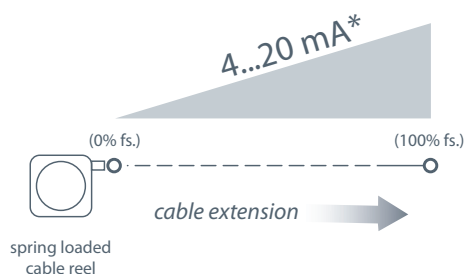


The PT8420 with its 4-20 mA feedback signal, is ideal for monitoring the stroke of a hydraulic cylinder and other applications requiring position data acquisition in harsh environments.

As a member of our family of NEMA 4-rated cable-extension transducers, the PT8420 provides a feedback signal that is proportional to the linear movement of a traveling stainless-steel extension cable. Simply mount the body of the transducer to a fixed surface and attach the extension cable to the moving object.

#### Output Signal



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

# PT8420

## Cable Actuated Sensor

Industrial • 4...20 mA • 0...20mA

Absolute Linear Position to 60 inches (1524 mm)

Aluminum or Stainless Steel Enclosure Options

VLS Option to Prevent Free-Release Damage

IP68 / NEMA 6 • Hazardous Area Certification

### GENERAL

Full Stroke Range Options

0-2 to 0-60 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

Measuring Cable Options

stainless steel or thermoplastic

Enclosure Material

powder-painted aluminum or stainless steel

Sensor

plastic-hybrid precision potentiometer

Potentiometer Cycle Life

see ordering information

Max. Retraction Acceleration

see ordering information

### ELECTRICAL

Input Voltage

see ordering information

Input Current

20 mA max.

Max. Loop Resistance (Load)

(loop supply voltage - 8)/0.020

Circuit Protection

38 mA max.

Impedance

100M ohms@100 VDC, min.

Signal Adjust, Zero

from factory set zero to 50% of full stroke range

Signal Adjust, Span

to 50% of factory set span

Thermal Effects, Zero

0.01% f.s./°F, max.

Thermal Effects, Span

0.01% f.s./°F, max.

### ENVIRONMENTAL

Enclosure

NEMA 4/4X/6, IP 67/68

Hazardous Area Certification

see ordering information

Operating Temperature

-40° to 200°F (-40° to 90°C)

Vibration

up to 10 g's to 2000 Hz maximum

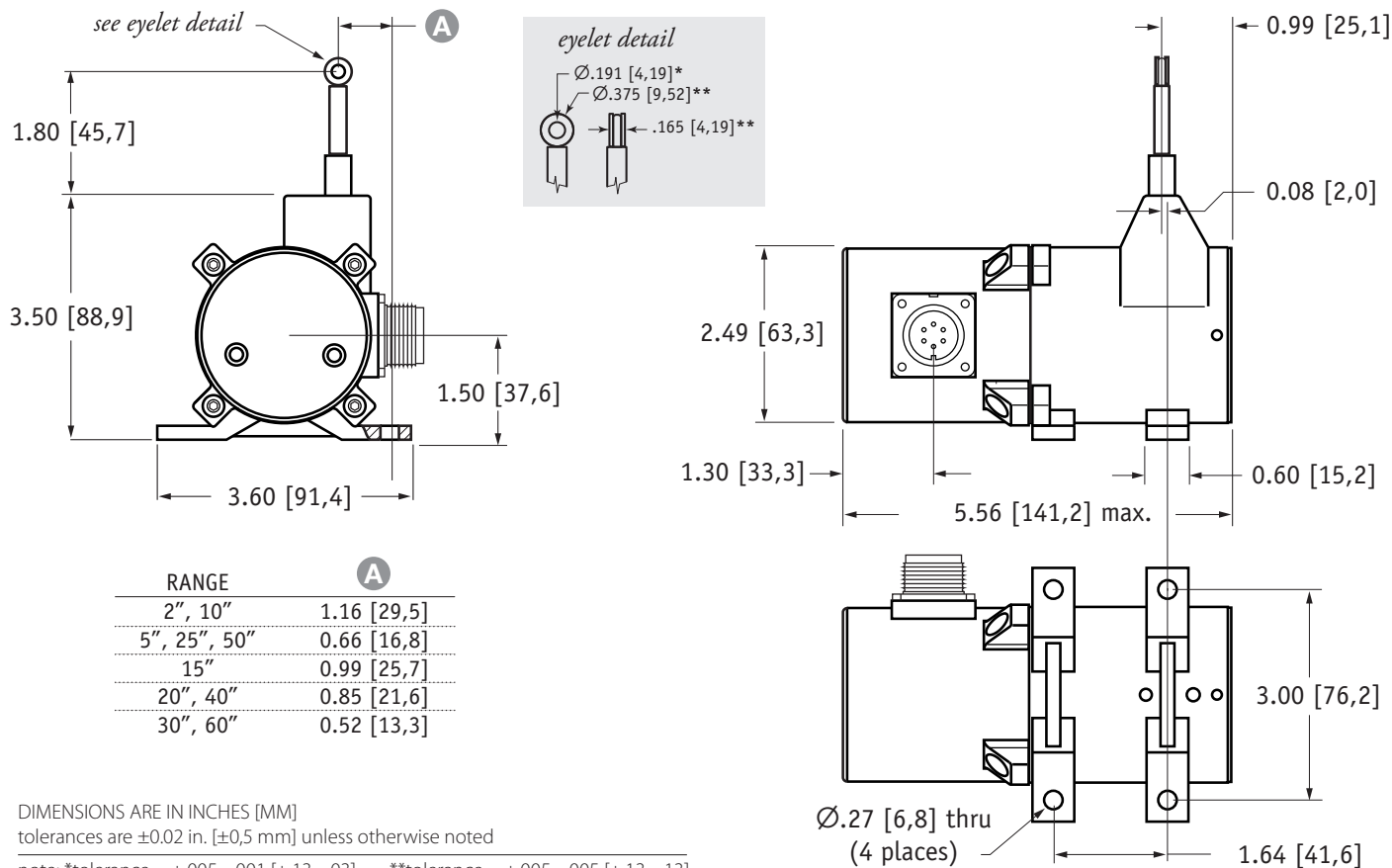
Weight, Aluminum Enclosure

3 lbs. max.

Weight, Stainless Steel Encl.

6 lbs. max.

## Outline Drawing:



DIMENSIONS ARE IN INCHES [MM]

tolerances are  $\pm 0.02$  in. [ $\pm 0.5$  mm] unless otherwise notednote: \*tolerance =  $+0.005 -0.001$  [ $+0.13 -0.03$ ] \*\*tolerance =  $+0.005 -0.005$  [ $+0.13 -0.13$ ]

## Ordering Information:

## Model Number:

**PT8420-** \_\_\_\_\_ **1 - 1** \_\_\_\_\_

order code: R A B C D E F G

Sample Model Number:

**PT8420 - 0030 - 111 - 1110**

R range: 30 inches  
 A enclosure/cable tension: aluminum/standard (13 oz.)  
 B measuring cable: .034 nylon-coated stainless  
 C output signal: 4...20mA, 2-wire  
 D electrical connection: 6-pin plastic connector  
 E cable guide option: standard nylon cable guide

## Full Stroke Range:

R order code:	0002	0005	0010	0015	0020	0025	0030	0040	0050	0060
full stroke range, min:	2 in.	5 in.	10 in.	15 in.	20 in.	25 in.	30 in.	40 in.	50 in.	60 in.
accuracy (% of f.s.):	1.00%	1.00%	0.18%	0.18%	0.18%	0.18%	0.18%	0.15%	0.15%	0.15%
potentiometer cycle life*:	$2.5 \times 10^6$	$2.5 \times 10^6$	$5 \times 10^5$	$5 \times 10^5$	$5 \times 10^5$	$5 \times 10^5$	$5 \times 10^5$	$2.5 \times 10^5$	$2.5 \times 10^5$	$2.5 \times 10^5$

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

## 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	{	Range:		2 in.	5 in.	10 in.	15 in.	20 in.	25 in.	30 in.	40 in.	50 in.	60 in.
		Standard:		39 oz.	16 oz.	39 oz.	26 oz.	20 oz.	16 oz.	13 oz.	20 oz.	16 oz.	13 oz.
		Medium:		65 oz.	26 oz.	65 oz.	43 oz.	33 oz.	26 oz.	22 oz.	33 oz.	26 oz.	22 oz.
		High:		116 oz.	47 oz.	116 oz.	77 oz.	60 oz.	47 oz.	40 oz.	60 oz.	47 oz.	40 oz.







tension tolerance:  $\pm 50\%$

## Ordering Information (cont.):

### Measuring Cable:

<b>B</b> order code:	1	2	3	4
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:	<i>all ranges</i>	<i>5, 15, 20, 25, 30-inch only</i>	<i>thru 30 inches only</i>	<i>40, 50, 60-inch only</i>
general use:	indoor	outdoor, debris, high temperature	high voltage or magnetic field	outdoor, debris, high temperature


### Output Signals:

<b>B</b> order code:	1	2	3	4	5*	6*
output signal options:	4...20 mA 	20...4 mA 	0...20 mA 	20...0 mA 	4...20 mA 	20...4 mA 
sensitivity:	16 mA/full stroke ±0.25%		20 mA/full stroke ±0.25%		16 mA/full stroke ±0.25%	
wiring configuration:	2 – wire		3 – wire		2 – wire	
input voltage:	8 – 34 vdc		14 – 29 vdc		14 – 32 vdc	
hazardous area certification:	not certified				CSA	

Example:

ordercode = 1 = 4...20 mA



 = 4 mA



 = 20 mA

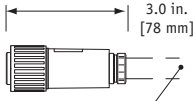
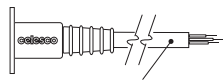
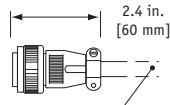
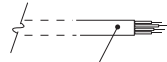
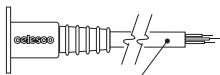
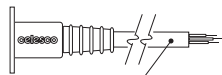
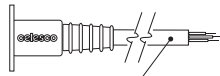

Hazardous Area Certification:



CSA Standard 22.2  
Class 1  
Groups A, B, C and D

**\*IMPORTANT:** intrinsically safe when powered from a CSA certified zener barrier rated 28 VDC max, 110 mA max per installation drawing#677984

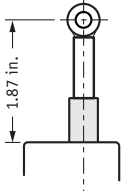
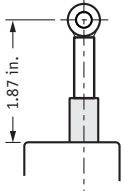
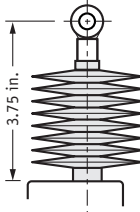
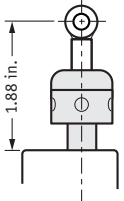
### Electrical Connection:

<b>F</b> <i>order code:</i>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>																																								
	6-pin plastic connector w/mating plug <b>IP 67, NEMA 4X**, 6</b>	10-ft. [3 M] waterproof cable <b>IP 67, NEMA 4X**, 6</b>	6-pin metal connector w/mating plug <b>IP 65, NEMA 4</b>	25-ft. [7.5 M] instrumentation cable <b>IP 67, NEMA 6</b>																																								
	 1/2 - 5/16" [14 - 8 mm] cable dia. 16 AWG max conductor size connector: MS3102E-14S-6P mating plug: MS3106E-14S-6S	 10 ft. x 0.4-in. dia. [3 M x 10 mm dia.] 3-conductor, 18 AWG type SJTOW	 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. [7.5 M x 5 mm] dia. 6-conductor, 24 AWG shielded																																								
<b>F</b> <i>order code:</i>	<b>5</b>	<b>6</b>	<b>7</b>																																									
	100-ft. [30 M] waterproof cable <b>IP 67, NEMA 4X**, 6</b>	10-ft. [3 M] <b>pressure tested*</b> waterproof cable <b>IP 68, NEMA 4X**, 6P</b>	100-ft. [30 M] <b>pressure tested*</b> waterproof cable <b>IP 68, NEMA 4X**, 6P</b>																																									
	 100 ft. x 0.4-in. dia. [30 M x 10 mm dia.] 18 AWG, type SJTOW	 10 ft. x 0.4-in. dia. [3 M x 10 mm dia.] 3-conductor, 18 AWG type SJTOW	 100 ft. x 0.4-in. dia. [30 M x 10 mm dia.] 3-conductor, 18 AWG type SJTOW																																									
	<b>6-pin Mating Plug</b> <table><tr><td>pin</td><td>2-wire</td><td>3-wire</td></tr><tr><td>A</td><td>8...34 vdc***</td><td>14...29 vdc common</td></tr><tr><td>B</td><td>4...20 mA out</td><td>0...20 mA out</td></tr><tr><td>C</td><td>—</td><td>—</td></tr><tr><td>D</td><td>case ground</td><td>—</td></tr></table> 		pin	2-wire	3-wire	A	8...34 vdc***	14...29 vdc common	B	4...20 mA out	0...20 mA out	C	—	—	D	case ground	—	<b>Waterproof Cable</b> <table><tr><td>color code</td><td>2-wire</td><td>3-wire</td></tr><tr><td>WHITE</td><td>8...34 vdc***</td><td>14...29 vdc common</td></tr><tr><td>BLACK</td><td>4...20 mA out</td><td>0...20 mA out</td></tr><tr><td>GREEN</td><td>—</td><td>—</td></tr></table>		color code	2-wire	3-wire	WHITE	8...34 vdc***	14...29 vdc common	BLACK	4...20 mA out	0...20 mA out	GREEN	—	—	<b>Instrumentation Cable</b> <table><tr><td>color code</td><td>2-wire</td><td>3-wire</td></tr><tr><td>RED</td><td>8...34 vdc***</td><td>14...29 vdc common</td></tr><tr><td>BLACK</td><td>4...20 mA out</td><td>0...20 mA out</td></tr><tr><td>GREEN</td><td>—</td><td>—</td></tr></table>	color code	2-wire	3-wire	RED	8...34 vdc***	14...29 vdc common	BLACK	4...20 mA out	0...20 mA out	GREEN	—	—
pin	2-wire	3-wire																																										
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BLACK	4...20 mA out	0...20 mA out																																										
GREEN	—	—																																										
			<i>Note: WHITE, BLUE, BROWN are not used.</i>																																									

\*-Test pressure: 100 feet [30 meters] H<sub>2</sub>O (40 PSID) Test Medium: Air; Duration: 2 hours. \*\* -applies to stainless steel enclosure only. \*\*\*14-32 VDC for hazardous area option.

## Ordering Information (cont.):



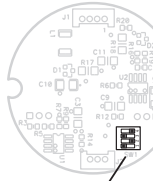


### Cable Guide Options:

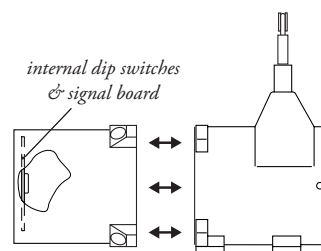
Ⓖ order code:	0	1	2*	3
	standard cable guide	stainless steel cable guide	polyurethane cable bellows	integral cable brush
				

\*note: all ranges up to 25 inches only

### 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.

output signal	switch setting	signal board
0...20 mA or 4...20 mA	 	 dip-switch location
20...0 mA or 20...4 mA	 	



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

## 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, stainless steel enclosure, cable bellows or 2, 5 and 15-inch stroke ranges.

### How To Configure Model Number for VLS Option:

VLS8420-	<sup>R</sup>	-	<sup>A</sup>	<sup>B</sup>	-	<sup>C</sup>	<sup>D</sup>	<sup>E</sup>	<sup>F</sup>	<sup>G</sup>
0015			1			1		1		0
0020			2			2		2		1
0025			3			3		3		3
0030			4			4		4		
0040						5		5		
0050						6		6		
0060								7		

= available options\*\*

*creating VLS model number (example):*

1. select PT8420 model **PT8420-0060-111-1110**
2. remove "PT" from the model number ~~PT~~ **8420-0060-111-1110**
3. add "VLS" **VLS + 8420-0060-111-1110**
4. completed model number ! **VLS8420-0060-111-1110**

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

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