Logix 3000MD Series
Digital Positioner

Experience In Motion
**Superior Performance and Reliability**

*Introducing the Flowserve Logix™ 3000MD Series Digital Positioner*

The Flowserve® Logix™ 3000MD series high-performance digital positioners utilize state-of-the-art piezo technology to provide superior performance and reliability. This is accomplished through the use of a powerful 32-bit microprocessor and a proprietary two-stage electronic relay (patent pending). Among the Logix 3000MD series more attractive features are the on-board QUICK-CAL™ button, DIP switches, Jog buttons, and variable gain selector. These features allow the user to complete setup and calibration of either diaphragm or piston operated valves in a couple of minutes, without the need of additional handheld devices or software.

The Logix 3000MD series positioners offer valve status updates at a glance using the highly visible LEDs. Users can easily determine if a valve or actuator is functioning properly, and quickly diagnose any problems using the smart LED blink codes. This means that maintenance personnel can provide a visual check of the valve status without having to remove the cover or connect a HART handheld device or maintenance PC/laptop.

Predictive diagnostics is available using the ValveSight software available through FDT/DTM technology. ValveSight is a diagnostic solution for control valves that can be seamlessly integrated into most host control and/or plant asset management systems. The power of ValveSight is in the intelligent diagnostic engine which is constantly monitoring the valve, actuator, positioner and control signal for patterns of behavior that may indicate a problem and provides actionable advice proactively.

*Inside the Logix 3200MD*

*Figure 1 – Logix 3200MD Controls*
The Logix 3000MD Series Digital Positioner - How It Works

Logix 3000MD Positioner Overview

Figure 1: System Positioning Algorithm for Logix 3400MD Digital Positioners

TUNING

Unlike other positioners that have only one set gains to set the response of the positioner, the Logix 3200MD positioner uses a multi-variable variable gain tuning algorithm. This allows the positioner to make large step changes with minimal overshoot, while achieving the resolution to respond to very small step changes.

The Auto Tune procedure cycles the actuator to produce a measured response and selects those gain values that provide appropriate actuator performance. The Auto Tune function includes a gain modifier selector that can be used to increase or decrease the calculated gain in order to achieve optimal performance.

By setting the Auto Tune on/off DIP switch, the tuning mode can be changed from auto to manual. The Logix 3000MD Series positioners provide several preset gain settings with a locally adjustable gain set selector directly from the user interface on the positioner. If custom settings are desired, tuning sets can be modified with a handheld or ValveSight, to accommodate a wide range of actuator sizes and types.
The Logix 3400MD for FOUNDATION Fieldbus Applications

Complete local configuration, on any valve/actuator and local.

- **FF Simulate** – Run a control strategy without process
- **FF Write Protect** – Locks out unauthorized writes to NVRAM

Foundation Fieldbus made easy.

(In OOS) Calibrate stroke and adjust tuning without entering the Transducer Block — Updates the Block when complete.

36 status and alert and messages displayed locally via three easy-to-read LEDs

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**Logix 3400MD Features**

<table>
<thead>
<tr>
<th>Feature</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>RFI/EMI Immunity</td>
<td>✓</td>
</tr>
<tr>
<td>FISCO Compliant, User Interface</td>
<td>✓</td>
</tr>
<tr>
<td>Polarity Insensitive UI (Potted UI)</td>
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<tr>
<td>AO Block (30mS)</td>
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<tr>
<td>PID Block (6 PID Equations) (90mS)</td>
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<tr>
<td>2 DI Block (20mS)</td>
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</tr>
<tr>
<td>1 DO Block (30mS)</td>
<td>✓</td>
</tr>
<tr>
<td>1 IS Block (50mS)</td>
<td>✓</td>
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<tr>
<td>1 OS Block (50mS)</td>
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<tr>
<td>LAS (Link Master Device)</td>
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<tr>
<td>Auto Tune (Positioner Performance)</td>
<td>✓</td>
</tr>
<tr>
<td>High Friction Stability</td>
<td>✓</td>
</tr>
<tr>
<td>FF Code Download</td>
<td>✓</td>
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<tr>
<td>Flash Ram (Local Positioner Embedded Code Upgrade)</td>
<td>✓</td>
</tr>
<tr>
<td>Local Valve Signature Storage</td>
<td>✓</td>
</tr>
<tr>
<td>Local Calibration and Setup (While in OOS)</td>
<td>✓</td>
</tr>
<tr>
<td>24/7 Local Fault Monitoring</td>
<td>✓</td>
</tr>
<tr>
<td>Local Adjustable Gain</td>
<td>✓</td>
</tr>
<tr>
<td>Wizard/Method for On-line Commissioning</td>
<td>✓</td>
</tr>
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</table>

**Logix 3400MD Features**

<table>
<thead>
<tr>
<th>Feature</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Jog Buttons to Adjust 100% Command Position</td>
<td>✓</td>
</tr>
<tr>
<td>(While in OOS)</td>
<td></td>
</tr>
<tr>
<td>Linkable Position feedback (AO Read Back)</td>
<td>✓</td>
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<tr>
<td>Four Response Curves (Linear, %, QQ, and Custom)</td>
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<tr>
<td>Locally Activated, or Through FF</td>
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<tr>
<td>Multiple View Objects in Transducer Block</td>
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<tr>
<td>Honeywell PKS Partner with FDM</td>
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</tr>
<tr>
<td>Methods Setup Wizard</td>
<td>✓</td>
</tr>
<tr>
<td>DTM Available</td>
<td>✓</td>
</tr>
<tr>
<td>Yokogawa VIP Partner &amp; PRM supported</td>
<td>✓</td>
</tr>
<tr>
<td>Honeywell PKS Advantage Partner</td>
<td>◯</td>
</tr>
</tbody>
</table>

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Flowserve is a Honeywell Partner, with Flowserve DTM support pending in the ExperionDCS Field Device Manager. Please contact your Honeywell representative for details.
The Logix 3200MD for HART Applications

Complete local configuration, just like the Logix 3400MD, but HART protocol

- Local status and alert messages
- Tuning (Auto Tune function and manual adjustment)
- Jog buttons to manually adjust 100% position
- Easy-to-install 4-20 mA analog feedback card option

Simple plug-in AO card, automatically zero and spans position feedback during Quick Cal

<table>
<thead>
<tr>
<th>Logix 3200MD Features</th>
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</tr>
</thead>
<tbody>
<tr>
<td>RFI/EMI Immunity</td>
<td>✓</td>
</tr>
<tr>
<td>Auto Tune (Positioner Performance)</td>
<td>✓</td>
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<tr>
<td>High Friction Stability Tuning</td>
<td>✓</td>
</tr>
<tr>
<td>Integral 4-20 mA Feedback Option</td>
<td>✓</td>
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<tr>
<td>Flash RAM (Local Positioner Embedded Code Upgrade)</td>
<td>✓</td>
</tr>
<tr>
<td>Local Valve Signature Storage</td>
<td>✓</td>
</tr>
<tr>
<td>Local Calibration and Setup</td>
<td>✓</td>
</tr>
<tr>
<td>24/7 Local Fault Monitoring</td>
<td>✓</td>
</tr>
<tr>
<td>Local Adjustable Gain</td>
<td>✓</td>
</tr>
<tr>
<td>Three Response Curves (Linear, % and custom)</td>
<td>✓</td>
</tr>
<tr>
<td>Local Jog Buttons to Adjust 100% Command Position</td>
<td>✓</td>
</tr>
<tr>
<td>Valve Signature Diag. “Valve Analysis” AMS SnapOn® Application</td>
<td>✓</td>
</tr>
<tr>
<td>AMS Device Manager</td>
<td>✓</td>
</tr>
<tr>
<td>DTM Available</td>
<td>✓</td>
</tr>
<tr>
<td>Yokogawa VIP Partner</td>
<td>✓</td>
</tr>
<tr>
<td>Honeywell PKS Partner with Honeywell HART FDM</td>
<td>✓</td>
</tr>
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</table>
With the Logix 3400MD, function blocks are no longer required to set up, configure and perform a simple stroke calibration. The 3400MD can be set up with 9-32 VDC supply and 45 psi (min.) air supply on any valve/actuator platform.

Calibration, configuration and tuning parameters from the local interface will be automatically updated in the Transducer Block on the Logix 3400MD. Local setup and calibration that does not require a link to a host controller, PC or hand-held device, as well as local validation that setup is correct, make any FOUNDATION Fieldbus™ installation easy and straightforward.

When the 3400MD is in OOS (Out Of Service mode), the local interface shown to the right is accessible and setup can be carried out through the following steps:

**Common Configuration Steps**

1. Make sure the mechanical linkage, air tubing and actuator mounting are correct.

2. Set the configuration switches to the desired operation of the valve/actuator.

3. Set the quick calibration switch to Jog or Auto. In Jog, the 100% position can be manually adjusted using the yellow up and down buttons after Re-Cal is pressed. In Auto, the positioner finds the 100% position and calibration is complete. LED blink codes will guide the user through the process. Four green blinks (GGGG) or (GGGY) at the end of the sequence confirm that the calibration was successful.

4. If needed, the GAIN switch located to the right of the jog buttons will speed up or slow down the positioner’s response to command changes. With the Auto Tune configuration switch set to “On”, the positioner’s algorithm will select a gain with no over-shoot. The “E” position of the rotary GAIN dial indicates “neutral” with respect to gain adjustment. Turning clockwise from E to H and will speed up the response. Tuning counter-clockwise from E will slow it down, with A being the slowest response.

The Logix 3200MD can be set up with 10 VDC milliamp current supply current and 45 psi (min.) air supply on any valve/actuator platform.

Calibration, configuration and tuning parameters from the local interface will be automatically updated in the HART registers on the Logix 3200MD. Local setup and calibration that does not require a link to a host controller, PC or hand-held device, and local validation that setup is correct make any HART™ installation easy and straightforward.

With the Logix 3200MD, the local interface shown to the right can be used to set up the unit in seconds through the following steps:
**Time is Money**

*Shorter commissioning time gets you up and running, making money faster*

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**3000MD Series Facts**

The local interface in the 3000MD series positioners and the two way communication capability allows the user to quickly commission loops.

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**3400**

- Three versions: Basic, Advanced (Advanced includes pressure sensors), and Pro (Pro includes pressure sensors and full featured valve diagnostics)
- ITK - CFF 4.6, 5.0
- DD available at www.fieldbus.org or www.flowserve.com
- Stores a valve signature onboard in NVRAM
- Linkable Position Feedback as part of the AO Function block.
- Contains: AO, PID, 2-DI, DO, OS, IS function blocks.
- Onboard temperature sensor to measure local positioner ambient
- Stroke speed limiter (configurable in transducer block)
- Stainless steel version available
- DTM Available

**3200**

- Three versions: Basic, Advanced (Advanced includes pressures), Pro (Pro includes pressure sensors and full featured valve diagnostics)
- HART Command 1, 3, 9, 33 & 48
- Burst Mode available to continuously transmit
  - Position command analog loop current
  - Final value of command after characterization
  - Supply pressure (advanced), Temperature (basic)
  - Stem position in percent
- Onboard temperature sensor to measure local positioner ambient
- Stroke speed limiter (configurable through HART)
- Stainless steel version available
- Enhanced Device Description for advanced signature diagnostics
  - Step test, friction test, HRL, data logger
- DTM Available
There’s a Flowserve Expert Inside - ValveSight FDT/DTM Technology

Flowserve’s ValveSight DTM software helps manage field devices by combining the features of field network hardware and the HART (3200MD) or Foundation Fieldbus (3400MD) communication protocols using FDT/DTM technology with the Logix 3000MD series positioners. ValveSight is a complete software package, featuring a unique and easy to understand health status of the device that shows not only problems, but the magnitude of developing problems as well. ValveSight also has configuration and calibration screens to fully support the Logix 3000MD positioner family. Additionally, the user can access customized reports for all configuration, calibration and event data. Flowserve’s ValveSight DTM opens the ‘window’ to the device and allows immediate views with live feedback on all active device sensors including valve stem position, control signal, friction, response time and other important system metrics.

ValveSight DTM software enables communication between the software and field device networks using the HART or FF protocol and provides access to the 24/7 diagnostic information from field devices. Using FDT/DTM technology maintenance personnel can access any Logix 3000MD series positioner on the network from a single workstation. Additionally, the software has capability to store configuration and calibration history and view event logs for each digital positioner accessible through the network.

Diagnostic Engine

Users can now obtain a new level of detailed real time diagnostic information with ValveSight DTM software. ValveSight features an “Expert Inside” performing real time on-line diagnostics 24 hours a day, 7 days a week. The diagnostic assessment of the ‘expert inside’ is instantly displayed on the local interface and through the ValveSight DTM software. The ‘health bars’ in the Dashboard view instantly indicate any developing issues and quickly direct the user to the implications and solutions for each problem. The system automatically prioritizes alarms to direct the user to the root cause.

Configuration Management

ValveSight DTM software also allows the user to easily upload a configuration from the positioner. This means that a new replacement positioner can be identically configured with the simple click of a mouse once the correct configuration has been identified. ValveSight enables users to edit individual configurations and print a positioner configuration report.

21-Point Characterization Curve

With ValveSight DTM software, the user can adjust a 21-point characterization curve to change the response of the positioner in order to meet the process requirements. The output of each control point is independent, allowing the user to create a custom curve with very high resolution. This customized curve can be saved in the memory of the Logix 3000MD positioners, and either activated or overridden with a simple on-board selector switch.

Signatures

The Logix 3000MD positioners are designed to assure that data is easily gathered, stored and compared to historical valve data so the user can determine the performance of critical valves.

With ValveSight DTM software a user-defined signature ramp or step response test can be generated with a Logix 3000MD positioner. Signatures can be saved and cataloged (and later retrieved) for comparison with a more recent signature. A special partial stroke signature function will automatically test the valve/actuator and give a pass/fail indication.

Positioner Performance

Static performance and accuracy measures such as hysteresis, deadband, linearity, and repeatability can be obtained with the Logix 3000MD positioners. These values can be graphically depicted, stored and later retrieved for comparative analysis.
# Logix 3000MD Series Features List for ValveSight DTM

<table>
<thead>
<tr>
<th>Feature</th>
<th>ValveSight DTM</th>
<th>Logix 3000MD Positioners</th>
<th>Logix 3400MD Positioners</th>
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<tr>
<td><strong>Overview</strong></td>
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<td></td>
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</tr>
<tr>
<td>Dashboard</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>All-Alarm Annunciator</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td><strong>Configuration</strong></td>
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<tr>
<td>Configuration Management</td>
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<td>Counters and Travel Settings</td>
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<td>Command Deviation Settings</td>
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<td>Custom Units of Measure</td>
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<td><strong>On-Line Diagnostics</strong></td>
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<tr>
<td>Valve Health View</td>
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<td>Positioner Health View</td>
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<tr>
<td>Actuator Health View</td>
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<tr>
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<td><strong>Foundation Fieldbus Function Blocks</strong></td>
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<tr>
<td>AO</td>
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</tr>
<tr>
<td>PID</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>DO</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>DI</td>
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<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>OS</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>IS</td>
<td></td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

2. Limited function. No friction or force monitoring.
3. Limited function. No pressure monitoring or information.
4. DCS Function
### Specifications for Logix 3200MD

#### Table I: Electrical Specifications

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Supply</td>
<td>Two-wire, 4-20 mA</td>
</tr>
<tr>
<td>Compliance Voltage</td>
<td>10.0 VDC @ 20 mA</td>
</tr>
<tr>
<td>Effective Resistance</td>
<td>495 Ω @ 20 mA Typical Add 20 Ω when HART communication active</td>
</tr>
<tr>
<td>Communications</td>
<td>HART Protocol ITK 5.6</td>
</tr>
<tr>
<td>Minimum Operating Current</td>
<td>3.6 mA without AO board 3.7 mA with AO board</td>
</tr>
<tr>
<td>Maximum Voltage</td>
<td>30.0 VDC</td>
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</table>

#### Table II: Environmental Conditions

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Temperature Range</td>
<td>Standard -4° to 176°F (-20° to 80°C)</td>
</tr>
<tr>
<td></td>
<td>Low -4° to 176°F (-20° to 80°C)</td>
</tr>
<tr>
<td>Transport and Storage</td>
<td>-40° to 176°F (-40° to 80°C)</td>
</tr>
<tr>
<td>Temperature Range</td>
<td>Operating Humidity</td>
</tr>
<tr>
<td></td>
<td>0 - 100% non-condensing</td>
</tr>
</tbody>
</table>

**Note:** The air supply must conform to ISA Standard ISA 7.0.01 (a dew point at least 18 degrees Fahrenheit below ambient temperature, particle size below five microns—one micron recommended—and oil content not to exceed one part per million).

### Specifications for Logix 3400MD

#### Table I: Electrical Specifications

<table>
<thead>
<tr>
<th>Specifications</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Supply</td>
<td>Two-wire, 9-32 VDC</td>
</tr>
<tr>
<td>FF compatible</td>
<td></td>
</tr>
<tr>
<td>IS Fisco compliant</td>
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<tr>
<td>Communications</td>
<td>FF Protocol ITK 4.6x, 5.0</td>
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<tr>
<td>Operating Current</td>
<td>23 mA</td>
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<tr>
<td>Maximum Voltage</td>
<td>36.0 VDC</td>
</tr>
</tbody>
</table>

#### Table II: Environmental Conditions

<table>
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<tr>
<th>Specifications</th>
<th>Details</th>
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</thead>
<tbody>
<tr>
<td>Operating Temperature Range</td>
<td>Standard -40° to 176°F (-40° to 80°C)</td>
</tr>
<tr>
<td></td>
<td>Low -40° to 176°F (-40° to 80°C)</td>
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<tr>
<td>Transport and Storage</td>
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</tr>
<tr>
<td>Temperature Range</td>
<td>Operating Humidity</td>
</tr>
<tr>
<td></td>
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</tr>
</tbody>
</table>

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# The Logix 3000MD E.O.M. Mounting Kits

<table>
<thead>
<tr>
<th>Brand</th>
<th>Model</th>
<th>Size</th>
<th>Mounting Kit</th>
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</thead>
<tbody>
<tr>
<td>Fisher</td>
<td>657 &amp; 667</td>
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<td>213905</td>
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<td>VSL-VA1D</td>
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<td>Automax</td>
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<td>Air-Torque</td>
<td>AT Series</td>
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<td>G Series</td>
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<td>EL-O-Matic</td>
<td>E Series</td>
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<td>P Series</td>
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<td>Hytork</td>
<td>XL Series</td>
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<td>Unitorq</td>
<td>M Series</td>
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<tr>
<td>Worcester</td>
<td>39 Series</td>
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*Adjustable mounting kit 173798 may be needed if handwheels are used.

## NAMUR Accessory Mounting Kit Part Numbers

<table>
<thead>
<tr>
<th>Bracket Option</th>
<th>Description</th>
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<tbody>
<tr>
<td>28</td>
<td>20 mm pinion x 80 mm bolt spacing</td>
</tr>
<tr>
<td>28</td>
<td>38 mm pinion x 80 mm bolt spacing</td>
</tr>
<tr>
<td>313</td>
<td>30 mm pinion x 80 mm bolt spacing</td>
</tr>
<tr>
<td>513</td>
<td>50 mm pinion x 130 mm bolt spacing</td>
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<table>
<thead>
<tr>
<th>Bolt Option</th>
<th>Description</th>
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<tbody>
<tr>
<td>A</td>
<td>10-24 UNC bolting</td>
</tr>
<tr>
<td>B</td>
<td>10-32 UNF bolting</td>
</tr>
<tr>
<td>L</td>
<td>M5-.8 metric bolting</td>
</tr>
</tbody>
</table>

Example: NK313A, NAMUR Accessory Mounting Kit with 30 mm pinion x 80 mm bolt spacing and 10-24 UNC bolting.

Please contact your Flowserve representative for additional mounting kit availability.
3000MD Series dimensions

NOTE: Dimensions in inches (mm)
# How to order

<table>
<thead>
<tr>
<th>Selection</th>
<th>Code</th>
<th>Example</th>
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<tbody>
<tr>
<td><strong>Protocol</strong></td>
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<td>HART</td>
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<td>Foundation Fieldbus</td>
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<td><strong>Diagnostics</strong></td>
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<td>Standard (No Sensors)</td>
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<td>Advanced (With Sensors)</td>
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<tr>
<td>Pro Diagnostics (with sensors and full ValveSight diagnostics)</td>
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<tr>
<td>Stainless Steel, No Paint (Valtek)</td>
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<td>Aluminum, Black Paint (Automax)</td>
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<tr>
<td>Aluminum, Food-Grade White Paint (Automax)</td>
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<tr>
<td>Aluminum, Black Paint (Accord)</td>
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<td>Aluminum, Food-Grade White Paint (Accord)</td>
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<td><strong>Design Version</strong></td>
<td>MD</td>
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<td>Nonincendive Ex nL nA IIC, ATEX II 3 G, T4amb -40°C to +85°C, T5 Tamb -40°C to +55°C; Intrinsically Safe Ex ia IIC, T4 Tamb -40°C to +85°C, T5 Tamb -40°C to +55°C; Ex ia D 20, T95°C -40°C to +80°C (CENELEC)</td>
<td>04</td>
<td>(3400MD)</td>
</tr>
<tr>
<td>INMETRO BR-EX ia IIC T4/T5; BR-Ex d IIB+H2, T5 (South America)</td>
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<tr>
<td>Explosionproof Ex d IIB + H2, Ex tD A21 T95°C, ATEX II 2 G (CENELEC)</td>
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<td>(3400MD)</td>
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<td>Explosionproof Class I, Div 1, Groups B, C, D Intrinsically Safe Class I, Div 1, Groups A through G (FM, CSA) FM Nonincendive. CSA Class I, Div 2, Class I, Zone 1, Group IIB + H2, and Exia Class 1, Zone 0, Group IIC (CSA Only)</td>
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<td><strong>Certifications</strong></td>
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<td>General Purpose</td>
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<td>Intrinsically Safe Ex ia IIC, T4 Tamb -40°C to +85°C, T5 Tamb -40°C to +55°C; Ex ia D 20, T95°C -40°C to +80°C, ATEX II 1 G D (CENELEC) (GOST GGTN Ex i Intrinsically Safe IIC)</td>
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<td>(3400MD)</td>
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<td>IECEx Explosionproof</td>
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<td>IECEx Intrinsically Safe</td>
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<td><strong>Shaft</strong></td>
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<td>DD 316 Stainless Steel Shaft (Valtek Standard)</td>
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<tr>
<td>NAMUR 316 Stainless Steel (VDI/VDE 3845)</td>
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<td>1/2” NPT</td>
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<td>M20</td>
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<td><strong>Action</strong></td>
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<td>Four-way (Double-Acting)</td>
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<td>Three-way (Single-Acting)</td>
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<td>Three-way Vented (Single-Acting)</td>
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<td><strong>Gauges</strong></td>
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<td>SS with brass internals, psi (bar/kPa) (Valtek Standard)</td>
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<td>SS with SS internals, psi (bar/kPa)</td>
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<td>SS with brass internals, psi (kg/cm2 )</td>
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<tr>
<td>SS with SS internals, psi (kg/cm2 )</td>
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<tr>
<td>No Gauges</td>
<td>U</td>
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<td>No special options</td>
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<td>4-20 mA Position Feedback</td>
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<td>Remote Mount Feedback (Only Available with Certification Option 14)</td>
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<td>Fail Option Feedback*</td>
<td>SF</td>
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* Contact factory before specifying this option

For each category, select the code for one of the options.
### Logix 3400MD Hazardous Area Certifications

<table>
<thead>
<tr>
<th>Notified Body</th>
<th>Certification Option</th>
<th>Approval</th>
<th>Entity Parameters</th>
<th>Temperature Code</th>
<th>Enclosure Rating</th>
</tr>
</thead>
<tbody>
<tr>
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<td>-01</td>
<td>Explosionproof: Class I, Div 1, Groups B,C,D Dust Ignition Proof: Class II, III, Div 1, Groups EFG</td>
<td>Not Applicable</td>
<td>T6 $T_{\text{amb}} \leq 60^\circ\text{C}$</td>
<td>NEMA 4X</td>
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<tr>
<td></td>
<td>-02</td>
<td>Intrinsically Safe: Class I, II, III, Div 1, Groups A,B,C,D Class 1, Zone 0, AEx ia IIC</td>
<td>Parameters</td>
<td>$T4 \ T_{\text{amb}} \leq 60^\circ\text{C}$</td>
<td>NEMA 4X</td>
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<tr>
<td></td>
<td>-02</td>
<td>Non-Incendive: Class I, II, III, Div 2, Groups A,B,C,D</td>
<td>Install per NEC Article 501-4</td>
<td>$T6 \ T_{\text{amb}} \leq 60^\circ\text{C}$</td>
<td>NEMA 4X</td>
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<tr>
<td></td>
<td>-01</td>
<td>Explosionproof: Class I, Div 1, Groups B,C,D Class II, Div 1, Groups E,F,G Class III Ex d IIB+H2</td>
<td>Not Applicable</td>
<td>$T5 \ T_{\text{amb}} \geq -40^\circ\text{C}$ to $+60^\circ\text{C}$</td>
<td>IP65</td>
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<tr>
<td></td>
<td>-07</td>
<td>Explosionproof (Flameproof): II 2 GD Ex d IIB + H2 Ex tD A21 T95°C</td>
<td>Not Required</td>
<td>$T5 \ T_{\text{amb}} \geq -40^\circ\text{C}$ to $+60^\circ\text{C}$</td>
<td>IP65</td>
</tr>
<tr>
<td></td>
<td>-04 or -15</td>
<td>Intrinsically Safe: II 1 G Ex ia IIC</td>
<td>$Ui = 30$ Volts $Il = 100\text{mA}$ $Pi = 800\text{mW}$ $Ci = 30 \text{nF}$ $Li = 0$ $Co = 36 \text{nF}$</td>
<td>$T4 \ T_{\text{amb}} \leq -40^\circ\text{C}$ to $+85^\circ\text{C}$</td>
<td>IP65</td>
</tr>
<tr>
<td></td>
<td>-04</td>
<td>Non-Incendive: II 3 G Ex nL nA IIC</td>
<td>Not Required</td>
<td>$T4 \ T_{\text{amb}} \leq -40^\circ\text{C}$ to $+85^\circ\text{C}$</td>
<td>IP65</td>
</tr>
<tr>
<td></td>
<td>-06</td>
<td>Explosionproof (Flameproof): 1Ex d IIBT5/H2X</td>
<td>Not Required</td>
<td>$T5 \ T_{\text{amb}} \geq -50^\circ\text{C}$ to $+60^\circ\text{C}$</td>
<td>IP65</td>
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<tr>
<td></td>
<td>-21</td>
<td>Intrinsically Safe: 0Ex ia IICT4X</td>
<td>$Ui = 24$ Vdc $Il = 250\text{mA}$ $Pi = 1.2W$ $Ci = 330 \text{pF}$ $Li = 10 \text{\mu F}$</td>
<td>$T4 \ T_{\text{amb}} \leq -50^\circ\text{C}$ to $+60^\circ\text{C}$</td>
<td>IP65</td>
</tr>
<tr>
<td></td>
<td>-06</td>
<td>Explosionproof (Flameproof): BR-Ex d IIB + H2</td>
<td>Not Required</td>
<td>$T5 \ T_{\text{amb}} \leq -40^\circ\text{C}$ to $+60^\circ\text{C}$</td>
<td>IP65</td>
</tr>
<tr>
<td></td>
<td>-06 or -22</td>
<td>Intrinsically Safe: BR- Ex ia IIC</td>
<td>$Ui = 24$ Vdc $Il = 250\text{mA}$ $Pi = 1.2W$ $Ci = 3300 \text{\mu F}$ $Li = 10 \text{\mu F}$</td>
<td>$T5 \ T_{\text{amb}} \leq -40^\circ\text{C}$ to $+60^\circ\text{C}$</td>
<td>IP65</td>
</tr>
</tbody>
</table>

**GOST R**

**GOST K, GOST K GGTN**

**WARNINGS:**
1. In order to maintain the explosionproof certifications do not remove or loosen covers during operation.
2. To avoid the possibility of static discharge clean only with a damp cloth.
3. The positioner must be connected to suitable rated intrinsically safe equipment, and must be installed in accordance with intrinsically safe installation standards.
<table>
<thead>
<tr>
<th>Notified Body</th>
<th>Certification Option</th>
<th>Approval</th>
<th>Entity Parameters</th>
<th>Temperature Code</th>
<th>Enclosure Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>ATEX</td>
<td>-28</td>
<td>Explosionproof: Class 1, Div 1 Groups B,C,D Ex nL nA IIC</td>
<td>Not Required</td>
<td>T4 $T_{a,n} \leq 80\degree C$</td>
<td>IP65</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Intrinsic Safe: Class I, II, III, Div 1, Groups A,B,C,D</td>
<td>$U_i = 30$ Volts $I_i = 100$mA $P_i = 800$mW $C_i = 30$ nF $L_i = 0$</td>
<td>T5 $T_{a,n} \leq 85\degree C$</td>
<td>IP65</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Non-Incendive: Class I, Div 2, Groups A,B,C,D</td>
<td>Not Required</td>
<td>T4 $T_{a,n} \leq 80\degree C$</td>
<td>Type 4X</td>
</tr>
<tr>
<td>EEx</td>
<td>-28</td>
<td>Explosionproof: II 2 GD</td>
<td>Not Required</td>
<td>T5 ($T = -40\degree C$ to $+ 80\degree C$)</td>
<td>IP65</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Intrinsic Safe: II 1 GD</td>
<td>$U_i = 30$ Volts $I_i = 100$mA</td>
<td>T4 ($T_{a,n} \leq 85\degree C$)</td>
<td>IP65</td>
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<td></td>
<td>Non-Incendive: II 3 G</td>
<td>Not Required</td>
<td>T4 ($T_{a,n} \leq 80\degree C$)</td>
<td>IP65</td>
</tr>
<tr>
<td>IECEx</td>
<td>-16</td>
<td>Explosionproof: Ex d II B + H</td>
<td>Not Required</td>
<td>T5 ($T_{a,n} \leq -20\degree C$ to $+ 55\degree C$)</td>
<td>IP65</td>
</tr>
<tr>
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<td>Intrinsic Safe: Ex ia IIC</td>
<td>$U_i = 30$ Volts $I_i = 100$mA</td>
<td>T4 ($T_{a,n} \leq -10\degree C$)</td>
<td>IP65</td>
</tr>
<tr>
<td>GOST</td>
<td>-06</td>
<td>Explosionproof:</td>
<td>Not Required</td>
<td>T5 ($-50\degree C \leq T_a \leq +55\degree C$)</td>
<td>IP65</td>
</tr>
<tr>
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<td></td>
<td>Intrinsic Safe: Ex ia IIC</td>
<td>$U_i = 30$ Volts $I_i = 100$mA</td>
<td>T4 ($T_{a,n} \leq -50\degree C$)</td>
<td>IP65</td>
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<tr>
<td>INMETRO</td>
<td>-06</td>
<td>Explosionproof: BR-Ex d II B + H</td>
<td>Not Required</td>
<td>T5 ($-40\degree C \leq T_a \leq +80\degree C$)</td>
<td>IP65</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Intrinsic Safe: BR- Ex ia IIC</td>
<td>$U_i = 30$ Volts $I_i = 100$mA</td>
<td>T4 ($T_{a,n} \leq -50\degree C$)</td>
<td>IP65</td>
</tr>
</tbody>
</table>
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