

# Digital Lever Probe

For high accuracy dimensional measurements  
in restricted access applications

Datasheet  
502583  
Issue 2.2



## Features

- ▶ Measuring Range 0.5 mm
- ▶ Resolution Programmable to  $< 0.01 \mu\text{m}$
- ▶ Tip Forces down to 5 g
- ▶ Excellent Repeatability
- ▶ Up to 3906 Readings/Second
- ▶ Industry Standard Styli
- ▶ Compact Size
- ▶ Direct Reading in mm/inch

## Description

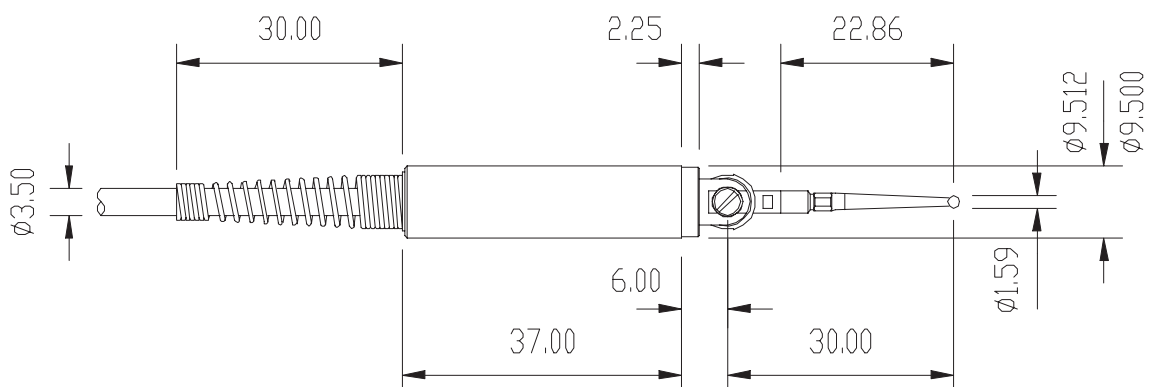
Solartron's new Digital Lever Probe has been conceived for the precision measurement market. This probe is ideally suited to applications where the use of axial measuring probes is not possible, and where a low tip force and a high number of probing points are required. Its simple design and exceptional reliability result in a reduced cost of ownership without any reduction in performance.

Due to its cylindrical housing geometry, the Lever Probe can be mounted in any attitude relative to the intended target. It can be mounted via the use of 8 mm peg or industry standard dovetail mounting blocks, or clamped directly into a 9.52 mm mounting hole.

With a measurement range of 500 microns and repeatability below 0.15 micron, the Digital Lever Probe can be easily integrated into measurement systems using Solartron's Orbit® Network.

Given its digital output, the digital lever probe easily lends itself to connection to a PC, PLC or to Solartron's digital readout, and can coexist with a multiplicity of other Solartron or non-Solartron sensors on a single network.

## Mechanical Drawing



CAD drawings are available to download from [www.solartronmetrology.com](http://www.solartronmetrology.com)

## Applications

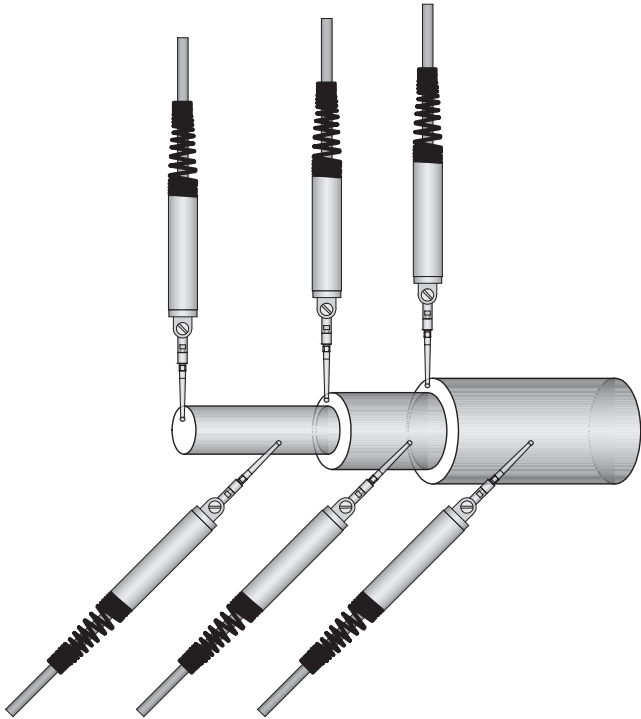
### Measurement of Delicate Components

The combination of the Digital Lever Probe's reduced size and low tip force allows accurate and reliable measurements to be performed on delicate components.



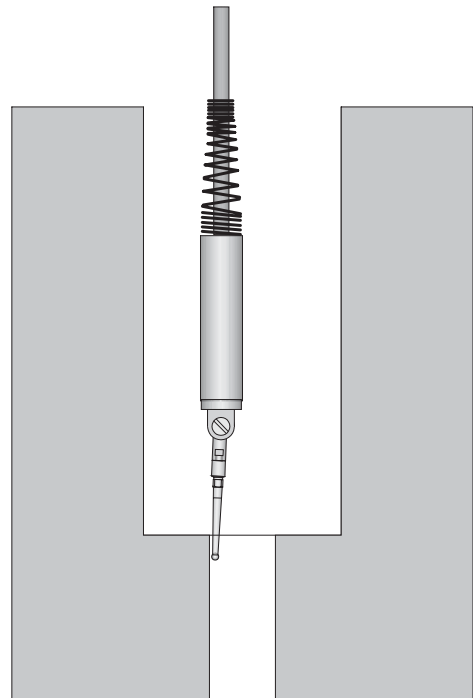
### Simultaneous Gauging of Several Closely Located Surfaces

The very high resolution and fast reading rates make the Digital Lever Probe an ideal sensor for dynamic applications such as profiling a rotation shaft.



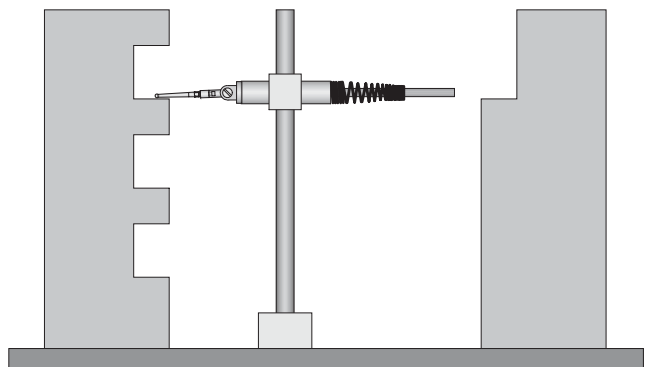
### Exploring the Geometry of Deep Lying Surfaces

The Digital Lever Probe's small body makes it easier than conventional lever type probes to access confined spaces to perform accurate measurements.



### High Accuracy Measurement of Height Dimensions

The Digital Lever Probe is also suitable for high accuracy transfer of height dimensions from a reference piece to the object surface.



## Technical Specification

### Measurement

Mechanical Travel	0.6 mm
Measurement Range	0.5 mm
Start of Measuring Range	20 $\mu\text{m}$ to 30 $\mu\text{m}$ from limit stop
Stylus Adjustment	180°
Accuracy (with measurement contact normal to the axis of the stylus)	$\pm 0.1 \mu\text{m} \pm D \times 0.08\%$ (where D is the distance from setting master)
Repeatability	< 0.15 $\mu\text{m}$ on axis < 0.3 $\mu\text{m}$ cross axis
Hysteresis	< 0.25 $\mu\text{m}$
Resolution	User selectable to < 0.01 $\mu\text{m}$
Measurement Bandwidth	Programmable from 6 Hz to 460 Hz
Reading Speed	Up to 3906 readings/second (Dynamic Measurement Mode)
Tip Force	Options for 5 g to 30 g in 5 g increments
Temperature Coefficient	0.1 $\mu\text{m}/^\circ\text{C}$
Life	Better than 5 million measuring cycles (dependant on application)

### Mechanical

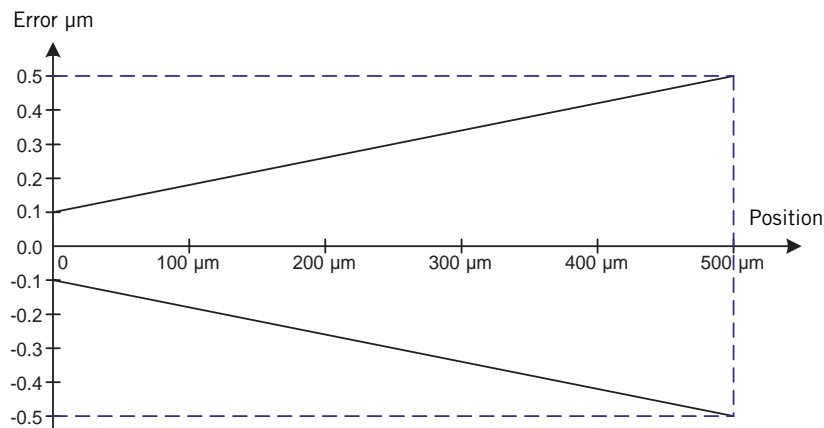
Mass	< 15 g (< 0.033 lbs)
Material of Frame	Stainless Steel
Mounting	Direct clamping into 9.52 mm hole Mounting blocks for 8 mm peg mount and industry standard dovetail available as accessories
Stylus	Available in diameters of 2.54 mm, 1.59 mm, 0.79 mm & 0.39 mm Mounting thread 1-72 UNF

### Environmental

Storage Temperature	-20°C to +85°C
Operating Temperature	0°C to +60°C
Shock	To maintain best performance the Lever Probe should be protected from shock

### Electrical Interface

Energising Voltage	5 V $\pm 0.25$ VDC (powered from Orbit Network)
Energising Current	55 mA (at 5 VDC) (powered by the Orbit Network)
Interface	Orbit Network



Plot showing typical Lever Probe performance

## Ordering Guide for the Digital Lever Probe

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### Cable Length

x

x = meters required

### Tip Force

0	5
1	0
1	5
2	0
2	5
3	0

5 g

10 g

15 g

20 g

25 g

30 g

### Stylus Ball Tip Diameter

0	3	9
0	7	9
1	5	9
2	5	4

0.39 mm (0.015")

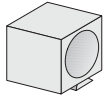
0.79 mm (0.031")

1.59 mm (0.062")

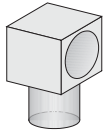
2.54 mm (0.100")

### Accessories

The Digital Lever Probe can be clamped directly into a 9.52 mm mounting hole. Alternatively the following mounting blocks are available:



Industry standard dovetail mounting block  
Part Number 804920



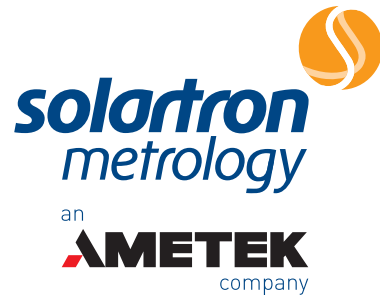
8 mm peg mounting block  
Part Number 804919

A range of spare ball tipped styli is available with different ball diameters.



Ball Ø	Part Number
0.39 mm (0.015")	008307-015
0.79 mm (0.031")	008307-031
1.59 mm (0.062")	008307-062
2.54 mm (0.100")	008307-100

The mounting threads are all 1-72 UNF.



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