

DC-SE Series

General Purpose LVDT

The new Schaevitz® DC-SE series has been designed to meet today's requirements for operation from a single-ended power supply. The output is also single-ended over the full range displacement of the LVDT making the unit compatible with unipolar inputs on analog-to-digital converters and programmable logic controllers, etc.

The DC-SE design features internal regulation which provides immunity from line ripple and allows operation from an unregulated 8.5 to 28 VDC supply. The DC-SE current draw is 6 mA (typical), making remote or portable operation from batteries possible. The incorporation of a new high stability oscillator provides improved temperature stability, while the synchronous demodulator insures excellent noise rejection.

The electronics design uses surface mount technology to keep costs and size of the unit to a minimum. Built-in EMI/ESD protection and shielded cable allows operation in industrial environments. The DC-SE meets CE requirements.

Features

- CE certified**
- Operates from single-ended, unregulated 8.5–28 VDC supply**
- 0–5 VDC or 1–6 VDC output voltage, depending on customer hook up**
- Low power consumption**
- 200 Hz frequency response**
- 1 meter shielded cable**
- Calibration certificates supplied with all models**

Applications

- Positioning sensing feedback, test labs, ram guide and platen position feedback**

Options

- Metric thread core**
- Guided core**
- Small diameter/low mass core**
- Captive core option for convenient installation**

Performance and Electrical Specifications¹

DC-SE Series Model Number	Nominal Linear Range		Scale Factor		Response
	inches	mm	V/inch	V/mm	-3 dB Hz
100 DC-SE	0 – 0.100	0 – 2.5	50	2.00	200
250 DC-SE	0 – 0.250	0 – 6.25	20	0.80	200
500 DC-SE	0 – 0.500	0 – 12.5	10	0.40	200
1000 DC-SE	0 – 1.000	0 – 25	5	0.20	200
2000 DC-SE	0 – 2.000	0 – 50	2.5	0.10	200
4000 DC-SE	0 – 4.000	0 – 100	1.25	0.05	200
6000 DC-SE	0 – 6.000	0 – 150	0.83	0.03	200



Specifications

Input Voltage	+8.5 to +28 VDC
Input Current	<10 mA (6 mA typical)
Line Regulation	<1mV/V (0.2mV/V typical)
Operating Temperature	
Range	-13°F to 185°F (-25°C to 85°C)
Storage Temperature	
Range	-65°F to +200°F (-55°C to 95°C)
Output Voltage	0–5 VDC (4 wire), 1–6 VDC (3 wire)
Ripple and Noise	Less than 10 mV rms
Linearity	0.25% full range
Stability	0.125% full scale
Temperature—Coefficient	
of Scale Factor	0.025%/°F (0.05%/°C) max
Shock Survival	250 g for 11 milliseconds
Vibration Tolerance	10 g up to 2 kHz
Housing Material	AISI 400 series stainless steel
Cable	4 conductor, 28 AWG stranded copper with braided shield and polyurethane jacket, 1 meter.
EMC	CE certified (The DC-SE series, when correctly installed, comply with the EMC Directive 89/336/EEC generic standards for residential commercial, light industrial and industrial environments.)
Output Impedance	Less than 1 ohm



How to Order

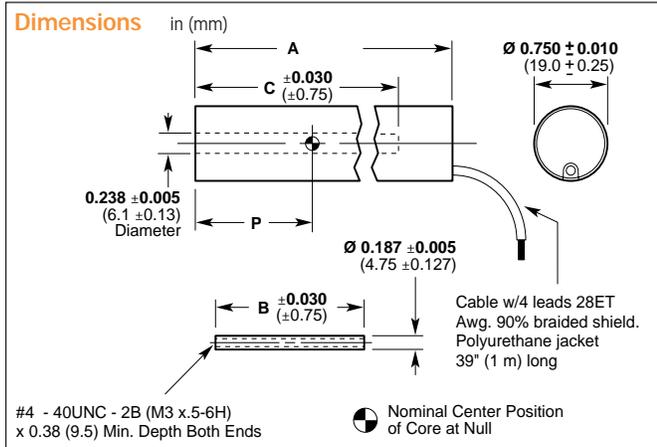
Specify the DC-SE Model followed by the desired option number(s) added together.

Ordering Example:

Model Number 250 DC-SE-200 is an DC-SE Series LVDT with a 0.250" range with the captive core option (200).

DC-SE Model	Options
100 DC-SE	Number Description
250 DC-SE	006 Metric Thread Core
500 DC-SE	010 Guided Core
1000 DC-SE	020 Small Diameter, Low Mass Core ¹
2000 DC-SE	200 Captive Core
4000 DC-SE	
6000 DC-SE	

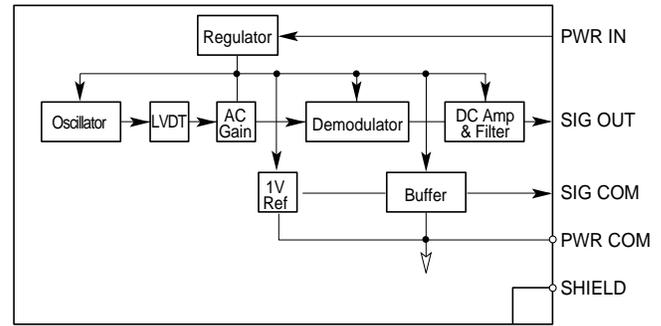
¹ Consult factory for mass, dimensions and thread size.



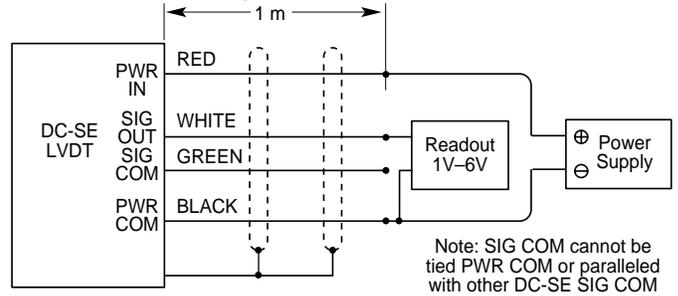
New Captive Core Option!

The DC-SE features a captive core design that greatly simplifies installation. The design utilizes a core rod and bearing assembly that is captured and guided within the LVDT providing low friction travel throughout the stroke length. The assembly incorporates two Delrin bearings on the core rod traveling through the stainless steel boreliner. A bronze bearing on the front end utilizes a self-aligning feature to accommodate lateral LVDT movement during operation. The core rod and bearing assembly are field replaceable. **See page 71 for specifications.**

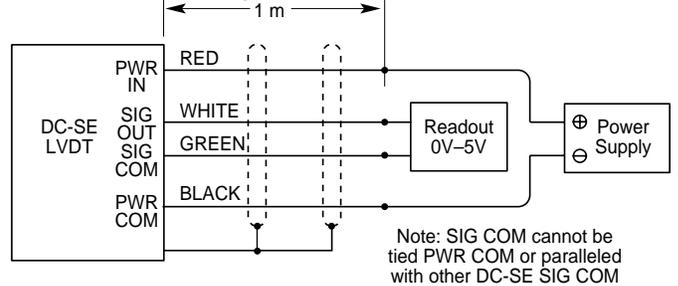
DC-SE Block Diagram



DC-SE 3-Wire Hookup: 1 to 6V Out



DC-SE 4-Wire Hookup: 0 to 5V Out



Mechanical Specifications

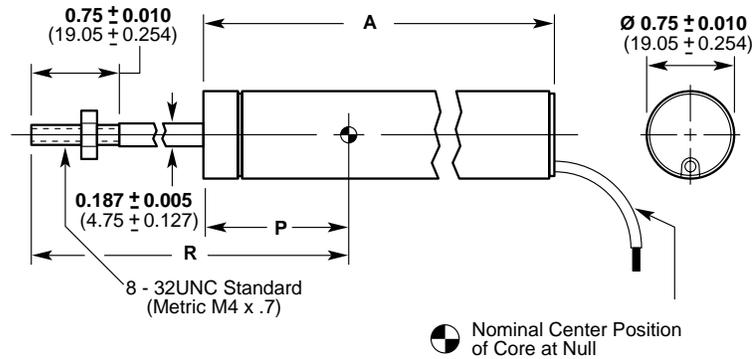
DC-SE Series Model Number	Weight				Dimensions							
	Body		Core		A (Body)		B (Core)		C		P	
	oz	gm	oz	gm	in	mm	in	mm	in	mm	in	mm
100 DC-SE	2.54	72	0.035	1	3.51	89.2	0.59	14.9	1.21	30.7	0.51	13.0
250 DC-SE	3.21	91	0.11	3	4.36	110.7	1.10	27.9	2.06	52.2	0.93	23.6
500 DC-SE	3.39	96	0.18	5	5.20	132.1	1.80	45.7	2.91	73.8	1.35	34.3
1000 DC-SE	4.38	124	0.28	8	6.89	175.0	3.00	76.2	4.59	116.7	2.20	55.9
2000 DC-SE	6.25	177	0.35	10	8.87	225.3	3.80	96.5	6.57	166.8	3.19	81.0
4000 DC-SE	8.33	236	0.53	15	12.25	311.2	5.30	134.6	9.95	252.8	4.88	124.0
6000 DC-SE	10.48	297	0.64	18	17.30	439.4	6.20	157.5	15.06	382.5	7.56	192.0



Captive Core Option

Lead Wire Models for DC-EC and DC-SE Series

Available for most models within the HCA, DC-EC, DS-SE, HCD and HCT Series



Mechanical Specifications

	Model Number	Linear Range		Weight Assembly		A		Dimensions P		R	
		in	mm	oz	gm	in	mm	in	mm	in	mm
DC-EC Series (See Page 56)	050 DC-EC	±0.050	±1.25	2.97	84	2.48	63.0	0.84	21.3	3.78	98.0
	125 DC-EC	±0.125	±3.0	3.32	94	3.31	84.1	1.27	32.3	4.36	110.7
	250 DC-EC	±0.250	±6.0	3.53	100	4.18	84.1	1.69	42.9	4.85	123.2
	500 DC-EC	±0.500	±12.5	4.02	114	5.87	149.1	2.54	64.5	6.04	153.4
	1000 DC-EC	±1.000	±25	5.61	159	8.13	206.5	3.52	89.4	7.90	200.7
	2000 DC-EC	±2.000	±50	7.20	204	11.50	292.1	5.22	143.3	10.52	267.2
	3000 DC-EC	±3.000	±75	11.68	331	16.70	424.2	7.89	200.4	15.27	387.9
DC-SE Series (See Page 58)	100 DC-SE	0-0.100	0-2.5	1.52	43	3.85	97.8	0.85	21.6	3.69	93.7
	250 DC-SE	0-0.250	0-6.0	4.09	116	4.70	119.4	1.27	32.3	4.28	108.7
	500 DC-SE	0-0.500	0-12.5	4.34	123	5.54	140.7	1.69	42.9	4.75	120.7
	1000 DC-SE	0-1.000	0-25	5.51	156	7.23	183.6	2.54	64.5	6.04	153.4
	2000 DC-SE	0-2.000	0-50	7.62	216	9.21	233.9	3.53	89.7	7.90	200.7
	4000 DC-SE	0-4.000	0-100	10.13	287	12.59	319.8	5.22	132.6	10.52	267.2
	6000 DC-SE	0-6.000	0-150	12.92	366	17.64	448.1	7.90	200.7	15.27	387.9