

OMP40-2 optical machine probe

www.renishaw.com/omp40-2

The OMP40-2 is a compact 3D touch trigger inspection probe with optical signal transmission, used for workpiece set up and inspection on small and medium CNC machining centres.

Features

- **Signal transmission**

The OMP40-2 transmits through 360°, at an angle of 90° to the spindle axis, with a range of up to 5 m (16.4 ft).

- **Modulated transmission**

Now upgraded to include modulated transmission for increased resistance to light interference.

- **Probe repeatability**

Repeatability of 1.0 μm 2σ (0.00004 in 2σ) is certified at 480 mm/min (1.57 ft/min) with 50 mm (1.97 in) stylus.

- **Probe switch-on**

The probe turn-on method is configurable between 'M' code and Auto start.

- **Probe switch-off**

Probe switch-off is user configurable between 'M' code and timer off.

- **Battery life**

A standard battery life of 140 hours continuous use, or the equivalent of over 85 days at 5 % usage is achievable. Battery life is increased when low power mode is selected.

- **Probe sealing**

Sealed to IPX8 and designed for the machine tool environment.

- **Visible probe diagnostic LEDs**

Provides on/off, seated/triggered and low battery information.



- **Optical receivers**

Compatible with OMI and OMM (Legacy transmission) and OMI-2T/OMI-2/OMI-2H (Modulated transmission).

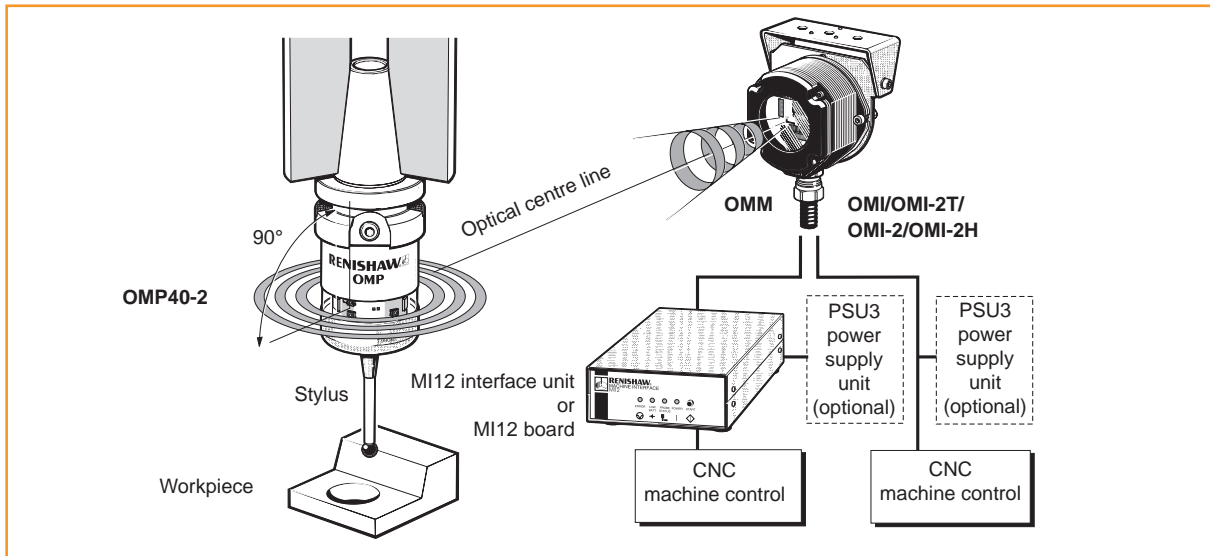
- **Twin probing**

A probe can be designated either as Probe 1 or Probe 2 for use in twin probe systems.

- **Software for probe routines**

The OMP40-2 is suitable for use with Renishaw single and double touch probing cycles.

Typical probe system



Probe modes

The OMP40-2 probe can be in one of three modes:

- Standby Mode** - The OMP40-2 is waiting for a switch-on signal to be received.
- Operating mode** - Activated by one of the switch-on methods described below. In this mode the OMP40-2 is now ready for use.
- Configuration mode** - The Trigger Logic™ configuration method allows the following settings to be configured.

Probe settings

Enhanced trigger filter

Probes subjected to high levels of vibration or shock loads may output signals without having contacted any surface. The enhanced trigger filter improves the probe's resistance to these effects.

Optical transmission start mode

The OMP40-2 can be operated in either legacy or modulated optical transmission modes.

In legacy mode the OMP40-2 is compatible with OMI and OMM/MI12, and a selectable start filter improves the resistance to false turn on/off.

In modulated mode, the OMP40-2 becomes compatible for use with an OMI-2T, OMI-2 or OMI-2H, to provide substantially increased resistance to light interference.

In modulated mode it is possible to define the probe ID. This is factory set to Probe 1 but can be changed to Probe 2 for use with twin probe systems.

Probe switch on/switch off method

Switch on/switch off methods are configurable:

- Optical on/optical off.
- Optical on/timer off.

These options are detailed in the table below.

Low optical power

Where the separation between OMP40-2 and the receiver is small, the low optical power setting may be used. In this setting, the optical transmission range will be reduced as shown on performance envelopes to extend battery life.

Dotted lines on performance envelopes represent the OMP40-2 in low optical power.

Probe switch-on	Probe switch-off
<p>Optical switch-on (when commanded by an M code or machine output).</p>	<p>Optical switch off (when commanded by an M code or machine output) A timer automatically switches the probe off after 90 minutes from last trigger if not turned off by an M code or machine output.</p> <p>Timer off (time out) Time out will occur (12, 33 or 134 sec) after the last probe trigger or reset.</p>
<p>Optical switch-on (when commanded by Auto start).</p>	<p>Timer off (time out) Time out will occur (12, 33 or 134 sec) after the last probe trigger or reset.</p>

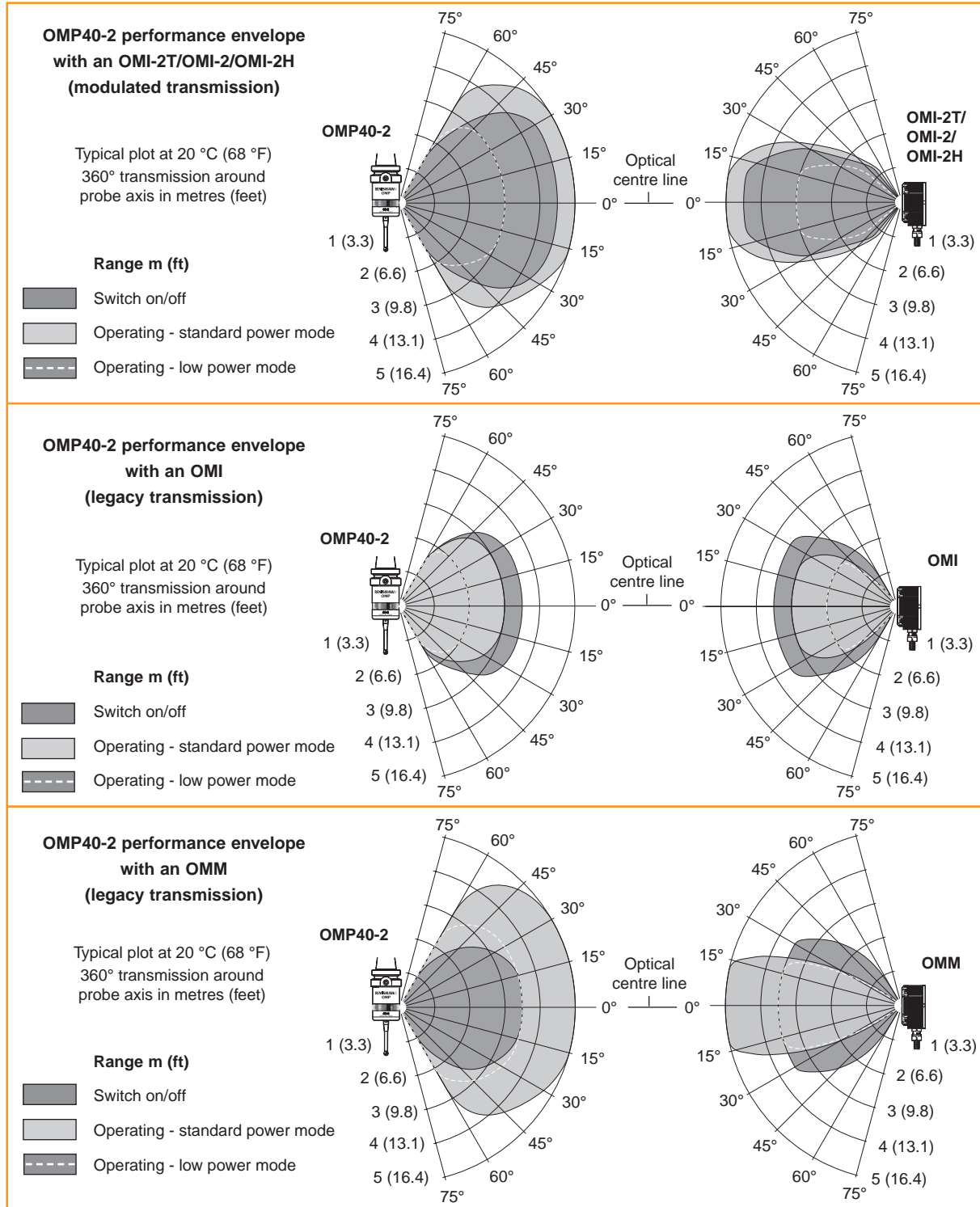
Performance envelope

The OMP40-2 has a 360° transmission envelope over the ranges shown below. The probe system should be positioned so that the optimum range is maintained over the full travel of the machine axis.

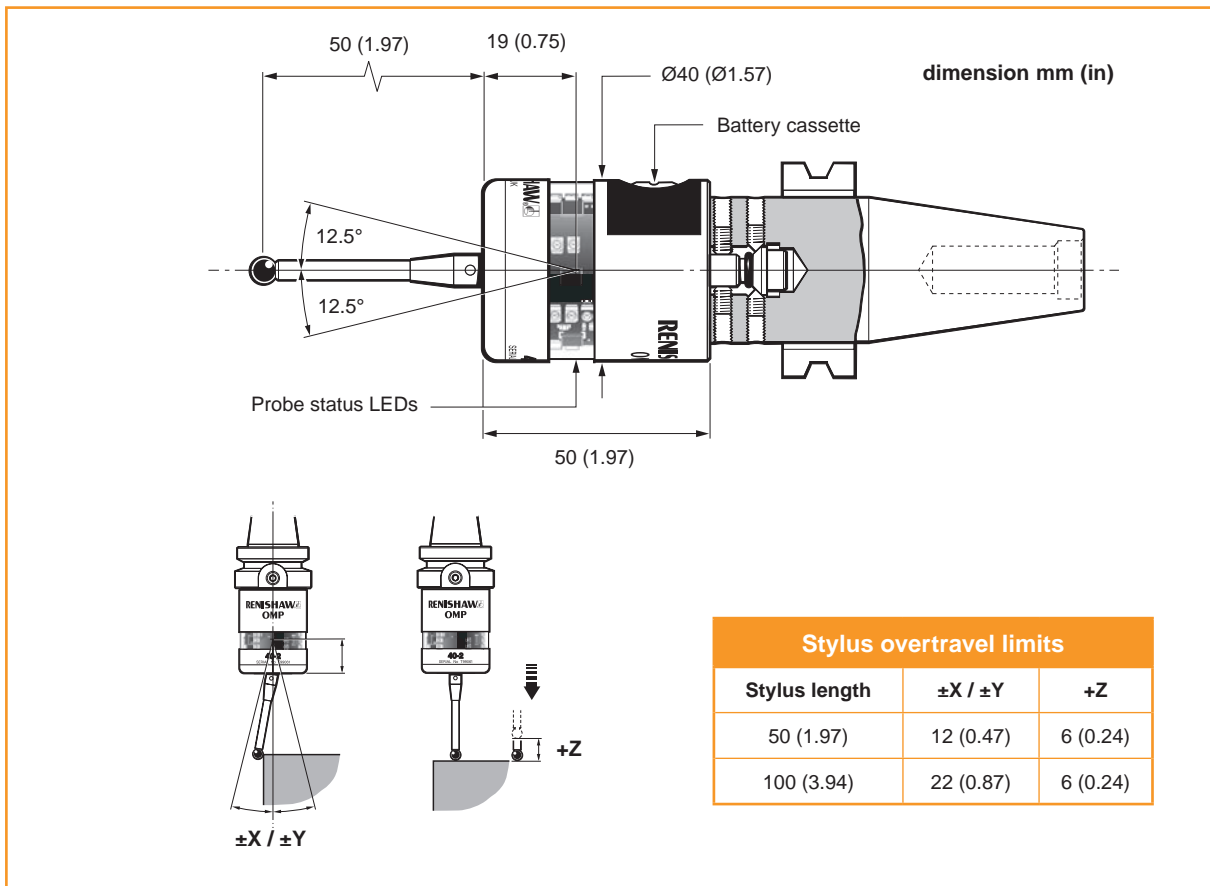
The OMP40-2 and optical receivers may deviate from the optical centre line, provided opposing light cones always overlap, with transmitters and receivers in the other's field of view (line of sight).

Natural reflective surfaces within the machine may increase the signal transmission range.

Coolant residue accumulating on the OMP40-2 or OMI-2T/O MI-2/O MI-2H/O MI/O MM windows may reduce the signal transmission range. Wipe clean as often as necessary to maintain unrestricted transmission.



Dimensions



Specification

Primary application	Inspection probe for machining centres
Sense directions	5 way ±X ±Y +Z
Stylus trigger force using 50 mm (1.97 in) stylus low force direction	XY 0.5 N 50 gf (1.76 ozf) Z 5.85 N 585 gf (20.63 ozf)
Stylus trigger force using 50 mm (1.97 in) stylus high force direction	XY 0.9 N 90 gf (3.17 ozf) Z 5.85 N 585 gf (20.63 ozf)
Repeatability	1.0 µm (0.00004 in). Maximum mean 2 sigma (2σ) value *
Temperature	Operating +5 °C to 50 °C (41 °F to 120° F) Storage -10 °C to 70 °C (14 °F to 158 °F)
Sealing	IPX8 (BS 5490, IEC 529) 1 atmosphere
Weight with batteries without batteries	260 g (9.17 oz) 240 g (8.46 oz)

* Probe results valid as tested with a 50 mm (1.97 in) straight stylus and a velocity of 480 mm/min (1.57 ft/min) at the centre of the stylus tip.

Battery life

Typical battery life

Using the ½ AA lithium thionyl chloride (LTC) batteries at 5% usage, the probe will continue to operate for approximately one week, after a low battery warning is first indicated. Replace the batteries as soon as possible.






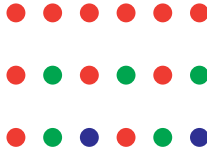
After batteries are inserted into the OMP40-2, flashing LEDs will indicate the current settings.

Low power mode should be used whenever possible for increased battery life.

Typical battery life (½ AA Lithium Thionyl Chloride (3.6 V) x 2)

MODULATED optical transmission mode				
Standby life	5% usage (72 minutes/day)		Continuous use	
	Standard power mode	Low power mode	Standard power mode	Low power mode
250 days	85 days	120 days	140 hours	230 hours
LEGACY optical transmission mode				
Standby life	5% usage (72 minutes/day)		Continuous use	
	Standard power mode	Low power mode	Standard power mode	Low power mode
250 days	115 days	170 days	170 hours	270 hours

Probe status LEDs

LED colour	Probe status	Graphic hint
Flashing green	Probe seated in operating mode	
Flashing red	Probe triggered in operating mode	
Flashing green and blue	Probe seated in operating mode - low battery	
Flashing red and blue	Probe triggered in operating mode - low battery	
Constant red	Battery dead	
Flashing red or red and green or red, green and blue	Unsuitable batteries	

Parts list - please quote the part number when ordering equipment

Type	Part no.	Description
OMP40-2	A-4071-0001	OMP40-2 probe with batteries, tool kit and Quick-start guide. Optical on, set to: optical off / trigger filter off / legacy transmission, start filter off / standard power.
OMP40-2	A-4071-0002	OMP40-2 probe with batteries, tool kit and Quick-start guide. Optical on, set to: time off 134 sec / trigger filter off / legacy transmission, start filter off / standard power.
OMP40-2	A-4071-2001	OMP40-2 probe with batteries, tool kit and Quick-start guide. Optical on, set to: optical off / trigger filter off / Probe 1 start, modulated transmission / standard power.
OMP40-2	A-4071-2002	OMP40-2 probe with batteries, tool kit and Quick-start guide. Optical on, set to: time off 134 sec / trigger filter off / Probe 1 start, modulated transmission / standard power.
Stylus	A-5000-3709	PS3-1C ceramic stylus 50 mm long with Ø6 mm ball.
Batteries	P-BT03-0007	½ AA Lithium thionyl chloride (LTC) batteries (pack of two).
Battery cassette kit	A-4071-1166	OMP40-2 battery cassette kit.
Seal	A-4038-0301	Seal for OMP40-2 battery cassette.
Tool kit	A-4071-0060	Probe tool kit comprising: Ø1.98 mm stylus tool, 2.0 mm AF hexagon key, and shank grub screws (x6).
OMI-2	A-5191-0049	OMI-2 complete with cable 8 m (26.25 ft) long.
OMI-2	A-5191-0050	OMI-2 complete with cable 15 m (49 ft) long.
OMI-2T	A-5439-0049	OMI-2T complete with cable 8 m (26.25 ft) long.
OMI-2T	A-5439-0050	OMI-2T complete with cable 15 m (49 ft) long.
OMI	A-2115-0001	OMI complete with cable 8 m (26.25 ft) long.
OMM	A-2033-0576	OMM complete with cable 25 m (82 ft) long.
Mounting bracket	A-2033-0830	OMI-2/OMI-2T/OMI-2H/OMI/OMM mounting bracket with fixing screws, washers and nuts.
MI12	A-2075-0142	MI12 interface unit
PSU3	A-2019-0018	PSU3 power supply unit
Publications. These can be downloaded from our web site at www.renishaw.com		
OMP40-2	A-4071-8500	Quick-start guide - includes CD with Installation guide.
OTS	A-5401-8500	Quick-start guide - includes CD with Installation guide.
Styli	H-1000-3200	Catalogue Styli and accessories.
OMI-2	H-2000-5233	Installation and user's guide Optical machine interface.
OMI-2T	A-5439-8500	Installation and user's guide Twin probe system machine interface.
OMI	H-2000-5062	Installation and user's guide Optical machine interface
OMM	H-2000-5044	Installation and user's guide Optical module machine.
MI12	H-2000-5073	Installation and user's guide MI12 interface unit.
PSU3	H-2000-5057	Installation and user's guide PSU3 power supply unit.
Software features	H-2000-2289	Data sheet Probe software for machine tools - illustrated features.
Software list	H-2000-2298	Data sheet Probe software for machine tools - list of programs.

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main web site at www.renishaw.com/contact**

