AMETEK®
ULTRA PRECISION TECHNOLOGIES

Solartron Metrology
Precision Driven

Optimum Series

Narrow bodied high performance displacement sensors



Description

The Optimum Series of LVDT sensors is an ideal choice for process control and research applications. The free core variants are designed for precise linear positioning and measurement of moving parts where zero friction and hysteresis is required within a restricted space.

The free core version is available with an optional lightweight core for mounting on to small, rapidly moving structures without affecting their performance and integrity, which is important in some control applications.

A version of a lightweight core with a 1.9 mm diameter is available which improves core to bore clearance, making alignment easier. A light titanium core carrier can be supplied on request.

The optimum is also available as a guided product and with universal joints either as an LVDT or digital product for use in applications where it is not possible to mount the core and carrier on the moving part.

Features

Good measurement range to body length ratio
Small body diameter
Larger radial bore clearance
Rugged construction
High temperature (200 °C) available on request
High pressure (vented case) available

Technical Specification

Generic Product Types

LVDT	OP1.5	OP6	OP10	OP12.5	OP25
Digital Output (Orbit)	DO3	DO12	DO20	DO25	DO50

Measurement

Measurement Range LVDT (mm)	±1.5	±6	±10	±12.5	±25
Measurement Range ORBIT (mm)	3	12	20	25	50
Linearity (% FSO)	<0.25	<0.25	<0.25	<0.25	<0.25
Resolution µm (Note 1)	<0.10	<0.10	<0.10	<0.20	<0.40
Pre-travel ±0.5 mm (Guided Versions only)	1.78	1.53	1.53	2.33	2.10
Post Travel ±0.5 mm (Guided Versions only)	1.20	1.67	1.67	2.47	2.30
Temperature Coefficients (%FSO/°C) LVDT	<0.05	<0.05	<0.05	<0.05	<0.05
Temperature Coefficients (%FSO/°C) DC/4-20mA	<0.07	<0.07	<0.07	<0.07	<0.07
Tip Force ±20% (Horizontal at middle of range) N	0.66	0.94	0.94	0.93	0.50

Mechanical

Nominal Mass (g) LVDT	7	12	12	20	20
Nominal Mass of Core (g)	1.5	2.5	2.0	3.5	4.0
Body diameter (mm)	9.52				
Case material	400 Series Stainless Steel				
Core material	Nickel Iron				
Cable Standard Type/Length (m) (Note 2)	F.E.P. / 3 Style A or B				

Electrical Interface (LVDT)

Energising Voltage (Vrms) at 5 kHz	1-5				
Energising Current at 5kHz (mA/V)	6.0	4.5	3.2 (3)	7.0	1.25
Sensitivity at 5kHz ±5% mv/V/mm	108	78	85 (3)	67	25

Electrical Interface (ORBIT)

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

Environment

Operating Temperature (°C)	-40 to +150
Storage Temperature (°C)	-40 to +150
Sealing	Splash Proof

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

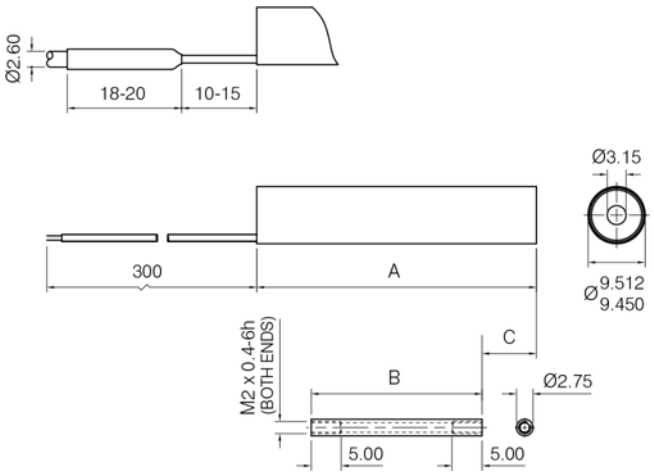
Note 2: Cable Style A comprises of individual twisted cores , Style B comprises a sheathed and screened cable

Note 3: OP10 at 20 kHz

OP Series Dimensions

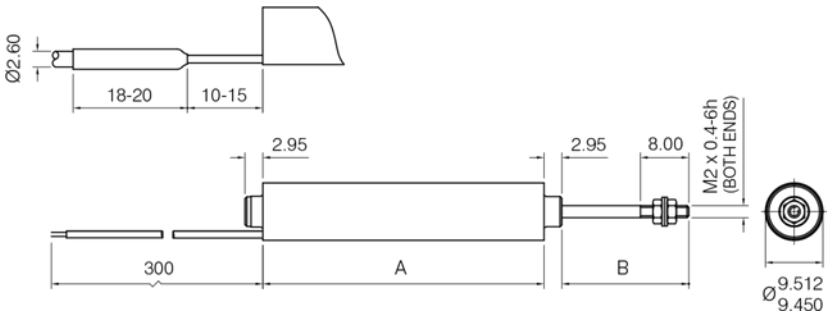
Free Core

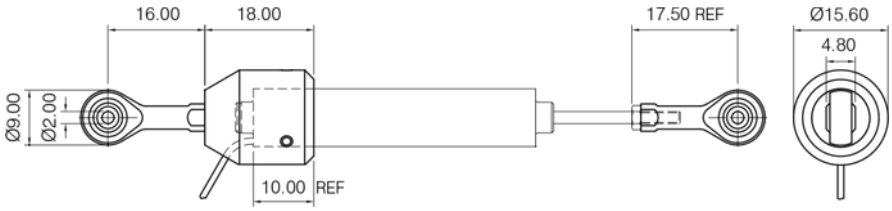
Type	A	B	C (at Null)
OP1.5	20.60	11.00	4.80
OP6	46.50	28.40	9.05
OP10	46.50	20.40	13.05
OP12.5	83.50	50.80	16.35
OP25	83.50	26.00	28.75



Guided Core & Universal Joints

Type	A	B (at Null)
OP1.5	20.60	14.00
OP6	46.50	20.90
OP10	46.50	29.40
OP12.5	83.50	31.50
OP25	83.50	48.65





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

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