The Proximity™ Series Mark Position Indicators/Switches/Transmitters are a line of position indicators with a selection of various output options. Three model styles make up the Mark series to cover almost any application. Standard models in the Mark Series have visual position indicators and are weatherproof, explosion-proof, and submersible. A large variety of outputs are available to fit specific applications. There is a choice of 1 to 6 switch outputs of 14 varieties including inductive sensors, high temperature switches, gold contact switches, hermetically sealed switches, and high current switches. Besides the switch outputs the Series offers potentiometer outputs, transmitters, and HART® Communication. The units are purchased for either direct drive applications, such as rotary valves, or lever drive applications, such as linear valves. Adjustable visual indicator is standard on direct drive units that displays OPEN / CLOSED status and degrees. A magnetic drive that completely seals the switch compartment from the atmosphere for maximum leak protection is utilized in the Mark 1. The Mark 3 uses the same magnetic drive of the Mark 1, but it can be used for multi-turn applications with 1 to 25 revolutions, such as gate valves. A through shaft drive is incorporated in the Mark 4 making the unit a more cost effective alternative to the Mark 1 for applications that are not as demanding.

**APPLICATIONS**
- Rotary valve actuators and dampers
- Linear valve actuators and cylinders
- Manual valves
- Gear operators
- Positioners

**MARK 1 FEATURES/BENEFITS**
- Features a magnetic coupling that isolates the switch compartment, completely sealing the unit from the surrounding atmosphere for maximum hazard and leak protection
- EZ set cams on switch models provide simple set point adjustment
- Flexible design allows multiple switches and transmitter options
- Ideal for corrosive environments

**MARK 3 FEATURES/BENEFITS**
- Features a magnetic coupling that isolates the switch compartment, completely sealing the unit from the surrounding atmosphere for maximum hazard and leak protection
- Multi-Turn models that can provide switch signals between 1 and 25 revolutions, and transmitter models for up to 10 revolutions without gear reduction
- Flexible design allows multiple switches and transmitter options
- Ideal for corrosive environments

**MARK 4 FEATURES/BENEFITS**
- Thru-Shaft design that features a 1" bushing for long life and O-rings to seal the switch compartment for hazard, corrosion, and leak protection
- EZ set cams on switch models provide simple set point adjustment
- Flexible design allows multiple switches and transmitter options
- A more cost effective alternative to the Mark 1 Series for less demanding applications

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**MODEL CHART**

<table>
<thead>
<tr>
<th>Model</th>
<th>Function</th>
<th>Design</th>
<th>Model</th>
<th>Function</th>
<th>Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>12AD0</td>
<td>2 SPDT (lever drive)</td>
<td>Magnetic coupling</td>
<td>42AD0</td>
<td>2 SPDT</td>
<td>Thru-shaft drive</td>
</tr>
<tr>
<td>12AL0</td>
<td>2 SPDT (lever drive)</td>
<td>Magnetic coupling</td>
<td>44AD0</td>
<td>4 SPDT</td>
<td>Thru-shaft drive</td>
</tr>
<tr>
<td>14AD0</td>
<td>4 SPDT</td>
<td>Magnetic coupling</td>
<td>45VD0</td>
<td>2 SPDT and 4 to 20 mA position transmitter</td>
<td>Thru-shaft drive</td>
</tr>
<tr>
<td>15VD0</td>
<td>2 SPDT and 4 to 20 mA position transmitter</td>
<td>Magnetic coupling</td>
<td>42VD0-J1</td>
<td>2 SPDT</td>
<td>Thru-shaft drive</td>
</tr>
<tr>
<td>12AD1</td>
<td>2 SPDT</td>
<td>Magnetic coupling</td>
<td>44VD0-J1</td>
<td>4 SPDT</td>
<td>Thru-shaft drive</td>
</tr>
<tr>
<td>14AD1</td>
<td>4 SPDT</td>
<td>Magnetic coupling</td>
<td></td>
<td></td>
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<tr>
<td>12VD0-J1</td>
<td>2 SPDT</td>
<td>Magnetic coupling</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14VD0-J1</td>
<td>4 SPDT</td>
<td>Magnetic coupling</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mounting kits with drive yoke (see drawing), or slotted lever arm, bracket, fasteners and other stainless steel hardware fit over 2000 popular valves and actuators. A high strength spring tempered stainless steel drive yoke/coupling is tailored to fit securely to a specific valve or actuator stem. There is no slippage or binding. No special alignment fixtures are required due to switch offset design and yoke to stem engagement that makes installation a “snap”. Each kit is specially designed for a particular valve or actuator, making field mounting simple with standard tools. Please specify make and model of valve or actuator on order. Mounting kits can be used interchangeably with all models since external mounting features are identical. Rotary valves utilize direct drive couplings and a slotted lever drive is used with linear valves. Lever drives convert linear motion to rotary. Stainless steel visual indicators are standard for direct drive, automated quarter-turn valve applications.
**POSITION INDICATORS/SWITCHES/TRANSmitters**

**Construction**

<table>
<thead>
<tr>
<th>1</th>
<th>3</th>
<th>4</th>
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</thead>
<tbody>
<tr>
<td>Mark 1, Magnetic Coupling</td>
<td>Mark 3, Multi-Turn</td>
<td>Mark 4, Thru-Shaft</td>
</tr>
<tr>
<td>Available Options</td>
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<td>A</td>
</tr>
</tbody>
</table>

**Output Type**

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<th>3</th>
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<th>6</th>
<th>7</th>
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<th>9</th>
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</thead>
<tbody>
<tr>
<td>1 Switch</td>
<td>2 Switches</td>
<td>1 kΩ Potentiometer 1/2%</td>
<td>Available with switches, see note below.*</td>
<td>1 kΩ Potentiometer 1/4%</td>
<td>Available with switches, see note below.*</td>
<td>2 kΩ Potentiometer</td>
<td>Available with switches, see note below.*</td>
<td>5 kΩ Potentiometer</td>
</tr>
<tr>
<td>Available Options</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
</tbody>
</table>

**Switch Type & Rating**

| A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W |
| SPDT Snap, Rated: 15 A @ 125/250/480 VAC (-); 1/8 hp @ 125 VAC (-); 1/4 hp @ 250 VAC (-); 1/2 A @ 125 VDC (-). | Inductive Sensor. 30 to 30 VDC (mg). Load: 0.1 A. | SPDT High Temperature Snap, 350°F (176°C) for 600 hours, Rated: 15.1 A @ 125/250/277 VAC (-). | DPDT Snap, Rated: 10 A @ 125/250 VAC (-); 0.3 A @ 125 VDC (mg), 0.15 A @ 250 VDC (mg). | SPDT Gold Contact Snap, Rated: 1 A @ 125 VAC (-). | SPDT Hermetically Sealed Snap, Rated: 1 A @ 125 VAC (-). | NAMUR Inductive Sensor. 15 mA max @ 5-25 VDC (mg). | SPDT Magnetic Blow-Out, Rated: 10 A @ 125 VAC (+)/VDC (mg), 1/4 hp @ 125 VAC (-)/VDC (mg). | No Switches | SPDT Hermetically Sealed Reed, Rated: 2 A @ 125 VAC (-), 2 A @ 24 VDC (mg). | SPDT Snap, Rated: 4 A @ 125/250 VAC (-). | SPDT High Temperature Snap, 250°F (121°C) Continuous, Rated: 5 A @ 125/250/480 VAC (-). | SPDT Snap, Rated: 10 A @ 125/250 VAC (-), 1/3 hp @ 125/250 VAC (-), 1/2 A @ 125 VDC (mg). | SPDT Gold Contact Snap, Rated: 0.1 A @ 125 VAC (+). |
| Available Options | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |

**Driving Method**

| A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W |
| A Direct or Yoke Drive without Visual Indicator. | Direct Drive (or Yoke) with Visual Indicator. | Direct Yoke Drive with Visual Indicator, Single Window. | Lever Drive (Shaft Projection) without Visual Indicator. | Lever Drive (Shaft Projection) with Visual Indicator. |
| Available Options | A | A | A | A | A | A | A |

**Enclosure**

<table>
<thead>
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<th>0</th>
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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7 thru 20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminum, Painted Black</td>
<td>Aluminum, Painted White Epoxy with SS trim</td>
<td>Aluminum, Painted Red</td>
<td>Aluminum, Painted (color not yet specified)</td>
<td>Cast 316 Stainless Steel</td>
<td>Aluminum Painted (color not yet specified)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Available Options</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td></td>
</tr>
</tbody>
</table>

**Options**

| C1 | C2 | FKM | PFM | A | J1 | J2 | SV1 | SV2 | MT | B | A | B | A | B | A | A | A | A | A | A | A |
| Long Dwell Cam (not on Mark 3) | Double Cam (not on Mark 3) | FKM | PFM | A | J1 Junction Package with One 1/2” NPT Female Conduit Connection and Terminal Strip. | J2 Junction Package with Two 1/2” NPT Female Conduit Connection and Terminal Strip. | 1 Attached Solenoid Valve (Must be ordered with J1 option). | 2 Attached Solenoid Valves (Must be ordered with J2 option). | Metric Threaded Conduit Connection, M25 X 1.5 (M20 X 1.5 for optional J1 and J2 connections). | Any Output Type except 91: Directive 2014/34/EU, KEMA 03ATEX2391 X. | $\text{C}_{0518} \text{II} \text{G2 Ex db IIC T6 Gb (-25/-40/-50°C ≤ Tamb ≤ 80°C).}$ | SPDT Snap, Rated: 1 A @ 125 VAC (-). | Any Output Type except 91: Directive 2014/34/EU, KEMA 03ATEX2391 X. | $\text{C}_{0518} \text{II} \text{G2 Ex db IIC T4 Gb (-40°C ≤ Tamb ≤ 80°C).}$ | SPDT Snap, Rated: 0.1 A @ 125 VAC (+). |
| Available Options | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A | A |

**Note:** Mark 1 and 4 potentiometer and transmitter outputs will have no switches when ordered with switch type O; 2 switches if ordered with switch types C, D, I, R, V, or W; and 4 switches if ordered with switch type S. Mark 3 potentiometer and transmitter outputs will have no switches when ordered with switch type O, and 2 switches if ordered with switch types A, D, G, M or T.

Example: 12VD0-1J, Mark 1, 2 Switches both Type V – SPDT, Direct Drive, Painted Aluminum Enclosure with Junction Package. Example: 15VD0, Mark 1, 2 Switches both Type V – SPDT, 4 to 20 mA transmitter, Direct Drive, Painted Aluminum Enclosure.
**Position Indicators/Switches/Transmitters**

**For Models 11, 12, 41 & 42**

**SPECIFICATIONS**

**Mark 1, 3, and 4 with Potentiometer**
- Accuracy: ±0.5% of full span. Optional ±0.25% of full span.
- Temperature Limits: -40 to 176°F (-40 to 80°C) (ATEX flameproof, -B suffix and IECEx flameproof, -IE suffix, rated -40 to 145°F (-40 to 63°C) for switch types A, G, M, O, R, S, T, V, or W; -13 to 145°F (-25 to 63°C) for switch types B, D, or L; ATEX intrinsically safe, -IS suffix and IECEx intrinsically safe, -II suffix, rated -104°F (-25 to 40°C) for switch type I, -104°F (-25 to 40°C) for switch types O, R, S, V, or W).
- Power Rating: 1.5 Watt maximum.
- Output Signal: 1000 Ω standard. Optional 2000, 10000, or 20000 Ω.

**Rotational Travel:**
- Mark 1, 3, and 4 with Transmitter
  - Accuracy: ±0.5% of full span. Optional ±0.25% of full span.
  - Temperature Limits: -40 to 176°F (-40 to 80°C) (ATEX flameproof, -B suffix and IECEx flameproof, -IE suffix, rated -40 to 145°F (-40 to 63°C) for switch types A, G, M, O, R, S, T, V, or W; -13 to 145°F (-25 to 63°C) for switch types B, D, or L; ATEX intrinsically safe, -IS suffix and IECEx intrinsically safe, -II suffix, rated -104°F (-25 to 40°C) for switch type I, -104°F (-25 to 40°C) for switch types O, R, S, V, or W).
  - Power Requirements: 5 to 30 VDC.
  - Current Consumption: 50 mA.
  - Output Signal: 4 to 20 mA.
- Zero and Span Adjustments: Trim pots for adjusting both. Mark 1 and 4: Span is adjustable from 0 to 50°C. Mark 3: Span is adjustable from 1.5 to 8.5 revolutions.
- Conduit Connection: 3/4˝ female NPT standard. Optional one or two 1/2˝ female NPT, N25 X 1.5 and M20 X 1.5 optional.

**Rotational Travel:**

**Mark 1 and 4 Transmitter with HART® communication**
- Accuracy: ±0.5% of full span. Optional ±0.25% of full span.
- Temperature Limits: -40 to 176°F (-40 to 80°C) (ATEX flameproof, -B suffix and IECEx flameproof, -IE suffix, rated -40 to 145°F (-40 to 63°C) for switch types A, G, M, O, R, S, T, V, or W; -13 to 145°F (-25 to 63°C) for switch types B, D, or L; ATEX intrinsically safe, -IS suffix and IECEx intrinsically safe, -II suffix, rated -104°F (-25 to 40°C) for switch types O, R, S, V, or W; -13 to 104°F (-25 to 40°C) for switch type I).
- Power Requirements: 8 to 30 VDC.
- Current Consumption: 21 mA.
- Output Signal: 4 to 20 mA.
- HART® Receive Impedance: Rx = 500 kΩ; Cx = 2500 pF.
- Zero and Span Adjustments: Pushbuttons or HART® communication master for setting both. Mark 1 and 4: Span is adjustable from 0 to 330°. Mark 3: Span is adjustable from 1.5 to 8.5 revolutions.

**Conduit Connection:**
- Standard: one 3/4˝ female NPT. M25 X 1.5 and M20 X 1.5 optional.

**Rotational Travel:**
- Mark 1 and 4: Minimum: 330°.

**Mark 1 and 4 Transmitter with WirelessHART® communication**
- Accuracy: ±0.5% of full span. Optional ±0.25% of full span.
- Temperature Limits: -40 to 176°F (-40 to 70°C) (ATEX flameproof, -B suffix and IECEx flameproof, -IE suffix, rated -40 to 145°F (-40 to 63°C), ATEX intrinsically safe, -IS suffix and IECEx intrinsically safe, -II suffix, rated -104°F (-40 to 80°C)).
- Power Requirements: 8 to 30 VDC.
- Current Consumption: 50 mA max.
- Output Power: ±50 mA.
- Operating Frequency: 2400 to 2483.5 MHz.
- Operating Channels: 15.
- Security: 64Kb.
- Zero and Span Adjustments: Pushbuttons or WirelessHART® communication master for setting both. Span is adjustable from -160 to 160°.

**Conduit Connection:**
- Two 1/2˝ female NPT, M20 X 1.5 optional.

**Rotational Travel:**
- Mark 1 and 4: Maximum: 320°.

**SPECIFICATIONS**

**Product Ratings:**
- Weatherproof and flameproof. NEMA 1, 2, 3, 3R, 3S, 4, 4X, 6, 7, 9, 12, 13.
- UL rated: Class I, Div. 1 & 2, Groups B, C, D (Some units available for Group A, consult factory); Class II, Div. 1 & 2, Groups E, F, and G.
- CSA rated: Class I, Div. 1 & 2, Groups B, C, D; Class II, Div. 1 & 2, Groups E, F, and G. Submersible to 15 meters (IP68). It is up to the end user to source the proper fittings to ensure a watertight seal.

**ATEX Compliant:**

**IECEx Compliant:**

**INMETRO compliant:**

**Electrical Connections:**
- Screw terminal. Optional factory sealed leads that are 36˝ (914.4 mm) of 16 AWG.
- Conduit Connection: Standard: one 3/4˝ female NPT; optional one to two 1/2˝ female NPT. WirelessHART® models: two 1/2˝ female NPT. Optional: M25 X 1.5 or M20 X 1.5 connections may be supplied in lieu of 3/4˝ and 1/2˝ female NPT for all models.

**Mounting Orientation:**
- Not position sensitive.
- Weight: 4 to 6 lb (1.5 to 3.0 kg).
- Operational Life: Over 1000 cycles.

**Mark 1, 3 and 4 with Switch Outputs**
- Temperature Limits: -58 to 176°F (-50 to 80°C). Switch Type C rated to 350°F (176°C) for 600 hours. Switch Type T rated to 250°F (121°C) continuous. (ATEX flameproof, -B suffix and IECEx flameproof, -IE suffix, rated -58 to 176°F (30 to 80°C) for switch type A, G, H, T, or M; -104 to 145°F (40 to 63°C) for switch type O, R, S, V, or W; -13 to 145°F (-25 to 63°C) for switch type B, D, I, or AS Interface; ATEX intrinsically safe, -IS suffix and IECEx intrinsically safe, -II suffix, rated -104°F (-25 to 40°C) for switch type D or I, -104°F (-40 to 40°C) for switch type M, O, R, V, or W; -58 to 104°F (-50 to 40°C) for switch type A, G, or H.)
- Switch Type: See page reference below.

**Electrical Rating:**
- See page reference below.

**Set Point Adjustment:**
- Mark 1 and 4: 5 to 360°.