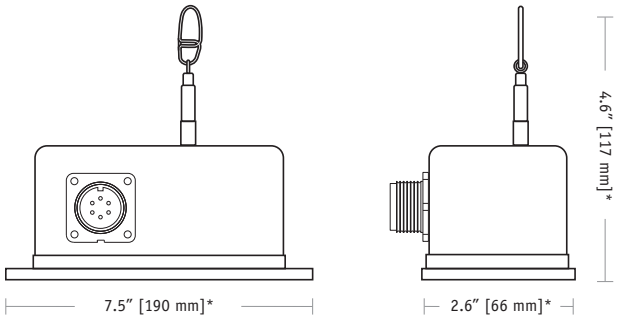
DV301

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





**50-inch range model, dimensions may differ for other ranges*

GENERAL

Full Stroke Range Options	0-2 to 0-100 inches
Measuring Cable	see ordering information
Enclosure Material	powder-painted and anodized aluminum
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 Options	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

VELOCITY

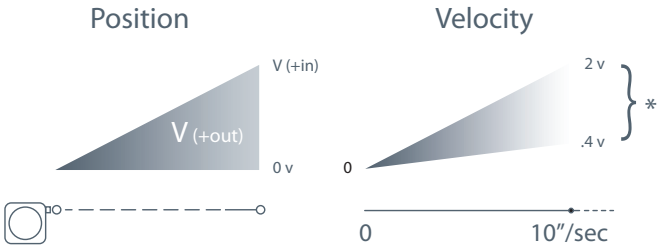
Output Signal	DC tachometer output
Linearity	better than ±0.10% of output at any velocity
Repeatability	±0.10% of reading
Maximum Velocity • Retraction Acceleration	see ordering information
Sensor	tach generator
Input Voltage	none required
Output Voltage @ 100 inches per minute	see ordering information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

ENVIRONMENTAL

Enclosure	IP50, NEMA 1
Operating Temperature	-40° to 200°F (-40° to 90°C)
Vibration	up to 10 g to 2000 Hz maximum

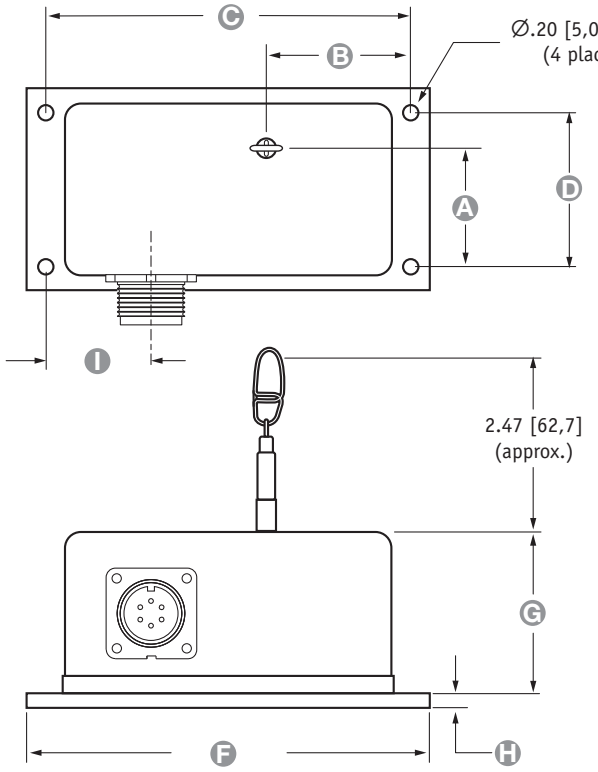
The DV301 is a combination position and velocity transducer for full-scale measurement ranges from 2 to 100 inches. A precision plastic-hybrid potentiometer provides accurate position feedback while a self-generating DC tachometer provides a velocity signal that is proportional to the speed of the traveling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

Electrical Output Signals

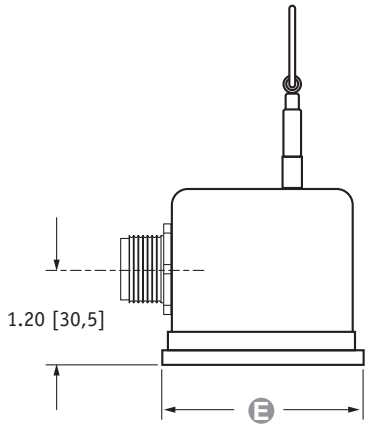


**varies by stroke range – see ordering information*

Fig. 1, Top Exit:



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



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

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", 80"	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** ____ **0**
order code: Ⓡ Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ Ⓕ Ⓖ

Sample Model Number:
DV301 - 0025 - 111 - 1110

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

Full Stroke Range:

Ⓡ *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:	2.5×10^6	2.5×10^6	5×10^5	5×10^5	5×10^5	5×10^5	5×10^5	2.5×10^5	2.5×10^5	2.5×10^5	2.5×10^5	2.5×10^5
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*

Ordering Information (cont.):

Measuring Cable Tension:

Ⓐ *order code:*

	1	H	M	2*	3*
	standard tension *tension, ±30% • max. acceleration*	high tension *tension, ±40%*	max tension *tension, ±40%*	medium tension *tension, ±40%*	high tension *tension, ±40%*
2, 10, 20 inch range:	39 oz. • 25g	65 oz.	116 oz.	65 oz.	116 oz.
5, 25, 50 inch range:	16 oz. • 5g	26 oz.	47 oz.	26 oz.	47 oz.
15, 30 inch range:	26 oz. • 6g	44 oz.	78 oz.	44 oz.	78 oz.
40 inch range:	21 oz. • 11g	33 oz.	61 oz.	34 oz.	61 oz.
60 inch range:	13 oz. • 4g	22 oz.	40 oz.	22 oz.	40 oz.
75, 80 inch range:	17 oz. • 5g	31 oz.	n/a	31 oz.	61 oz.
100 inch range:	24 oz. • 10g	n/a	n/a	47 oz.	47 oz.
measuring cable:	.019-in. dia. nylon-coated stainless steel			.024-in. diameter stainless steel	

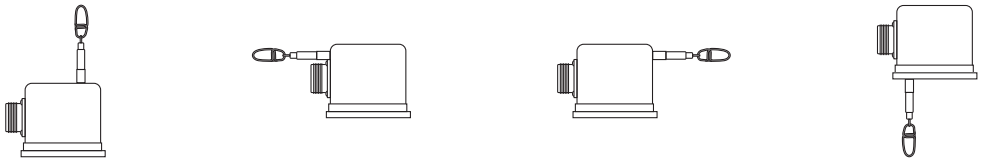
Reorder Only

note – outline dimensions for these options are **not controlled on this datasheet!*

Measuring Cable Exit:

Ⓒ *order code:*

1	2	3	4
top exit (see fig. 1)	front exit*	rear exit*	bottom exit*



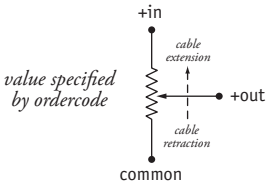
**–note: dimensions for optional cable exits not controlled on this datasheet, please contact factory*

Output Signals:

Ⓓ *order code:*

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

position sensing circuit



velocity sensing circuit



max. input voltage & power rating

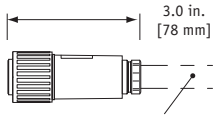
	2-inch, 5-inch range	*10-inch to 100-inch range*
500-ohms:	20 V AC/DC (1 W)	30 V AC/DC (2 W)
1K to 10K-ohms:	30 V AC/DC (1 W)	30 V AC/DC (2 W)

**–tolerance = ±10%*

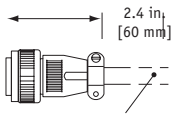
Electrical Connection:

Ⓕ *order code:*

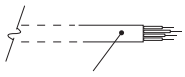
1	3	4
6-pin plastic connector with mating plug	6-pin metal connector with mating plug	25-ft. instrumentation cable 24 AWG, shielded



1/2 - 5/16" [14 - 8 mm] cable dia.
16 AWG max conductor size
connector: MS3102E-14S-6P
mating plug: MS3106E-14S-6S

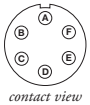


3/8-in. [9 mm] max cable dia.
16 AWG max conductor size
connector: MS3102E-14S-6P
mating plug: MS3106E-14S-6S



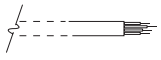
25 ft. x 0.2-in. dia.
[7,5 M x 5 mm dia.]
24 AWG, shielded

6-pin mating plug:



pin	signal	
A	+ in	position
B	common	position
C	+ out	position
D	-	
E	+ out	velocity
F	- out	velocity

25-ft. instrumentation cable:



color	signal	
red	+ in	position
black	common	position
green	+ out	position
white	+ out	velocity
brown	- out	velocity

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