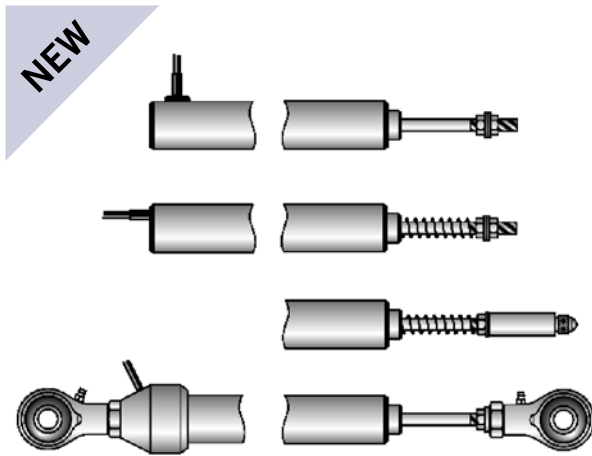


Orbit® Digital Displacement

LVDT Technology fully compatible with Solartron's Orbit® Network

Datasheet
502637
Issue 3.1



Features

DB Series

- ▶ Measurement Range, 3.0 mm to 250 mm (0.12" to 10")
- ▶ IP65 Environmental Rating
- ▶ Guided Core Assemblies
- ▶ International Standard Diameter
- ▶ Stainless Steel Body and Carrier
- ▶ High Temperature (200°C) Version

DO Series

- ▶ Measurement Range, 3.0 mm to 25 mm (0.12" to 1")
- ▶ Small Body Diameter
- ▶ Good Stroke to Length Ratio
- ▶ Rugged Construction

Description

Solartron Metrology has taken the proven design of the Mach 1 and Optimum series transducers and added the ability to connect to the Orbit Network. The new digital range of displacement transducers can operate as stand alone devices on the network or combined with other orbit modules, such as an Encoder Input Module, resulting in a greater versatility in measurement processes.

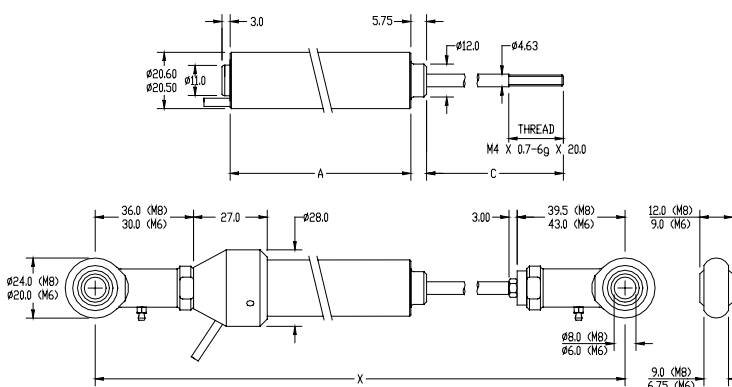
The DB family of displacement transducers provides 12 different measurement ranges from 3 mm to 250 mm (0.12 to 10 inch). All transducer models are guided versions and feature return spring or universal joints, there are also special versions that operate at high temperatures up to 200°C (392°F)(Transducer only, not electronics PIE).

The DO series offer the benefit of a smaller overall body size including a small body diameter. This together with a good measurement range to body length ratio make the Optimum transducer an ideal device for use where space is limited.

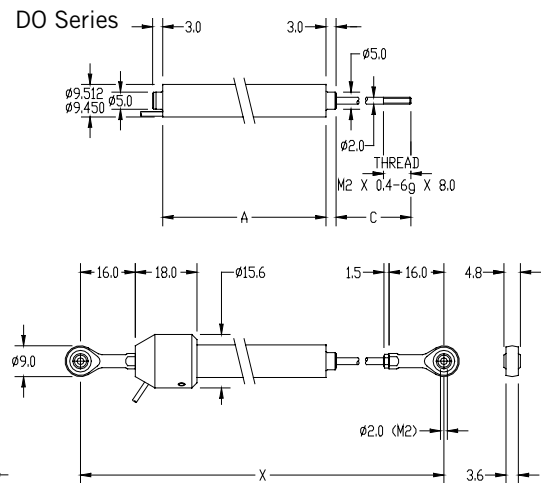
The transducer signals can be acquired directly into a PC, PLC or Solartron's Digital Readout. For PC applications the *Orbit Windows Support Pack*, which includes a standard *Windows DLL Library* and a *Com-Object Library*, allows readings to be acquired into any Windows application. Driver support is provided for LabVIEW® and other high level software as well as a users' own application program for example.

Mechanical Drawing

DB Series



DO Series



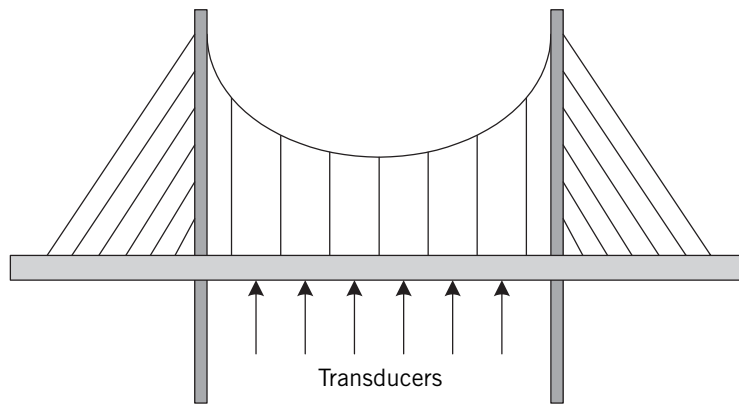


Figure 1
Long term measurement of deformation of a bridge structure

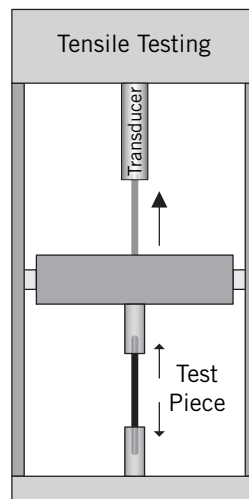


Figure 2
Monitoring the extension of a specimen in a tensile testing machine

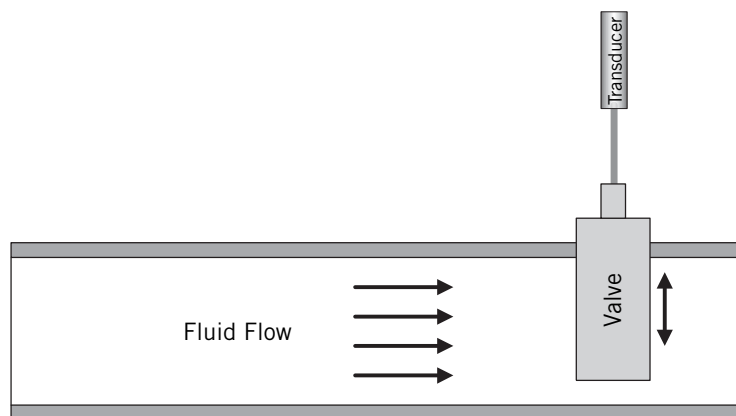


Figure 3
Monitoring the valve position and providing a feedback control signal for regulating the fluid flow

Technical Specification - DB series

Measurement

	DB03	DB05	DB10	DB15	DB20	DB30	DB50	DB100	DB150	DB200	DB250
Linear Measurement Range (mm)	3	5	10	15	20	30	50	100	150	200	250
Linear Measurement Range (inches)	0.12	0.2	0.4	0.6	0.8	1	2	4	6	8	10
Linearity % of Full Range	0.25										
Resolution	User selectable to < 0.1 µm										

Mechanical

	DB03	DB05	DB10	DB15	DB20	DB30	DB50	DB100	DB150	DB200	DB250
Standard Cable Length (m)	3										
Transducer Weight (excluding cable) (g)	38	50	60	82	86	105	126	195	265	350	400
Right Angle Option	yes	yes	no	no	no	no	no	no	no	no	no
Body Length (A) (mm)	28.6	46.3	62.2	83.7	112.5	141.2	169.9	256.1	327.9	399.7	457.1
Material (body)	400 Series Stainless Steel										
Pretravel (mm)	1.9	3.6	6.6	11.8	6.2	9.1	5.9	9.5	15.4	8.3	12.0
Total Mechanical Travel (C) (mm)	5	12	23	39	32	48	62	119	181	217	240
Length of Carrier (protruding at zero position) (mm)	34	38	51	57	70	83	107	179	246	309	375
Mass of Moving Components (g)	13	16	19	22	28	33	39	55	65	80	90
Spring Rate (g/mm)	3.03	3.03	2.42	2.92	3.51	3.07	2.05	2.99	2.24	1.68	1.41
Minimum Upward Force (g)	55	54	54	55	53	52	56	52	51	57	58
Horizontal Force at Mid Stroke (g)	80	90	100	130	140	160	160	280	320	320	340
Length (x) with M6 universal joints (mm)	142	164	193	220	262	303	357	514	654	789	911
Length (x) with M8 universal joints (mm)	138	161	190	217	258	300	353	511	650	785	908

Environmental

	DB03	DB05	DB10	DB15	DB20	DB30	DB50	DB100	DB150	DB200	DB250
Operating Temperature (type C, D)	-55°C to +200°C										
Operating Temperature (type A, B)	-55°C to +150°C										
IP Rating	IP65										

Technical Specification - DO series

Measurement

	D003	D012	D025
Linear Measurement Range (mm)	3	12	25
Linear Measurement Range (inches)	0.12	0.50	1.00
Linearity % of Full Range	0.25		

Mechanical

	D003	D012	D025
Standard Cable Length (m)	0.5		
Material (body)	400 Series Stainless Steel		
Transducer Weight (excluding cable) (g)	7	12	20
Right Angle Option	no	no	no
Body Length (A) (mm)	20.7	46.6	83.6
Pretravel (mm)	1.78	1.53	2.33
Total Mechanical Travel (C) (mm)	6.72	15.22	29.82
Length of Carrier (protruding at zero position) (mm)	15.42	26.77	43.97
Mass of Moving Components (g)	1.5	2.5	3.5
Spring Rate (g/mm)	14.2	6.6	5.2
Minimum Upward Force (g)	69	82	73
Horizontal Force at Mid Point (g)	66	94	93
Length (x) with M6 universal joints (mm)	72.70	110.02	164.22

Environmental

	D003	D012	D025
Operating Temperature	-40°C to +150°C		
IP Rating	IP65		

Ordering Guide for Digital Displacement Sensors



Series Type

A	150°C rated Axial Cable outlet*
B	150°C rated Radial Cable outlet (DB03 & DB05 only)*
C	200°C rated Axial Cable outlet*
D	200°C rated Radial Cable outlet (DB03 & DB05 only)*
O	DO (150°C rated Axial only)*
P	DO (Cable protection to 150°C)*

(*Temperature range for probe only, not electronics)

Total Measurement Range

x	x	x	•	y	x = millimetres • y = 1/10 millimetres
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Core / Carrier Type

G	Guided Core/Carrier - M4 x 0.7 thread (DB only)
R	Guided Core/Carrier - 6-40 UNF thread (DB only)
J	Guided Core/Carrier - M2 x 0.4 thread (DO only)

Electrical Connections

z	z	z = cable length in metres from transducer to electronics (PIE) (Solartron approval required for cable length of 10 m or above)
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Accessories

Spares are available to order separately

Springs

Return springs may be fitted to guided carrier versions

Part Number DB series		Part Number DO series	
DB03	207181/B1.5	D003	208158/O15
DB05	207181/B2.5	D012	208158/O60
DB10	207181/B5	D025	208158/O125
DB15	207181/B7.5		
DB20	207181/B10		
DB30	207181/B15		
DB50	207181/B25		
DB100	207181/B50		
DB150	207181/B75		
DB200	207181/B100		
DB250	207181/B125		

Universal Joint Kit

Consisting of 2 universal joints and 1 mounting adaptor

	Part Number
6 mm Ø	802967
8 mm Ø	802578
DO	804352

Ball Tip

Consisting of 3 mm carbide ball and adaptor to fit guided carrier

	Part Number
DB series	803127
DO series	804619



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