DC-EC AccuSens™ Series

General Purpose LVDT

The DC–EC AccuSens™ Series incorporates a unique monolithic chip combined with a computer-designed AC LVDT to achieve premium performance.

The ratiometric design of the monolithic circuitry compensates for power supply deviations for continuously stable operation. Unaffected by input variations, the transducer provides highly accurate, repeatable measurement.

Innovative manufacturing techniques further enhance the AccuSens operation and cost efficiency. Micro-miniature components used in the construction of each unit are selected for maximum stability.

Vacuum encapsulation of all elements produces an assembly tolerant to shock, vibration and other forms of physical abuse. Double magnetic shielding protects against stray electrical fields.



Features

- ❑ ***Linearity 0.25% of FS or better***
- ❑ ***CE certified***
- ❑ ***Integrated signal conditioning***
- ❑ ***Rugged stainless steel construction***
- ❑ ***Calibration certificates supplied with all models***

Applications

- ❑ ***General***

Options

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

Specifications

Input Voltage ..... ±15 VDC (nominal), ±25 mA
Operating Temperature Range ..... 32°F to 160°F (0°C to 70°C)
Survival Temperature Range ..... -65°F to 200°F (-55°C to 95°C)
Null Voltage ..... 0 VDC
Ripple ..... Less than 25 mV rms
Linearity ..... 0.25% full range
Stability ..... 0.125% full scale
Temperature—Coefficient of Scale Factor ..... 0.04%/°F (0.08%/°C)
Shock Survival ..... 250 *g* for 11 milliseconds
Vibration Tolerance ..... 10 *g* up to 2 kHz
Coil Form Material ..... High density, glass-filled polymer
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-EC 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

Performance and Electrical Specifications[1]

DC–EC Series Model Number	Nominal Linear Range inches	Nominal Linear Range mm	Scale Factor V/inch	Scale Factor V/mm	Response -3 dB Hz
050 DC–EC	±0.050	±1.25	200.0	8.00	500
125 DC–EC	±0.125	±3.0	80.0	3.20	500
250 DC–EC	±0.250	±6.0	40.0	1.60	500
500 DC–EC	±0.500	±12.5	20.0	0.80	200
1000 DC–EC	±1.000	±25	10.0	0.40	200
2000 DC–EC	±2.000	±50	5.0	0.20	200
3000 DC–EC	±3.000	±75	3.3	0.13	200
5000 DC–EC	±5.000	±125	2.0	0.08	200
10000 DC–EC	±10.00	±250	1.0	0.04	200

[1] *All calibration is performed at room ambient temperature.*

DC-EC models, when correctly installed, are CE certified to comply with the EMC Directive 89/336/EEC.

How to Order

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

Ordering Example:
Model Number 050 DC-EC-200 is an DC-EC Series LVDT with a ±0.050" range (050 DC-EC), with the captive core option (200).

DC-EC Model

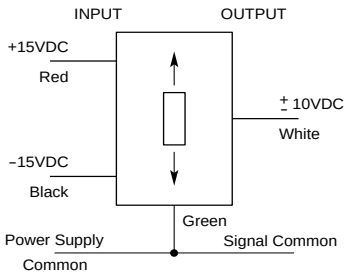
050 DC-EC
125 DC-EC
250 DC-EC
500 DC-EC
1000 DC-EC
2000 DC-EC
3000 DC-EC
5000 DC-EC
10000 DC-EC

Options

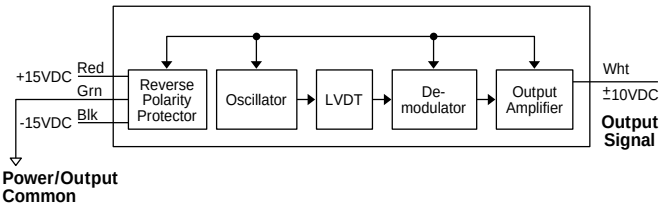
Number	Description
006	Metric Thread Core
010	Guided Core
020	Small Diameter, Low Mass Core[1]
200	Captive Core[2]

[1] *Consult factory for mass, dimensions and thread size.*
[2] *Available on 050 DC-EC through 3000 DC-EC models only.*

Wiring



Block Diagram



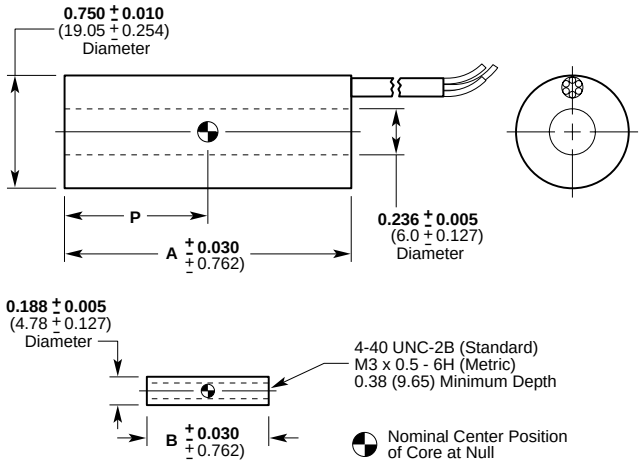
New Captive Core Option!



The DC-EC 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.**

Dimensions

in (mm)



Mechanical Specifications

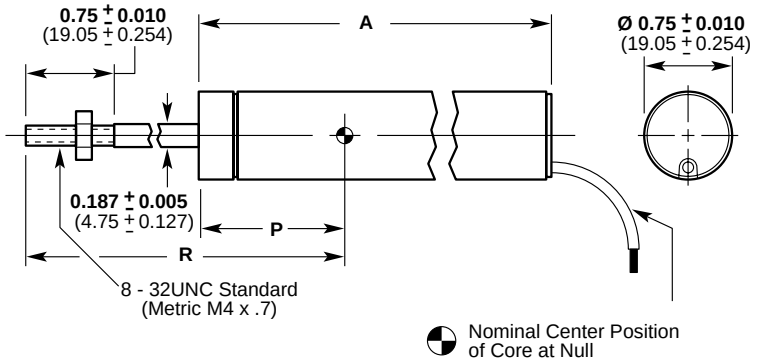
DC-EC Series Model Number	Weight Body oz	Body gm	Core oz	Core gm	Dimensions A (Body) in	A (Body) mm	B (Core) in	B (Core) mm	P in	P mm
050 DC–EC	2.19	62	0.07	2	2.10	53.5	0.75	19.1	0.50	12.7
125 DC–EC	2.44	69	0.11	3	2.93	74.5	1.25	31.8	0.93	23.6
250 DC–EC	2.58	73	0.18	5	3.80	96.5	2.00	50.8	1.35	34.3
500 DC–EC	2.93	82	0.28	8	5.49	139.5	3.00	76.0	2.20	55.9
1000 DC–EC	4.24	120	0.35	10	7.75	196.9	3.80	96.5	3.18	80.8
2000 DC–EC	5.47	155	0.46	13	11.12	282.5	5.30	135.0	4.88	134.6
3000 DC–EC	9.39	266	0.49	14	16.32	414.5	6.20	157.5	7.55	191.8
5000 DC–EC	11.47	325	0.60	17	20.15	511.8	6.20	157.5	9.53	242.0
10000 DC–EC	15.71	445	0.85	24	35.38	898.5	12.00	305.0	16.58	421.1

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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 in	Linear Range mm	Weight Assembly oz	Weight Assembly gm	Dimensions A in	Dimensions A mm	Dimensions P in	Dimensions P mm	Dimensions R in	Dimensions R 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

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LVDT Accessories

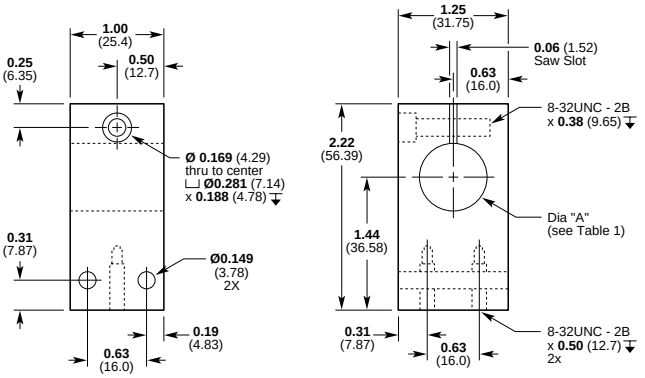
LVDT Mounting Blocks



Frequently, LVDT installations require a convenient method to mount the units. Ready-made mounting blocks are available for all LVDT Series (except XS-B). Constructed of reinforced phenolic and other nonconductive materials with a low-temperature coefficient of expansion, mounting blocks are a convenient, inexpensive and fast solution for LVDT installation.

To Order: use the chart below to specify the part number for the appropriate LVDT Series.

Dimensions in (mm)



LVDT Mounting Blocks

Part Number	Use with LVDT Series	Dim. A Diameter	LVDT Diameter
04560950-000	E	0.77	0.750
04560952-000	HR	0.83	0.812
04560953-000	M	0.33	8 mm
04560954-000	MHR	0.39	0.375
04560956-000	M-12	0.49	12 mm

MS-Type Connector Cables

Consult factory for price and availability of adaptor cables for LVDTs and signal conditioners.

Core Connecting Rods



LVDT installations require a connecting rod between the LVDT core and the object whose motion is being measured. These connecting rods are fabricated from non-magnetic stainless steel to prevent distortion of the LVDT's magnetic field. Manufactured from AISI 300 Series stainless steel, core connecting rods are threaded end to end. (Consult factory for available lengths and sizes.)

To Order: Specify CCR-(Length)-(LVDT Series)-(S for standard thread or M for metric thread). For example, to order a 4" rod to go with an MHR Series LVDT equipped with the optional metric thread core, specify: CCR-4-MHR-M

PSD 4-15 DC LVDT Power Supply



The PSD 4-15 DC LVDT power supply is designed to work with all of Schaevitz® DC powered LVDTs. The module will operate on either a 115 VAC or 230 VAC input at 47 to 63 Hz. The PSD 4-15 provides the necessary ±15 VDC excitation to operate as many as four DC-EC or HCD Series LVDTs, as well as GCD Series gage heads or DC powered Schaevitz® RVDTs (see rotary section) or pressure transducers (see pressure section) that require a ±15 VDC input. The rugged, compact design can be chassis mounted and features a DIN standard rail mount for secure installation in most industrial environments. In addition, the PSD 4-15 is UL, VDE and cUL approved and CE certified.

General Specifications

Input Voltage ..... 115/230 VAC ±10%
Input Frequency ..... 47 to 63 Hz
Input Current ..... 0.1 A (max)
Output Voltage ..... ±15 VDC ±0.05%
Output Current ..... 100 mA continuous
Ripple ..... < 5mV. pp.
Noise ..... < 5mV. pp.
Overload Protection ..... Continuous
Overall Dimensions ..... 2.00 x 4.31 x 0.90 inches; (51 x 110 x 23 mm)
Operating Temperature .. –25°C to 70°C