

Displacement Sensors

High Performance Displacement Transducers S Series

Description

The S Series Displacement Sensor is the accumulation of many years' experience gained from Solartron's pedigree of producing excellent displacement sensors coupled with attention to market feedback.

The result is a large range of sensors both 'off the shelf' and 'customer specials' that are better able to satisfy today's demanding manufacturing and research applications.

Features

- <0.2% Linearity
- Analogue, DC and 4-20mA versions
- 19 mm diameter stainless steel body
- IP65 and IP67 option
- Excellent measuring range for the body length
- Multiple output options with integrated electronics
- Large bore to core clearance for ease of installation
- Excellent magnetic shielding
- Wide range of signal conditioning and instrumentation
- Absolute Positioning



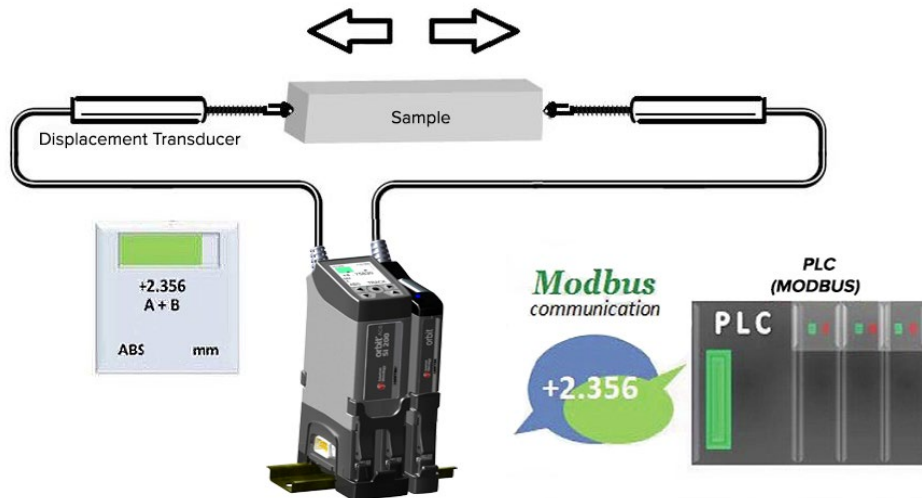
The stainless steel body and IP67 Sealing coupled with polymer bearings and 6 mm diameter carriers ensure the transducers keep working accurately and reliably even in wet and corrosive environments.

The large core to bore clearance enables easier installation.

Precision. Quality. Reliability

www.solartronmetrology.com • sales.solartronmetrology@ametek.com

Application Example



Technical Specification

Generic Product Types

LVDT	S002.5	S005.0	S007.5	S010.0	S015.0	S025.0	S050.0	S075.0	S100.0	S150.0
Voltage Output (±DC Bipolar)	V002.5	V005.0	V007.5	V010.0	V015.0	V025.0	V050.0	V075.0	V100.0	V150.0
Voltage Output (DC Unipolar)	V005.0	V010.0	V015.0	V020.0	V030.0	V050.0	V100.0	V150.0	V200.0	V300.0
Current Output (4-20mA)	I005.0	I010.0	I015.0	I020.0	I030.0	I050.0	I100.0	I150.0	I200.0	I250.0
Digital Output (Orbit)	SD005	SD010	SD015	SD020	SD030	SD050	SD100	SD150	SD200	SD250

Measurement

Measurement Range (LVDT±DC) (mm)	±2.5	±5	±7.5	±10	±15	±25	±50	±75	±100	±150
Measurement Range (4-20mA/DC/ORBIT) (mm)	5	10	15	20	30	50	100	150	200	300
Linearity (% FSO)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.25
Resolution µm (Note 1)	<0.1	<0.1	<0.1	<0.2	<0.2	<0.3	<0.5	<0.7	<1.0	<2.0
Pre-travel ±0.5 mm (Guided Versions only)	2.00	3.00	1.50	2.50	5.00	7.00	5.00	5.00	9.00	16.50
Post Travel ±0.5 mm (Guided Versions only)	4.50	5.50	4.00	5.75	9.25	9.50	7.50	7.40	11.25	18.50
Temperature Coefficients (%FSO/°C) LVDT	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.015	<0.01	<0.01
Temperature Coefficients (%FSO/°C) DC/4-20mA	<0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.015	<0.01	<0.01
Tip Force ±20% (Horizontal at middle of range) N	1.1	1.0	1.0	1.1	1.2	1.5	2.1	1.9	2.3	2.6

Mechanical

Nominal Mass (g) LVDT	58	66	67	80	92	110	153	167	243	344
Nominal Mass (g) (4-20mA/DC)	72	80	81	94	106	124	167	181	257	358
Nominal Mass of Core (g)	2.8	5.0	5.9	7.1	6.8	7.0	9.1	9.1	9.1	9.1
Body diameter (mm)	19 (+0.0, -0.2)									
Case material	300 Series Stainless Steel									
Core material	Nickel Iron									
Cable Standard Type/Length (m)	F.E.P. Style B (3)									

Electrical Interface (LVDT)

Energising Voltage (Vrms) at 5 kHz	1-10									
Energising Current at 5kHz (mA/V)	1.00	2.60	2.20	0.70	1.50	0.50	0.60	2.50	1.65	1.83
Sensitivity at 5kHz ±5% mv/V/mm	144.0	178.0	121.0	76.0	60.0	21.5	15.0	10.5	6.9	3.9

Electrical Interface (4-20mA & DC)

Input	10 to 30 V @ 30mA (Typ) or 4-20mA loop powered									
Noise (DC Output) measured in 500Hz	<0.2 % FSO									
Output Change with Power Supply Variation	<0.5 mV									
Bandwidth (-3dB)	500Hz									

Electrical Interface (ORBIT)

Bandwidth	Up to 460 Hz (selectable)									
Output	Solartron Orbit									
Power (VDC)	5±0.25 @ 0.06A									
Sealing (Orbit Module)	IP43									

Environment

Temperature (Standard LVDT)	-40 to +120 °C									
Temperature (HT LVDT)	-40 to +200 °C									
Operating/Storage Temperature (4-20mA/DC)	0 to +65 / -20 to 85 °C									
Sealing	IP65 or IP67									
Vibration Sinusoidal	1 to 10g rms linear 10 to 50 Hz & 10g rms 50Hz to 1kHz									
Vibration Random	DO160F Curve D									
Shock	Drop test from 1m onto hard surface									

Note 1: Resolution specification is only applicable to Orbit® digital transducers.

The resolution of LVDT transducers is effectively infinite and is only limited by the conditioning electronics

Technical Specification

Environment

Temperature (Standard LVDT)	-40 to +120 °C
Temperature (HT LVDT)	-40 to +200 °C
Operating/Storage Temperature (4-20mA/DC)	0 to +65 / -20 to 85 °C
Sealing	IP65 or IP67
Vibration Sinusoidal	1 to 10g rms linear 10 to 50 Hz & 10g rms 50Hz to 1kHz
Vibration Random	DO160F Curve D
Shock	Drop test from 1m onto hard surface

S Series Options

Standard Output Options
LVDT
±5V DC
±10V DC
0-5V DC
5-0V DC
0-10V DC
10-0V DC
4-20 mA
20-4 mA
Solartron Orbit (Digital)
TTL

Mechanical Options
Free Core
Free Core/Carrier
Guided Core
Tip
Spring Push
Universal Joints

Connection Options
Cable (wire ends)
Cable + Connector
Axial Connector
Orbit Module

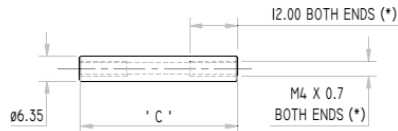
For non-standard products contact your local Sales Office or Distributor

Solartron can provide a range of LVDT Conditioning Modules and Readouts for use with the LVDT versions of the S Series. Please see the LVDT Conditioning Data Sheet

S Series Dimensions

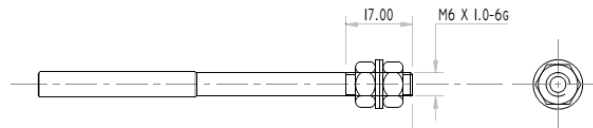
Free Core, Free Core with Carrier, Cable and Axial Connector Body Types

CORE

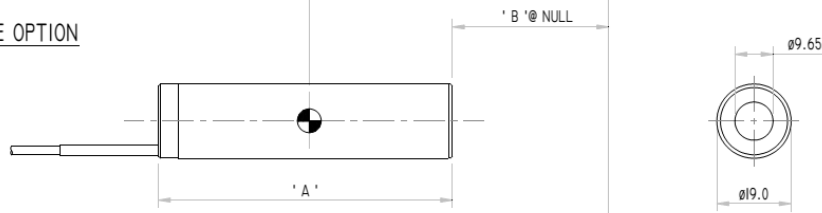


* FOR CORE LENGTH 16.5 THREAD LENGTH = 6.00MM

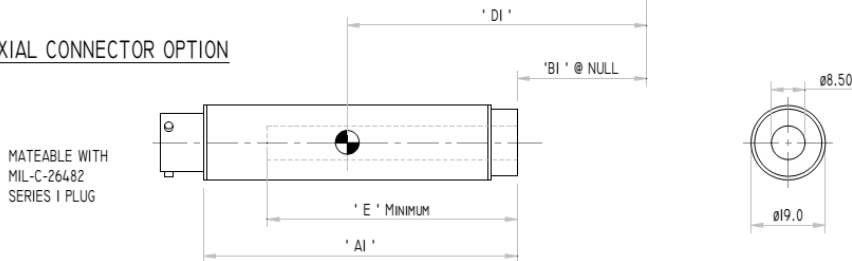
CORE CARRIER



CABLE OPTION



AXIAL CONNECTOR OPTION

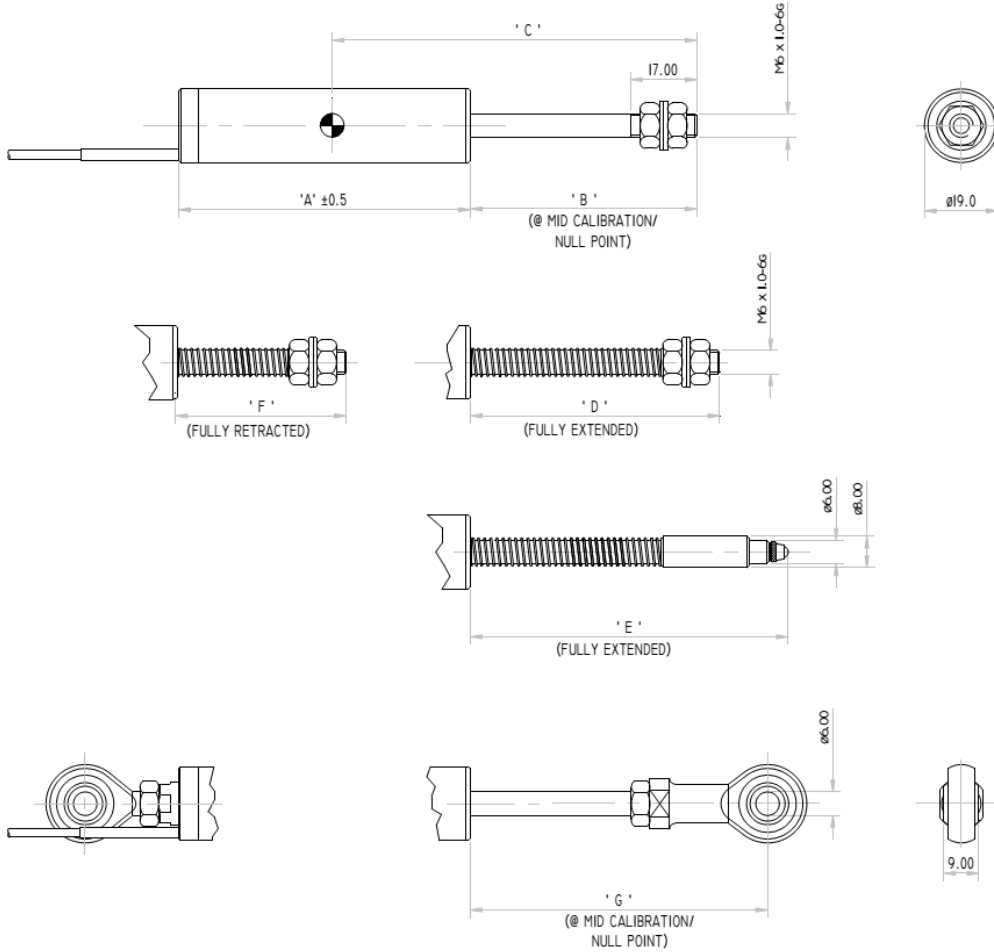


MATEABLE WITH MIL-C-26482 SERIES I PLUG

Range (mm)		Free Core and Free Core with Carrier					Axial Connector Free Core Free Core with Carrier					
LVDT	DC & 4-20mA	LVDT	DC 4-20mA	All			LVDT		DC 4-20mA		All	
		A	A	B	C	D	A1	E	A1	E	B1	D1
±2.5	5	33.50	72.50	40.75	16.50	55.25	60.50	41.75	93.50	73.75	39.00	63.25
±5	10	53.00	92.00	48.25	29.00	72.50	79.50	62.50	110.50	93.50	46.50	80.50
±7.5	15	60.00	99.00	51.25	34.00	79.00	86.50	69.50	120.00	100.50	45.50	87.00
±10	20	74.50	113.50	58.00	40.00	93.00	101.50	84.00	134.50	115.00	56.25	101.00
±15	30	89.00	128.00	67.50	37.50	109.75	116.50	98.25	148.50	129.25	65.75	117.75
±25	50	110.50	149.50	80.25	38.50	133.25	137.50	120.00	170.50	151.00	78.50	141.25
±50	100	168.00	206.75	115.25	50.00	197.00	194.50	177.25	227.50	208.25	113.50	205.00
±75	150	218.50	257.00	161.00	50.00	268.00	245.50	227.50	278.50	258.50	159.50	276.00
±100	200	276.00	314.50	192.25	50.00	328.00	301.50	285.00	333.50	316.00	190.75	336.00
±150	300	391.00	429.50	300.75	50.00	494.00	416.50	400.00	448.50	431.00	299.25	502.00

S Series Dimensions

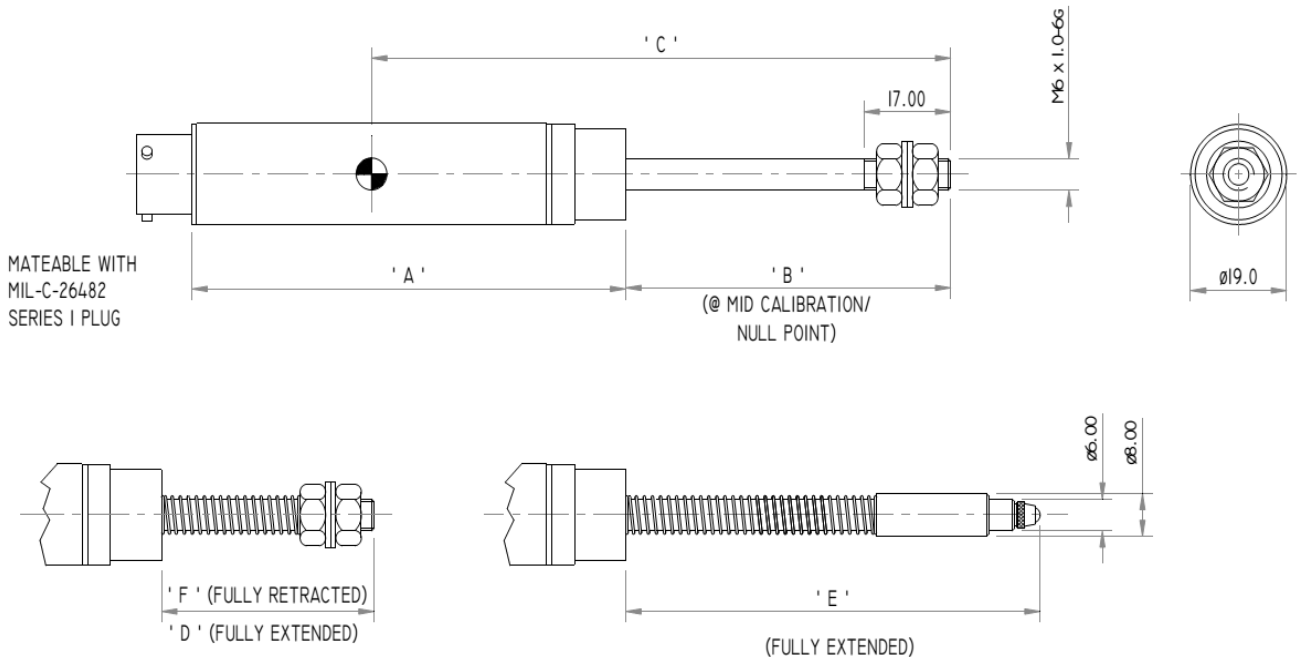
Guided Core, Spring Push and Universal Joints



Range (mm)		Guided Core, Spring Push and Universal Joints Cable Type							
LVDT	DC & 4-20mA	LVDT	DC	All					
		A	A	B	C	D	E	F	G
±2.5	5	55.00	94.00	31.50	56.75	36.00	52.50	24.50	49.50
±5	10	74.50	113.50	39.00	74.00	47.00	63.50	28.50	57.00
±7.5	15	81.50	120.50	41.75	80.50	51.00	67.50	30.50	59.75
±10	20	96.00	135.00	48.50	94.50	62.00	78.50	33.00	66.50
±15	30	110.50	149.25	58.25	111.25	80.00	96.50	34.00	76.25
±25	50	132.00	171.00	71.00	134.75	103.00	119.50	36.50	89.00
±50	100	189.50	228.50	106.00	198.50	161.00	177.50	48.50	124.00
±75	150	240.00	278.50	151.75	269.50	232.00	248.50	69.00	169.75
±100	200	297.50	336.00	183.00	329.50	292.00	CF	71.50	CF
±150	300	412.50	451.00	291.25	495.50	458.00	CF	122.50	CF

CF = Consult Solartron for this option

S Series Dimensions
Axial Connector Guided Core, Spring Push



All Dimensions are Nominal for Full Dimensional Detail see website

Range (mm)		Guided Core, Spring Push Axial connector Type						
LVDT	DC & 4-20mA	LVDT	DC	All				
		A	A	B	C	D	E	F
±2.5	5	68.50	101.50	32.50	64.75	39.00	55.50	27.25
±5	10	87.50	118.50	40.00	82.00	50.00	66.50	30.25
±7.5	15	94.50	128.00	43.00	88.50	54.00	70.50	32.35
±10	20	109.50	142.50	49.75	102.50	65.00	81.50	34.75
±15	30	124.50	156.50	59.25	119.25	83.00	99.50	35.75
±25	50	145.50	178.50	72.00	142.75	106.00	122.50	38.25
±50	100	202.50	235.50	107.00	206.50	164.00	180.50	50.25
±75	150	253.50	286.50	153.00	277.50	235.00	251.50	71.00
±100	200	309.50	341.50	184.25	337.50	295.00	CF	73.50
±150	300	424.50	456.50	292.75	503.50	461.00	CF	124.50

CF = Consult Solartron for this option

For 3D drawings, please contact sales.solartronmetrology@ametek.co.uk

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

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

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

Brazil

Ametek do Brasil, Ltda
Rod. Eng Ermenio de Oliveira Penteado, Km 57, SP75
Bairro Tombadouro
13337-300, Indaiatuba, SP, Brazil
Tel: +55 19 2107 4126

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

China

AMETEK Commercial Enterprise (Shanghai) Co. Ltd
No. 155 Puhui Road
Ju Ting Economic Development Zone
Shanghai 200131, China
Tel: +86 21 5763 2509
Fax: +86 21 5866 0969 Ext. 261/262
china.solartronmetrology@ametek.com



**Solartron
Metrology**

Precision Driven

Offices worldwide
Agent and distributor details
available at
www.solartronmetrology.com



Q09540

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

AMETEK[®]
ULTRA PRECISION TECHNOLOGIES

Precision. Quality. Reliability

www.solartronmetrology.com • sales.solartronmetrology@ametek.com