

Cable-Extension Position Transducer

Position and Velocity Output Signals

Ranges: 0-2 to 0-100 inches

Instrument Grade



DV301



Specification Summary:

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 $\pm 0.25\%$ to $\pm 0.10\%$ full stroke *see ordering information*
 Repeatability..... $\pm 0.02\%$ full stroke
 Resolution *essentially infinite*
 Sensor plastic-hybrid precision potentiometer
 Input Resistance Options 500, 1K, 5K or 10K Ω –*see ordering information*
 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..... $94\% \pm 4\%$ of input voltage

VELOCITY

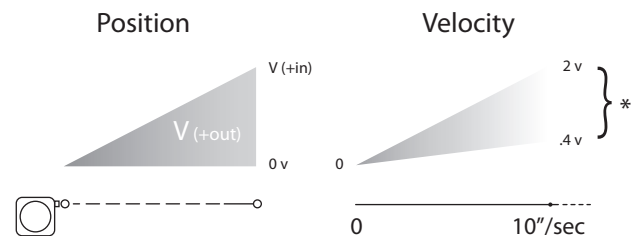
Output Signal DC tachometer output
 Linearity better than $\pm 0.10\%$ of output at any velocity
 Repeatability..... $\pm 0.10\%$ of reading
 Maximum Velocity * Retraction Acceleration *see ordering information*
 Sensor tach generator
 Input Voltage none required
 Output Voltage @ 100 inches per minute.....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

ENVIRONMENTAL

Enclosure NEMA 1
 Operating Temperature -40° to 200°F (-40° to 90°C)
 Vibration..... up to 10 G's 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.

Output Signals



*varies by stroke range – see ordering information

Ordering Information:

Model Number:

DV301 - - 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.
- C cable exit: top
- D output signals: 500 ohm position / DC tachometer velocity
- E 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 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

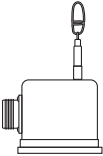
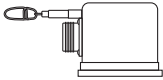
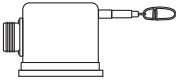
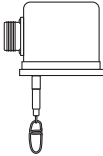
*¹ – 1 cycle is defined as the travel of the measuring cable from full retraction to full extension and back to full retraction *² – at the rate of 100 inches per minute *³ – output signal is reduced by 50% when **Measuring Cable Tension** options 2 or 3 is selected below

Measuring Cable Tension:

Ⓐ order code:	1	2**	3**
	standard tension* (max. acceleration)	increased tension*	high tension*
2, 10, 20 inch range:	30 oz. (25 G)	60 oz.	120 oz.
5, 25, 50 inch range:	14 oz. (5 G)	28 oz.	56 oz.
15, 30 inch range:	20 oz. (6 G)	40 oz.	80 oz.
40 inch range:	17 oz. (11 G)	34 oz.	68 oz.
60 inch range:	13 oz. (4 G)	26 oz.	52 oz.
75, 80 inch range:	18 oz. (5 G)	36 oz.	72 oz.
100 inch range:	26 oz. (10 G)	52 oz.	104 oz.
measuring cable:	.019-in. dia. nylon-coated stainless steel	.024-inch diameter stainless steel	.024-inch diameter stainless steel

* – note: spring tension tolerance: ±20% ** – note: dimensions for Options 2, 3 are not controlled on this datasheet.

Measuring Cable Exit:

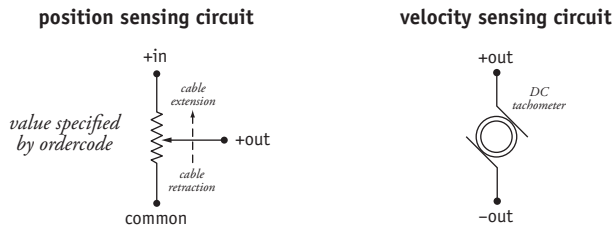
Ⓒ order code:	1	2	3	4
	top exit (see fig. 1)	front exit*	rear exit*	bottom exit*
				

* – 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*

* – tolerance = ±10%



max. input voltage and 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)

Ordering Information (cont.):

Electrical Connection:

Order code:

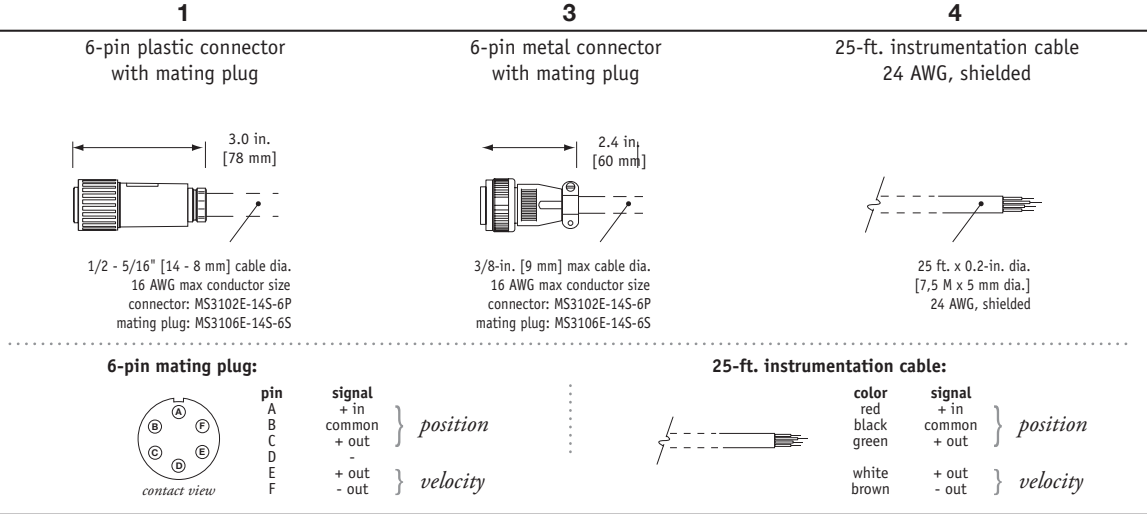
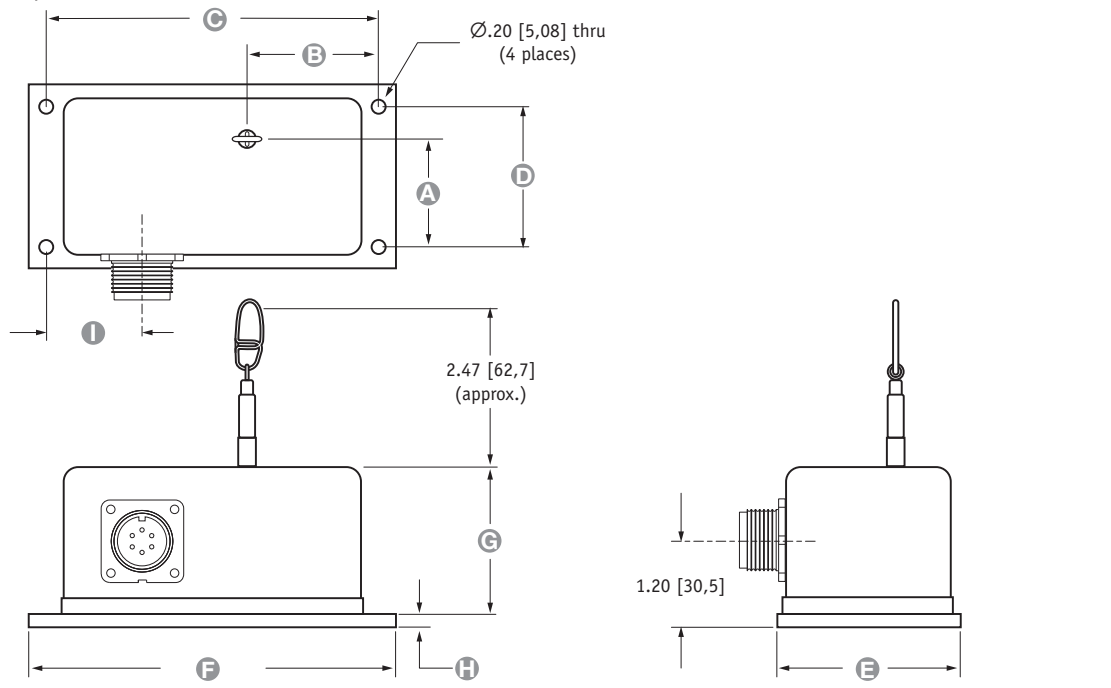


fig. 1: Top Exit Option



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]

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