

DV301

Cable Actuated Sensor

Instrument Grade • Position/Velocity

Position and Velocity Output Signals
Stroke Range Options: 0–2 to 0–100 inches
Powder Painted & Anodized Aluminum Enclosure
Industrial Automation & Testing Applications

General

Full Stroke Range	0-2 to 0-100 inches
Measuring Cable	.019-inch dia. nylon-coated stainless steel
Enclosure	rope powder-painted and anodized aluminum
Material Weight	2 lbs. max.

Position

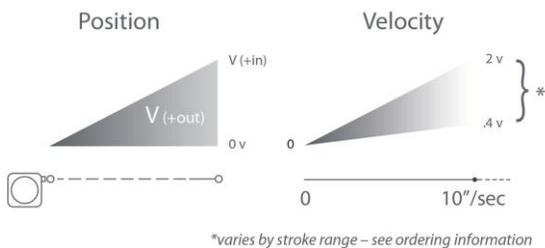
Output Signal	voltage divider (potentiometer)
Accuracy	± 0.25% to ±0.10% full stroke (see ordering information)
Repeatability	± 0.02% full stroke
Resolution	essentially infinite
Sensor	plastic-hybrid precision potentiometer
Input Resistance	500, 1K, 5K or 10K Ω
Power Rating, Watts	2.0 at 70°F derated to 0 at 250° F
Maximum Input Voltage	see ordering information
Output Signal Change Over Full Stroke Range	94% ±4% of input voltage

The DV301 is a combination position and velocity transducer for full-scale measurement ranges from 2 to 100 inches. A precision plastic-hybrid potentiometer provides accurate position feedback while a self-generating DC tachometer provides a velocity signal that is proportional to the speed of the traveling stainless-steel measuring cable.

Velocity

Output Signal	DC tachometer output
Linearity	better than ±0.10% of output at any velocity
Repeatability	±0.10% of reading
Maximum Velocity • Retraction Acceleration	see ordering information
Sensor	tach generator
Input Voltage	none required
Output Voltage @ 100 inches per minute	see ordering information
Output Impedance	350 ohms ±10%
Output Ripple (when output ≥ 280 mV)	±3% rms

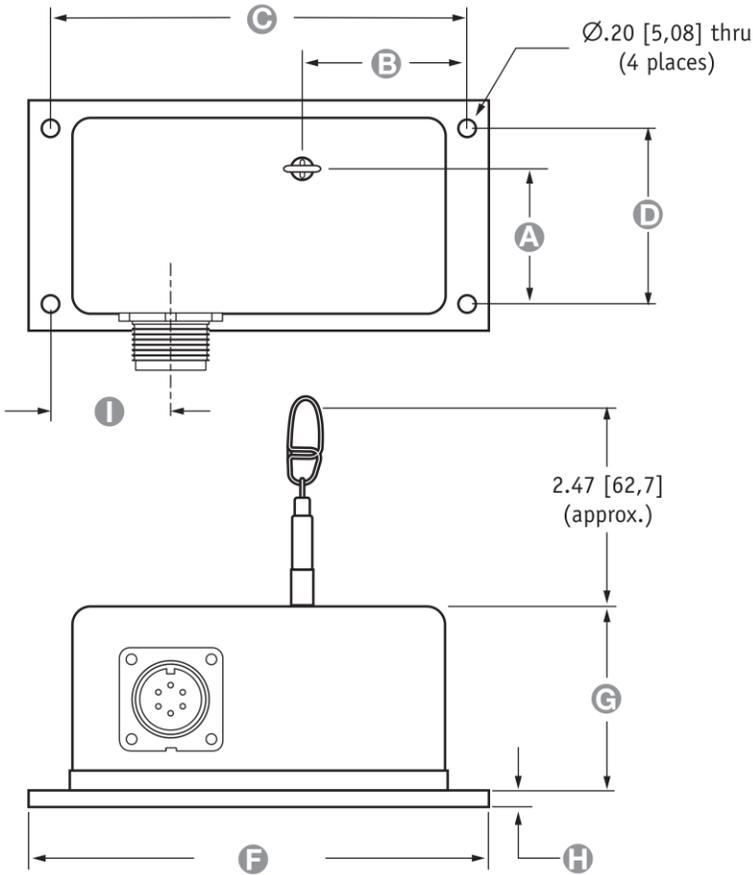
Electrical Output Signals



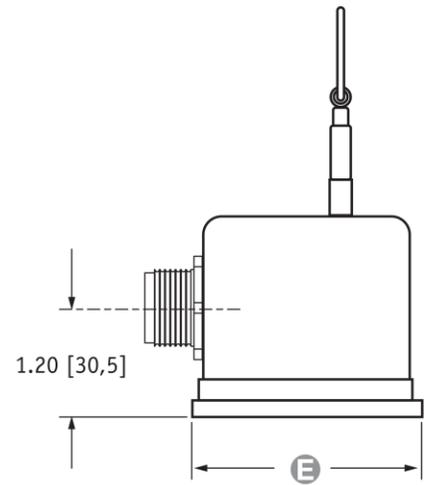
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Outline Drawing



ALL DIMENSIONS ARE IN INCHES [MM]
tolerances are ±0.02 in. [±0,5mm]



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Range	A	B	C	D	E	F	G	H	I
2", 10", 20"	1.34 [34,0]	4.00 [101,6]	7.00 [177,8]	2.00 [50,8]	2.63 [66,8]	7.50 [190,5]	2.10 [53,3]	.16 [4,1]	1.37 [34,8]
5", 25", 50"	1.85 [47,0]	4.00 [101,6]	7.00 [177,8]	2.00 [50,8]	2.63 [66,8]	7.50 [190,5]	2.10 [53,3]	.16 [4,1]	1.37 [34,8]
15", 30"	1.51 [38,4]	4.00 [101,6]	7.00 [177,8]	2.00 [50,8]	2.63 [66,8]	7.50 [190,5]	2.10 [53,3]	.16 [4,1]	1.37 [34,8]
40"	1.67 [42,4]	4.00 [101,6]	7.00 [177,8]	2.00 [50,8]	2.63 [66,8]	7.50 [190,5]	2.10 [53,3]	.16 [4,1]	1.37 [34,8]
60"	2.19 [55,6]	3.88 [98,5]	7.00 [177,8]	2.37 [60,2]	3.25 [82,5]	7.50 [190,5]	2.60 [66,0]	.19 [4,8]	1.37 [34,8]
75"	2.52 [64,0]	4.38 [111,3]	6.75 [171,4]	2.50 [63,5]	3.63 [92,2]	7.50 [190,5]	2.86 [72,6]	.19 [4,8]	1.37 [34,8]
100"	3.18 [80,7]	5.18 [131,5]	7.38 [187,5]	3.00 [76,2]	4.25 [108,0]	8.00 [203,2]	3.80 [96,5]	.19 [4,8]	3.69 [93,7]

Ordering Information

Model Number:

DV301 - - **1** **1** - **1** - **0**

order code: R A B C D E F G

Sample Model Number:

DV301 - 0025 - 111 - 1110

- R** range: 25 inches
- A** measuring cable tension: standard - 5 oz.
- D** output signals: 500 ohm position / DC tachometer velocity
- F** electrical connection: 6-pin plastic connector

Ordering Information (cont.)

Full Stroke Range:

R order code:	0002	0005	0010	0015	0020	0025	0030	0040	0050	0060	0075	0100
full stroke range, min:	2 in.	5 in.	10 in.	15 in.	20 in.	25 in.	30 in.	40 in.	50 in.	60 in.	75 in.	100 in.
position accuracy (% of f.s.):	0.25%	0.25%	0.15%	0.15%	0.10%	0.15%	0.10%	0.10%	0.10%	0.10%	0.10%	0.10%
potentiometer cycle life* ¹ :	2.5 x 10 ⁶	2.5 x 10 ⁶	5 x 10 ⁵	5 x 10 ⁵	5 x 10 ⁵	5 x 10 ⁵	5 x 10 ⁵	2.5 x 10 ⁵	2.5 x 10 ⁵	2.5 x 10 ⁵	2.5 x 10 ⁵	2.5 x 10 ⁵
velocity output signal (±3%)* ² :	322 mV	130 mV	322 mV	217 mV	322 mV* ³	130 mV	217 mV* ³	165 mV* ³	130 mV* ³	112 mV	91 mV	66 mV

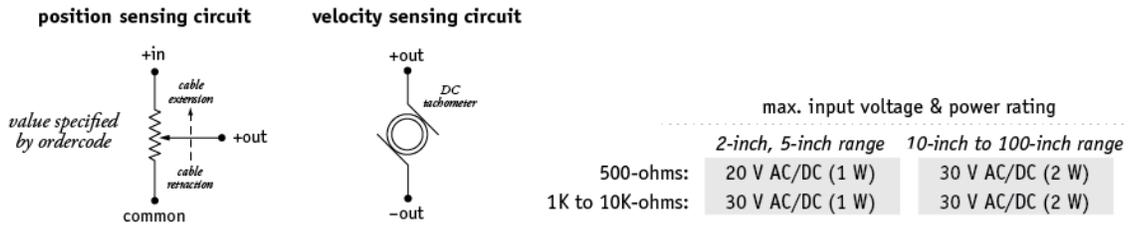
*¹ – 1 cycle is defined as the travel of the measuring cable from full retraction to full extension and back to full retraction *² – at the rate of 100 inches per minute *³ – output signal is reduced by 50% when Measuring Cable Tension options 2 or 3 is selected below

Measuring Cable Tension:

A order code:	1	H	M
	standard tension tension, ±30% • max. acceleration	high tension tension, ±40%	max tension tension, ±40%
2, 10, 20 inch range:	39 oz. • 25g	65 oz.	116 oz.
5, 25, 50 inch range:	16 oz. • 5g	26 oz.	47 oz.
15, 30 inch range:	26 oz. • 6g	44 oz.	78 oz.
40 inch range:	21 oz. • 11g	33 oz.	61 oz.
60 inch range:	13 oz. • 4g	22 oz.	40 oz.
75 inch range:	17 oz. • 5g	31 oz.	n/a
100 inch range:	24 oz. • 10g	n/a	n/a

Output Signals:

D order code:	1	2	3	4
position sensing potentiometer:	500 ohms*	1000 ohms*	5000 ohms*	10,000 ohms*



* – tolerance = ±10%

Electrical Connection:

F order code:	1	3	4
	6-pin plastic connector with mating plug	6-pin metal connector with mating plug	25-ft. instrumentation cable 24 AWG, shielded
	 1/2 - 5/16" [14 - 8 mm] cable dia. 16 AWG max conductor size connector: MS3102E-14S-6P mating plug: MS3106E-14S-6S	 3/8-in. [9 mm] max cable dia. 16 AWG max conductor size connector: MS3102E-14S-6P mating plug: MS3106E-14S-6S	
	<p>6-pin mating plug:</p> <p>pin A B C D E F signal + in common + out - + out - out } position } velocity</p>		<p>25-ft. instrumentation cable:</p> <p>color red black green white brown signal + in common + out + out - out } position } velocity</p>