

# PT8150

## Heavy Industrial • Incremental Encoder

Linear Position to 60 inches • 1250mm (metric range)

Aluminum or Stainless Steel Enclosure Options

VLS Option To Prevent Free-Release Damage

IP67 • NEMA 6 Protection

### GENERAL

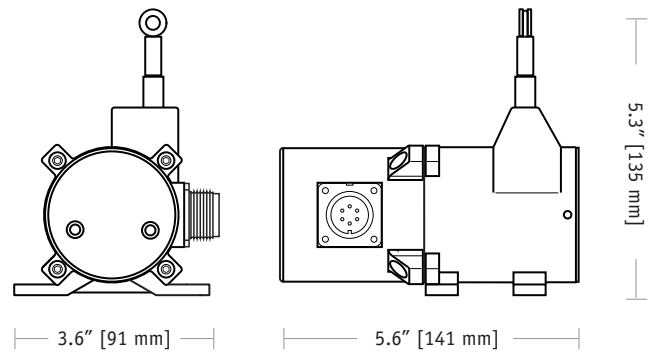
|  |   |
|--|---|
| Full Stroke Range Options                    | 0-30, 0-60 inches, 0-625, 0-1250 mm                     |
| Output Signal                                | incremental encoder (quadrature)                        |
| Accuracy                                     | 0.04% full stroke (contact factory for higher accuracy) |
| Repeatability                                | ± 0.02% full stroke                                     |
| Resolution Options                           | 20 to 500 pulses per inch                               |
| Measuring Cable Options                      | stainless steel or thermoplastic                        |
| Enclosure Material                           | powder-painted aluminum or stainless steel              |
| Sensor                                       | optical encoder   |
| Maximum Retraction Acceleration              | see ordering information                                |
| Weight, Aluminum (Stainless Steel) Enclosure | 3 lbs. (6 lbs.) max.                                    |

### ELECTRICAL

|                       |                          |
|-----------------------|--------------------------|
| Input Voltage         | see ordering information |
| Input Current         | see ordering information |
| Output Driver Options | see ordering information |

### ENVIRONMENTAL

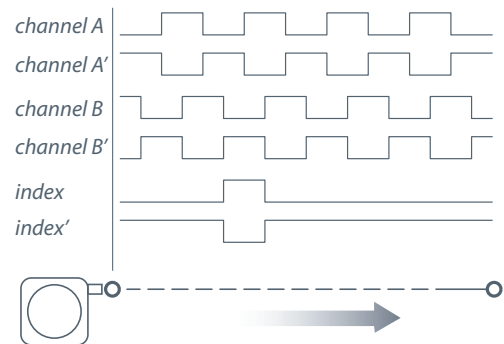
|                       |                              |
|-----------------------|------------------------------|
| Enclosure             | NEMA 4/4X/6, IP 67           |
| Operating Temperature | 0° to 160°F (-17° to 71°C)   |
| Vibration             | up to 10g to 2000 Hz maximum |



With its incremental optical encoder and industrial design, this rugged transducer provides the highest accuracy and longest life of any measurement device of its kind. For measurements up to 60 inches, this model is available in a variety of resolutions and output stages to fit virtually any requirement.

The PT8150 offers numerous advantages over other industrial-grade sensors: It installs in minutes by mounting its body to a fixed surface and attaching its cable to the movable object, fits into areas unsuited for rod-type measurement devices, and works without perfect parallel alignment.

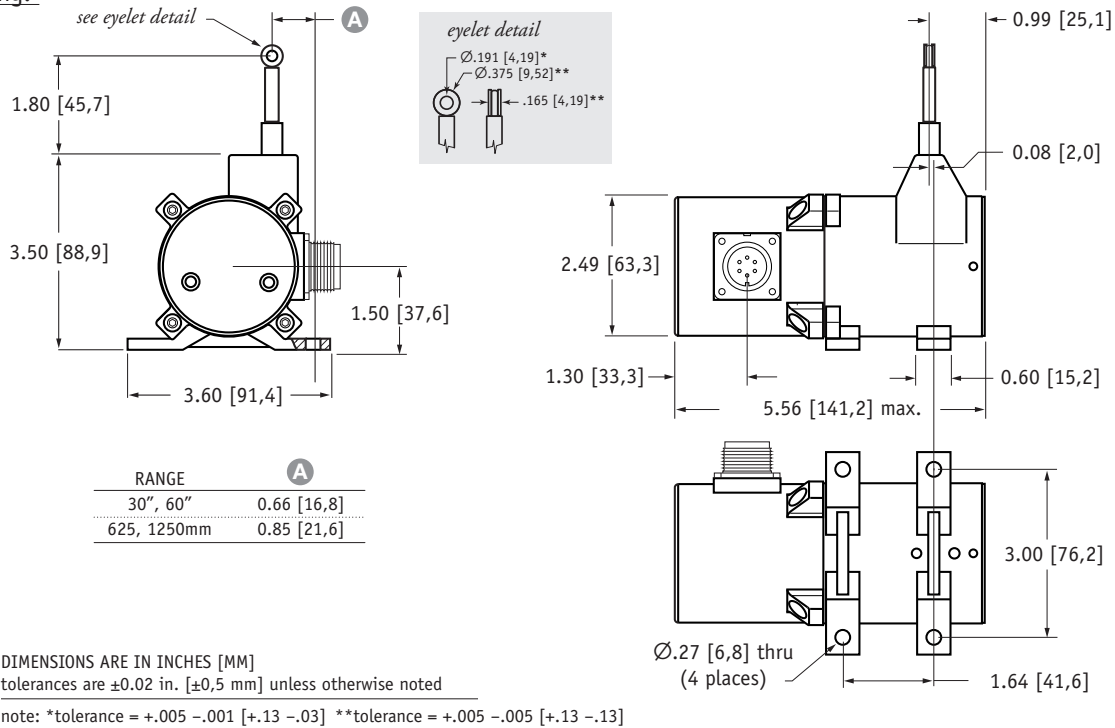
### Output Signal Options:



-- see ordering information for available channels



**Outline Drawing:**



**Ordering Information:**

**Model Number:**

**PT8150-** \_\_\_\_\_ **1** \_\_\_\_\_  
 order code:      R      A      B      C      D      E      F      G

Sample Model Number:

**PT8150 - 0030 - 111 - 1110**

- R range: 30 inches
- A enclosure/cable tension: aluminum/standard (12 oz.)
- B measuring cable: .034 nylon-coated stainless
- D output signal: TTL/CMOS driver
- E resolution: 200  $\pm 4$  pulses per inch
- F electrical connection: 6-pin plastic connector
- G cable guide option: standard nylon cable guide

**Full Stroke Range:**

| R order code:           | 0030   | 0060   | 0625   | 1250    |
|-------------------------|--------|--------|--------|---------|
| full stroke range, min: | 30 in. | 60 in. | 625 mm | 1250 mm |

**Enclosure Material and Measuring Cable Tension:**

| A order code:      | 1        | 5      | 2    | 3             | 6      | 4    | 8             | 7      | 9    |
|--------------------|----------|--------|------|---------------|--------|------|---------------|--------|------|
| enclosure:         | aluminum |        |      | 303 stainless |        |      | 316 stainless |        |      |
| cable tension:     | standard | medium | high | standard      | medium | high | standard      | medium | high |
| max. acceleration: | 15 g     | 25 g   | 40 g | 6 g           | 12 g   | 18 g | 6 g           | 12 g   | 18 g |

| cable tension option specifications<br>(tension tolerance: $\pm 50\%$ ) | Range:    | 30 in. | 60 in. | 625 mm | 1250 mm |
|---|-----------|--------|--------|--------|---------|
|   | Standard: | 16 oz. | 16 oz. | 4,5 N  | 4,5 N   |
|   | Medium:   | 26 oz. | 26 oz. | 7,2 N  | 7,2 N   |
|   | High:     | 47 oz. | 47 oz. | 13,1 N | 13,1 N  |

## Ordering Information (cont.):

### Measuring Cable:

| order code: | 1   | 2   | 3  | 4  |
|-------------|---|---|--|--|
|             | Ø.034-inch nylon-coated stainless steel<br><i>available in all ranges</i> | Ø.047-inch non-coated stainless steel<br><i>30 in. and 625 mm ranges only</i> | Ø.062-inch thermoplastic<br><i>30 in. and 625 mm ranges only</i> | Ø.031-inch non-coated stainless steel<br><i>60 in. and 1250 mm ranges only</i> |

### Output Signals:

| order code:         | 1              | 2               | 3                 | 4                     |
|---------------------|----------------|-----------------|-------------------|-----------------------|
| output driver:      | TTL - CMOS     | Open Collector  | 5 V - Line Driver | Universal Line Driver |
| Input voltage (V+): | 4.5...13.2 Vdc | 10.8...26.4 Vdc | 5 Vdc             | 5...30 VDC            |
| Sink current:       | 20 mA max.     | 20 mA max.      | 20 mA max.        | 20 mA max.            |
| Input current:      | 80 mA max.     | 80 mA max.      | 150 mA max.       | 100 mA max, no load   |
|                     |                |                 |                   |                       |

### Resolution:

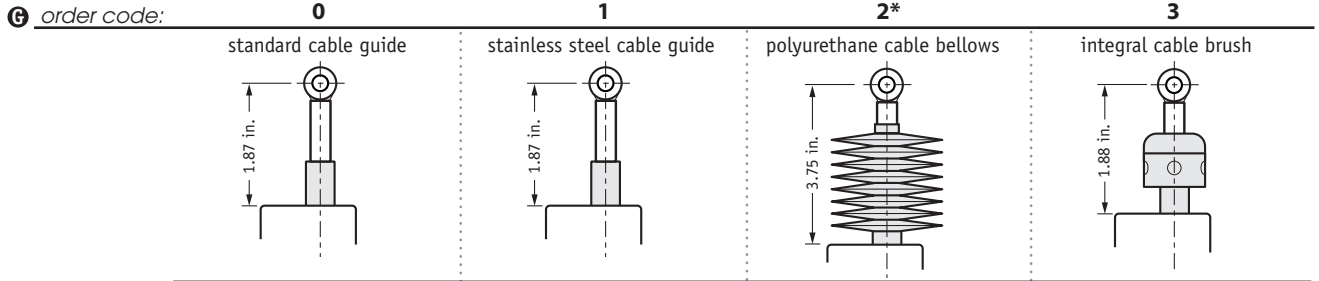
| order code:     | 1                     | 2                     | 3                      | 4                      |
|-----------------|-----------------------|-----------------------|------------------------|------------------------|
| english ranges: | 200 ±4 pulses per in. | 400 ±8 pulses per in. | 500 ±10 pulses per in. | 20 ±0.4 pulses per in. |
| metric ranges:  | 10 ±0,2 pulses per mm | 20 ±0,4 pulses per mm | 25 ±0,5 pulses per mm  | 1 ±0,02 pulses per mm  |

### Electrical Connection:

| order code: | 1   | 2   | 3   | 4   |   |               |               |   |        |        |   |           |           |   |           |           |   |   |            |   |   |            |   |     |                         |                                       |   |               |               |   |        |        |   |           |           |   |           |           |   |   |       |    |   |            |    |   |            |    |   |        |   |       |                         |                                       |     |               |               |       |        |        |       |           |           |       |           |           |      |   |            |       |   |            |        |   |       |        |   |        |  |
|-------------|---|---|---|---|---|---------------|---------------|---|--------|--------|---|-----------|-----------|---|-----------|-----------|---|---|------------|---|---|------------|---|-----|-------------------------|---------------------------------------|---|---------------|---------------|---|--------|--------|---|-----------|-----------|---|-----------|-----------|---|---|-------|----|---|------------|----|---|------------|----|---|--------|---|-------|-------------------------|---------------------------------------|-----|---------------|---------------|-------|--------|--------|-------|-----------|-----------|-------|-----------|-----------|------|---|------------|-------|---|------------|--------|---|-------|--------|---|--------|--|
|             | 6-pin plastic connector with mating plug<br>IP 67, NEMA 4X*, 6  | 25-ft. instrumentation cable<br>24 AWG, shielded<br>IP 67, NEMA 6 | 18-pin plastic connector with mating plug<br>IP 65, NEMA 4  | 6-pin metal connector with mating plug<br>IP 67, NEMA 6   |   |               |               |   |        |        |   |           |           |   |           |           |   |   |            |   |   |            |   |     |                         |                                       |   |               |               |   |        |        |   |           |           |   |           |           |   |   |       |    |   |            |    |   |            |    |   |        |   |       |                         |                                       |     |               |               |       |        |        |       |           |           |       |           |           |      |   |            |       |   |            |        |   |       |        |   |        |  |
|             |   |   |   |   |   |               |               |   |        |        |   |           |           |   |           |           |   |   |            |   |   |            |   |     |                         |                                       |   |               |               |   |        |        |   |           |           |   |           |           |   |   |       |    |   |            |    |   |            |    |   |        |   |       |                         |                                       |     |               |               |       |        |        |       |           |           |       |           |           |      |   |            |       |   |            |        |   |       |        |   |        |  |
|             | .30 - .39 in. [8 - 10 mm] cable dia.<br>16 AWG max conductor size<br>connector: MS3102E-14S-6P<br>mating plug: MS3106E-14S-6S   | 25 ft. x 0.2-in. dia. [7,5 M x 5 mm dia.]<br>24 AWG, shielded     | .26 - .30 in. [7 - 8 mm] cable dia.<br>20 - 24 AWG conductor size<br>connector: Conxall 14282-18PG-300-K<br>mating plug: Conxall 13282-18SG-326-K | .375 in. [9 mm] max cable dia.<br>16 AWG max conductor size<br>connector: MS3102E-14S-6P<br>mating plug: MS3106E-14S-6S |   |               |               |   |        |        |   |           |           |   |           |           |   |   |            |   |   |            |   |     |                         |                                       |   |               |               |   |        |        |   |           |           |   |           |           |   |   |       |    |   |            |    |   |            |    |   |        |   |       |                         |                                       |     |               |               |       |        |        |       |           |           |       |           |           |      |   |            |       |   |            |        |   |       |        |   |        |  |
|             | 6-pin mating plug:  | 18-pin mating plug:   | 25-ft. instrumentation cable:   |   |   |               |               |   |        |        |   |           |           |   |           |           |   |   |            |   |   |            |   |     |                         |                                       |   |               |               |   |        |        |   |           |           |   |           |           |   |   |       |    |   |            |    |   |            |    |   |        |   |       |                         |                                       |     |               |               |       |        |        |       |           |           |       |           |           |      |   |            |       |   |            |        |   |       |        |   |        |  |
|             | <table border="1"> <thead> <tr> <th>pin</th> <th>TTL/CMOS Open Collector</th> <th>5 V Line Driver Universal Line Driver</th> </tr> </thead> <tbody> <tr><td>A</td><td>input voltage</td><td>input voltage</td></tr> <tr><td>B</td><td>common</td><td>common</td></tr> <tr><td>C</td><td>channel A</td><td>channel A</td></tr> <tr><td>D</td><td>channel B</td><td>channel B</td></tr> <tr><td>E</td><td>-</td><td>channel A'</td></tr> <tr><td>F</td><td>-</td><td>channel B'</td></tr> </tbody> </table> | pin   | TTL/CMOS Open Collector   | 5 V Line Driver Universal Line Driver   | A | input voltage | input voltage | B | common | common | C | channel A | channel A | D | channel B | channel B | E | - | channel A' | F | - | channel B' | <table border="1"> <thead> <tr> <th>pin</th> <th>TTL/CMOS Open Collector</th> <th>5 V Line Driver Universal Line Driver</th> </tr> </thead> <tbody> <tr><td>1</td><td>input voltage</td><td>input voltage</td></tr> <tr><td>2</td><td>common</td><td>common</td></tr> <tr><td>3</td><td>channel B</td><td>channel B</td></tr> <tr><td>6</td><td>channel A</td><td>channel A</td></tr> <tr><td>7</td><td>-</td><td>index</td></tr> <tr><td>11</td><td>-</td><td>channel B'</td></tr> <tr><td>12</td><td>-</td><td>channel A'</td></tr> <tr><td>15</td><td>-</td><td>index'</td></tr> </tbody> </table> | pin | TTL/CMOS Open Collector | 5 V Line Driver Universal Line Driver | 1 | input voltage | input voltage | 2 | common | common | 3 | channel B | channel B | 6 | channel A | channel A | 7 | - | index | 11 | - | channel B' | 12 | - | channel A' | 15 | - | index' | <table border="1"> <thead> <tr> <th>color</th> <th>TTL/CMOS Open Collector</th> <th>5 V Line Driver Universal Line Driver</th> </tr> </thead> <tbody> <tr><td>red</td><td>input voltage</td><td>input voltage</td></tr> <tr><td>black</td><td>common</td><td>common</td></tr> <tr><td>green</td><td>channel A</td><td>channel A</td></tr> <tr><td>white</td><td>channel B</td><td>channel B</td></tr> <tr><td>blue</td><td>-</td><td>channel A'</td></tr> <tr><td>brown</td><td>-</td><td>channel B'</td></tr> <tr><td>yellow</td><td>-</td><td>index</td></tr> <tr><td>orange</td><td>-</td><td>index'</td></tr> </tbody> </table> | color | TTL/CMOS Open Collector | 5 V Line Driver Universal Line Driver | red | input voltage | input voltage | black | common | common | green | channel A | channel A | white | channel B | channel B | blue | - | channel A' | brown | - | channel B' | yellow | - | index | orange | - | index' |  |
| pin         | TTL/CMOS Open Collector   | 5 V Line Driver Universal Line Driver                             |   |   |   |               |               |   |        |        |   |           |           |   |           |           |   |   |            |   |   |            |   |     |                         |                                       |   |               |               |   |        |        |   |           |           |   |           |           |   |   |       |    |   |            |    |   |            |    |   |        |   |       |                         |                                       |     |               |               |       |        |        |       |           |           |       |           |           |      |   |            |       |   |            |        |   |       |        |   |        |  |
| A           | input voltage   | input voltage   |   |   |   |               |               |   |        |        |   |           |           |   |           |           |   |   |            |   |   |            |   |     |                         |                                       |   |               |               |   |        |        |   |           |           |   |           |           |   |   |       |    |   |            |    |   |            |    |   |        |   |       |                         |                                       |     |               |               |       |        |        |       |           |           |       |           |           |      |   |            |       |   |            |        |   |       |        |   |        |  |
| B           | common  | common  |   |   |   |               |               |   |        |        |   |           |           |   |           |           |   |   |            |   |   |            |   |     |                         |                                       |   |               |               |   |        |        |   |           |           |   |           |           |   |   |       |    |   |            |    |   |            |    |   |        |   |       |                         |                                       |     |               |               |       |        |        |       |           |           |       |           |           |      |   |            |       |   |            |        |   |       |        |   |        |  |
| C           | channel A   | channel A   |   |   |   |               |               |   |        |        |   |           |           |   |           |           |   |   |            |   |   |            |   |     |                         |                                       |   |               |               |   |        |        |   |           |           |   |           |           |   |   |       |    |   |            |    |   |            |    |   |        |   |       |                         |                                       |     |               |               |       |        |        |       |           |           |       |           |           |      |   |            |       |   |            |        |   |       |        |   |        |  |
| D           | channel B   | channel B   |   |   |   |               |               |   |        |        |   |           |           |   |           |           |   |   |            |   |   |            |   |     |                         |                                       |   |               |               |   |        |        |   |           |           |   |           |           |   |   |       |    |   |            |    |   |            |    |   |        |   |       |                         |                                       |     |               |               |       |        |        |       |           |           |       |           |           |      |   |            |       |   |            |        |   |       |        |   |        |  |
| E           | -   | channel A'  |   |   |   |               |               |   |        |        |   |           |           |   |           |           |   |   |            |   |   |            |   |     |                         |                                       |   |               |               |   |        |        |   |           |           |   |           |           |   |   |       |    |   |            |    |   |            |    |   |        |   |       |                         |                                       |     |               |               |       |        |        |       |           |           |       |           |           |      |   |            |       |   |            |        |   |       |        |   |        |  |
| F           | -   | channel B'  |   |   |   |               |               |   |        |        |   |           |           |   |           |           |   |   |            |   |   |            |   |     |                         |                                       |   |               |               |   |        |        |   |           |           |   |           |           |   |   |       |    |   |            |    |   |            |    |   |        |   |       |                         |                                       |     |               |               |       |        |        |       |           |           |       |           |           |      |   |            |       |   |            |        |   |       |        |   |        |  |
| pin         | TTL/CMOS Open Collector   | 5 V Line Driver Universal Line Driver                             |   |   |   |               |               |   |        |        |   |           |           |   |           |           |   |   |            |   |   |            |   |     |                         |                                       |   |               |               |   |        |        |   |           |           |   |           |           |   |   |       |    |   |            |    |   |            |    |   |        |   |       |                         |                                       |     |               |               |       |        |        |       |           |           |       |           |           |      |   |            |       |   |            |        |   |       |        |   |        |  |
| 1           | input voltage   | input voltage   |   |   |   |               |               |   |        |        |   |           |           |   |           |           |   |   |            |   |   |            |   |     |                         |                                       |   |               |               |   |        |        |   |           |           |   |           |           |   |   |       |    |   |            |    |   |            |    |   |        |   |       |                         |                                       |     |               |               |       |        |        |       |           |           |       |           |           |      |   |            |       |   |            |        |   |       |        |   |        |  |
| 2           | common  | common  |   |   |   |               |               |   |        |        |   |           |           |   |           |           |   |   |            |   |   |            |   |     |                         |                                       |   |               |               |   |        |        |   |           |           |   |           |           |   |   |       |    |   |            |    |   |            |    |   |        |   |       |                         |                                       |     |               |               |       |        |        |       |           |           |       |           |           |      |   |            |       |   |            |        |   |       |        |   |        |  |
| 3           | channel B   | channel B   |   |   |   |               |               |   |        |        |   |           |           |   |           |           |   |   |            |   |   |            |   |     |                         |                                       |   |               |               |   |        |        |   |           |           |   |           |           |   |   |       |    |   |            |    |   |            |    |   |        |   |       |                         |                                       |     |               |               |       |        |        |       |           |           |       |           |           |      |   |            |       |   |            |        |   |       |        |   |        |  |
| 6           | channel A   | channel A   |   |   |   |               |               |   |        |        |   |           |           |   |           |           |   |   |            |   |   |            |   |     |                         |                                       |   |               |               |   |        |        |   |           |           |   |           |           |   |   |       |    |   |            |    |   |            |    |   |        |   |       |                         |                                       |     |               |               |       |        |        |       |           |           |       |           |           |      |   |            |       |   |            |        |   |       |        |   |        |  |
| 7           | -   | index   |   |   |   |               |               |   |        |        |   |           |           |   |           |           |   |   |            |   |   |            |   |     |                         |                                       |   |               |               |   |        |        |   |           |           |   |           |           |   |   |       |    |   |            |    |   |            |    |   |        |   |       |                         |                                       |     |               |               |       |        |        |       |           |           |       |           |           |      |   |            |       |   |            |        |   |       |        |   |        |  |
| 11          | -   | channel B'  |   |   |   |               |               |   |        |        |   |           |           |   |           |           |   |   |            |   |   |            |   |     |                         |                                       |   |               |               |   |        |        |   |           |           |   |           |           |   |   |       |    |   |            |    |   |            |    |   |        |   |       |                         |                                       |     |               |               |       |        |        |       |           |           |       |           |           |      |   |            |       |   |            |        |   |       |        |   |        |  |
| 12          | -   | channel A'  |   |   |   |               |               |   |        |        |   |           |           |   |           |           |   |   |            |   |   |            |   |     |                         |                                       |   |               |               |   |        |        |   |           |           |   |           |           |   |   |       |    |   |            |    |   |            |    |   |        |   |       |                         |                                       |     |               |               |       |        |        |       |           |           |       |           |           |      |   |            |       |   |            |        |   |       |        |   |        |  |
| 15          | -   | index'  |   |   |   |               |               |   |        |        |   |           |           |   |           |           |   |   |            |   |   |            |   |     |                         |                                       |   |               |               |   |        |        |   |           |           |   |           |           |   |   |       |    |   |            |    |   |            |    |   |        |   |       |                         |                                       |     |               |               |       |        |        |       |           |           |       |           |           |      |   |            |       |   |            |        |   |       |        |   |        |  |
| color       | TTL/CMOS Open Collector   | 5 V Line Driver Universal Line Driver                             |   |   |   |               |               |   |        |        |   |           |           |   |           |           |   |   |            |   |   |            |   |     |                         |                                       |   |               |               |   |        |        |   |           |           |   |           |           |   |   |       |    |   |            |    |   |            |    |   |        |   |       |                         |                                       |     |               |               |       |        |        |       |           |           |       |           |           |      |   |            |       |   |            |        |   |       |        |   |        |  |
| red         | input voltage   | input voltage   |   |   |   |               |               |   |        |        |   |           |           |   |           |           |   |   |            |   |   |            |   |     |                         |                                       |   |               |               |   |        |        |   |           |           |   |           |           |   |   |       |    |   |            |    |   |            |    |   |        |   |       |                         |                                       |     |               |               |       |        |        |       |           |           |       |           |           |      |   |            |       |   |            |        |   |       |        |   |        |  |
| black       | common  | common  |   |   |   |               |               |   |        |        |   |           |           |   |           |           |   |   |            |   |   |            |   |     |                         |                                       |   |               |               |   |        |        |   |           |           |   |           |           |   |   |       |    |   |            |    |   |            |    |   |        |   |       |                         |                                       |     |               |               |       |        |        |       |           |           |       |           |           |      |   |            |       |   |            |        |   |       |        |   |        |  |
| green       | channel A   | channel A   |   |   |   |               |               |   |        |        |   |           |           |   |           |           |   |   |            |   |   |            |   |     |                         |                                       |   |               |               |   |        |        |   |           |           |   |           |           |   |   |       |    |   |            |    |   |            |    |   |        |   |       |                         |                                       |     |               |               |       |        |        |       |           |           |       |           |           |      |   |            |       |   |            |        |   |       |        |   |        |  |
| white       | channel B   | channel B   |   |   |   |               |               |   |        |        |   |           |           |   |           |           |   |   |            |   |   |            |   |     |                         |                                       |   |               |               |   |        |        |   |           |           |   |           |           |   |   |       |    |   |            |    |   |            |    |   |        |   |       |                         |                                       |     |               |               |       |        |        |       |           |           |       |           |           |      |   |            |       |   |            |        |   |       |        |   |        |  |
| blue        | -   | channel A'  |   |   |   |               |               |   |        |        |   |           |           |   |           |           |   |   |            |   |   |            |   |     |                         |                                       |   |               |               |   |        |        |   |           |           |   |           |           |   |   |       |    |   |            |    |   |            |    |   |        |   |       |                         |                                       |     |               |               |       |        |        |       |           |           |       |           |           |      |   |            |       |   |            |        |   |       |        |   |        |  |
| brown       | -   | channel B'  |   |   |   |               |               |   |        |        |   |           |           |   |           |           |   |   |            |   |   |            |   |     |                         |                                       |   |               |               |   |        |        |   |           |           |   |           |           |   |   |       |    |   |            |    |   |            |    |   |        |   |       |                         |                                       |     |               |               |       |        |        |       |           |           |       |           |           |      |   |            |       |   |            |        |   |       |        |   |        |  |
| yellow      | -   | index   |   |   |   |               |               |   |        |        |   |           |           |   |           |           |   |   |            |   |   |            |   |     |                         |                                       |   |               |               |   |        |        |   |           |           |   |           |           |   |   |       |    |   |            |    |   |            |    |   |        |   |       |                         |                                       |     |               |               |       |        |        |       |           |           |       |           |           |      |   |            |       |   |            |        |   |       |        |   |        |  |
| orange      | -   | index'  |   |   |   |               |               |   |        |        |   |           |           |   |           |           |   |   |            |   |   |            |   |     |                         |                                       |   |               |               |   |        |        |   |           |           |   |           |           |   |   |       |    |   |            |    |   |            |    |   |        |   |       |                         |                                       |     |               |               |       |        |        |       |           |           |       |           |           |      |   |            |       |   |            |        |   |       |        |   |        |  |
|             |   |   |   |   |   |               |               |   |        |        |   |           |           |   |           |           |   |   |            |   |   |            |   |     |                         |                                       |   |               |               |   |        |        |   |           |           |   |           |           |   |   |       |    |   |            |    |   |            |    |   |        |   |       |                         |                                       |     |               |               |       |        |        |       |           |           |       |           |           |      |   |            |       |   |            |        |   |       |        |   |        |  |

\*—applies to stainless steel enclosure only.

## Cable Guide Options:



\*important! – bellows limits measuring cable travel to 25 inches, contact factory before ordering.

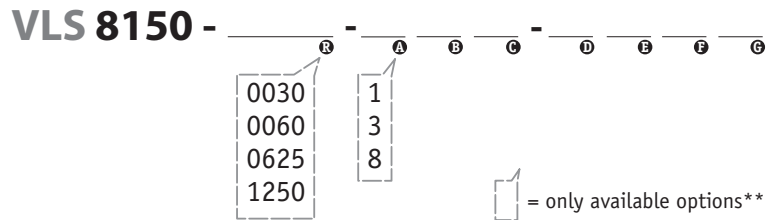
## VLS Option - Free Release Protection

The patented Celesco Velocity Limiting System (VLS) is an option for PT8000 Series cable extension transducers that limits cable retraction to a safe 40 to 55 inches per second.

The VLS option prevents the measuring cable from ever reaching a damaging velocity during an accidental free release. This option is ideal for mobile applications that require frequent cable disconnection and reconnection. It prevents expensive unscheduled downtime due to accidental cable mishandling or attachment failure.

VLS is NOT available for medium and high cable tension options or 2, 5 and 15-inch stroke ranges.

How To Configure Model Number for VLS Option:



creating VLS model number (example):

1. select PT8150 model **PT8150-0060-111-1110**
2. remove "PT" from the model number ~~PT~~ **8150-0060-111-1110**
3. add "VLS" **VLS + 8150-0060-111-1110**
4. completed model number ! **VLS8150-0060-111-1110**

\*\*Note: please contact factory for a solution to options not supported.

