

DZ series compact digital gauging probes



A novel approach to High Performance yet Compact Gauge Probes.

The lack of space to fit a gauge probe is often a problem for gauge builders and test engineers alike. Very short pencil style gauge probes have usually meant a reduction in performance and/or life expectancy, but that has now changed.

Solartron Metrology has taken a novel but practical route to solving the problem of miniaturisation with strength to produce the DZ range of compact Gauge Probes.

Up to 50% reduction in length over conventional 1mm and 2mm gauge probes has been achieved yet performance and life expectancy has been maintained. due to a completely new approach to the construction of gauge probes.

The sensor in a gauge probe normally sits behind the bearing. A reduction in overall length of a gauge probe is normally achieved by reducing the size of the bearing, which in turn affects the life or accuracy of the probe. Solartron's novel approach of fitting a specially designed sensor inside a Ball Sleeve Bearing enables the gauge builder to install extremely compact probes without compromising on performance.

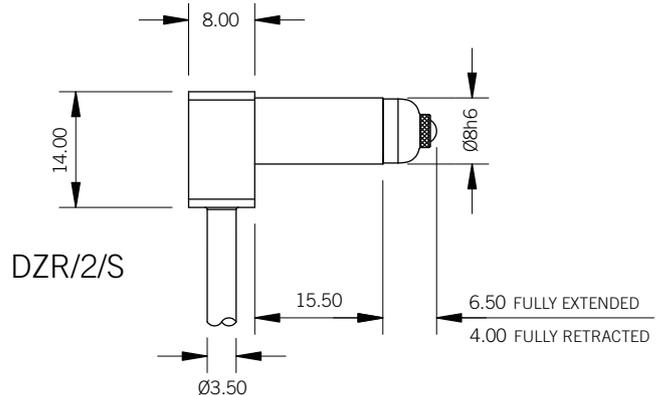
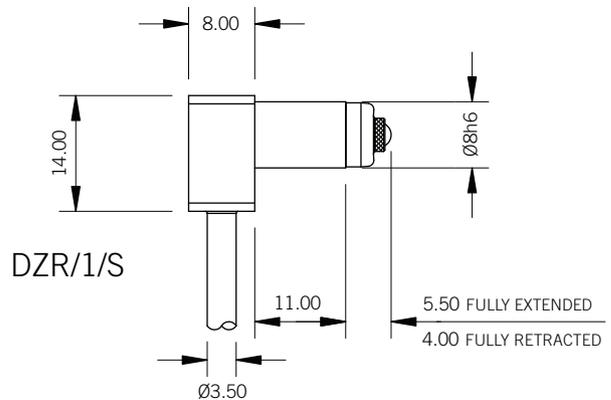
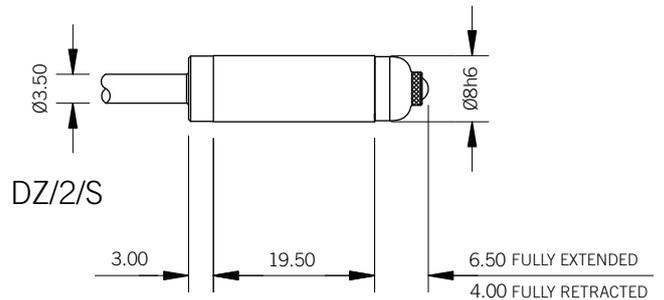
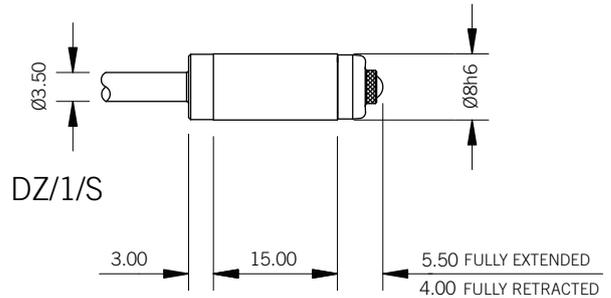




40 Specification and dimensions (mm)



Product type	DZ Digital Probe
Axial cable outlet	DZ/1/S DZ/2/S
Radial cable outlet	DZR/1/S DZR/2/S
Measurement	
Measurement range	1.0 mm 2.0mm
Accuracy	< 0.1%
Resolution	Down to 0.01µm (user selectable)
Repeatability (µm)	0.15
Pre-travel (mm)	0.15
Post-travel (mm)	0.35
Tip force (N) (mid position)	0.7
Temperature coefficient %FS/°C	0.01
Mechanical	
Body diameter	8h6
Body material	Stainless Steel
Tip Material	Tungsten Carbide
Gaiter	Viton®
Cable	PUR
Environmental (Probe only)	
Operating temperature (°C)	+5 to + 80
Storage temperature (°C)	-20 - + 70
IP rating	65
Interface electronics	
Reading rate	Up to 3906 readings per second
Bandwith	Up to 460 Hz
Output	Solartron Orbit Serial communication
Power	5.0 VDC +/- 0.25 @0.06A
Storage temperature (°C)	-20 to + 70
Operating temperature (°C)	0 to + 60
IP rating	43



Mini probes



The Solartron Digital Mini Probe is a compact, low profile transducer intended for measurements in confined spaces such as bores. The tip of the probe is adjustable to enable ease of installation.

- > Measurement range 0.5mm
- > Resolution programmable to $< 0.05\mu\text{m}$
- > Excellent repeatability and robustness in two planes
- > IP65 protection
- > Simple installation and sensor change
- > Suitable for operation in bores with key slot
- > Very compact size
- > Range of changeable tips
- > Up to 3,906 readings/second
- > Traceable calibration



42 Specification

The Solartron Digital Mini Probe is based on a parallel spring structure that is significantly more robust than a single leaf arrangement. This greatly improves the reliability of the sensor, extending its working life and allowing it to be used in more demanding applications, such as automatic gages.

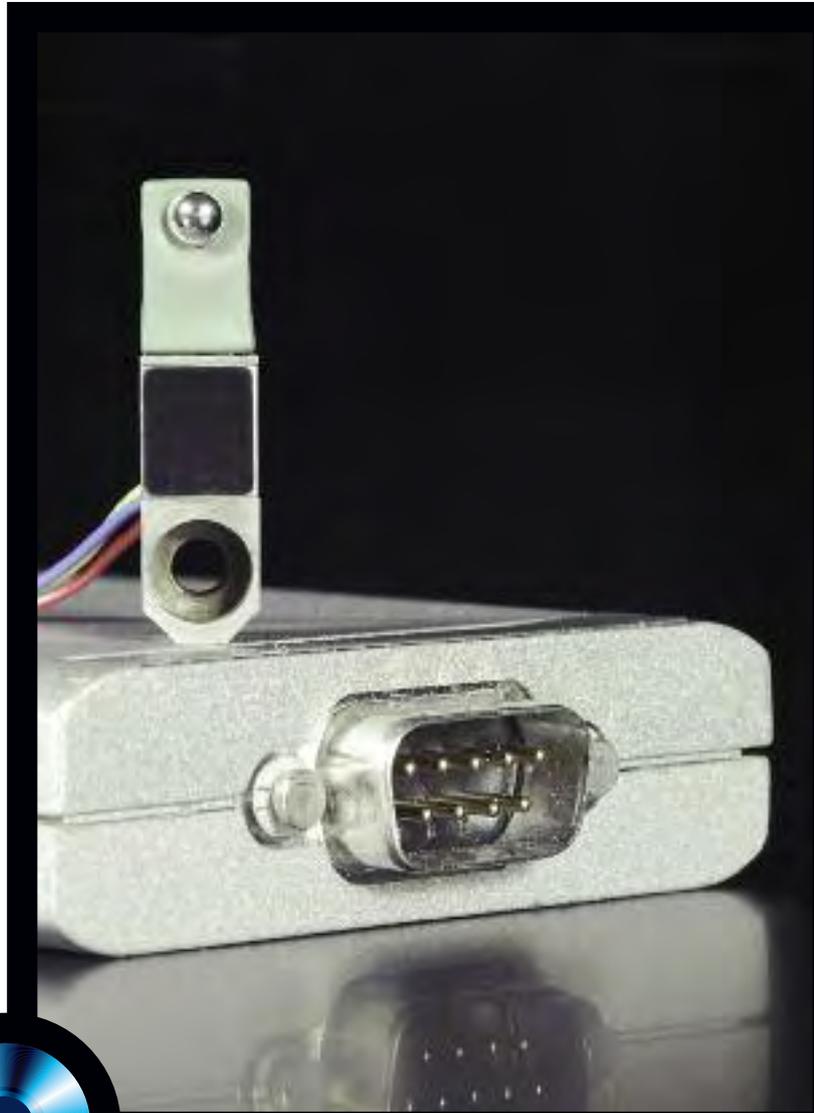
The parallel spring also ensures a high level of repeatability, both on axis and across axis, so that it can be used in dynamic applications where profiling is required.

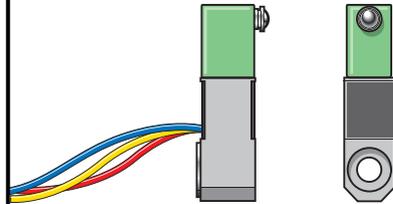
The centreline of the tip is accurately aligned to one side of the transducer to provide a reference datum surface. Installation is simply a matter of positioning the device, and securing it via a single M3 screw. This requires accurate machining of the pocket in which the transducer is housed, with the resultant benefit of reduced installation and changeover time.

The digital nature of the Mini Probe provides an unprecedented ease of setup, especially since the electrical zero does not need to be set. The probe forms part of Solartron's range of digital products sharing the same Orbit Network interface. Mini Probes and other digital transducers can be connected via a single cable to a PC, PLC or Solartron's own Digital Readout.

The transducer is sealed using a Viton® boot to achieve IP65 requirements.

Tips with an M2 thread are available to suit different applications, these can be replaced in the field without the need to return the product to Solartron.





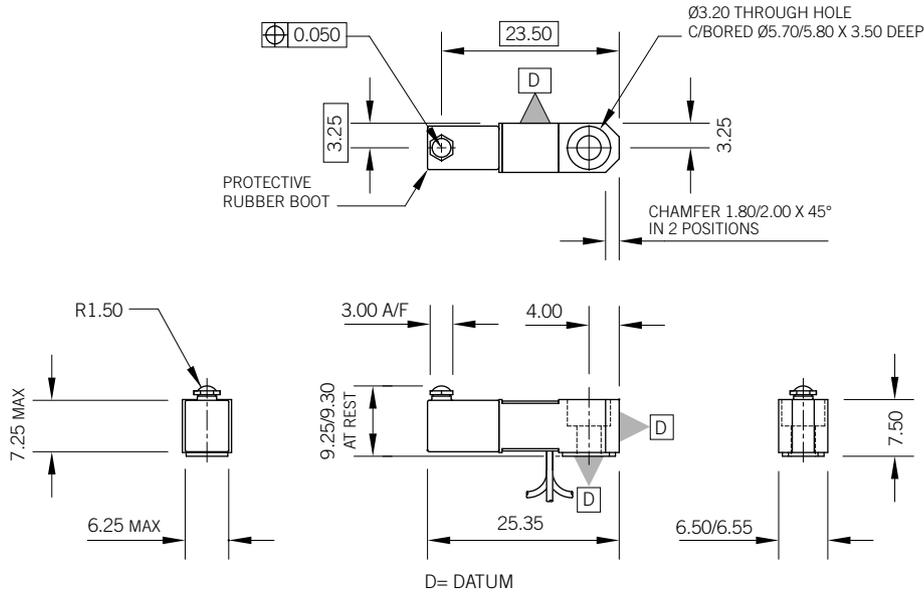
Product type: DM/0.5/S

Measurement	
Measurement Range (mm)	0.5
Mechanical Travel (mm)	0.6
Start of Measuring Range	20 µm to 30 µm from limit stop
Accuracy (nominal to axis of stylus)	±0.1 µm ± D x 0.2% (D= distance from setting master)
Operational Repeatability ¹ (µm)	On axis On cross axis
at position 100 µm from limit stop	0.1 0.1
at position 250 µm from limit stop	0.25 0.15
at position 500 µm from limit stop	0.5 0.25
Resolution (µm)	0.05
Measurement Bandwidth	Programmable from 6 Hz to 460 Hz
Reading Speed	Up to 3906 readings/second (Dynamic Measurement Mode)
Tip Force (N ± 25%)	0.7 (centre measurement range)
Temperature Coefficient (µm/°C)	0.08
Mechanical	
Mass (g)	< 15
Recommended tip adjustment (mm)	±0.25 from the factory position (refer to manual)
Material	
Mini Probe frame	Chromium Steel
Frame Gaiter	Viton®
Mounting	Retain using 1 x M3 screw (supplied with transducer)
Environment	
Storage Temperature (°C)	-20 to +85
Operating Temperature (°C)	0 to +60
IP Rating	Transducer IP65
	Electronics IP43
Electrical Interface	
Energising Voltage	5 V ±0.25 VDC (Powered by Orbit Network)
Energising Current	55 mA at 5 VDC (Powered by Orbit Network)
Interface	Orbit Network

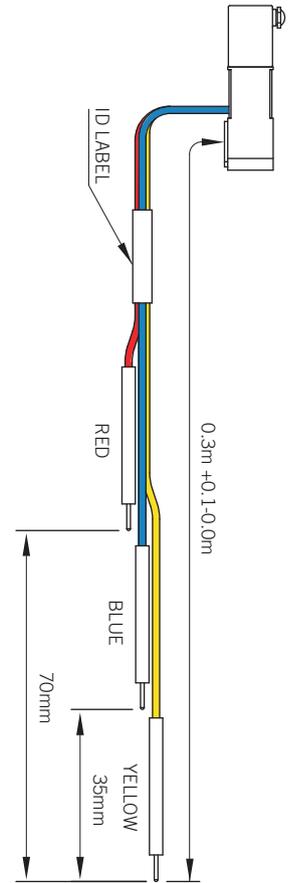
¹ Obtained by step gauging. Repeatability pushing the probe against the edge of the intended target prior to recording the measurement. This replicates the actual mini probe operation in the field.



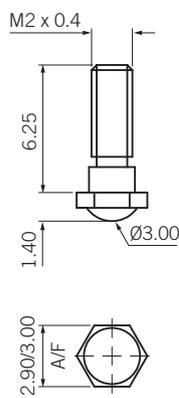
44 Dimensions (mm)



Cable assembly

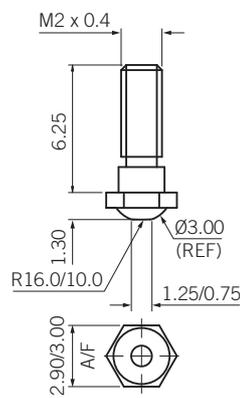


Probe tips



Ø3.00mm Ball

Tip material	Part no.
T.Carbide	804847
Ruby	804582
Silicon Nitride	804982



R12.70mm Ball

Tip material	Part no.
T.Carbide	804857

