RMP600 high accuracy machine probe

An unrivalled combination of flexibility and accuracy

The RMP600 is Renishaw’s latest addition to its range of spindle probes for inspection, successfully combining patented RENGAGE™ strain gauge technology with the unique frequency hopping radio transmission system from the RMP60.

These unparalleled features make the RMP600 the most flexible and high precision machine tool probe in the world.

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.

The RMP600 is only the second probe in the world to use frequency hopping spread spectrum (FHSS) transmission; the first being the extremely successful RMP60.

Unlike conventional radio transmissions, the RMP600’s transmission system does not use a dedicated radio channel. Instead, the probe and receiver ‘hop’ together through a sequence of frequencies, enabling multiple probe systems and other industrial equipment to operate in confidence. Paired with a RMI receiver, the RMP600 signals are transmitted over long distances with a negligible chance of interference.

The 2.4 GHz frequency band is compliant with radio regulations in the EU and other countries including USA, Japan, Canada, Switzerland, Australia, New Zealand, Taiwan, India, Indonesia, South Korea, Malaysia, Singapore and China.

Key benefits

Simple set up
Unlike fixed frequency systems, with the RMP600 there is no need to allocate a specific radio channel. Once installed, reliable communications are assured within the industrial environment.

Compact and robust
The RMP600 is ideal for machines of all sizes and can access surfaces cut with short tools. Its robust stainless steel body makes it suited to the harshest machine environments.

Ideal for retrofit
The RMP600 has the same functionality and practicality as the RMP60. The RMI (a combined antenna and interface) can be positioned anywhere near the machine, resulting in a fast installation. The RMP600 system is ideal for retrofitting to machines with no previous probing or as an upgrade.

Innovations

RENGAGE™ technology
Using extremely accurate strain gauge technology results in less bending of the stylus, less pretravel, and greater accuracy. Additional benefits of this are:

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

Frequency hopping spread spectrum transmission
FHSS transmission for probes means that the RMP600 and RMI hop frequencies together to provide reliable communications. Radio “turn on” is available via an M-code signal.

Multiple probe mode
Multiple probe mode is available on RMP600 to allow the use of many different probes with the same RMI receiver. *

* Only spin or shank on/off in multiple probe mode.
Specification - RMP600 probe

Principal applications  Workpiece measurement and job set-up on medium to large horizontal, vertical and gantry machining centres, 5 axis machines, twin spindle machines and vertical turret lathes

Dimensions  Length: 76 mm (2.99 in)
            Diameter: 63 mm (2.48 in)

Weight (without shank in g)  with batteries  1010 g (35.65 oz)
                              without batteries  940 g (33.18 oz)

Territory  EU and countries including the USA, Japan, Canada, Switzerland, Australia, New Zealand, Taiwan, India, Indonesia, South Korea, Malaysia, Singapore and China.

Transmission type  Frequency hopping spread spectrum radio (FHSS)

Radio frequency  2400 - 2483.5 MHz

Switch on methods  Radio M code, spin on or shank switch

Switch off methods  Radio M code, timer, spin off or shank switch

Operating range  Up to 15 m (49.2 ft)

Shanks  Various

Interface/receiver  RMI combined interface and receiver unit

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
                                ± 0.25 µm (10 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  0.2 N, 20 gf (0.72 ozf) typical minimum
            + Z direction  1.9 N, 193 gf (6.83 ozf) typical minimum

Stylus overtravel force**  
            XY plane  2.8 N, 285 gf (10.07 ozf) typical minimum §
            + Z direction  9.8 N, 999 gf (35.25 ozf) typical minimum †

Probing speed (minimum)  3 mm/min (0.12 in/min) with Auto-reset

Spindle speed (maximum)  1000 rev/min

Stylus overtravel  
            XY plane  ± 15°
            + Z direction  11 mm (0.43 in)

Battery type  2 x AA 1.5 V alkaline or 3.6 V Lithium Thionyl Chloride

Battery life (using LTC)  
            stand by (radio)  260 days
            5% usage  120 days
            continuous life  230 hours

Sealing  IPX8 (EN/IEC60529)

* 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 80 µm after the trigger point and rises by 0.36 N/mm, 36 gf/mm (32 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 7 µm to 8 µm after the trigger point and rises by 1.5 N/mm, 153 gf/mm (137 oz/in) until the machine tool stops.

More information

Details of the RMP600, RMI and accessories can be found at www.renishaw.com/RMP600

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

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