

Cable-Extension Position Transducer

0/4...20 mA Output
Ranges: 0-2 to 0-100 inches
Instrument Grade



PT420



Specification Summary:

GENERAL
 Full Stroke Range Options 0-2 to 0-100 inches
 Output Signal Options 4...20 mA (2-wire) and 0...20 mA (3-wire)
 Accuracy *see ordering information*
 Repeatability ± 0.05% full stroke
 Resolution essentially infinite
 Enclosure Material powder-painted and anodized aluminum
 Sensor plastic-hybrid precision potentiometer
 Weight 2 lbs. max.

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

ENVIRONMENTAL
 Enclosure NEMA 1
 Operating Temperature -40° to 200°F (-40° to 90°C)
 Vibration up to 10 G's 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 Signal

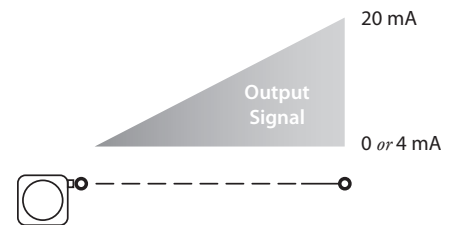
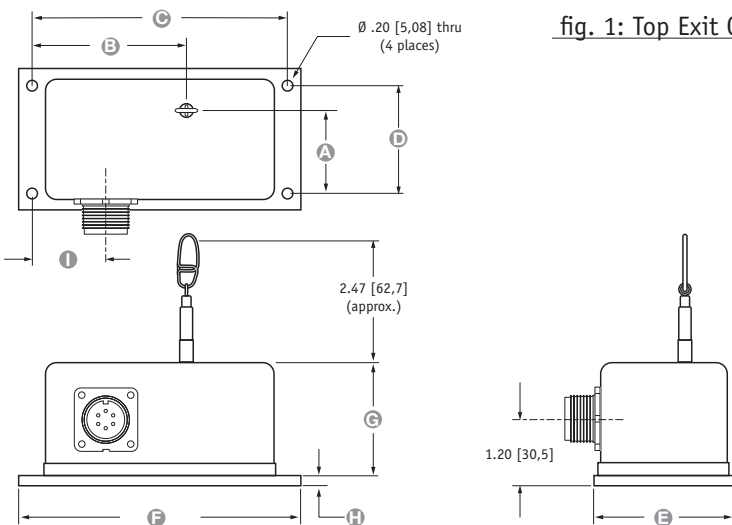


fig. 1: Top Exit Option



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", 80"	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]

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

PT420 Cable-Extension Transducer: 0/4...20 mA Output Signal

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.
- C** cable exit: top
- F** output signal: 4...20 mA
- G** electrical connection: 6-pin plastic connector

Full Stroke Range:

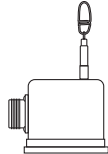
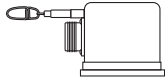
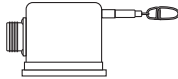
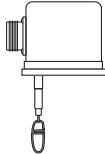
R order code:	0002	0005	0010	0015	0020	0025	0030	0040	0050	0060	0075	0100
full stroke range, min:	2 in.	5 in.	10 in.	15 in.	20 in.	25 in.	30 in.	40 in.	50 in.	60 in.	75 in.	100 in.
accuracy (% of f.s.):	0.28%	0.28%	0.18%	0.18%	0.15%	0.18%	0.15%	0.15%	0.15%	0.15%	0.15%	0.15%
potentiometer cycle life*: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

*-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:





A order code:	1		H		2*		3*	
	standard tension		high tension		*note – outline dimensions for these options are not controlled on this datasheet!			
	tension, ±20%	max acceleration	tension, ±40%	max acceleration				
2, 10, 20 inch range:	12 oz.	• 11 g	65 oz.	• 53 g	72 oz.	144 oz.		
5, 25, 50 inch range:	5 oz.	• 2 g	26 oz.	• 11 g	30 oz.	60 oz.		
15, 30 inch range:	8 oz.	• 3 g	43 oz.	• 23 g	48 oz.	96 oz.		
40 inch range:	6 oz.	• 4 g	33 oz.	• 16 g	36 oz.	72 oz.		
60 inch range:	13 oz.	• 4 g	22 oz.	• 8 g	26 oz.	52 oz.		
75, 80 inch range:	10 oz.	• 3 g	40 oz.	• 12 g	20 oz.	40 oz.		
100 inch range:	13 oz.	• 5 g	52 oz.	• 20 g	26 oz.	52 oz.		
measuring cable:	.019-in. dia. nylon-coated stainless steel				.024-in. dia. stainless steel			

Measuring Cable Exit:

C 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

Sensing Circuit:

F 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 - 40 VDC		14 - 29 VDC	

Example:

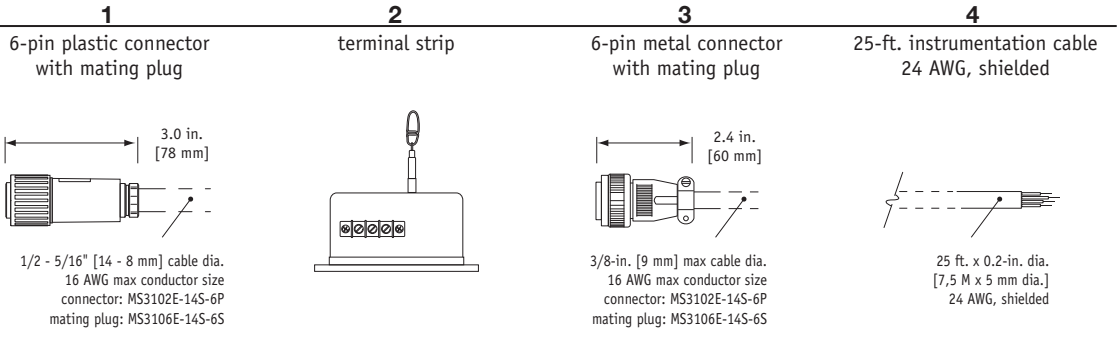
ordercode = **1** = 4...20 mA

 = 4 mA  = 20 mA

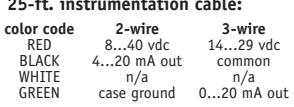
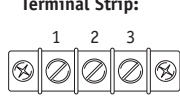
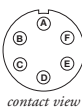
Ordering Information (cont.):

Electrical Connection:

Order code:

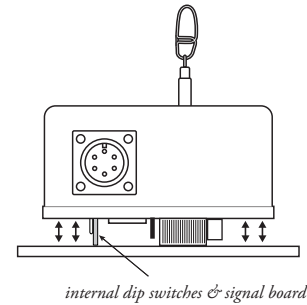
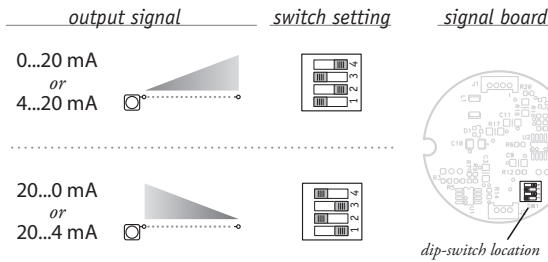


6-pin mating plug:				Terminal Strip:			25-ft. instrumentation cable:		
pin	2-wire	3-wire		terminal	2-wire	3-wire	color code	2-wire	3-wire
A	8...40 vdc	14...29 vdc		1	8...40 vdc	14...29 vdc	RED	8...40 vdc	14...29 vdc
B	4...20 mA out	common		2	4...20 mA out	common	BLACK	4...20 mA out	common
C	-	0...20 mA out		3	case ground	0...20 mA out	WHITE	n/a	n/a
D	case ground	-					GREEN	case ground	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.

version: 6.0 last updated: May 24, 2011