

Primo™ system



www.renishaw.com/primo

Specification

Primo system

Principal application	Workpiece set-up and tool setting on small to medium CNC machining centres.
Primo Credit Token	Allows the Primo system to function.
Transmission type	Frequency Hopping Spread Spectrum (FHSS) radio Radio frequency 2400 MHz to 2483.5 MHz
Radio approval regions	Radio approval regions: Europe (all countries within the European Union), Japan and USA. China is exempt from requiring radio approvals. For details about other regions, please contact Renishaw.
Operating range	Up to 10 m (32.8 ft)
Sealing	IPX8 (EN/IEC 60529)
Operating temperature	+5°C to +55°C (+41°F to +131°F)

Primo Radio Part Setter

Principal application	Used for workpiece set-up and inspection.	
Compatible interface	Primo Interface.	
Recommended stylus	M4 stylus with 50 mm (1.97 in) ceramic stem and 6 mm (0.24 in) ruby ball.	
Weight without shank (including battery and credit token)	350 g (12.35 oz)	
Switch-on/switch-off options	Radio on → Radio off Spin on → Spin off	
Battery types	½ AA (3.6 V) Lithium-thionyl chloride	CR2 (3 V) Lithium manganese dioxide
Battery life (½ AA (3.6 V) Lithium-thionyl chloride)	Standby life	270 days maximum
	Continuous life	260 hours maximum
Sense directions	±X, ±Y, +Z	
Unidirectional repeatability	1.00 µm (40 µin) 2σ (see note 1)	
Stylus trigger force (see notes 2 and 3)		
XY low force	0.50 N, 51 gf (1.80 ozf)	
XY high force	0.90 N, 92 gf (3.24 ozf)	
+Z direction	5.85 N, 597 gf (21.04 ozf)	
Mounting	Taper shank in machine tool spindle.	

Data sheet

Specification (continued)

Primo Radio 3D Tool Setter

Principal application		Tool measurement and broken tool detection on small to medium CNC machining centres.	
Compatible interface		Primo Interface.	
Recommended stylus		26 mm (1.02 in) diameter disc stylus, tungsten carbide	
Weight with disc stylus (including battery)		660 g (23.28 oz)	
Switch-on/switch-off options		Radio on \longrightarrow Radio off	
Battery types		$\frac{1}{2}$ AA (3.6 V) Lithium-thionyl chloride	CR2 (3 V) Lithium manganese dioxide
Battery life ($\frac{1}{2}$ AA (3.6 V) Lithium-thionyl chloride)	Standby life	270 days maximum	
	Continuous life	260 hours maximum	
Sense directions		$\pm X, \pm Y, \pm Z$	
Unidirectional repeatability		1.00 μm (40 μin) 2σ (see note 1)	
Stylus trigger force (see notes 2 and 3)		1.30 N to 2.40 N, 133 gf to 245 gf (4.68 ozf to 8.63 ozf) depending on sense direction.	
Mounting		The tool setter is mounted on the machine table using a cap head bolt and T nut (not supplied by Renishaw).	

Primo Interface

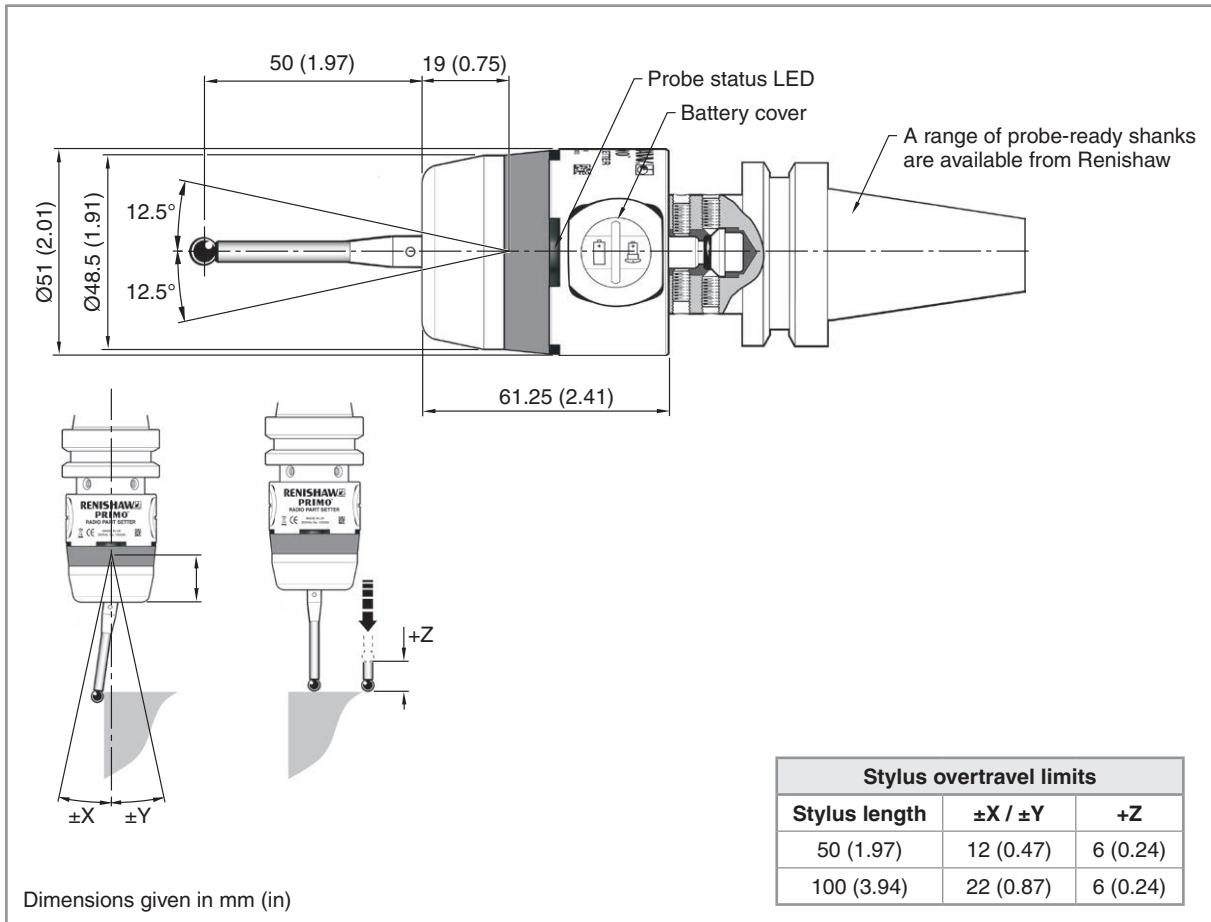
Principal application		Used to communicate signals between the part setter or tool setter and the CNC machining centre.	
Compatible probes		Primo Radio Part Setter, Primo Radio 3D Tool Setter and Primo LTS.	
Weight (with 8 m (26.2 ft) cable)		950 g (33.51 oz)	
Supply voltage		12 Vdc to 30 Vdc	
Supply current		100 mA at 24 V peak, 30 mA typical	
Output signal		Four machine outputs, comprising four solid-state relays (SSR) configurable normally open or normally closed to be used for probe status 1, 2, error and low battery / low credit; all of which can be inverted.	
Input/output specification		SSR output is protected by a circuit which limits the current to 100 mA. M-code input: up to 30 V (10 mA at 24 V max) for part setter and tool setter. Power supply should be fused separately within the machine cabinet.	
Diagnostic LEDs		Digital 'credit days remaining' and error codes display, part setter, start, low credit / low battery, probe status, error, signal, tool setter / length tool setter.	
Cable	Specification	$\varnothing 7.5$ mm (0.29 in), 15-core screened cable, each core 18×0.1 mm	
	Length	8 m (26.2 ft)	
Mounting		Directional mounting with optional mounting bracket or flush mounting (both available separately).	

Note 1 Performance specification is tested at a standard test velocity of 480 mm/min (18.9 in/min) with a 50 mm (1.97 in) stylus for the part setter and a 35 mm (1.38 in) straight stylus for the tool setter. Significantly higher velocity is possible, depending on application requirements.

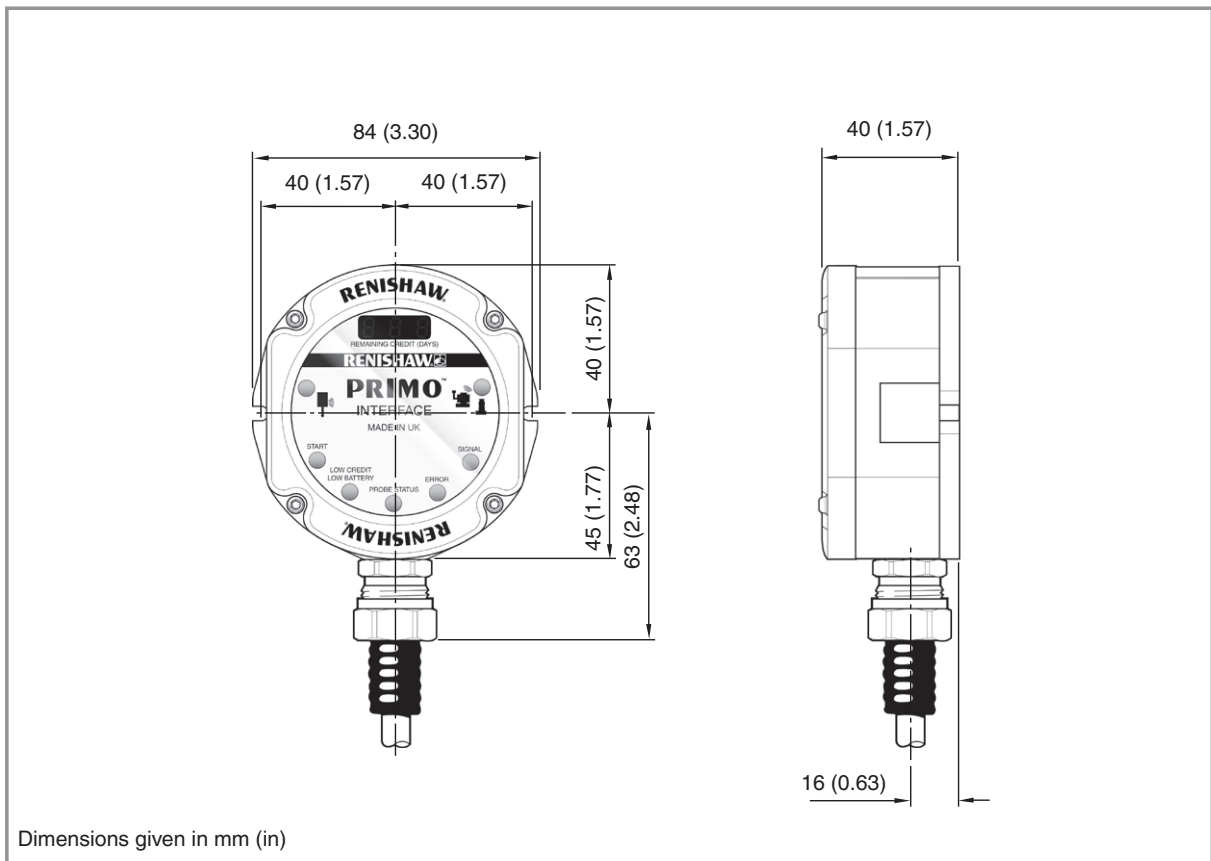
Note 2 Trigger force, which is critical in some applications, is the force exerted on the component by the stylus when the probe triggers. The maximum force applied will occur after the trigger point (overtravel). The force value depends on related variables including measuring speed and machine deceleration.

Note 3 These are the factory settings. Manual adjustment is not possible.

Part setter dimensions

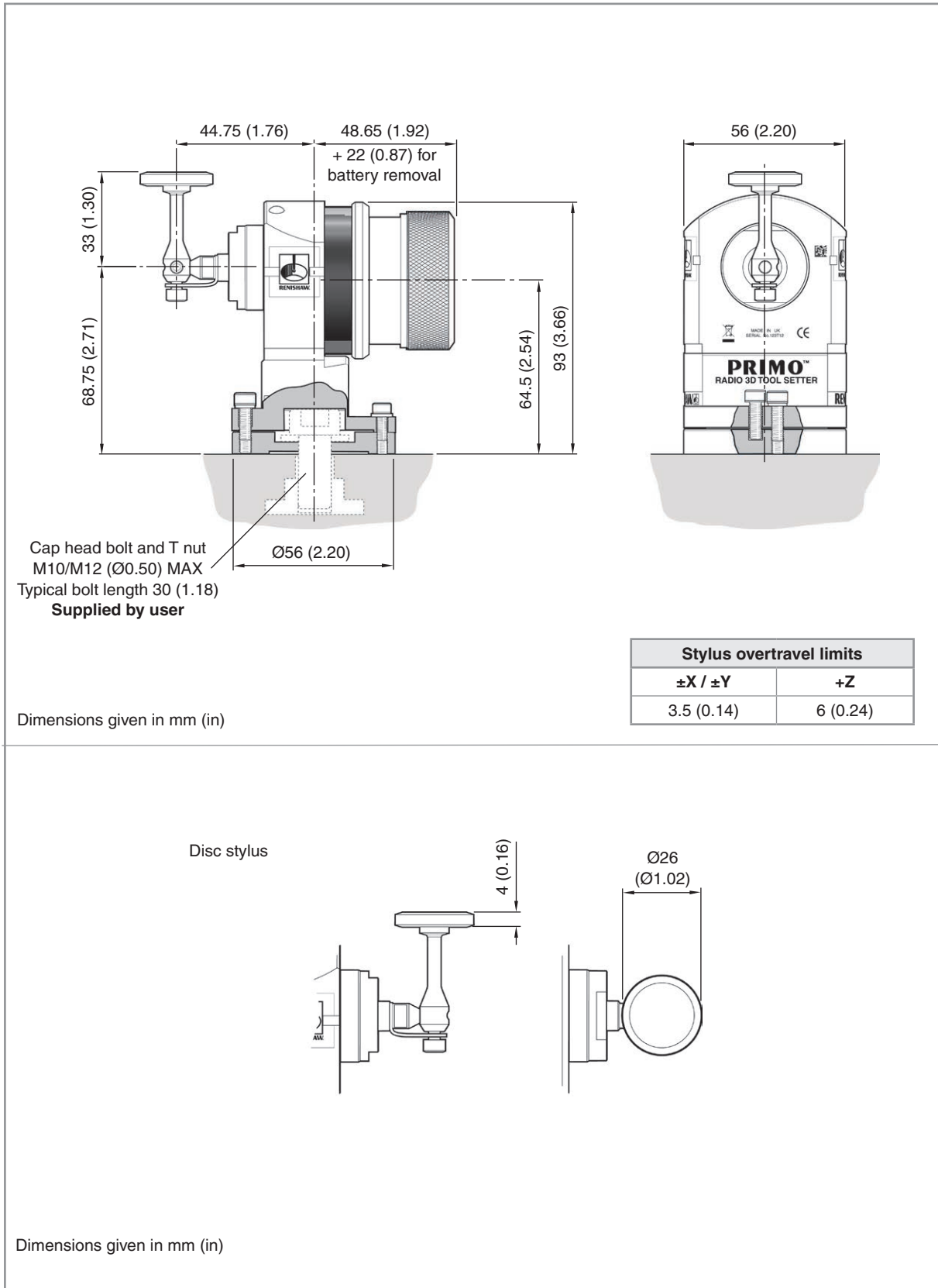


Interface dimensions



Data sheet

Tool setter dimensions

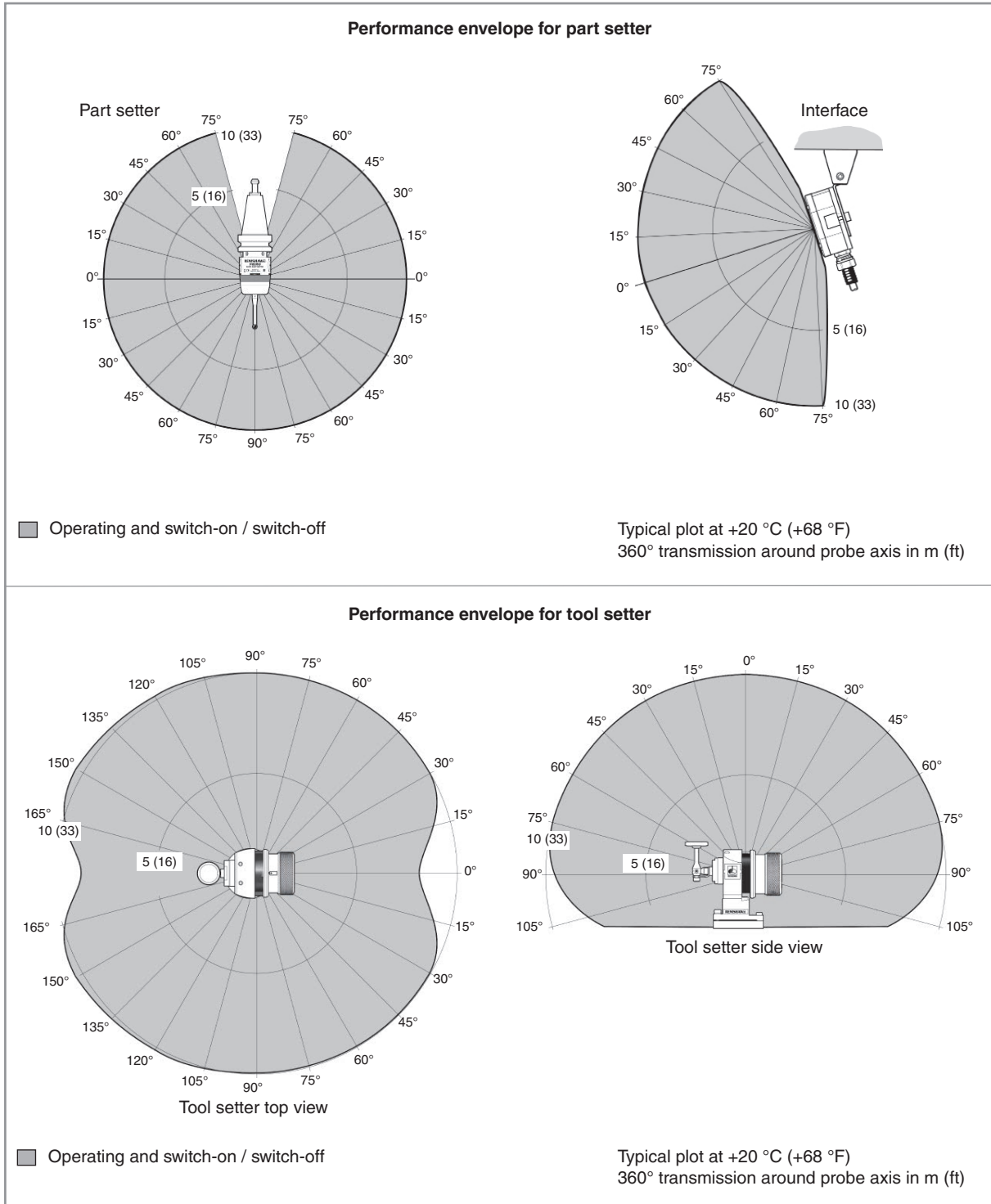


Transmission performance envelopes

Primo system performance envelopes and ranges are shown below.

System components should be positioned so that the optimum range can be achieved over the full travel of the machine's axes, taking into account likely part positions on a moving machine table.

The front cover of the interface should be facing in the general direction of the machining area.



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