SELECT A SENSOR FOR THE ORBIT® NETWORK

Choose from a full array of linear measurement sensors, each with their own application advantages

CONTACT MEASUREMENT

DIGITAL PROBES AND TRANSDUCERS

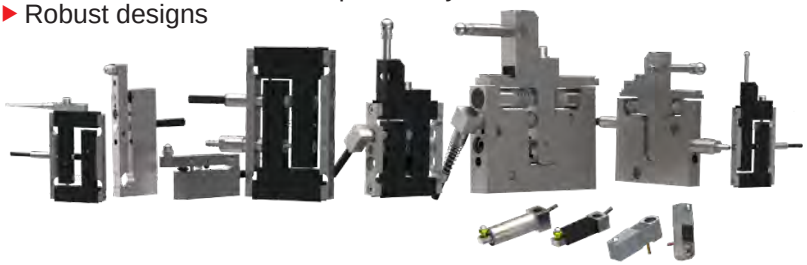
- Accurate
- Repeatable
- Robust
- Small size
- Low tip force
- Long life
- Displaces light, dirt and oil
- Absolute measurement
- Works on all surfaces
- Best cost vs performance
- Can be used in most environments
- Very wide range of products

"FEATHER TOUCH" PROBES WITH LOW TIP FORCE

- Tip forces from 20 g to as low as 3 g
- Ideal for glass, delicate surfaces, or easily damaged materials
- Nylon, Silicon Nitride and Ruby tips available
- Same high accuracy and resolution as digital probe

Specialised Sensors

- Sensors for hard to reach areas, such as bores or gaps
- Multiple ranges and sizes
- Excellent resolution and repeatability
- Robust designs



Linear Encoder

- Glass Scale
- Best Accuracy over full scale range

CUSTOM PRODUCTS

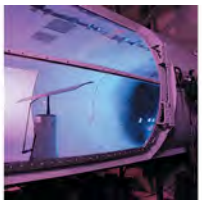
At Solartron Metrology our experienced design team have worked closely with customers to produce customised measurement solutions. If you require a specialised sensor to solve your measurement problem then please contact your local Solartron representative.

Example: Customised Feather Touch Probe

- Built for glass industry
- Long 30 mm travel, but with 5 mm range at end of stroke
- Ensures tip is clear when glass removed
- R/A Outlet with Steel Braided Cable

Automation

Metrology



Bench Test

Medical

- Position feedback
- Level measurement
- Machine alignment

- Assembly checking
- Closed loop control
- Tool positioning

ORBIT® - A UNIVERSAL TRUTH

Data is only of value when it is processed from a reliable source

All standard transducer cables feature a polyurethane sheath with a foil screen layer for excellent electrical screening. The cable is very flexible

Hardened stainless steel

Titanium core carrier, inert and able to withstand lateral shock

Internal screen to protect from magnetic fields

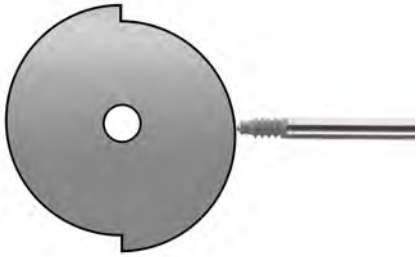
Tight tolerance bearing with carbon/ chrome balls providing good repeatability with long life

Anti rotation device designed to be strong and provide great repeatability even with probe tip off centre

Indicator lamps show power and data transmission active

Strong, and lightweight body with internal electrical screening

PIE (Probe Interface Electronics)



Probe design endures a harsh “stepped cam” test where probe is actuated with a sideload. Repeatablity is maintained during the test.

35 mm DIN rail mount for PIE, strong, lightweight construction. Holds the sensor address

Solartron Digital Transducers calibrated using laser interferometers are error mapped to significantly improve linearity. In gauging applications this minimises number of setting masters required, reducing investment costs and ongoing cost of ownership.

UNERRING DATA COLLECTION + POWERFUL PROCESSING = ROCK SOLID RESULTS

Good original data can be ruined by noisy signal conditioning and poor immunity from electrical interference which in turn affects the repeatability of results. Orbit® processes and transmits clean, repeatable data from sensors at high speeds of up to 3906 readings per second.

A reliable sensor is essential to any data processing system. All Solartron Orbit® based sensors and mechanical interfaces are designed to generate reliable data, not just from new but for millions of cycles.

Data is only of use if it can be displayed and/or acted on. Orbit® offers a range of displays and readouts, interface modules and software for both PC and PLC based systems. The Excel® Add-In provides a simple way to get data into Excel®. PLC systems are addressed with various interfaces.

ORBIT® DIGITAL MEASURING PROBES

Contact gauge probes often provide the most cost effective solution for a wide range of measuring and positioning applications. These have excellent sideload capabilities and can last over 100 million cycles.

DP/S - SPRING PUSH

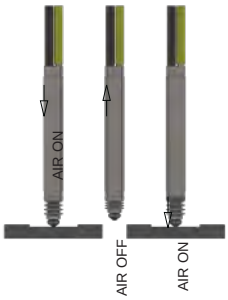
- 0.5, 1, 2, 5, 10, 12, 20, 30 mm measuring ranges
- Accuracy as low as <0.1 µm
- Up to 0.01 µm resolution
- Up to 0.05 µm repeatability
- Tip force of 0.7 N (options available)
- IP65 Sealing

DP/0.5/S Probe

The DP range of spring push probes is the work horse of the gauging industry. Very high resolution, excellent linearity and high data speeds are coupled with outstanding measurement repeatability. Long life precision bearings and IP65 sealing ensures that the probes maintain their performance for millions of measurements.

DP/P - PNEUMATIC PUSH

- 2, 5, 10, 12, 20, 30 mm measuring ranges
- Accuracy as low as <0.1 µm
- Up to 0.01 µm resolution
- Up to 0.05 µm repeatability
- Tip force of 0.7 N (0.4 bar of pressure)
- IP65 Sealing
- Pneumatic gaiter actuation
- **Vacuum retract option available**



Pneumatic transducers are ideal for use in automatic gauging applications or for accessing details that would be difficult or impossible to reach with spring push transducers. The standard range of Pneumatic Probes comes with IP65 sealing to ensure a long working life in wet or oily environments.

DJ/P - PNEUMATIC PUSH

- 2, 5, 10, 12, 20 mm measuring ranges
- Actuation is by a built in piston, separate from gaite
- Same performance as standard Pneumatic probe

Air Exit

Jet “J Type” probes are similar to standard pneumatic transducers except that actuation is by an inbuilt piston. High tip forces are available but as air is vented through a port close to the front of the probe, they have a lower IP rating. These probes will continue to operate even if the gaiter becomes punctured.

DSP/S - DIGITAL SHORT PROBES

- 8mm Diameter Probes that are up to 25% shorter than Standard Digital Probes
- Same linearity, resolution, and repeatability as standard probes.
- Special 4 mm range probe available.
- Right angle versions also available.

Considerably shorter than standard digital displacement sensors and much shorter than conventional LVDT sensors, the short range of digital short probes (DSP/S) still maintain all of the advantages of LVDT sensors while providing superior performance.

TECHNICAL SPECIFICATIONS

PRODUCTS *(Note 4)*	**STANDARD, SPRING, PNEUMATIC, VACUUM, JET, RUGGED**								
Spring Push Axial Cable	DP/0.5/S	DP/1/S	DP/2/S	DP/5/S	DP/10/S	DP/12/S	DP/20/S	DP/30/S	DP/10/2/S
Pneumatic Axial Cable	N/A	N/A	DP/2/P	DP/5/P	DP/10/P	DP/12/P	DP/20/P	DT/30/P	DP/10/2/P
Vacuum Axial Cable			DP/2/V	DP/5/V	DP/10/V	DP/12/V	DP/20/V		N/A
Pneumatic Axial Cable Jet			DJ/2/P	DJ/5/P	DJ/10/P	DJ/12/P	DJ/20/P		DJ/10/2/P
Digital Short Probe - Spring			DSP/2/S	DSP/5/S	N/A	N/A	N/A	N/A	N/A
Digital Short Probe - Pneumatic			N/A	N/A	N/A				
12mm Diameter Rugged Probe				D12P/5/S	D12P/10/S				
Diameter	8h6								
MEASUREMENT PERFORMANCE									
Measurement Range (mm)	0.5	1	2	5	10	12	20	30	2
Accuracy (% of Reading) *(Note 1)*	0.05	0.05	0.05	0.05	0.06	0.06	0.07	0.1	0.05
Accuracy (% of Reading) *(Note 1)* - with In line Connector	N/A	0.20	0.20	0.15	0.15	0.15	0.15	0.2	0.20
Repeatability (worst case) µm *(Note 2)*	0.10	0.15	0.15	0.15	0.15	0.15	0.25	0.5	0.15
Repeatability (typical) µm *(Note 3)*	0.05	0.05	0.05	0.05	0.07	0.07	0.10	0.25	0.05
Resolution (µm)	0.01	0.01	0.01	0.02	0.04	0.05	0.08	0.12	0.01
Pre Travel (mm)	0.03	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Post Travel (mm)	0.05	0.35	0.85	0.85	0.85	0.85	0.85	0.85	8.85
Tip Force (N) at Middle of Range ±20% (Note 7)									
Spring Push	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.85	0.70
12mm Diameter Spring Push				0.80	0.80				
Pneumatic at 0.4 bar Minimum (Note 6)	N/A	N/A	0.70	0.70	0.70	0.70	0.70	N/A	0.70
Pneumatic at 1 bar Maximum (Note 6)	N/A	N/A	2.60	2.60	2.60	2.60	2.60	N/A	2.60
Pneumatic Jet ±30% at 1 bar	N/A	N/A	0.85	0.85	0.85	0.85	0.85	N/A	0.85
Temperature Coefficient %FS/ºC	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.03	0.01
ENVIRONMENTAL									
Sealing for Probe	IP65 with gaiter or IP50 without gaiter								
Sealing for Probe Interface Electronics	IP43 for module and TCON								
Storage Temperature (°C)	-20 to +80								
Probe Operating Temperature with Gaiter (°C)	+5 to +80								
Probe Operating Temperature without Gaiter (°C)	-10 to +80								
ELECTRONICS OPERATING									
Temperature (°C)	0 to +60								
EMC Emission	EN61000-6-3								
EMC Immunity	EN61000-6-2								
Probe life (Operating Cycles)	100 million cycles (no side load), > 10 million cycles in most applications								
MATERIAL									
Probe Body	Stainless Steel								
Probe Tip (options)	Nylon, Ruby, Silicon Nitride, Tungsten Carbide								
Gaiter *(Note 5)*	Fluoroelastomer or Silicon								
Cable	PUR								
Electronics Module	ABS								
ELECTRONICS INTERFACE (ORBIT®)									
Orbit® Interface options	PC: USB, Ethernet®, RS232, R5485, Bluetooth™, PLC: MODBUS® TCP/IP, EtherNet/IP®, Profinet®, EtherCat®, CC-Link®								
Reading Rate	Up to 3906 readings per second								
Bandwidth of Electronics (Hz) user selectable	460, 230, 115, 58, 29, 14, 7, 4								
Power	5±0. 25 VDC @ 0.06 A typical								

- Note 1: Accuracy 0.1 µm or % reading whichever is greater
- Note 2: Repeated operation against a carbide target with side load applied to the bearing using max-min
- Note 3: Repeated operation against a carbide target standard deviation from average (68%)
- Note 4: Right angle outlet versions of all of the standard 8h6 diameter probes for measuring ranges 2 mm to 20 mm are available, part description add R after first two letters e.g DPR/2/S is right angled version of DP/2/S
- Note 5: Different gaiter materials available for specific applications - Fluoroelastomer standard option.
- Note 6: PNEUMATIC ACTUATION: For continual reliable operation and to maximise working life, the air supply should be clean and dry. 60% maximum relative humidity, filtered to better than 5µm particle size.
- Note 7: VACUUM OPERATION: 0 to 0.27 Bar Absolute.