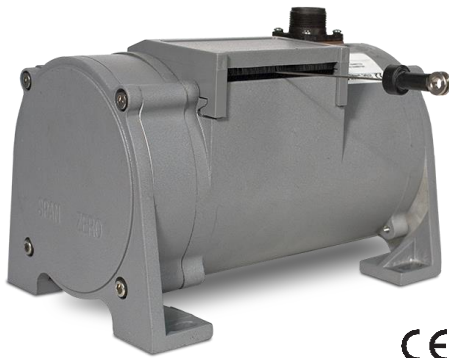
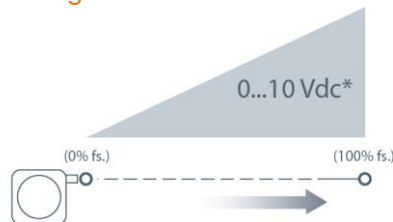


The PT9510 can operate from an unregulated 14.5 to 40 VDC power supply while providing a regulated output signal over its full extended range. It provides a 0 - 5 or 0 - 10 VDC position feedback signal proportional to the linear movement of its stainless steel measuring cable.

As a member of Celesco's innovative family of NEMA-4 rated cable-extension transducers, the PT9510 offers numerous benefits. It installs in minutes, functions properly without perfectly parallel alignment, and when its cable is retracted, it measures only 6".

### Output Signal



\*Additional Output Options: 0...5, -5...+5, -10...+10 Vdc

## PT9510

### Cable Actuated Sensor

Heavy Industrial • 0...5 Vdc, 0...10 Vdc

**Absolute Linear Position to 550 inches (1400 cm)**

**Aluminum or Stainless Steel Enclosure Options**

**VLS Option to Prevent Free-Release Damage**

**IP68 • NEMA 6 Protection**

### General

|                                              |                                                |
|----------------------------------------------|------------------------------------------------|
| Full Stroke Range                            | 0-75 to 0-550 inches                           |
| Output Signal                                | 0...10, 0...5, -5...+5, -10...+10 VDC          |
| Accuracy                                     | ± 0.12% full stroke                            |
| Repeatability                                | ± 0.05% full stroke                            |
| Resolution                                   | essentially infinite                           |
| Measuring Cable Options                      | stainless steel or thermoplastic               |
| Enclosure Material                           | powder-painted aluminum or 303 stainless steel |
| Sensor                                       | plastic-hybrid precision potentiometer         |
| Potentiometer Cycle Life                     | ≥ 250,000                                      |
| Maximum Retraction                           | see ordering information                       |
| Acceleration                                 |                                                |
| Maximum Velocity                             | see ordering information                       |
| Weight, Aluminum (Stainless Steel) Enclosure | 8 lbs. (16 lbs.) max.                          |

### Electrical

|                            |                                             |
|----------------------------|---------------------------------------------|
| Input Voltage              | 14.5-40VDC (10.5-40VDC for 0-5 volt output) |
| Input Current              | 10 mA maximum                               |
| Output Impedance           | 1000 ohms                                   |
| Maximum Output Load        | 5000 ohms                                   |
| Output Signal, Zero Adjust | up to 50% of full stroke range              |
| Output Signal, Span Adjust | to 50% of factory set span                  |

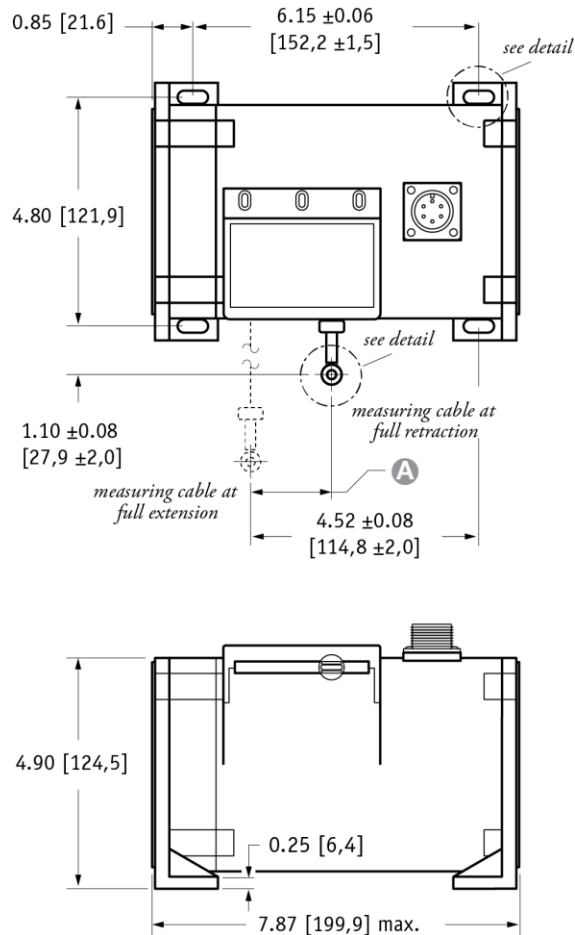
### Environmental

|                       |                               |
|-----------------------|-------------------------------|
| Enclosure             | NEMA 4/4X/6, IP 67/68         |
| Operating Temperature | -40° to 200°F (-40° to 90°C)  |
| Vibration             | up to 10 g to 2000 Hz maximum |

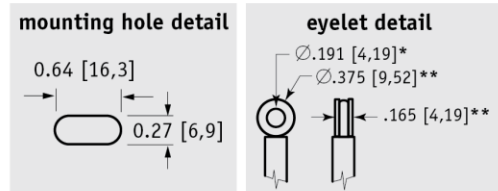
### EMC COMPLIANCE PER DIRECTIVE 89/336/EEC

|                     |                       |
|---------------------|-----------------------|
| Emission / Immunity | EN50081-2 / EN50082-2 |
|---------------------|-----------------------|

Fig. 1 – Outline Drawing (18 oz. cable tension only)

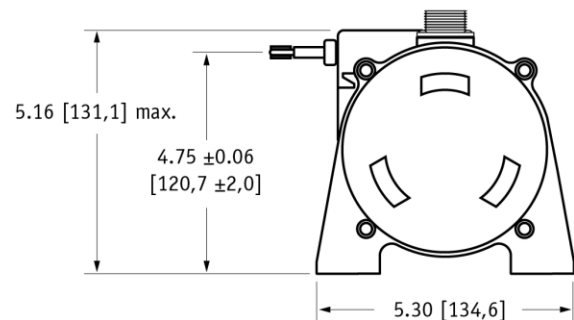


DIMENSIONS ARE IN INCHES [MM]  
tolerances are 0.03 IN. [0.5 MM] unless otherwise noted.



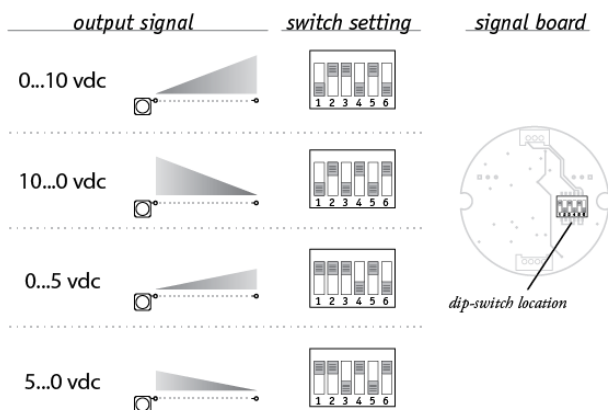
### A DIMENSION (INCHES)

| RANGE | MEASURING CABLE |           |           |           |
|-------|-----------------|-----------|-----------|-----------|
|       | Ø.031 in.       | Ø.034 in. | Ø.047 in. | Ø.062 in. |
| 75    | n/a             | 0.22      | 0.29      | 0.37      |
| 100   | n/a             | 0.29      | 0.39      | 0.49      |
| 150   | n/a             | 0.44      | 0.59      | 0.73      |
| 200   | n/a             | 0.58      | 0.79      | 0.98      |
| 250   | n/a             | 0.73      | 0.98      | 1.22      |
| 300   | n/a             | 0.88      | 1.18      | 1.47      |
| 350   | n/a             | 1.02      | 1.38      | 1.71      |
| 400   | n/a             | 1.17      | 1.57      | 1.96      |
| 450   | n/a             | 1.31      | 1.77      | n/a       |
| 500   | n/a             | 1.46      | 1.97      | n/a       |
| 550   | 1.61            | 1.61      | n/a       | n/a       |



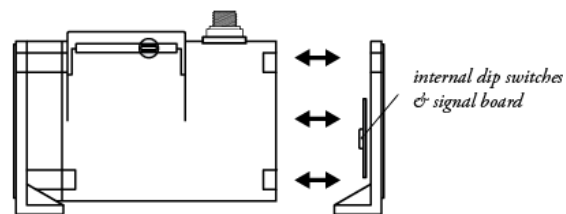
\* tolerance = +.005 -.001 [+13 -.03]  
\*\* tolerance = +.005 -.005 [+13 -.13]

### Output Signal Selection (does not apply to -5...+5 & -10...+10 vdc options)



The output signal direction can be reversed at any time by simply changing the dip-switch settings found on the internal signal board. After the settings have been changed, adjustment of the Zero and Span trimpots will be required to precisely match signal values to the beginning and end points of the stroke.

To gain access to the signal board, remove four Allen-Head Screws and remove end cover bracket.



## PT9510

Heavy Industrial • 0...5 Vdc, 0...10 Vdc

### Ordering Information

#### Model Number:

**PT9510-** **R** - **A** **B** **C** - **1** **D** **E** **F** **0**  
order code:

Sample Model Number:

**PT9510 - 0500 - 111 - 1110**

|                                   |                             |
|-----------------------------------|-----------------------------|
| <b>R</b> range:                   | 500 inches                  |
| <b>A</b> enclosure/cable tension: | aluminum/18 oz.             |
| <b>B</b> measuring cable:         | .034 nylon-coated stainless |
| <b>C</b> cable exit:              | front                       |
| <b>E</b> output signal:           | 0...10 vdc                  |
| <b>F</b> electrical connection:   | 6-pin plastic connector     |

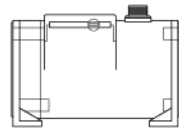
#### Full Stroke Range:

|                         |             |             |             |             |             |             |             |             |              |              |              |
|-------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|--------------|--------------|
| <b>R</b> order code:    | <b>0075</b> | <b>0100</b> | <b>0150</b> | <b>0200</b> | <b>0250</b> | <b>0300</b> | <b>0350</b> | <b>0400</b> | <b>0450*</b> | <b>0500*</b> | <b>0550*</b> |
| full stroke range, min: | 75 in.      | 100 in.     | 150 in.     | 200 in.     | 250 in.     | 300 in.     | 350 in.     | 400 in.     | 450 in.      | 500 in.      | 550 in.      |

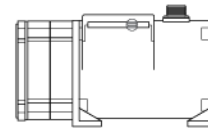
\* – 36 oz. cable tension strongly recommended

#### Enclosure Material and Measuring Cable Tension:

|                         |                         |                     |                         |                     |
|-------------------------|-------------------------|---------------------|-------------------------|---------------------|
| <b>A</b> order code:    | <b>1</b>                | <b>3</b>            | <b>2</b>                | <b>4</b>            |
| tension ( $\pm 30\%$ ): | 18 oz.                  |                     | 36 oz.                  |                     |
| enclosure material:     | powder-painted aluminum | 303 stainless steel | powder-painted aluminum | 303 stainless steel |
| max. acceleration:      | 1 g                     | 1 g                 | 5 g                     | 5 g                 |
| max. velocity:          | 60 inches/sec           | 60 inches/sec       | 200 inches/sec          | 200 inches/sec      |



standard housing  
see fig 1.



dual-spring housing  
see fig 2.

#### Measuring Cable:

|                      |                                              |                                      |                                           |                                      |
|----------------------|----------------------------------------------|--------------------------------------|-------------------------------------------|--------------------------------------|
| <b>B</b> order code: | <b>1</b>                                     | <b>2</b>                             | <b>3</b>                                  | <b>4</b>                             |
| cable construction:  | Ø.034-inch nylon-coated stainless steel rope | Ø.047-inch bare stainless steel rope | Ø.058-inch PVC jacketed vectra fiber rope | Ø.031-inch bare stainless steel rope |
| available ranges:    | all ranges                                   | all ranges up to 500 inches          | all ranges up to 400 inches               | 550-inch range only                  |
| general use:         | indoor                                       | outdoor, debris, high temperature    | high voltage or magnetic field            | outdoor, debris, high temperature    |

#### Cable Exit:

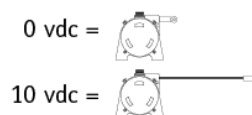
|                      |          |          |          |          |
|----------------------|----------|----------|----------|----------|
| <b>C</b> order code: | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> |
|                      | front    | top      | back     | down     |
|                      |          |          |          |          |

#### Output Signals:

|                        |                                                   |            |               |           |                                                   |               |               |             |
|------------------------|---------------------------------------------------|------------|---------------|-----------|---------------------------------------------------|---------------|---------------|-------------|
| <b>E</b> order code:   | <b>1</b>                                          | <b>2</b>   | <b>3</b>      | <b>4</b>  | <b>5</b>                                          | <b>6</b>      | <b>7</b>      | <b>8</b>    |
| output signal options: | 0...10 VDC                                        | 10...0 VDC | 0...5 VDC     | 5...0 VDC | -10...+10 VDC                                     | +10...-10 VDC | -5...+5 VDC   | +5...-5 VDC |
|                        |                                                   |            |               |           |                                                   |               |               |             |
| input voltage:         | 14.5 – 40 vdc                                     |            | 10.5 – 40 vdc |           | 14.5 – 40 vdc                                     |               | 10.5 – 40 vdc |             |
| span adjustment:       | to 50% of full stroke range                       |            |               |           | to 75% of full stroke range                       |               |               |             |
| zero adjustment:       | from factory set zero to 50% of full stroke range |            |               |           | from factory set zero to 25% of full stroke range |               |               |             |

example:

ordercode = **1** = 0...10 VDC ➔

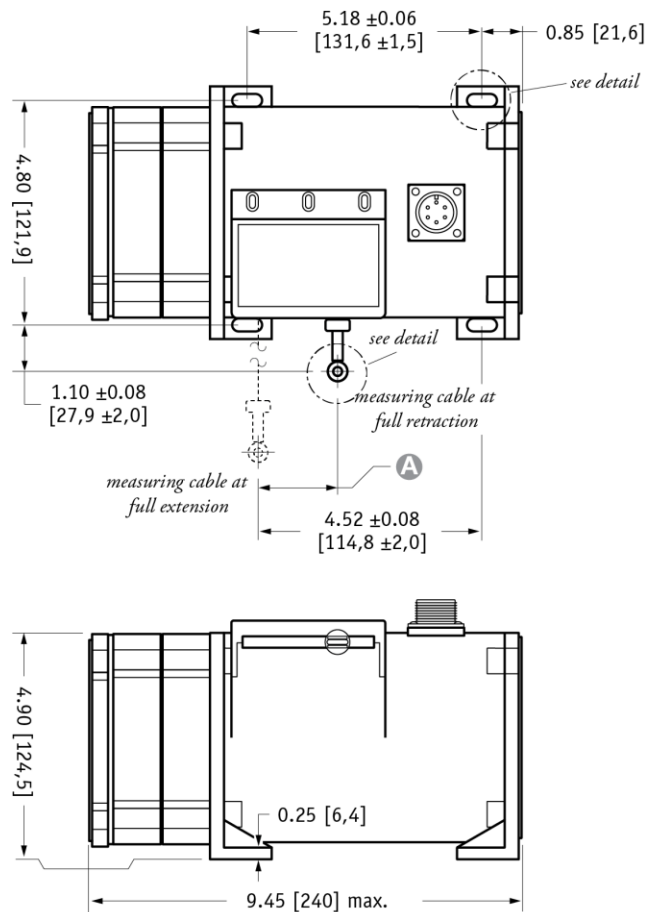


Heavy Industrial • 0...5 Vdc, 0...10 Vdc

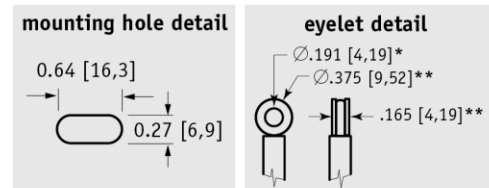
|                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                    |               |   |               |   |        |                                                                                                                                                                                                                                            |            |        |       |               |       |               |       |        |                                                                                                                                                                                                                                               |            |        |     |               |       |               |       |        |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---|---------------|---|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------|-------|---------------|-------|---------------|-------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------|-----|---------------|-------|---------------|-------|--------|
| <p><b>1</b> <i>order code:</i></p> <p>6-pin plastic connector<br/>w/mating plug</p> <p>IP 67, NEMA 4X**, 6</p>  <p>1/2 - 5/16" [14 - 8 mm] cable dia.<br/>16 AWG max conductor size<br/>connector: MS3102E-14S-6P<br/>mating plug: MS3106E-14S-6S</p> | <p><b>2</b></p> <p>10-ft. [3 M]<br/>waterproof cable</p> <p>IP 67, NEMA 4X**, 6</p>  <p>10 ft. x 0.4-in. dia.<br/>[3 M x 10 mm dia.]<br/>18 AWG, type SJTOW</p>                              | <p><b>3</b></p> <p>6-pin metal connector<br/>w/mating plug</p> <p>IP 65, NEMA 4</p>  <p>3/8-in. [9 mm] max cable dia.<br/>16 AWG max conductor size<br/>connector: MS3102E-14S-6P<br/>mating plug: MS3106E-14S-6S</p> | <p><b>4</b></p> <p>25-ft. [7.5 M]<br/>instrumentation cable</p> <p>IP 67, NEMA 6</p>  <p>25 ft. x 0.2-in. dia.<br/>[7.5 M x 5 mm dia.]<br/>24 AWG, shielded</p> |               |   |               |   |        |                                                                                                                                                                                                                                            |            |        |       |               |       |               |       |        |                                                                                                                                                                                                                                               |            |        |     |               |       |               |       |        |
| <p><b>5</b> <i>order code:</i></p> <p>100-ft. [30 M]<br/>waterproof cable</p> <p>IP 67, NEMA 4X**, 6</p>  <p>100 ft. x 0.4-in. dia.<br/>[30 M x 10 mm dia.]<br/>18 AWG, type SJTOW</p>                                                                | <p><b>6</b></p> <p>10-ft. [3 M]<br/><b>pressure tested*</b><br/>waterproof cable</p> <p>IP 68, NEMA 4X**, 6P</p>  <p>10 ft. x 0.4-in. dia.<br/>[3 M x 10 mm dia.]<br/>18 AWG, type SJTOW</p> | <p><b>7</b></p> <p>100-ft. [30 M]<br/><b>pressure tested*</b><br/>waterproof cable</p> <p>IP 68, NEMA 4X**, 6P</p>  <p>100 ft. x 0.4-in. dia.<br/>[30 M x 10 mm dia.]<br/>18 AWG, type SJTOW</p>                      |                                                                                                                                                                                                                                                    |               |   |               |   |        |                                                                                                                                                                                                                                            |            |        |       |               |       |               |       |        |                                                                                                                                                                                                                                               |            |        |     |               |       |               |       |        |
| <p><b>6-pin Mating Plug</b></p> <table> <tr> <td>pin</td> <td>signal</td> </tr> <tr> <td>A</td> <td>input voltage</td> </tr> <tr> <td>B</td> <td>output signal</td> </tr> <tr> <td>C</td> <td>common</td> </tr> </table>  <p><i>contact view</i></p> | pin                                                                                                                                                                                                                                                                           | signal                                                                                                                                                                                                                                                                                                  | A                                                                                                                                                                                                                                                  | input voltage | B | output signal | C | common | <p><b>Waterproof Cable</b></p> <table> <tr> <td>color code</td> <td>signal</td> </tr> <tr> <td>WHITE</td> <td>input voltage</td> </tr> <tr> <td>GREEN</td> <td>output signal</td> </tr> <tr> <td>BLACK</td> <td>common</td> </tr> </table> | color code | signal | WHITE | input voltage | GREEN | output signal | BLACK | common | <p><b>Instrumentation Cable</b></p> <table> <tr> <td>color code</td> <td>signal</td> </tr> <tr> <td>RED</td> <td>input voltage</td> </tr> <tr> <td>GREEN</td> <td>output signal</td> </tr> <tr> <td>BLACK</td> <td>common</td> </tr> </table> | color code | signal | RED | input voltage | GREEN | output signal | BLACK | common |
| pin                                                                                                                                                                                                                                                                                                                                    | signal                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                    |               |   |               |   |        |                                                                                                                                                                                                                                            |            |        |       |               |       |               |       |        |                                                                                                                                                                                                                                               |            |        |     |               |       |               |       |        |
| A                                                                                                                                                                                                                                                                                                                                      | input voltage                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                    |               |   |               |   |        |                                                                                                                                                                                                                                            |            |        |       |               |       |               |       |        |                                                                                                                                                                                                                                               |            |        |     |               |       |               |       |        |
| B                                                                                                                                                                                                                                                                                                                                      | output signal                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                    |               |   |               |   |        |                                                                                                                                                                                                                                            |            |        |       |               |       |               |       |        |                                                                                                                                                                                                                                               |            |        |     |               |       |               |       |        |
| C                                                                                                                                                                                                                                                                                                                                      | common                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                    |               |   |               |   |        |                                                                                                                                                                                                                                            |            |        |       |               |       |               |       |        |                                                                                                                                                                                                                                               |            |        |     |               |       |               |       |        |
| color code                                                                                                                                                                                                                                                                                                                             | signal                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                    |               |   |               |   |        |                                                                                                                                                                                                                                            |            |        |       |               |       |               |       |        |                                                                                                                                                                                                                                               |            |        |     |               |       |               |       |        |
| WHITE                                                                                                                                                                                                                                                                                                                                  | input voltage                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                    |               |   |               |   |        |                                                                                                                                                                                                                                            |            |        |       |               |       |               |       |        |                                                                                                                                                                                                                                               |            |        |     |               |       |               |       |        |
| GREEN                                                                                                                                                                                                                                                                                                                                  | output signal                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                    |               |   |               |   |        |                                                                                                                                                                                                                                            |            |        |       |               |       |               |       |        |                                                                                                                                                                                                                                               |            |        |     |               |       |               |       |        |
| BLACK                                                                                                                                                                                                                                                                                                                                  | common                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                    |               |   |               |   |        |                                                                                                                                                                                                                                            |            |        |       |               |       |               |       |        |                                                                                                                                                                                                                                               |            |        |     |               |       |               |       |        |
| color code                                                                                                                                                                                                                                                                                                                             | signal                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                    |               |   |               |   |        |                                                                                                                                                                                                                                            |            |        |       |               |       |               |       |        |                                                                                                                                                                                                                                               |            |        |     |               |       |               |       |        |
| RED                                                                                                                                                                                                                                                                                                                                    | input voltage                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                    |               |   |               |   |        |                                                                                                                                                                                                                                            |            |        |       |               |       |               |       |        |                                                                                                                                                                                                                                               |            |        |     |               |       |               |       |        |
| GREEN                                                                                                                                                                                                                                                                                                                                  | output signal                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                    |               |   |               |   |        |                                                                                                                                                                                                                                            |            |        |       |               |       |               |       |        |                                                                                                                                                                                                                                               |            |        |     |               |       |               |       |        |
| BLACK                                                                                                                                                                                                                                                                                                                                  | common                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                    |               |   |               |   |        |                                                                                                                                                                                                                                            |            |        |       |               |       |               |       |        |                                                                                                                                                                                                                                               |            |        |     |               |       |               |       |        |

Downloaded from [Arrow.com](http://Arrow.com).

Fig. 2 – Outline Drawing (36 oz. cable tension only)

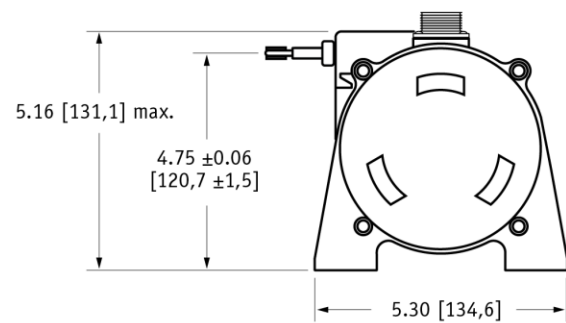


DIMENSIONS ARE IN INCHES [MM]  
tolerances are 0.03 IN. [0.5 MM] unless otherwise noted.



#### A DIMENSION (INCHES)

| RANGE | MEASURING CABLE       |                       |                       |                       |
|-------|-----------------------|-----------------------|-----------------------|-----------------------|
|       | $\varnothing.031$ in. | $\varnothing.034$ in. | $\varnothing.047$ in. | $\varnothing.062$ in. |
| 75    | n/a                   | 0.22                  | 0.29                  | 0.37                  |
| 100   | n/a                   | 0.29                  | 0.39                  | 0.49                  |
| 150   | n/a                   | 0.44                  | 0.59                  | 0.73                  |
| 200   | n/a                   | 0.58                  | 0.79                  | 0.98                  |
| 250   | n/a                   | 0.73                  | 0.98                  | 1.22                  |
| 300   | n/a                   | 0.88                  | 1.18                  | 1.47                  |
| 350   | n/a                   | 1.02                  | 1.38                  | 1.71                  |
| 400   | n/a                   | 1.17                  | 1.57                  | 1.96                  |
| 450   | n/a                   | 1.31                  | 1.77                  | n/a                   |
| 500   | n/a                   | 1.46                  | 1.97                  | n/a                   |
| 550   | 1.61                  | 1.61                  | n/a                   | n/a                   |



\* tolerance =  $+0.005 -0.001$  [ $+0.13 -0.03$ ]  
\*\* tolerance =  $+0.005 -0.005$  [ $+0.13 -0.13$ ]

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PT9510 12/01/2015