

# Cable-Extension Position Transducer

## Incremental Encoder Output

Ranges: 0-50 to 0-250 inches

Industrial Grade • High Cycle Applications



# PT5E

### Specification Summary:

#### GENERAL

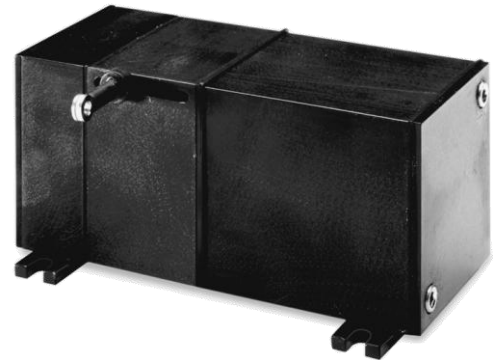
Full Stroke Range Options ..... 0-50 to 0-250 inches  
 Output Signal Options..... incremental encoder (quadrature)  
 Accuracy ..... see ordering information  
 Repeatability ..... see ordering information  
 Resolution ..... 10 to 250 pulses per inch  
 Measuring Cable Options ..... stainless steel or thermoplastic  
 Enclosure Material..... hard anodized aluminum  
 Sensor ..... optical encoder  
 Maximum Measuring Cable Velocity ..... see ordering information  
 Maximum Retraction Acceleration ..... see ordering information  
 Weight ..... 5 lbs. max.

#### ELECTRICAL

Input Voltage ..... see ordering information  
 Input Current..... see ordering information

#### ENVIRONMENTAL

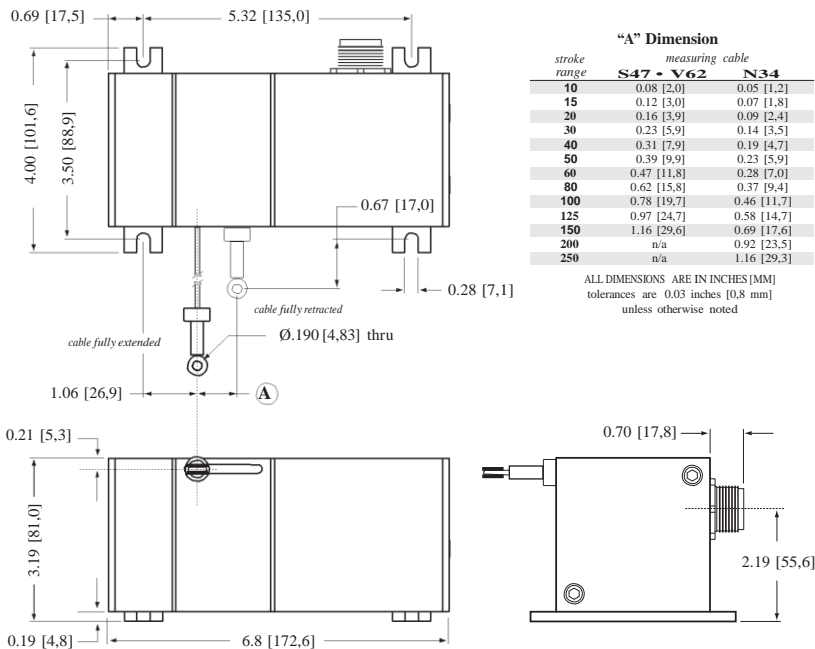
Enclosure ..... NEMA 4/6, IP 65/67  
 Operating Temperature ..... 0° to 160°F (-17° to 71°C)  
 Vibration..... up to 10 G's to 2000 Hz maximum



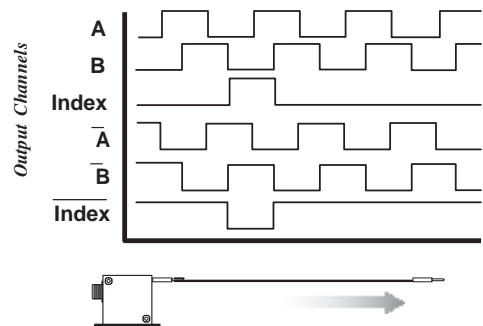
The PT5E encoder-based cable-extension transducer offers a unique thermoplastic cable that has virtually an infinite fatigue life. This cable, known as V62, has properties that are superior for high cycle and rugged applications.

the PT5E installs in minutes, functions properly without perfectly parallel alignment, and fits easily into small areas. The PT5E offers additional installation flexibility since its cable exit can be rotated relative to the mounting surface, providing four different cable exit orientations.

### Outline Drawing



### Output Signal



## Ordering Information:

### Model Number:

**PT5E** - **R** - **A** - **B** - **C** - **D** - **E**  
*order code:*

Sample Model Number:

**PT5E - 100 - N34 - FR - 100 - AB-TTL - M6**

**R** range: 100 inches  
**A** measuring cable: .034 nylon-coated stainless steel  
**B** cable exit: front  
**C** resolution: 100±2 pulses per inch  
**D** output signal: TTL/CMOS compatible driver  
**E** electrical connection: 6-pin plastic connector

### Full Stroke Range:

| <b>R</b> <i>order code:</i>           | 50                  | 100     | 150     | 200                 | 250     | 1250    | 2500            | 3750    | 5000            | 6250    |
|---------------------------------------|---------------------|---------|---------|---------------------|---------|---------|-----------------|---------|-----------------|---------|
| full stroke range, min:               | 50 in.              | 100 in. | 150 in. | 200 in.             | 250 in. | 1250 mm | 2500 mm         | 3750 mm | 5000 mm         | 6250 mm |
| $\Delta$ accuracy ( $\pm$ % of f.s.): | .1                  | .07     | .06     | .05                 | .04     | .1      | .07             | .06     | .05             | .04     |
| repeatability ( $\pm$ % of f.s.):     | .02                 | .01     | .01     | .01                 | .01     | .02     | .01             | .01     | .01             | .01     |
| cable tension ( $\pm$ 20%):           | 41 ounces           |         |         | 21 ounces           |         |         | 11,4 N          |         | 5,8 N           |         |
| max. cable velocity • acceleration:   | 300 in./sec • 5 G's |         |         | 120 in./sec • 2 G's |         |         | 8 M/sec • 5 G's |         | 3 M/sec • 2 G's |         |

### Measuring Cable:

| <b>A</b> <i>order code:</i> | N34  | S47   | V62   |
|-----------------------------|--|---|---|
|                             | .034 nylon-coated stainless steel<br>available in all ranges | .047 stainless steel<br>all ranges up to 150 inches | .062 thermoplastic<br>all ranges up to 150 inches |
|                             |  |   |   |

### Cable Exit:

| <b>B</b> <i>order code:</i> | UP          | DN   | FR    | BK   |
|-----------------------------|-------------|------|-------|------|
|                             | up          | down | front | back |
|                             |             |      |       |      |
|                             | inches [mm] |      |       |      |

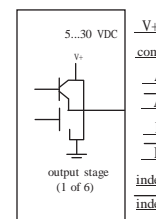
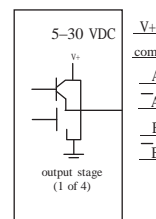
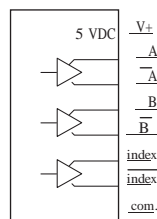
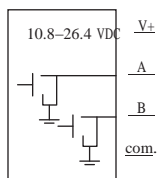
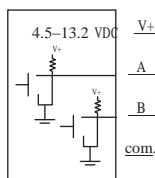
### Resolution:

| <b>C</b> <i>order code:</i>           | 10                           | 100                         | 200                         | 250                          |
|---------------------------------------|------------------------------|-----------------------------|-----------------------------|------------------------------|
| resolution for <b>english</b> ranges: | 10 $\pm$ 0.2 pulses per inch | 100 $\pm$ 2 pulses per inch | 200 $\pm$ 4 pulses per inch | 250 $\pm$ 5 pulses per inch  |
| <b>C</b> <i>order code:</i>           | .5                           | 5                           | 10                          | 12.5                         |
| resolution for <b>metric</b> ranges:  | 0.5 $\pm$ 0.01 pulses per mm | 5 $\pm$ 0.1 pulses per mm   | 10 $\pm$ 0.2 pulses per mm  | 12.5 $\pm$ 0.3 pulses per mm |

## Ordering Information (cont.)

### Output Signals:

| ① order code:             | AB-TTL              | AB-OC           | ABC-LD             | ABC-UD                              | ABZC-UD                               |
|---------------------------|---------------------|-----------------|--------------------|-------------------------------------|---------------------------------------|
| output driver:            | TTL/CMOS compatible | open collector  | 5-volt line driver | universal line driver<br>(no index) | universal line driver<br>(with index) |
| input voltage:            | 4.5...13.2 VDC      | 10.8...26.4 VDC | 5 VDC              | 5...30 VDC                          | 5...30 VDC                            |
| max. source/sink current: | 20 mA sink          | 20 mA sink      | 20 mA sink         | 20 mA source/sink                   | 20 mA source/sink                     |
| max. input current:       | 80 mA               | 80 mA           | 150 mA             | 100 mA, no load                     | 100 mA, no load                       |



### Electrical Connection:

| ① order code: | MC4  | M6   | M6M  | M18  | C25  |
|---------------|--|--|--|--|--|
|               | 4-pin micro-connector with 12 ft [3.5 M] cord set                            | 6-pin plastic connector with mating plug   | 6-pin metal connector with mating plug   | 18-pin plastic connector with mating plug  | 25-ft. instrumentation cable 24 AWG, shielded              |
|               | IP 67, NEMA 6  | IP 67, NEMA 6  | IP 65, NEMA 4  | IP 67, NEMA 6  | IP 67, NEMA 6  |
|               | 1.2 in. [31 mm]  | 3.0 in. [78 mm]  | 2.4 in. [60 mm]  | 2.5 in. [64 mm]  |  |
|               | 12 ft. x 5/16-in. dia. [3.5 M x 8 mm dia.] yellow PVC jacket 22AWG, shielded | .30 - .39 in. [8 - 10 mm] cable dia. 16 AWG max conductor size connector: MS3102E-14S-6P mating plug: MS3106E-14S-6S | .375 in. [9 mm] max cable dia. 16 AWG max conductor size connector: MS3102E-14S-6P mating plug: MS3106E-14S-6S | .26 - .30 in. [7 - 8 mm] cable dia. 20 - 24 AWG conductor size connector: Conxall 14282-18PG-300-K mating plug: Conxall 13282-18SG-326-K | 25 ft. x 0.2-in. dia. [7.5 M x 5 mm dia.] 24 AWG, shielded |

#### 4-pin cordset:



contact view

| pin | color code  | TTL/CMOS Open Collector | 5 V Line Driver Universal Line Driver |
|-----|-------------|-------------------------|---------------------------------------|
| 1   | RED-BLK TR. | input voltage           | input voltage                         |
| 2   | RED-WHT TR. | channel A               | channel A                             |
| 3   | RED         | channel B               | channel B                             |
| 4   | GREEN       | common                  | common                                |

#### 6-pin mating plug:



contact view

| 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'                            |

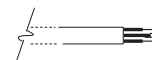
#### 18-pin mating plug:



contact view

| 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'                                |

#### 25-ft. instrumentation cable:



| 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'                                |

△ Total accuracy includes uncertainty due to resolution and is calculated:  $\left\{ \pm [(\%FS)(FS) + \text{length of 1 pulse}] \right\}$

Example: Model Number: PT5E-100-N34-FR100-AB-TTL-M6

Full Stroke: 100 inches

Accuracy: [.07% (100 in.) + 1/100 in.] = ± .08 inches