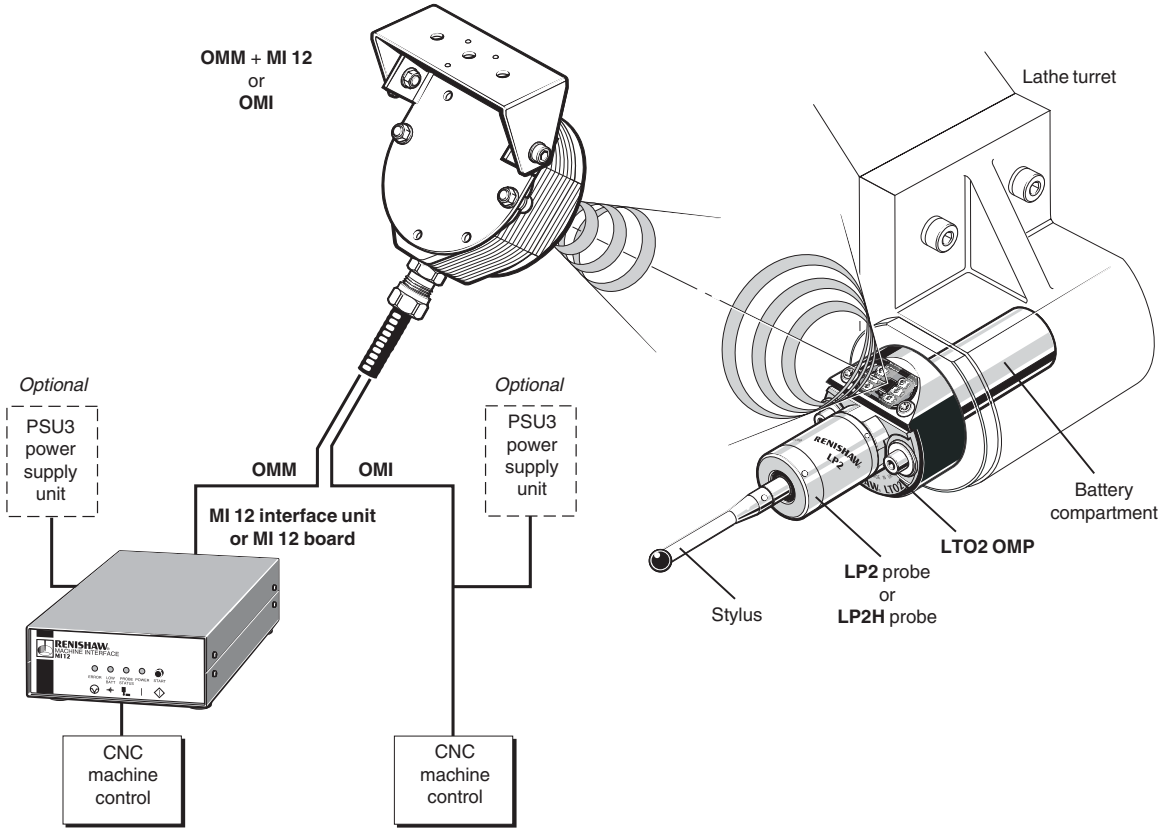
Data sheet
H-2000-2271-09-A

RENISHAW
apply innovation™

LTO2 systems for CNC lathes



System features

- **The compact size suits smaller machines.**
- **Easy to install as original equipment or retrofit.**
- **Exposed Renishaw components are fully sealed against coolant and hot metal chips.**
- **Optical windows are made from toughened non-scratch material.**
- **Rapid job set-up and inspection.**
- **Automatic updating of work offsets.**

System components

LTO2 OMP

The OMP receives and transmits optical signals. Power for the probe's operation is supplied by a battery. The OMP is sealed to IPX8 and has been designed for reliable operation in the machine tool environment.

OMM + MI 12

Signals pass from the CNC control to the OMP via the MI 12 and OMM and return along the same route. The MI 12 interface converts probe signals into the correct format for the CNC machine control input. OMM transmission and reception ranges are factory set to 100%. If OMM signals interfere with probes on other machines, the optical range can then be reduced.

OMI

This is an alternative to the OMM + MI 12 interface, combining the functions of the OMM and MI 12 in one unit.

LP2 or LP2H probe

3D touch-trigger inspection probes (±X, ±Y, +Z directions). The LP2 is more sensitive than the LP2H. The LP2H has been designed for heavier duty applications where vibration or heavy stylus arrangements can cause spurious trigger signals.

PSU3 power supply unit for MI 12 or OMI

This is used when a +24 V supply is not available from the machine.

Extension bars and MA4 90° adaptor

Accessories provide greater access to workpiece features.

Software for probing routines

Renishaw single and double-touch probing cycles are available for use with Renishaw probing systems.

Note: Each system component is fully described on a separate data sheet – refer to the parts list on the back page.

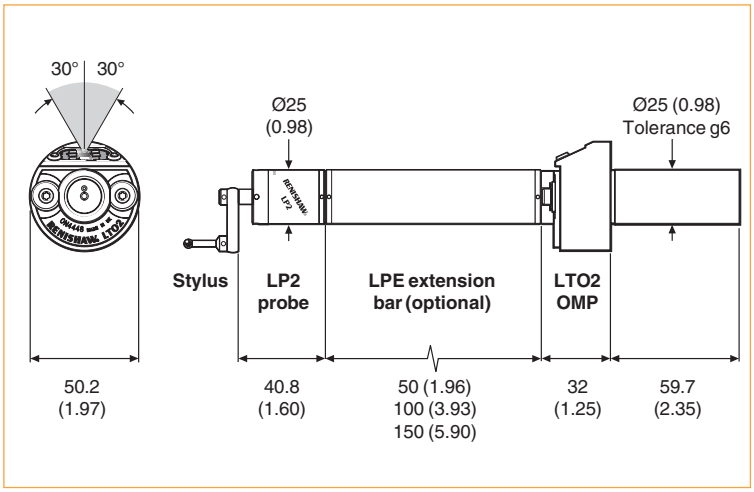
Dimensions in mm (in)

LTO2 OMP

The LTO2 OMP is mounted in a tool position on the lathe turret. Signal transmission and reception LEDs communicate with the OMM or OMI.

Timeout and debounce time-setting switches are located inside the OMP.

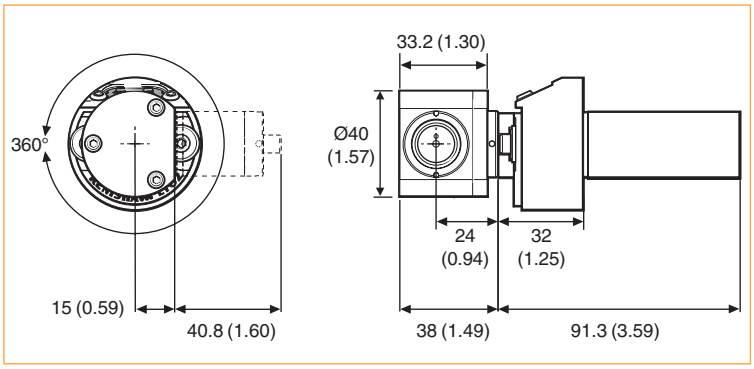
For an explanation of terms and settings, see **System operation** on the opposite page.



MA4 90° adaptor (optional)

The MA4 adaptor with M16 thread connects to the LTO2 OMP.

The LP2 is mounted on the MA4 at 90° to the OMP centre line and can be set in any position through 360° before being clamped in place with three set screws.

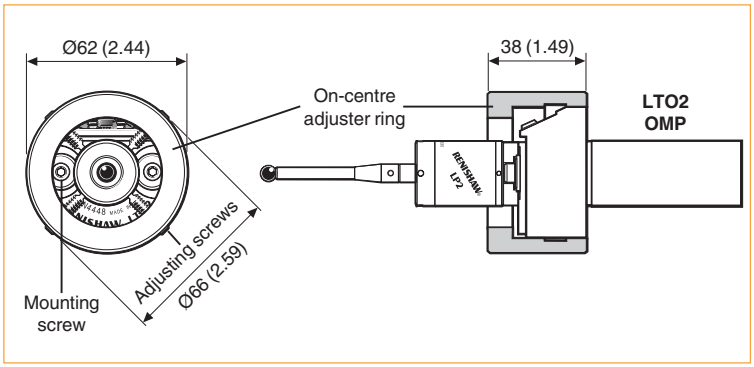


Stylus on-centre adjuster

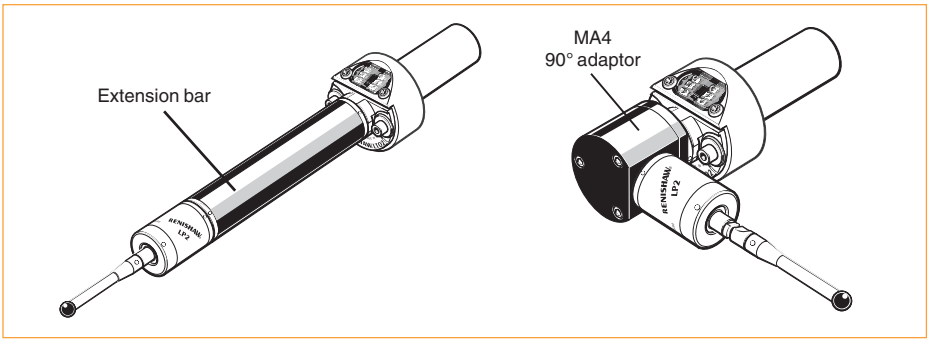
The stylus can be set to correspond with the nominal tool tip position.

The on-centre adjuster ring is mounted on the OMP. The probe mounting screws are slackened, and the probe can be moved in incremental stages relative to the OMP by adjusting opposing grub screws.

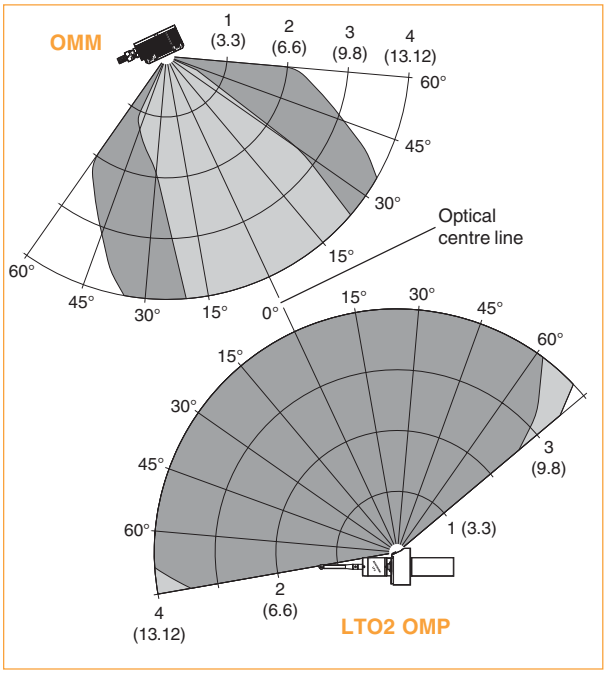
The mounting screws are tightened when the correct position is achieved. The adjuster ring is then removed.

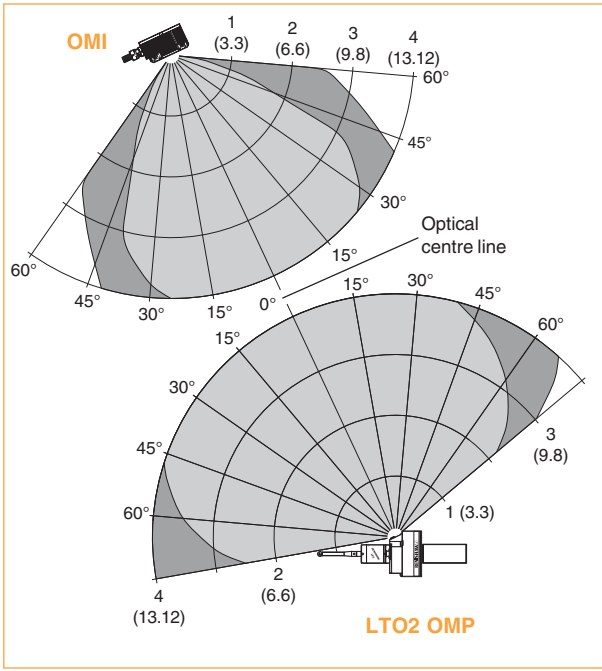


Accessories



Signal transmission operating envelope





SWITCH ON/OFF

OPERATING

Range in metres (feet).

The OMP must be within 4 m (13.12 ft) of the OMM/OMI.

The probe and OMM/OMI diodes must be in each other's field of view, and within the performance envelope shown.

System operation

OMM, MI 12 and OMI LEDs continuously indicate system status during operation.

Standby mode/Operating mode

To initiate an inspection routine, the probe is first indexed to the tool cutting position.

To conserve battery life, the probe is held in standby mode until a switch-on signal is sent from the CNC control to the LTO2 OMP, which switches the probe from standby mode to operating mode.

LTO2 switch on options

The probe is switched on by one of the following methods:

- **Machine start** (software M code command)
- **MI 12 interface manual start** (system with OMM)
- **Auto start** (start signal at one second intervals)

Note: The MI 12 and OMI are factory-set to machine start.

LTO2 operation

The probe's stylus is driven against a workpiece feature. When the stylus contacts the surface, a trigger signal is generated. The contact position is recorded in the CNC machine registers and machine forward motion is stopped within the limits of stylus overtravel. Contacts in several positions provide measurement data.

LTO2 switch off (timeout)

The LTO2 is set to switch off (timeout) automatically after 5, 9, 33 (factory set) or 134 seconds. During operating mode (for 33 and 134 seconds only), each probe contact will cause the timer to restart. If no further contacts are made, the LTO2 reverts to standby mode.
With the 5 and 9 second timeout settings, further probe contacts **will not** cause the timer to restart

Note: A start signal during operating mode has no affect on timeout.

Debounce time

When the probe switches off, there is a delay before it can be switched back on. This is known as the debounce time and may be set to 5 seconds (factory set) or 9 seconds (optional).

Note: Only qualified persons should change timeout and debounce time switch settings. Switches are accessed by removing the OMP front cover. Ensure cleanliness is maintained while changing settings.

Renishaw plc
New Mills, Wotton-under-Edge,
Gloucestershire GL12 8JR
United Kingdom

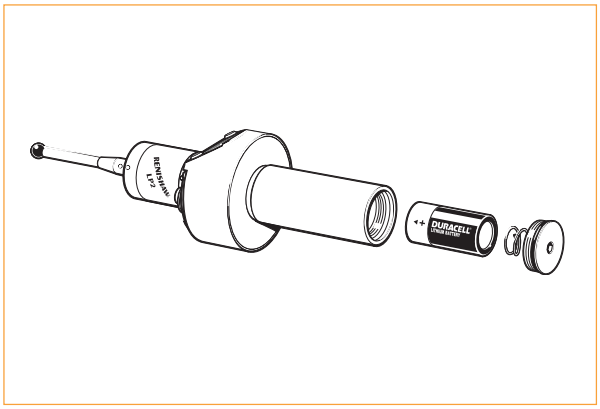
T +44 (0)1453 524524
F +44 (0)1453 524901
E uk@renishaw.com
www.renishaw.com

RENISHAW
apply innovation™

Power supply for the probe

The probe is powered by a 3 V lithium battery (Duracell type DL123A). A system low battery LED will light up when the battery needs to be replaced.

Typical battery life		
Standby life	**5% usage (72 min/day)**	**Continuous use**
65 days	35 days	88 hours



Parts list – please quote the part number when ordering equipment

Component	Part number	Description
LTO2 system kit	A-2030-0100	LP2 probe, PS3-1C stylus, LTO2 OMP, OMM with mounting bracket and MI 12 interface unit
LTO2 system kit	A-2030-0101	LP2H probe, PS3-1C stylus, LTO2 OMP, OMM with mounting bracket and MI12 interface unit
LTO2 system kit	A-2115-0028	LP2 probe, PS3-1C stylus, LTO2 OMP and OMI with mounting bracket
LTO2 system kit	A-2115-0029	LP2H probe, PS3-1C stylus, LTO2 OMP and OMI with mounting bracket
LTO2 OMP	A-2030-0121	LTO2 OMP (Ø25 mm shank) complete with battery, 3 mm hexagon key, stylus on-centre adjuster and user's guide
LP2	A-2063-6098	LP2 probe complete with two C spanners and TK1 tool kit
LP2H	A-2064-0002	LP2H probe complete with two C spanners and TK1 tool kit
Battery	P-BT03-0006	3 V lithium battery – Duracell type DL123A
Stylus	A-5000-3709	Ceramic PS3-1C stylus, 50 mm long with Ø6 ball
Extension bar	A-2063-7001	LPE1 – extension bar Ø25 x 50 mm long
Extension bar	A-2063-7002	LPE2 – extension bar Ø25 x 100 mm long
Extension bar	A-2063-7003	LPE3 – extension bar Ø25 x 150 mm long
MA4 adaptor	A-2063-7600	MA4 90° adaptor

Associated literature

Stylus range	See brochure H-1000-3200
LP2 and LP2H probes	See data sheet H-2000-2100
Adaptors and extensions	See data sheet H-2000-2120
OMM	See data sheet H-2000-2275
MI 12	See data sheet H-2000-2195
OMI	See data sheet H-2000-2285
PSU3 power supply	See data sheet H-2000-2200
Software	See data sheet H-2000-2289

For worldwide contact details, please visit our main web site at www.renishaw.com/contact

Issued 06.05 Part no. H-2000-2271-09-A