

# Cable-Extension Position Transducer

## ▼ Instrument Grade

## ▼ Short to Medium Range

## ▼ Position and Velocity Output

### GENERAL

Full Stroke Ranges ..... 0-2 to 0-100 inches, see ① back page  
Enclosure Materials ..... powder coated or anodized aluminum  
Sensor (Position) ..... plastic-hybrid precision potentiometer  
Sensor (Velocity) ..... tach generator  
Electrical Connection ..... see ⑦  
Weight ..... 3 lbs. max.

### ELECTRICAL (Position)

Input Resistance ..... 500, 1K, 5K & 10K ohms  $\pm 10\%$ , see ⑥  
Maximum Power Rating, Watts ..... 2.0 at 70°F, derated to 0 W @ 250°F  
Recommended Maximum Voltage ..... 30 V (AC or DC)  
Voltage Change Over Measurement Range ..... 94%  $\pm 3\%$  of input voltage

### ELECTRICAL (Velocity)

Input ..... none  
Output Voltage @ 100 IPM ..... 91 to 322 mV, see ④  
Output Impedance ..... 350 ohms  $\pm 10\%$  (880 ohms  $\pm 10\%$  for 100 in. range)  
Output Ripple .....  $\leq 3\%$  of velocity output (for velocity outputs  $\geq 280$  mV)

### PERFORMANCE (Position)

Accuracy .....  $\pm 0.25\%$  to  $0.10\%$  full stroke, see ②  
Repeatability .....  $\pm 0.02\%$  full stroke  
Resolution ..... essentially infinite

### PERFORMANCE (Velocity)

Linearity ..... better than  $\pm 0.10\%$  of output at any velocity  
Repeatability (Stability) .....  $\pm 0.10\%$  of reading  
Maximum Velocity ..... 200 inches per second

### MEASURING CABLE

Tension ..... 13 to 160 oz., see ③  
Construction ..... stainless steel rope, see ⑤  
End Fitting ..... crimp and swivel

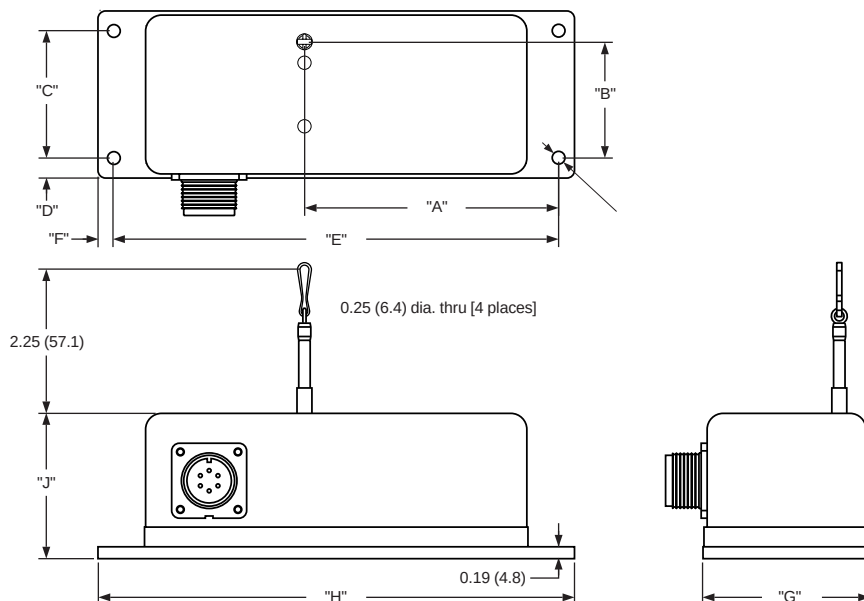
### ENVIRONMENTAL

Operating Temperature ..... -40° F to +200°F  
Temperature Coefficient of Sensing Element ..... 88 P.P.M./°F  
Humidity ..... 100% RH at 90°F  
Vibration ..... up to 10 G's to 2000 Hz  
Enclosure ..... NEMA 1

# DV301



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.



### Outline Drawing Dimensions

|   | Full Stroke Range |             |             |             |              |              |              |
|---|-------------------|-------------|-------------|-------------|--------------|--------------|--------------|
|   | 2, 10, 20         | 5, 25, 50   | 15, 30      | 40          | 60           | 75           | 100          |
| A | 4.00 (101.6)      |             |             |             | 3.88 (98.5)  | 4.38 (111.2) | 5.18 (131.5) |
| B | 1.34 (34.1)       | 1.83 (46.5) | 1.56 (39.6) | 1.64 (41.6) | 2.16 (54.9)  | 2.46 (62.5)  | 3.10 (78.5)  |
| C | 2.00 (50.8)       |             |             |             | 2.38 (60.5)  | 2.50 (63.5)  | 3.00 (76.2)  |
| D | 0.31 (7.9)        |             |             |             | 0.44 (11.2)  | 0.56 (14.2)  | 0.62 (15.7)  |
| E | 7.00 (177.8)      |             |             |             | 6.75 (171.4) | 7.38 (187.4) |              |
| F | 0.25 (6.3)        |             |             |             | 0.38 (9.7)   | 0.31 (7.9)   |              |
| G | 2.63 (66.8)       |             |             |             | 3.25 (82.6)  | 3.63 (92.2)  | 4.25 (108.0) |
| H | 7.50 (190.5)      |             |             |             | 8.00 (203.2) |              | 8.00 (203.2) |
| J | 2.10 (53.3)       |             |             |             | 2.60 (66.0)  | 2.85 (72.4)  | 3.78 (96.0)  |

ALL DIMENSIONS ARE IN INCHES (MM)  
tolerances are  $\pm 0.02$  in. ( $\pm 0.5$ mm) unless otherwise noted

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# DV301 Short to Medium Range / Position and Velocity Output

## ▼ Ordering Information

### Model Number:

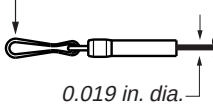
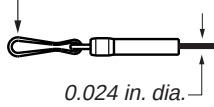
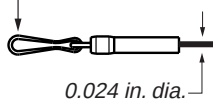
**DV301-** \_\_\_\_\_ **1** \_\_\_\_\_ **1** \_\_\_\_\_ **0**  
 order code: **R** **A** **B** **C** **D** **E** **F** **G**

### Full Stroke Range:

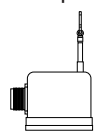
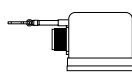
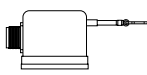
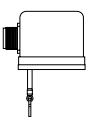
|   | <b>R</b> order code:                | <b>0002</b>     | <b>0005</b>     | <b>0010</b>       | <b>0015</b>       | <b>0020</b>       | <b>0025</b>       | <b>0030</b>       | <b>0040</b>       | <b>0050</b>       | <b>0060</b>       | <b>0075</b>       | <b>0100</b>       |
|---|-------------------------------------|-----------------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| ① | 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.           |
| ② | position accuracy--% f.s.:          | 0.25%           | 0.25%           | 0.15%             | 0.15%             | 0.1%              | 0.15%             | 0.1%              | 0.1%              | 0.1%              | 0.1%              | 0.1%              | 0.1%              |
|   | potentiometer life, cycles:         | $5 \times 10^6$ | $5 \times 10^6$ | $2.5 \times 10^5$ | $2.5 \times 10^5$ | $2.5 \times 10^5$ | $2.5 \times 10^5$ | $2.5 \times 10^5$ | $2.5 \times 10^5$ | $2.5 \times 10^5$ | $2.5 \times 10^5$ | $2.5 \times 10^5$ | $2.5 \times 10^5$ |
| ③ | cable tension, $\pm 30\%$ :         | 30 oz.          | 13 oz.          | 31 oz.            | 20 oz.            | 38 oz.            | 14 oz.            | 25 oz.            | 17 oz.            | 15 oz.            | 13 oz.            | 18 oz.            | 26 oz.            |
| ④ | velocity output signal, $\pm 3\%$ : | 322 mV          | 130 mV          | 322 mV            | 217 mV            | 322 mV*           | 130 mV            | 217 mV*           | 168 mV*           | 130 mV*           | 112 mV            | 91 mV             | 66 mV             |

note\*--output signal reduced by 50% when **Measuring Cable** order code **2** or **3** is selected below

### Measuring Cable:

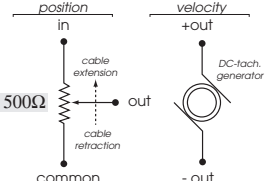
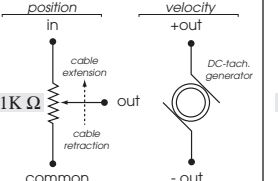
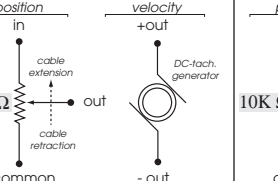
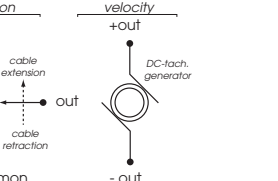
|   | <b>1</b>                                                                                                                                                                                                                                                                 | <b>2*</b>                                                                                                                                                                                                                                | <b>3*</b>                                                                                                                                                                                                                                 |
|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ⑤ | <div><div>order code:</div><div>cable tension multiplier: (see ③ above)</div><div>cable construction: .019 nylon-coated stainless</div></div> <div><div>0.19-inch dia. thru</div></div> | <div><div>cable tension multiplier: 2x</div><div>cable construction: .024 nylon-coated stainless</div></div> <div><div>0.19-inch dia. thru</div></div> | <div><div>cable tension multiplier: 4x</div><div>cable construction: .024 nylon-coated stainless</div></div> <div><div>0.19-inch dia. thru</div></div> |

### Measuring Cable Exit:

| <b>C</b> order code: | <b>1</b>                                                                           | <b>2*</b>                                                                           | <b>3*</b>                                                                             | <b>4*</b>                                                                             |
|----------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| direction:           | top                                                                                | front                                                                               | rear                                                                                  | bottom                                                                                |
|                      |  |  |  |  |

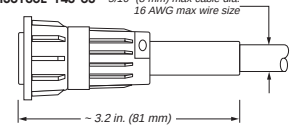
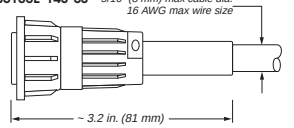
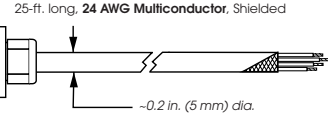
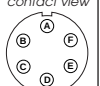
\*Note: options 2 and 3 are available for RE-ORDERS only!

### Output Signals:

| <b>D</b> order code: | <b>1</b>                                                                            | <b>2</b>                                                                            | <b>3</b>                                                                              | <b>4</b>                                                                              |
|----------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| ⑥                    | position & velocity circuits:                                                       |                                                                                     |                                                                                       |                                                                                       |
|                      |  |  |  |  |

\*Note: options 2, 3 and 4 are available for RE-ORDERS only!

### Electrical Connection:

| <b>E</b> order code: | <b>1</b>                                                                            | <b>3</b>                                                                             | <b>4</b>                                                                              |
|----------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| ⑦                    | electrical connection:                                                              |                                                                                      |                                                                                       |
|                      | 6-pin plastic connector                                                             | 6-pin metal connector                                                                | instrumentation cable                                                                 |
|                      |  |  |  |
|                      |  |   |                                                                                       |
|                      | position<br>A = IN<br>B = COMMON<br>C = OUT                                         | position<br>A = IN<br>B = COMMON<br>C = OUT                                          | position<br>RED = IN<br>BLK = COM.<br>GRN = OUT                                       |
|                      | velocity<br>E = +OUT<br>F = - OUT                                                   | velocity<br>E = +OUT<br>F = - OUT                                                    | velocity<br>WHT = + OUT<br>BRN = - OUT                                                |

## ▼ Sample Model Number

**DV301-** **0025** - **1** **1** **1** - **1** **1** **1** **0**  
 order code: **R** **A** **B** **C** **D** **E** **F** **G**

Specifications: Full Stroke Range: 25 inches  
 Measuring Cable: 0.019-in dia. nylon coated stainless steel rope, 16 oz. cable tension  
 Cable Exit: top  
 Output Signals: 500 ohm potentiometer, DC tachometer  
 Electrical Connection: 6-pin plastic connector

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