

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 co-exist in confidence. Paired with a RMI receiver, the RMP600's 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, USA, Japan, Canada, Switzerland, Australia, New Zealand.

Highly sensitive probes can suffer from false triggers due to high speed movement and shock. The risk of this has been eliminated in RMP600 by using solid state accelerometers within the probe, making it as flexible as Renishaw's RMP60.



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, therefore it is 100% compatible, the only difference being increased accuracy.

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 strain gauges, the probe is able to detect very low contact forces, resulting in less bending of the stylus, less pretravel, 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.

Frequency hopping spread spectrum transmission

FHSS transmission for probes means that once partnered, the RMP600 and RMI hop frequencies together to provide reliable communications. Radio "turn on" is available via an M-code signal.

Acceleration and motion detection

The RMP600 utilizes accelerometers to detect shock and motion to assess whether stylus forces are due to valid triggers or high speed acceleration

Multiple probe mode

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

* No radio turn on in multiple probe mode.

Specification

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

Territory

EU, USA, Japan, Canada, Switzerland, Australia and New Zealand.

Transmission type

Frequency hopping spread spectrum radio (FHSS)

Radio frequency

2400 - 2483.5 MHz

Turn ON control

Radio 'M' code, spin, shank switch

Turn OFF control

Radio 'M' code, time out, spin, shank switch

Operating range

Up to 15 m

Shanks

Various

Interface/receiver

RMI combined interface and receiver unit

Sense directions

Omni-directional: $\pm X$, $\pm Y$, $+Z$

Uni-directional repeatability

0.25 μm (0.000010 in) – (50 mm stylus length)*
 0.35 μm (0.000014 in) – (100 mm stylus length)

2D lobing in X, Y

$\pm 0.25 \mu\text{m}$ (50 mm stylus length)*
 $\pm 0.25 \mu\text{m}$ (100 mm stylus length)

3D Lobing in X, Y, Z

$\pm 1.00 \mu\text{m}$ (50 mm stylus length)*
 $\pm 1.75 \mu\text{m}$ (100 mm stylus length)

Trigger speed range

10 mm/min to 1 m/min

Stylus trigger force

XY plane

0.3 N, 30 gf (1.05 ozf) max §

+ Z direction

4.67 N, 467 gf (16.47 ozf) max §

Stylus overtravel force

XY plane

3.5N, 350 gf (12.34 ozf) max

+Z direction

4.9N, 490 gf (17.28 ozf) †

Maximum spin speed

1000 r/min

Stylus overtravel

XY plane

$\pm 15^\circ$

+ Z direction

11 mm (0.43 in)

Max recommended stylus length

200 mm, 5.91 in

Test conditions

Stylus length

50 mm, 1.97 in

Stylus velocity

480 mm/min, 18.90 in/min

Battery quantity and type

2 x AA type alkaline or Lithium Thionyl Chloride

Battery life maximum

stand by (radio)

195 days

5% usage

85 days

continuous life

170 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.

§ Performance specification is for a test velocity of 30 mm/min (1.18 in/min) with a 50 mm stylus.

† Stylus overtravel force in + Z direction occurs 7 to 8 μm after the trigger point and rises by 1 N/mm, 100 gf/mm (89.59 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



RMP600 probe



RMP600 probe inspecting a component, with RMI receiver / interface in the background