

# TopWorx™ PD Series Smart Valve Positioner

Models PD100 and PD200

Series  
**PD**

## General Description

The PD Series Smart Valve Positioner has a compact and robust design for both linear and rotary actuators and can be used in applications with either single or double acting actuators. The PD series provides precise valve feedback and data as well as complete control of the valve, while maintaining plant efficiency and safety in any process application.



## Features & Benefits

- Hall-effect, contactless position sensing
- Feedback through 4-20mA and discrete signals
- HART® Capable with configurable alarms
- Autocalibration features
- Mechanical & magnetic buttons for easy operation
- Local user interface with Liquid Crystal Display
- Easy to install – can be mounted at any angle
- Mounting options for both rotary and linear applications



## Specifications

| Operating Specifications    | PD100                                                                                                                                                                                                                    | PD200                                                                                                                                                                                             |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Certifications              | <b>General Purpose</b><br>Type 4X<br><b>Non-Incendive (Pending)</b><br>Class I, Div 2, Groups A, B, C & D;<br>Class II, Div 2, Groups F & G;<br>Class III<br>Ex ec nC IIC T4 Gc;<br>Tamb -40°C to +65°C<br>IP66, Type 4X | <b>Intrinsically Safe (Pending)</b><br>Class I, Div 1, Groups A, B, C & D;<br>Class II, Div 1, Groups F & G;<br>Class III<br>Ex ia IIC T4 Ga; IIIC T4 Da;<br>Tamb -40°C to +75°C<br>IP66, Type 4X |
| Communications Protocol     | 4-20 mA (nominal)                                                                                                                                                                                                        | 4-20 mA (nominal) and HART Capable                                                                                                                                                                |
| Configurable Alarms         | No                                                                                                                                                                                                                       | Yes                                                                                                                                                                                               |
| Minimum Voltage             | 8.5 VDC for analog control                                                                                                                                                                                               | 8.5 VDC for analog control<br>9.0 VDC for HART communication                                                                                                                                      |
| Overvoltage                 | 36 VDC                                                                                                                                                                                                                   | 36 VDC                                                                                                                                                                                            |
| Voltage Drop                | 12.2 VDC @ 4mA/24 VDC                                                                                                                                                                                                    | 12.2 VDC @ 4mA/24 VDC                                                                                                                                                                             |
| Input Impedance             | 470 ohms @ 20mA/24 VDC                                                                                                                                                                                                   | 470 ohms @ 20mA/24 VDC                                                                                                                                                                            |
| Output Impedance (Feedback) | 800 ohms @ 20mA/24 VDC                                                                                                                                                                                                   | 800 ohms @ 20mA/24 VDC                                                                                                                                                                            |
| Actuator Signal             | 0% to 100% of the supply pressure                                                                                                                                                                                        | 0% to 100% of the supply pressure                                                                                                                                                                 |
| Stroke Range                | Linear: 12 to 200 mm<br>Rotary: 0° to 120°                                                                                                                                                                               | Linear: 12 to 200 mm<br>Rotary: 0° to 120°                                                                                                                                                        |
| Hysteresis                  | 1.5% of Full Scale                                                                                                                                                                                                       | 1.5% of Full Scale                                                                                                                                                                                |
| Repeatability               | 1.5% of Full Scale                                                                                                                                                                                                       | 1.5% of Full Scale                                                                                                                                                                                |
| Linearity                   | 0.8% of Full Scale                                                                                                                                                                                                       | 0.8% of Full Scale                                                                                                                                                                                |
| Temperature Range           | -40°C to +65°C (-40°F to + 149°F)                                                                                                                                                                                        | -40°C to +75°C (-40°F to +167°F)                                                                                                                                                                  |
| Electrical Connection       | 1/2" NPT female                                                                                                                                                                                                          | 1/2" NPT female                                                                                                                                                                                   |
| Pneumatic Connection        | 1/4" NPT female (Inlet & Outlet)                                                                                                                                                                                         | 1/4" NPT female (Inlet & Outlet)                                                                                                                                                                  |
| Air-Supply Pressure         | 2.8 to 8 bar (40 to 116 psi)                                                                                                                                                                                             | 2.8 to 8 bar (40 to 116 psi)                                                                                                                                                                      |
| Output Air Consumption      | 8.8 l/m   0.5N m³/h  <br>0.31 scfm @ 60 psi   4 bar   0.6 cv                                                                                                                                                             | 8.8 l/m   0.5N m³/h  <br>0.31 scfm @ 60 psi   4 bar   0.6 cv                                                                                                                                      |

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## Specifications

| Physical Specifications    | PD100                                                        | PD200                                                                                                                  |
|----------------------------|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| Display Type               | Liquid Crystal Display (LCD)<br>4 numeric digits             | Liquid Crystal Display (LCD)<br>4 .5 numeric & 6 alphanumeric digits                                                   |
| Local Controls             | 3 mechanical buttons<br>Up, Down, & Enter                    | 3 mechanical & 3 magnetic buttons<br>Up, Down, & Enter<br>(Includes magnetic key for operation without removing cover) |
| Actuator Action            | Rotary & Linear, Single & Double, Direct (DA) & Reverse (RA) | Rotary & Linear, Single & Double, Direct (DA) & Reverse (RA)                                                           |
| Enclosure & Cover          | Thermoplastic Composite                                      | Thermoplastic Composite                                                                                                |
| Actuator Mounting Base     | Aluminum                                                     | Aluminum                                                                                                               |
| Manifold                   | ZAMAC                                                        | ZAMAC                                                                                                                  |
| Seals                      | Fluoroelastomer                                              | Fluoroelastomer                                                                                                        |
| Net Weight – With Manifold | 2.2 kg (4.8 lbs.)                                            | 2.3 kg (5.1 lbs.)                                                                                                      |

## Ordering Information

Nomenclature guide below. Choose codes for desired features(s). Not all feature combinations are compatible. Please consult TopWorx or Online “Configure Your Product” guide at [www.topworx.com](http://www.topworx.com) for confirmation.

## Codification

|                                  | PD200 | - | H | S | N | G | K3 | 00 | 00 | - | ES |                                      |                                       |
|----------------------------------|-------|---|---|---|---|---|----|----|----|---|----|--------------------------------------|---------------------------------------|
| <b>Model</b>                     |       |   |   |   |   |   |    |    |    |   |    | <b>Regional Certifications</b>       |                                       |
| PD100                            |       |   |   |   |   |   |    |    |    |   |    | Blank                                | No Regional Certifications            |
| PD200                            |       |   |   |   |   |   |    |    |    |   |    |                                      |                                       |
| <b>Input &amp; Communication</b> |       |   |   |   |   |   |    |    |    |   |    | <b>Hazardous Area Classification</b> |                                       |
| C                                |       |   |   |   |   |   |    |    |    |   |    | GP                                   | General Purpose (PD100 Only)          |
| H                                |       |   |   |   |   |   |    |    |    |   |    | EN                                   | Non-Incendive (PD100 Only)            |
|                                  |       |   |   |   |   |   |    |    |    |   |    | ES                                   | Intrinsically Safe (PD200 Only)       |
| <b>Feedback Output</b>           |       |   |   |   |   |   |    |    |    |   |    | <b>Options</b>                       |                                       |
| F                                |       |   |   |   |   |   |    |    |    |   |    | 00                                   | No additional options                 |
| S                                |       |   |   |   |   |   |    |    |    |   |    |                                      | <b>Actuator Mounting Bracket</b>      |
|                                  |       |   |   |   |   |   |    |    |    |   |    | 00                                   | No Mounting Bracket (Sold Separately) |
| <b>Connection</b>                |       |   |   |   |   |   |    |    |    |   |    | <b>Type of Actuator</b>              |                                       |
| N                                |       |   |   |   |   |   |    |    |    |   |    | RN                                   | Rotary NAMUR adapter                  |
|                                  |       |   |   |   |   |   |    |    |    |   |    | K3                                   | Linear feedback lever 12-120mm        |
|                                  |       |   |   |   |   |   |    |    |    |   |    | K4                                   | Linear feedback lever 80-200mm        |
| <b>Manifold</b>                  |       |   |   |   |   |   |    |    |    |   |    |                                      |                                       |
| G                                |       |   |   |   |   |   |    |    |    |   |    |                                      |                                       |

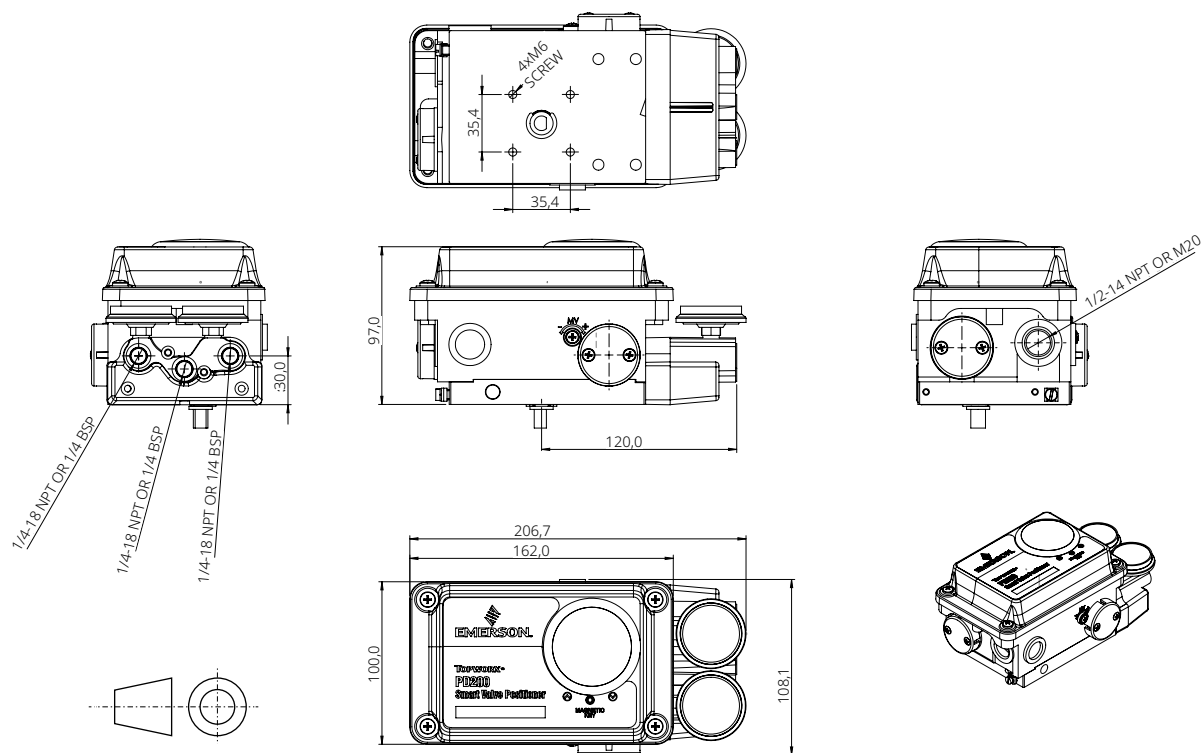
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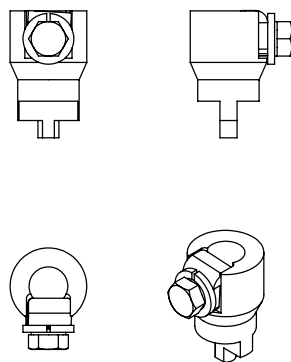
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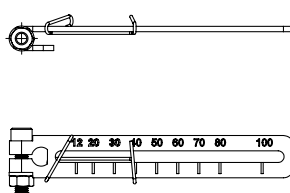
## Dimensions in mm



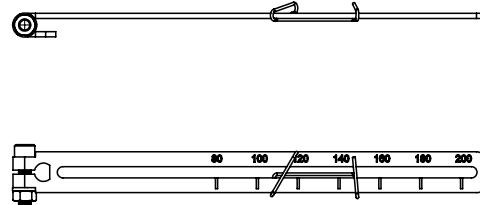
## Actuator Adaptor Options



**RN - Rotary NAMUR Adaptor**



**K3 - Linear Adaptor (12 - 120mm)**



**K4 - Linear Adaptor (80 - 200mm)**

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## Model Comparison Chart



| Features                                                                          | PD100 | PD200 |
|-----------------------------------------------------------------------------------|-------|-------|
| General Purpose certification                                                     | •     | •     |
| Non-incendive certification (Ex n)                                                | •     |       |
| Intrinsically Safe certification (Ex i)                                           |       | •     |
| Digital technology with hall-effect continuous sensing                            | •     | •     |
| Analog 4-20mA input signal                                                        | •     | •     |
| 4-20mA feedback position transmitter                                              | •     | •     |
| HART® communication protocol                                                      |       | •     |
| Configurable Position Alarms                                                      |       | •     |
| Setup using mechanical push buttons                                               | •     | •     |
| Setup using magnetic keys (without removing outer cover)                          |       | •     |
| Digital display (LCD) with 4 numeric digits                                       | •     |       |
| Digital display (LCD) with 4.5 numeric & 6 alphanumeric digits                    |       | •     |
| Position indication 0% to 100%                                                    | •     | •     |
| Linear and rotary valve compatibility                                             | •     | •     |
| Linear stroke range 12mm to 200mm (0.47 to 7.87 inches)                           | •     | •     |
| Rotary angle range 0° to 120°                                                     | •     | •     |
| Included rotary or linear actuator adaptors                                       | •     | •     |
| Included manifold with two pressure gauges                                        | •     | •     |
| Modes                                                                             | PD100 | PD200 |
| Autocalibration                                                                   | •     | •     |
| Calibration Setup: Tune, Auto, & Full                                             | •     | •     |
| Display Choices: Setpoint, feedback position (mA or %), position / SP or MV%      |       | •     |
| Operating Range: Range, zero, & span adjustment                                   |       | •     |
| Split range: 4-12mA / 12-20mA                                                     |       | •     |
| PID Adjustment: Proportional Gain (KP), Integral Time (TR) & Derivative Time (TD) | •     | •     |
| Position alarm setting and options                                                |       | •     |
| Valve Action : Direct or Reverse setup                                            |       | •     |
| Manual or auto operation modes                                                    |       | •     |
| Valve Characterization Curve: Linear                                              |       | •     |
| Valve Characterization Curve: Equal Percentage - EP25, 33, & 50                   |       | •     |
| Valve Characterization Curve: Quick Opening - QO25, 33, & 50                      |       | •     |
| Adjustable input trim to correct small variations in 4-20mA signal vs. position % | •     | •     |
| Lock Function: Block unwanted setting changes (local & remote)                    |       | •     |
| Opening & closing valve time indication                                           |       | •     |
| Adjustable delay time for calibration.                                            | •     | •     |
| Configure air pressure effect on valve action                                     |       | •     |
| Factory reset option                                                              |       | •     |

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