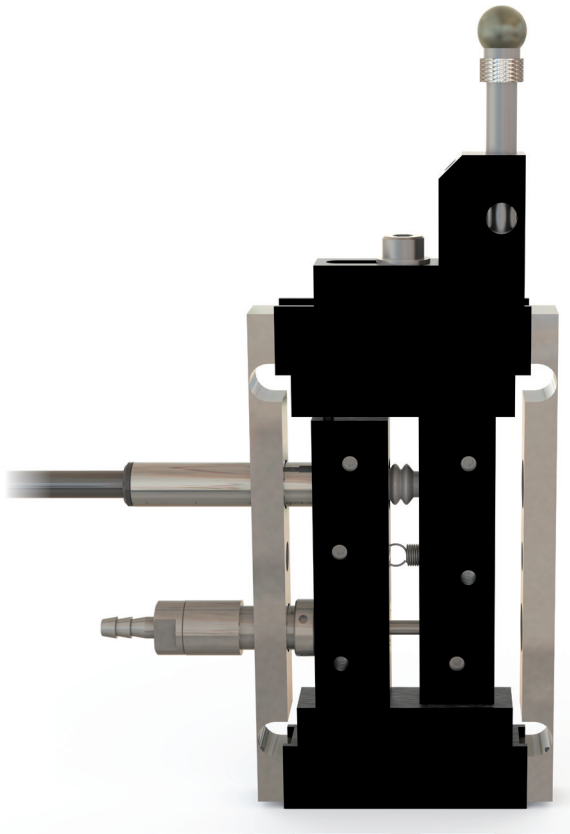


# Analogue Flexures



- ▶  $\pm 0.5$  &  $\pm 1.0$  mm measuring ranges
- ▶ Extended operating life: > 20 million cycles
- ▶ Excellent repeatability: <  $0.1 \mu\text{m}$
- ▶ Excellent resolution
- ▶ Half Bridge or LVDT output
- ▶ Spring push or pneumatic operation
- ▶ IP65 protection
- ▶ Large selection of contact tips
- ▶ 3D drawings available
- ▶ High degree of serviceable parts

Very high resolution and gauge R&R at  $<0.1 \mu\text{m}$  maintained without degradation over millions of measuring cycles is the hallmark of Solartron analogue gauging flexures.

Analogue flexures are the ideal solution for high precision/ high volume post process or in process gauging applications where cycle time is short and high throughput would shorten the life of a conventional pencil probe.

There are no sliding parts to wear out or to cause friction within the frame or sensor which makes Solartron flexures virtually free from hysteresis.

Flexures can be mounted such that there is little or no stress through the gauge centre line and enabling precision profiling of moving material, such as sheet material or rotating shafts, brake discs etc.

The flexure gauge has forward and reverse spring action with a pneumatically actuated version available for automatic measurements. It is supplied in analogue form for plugging into most standard amplifiers. For improved performance Solartron recommends the Digital Flexure use with the Orbit<sup>®</sup> Digital Measurement System.

The tool mounting assembly can be variously adjusted along the gauge's length and fixed with M3 bolts. A selection of tips is offered to suit each application. The unique design offers a high degree of factory serviceable parts, providing a low cost repair which in turn reduces the cost of ownership to the end customer.

## Analogue Flexures: Specification

Measurement Performance	AU/0.5	AU/1
Mechanical Travel	1.7 mm	2.5 mm
Measurement Range	1.0 mm	2.0 mm
Repeatability <sup>2</sup>	<0.1 µm	
Resolution (user selectable)	<0.1 µm	
Linearity % reading <sup>1</sup>	0.5	
Tip Force.Spring Push (horizontal attitude ± 20%)	1.5 N at mid position	
TipForce Pneumatic (horizontal attitude ± 20%)	1.0 N at mid position at 2 bar	
Temperature Coefficient	<0.01% FS / °C	

Mechanical	AU/0.5	AU/1
Flexure Material	Aluminium and Steel	
Mass (including tool holder, 20 mm tip holder and ball tip) excluding PIE/cable	<60 g	<70 g
Mass of Tool Holder and screw	6 g	
Gaiter Material	High Grade Polymer	
Cable Type and Length	2 m PUR	
Operating life (dependant on application)	>20 million cycles	
Pneumatic Operating Pressure <sup>3</sup>	1.5 bar to 2.5 bar relative	

Electrical	LVDT	Halfbridge
Energising Voltage	1 to 10 V rms	
Energising Frequency	2 to 20 kHz	
Energising Current	3 mA/V at 5 kHz	1.5 mA/V at 10 kHz
Calibration Load	10 kΩ	2 kΩ
Standard Calibration Parameter	200 mV/V/mm ±0.5% at 5 kHz, 3 V rms	73.5 mV/V/mm ±0.5% at 10 kHz, 3 V rms

Environmental	AU/0.5	AU/1
IP Rating	IP 65 (flexure only)	
Operating Temperature Flexure only	+5 to +85 °C	
Operating Temperature Flexure and Electronics	+5 to +65 °C	
Storage Temperature	-20 to +70 °C	

1 Linearity 1 µm or % reading, whichever greater, accuracy assumes tip holder < 20 mm and mounted on centre, spring operation with 1.5 N tip force.

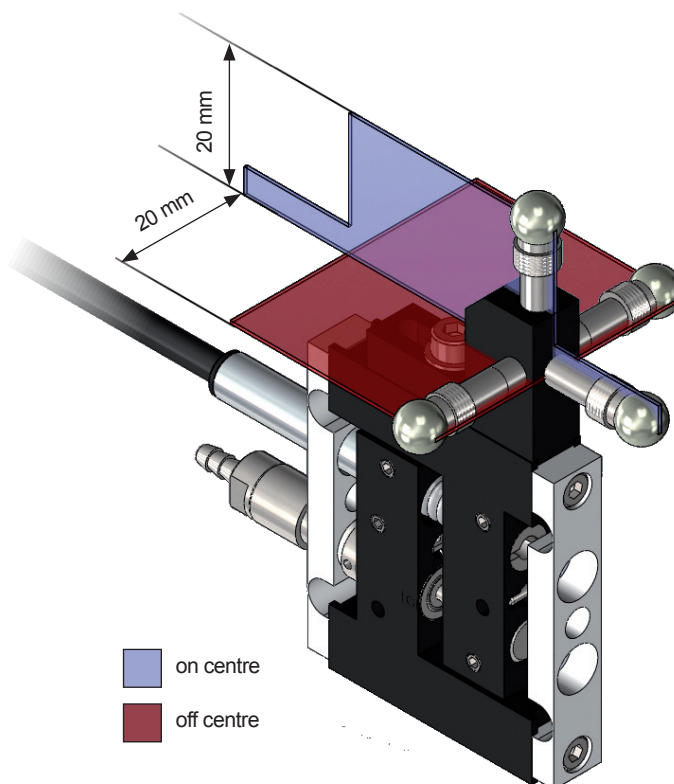
2 See Zonal Repeatability Specification for off center repeatability

3 For best gauging results it is recommended that the flexure is operated so that the spring provides the gauging force and the pneumatic cylinder is used to retract the flexure.

### Zonal Repeatability

For optimal gauging performance the recommended operation is on centre. The specification is valid when using Solartron standard tool holder, tip holder and tip. (*Tip used is 6.35 mm TC Ball Tip*)

Repeatability	AU/0.5 and AU/1
on centre	< 0.1 µm
off centre	< 0.5 µm



Analogue Flexure  
AU/0.5



For multiple sensor applications a minimum spacing between fixing hole centres of 8.5mm is recommended.

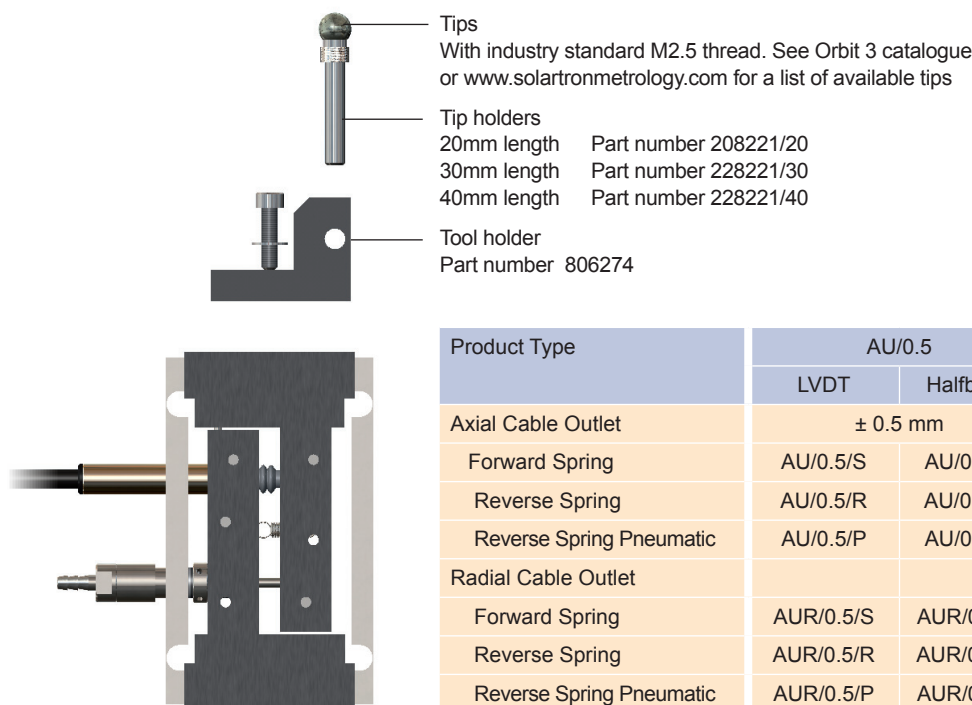
For 3D drawings please contact  
sales.solartronmetrology@ametec.com  
[www.solartronmetrology.com](http://www.solartronmetrology.com)

# Analogue Flexures: Components

The gauge is supplied inclusive of sensor but does not include the tool holder, tip carrier or tips. There are versions for spring push and pneumatic push with axial and radial cable exit.

Solartron supplies flexures calibrated to suit your non-solartron electronics. Please contact your nearest Solartron representative for details.

Accessories are common to both AU/0.5 and AU/1 versions.



Product Type	AU/0.5		AU/1	
	LVDT	Halfbridge	LVDT	Halfbridge
Axial Cable Outlet	± 0.5 mm		± 1.0 mm	
Forward Spring	AU/0.5/S	AU/0.5/SH	AU/1.0/S	AU/1.0/SH
Reverse Spring	AU/0.5/R	AU/0.5/RH	AU/1.0/R	AU/1.0/RH
Reverse Spring Pneumatic	AU/0.5/P	AU/0.5/PH	AU/1.0/P	AU/1.0/PH
Radial Cable Outlet				
Forward Spring	AUR/0.5/S	AUR/0.5/SH	AUR/1.0/S	AUR/1.0/SH
Reverse Spring	AUR/0.5/R	AUR/0.5/RH	AUR/1.0/R	AUR/1.0/RH
Reverse Spring Pneumatic	AUR/0.5/P	AUR/0.5/PH	AUR/1.0/P	AUR/1.0/PH

## United Kingdom - Head Office

Solartron Metrology  
Steyning Way  
Bognor Regis  
West Sussex  
PO22 9ST  
Tel: +44 (0) 1243 833333  
Fax: +44 (0) 1243 833322  
[Sales.solartronmetrology@ametek.com](mailto:Sales.solartronmetrology@ametek.com)

## France

Solartron Metrology  
Rond-point de l'Espine des Champs  
Buroplus - Bat. D  
Elancourt 78990  
Tel: +33 (0)1 30 68 89 50  
Fax: +33 (0)1 30 68 89 59  
[france.solartronmetrology@ametek.com](mailto:france.solartronmetrology@ametek.com)

## Germany

Ametek GmbH  
Solartron Metrology Division  
Rudolf-Diesel-Strasse 16  
40670 Meerbusch  
Tel: +49 (0) 2159 9136 500  
Fax: +49 (0) 2159 9136 505  
[vertrieb.solartron@ametek.de](mailto:vertrieb.solartron@ametek.de)

## India

Ametek Instruments India Private Limited  
1st Floor, Left Wing  
Prestige Featherlite Tech Park  
Plot #148, EPIP II Phase  
Whitefield, Bengaluru 560 066  
Karnataka, India  
Tel: +91 80 6782 3200  
Fax: +91 80 6782 3232

## USA

Solartron Metrology  
USA Central Sales Office  
915 N. New Hope Road, Suite C  
Gastonia, NC 28054  
Tel: +1 800 873 5838  
Fax: +1 704 868 8466  
[usasales.solartronmetrology@ametek.com](mailto:usasales.solartronmetrology@ametek.com)

## China

AMETEK Commercial Enterprise (Shanghai)  
Co. Ltd  
No. 1 AMETEK Road  
Ju Ting Economic Development Zone  
Shanghai 201615  
Tel: +86 21 5763 2509  
Fax: +86 21 5866 0969 Ext. 261/262  
[china.solartronmetrology@ametek.com](mailto:china.solartronmetrology@ametek.com)



Offices worldwide

Agent and distributor details available at  
[www.solartronmetrology.com](http://www.solartronmetrology.com)



Q 09540

Solartron pursues a policy of continuous development. Specifications in this document may therefore be changed without notice.

Datasheet 503004  
Issue 3  
EDCR 20461