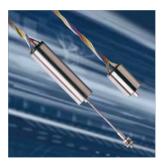
SM/MD/DF series

Miniature displacement sensors

SM



- ► Rugged construction
- ► Short body length
- Good performance

SM sensors cover two standard types in two measurement ranges ±1mm and ±3mm. They are designed for measuring displacement in applications where infinite resolution and precise repeatability is required in a very small size.

The coils are wound on a PPS (40% GL) former and housed in a stainless steel case. The epoxy bonded construction makes the device suitable for operation in wet and oily environments and in applications with high levels of mechanical stress.

The core carrier assembly moves friction free within the sensor, an alternative option where the core is provided threaded at both ends is available allowing the user to manufacture their own carrier interface. Recommended carrier material is titanium.

MD



- Small diameter
- ► Right angle cable outlet option
- Low core weight
- Screened cable

The small case diameter (6mm and 8mm) allows for easy installation in confined spaces. A right angle output facility is available as a retrofit for the 8mm version.

The low core weight makes this range ideal for use in low inertia systems. Cross talk is prevented by the screened cable, which also allows for multiple use of these sensors in close proximity.

DF



- ► Measurement range to 10mm
- ► High Output
- Excellent repeatability
- ▶ Low power

The DF dc miniature displacement sensor has a friction-free core and the DFg has a free guided core incorporating Delrin bearings. All types incorporate a linear variable differential transformer (LVDT) as the measuring source together with oscillator, demodulator and filter providing a self-contained unit accepting a DC input and providing a DC output relative to armature position.

With high linearity and low mass of moving parts, these are ideally suited to applications in civil, mechanical, chemical and production engineering. Also, when mounted in a suitable load-sensitive member such as a proof ring or diaphragm, they can provide load or pressure measurement.

Sensor										
LVDT with Free Core	SM1	SM3	M6D1	MD1	MD2.5	MD5	MD10	-		
Half Bridge (HB) with Free Core		-	M6DH1	MD1H	MD2.5H	MD5H MD10H		-		
DC Output with Free Core			-				DF1	DF2.5	DF5	
DC Output with Guided Core		-							DFg2.5	DFg5
Measurement										
Measurement Range (mm)	±1	±3	±1	±1	±2.5	±5	±10	±1	±2.5	±5
Linearity (% FSO)	0.	25	-					0.30		
Linearity (% Reading)		-	0.5				-			
Resolution μ m ¹			<0.1				< 0.2	see Note 1		
Temperature Coefficients (%FSO/°C)	<0.	<0.03% <0.01%						< 0.025%		
Mechanical										
Body diameter (mm)	9.52		6h6	8h6				19.0		
Case Material	400 Stainless Steel									
Cable Type	PU									
Standard cable Length (m)	0	.5	2					3		
Standard cable Style		A	В							
Nominal Mass (g)	6.0	8.0	2.6	5.0	7.6	8.5	13.0	26.0	26.0	30.0
Nominal Mass of Moving Parts (g)	0.50	1.50	0.10	0.	20	0.30	0.70	1.00	1.00	1.20
Environment										
Operating Temperature (°C)	-40 to	+85	-10 to + 80					-5 to +70		
Storage Temperature (°C)	-40 to	+100	-40 to +105					-10 to + 80		
Sealing	Splash Proof									
Electrical Interface										
Energising Voltage			1	1-10 (Vrms)				17-24 (VDC)		
Energising (LVDT) Current at 5kHz (mA/V)	3.8	1.8	3.0	1.8	2.0	1.0	0.6	-		
Energising Current (HB) at 10kHz (mA/V)		-	1.2	1.0	-	1.2	-	-		
Energising Current (DC) at 10V (mA)		-							10	
frequency Response (-3db) Hz	Depends on Conditioning Electronics							50		75
Sensitivity at 10VDC ±10% mV/V/mm								75 5		54
Sensitivity at 5kHz ±10% mV/V/mm	142	136	269	210	150	105	33	-		
Sensitivity (HB) at 10kHz ±10% mV/V/mm	-		88	83	82	51	33	-		

Note 1: Resolution specification is only applicable to ORBIT digital sensors. The resolution of LVDT sensors is effectively infinite and is only limited by the conditioning electronics.

Cable Style A comprises of individual twisted cores Cable Style B comprises a sheathed and screened cable

Also see...

Dimensions and drawings Page 38

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