

\*50-inch range model, dimensions may differ for other ranges

## PT420

### Cable Actuated Sensor Instrument Grade • 4..20mA / 0..20mA

**Absolute Linear Position • Classic Stringpot Design**

**Stroke Range Options: 0–2 to 0–100 inches**

**Powder Painted & Anodized Aluminum Enclosure**

**Industrial Automation & Testing Applications**

#### General

<b>Full Stroke Range Options</b>	0-2 to 0-100 inches
<b>Output Signal</b>	4...20 mA (2-wire) and 0...20 mA (3-wire)
<b>Accuracy</b>	± 0.15% - ±0.28% full stroke (see ordering information)
<b>Repeatability</b>	± 0.05% full stroke
<b>Resolution</b>	essentially infinite
<b>Measuring Cable</b>	.019-inch dia. nylon-coated stainless steel rope
<b>Enclosure Material</b>	powder-painted and anodized aluminum
<b>Sensor</b>	plastic-hybrid precision potentiometer
<b>Weight</b>	2 lbs. max.

#### Electrical

<b>Input Voltage</b>	see ordering information
<b>Input Current</b>	20 mA max.
<b>Maximum Loop Resistance (Load)</b>	(loop supply voltage - 8)/0.020
<b>Circuit Protection</b>	38 mA max.
<b>Impedance</b>	100M ohms@100 VDC, min.
<b>Signal Adjustment, Zero Span</b>	from factory set zero to 50% of full stroke range to 50% of factory set span
<b>Signal Adjustment, Span</b>	to 50% of factory set span
<b>Thermal Effects, Zero</b>	0.01% f.s./°F, max.
<b>Thermal Effects, Span</b>	0.01% f.s./°F, max.

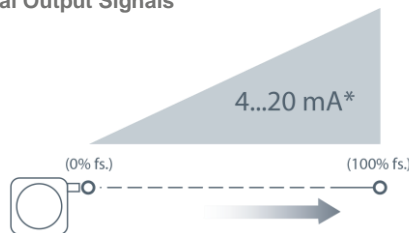
#### Environmental

<b>Enclosure</b>	IP50, NEMA 1
<b>Operating Temperature</b>	-40° to 200°F (-40° to 90°C)
<b>Vibration</b>	up to 10 g to 2000 Hz maximum

The PT420 is available with full-scale measurement ranges from 2 to 100 inches, providing a 0/4-20 mA feedback signal that is linearly proportional to the position of a traveling stainless-steel extension cable. Use the PT420 to provide position feedback on hydraulic cylinders in factories and utilities, gate position in fresh or wastewater distribution systems, or valve opening in process-related applications.

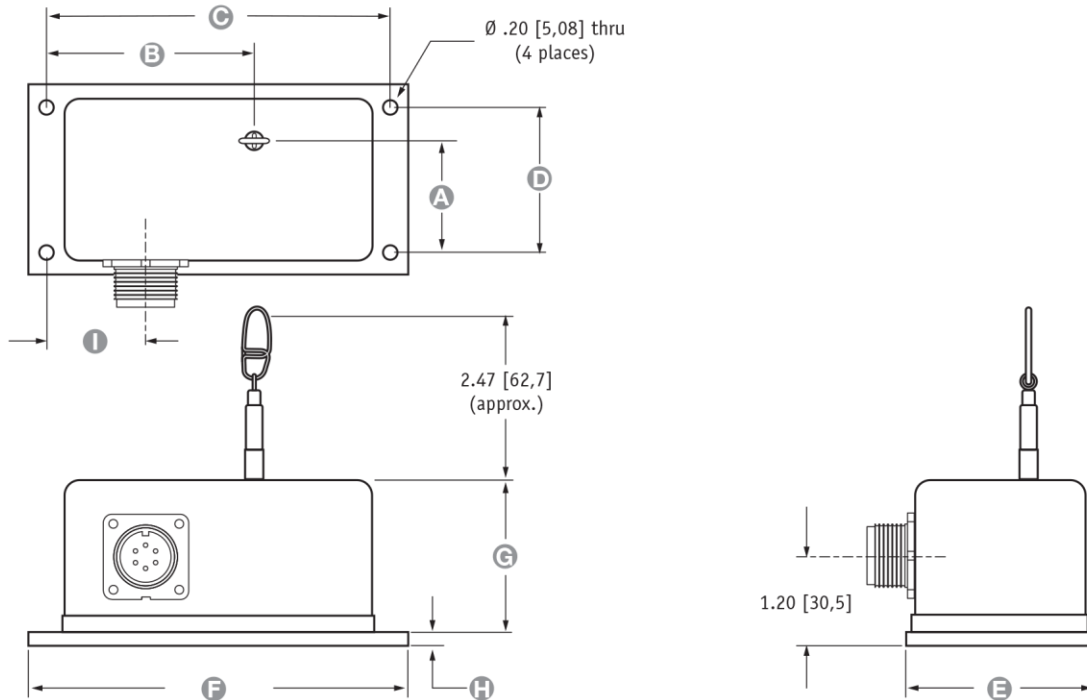
The PT420 installs in minutes by mounting its base to a fixed surface and attaching its cable to the movable object. The PT420 works without perfect parallel alignment, and when its stainless steel cable is retracted, its height is less than 5".

#### Electrical Output Signals



\*Optional 3-wire, 0...20mA output signal available.

**Fig. 1 - Outline Drawing**



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

Range	A	B	C	D	E	F	G	H	I
2", 10", 20"	1.34 [34,0]	4.00 [101,6]	7.00 [177,8]	2.00 [50,8]	2.63 [66,8]	7.50 [190,5]	2.10 [53,3]	.16 [4,1]	1.37 [34,8]
5", 25", 50"	1.83 [46,5]	4.00 [101,6]	7.00 [177,8]	2.00 [50,8]	2.63 [66,8]	7.50 [190,5]	2.10 [53,3]	.16 [4,1]	1.37 [34,8]
15", 30"	1.56 [39,6]	4.00 [101,6]	7.00 [177,8]	2.00 [50,8]	2.63 [66,8]	7.50 [190,5]	2.10 [53,3]	.16 [4,1]	1.37 [34,8]
40"	1.64 [41,6]	4.00 [101,6]	7.00 [177,8]	2.00 [50,8]	2.63 [66,8]	7.50 [190,5]	2.10 [53,3]	.16 [4,1]	1.37 [34,8]
60"	2.16 [54,9]	4.19 [106,4]	7.00 [177,8]	2.37 [60,2]	3.25 [82,5]	7.50 [190,5]	2.60 [66,0]	.19 [4,8]	1.37 [34,8]
75"	2.45 [62,2]	4.38 [111,3]	6.75 [171,4]	2.50 [63,5]	3.63 [92,2]	7.50 [190,5]	2.86 [72,6]	.19 [4,8]	1.37 [34,8]
100"	3.10 [78,7]	4.19 [106,4]	7.38 [187,5]	3.00 [76,2]	4.25 [108,0]	8.00 [203,2]	3.79 [96,3]	.19 [4,8]	3.69 [93,7]

**Ordering Information**

**Model Number:**

**PT420** -      -      **1** -      **1** -      **0**  
order code:                    R            A            B            C            D            E            F            G

**Sample Model Number:**

**PT420 - 0025 - 111 - 1110**

- R** range: 25 inches
- A** measuring cable tension: standard - 5 oz.
- B** cable exit: top
- C** output signal: 4...20 mA
- E** electrical connection: 6-pin plastic connector

**Full Stroke Range:**

<b>R</b> order code:	0002	0005	0010	0015	0020	0025	0030	0040	0050	0060	0075	0100
full stroke range, min:	2 in.	5 in.	10 in.	15 in.	20 in.	25 in.	30 in.	40 in.	50 in.	60 in.	75 in.	100 in.
accuracy (% of f.s.):	0.28%	0.28%	0.18%	0.18%	0.15%	0.18%	0.15%	0.15%	0.15%	0.15%	0.15%	0.15%
potentiometer cycle life*:	2.5 x 10 <sup>6</sup>	2.5 x 10 <sup>6</sup>	5 x 10 <sup>5</sup>	5 x 10 <sup>5</sup>	5 x 10 <sup>5</sup>	5 x 10 <sup>5</sup>	5 x 10 <sup>5</sup>	2.5 x 10 <sup>5</sup>	2.5 x 10 <sup>5</sup>	2.5 x 10 <sup>5</sup>	2.5 x 10 <sup>5</sup>	2.5 x 10 <sup>5</sup>

\*-1 cycle is defined as the travel of the measuring cable from full retraction to full extension and back to full retraction

**Measuring Cable Tension:**

	1		H	
	standard tension		high tension	
	tension, ±20%	max acceleration	tension, ±40%	max acceleration
2, 10, 20 inch range:	12 oz.	• 11 g	65 oz.	• 53 g
5, 25, 50 inch range:	5 oz.	• 2 g	26 oz.	• 11 g
15, 30 inch range:	8 oz.	• 3 g	43 oz.	• 23 g
40 inch range:	6 oz.	• 4 g	33 oz.	• 16 g
60 inch range:	13 oz.	• 4 g	22 oz.	• 8 g
75 inch range:	10 oz.	• 3 g	31 oz.	• 12 g
100 inch range:	13 oz.	• 5 g	52 oz.	• 20 g

**Measuring Cable Exit:**

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

\*—note: dimensions for optional cable exits not controlled on this datasheet, please contact factory

**Output Signal:**

order code:	1	2	3	4
output signal options:	4...20 mA	20...4 mA	0...20 mA	20...0 mA
sensitivity:	16 mA/full stroke ±0.25%		20 mA/full stroke ±0.25%	
wiring configuration:	2 – wire		3 – wire	
input voltage:	8 – 34 VDC		14 – 29 VDC	

Example:

ordercode = 1 = 4...20 mA

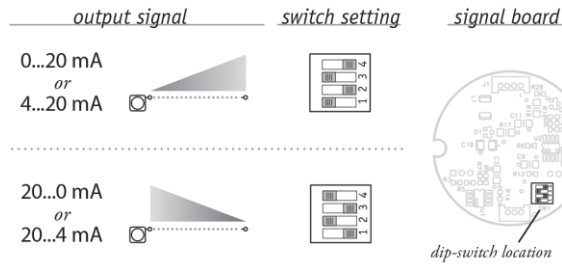


**Electrical Connection:**

order code:	1	2	3	4
	6-pin plastic connector with mating plug	terminal strip	6-pin metal connector with mating plug	25-ft. instrumentation cable 24 AWG, shielded
	3.0 in. [78 mm]		2.4 in. [60 mm]	
	1/2 - 5/16" [14 - 8 mm] cable dia. 16 AWG max conductor size connector: MS3102E-14S-6P mating plug: MS3106E-14S-6S		3/8-in. [9 mm] max cable dia. 16 AWG max conductor size connector: MS3102E-14S-6P mating plug: MS3106E-14S-6S	25 ft. x 0.2-in. dia. [7,5 M x 5 mm dia.] 24 AWG, shielded
	<b>6-pin mating plug:</b>	<b>Terminal Strip:</b>	<b>25-ft. instrumentation cable:</b>	
pin	2-wire A 8...34 vdc B 4...20 mA out C - D case ground	3-wire 14...29 vdc common 0...20 mA out -	3-wire 8...34 vdc 4...20 mA out case ground	2-wire 8...34 vdc 4...20 mA out n/a case ground
		terminal 1 2 3	terminal 1 2 3	color code RED BLACK WHITE GREEN
				3-wire 14...29 vdc common n/a 0...20 mA out

### Output Signal Selection

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 the two 4-40 screws on top and lift up cover.

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