

Electric Actuators and Control Systems

rotork[®] Process Controls

Established Leaders in Valve Actuation



Position Transmitters

Instruction Manual

Publication P973E Issue 08/09

Position Transmitters

***Where logo shown or copy refers to Jordan Controls
please now read as Rotork Process Controls***

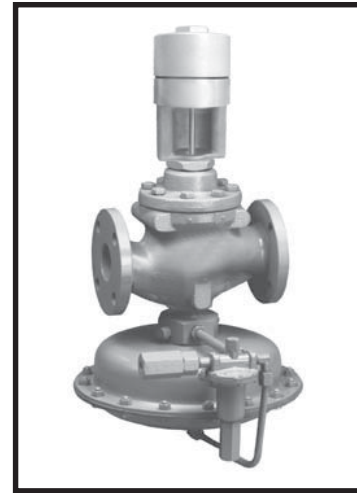
POSITION TRANSMITTERS

GENERAL DESCRIPTION

Jordan Control's Series of position transmitters are rugged, compact industrial components that couple a precision feedback component and/or limit switches to the input shaft through an enclosed gear train.

Typical applications include position feedback for valves, dampers, tension loops, winder/rewinder rolls and other process control equipment.

PT and PF models are rotary transmitters, LT and LF models are linear transmitters.



LT-1010

FEATURES

- NEMA 4 enclosure (IP65) & dust ignition-proof (NEMA 4 for PT-1330)
- Permanently lubricated for any position mounting
- Wide ambient temperature range
- High strength, corrosion resistant, cast aluminum enclosure rated for indoor/outdoor and hazardous dust installations
- Wide range of input turn ratios
- Face or side servo mount (except LF-1210)
- Full one year warranty

POPULAR OPTIONS (See Pages 197-206)

- Anti-condensation heater and thermostat
- Auxilliary position limit switches
- Aluminum limit switch cams and frames
- Various enclosure coatings

$$\text{Maximum load (ohms)} = \frac{\text{DC power supply voltage} - 8V}{0.020 \text{ A}}$$

$$\text{Minimum load rating (watts)} = \text{Max.load} \times (0.020 \text{ A})$$

Figure 1

SPECIFICATIONS

- **Linearity:** $\pm 0.5\%$, ($\pm 0.1\%$ for PT-1330)
- **Ambient Operating Temperature Range:** -40° F to 150° F (-40° C to 65° C)
- **Maximum Radial Input Shaft Load:**
PF/PT-1010 models: 400 lbs. (181 kg)
PF-1210 models: 60 lbs. (27 kg) at midpoint of flat
PT-1330 models: 75 lbs. (34 kg)
- **Maximum Axial Input Shaft Load:**
PF/PT-1010 models: 600 lbs. (272 kg)
PF-1210 models: Not recommended
PT-1330 models: 320 lbs. (145.2 kg)
- **Standard Signal Range Output:**
PF models: 60% to 90% (depending on gear ratio of 1000 ohm, 2W, $\pm 0.25\%$ linearity potentiometer)
LF models: 60% to 90% (depending on gear ratio of 1000 ohm, 2W, $\pm 0.25\%$ linearity potentiometer)
PT models: 4 to 20 mA, 2 wire, loop-powered, 800 ohm impedance load maximum, as calculated by the formula in Figure 1.
LT models: 4 to 20 mA, 2 wire, loop-powered, 800 ohm impedance load maximum, as calculated by the formula in Figure 1.
- **Temperature Effect:** 0.05% or less variation per $^{\circ} \text{C}$
- **Weight:**
1010 & 1330 models: 3.5 lbs. (1.5 kg)
PF-1210 models: 6.5 lbs. (2.9 kg)
LF-1210 models: 6.5 lbs. (2.9 kg) minimum, depends upon length of rack
LT-1010 models: 6 lbs. (2.7 kg)

BASIC SPECIFICATIONS FOR POSITION TRANSMITTERS

Model	Rotation/ Travel	Output Signal	Max. Loop Impedence	NEMA Rating	Limit Switches	1000 Ohm Pot	Catalog Page #
PF-1010	28° to 420 turns *	1000 ohm Pot and/or switches	NA	4/7/9	Option (See chart)	NA	160
PT-1010		4 to 20 mA	800 ohms		NA	Option (See chart)	161
PF-1210	0.25 to 60 turns	1000 ohm Pot and/or switches	NA	4/7/9	Option (See chart)	NA	162
LF-1210	3 in. to 18 in.				Option (See chart)	NA	163
PT-1330	0° to 19° or 19° to 300°	4 to 20 mA	800 ohms	4/7/9	NA	Option (See chart)	164
LT-1010	0.38 in. to 2 in.	4 to 20 mA	800 ohms	4/7/9	NA	NA	165

* Rotation range is accomplished with 18 different gear ratios.

N/A = Not Applicable

PF-1010 SERIES SELECTION CHART

Selection

Basic Model	PF-1010, Position Sensor *	
Input Shaft Turns	Specify specific input shaft turns required. (<i>Not the Range</i>)	
	28° to 40 turns	
	41 to 420 turns	

* Select desired feedback options below.

PF-1010 SERIES STANDARD OPTIONS

Code	Description	Selection
Position Feedback		
F001	Potentiometer, 1000 ohms	
F002	Tandem Potentiometer, 1000 ohms each	
F003	Potentiometer, 5000 ohms	
F004	Potentiometer, 10,000 ohms	
F010	Anti Backlash Feedback Gearing <i>Up to 40 turns</i>	
F011	Anti Backlash Feedback Gearing <i>Up to 420 turns</i>	
F012	Tandem Potentiometers, 5000 ohms	
F013	Tandem Potentiometers, 10,000 ohms	
F999	Special Potentiometer (consult factory)	
Heater		
H001	Anti-Condensation Heater (24 VDC)	
H002	Anti-Condensation Heater (120 VAC)	
H003	Anti-Condensation Heater (240 VAC)	
Identification/Certifications		
J002	Stainless Steel Tags	
J004	One year extended warranty	
J005	Two year extended warranty	

Code	Description	Selection
Auxiliary Switches		
S005	Aluminum Cam, Up to 40 turns	
S006	Aluminum Feedback Frame (Up to 40 turns)	
S009	Two Adjustable Position Switches, SPDT, 10 Amp, 120/240 Vac	
S010	Two Adjustable Position Switches, DPDT, 10 Amp, 120/240 Vac	
S011	Four Adjustable Position Switches, SPDT, 10 Amp, Up to 40 turns, 120/240 Vac	
S012	Four Adjustable Position Switches, DPDT, 10 Amp, Up to 40 turns, 120/240 Vac	
Painting/Coating		
W001	JCI Standard Polyurethane Blue	
W002	Two Part Epoxy	
Special Mechanical Options		
Y019	Metric mounting holes, 6mm	

For a full description of options, go to the Complete Listing of Options starting on page 197.

PT-1010 SERIES SELECTION CHART

Selection

Basic Model	PT-1010, Two-wire, 4 to 20 mA output	
Transmitter Type	1: 120 Vac line powered, 4 to 20 mA dc. Capable of powering loads of up to 600 ohms	
	2: 240 Vac line powered, 4 to 20 mA dc. Capable of powering loads of up to 600 ohms	
	12: Loop powered, two-wire, 4 to 20 mA dc. Customer-supplied, external dc power supply required	
Input Shaft Turns	Specify specific input shaft turns required. (Not the Range)	
	28° to 40 turns	
	41 to 420 turns	

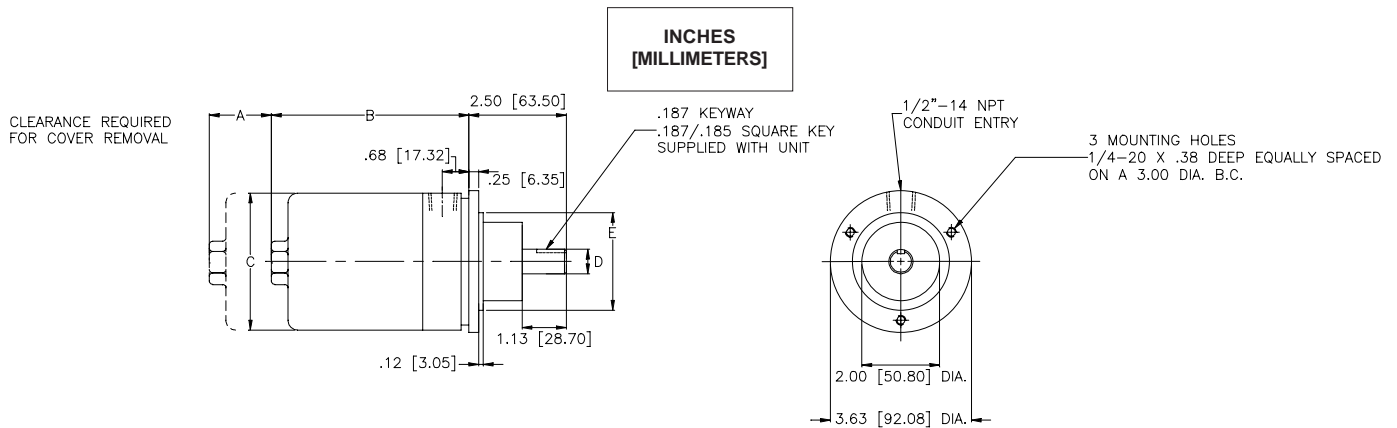
PT-1010 SERIES STANDARD OPTIONS

Code	Description	Selection
Position Feedback		
F010	Anti Backlash Feedback Gearing <i>Up to 40 turns</i>	
F011	Anti Backlash Feedback Gearing <i>Up to 420 turns</i>	
Heater		
H001	Anti-Condensation Heater (24 VDC)	
H002	Anti-Condensation Heater (120 VAC)	
H003	Anti-Condensation Heater (240 VAC)	
Identification/Certifications		
J002	Stainless Steel Tags	
J004	One year extended warranty	
J005	Two year extended warranty	

Code	Description	Selection
Auxiliary Switches		
S005	Aluminum Cam (Up to 40 turns)	
S006	Aluminum Feedback Frame (Up to 40 turns)	
S007	Aluminum Feedback Frame (41 to 420 turns)	
S009	Two Adjustable Position Switches, SPDT, 10 Amp, 120/240 Vac	
S010	Two Adjustable Position Switches, DPDT, 10 Amp, 120/240 Vac	
S011	Four Adjustable Position Switches, SPDT, 10 Amp, Up to 40 turns, 120/240 Vac	
S012	Four Adjustable Position Switches, DPDT, 10 Amp, Up to 40 turns, 120/240 Vac	
Painting/Coating		
W001	JCI Standard Polyurethane Blue	
W002	Two Part Epoxy	
Special Electrical Options		
X020	24 Vdc power supply for position transmitter, separately mounted, 120/240 Vac input. For use with DC transmitter	
Special Mechanical Options		
Y019	Metric mounting holes, 6mm	

For a full description of options, go to the Complete Listing of Options starting on page 197.

PF-1010 & PT-1010 MAJOR DIMENSIONS



Model	A	B	C	D	E
NEMA Type 4 "X-Proof"	5.63 (143)	6.82 (172.23)	3.50 (88.9)	0.625 (18.875)	2.5 (63.5)
Short Cover	4.02 (102.11)	5.08 (129.03)	3.50 (88.9)	0.625 (18.875)	2.5 (63.5)

These dimensions are subject to change without notice and should not be used for preparation of drawings or fabrication of installation mounting. For current installation manuals and other product information, see www.jordancontrols.com.

PF-1210 SERIES SELECTION CHART

Selection

Basic Model	PF-1210, Position Sensor	
Input Shaft Turns	Specify specific input shaft turns required. (<i>Not the Range</i>)	
	40° to 5.85 turns	
	5.85 to 60 turns	

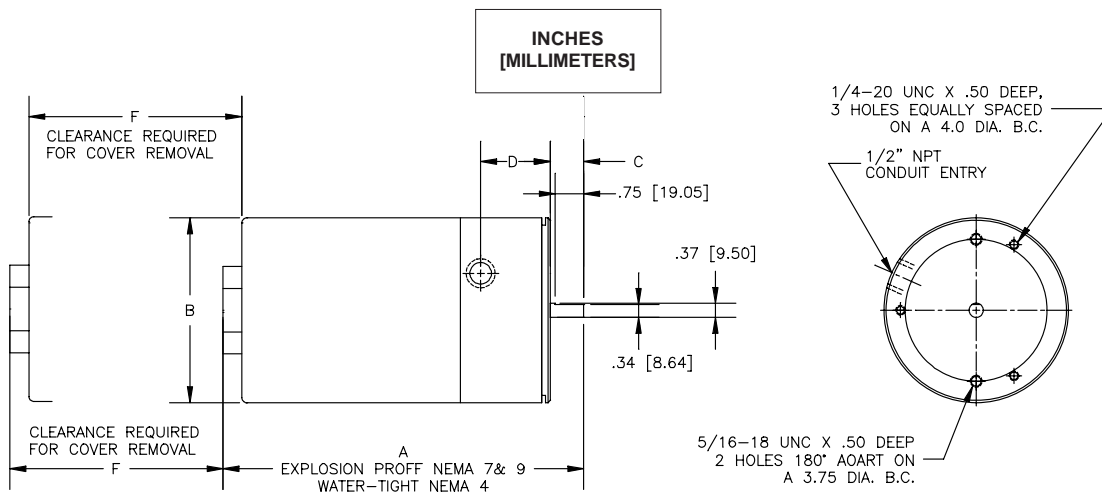
PF-1210 SERIES STANDARD OPTIONS

Code	Description	Selection
Position Feedback		
F001	Potentiometer, 1000 ohms	
F002	Tandem Potentiometer, 1000 ohms each	
F003	Potentiometer, 5000 ohms	
F004	Potentiometer, 10,000 ohms	
F006	One Potentiometer, 1000 ohms plus 4-20 mA Transmitter	
F010	Anti Backlash Feedback Gearing, 40° to 5.85 turns	
F011	Anti Backlash Feedback Gearing, 5.85 turns to 60 turns	
F012	Tandem Potentiometers, 5000 ohms	
F013	Tandem Potentiometers, 10,000 ohms	
F999	Special Potentiometer (consult factory)	
Heater		
H001	Anti-Condensation Heater (24 VDC)	
H002	Anti-Condensation Heater (120 VAC)	
H003	Anti-Condensation Heater (240 VAC)	

Code	Description	Selection
Identification/Certifications		
J002	Stainless Steel Tags	
J004	One year extended warranty	
J005	Two year extended warranty	
Auxiliary Switches		
S005	Aluminum Cam, 40° to 5.85 turns	
S006	Aluminum Feedback Frame, 40° to 5.85 turns	
S007	Aluminum Feedback Frame 5.85 turns to 60 turns	
S009	Two Adjustable Position Switches, SPDT, 10 Amp, 120/240 Vac	
S010	Two Adjustable Position Switches, DPDT, 10 Amp, 120/240 Vac	
S011	Four Adjustable Position Switches, SPDT, 10 Amp, 40° to 5.85 turns, 120/240 Vac	
S012	Four Adjustable Position Switches, DPDT, 10 Amp, 40° to 5.85 turns, 120/240 Vac	
Painting/Coating		
W001	JCI Standard Polyurethane Blue	
W002	Two Part Epoxy	
Special Mechanical Options		
Y020	Metric mounting holes, 6mm	

For a full description of options, go to the Complete Listing of Options starting on page 197.

PF-1210 MAJOR DIMENSIONS



A	B	C	D	E	F
9.53 (190.6)	4.88 (123.95)	0.88 (22.35)	1.84 (46.74)	6.28 (159.51)	

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LF-1210 SERIES SELECTION CHART

Selection

Basic Model	LF-1210, Position Sensor	
Input Shaft Turns	Specify stroke (3 inch increments) 0.75 inch (19mm to 18 inches (457mm))	

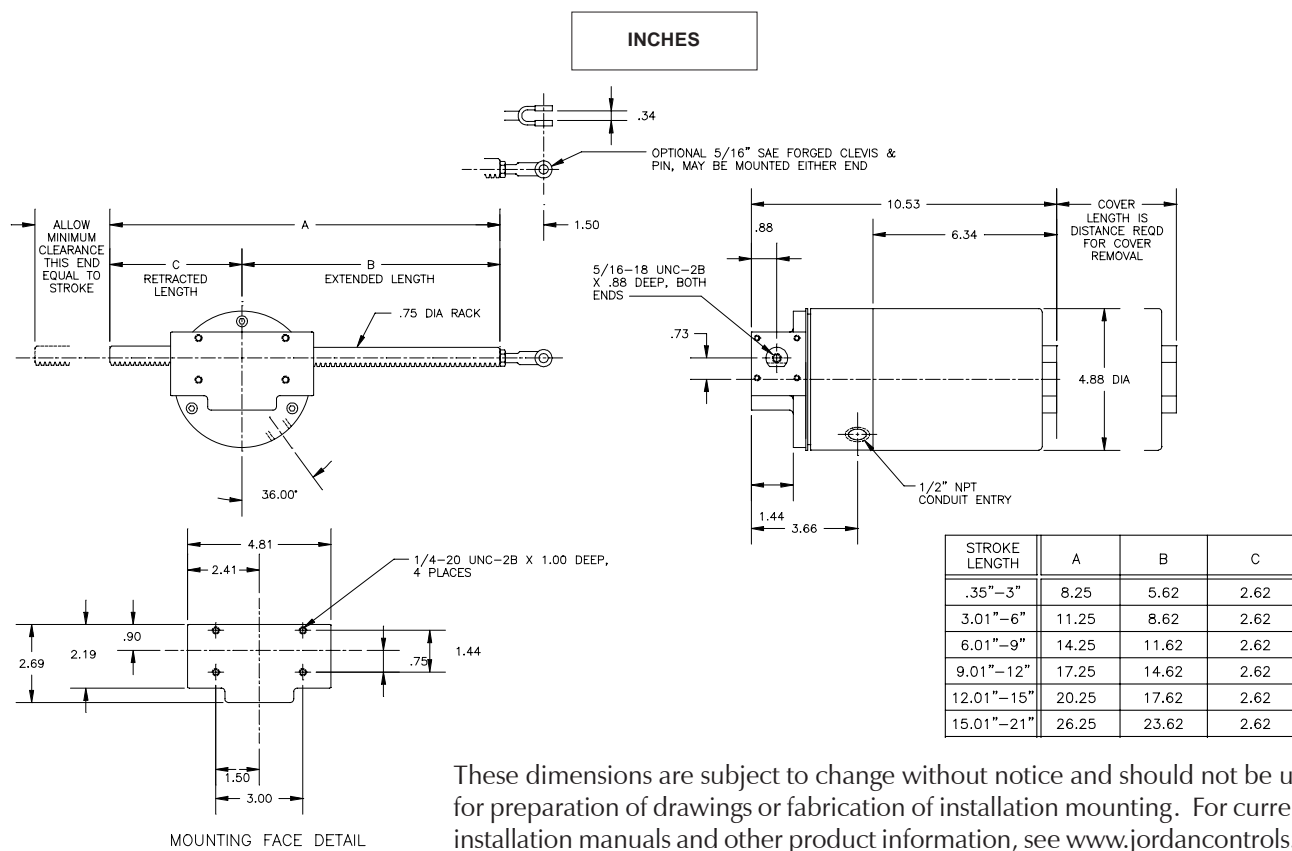
LF-1210 SERIES STANDARD OPTIONS

Code	Description	Selection
Drive Arm/Adapter Clevis/Driven Arm		
D036	Rack bellows	
Position Feedback		
F001	Potentiometer, 1000 ohms	
F002	Tandem Potentiometer, 1000 ohms each	
F003	Potentiometer, 5000 ohms	
F004	Potentiometer, 10,000 ohms	
F005	Transmitter, 4-20 mA output	
F006	One Potentiometer, 1000 ohms plus 4-20 mA Transmitter	
F012	Tandem Potentiometers, 5000 ohms	
F013	Tandem Potentiometers, 10,000 ohms	
F999	Special Potentiometer (consult factory)	
Heater		
H001	Anti-Condensation Heater (24 VDC)	
H002	Anti-Condensation Heater (120 VAC)	
H003	Anti-Condensation Heater (240 VAC)	

Code	Description	Selection
Identification/Certifications		
J002	Stainless Steel Tags	
J004	One year extended warranty	
J005	Two year extended warranty	
Auxiliary Switches		
S005	Aluminum Cam	
S006	Aluminum Feedback Frame, Up to 18 inches	
S009	Two Adjustable Position Switches, SPDT, 10 Amp	
S010	Two Adjustable Position Switches, DPDT, 10 Amp	
S011	Four Adjustable Position Switches, SPDT, 10 Amp	
S012	Two nonadjustable end of travel position switches, SPST, 10 Amp	
Painting/Coating		
W001	JCI Standard Polyurethane Blue	
W002	Two Part Epoxy	
Special Mechanical Options		
Y025	Metric mounting holes, 6mm	

For a full description of options, go to the Complete Listing of Options starting on page 197.

LF-1210 MAJOR DIMENSIONS



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PT-1330 SERIES SELECTION CHART

Selection

Basic Model	PT-1330, Two-wire, 4 to 20 mA output	
Transmitter Type	1: 120 Vac line powered, 4 to 20 mA dc. Capable of powering loads of up to 600 ohms	
	2: 240 Vac line powered, 4 to 20 mA dc. Capable of powering loads of up to 600 ohms	
	12: Loop powered, two-wire, 4 to 20 mA dc. Customer-supplied, external dc power supply required	

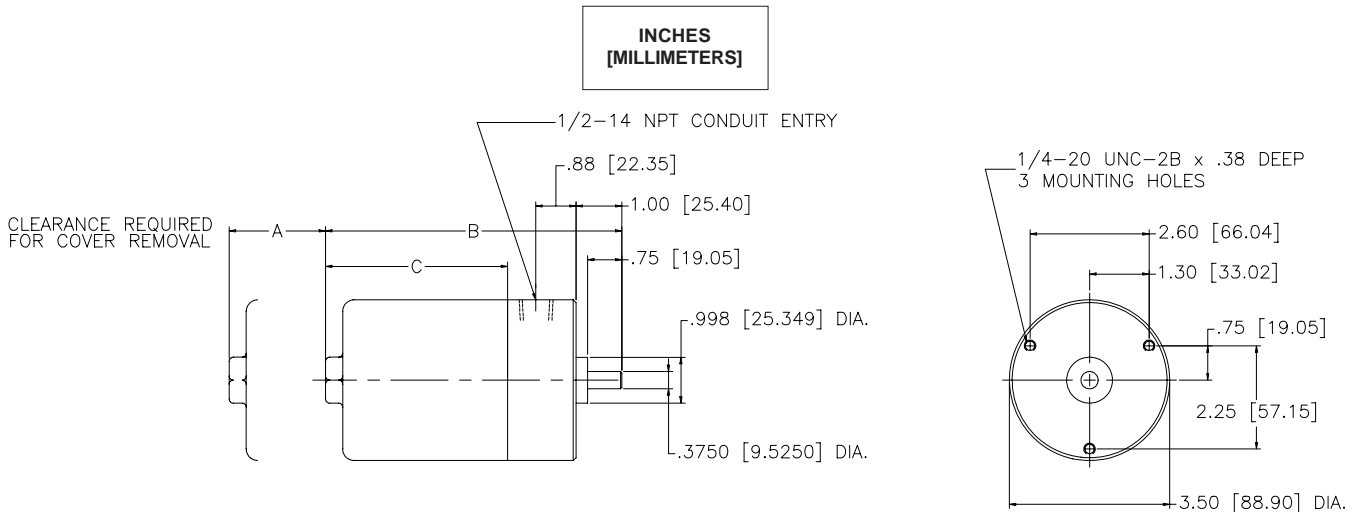
PT-1330 SERIES STANDARD OPTIONS

Code	Description	Selection
Drive Arm/Adapter Clevis/Driven Arm		
D029	PT-1300 Mounting Kit	
Heater		
H001	Anti-Condensation Heater (24 VDC)	
H002	Anti-Condensation Heater (120 VAC)	
H003	Anti-Condensation Heater (240 VAC)	
Identification/Certifications		
J002	Stainless Steel Tags	
J004	One year extended warranty	
J005	Two year extended warranty	
Auxiliary Switches		
S009	Two Adjustable Position Switches, SPDT, 10 Amp	
S011	Four Adjustable Position Switches, SPDT, 10 Amp	

Code	Description	Selection
Painting/Coating		
W001	JCI Standard Polyurethane Blue	
W002	Two Part Epoxy	
W003	Food Grade Epoxy	
W004	Baked On Epoxy	
W005	Teflon	
Special Electrical Options		
X020	24 Vdc power supply for position transmitter, separately mounted, 120/240 Vac input. For use with DC transmitter	
Special Mechanical Options		
Y021	Metric mounting holes, 5mm	

For a full description of options, go to the Complete Listing of Options starting on page 197.

PT-1330 MAJOR DIMENSIONS



STROKE LENGTH	A	B	C
PT-1330 SHORT COVER	4.01 [101.85]	6.47 [164.34]	3.98 [101.09]
PT-1330 LONG COVER	5.63 [144.00]	8.07 [204.98]	5.58 [141.73]

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PT-1510 SERIES SELECTION CHART

Selection

Basic Model	PT-1510 , Two-wire, 4 to 20 mA output	
Transmitter Type	1: 120 Vac line powered, 4 to 20 mA dc. Capable of powering loads of up to 600 ohms	
	2: 240 Vac line powered, 4 to 20 mA dc. Capable of powering loads of up to 600 ohms	
	12: Loop powered, two-wire, 4 to 20 mA dc. Customer-supplied, external dc power supply required	

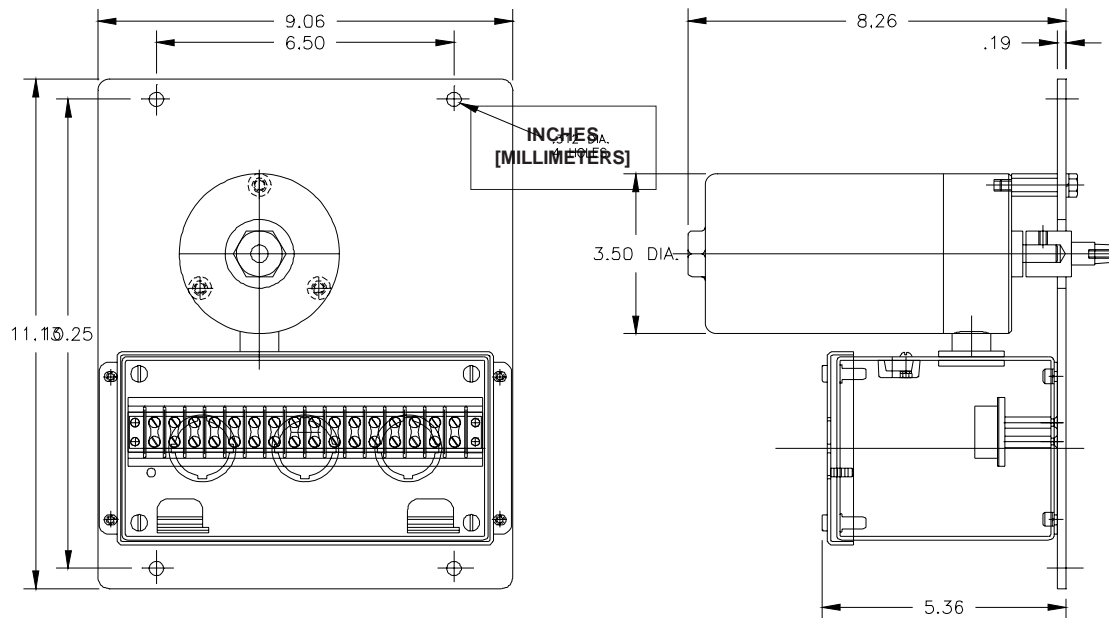
PT-1510 SERIES STANDARD OPTIONS

Code	Description	Selection
Heater		
H001	Anti-Condensation Heater (24 VDC)	
H002	Anti-Condensation Heater (120 VAC)	
H003	Anti-Condensation Heater (240 VAC)	
Identification/Certifications		
J002	Stainless Steel Tags	
J004	One year extended warranty	
J005	Two year extended warranty	

Code	Description	Selection
Auxiliary Switches		
S009	Two Adjustable Position Switches, SPDT, 10 Amp	
S011	Four Adjustable Position Switches, SPDT, 10 Amp	
Special Electrical Options		
X020	24 Vdc power supply for position transmitter, separately mounted, 120/240 Vac input. For use with DC transmitter	

For a full description of options, go to the Complete Listing of Options starting on page 197.

PT-1510 MAJOR DIMENSIONS



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LT-1010 SERIES SELECTION CHART

Selection

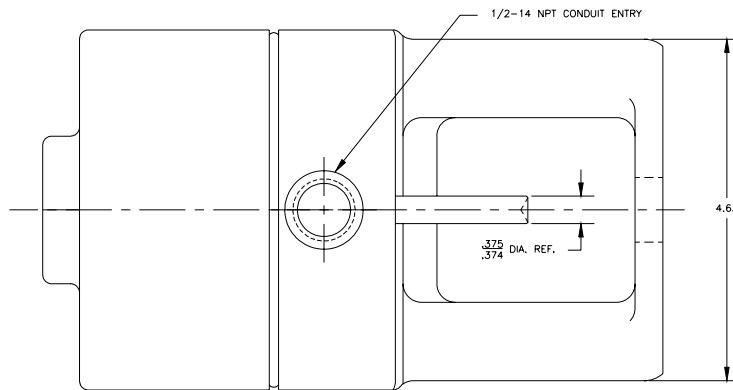
Basic Model	LT-1010, Linear Position Transmitter	
Stroke	1: 0.38 - 1.5 in. (9.6 - 38.1 mm) stroke	
	2: 1.5 - 2 in. (38.1 - 50.8 mm) stroke	

LT-1010 SERIES STANDARD OPTIONS

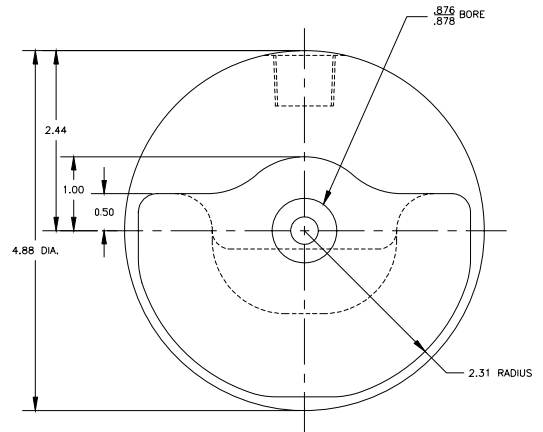
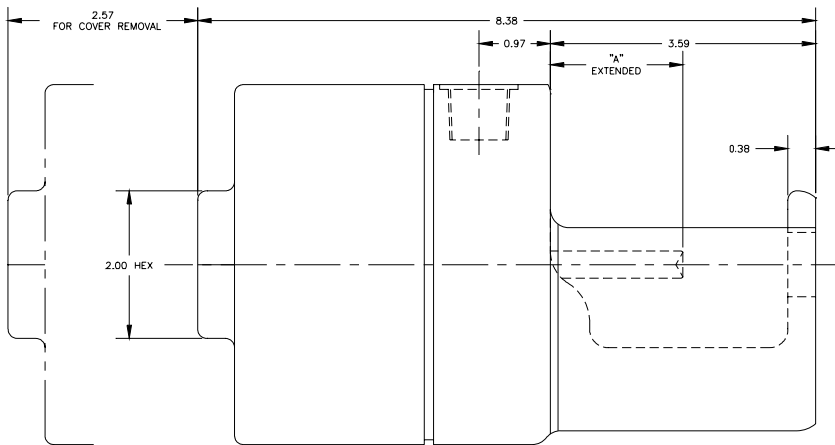
Code	Description	Selection
Painting/Coating		
W001	JCI Standard Polyurethane Blue	
W002	Two Part Epoxy	

LT-1010 MAJOR DIMENSIONS

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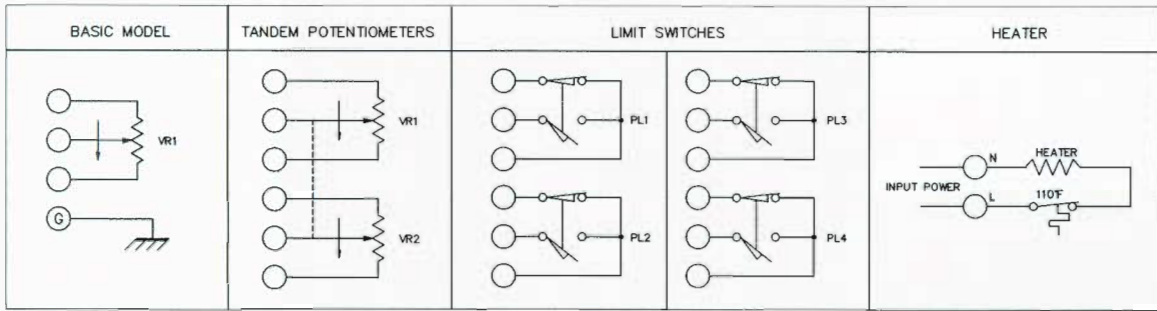


"A"	FOR
1.63"	EZR 3"
1.73"	EZR 6"
1.97"	EGR 3" EGR 1"
2.14"	EZR 4" EGR 2" EGR 6"
2.20"	EZR 1" & EZR 2"
1.93"	EGR 4"

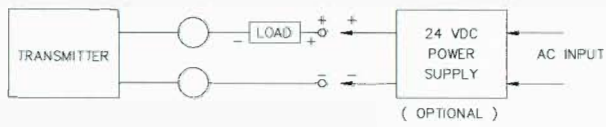


TYPICAL WIRING DIAGRAMS

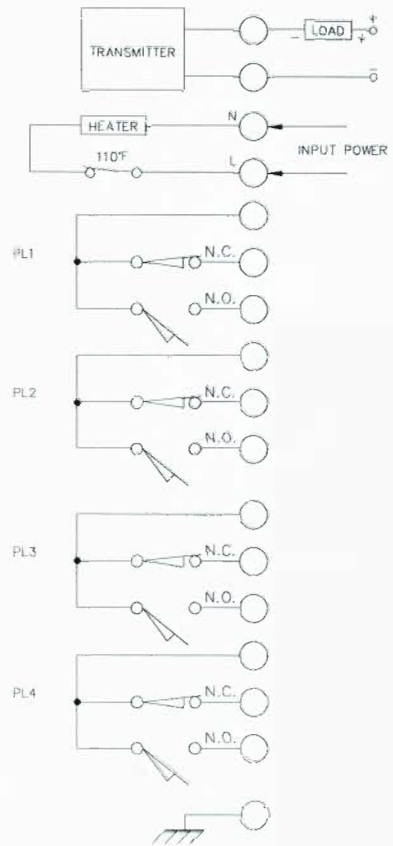
PF-1010, PF-1210 & LF-1210



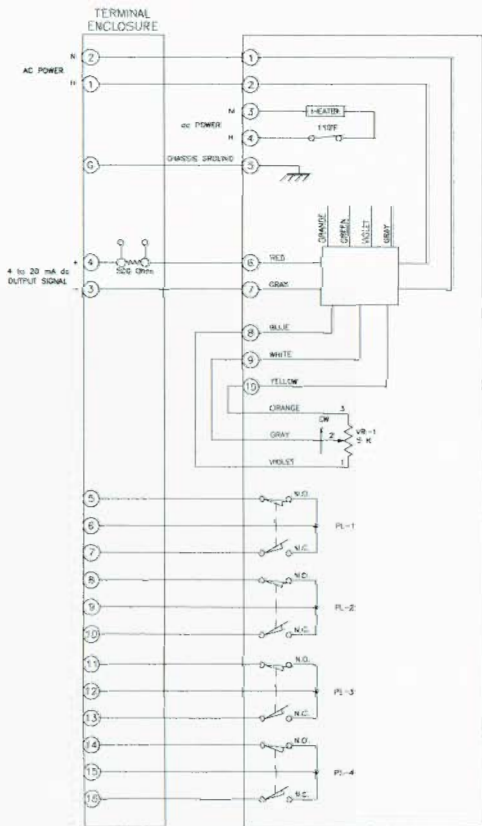
PT-1010 & LT-1010



PT-1330



PT-1510



These dimensions and specifications are subject to change without notice. Current drawings and specifications are available upon request.

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