AVID® Position Monitors

The AVID® (Automated Valve Interface Devices) range of position monitors represents the latest technology for the monitoring and control of automated 1/4 turn valves.

Features
- All AVID® products are suitable for NAMUR mounting to actuators.

EasiFix® switch adjustment
- Vibration resistant self-locking cams are fastened to a splined shaft and can be set by hand in seconds. Since there are no set screws, the cams will never slip out of adjustment.

ModMount® assembly
- The AVID® position monitors are directly mounted to the actuator by a low-profile mounting assembly.
- An easy access terminal block having two extra points for solenoid valve integration provides for simplicity of wiring and economy of space.

HiVue® local visual indicator
- All models are fitted with a HiVue® impact and corrosion resistant beacon, capable of displaying exact valve position from any quadrant at distances of up to 50 meters.
- ATEX certified.

The range

CR position monitor
Corrosion resistant IP68 valve position monitor.

XA/XS position monitor
Flameproof ATEX approved position monitor for hazardous area applications.

ZR position monitor
Corrosion resistant ATEX approved position monitor for general purpose, hazardous area and intrinsically safe applications.

ZR+ Control position monitor
Integrated monitoring and control of a 5/2 or 3/2 solenoid in a single ATEX approved package.

www.pentair.com/valves
AVID® Position Monitors

Model CR position monitor

The CR represents a universal entry level product for the Pentair AVID® range of position monitors.

### General description

- The IP68 engineered resin enclosure assures both strength and corrosion resistance. Extra conduit entrance allows for electrical integration of solenoid valves.
- 8 point slide-out terminal strip for electrical integration of solenoid valves and ease of wiring.
- For intrinsically safe applications, it is recommended that the following NAMUR IS inductive proximity sensors are used, either P&F NJ2-V3-N or IFM NS5002. Alternatively gold plated SPDT mechanical switches can be used as Simple Apparatus (for Gas only). Please note that all of the above must be used in combination with a suitable IS barrier.

The unit would then be suitable for use in the appropriate hazardous area as indicated by the certification for the sensor and/or as follows:

**P&F NJ2-V3-N**

- \( \text{II 1 GD} \) *see: PTB 00 ATEX 2032 X Exia IIC T*   
- *see: ZELM 03 ATEX 0128 X IFM NS5002  

**IFM NS5002**

- \( \text{II 1 GD} \) (max: 70°C) *see: PTB 01 ATEX 2191 Exia IIC T*  
- *see: BVS 04 ATEX E 153 GP SPDT V3 MECH  

**GP SPDT V3 MECH**

- \( \text{II 1 G} \)  

Exia IIC T5  

Note: * See corresponding certificate/s for all/any approval variations.

### Materials of construction

<table>
<thead>
<tr>
<th>Part</th>
<th>Description</th>
<th>Material specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cover assembly with HiVue indicator</td>
<td>ABS (clear white)</td>
</tr>
<tr>
<td>2</td>
<td>Shaft assembly with NBR ‘O’rings</td>
<td>Acetal resin</td>
</tr>
<tr>
<td>3</td>
<td>Terminal strip &amp; switch assembly</td>
<td>ABS (black)</td>
</tr>
<tr>
<td>4</td>
<td>Switch to shaft support plate</td>
<td>ABS (black)</td>
</tr>
<tr>
<td>5</td>
<td>Housing with EPDM ‘O’ring</td>
<td>ABS (black)</td>
</tr>
<tr>
<td>6</td>
<td>Actuator mounting screws</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>7</td>
<td>NAMUR &amp; 11 x 16 mm shaft coupler</td>
<td>Acetal resin</td>
</tr>
<tr>
<td>8</td>
<td>ModMount bracket</td>
<td>Acetal resin</td>
</tr>
<tr>
<td>9</td>
<td>Bracket to housing screws</td>
<td>Stainless steel</td>
</tr>
</tbody>
</table>

### Micro-switch V3 (mechanical)

- Electrical version SPDT form C
- Electrical rating (resistive load):
  - 15 A / 125/250 V AC
  - 6 A / 24 V DC
  - 0.5 A / 125 V DC
  - 0.25 A / 250 V DC
  - 5 A / 125 V AC ‘L’

### Inductive proximity sensor

- Pepperl & Fuchs: NJ2-V3-N, NBB3-V3-Z4, NBB2-V3-E2
- IFM: IS5026, IS5001, IS0003, IS5003, NS5002

### Area classification & approvals

- Weatherproof: IP66 / IP67 / IP68 (30 m for 24 hrs)

### Enclosure

- Conduit entries: 2 x M20 x 1.5 / 1/2” NPT
- Terminal strip: 8 points (slide out terminal)
- Temperature range: -20°C to +80°C

Pentair reserves the right to change the contents without notice
AVID® Position Monitors

General description
Flameproof ATEX approved Ex II 2GD T80°C Ex d IIB+H2 position monitors for hazardous area applications.

Features
- Flameproof ATEX Ex II 2GD T80°C Ex d IIB+H2 rated aluminium enclosure, equipped with 2 or 4 mechanical switches.
- Conform to ATEX for use in category 2 group 2 zones 1, 2 (G) and/or zones 21, 22 (D).
- All units are manufactured to IP66/67/68 and NEMA 4, 4x weatherproof ratings.
- Approvals: ATEX, UL, FM, CSA.
- Monitors available with proximity sensors.
- 0 to 100% re-transmission signal (option).

Materials of construction

<table>
<thead>
<tr>
<th>Item</th>
<th>Material XA</th>
<th>Material XS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing</td>
<td>Aluminium</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>Cover</td>
<td>Aluminium</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>Shaft</td>
<td>Stainless steel</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>Fasteners</td>
<td>Stainless steel</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>HiVue</td>
<td>Grilamid resin</td>
<td>Grilamid resin</td>
</tr>
<tr>
<td>ModMount</td>
<td>Nylon (not used)</td>
<td></td>
</tr>
</tbody>
</table>

Dimensions (mm)

Model XA/XS position monitor - hazardous areas

Dimensions (mm)

Micro-switch V3 (mechanical)
- Electrical version: SPDT form C
- Electrical rating:
  - 15 A / 125/250 V AC
  - 6 A / 24 V DC
  - 0.5 A / 125 V DC
  - 0.25 A / 250 V DC
  - 5 A / 125 V AC 'L'

Inductive proximity sensors
The XA/XS position monitor is also available with 2 & 3-wire DC PNP/NPN (NO/NC) inductive proximity sensors (5-36 V DC) and 2-wire AC/DC inductive proximity sensors (20-140 V AC/10-140 V DC).

Area classification & approvals
- Weatherproof: IP66/67/68
- ATEX: Ex II 2G Ex d IIB+H2 T*
- ATEX: Ex II 2D Ex tD A21 T**°C
- UL, FM & CSA: NEMA 4, 4x
  - Cl. Grps. C & D, Cl. II,
  - Grp. E, F & G, Div. 1 & 2

* See corresponding certificate for approval variations

Enclosure
- Conduit entries: 2 x M20 / 1/2" NPT
- Terminal strip: 8 or 16 points
- Temperature range: Ex d approved at ambient -30°C to +85°C

Materials of construction

Pentair reserves the right to change the contents without notice
Model ZR position monitor

General description
A highly corrosion resistant, IP67 resin enclosure suitable for general purpose, hazardous area and intrinsically safe, zones 1, 2 (G) and/or zones 21, 22 (D).

Features
- High-impact, engineered resin enclosure compatible with many corrosive environments.
- Position sensors are available in mechanical and inductive proximity configurations.
- Up to 4 SPDT form C micro-switches or inductive proximity sensors or up to 2 proximity T-switches.
- Inductive T-switches are internationally approved for intrinsically safe applications as are mechanical sensors under their classification as ‘Simple Apparatus’.
- Two conduit entries and an easy access terminal block having two extra points for solenoid valve integration.
- 0 to 100% re-transmission signal (option).
- Suitable for hazardous area zones 1 and 2 (G) and/or zones 21, 22 (D).

Area classification & approvals
Weatherproof IP67
ATEX

| II 1G Ex ia IIB/C T* Ga |
| II 1D Ex tb IIIC T135°C Da |
| II 2G Ex mb e IIC T* Gb |
| II 2D Ex t IIIC T** Db |

* See corresponding certificate for approval variations

Enclosure
Conduit entries 2 x M20 / 1/2” NPT
Terminal strip 8 points
Temperature range
ZR with V3 mech. -40°C to +80°C
ZR with NJ2-V3-N -25°C to +80°C
All ATEX/IECEx models check certificate

Materials of construction
<table>
<thead>
<tr>
<th>Item</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing</td>
<td>Black Grilamid resin</td>
</tr>
<tr>
<td>Cover</td>
<td>Clear Grilamid resin</td>
</tr>
<tr>
<td>Shaft</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>Fasteners</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>HiVue</td>
<td>Grilamid resin</td>
</tr>
<tr>
<td>ModMount</td>
<td>Nylon</td>
</tr>
</tbody>
</table>

Dimensions (mm)

Micro-switch V3 (mechanical)

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical version</td>
<td>SPDT form C</td>
</tr>
<tr>
<td>Electrical rating</td>
<td>15 A / 125/250 V AC</td>
</tr>
<tr>
<td></td>
<td>6 A / 24 V DC</td>
</tr>
<tr>
<td></td>
<td>0.5 A / 125 V DC</td>
</tr>
<tr>
<td></td>
<td>0.25 A / 250 V DC</td>
</tr>
<tr>
<td></td>
<td>5 A / 125 V AC ‘L’</td>
</tr>
</tbody>
</table>

Proximity type (inductive), intrinsically safe

<table>
<thead>
<tr>
<th>Sensing range</th>
<th>2-4 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical version</td>
<td>D.C. voltage 2 wire in accordance with EN 60947-5-6</td>
</tr>
<tr>
<td>Switching frequency</td>
<td>1.0 kHz</td>
</tr>
<tr>
<td>Nominal voltage</td>
<td>8 V DC</td>
</tr>
<tr>
<td>Input voltage range</td>
<td>Dependent on barrier</td>
</tr>
<tr>
<td>Output/current consumption</td>
<td>≥ 1 mA, ≤ 3 mA</td>
</tr>
</tbody>
</table>

T-sensor for Ex mb e classification

| Electrical version    | SPDT form C normally open          |
| Contacts              | Rhodium                            |
| Electrical rating     | 2 A / 120 V AC, 1.5 A / 24 V DC, 1.0 A / 230 V AC |
| Contact resistance    | 0.08 ohms                          |
| Seal                  | Encapsulation                      |

Proximity type (inductive)
The ZR position monitor is also available with 2 and 3-wire DC PNP/NPN (NC/NO) inductive proximity sensors (5-36 V DC) and 2-wire AC/DC inductive proximity sensors (20-140 V AC/10-140 V DC).
**General description**
Providing integrated monitoring and control of automated process valves, the ZR+ is designed for general purpose, increased safety & encapsulation or intrinsically safe applications. Eliminates the need for costly adaptors to mount solenoids onto Scotch Yoke type actuators.

**Features**
- Solenoid valves are pre-wired and integrated within the ZR+ enclosure.
- High-impact, engineered resin enclosure.
- Position sensors are available in mechanical and inductive proximity configurations.
- Up to 4 SPDT form C micro-switches or inductive proximity sensors or up to 2 proximity T-switches.
- Solenoid valves, in both 3/2-way and 5/2-way configurations are supplied in a variety of coil voltages and body materials.
- A high Cv value of 1.1 is standard on all valves.
- Non-venting valve design with spool position indicator.
- Models available for hazardous area zones 1, 2 (G) and/or zones 21, 22 (D).
- Solenoid valves available as standard with manual override.

**Solenoid coils (standard)**
- **General purpose** 24 V DC/2 W, 110 V AC/6 W, 230 V AC/6 W
- **Intrinsically safe** 24 V DC/6 W
- **Increased safety** 24 V DC/5 W, 120 V AC/5 W, 8 encapsulation 230 V AC/3.2 W

**Solenoid specifications**
- **Body** Anodised aluminium/316 stainless steel
- **Cv** 1.1
- **Tube connection** 1/4” NPT or G1/4 ISO2228
- **Configuration:**
  - Mechanical 3/2-way or 5/2-way
  - Electrical Normally closed
- **Pressure rating** 3 to 10 bar
- **Operating media** Air, inert gas
- **Operations** 1,000,000 (typ)
- **Mounting** Any position

**Area classification & approvals**
- **Weatherproof** IP66/67
  - **ATEX** Ex II 1GD Ex ia IIC T6 Ga Ex t IIC T135°C Da IP67
  - **II 2GD Ex mb e IIC T5 Gb** Ex tb IIC T100°C Db IP67
  - **IECEX** Ex ia IIC T6 Ga Ex t IIC T135°C Da IP67
  - **Ex mb e IIC T5 Gb** Ex tb IIC T100°C Db IP67
- **IECEx** Ex t IIC T135°C Da IP67
- **Ex mb e IIC T5 Gb** Ex tb IIC T100°C Db IP67
- **IECEx** Ex ia IIC T6 Ga Ex t IIC T135°C Da IP67
- **Ex mb e IIC T5 Gb** Ex tb IIC T100°C Db IP67
- **IECEx** Ex ia IIC T6 Ga Ex t IIC T135°C Da IP67
- **Ex mb e IIC T5 Gb** Ex tb IIC T100°C Db IP67
- **IECEx** Ex ia IIC T6 Ga Ex t IIC T135°C Da IP67
- **Ex mb e IIC T5 Gb** Ex tb IIC T100°C Db IP67
- **IECEx** Ex ia IIC T6 Ga Ex t IIC T135°C Da IP67
- **Ex mb e IIC T5 Gb** Ex tb IIC T100°C Db IP67
- **IECEx** Ex ia IIC T6 Ga Ex t IIC T135°C Da IP67
- **Ex mb e IIC T5 Gb** Ex tb IIC T100°C Db IP67
- **IECEx** Ex ia IIC T6 Ga Ex t IIC T135°C Da IP67
- **Ex mb e IIC T5 Gb** Ex tb IIC T100°C Db IP67

**Micro-switch V3 (mechanical)**
- **Electrical version** SPDT form C
- **Electrical rating** 15 A / 125/250 V AC
  - 6 A / 24 V DC
  - 0.5 A / 125 V DC
  - 0.25 A / 250 V DC
  - 5 A / 125 V AC ‘L’

**Proximity type (inductive), intrinsically safe**
- **Sensing range** 2-4 mm
- **Electrical version** D.C. voltage 2 wire in accordance with EN 60947-5-6
- **Switching frequency** 1.0 kHz
- **Nominal voltage** 8 V DC
- **Input voltage range** Dependent on barrier
- **Output/current consumption** ≥ 1 mA, ≤ 3 mA

**T-sensor for Ex mb e classification**
- **Electrical version** SPDT form C normally open
- **Contacts** Rhodium
- **Electrical rating** 2 A / 120 V AC, 1.5 A / 24 V DC, 1.0 A / 230 V AC
- **Contact resistance** 0.08 ohms
- **Seal** Encapsulation

**Proximity type (inductive)**
The ZR+ Control position monitor is also available with 2- and 3-wire DC PNP/NPN (NC/NO) inductive proximity sensors (5-36 V DC) and 2-wire AC/DC inductive proximity sensors (20-140 V AC/10-140 V DC).

**Materials of construction**
- **Item** Housing Cover Shaft Fasteners HiVue ModMount
- **Material** Black Grilamid resin Clear Grilamid resin Stainless steel Stainless steel Grilamid resin Nylon

Pentair reserves the right to change the contents without notice