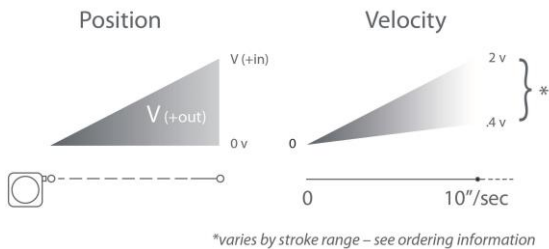


The DV301 is a combination position and velocity transducer for full-scale measurement ranges from 2 to 100 inches. A precision plastic-hybrid potentiometer provides accurate position feedback while a self-generating DC tachometer provides a velocity signal that is proportional to the speed of the traveling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

#### Electrical Output Signals



## 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

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

#### Position

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

#### Velocity

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

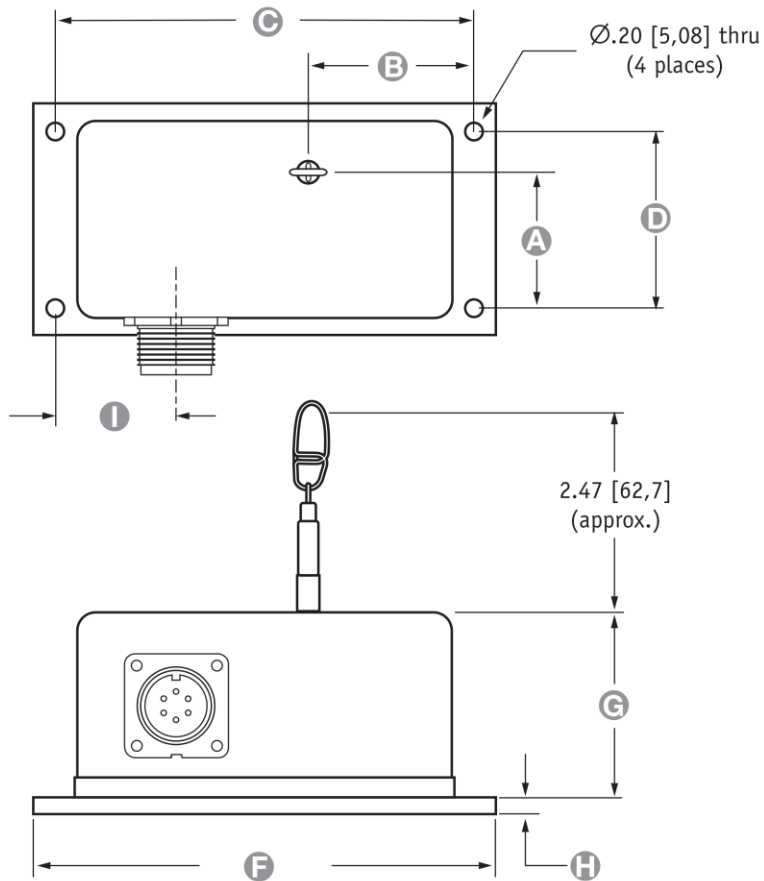
#### Environmental

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

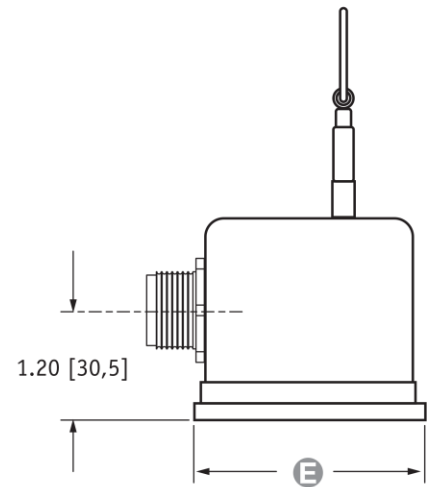
## DV301

Instrument Grade • Position/Velocity

### Outline Drawing



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"	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:

<b>R</b> 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* <sup>1</sup> :	2.5 x 10 <sup>6</sup>	2.5 x 10 <sup>6</sup>	5 x 10 <sup>5</sup>	5 x 10 <sup>5</sup>	5 x 10 <sup>5</sup>	5 x 10 <sup>5</sup>	5 x 10 <sup>5</sup>	2.5 x 10 <sup>5</sup>	2.5 x 10 <sup>5</sup>	2.5 x 10 <sup>5</sup>	2.5 x 10 <sup>5</sup>	2.5 x 10 <sup>5</sup>
velocity output signal (±3%)* <sup>2</sup> :	322 mV	130 mV	322 mV	217 mV	322 mV* <sup>3</sup>	130 mV	217 mV* <sup>3</sup>	165 mV* <sup>3</sup>	130 mV* <sup>3</sup>	112 mV	91 mV	66 mV

\*<sup>1</sup> – 1 cycle is defined as the travel of the measuring cable from full retraction to full extension and back to full retraction    \*<sup>2</sup> – at the rate of 100 inches per minute

\*<sup>3</sup> – output signal is reduced by 50% when **Measuring Cable Tension** options 2 or 3 is selected below

## Measuring Cable Tension:

<b>A</b> 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:

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

**position sensing circuit**

value specified by order code

**velocity sensing circuit**

DC tachometer

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:

<b>F</b> 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
	<p>3.0 in. [78 mm]</p> <p>1/2 - 5/16" [14 - 8 mm] cable dia. 16 AWG max conductor size connector: MS3102E-14S-6P mating plug: MS3106E-14S-6S</p>	<p>2.4 in. [60 mm]</p> <p>3/8-in. [9 mm] max cable dia. 16 AWG max conductor size connector: MS3102E-14S-6P mating plug: MS3106E-14S-6S</p>	<p>25 ft. x 0.2-in. dia. [7.5 M x 5 mm dia.] 24 AWG, shielded</p>
	<p><b>6-pin mating plug:</b></p> <p>pin A B C D E F</p> <p>signal + in common + out - + out - out</p> <p>} position } velocity</p>		<p><b>25-ft. instrumentation cable:</b></p> <p>color red black green white brown</p> <p>signal + in common + out + out - out</p> <p>} position } velocity</p>