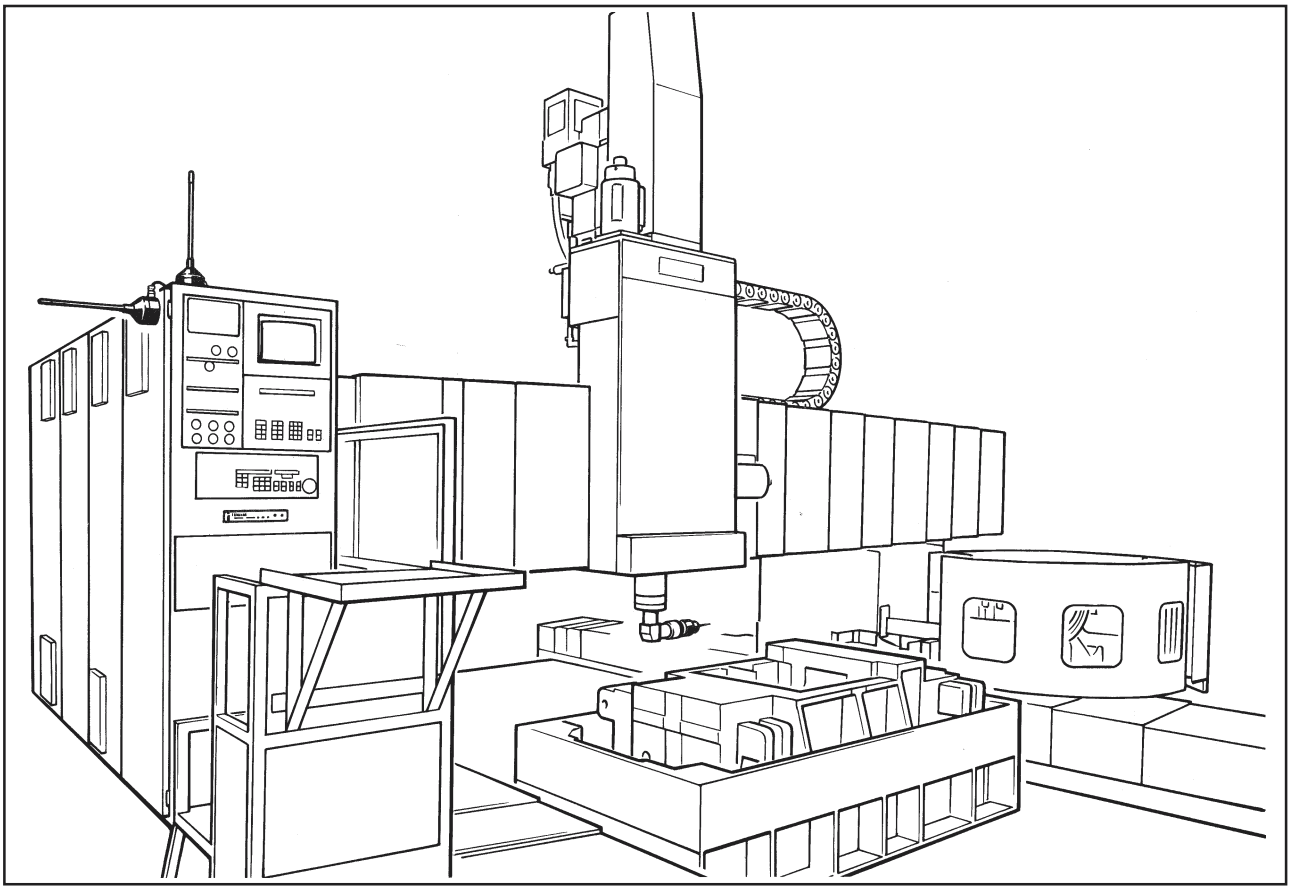
MP3 - radio transmission system

A probe system for 5-axis or large gantry type machining centres



PROBE SYSTEM

The **MP3 Radio Transmission System** is fast and easy to use. It uses proven Renishaw probe technology with a new signal transmission system which does not require line of sight between the transmitter, mounted on a shank in the machine spindle, and the receiver, mounted anywhere within 10 meters (32.8ft).

SYSTEM COMPONENTS

RMP	Probe signal transmission module
MP3	Three dimensional touch trigger probe head
RMM	Receiver antenna (2 recommended)
MI 14	Interface unit
PSU3	24V power supply unit (optional)

RENISHAW®

Data Sheet

SYSTEM OPERATION

The probe is stored in the machine tool changer and is transferred to the machine spindle as any tool in the system. The probe acts as an omni-directional switch and is effective in the ±X, ±Y and +Z directions. As the stylus comes into contact with a workpiece the RMP generates an electro-magnetic signal. The signal is received by the RMM receiver antenna which passes the signal via a coaxial cable to the MI 14 Interface. The MI 14 then decodes the signal and produces a corresponding signal in a solid state relay format for the CNC machine control.

Signal delay time The delay time from the point of stylus/workpiece contact to an output from the MI 14 is approximately 12mS ±10µS.

Probe batteries

Power for the probe is provided by two PP3 type 9V batteries housed in the RMP body. An LED on the MI 14 will indicate when the batteries need replacing. For details of battery life see **SYSTEM OPTIONS** (back page).

SYSTEM OPTIONS

RMP-R - Spin on/spin off option

The probe is mounted into the machine spindle and spun for at least one second at 500rpm (±10%). A centrifugal switch activates the power switch on. After use the probe is again spun at 500rpm (±10%) to switch power off. Seven seconds must elapse between each switch on/off cycle.

RMP-T - Spin on/time out option

The probe is spun on in the same way as the RMP-R option. A timer automatically switches power off 3 minutes (±1 minute 10 seconds) after spin on. Any probe spin, probe trigger or reseat during these 3 minutes will reset the timer and the power will remain on for a further 3 minute period.

RMP-S -Shank switch on/off option The probe is supplied complete with a dedicated shank incorporating a shank switch. When the probe is inserted into the machine spindle, the shank switch is depressed switching the probe power on. Probe power is switched off when the probe is removed from the machine spindle.

Frequency options The frequency band used by the RMP/RMM systems depends on the country where the system is to be installed. Within each band are many discrete operating channels enabling interference free operation of multiple probe installations within close proximity.
It is essential that both the RMP and the MI 14 use the same channel or the system will not operate. Consult your Renishaw supplier for information on the frequency band appropriate for your country.

Operating range The operational transmission range between the RMP and RMM is dependent on the frequency chosen.
For details see **SYSTEM OPTIONS** (back page).

Shanks The MP3-RMP can be fitted to any shank using an adaptor plate. The standard adaptor plate will fit any of the following shanks :

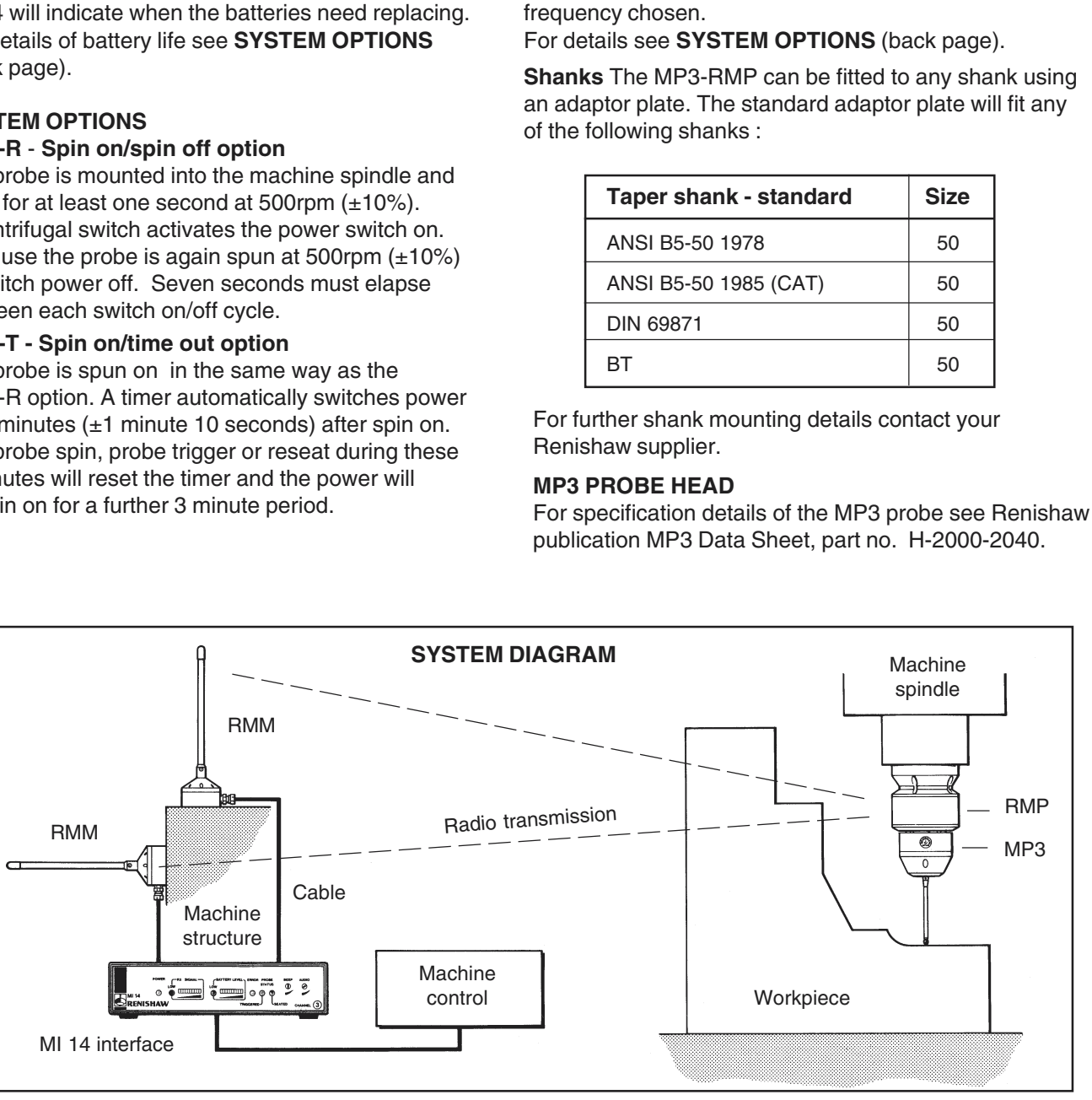
Taper shank - standard	Size
ANSI B5-50 1978	50
ANSI B5-50 1985 (CAT)	50
DIN 69871	50
BT	50

For further shank mounting details contact your Renishaw supplier.

MP3 PROBE HEAD

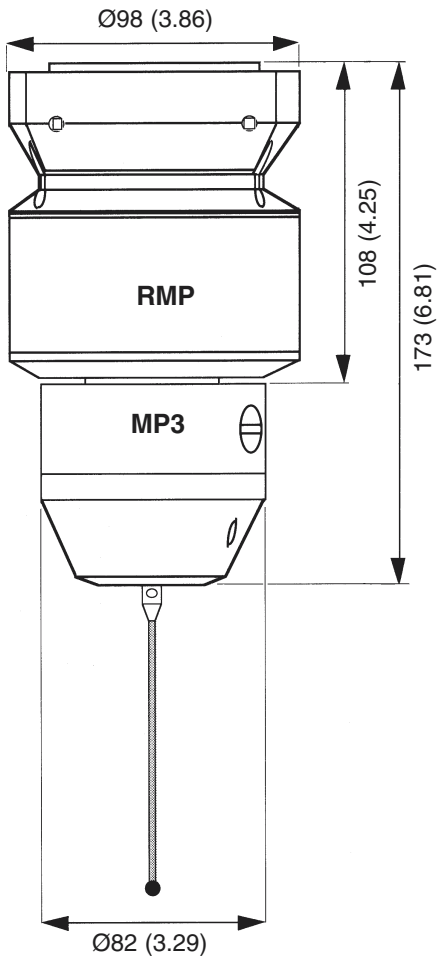
For specification details of the MP3 probe see Renishaw publication MP3 Data Sheet, part no. H-2000-2040.

SYSTEM DIAGRAM



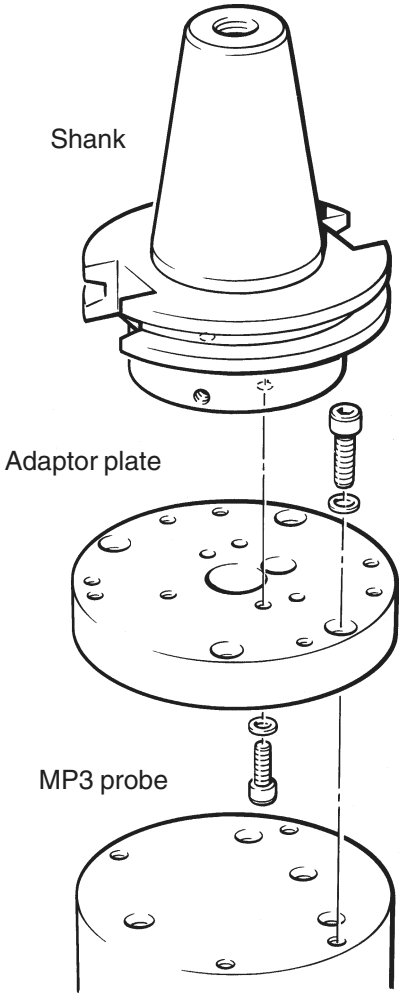
DIMENSIONS / INSTALLATIONS

MP3 probe with RMP transmitter



dimensions mm (in)

Shank mounting



Operating environment

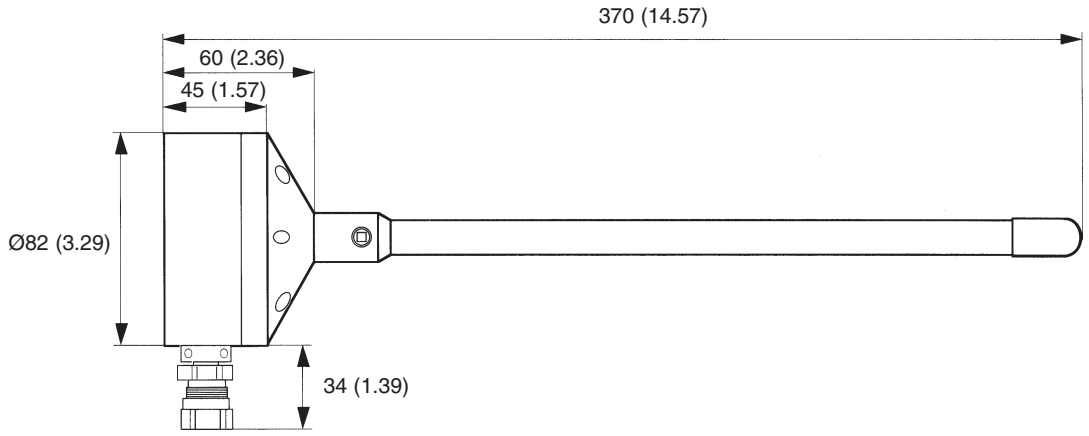
The RMM/RMP system uses a specific frequency band. It is therefore essential to ensure that the band selected is free from interference. Operation may be difficult if an arc welding machine is in use in the same working area. Other devices such as remote control keys and radio pagers may also cause interference. There is an audio indicator on the MI 14 Interface for checking and monitoring interference.

Temperature range

The storage and operating temperature ranges for the system are as follows :

Operating	0°C to 40°C (32°F to 104°F)
Storage	-20°C to +60°C (-4°F to +140°F)

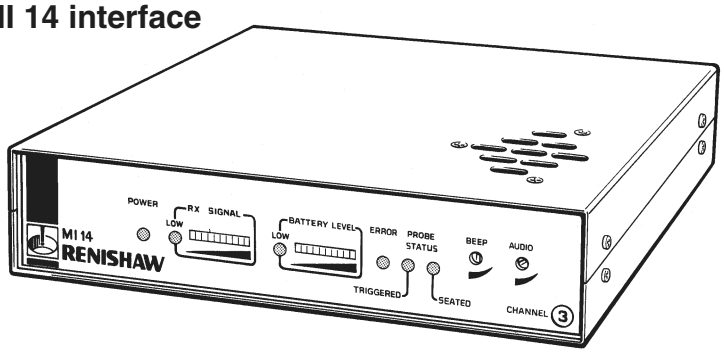
RMM receiver antenna

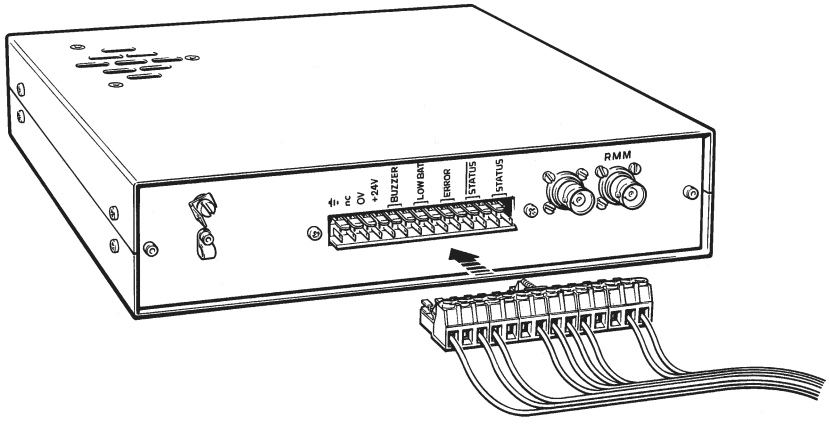


dimensions mm (in)

Two **RMMs** are recommended for each installation. The RMM base must be mounted to a flat metallic surface using the integral permanent magnets for temporary fixtures; the mounting holes should be used for permanent installations.

MI 14 interface





MI 14 dimensions

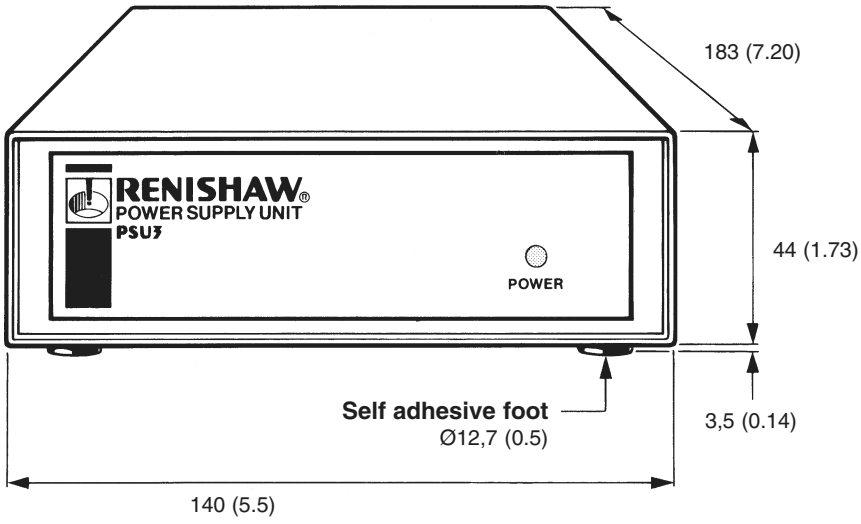
Length 235mm (9.25in),
Height 55mm (2.16in)
Depth 240mm (9.45in)

The **MI 14** converts the signals received by the RMM into an acceptable form for the machine control. It also continuously monitors system status, including received signal strength, battery level and probe status. The data is displayed visually on the front panel. In addition there are audio indicators to aid installation and diagnostics.

A panel mounting kit for the MI 14 is available if required. Please contact your Renishaw supplier.

POWER SUPPLY REQUIREMENTS

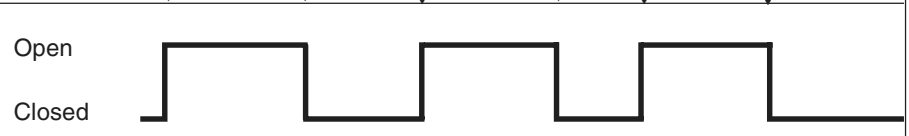
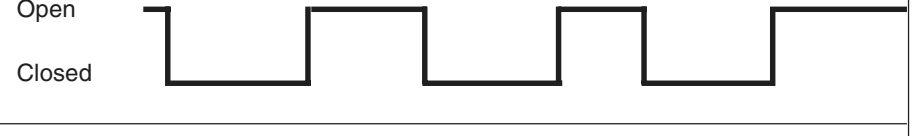
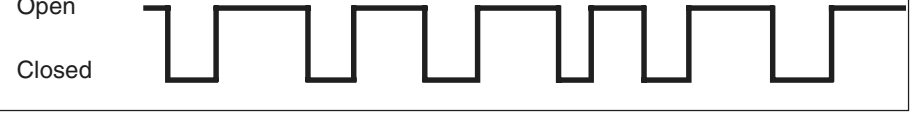
The MI 14 interface unit can draw its 24Vdc ±10% supply from the CNC machine and presents a load of up to 500mA. Alternatively power can be supplied via a Renishaw **PSU3** power supply unit. The PSU3 uses mains input voltage and is suitable for use in all countries worldwide.



dimensions mm (in)

MI 14 OUTPUT SIGNALS

There are three pairs of reed relay outputs rated @500mA, 100V max: error, low battery, buzzer. There are also two pairs of probe status, solid state relay outputs rated @ ±50mA, ±50V peak. Probe Status relays change state both when the probe is triggered and re-seated.

Probe		
MI14 output signal	Solid state relay	
Probe status	Normally open	
$\overline{\text{Probe status}}$	Normally closed	
Error	Normally closed	
Battery	Normally open	
Buzzer	Normally open	

SYSTEM OPTIONS

Frequency band	No. of channels	Transmission range	Distance required between systems operating on same channel	Battery life: Alkaline Duracell™ MN1604 rated @550mAH	Country
224MHz Normal power	10	10 metres	100 metres	153 hours	France
224MHz Low power	10	3 metres	20 metres	153 hours	Japan, USA
40MHz	4	15 metres	120 metres	31 hours	Germany, USA, Switzerland
173MHz	6	15 metres	100 metres	153 hours	UK

ORDERING

Please refer to your Renishaw supplier for ordering details.

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