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

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OMP400 optical machine probe

An unrivalled combination of size and accuracy

The OMP400 is Renishaw's new ultra-compact probe for small to medium machining centres, successfully combining the miniaturisation of the popular OMP40 probe, with patented **RENGAGE™** strain gauge technology.

RENGAGE™ technology, the combination of a patented sensing mechanism and new electronics processing, delivers sub-micron **3D performance** to allow probing of complex geometry.

It achieves this with no compromises in terms of overall robustness; the resistance to shock is as high with this very sensitive probe as with Renishaw's other market leading probes.

Utilising the same shank mounting arrangement as the OMP40, this new product gives existing users a simple upgrade path to the new technology.

The OMP400 probe can be used with either the new OMI-2 or the existing receiver interfaces (OMI, OMM, MI12).

The new OMI-2 offers a revised state-of-the-art modulated optical transmission method which enables the system to offer the highest levels of resistance to light interference. Compatibility with existing receiver/interfaces allows current optical system users the opportunity to upgrade to the new probe technology.

By using Renishaw's proven trigger logic, multiple turn on/off options are available to optimise the probe for specific machine applications. As always, the probe and interface are built to the highest of standards and will withstand the harshest of machine tool environments.

The OMP400 offers a truly unrivalled combination of size, accuracy, reliability and robustness that will benefit its users through reduced set-up times, reduced fixture costs, reduced scrap and improved process control.

Key benefits

Ultra compact

At only 40 mm in diameter and 50 mm in length, the OMP400 is the ideal solution for the growing family of small to medium sized machines that were previously unable to benefit from the high accuracy of strain gauge performance.

Robust and reliable

The OMP400 sets new standards for reliability and is designed to resist the harshest machine conditions. Solid-state strain gauge technology removes the effects of mechanical wear resulting in up to 10 times the life of traditional probes.

Highly repeatable

Strain gauge technology contributes to making OMP400 measurements not only very accurate, but highly repeatable.

Twin Probing

The OMP400 probe can be designated either as PROBE 1 or PROBE 2 for use on twin probe systems.

Innovations

Resistance to optical interference

The OMP400 features Renishaw's new modulated transmission method, for use with the new OMI-2 receiver, offering increased resistance to light interference. OMP400 is also backward compatible with existing OMM/MI12 and OMI receivers.

RENGAGE™ technology

Using extremely accurate strain gauge technology results in less bending of the stylus, less pre-travel, and greater accuracy. Additional benefits of this are:

- Increased stylus lengths can be supported without a decrease in probe performance.
- Excellent 3D performance which allows probing of contoured surfaces whilst maintaining very high accuracy.

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Specification - OMP400 probe

Principal application	Small to medium machining centres and mould & die applications	
Dimensions	Length: 50 mm (1.97 in) Diameter: 40 mm (1.57 in)	
Weight (without shank in g)	**with batteries** 262 g (9.24 oz)	**without batteries** 242 g (8.53 oz)
Transmission type	360° infra-red optical transmission	
Turn ON control	Machine 'M' code or Auto start	
Turn OFF control	Machine 'M' code or timer	
Operating range	Up to 5 m (16.4 ft)	
Receiver/interface	OMI-2, OMI or OMM/MI12	
Sense directions	Omni-directional: ± X, ± Y, +Z	
Uni-directional repeatability	0.25 µm (10 µin) 2 sigma – 50 mm stylus length* 0.35 µm (14 µin) 2 sigma – 100 mm stylus length	
2D lobing in X, Y	± 0.25 µm (10 µin) 2 sigma – 50 mm stylus length* ± 0.25 µm (10 µin) 2 sigma – 100 mm stylus length	
3D Lobing in X, Y, Z	± 1.00 µm (40 µin) 2 sigma – 50 mm stylus length* ± 1.75 µm (70 µin) 2 sigma – 100 mm stylus length	
Stylus trigger force** XY plane + Z direction	 0.06 N, 6 gf (0.22 ozf) typical minimum 2.55 N, 260 gf (9.17 ozf) typical minimum	
Stylus overtravel force** XY plane +Z direction	 1.04 N, 106 gf (3.74 ozf) typical minimum§ 5.5 N, 561 gf (19.78 ozf) typical minimum †	
Stylus overtravel XY plane +Z direction	 ± 11° 6 mm (0.23 in)	
Maximum spin speed	1000 r/min	
Max recommended stylus length	200 mm, 7.87 in	
Battery type	1/2 AA Lithium Thionyl Chloride (3.6 V) x 2	
Battery life (using LTC in low power mode)	**legacy** / **modulated** **stand by**: One year / One year **5% usage**: 90 days / 110 days **continuous life**: 110 hours / 105 hours	
Sealing	IPX8 (BS 5490, IEC 529) 1 atmosphere	

* Performance specification is for a test velocity of 240 mm/min (9.45 in/min) with a 50 mm carbon fibre stylus. Test velocity does not constrain performance in application.

** The stylus trigger force is the force exerted on the component when the probe triggers. However, the maximum force applied to the component will occur after the trigger point and will be greater than the trigger force. The magnitude depends on a number of factors affecting probe overtravel including measuring speed and machine deceleration. If the forces applied to the component are critical, contact Renishaw for further information.

§ Stylus overtravel force in XY plane occurs 70 µm after the trigger point and rises by 0.1 N/mm, 10 gf/mm (9.1 oz/in) until the machine tool stops (in the high force direction and using a 50 mm carbon fibre stylus).

† Stylus overtravel force in + Z direction occurs 10 to 11 µm after the trigger point and rises by 1.2 N/mm, 122 gf/mm (109.6 oz/in) until the machine tool stops.

Specification - OMI-2 interface/receiver

Principal application	Combined optical transceiver/interface, which conveys and processes signals between an inspection probe and the CNC machine control
Dimensions	Depth: 46.7 mm (1.84 in) Diameter: 84 mm (3.30 in)
Power supply	12 V to 30 V d.c.
Sealing	IPX8

More information

For further details on the products mentioned in this flyer, please visit www.renishaw.com and choose Machine tool products.

For worldwide contact details please visit our main website at www.renishaw.com/contact

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