



#### **FEATURES**

- Unipolar DC operation
- Low power consumption
- Shock and vibration tolerant
- Captive core option (available on select models)
- AISI 400 Series stainless steel housing
- CE compliant
- Calibration certificate supplied with each unit

#### **APPLICATIONS**

- Factory floor automation
- Position feedback
- Data collection
- Process control
- Metrology
- Portable / battery powered measurements
- General industrial

## **DC-SE SERIES**

# General purpose DC LVDT

#### **SPECIFICATIONS**

- Single-Ended DC operation
- Low 6mA current consumption
- Stroke ranges from 0.1 to 6 inches
- 0.25% linearity
- Stainless steel housing
- Double magnetic shielding
- EMI/ESD protected
- 1 meter long shielded cable
- Captive core option

**The DC-SE Series** LVDTs operate on a single-ended DC power supply, and provide either a 0 to +5VDC or +1 to +6VDC output signal (wiring dependent) over their full range of displacement. The extremely linear and low noise output makes the DS-SE Series the perfect choice for interfacing to unipolar inputs of analog-to-digital converters, PLC's, and various data collection systems.

The DC-SE is internally regulated, thus providing immunity to line ripple and allowing operation from unregulated power sources of between 8.5 and 28VDC. The very low typical 6mA current draw is ideal for remote or battery powered applications. The highly stable oscillator provides excellent temperature performance throughout the operating temperature range, while synchronous demodulation insures superb noise rejection.

The built-in EMI/ESD protection and the shielded cable permit operation in noisy industrial environments, with double magnetic shielding providing the utmost protection from stray fields.

Like in most of our LVDTs, the DC-SE windings are vacuum impregnated with a specially formulated, high temperature, flexible resin, and the coil assembly is potted inside its housing with a two-component epoxy. This provides excellent protection against hostile environments such as high humidity, vibration and shock.

Available in a variety of stroke ranges from 0.1 to 6 inches, the DC-EC Series can be configured with a number of standard options including metric threaded core, guided core and small diameter/low mass core.

<u>Captive core option:</u> The DC-EC features an optional captive core design (available for most models) that greatly simplifies installation. The core rod and bearing assembly includes a Bronze bearing on the front end for self-alignment, while a PTFE sleeve allows low-friction travel through the stainless steel boreliner (spool tube). The core rod and the bearing assembly are both field serviceable.

## PERFORMANCE SPECIFICATIONS

ELECTRICAL SPECIFICATIONS								
Parameter	DC-SE 100 DC-SE 250 DC-SE 500 DC-SE 1000 DC-SE 2000 DC-SE 4000 DC-SE 6000							
Stroke range	0.10 [2.54]	0.25 [6.35]	0.50 [12.7]	1.0 [25.4]	2.0 [50.8]	4.0 [101.6]	6.0 [152.4]	
Sensitivity, VDC/inch	50	20	10	5	2.5	1.25	0.833	
Sensitivity, VDC/mm	1.97	0.787	0.394	0.197	0.098	0.0492	0.0328	
Input voltage	+8.5 to +28V	DC						
Line regulation	1mV/VDC, m	aximum; 0.2m	nV/VDC, typic	al				
Input current	10mA maxim	um; 6mA typi	cal					
Output voltage	0 to +5VDC (	4 wire), +1 to	+6VDC (3 wir	e) - Increases w	hen the core is o	displaced towards	the cable	
Output current	5mA maximu	5mA maximum						
Non-linearity	±0.25% of FF	±0.25% of FR, maximum						
Output ripple & noise	10 mVRMS,	10 mVRMS, maximum						
Stability	0.125% of FS	0.125% of FSO						
Temp. coefficient of sensitivity	0.028%/ºF [0	0.028%/ºF [0.05%/C], maximum						
Frequency response	200 Hertz @ -3dB							
	ENVIRONMENTAL SPECIFICATIONS & MATERIALS							
Temperature range	-13°F to +185°F [-25°C to 85°C] Operating; -65°F to +257°F [-55°C to 125°C] Survival							
Shock survival	250 g (11ms half-sine)							
Vibration tolerance	10 g up to 2kHz							
Housing material	AISI 400 Series stainless steel							
Electrical connection	Cable with 4 conductor, 28AWG, stranded copper, braided shield and polyurethane jacket, 39 inches [1 meter] long. <b>Shield is connected to case.</b>							
IEC 60529 rating	IP61							

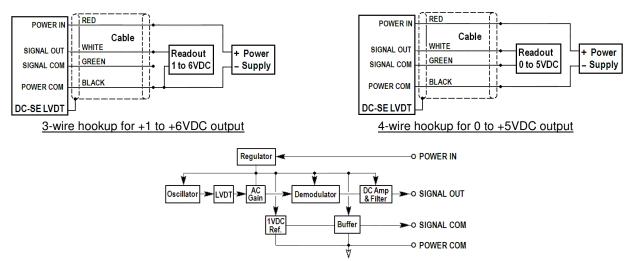
#### Notes:

All values are nominal unless otherwise noted; Dimensions are in inch [mm] unless otherwise noted

FR: Full Range is the stroke range, end to end; FR=S for 0 to S stroke range

FSO (Full Scale Output): Largest absolute value of the outputs measured at the ends of the range

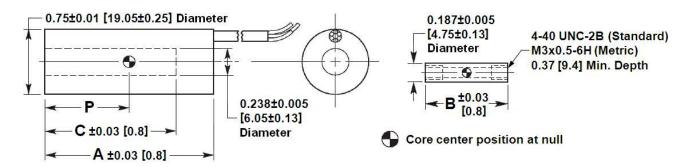
## WIRING SCHEMATIC & BLOCK DIAGRAM



Important: NEVER connect SIG COM and PWR COM together; NEVER connect SIG COM to other DC-SE's

MECHANICAL S	SPECIFICATIONS -	NON-CAPTIVE CORE	(STANDARD)
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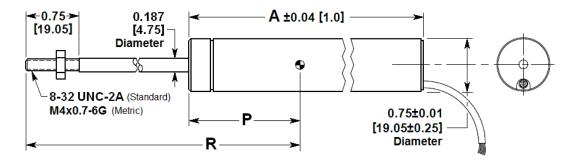
Parameter	DC-SE 100	DC-SE 250	DC-SE 500	DC-SE 1000	DC-SE 2000	DC-SE 4000	DC-SE 6000
Main body length	3.51	4.36	5.20	6.89	8.87	12.25	17.3
"A"	[89.2]	[110.7]	[132.1]	[175.0]	[225.3]	[311.2]	[439.4]
Core length	0.585	1.10	1.80	3.00	3.80	5.30	6.20
"B"	[14.9]	[27.9]	[45.7]	[76.2]	[96.5]	[134.6]	[157.5]
Length of bore	1.21	2.06	2.91	4.59	6.57	9.95	15.06
"C"	[30.7]	[52.2]	[73.8]	[116.7]	[166.8]	[252.8]	[382.5]
Center of core	0.51	0.93	1.35	2.20	3.19	4.88	7.56
position at null "P"	[13.0]	[23.6]	[34.3]	[55.9]	[81.0]	[124.0]	[192.0]
Body weight oz	2.54	3.21	3.39	4.38	6.25	8.33	10.48
[gram]	[72]	[91]	[96]	[124]	[177]	[236]	[297]
Core weight oz	0.035	0.11	0.18	0.28	0.35	0.53	0.64
[gram]	[1]	[3]	[5]	[8]	[10]	[15]	[18]



Dimensions are in inch [mm]

## MECHANICAL SPECIFICATIONS - CAPTIVE CORE OPTION

Parameter	DC-SE 100	DC-SE 250	DC-SE 500	DC-SE 1000	DC-SE 2000	DC-SE 4000	DC-SE 6000
Main body length "A"	3.85	4.70	5.54	7.23	9.21	12.59	17.64
	[97.8]	[119.4]	[140.7]	[183.6]	[233.9]	[319.8]	[448.1]
Core rod position at null "R"	3.69	4.28	4.75	6.04	7.90	10.52	15.27
	[93.7]	[108.7]	[120.6]	[153.4]	[200.7]	[267.2]	[387.9]
Center of core position at null "P"	0.85	1.27	1.69	2.54	3.53	5.22	7.90
	[21.6]	[32.2]	[42.9]	[64.5]	[89.7]	[132.6]	[200.7]
Weight, oz [gram]	1.52 [43]	4.09 [116]	4.34 [123]	5.51 [156]	7.62 [216]	10.13 [287]	12.92 [366]



Dimensions are in inch [mm]

## **ORDERING INFORMATION**

Description	Model	Part Number	
0.10 inch LVDT	DC-SE 100	02560990-000	
0.25 inch LVDT	DC-SE 250	02560991-000	
0.50 inch LVDT	DC-SE 500	02560992-000	
1 inch LVDT	DC-SE 1000	02560993-000	

Description	Model	Part Number	
2 inch LVDT	DC-SE 2000	02560994-000	
4 inch LVDT	DC-SE 4000	02560995-000	
6 inch LVDT	DC-SE 6000	02560996-000	

OPTIONS	
Metric threaded core (M3 x 0.5-6H)	XXXXXXXX-006
Guided core	XXXXXXXX-010
Small-diameter/low-mass core (consult factory for mass & dimensions)	xxxxxxxx-020
Captive core	XXXXXXXX-200

Note: Add multiple option dash numbers together to determine proper ordering suffix Example: DC-SE 1000, 1 inch stroke, with metric threaded and guided core, P/N 02560993-016

ACCESSORIES		
DC power supply (15VDC)	Model PSD 40-15	02291339-000
Core connecting rod, 6 inches long, 4-40 threads		05282946-006
Core connecting rod, 12 inches long, 4-40 threads		05282946-012
Core connecting rod, 24 inches long, 4-40 threads	05282946-024	
Core connecting rod, 36 inches long, 4-40 threads		05282946-036
Core connecting rod, 6 inches long, M3x0.5 metric threads	05282977-006	
Core connecting rod, 12 inches long, M3x0.5 metric threads	05282977-012	
Mounting block		04560950-000

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