.64 m
Weight	3.8 kg

Correction:

The input voltage is 100 to 240V +/-10%

XL laser power supply unit

Section – Reference,
Safety information

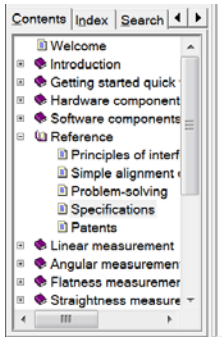


Amendment to safety statement

Do not use or handle the power supply unit if it comes into contact with fluids, e.g. coolant or the case is cracked or otherwise physically damaged.

Angular measurement specification

Section – Reference, Specifications



Angular measurement			
		Metric	Imperial
Axial range		0-15 m	0-590 in
Angular measurement range		±175 mm/m	±10°
Angular accuracy	High accuracy angular optics	±0.2% ±0.5 ±0.1M µm/m	±0.2% ±0.1 ±0.007F arc sec
	Standard accuracy angular optics	±0.6% ±0.5 ±0.1M µm/m	±0.6% ±0.1 ±0.007F arc sec
Resolution		0.1 µm/m	0.01 arc sec

Where:
M = measurement distance in metres
F = measurement distance in Feet
% = percentage of calculated angle

Amendment to angular accuracy

Specification	Metric	Imperial
Angular accuracy	±0.002A ±0.5 ±0.1M µ rad	±0.002A ±0.1 ±0.007F arc sec
Angular accuracy (calibrated)	±0.0002A ±0.5 ±0.1M µ rad*	±0.0002A ±0.1 ±0.007F arc sec

- for 20° C ±5° C

A = displayed angular reading M = measurement distance in metres F = measurement distance in feet