Condition Sensors and Switches

Designed to Produce High-Quality Results in a Variety of Rugged Environments
Condition Sensing

Rockwell Automation offers an impressive line of Allen-Bradley® condition sensing products to meet your application needs. With models capable of detecting pressure, temperature, flow and level, Allen-Bradley solid-state and electromechanical condition sensing switches offer exceptional control for automatic operation of machines and processes.

Applications

**Pressure**
- Pump control
- Monitoring of pneumatic/hydraulic systems
- Machine tools
- Monitoring clamping pressure
- Air compressors
- Lubricant and coolant pressures

**Temperature**
- Monitoring injection molding temperature
- Automotive and machine tools
- Hydraulics and batch processing
- Ovens, machine coolants and die temperatures

**Flow**
- Pump dry run protection
- Ideal for monitoring cooling water circulation systems and pump functionality
- Process leak, lubrication systems and filter monitoring in the beverage industry

**Level**
- Liquid level monitoring, not affected by foam
- Filtering systems
- Coolant and lubricant tanks
- Pump protector program support
- Overspill protection and leakage monitoring

<table>
<thead>
<tr>
<th>Product</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>836P Solid-State Pressure Sensor Display and Non-display models</td>
<td>Monitors pressure of liquid, gas, vapor and dust.</td>
</tr>
<tr>
<td>837T Solid-State Temperature Sensor Display and Non-display models</td>
<td>Measures the temperature in liquids, gases and vapors.</td>
</tr>
<tr>
<td>839E Solid-State Flow Sensor</td>
<td>Measures the liquid media flow rate.</td>
</tr>
<tr>
<td>840E Solid-State Level Switch</td>
<td>Monitors liquid leveling in tanks, containers and pipelines.</td>
</tr>
</tbody>
</table>
Solid-State Condition Sensors

Rockwell Automation knows Condition Sensing controls are vital components in today's control systems. High-accuracy, new technology, and rigid standards are combined to manufacture these reliable world-class products.

Pressure

Solid-State 836P

Allen-Bradley 836P pressure sensors are capable of measuring pressure of liquid, gas, vapor and dust. The product family consists of different pressure ranges from -1...689 bar (-14.5...10,000 psi), offering both discrete and analog outputs. We also offer a large number of process connections.

Display
- Compact design
- Wide selection of process connections
- 316L sensing element
- -1...551 bar (-14.5...8,000 psi)
- Rotatable housing and head
- Rotate display 180° via firmware
- Embedded IO-Link 1.1 communications protocol

Non-display
- Miniature housing – smallest footprint in the market
- -1.689 bar (-30 in. Hg to 10,000 psi)
- 4...20 mA

836P Display

<table>
<thead>
<tr>
<th>Pressure Ranges (bar (psi))</th>
<th>Electrical Outputs</th>
<th>Enclosure Rating</th>
<th>Process Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>836P Display</td>
<td>2PNP+1PNP+4...20 mA</td>
<td>IP65 and IP67</td>
<td>Male NPT ½&quot; BSPP G/½&quot; G/V, SAE ½&quot;-20UNF Female NPT ½&quot; BSPP G/½&quot; SAE ½&quot;-20UNF Sanitary 1/8” Tri-Clamp 2” Tri-Clamp</td>
</tr>
<tr>
<td>836P Non-display</td>
<td>4...20 mA</td>
<td>IP67</td>
<td>Male NPT ½&quot; BSPP G/½&quot; SAE ½&quot;-20UNF BSPP G/½&quot; SAE 1/2&quot;-20UNF</td>
</tr>
</tbody>
</table>

Temperature

Solid-State 837T

Allen-Bradley 837T temperature sensors are capable of measuring temperature in liquids, gases and vapors in the range from -50 to 250°C (-58 to 482°F). Several different probe insertion lengths are available for display and non-display models.

Display
- Rugged, corrosion-resistant housing
- 304 stainless steel
- Media temperature range from -20...80°C (-4..178°F)
- Operating temperature from 40...185°C (104...365°F)
- Four-digit 14-segment display
- 316Ti stainless steel probe
- Embedded IO-Link 1.1 communications protocol

Non-display
- Rugged, corrosion-resistant housing
- 304 stainless steel
- Media temperature range from -50...250°C (-58...482°F)
- Operating temperature from -40...85°C (-40...185°F)
- 316Ti stainless steel probe

837RTD Remote Temperature Probe
- Tough, stainless steel housing with IP67 enclosure rating
- Compact design
- Measuring ranges from -50...200°C (-58...392°F)
- High vibration resistance

What is IO-Link?

When it comes to linking end point devices on the plant floor to The Connected Enterprise, Rockwell Automation offers a wide range of smart IO-Link enabled sensors that deliver information, advanced functionality and flexibility. All this while increasing efficiency machine- and plant-wide. Through IO-Link you can access all sensor configuration parameters, process data and diagnostics while monitoring your machine's health as it runs. Plus, IO-Link simplifies setup and commissioning while offering enhanced flexibility for your current – and future – processes.

* Available Summer 2016.
### Solid-State Condition Sensors

**Flow**

**Solid-State 839E**

Allen-Bradley 839E flow sensors monitor and display liquid media flow rate in the range from 0.03 to 3 m/s (0.1 to 9.84 ft/s). Available with two different probe insertion lengths, this sensor is capable of measuring both flow and temperature.

- Rugged, corrosion-resistant 316L stainless steel housing with IP66 enclosure rating
- Flow rates of liquid media (calorimetric measuring principle) in the range from 0.03...3 m/s (0.1...9.84 ft/s)
- Four-digit 14-segment digital display
- Dual N.O./N.C. programmable PNP outputs or 4...20 mA analog output with single PNP output
- 316L stainless steel probe
- Selectable units of measurement: °C, °F, or %

<table>
<thead>
<tr>
<th>Probe Lengths (mm in.)</th>
<th>Electrical Outputs</th>
<th>Enclosure Rating</th>
<th>Process Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>839E</td>
<td>30 (1.18), 100 (3.94)</td>
<td>2PNPNPNP -4...20 mA</td>
<td>IP66</td>
</tr>
<tr>
<td></td>
<td>Male NPT 1/4&quot; NPT 1/4&quot;</td>
<td>B3PP G/C, B3PP G/C/</td>
<td></td>
</tr>
</tbody>
</table>

**Level**

**Solid-State 840E**

Allen-Bradley 840E level switches are microprocessor based and designed to withstand harsh industrial conditions and wash-down applications such as liquid level monitoring in tanks, containers and pipelines. Available in both AC and DC versions, these switches are not affected by foam and are immune to vibration and build-up.

- Rugged, corrosion-resistant 316L stainless steel housing with IP66/67 rating for DC type and IP65 for AC type enclosure
- DC PNP version with M12 connector
- AC version with NPT 1/2" valve connector
- 316L stainless steel sensing element
- On-site control via high-visibility status LED
- Discrete NO/NC level switch is based on ultrasonic vibrating fork technology
- Easy-to-install

### Electromechanical Condition Sensing Switches

**Pressure**

**836 Pressure and 836T Pressure**

Allen-Bradley 836 and 836T electromechanical pressure controls are rugged, reliable NEMA-style switches that offer exceptional performance for AC loads and DC performance over 250 mA.

- Adjustable differential ranges from 0.2...125 psi (0.01...8.62 bar)
- Copper alloy or stainless steel bellows
- Standard and custom refrigeration controls available

<table>
<thead>
<tr>
<th>Pressure Ranges (psi bar)</th>
<th>Electrical Outputs</th>
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<tbody>
<tr>
<td>836 Pressure</td>
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<tr>
<td>30 in. Hg vacuum to 900</td>
<td>-1.02 to 62.05</td>
<td>Non-inductive</td>
<td>1/4&quot; NPT Internal,</td>
</tr>
<tr>
<td>Independently adjustable</td>
<td>5A, 240V / 3A, 600V</td>
<td>Control Circuit</td>
<td>1/4&quot; NPT Internal,</td>
</tr>
<tr>
<td>Trip/Reset and differential settings</td>
<td>DC - 57.5 VA, 115...230V</td>
<td>Pilot light indicator (optional)</td>
<td>1/4&quot; NPT Internal,</td>
</tr>
<tr>
<td>836T Pressure</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>30 in. Hg vacuum to 5000</td>
<td>-1.02 to 344.74</td>
<td>2 circuit - NEMA A600</td>
<td></td>
</tr>
<tr>
<td>Independently adjustable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trip/Reset and differential settings</td>
<td>4 circuit - NEMA B300/P00, Pilot light indicator (optional)</td>
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</tbody>
</table>

**Temperature**

**837 Temperature**

Allen-Bradley 837 electromechanical temperature controls are rugged, industrial-grade solutions that use vapor pressure technology to sense changes in temperature.

- Adjustable temperature ranges from -60...+570°F (-51.1...+298.9°C)
- Adjustable differential from +2...+87°F (-16.7...30.6°C)
- Wide variety of contact arrangements
- Packing glands in brass and thermostat wells in either brass or stainless steel are available

<table>
<thead>
<tr>
<th>Temperature Ranges (°F °C)</th>
<th>Electrical Outputs</th>
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<th>Process Connections</th>
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<tbody>
<tr>
<td>837 Temperature</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Direct Horizontal Immersion,</td>
<td></td>
<td></td>
<td>Direct immersion</td>
</tr>
<tr>
<td>Direct Vertical Immersion,</td>
<td></td>
<td></td>
<td>1/4&quot; NPT</td>
</tr>
<tr>
<td>Remote Bulb and Capillary</td>
<td></td>
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<tr>
<td>with 3,6, 12,20 or 30 foot capillary lengths (9.1,8.3,7.6,1, or 9.1 meter capillary lengths)</td>
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</tr>
</tbody>
</table>
Our Integrated Smart Sensor Solution

When it comes to linking plant-floor devices to The Connected Enterprise, Rockwell Automation offers a wide range of smart sensors that deliver information, advanced functionality and flexibility. All this while increasing efficiency machine- and plant-wide. These Allen-Bradley sensors use IO-Link technology for visibility of field devices through our Integrated Architecture.