

# Sensors and Switches for Valve Monitors and Valve Indicators for Potential Use in Chemical, Pharmaceutical, Power Generation and Oil and Gas Process Applications

### BACKGROUND

Mechanical or electrical valve monitors and indicators are used in process control to show valve position. They provide an electrical signal, and sometimes visual feedback, to accurately monitor and verify that a valve is in the right position. Valve monitors are mostly used in conjunction with a valve positioner/actuator to provide information from remote locations that are hard to get to, or where power isn't readily available. Honeywell sensors and switches for use in valve monitors and indicators are designed to provide reliability, accuracy, low power consumption, easy wiring and installation, and help reduce overall total installed costs. Potential applications include chemical, pharmaceutical, power generation and oil and gas processes.

### SOLUTIONS

Honeywell manufactures a wide range of sensors and switches, from simple on/off switches, to sensors, and wireless sensors with flexible mounting options and configurations. Various packages are available, including stainless steel, designed specifically for hazardous locations and challenging applications.

- **Snap-Action Switches**—position sensing on cams with no power consumption
- **Position Sensors**—continuous position status with enhanced reliability and accuracy.
- **Hall-Effect Position Sensor ICs**—position sensing on cams

Figure 1. Oil And Gas Platform

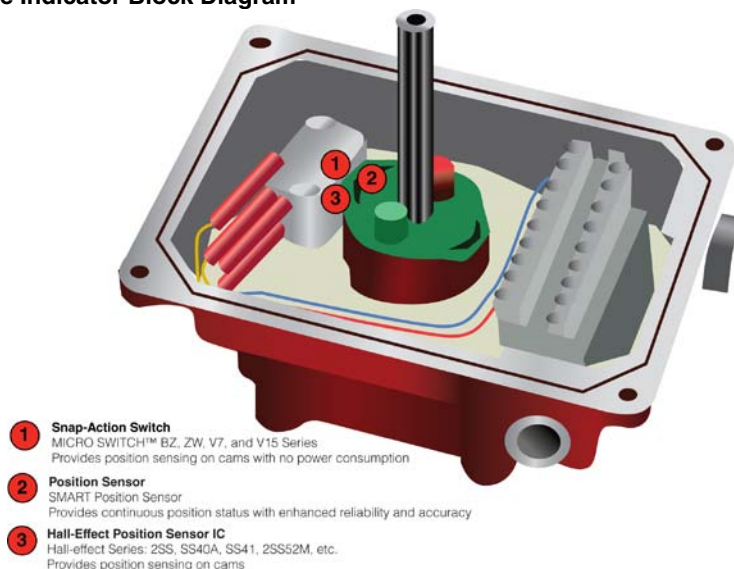


Figure 2. Valve Monitor/Valve Indicator







*Photo used with permission from Moniteur*

Figure 3. Valve Monitor/Valve Indicator Block Diagram





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**Table 1. MICRO SWITCH™ Snap-Action Switches**

MICRO SWITCH™ Snap-Action Switches			
MICRO SWITCH™ BZ Series	MICRO SWITCH™ ZW Series	MICRO SWITCH™ V7 Series	MICRO SWITCH™ V15 Series
			
Benefits			
<ul style="list-style-type: none"> <li>Accepted world-wide standard “Large Basic” switch</li> <li>Low operating force and differential travel</li> <li>Extended mechanical life up to 20,000,000 cycles at 95% survival</li> <li>Elongated mounting hole for easier, more accurate mounting</li> <li>Current rating from 15A to 25A</li> <li>Choice of actuation, termination and operating characteristics</li> <li>High temperature versions (204 °C [400 °F]) available</li> <li>Momentary or maintained actions</li> <li>Capable of an IP67 rating</li> </ul>	<ul style="list-style-type: none"> <li>Small size and light weight with ample electrical capacity, low cost and extended life</li> <li>Choice of low energy or power duty electrical ratings (gold-plated or silver contacts)</li> <li>Single pole double throw (SPDT) circuitry or single pole single throw (SPST) circuitry available</li> <li>Choice of ratings, actuation, termination and operating characteristics</li> <li>PBT polyester housing material</li> <li>IP67 sealed available</li> </ul>	<ul style="list-style-type: none"> <li>Premium product line for a broad range of electrical loads, best suited for higher cost-of-failure applications</li> <li>Designed for 100K operations at a full load or 10M for mechanical life</li> <li>World-wide package size acceptance</li> <li>Current rating ranges from 0.1 A to 25 A</li> <li>UL/CSA recognized, ENEC (European) approval available</li> <li>Choice of actuation, termination and operating characteristics</li> </ul>	<ul style="list-style-type: none"> <li>Standard product line best suited for lower cost-of-failure applications</li> <li>Designed for 50K operations at a full load or 5M for mechanical life</li> <li>Current ratings of 5 A to 26 A</li> <li>Global approvals (UL/CSA, cUL, ENEC, and CQC)</li> <li>Limited configuration options available</li> </ul>

**Table 2. Position Sensors**

Position Sensors	
<p><b>SMART Position Sensor, 75 mm Linear Configuration</b></p> 	<p><b>Hall-Effect Magnetic Position Sensor ICs, SS351AT/SS451A, SS361CT/SS461C, SS361RT/SS461R, SS400/SS500 Series, SS41/SS51T Series, SS421 Series, SS42R, SS46, VF526DT, 91SS Series, SS490/SS491B Series, SS49E/SS59ET Series, SS94 Series</b></p> 
Benefits	
<ul style="list-style-type: none"> <li>Flexible and protective packaging for durability in specified harsh environments</li> <li>Reduces costs and increases standardization by 90%, allowing for the elimination of multiple sensor and switch components</li> <li>A patented combination of magnetoresistive and ASIC provides accuracy up to 0.05 % of full-scale</li> <li>On-board ASIC provides signal processing and communication with customers’ integrated control units</li> <li>Simple non-contact solution reduces wear and tear</li> </ul>	<ul style="list-style-type: none"> <li>Small package size (SOT-23 subminiature, fat TO-92) allows for use in compact designs with tight space limitations</li> <li>High magnetic sensitivity allows for the use of small, low-cost magnetics and for a wider gap between the sensor and the magnet than devices with a lower magnetic sensitivity</li> <li>Standard output simplifies installation and is easy to interface with common electronic control circuits, simplifying installation</li> <li>Wide operating frequency (most operate over 1 KHz) for precise tracking of a fast-moving magnet</li> <li>Wide operating temperature accommodates a variety of environmental conditions</li> <li>Solid state, non-contact technology enhances system reliability</li> <li>Repeatable magnetic characteristics for accurate position monitoring</li> </ul>

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## **WARNING**

### **PERSONAL INJURY**

DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

**Failure to comply with these instructions could result in death or serious injury.**

### **WARRANTY/REMEDY**

Honeywell warrants goods of its manufacture as being free of defective materials and faulty workmanship. Honeywell's standard product warranty applies unless agreed to otherwise by Honeywell in writing; please refer to your order acknowledgement or consult your local sales office for specific warranty details. If warranted goods are returned to Honeywell during the period of coverage, Honeywell will repair or replace, at its option, without charge those items it finds defective. The foregoing is buyer's sole remedy and is in lieu of all other warranties, expressed or implied, including those of merchantability and fitness for a particular purpose. In no event shall Honeywell be liable for consequential, special, or indirect damages.

While we provide application assistance personally, through our literature and the Honeywell web site, it is up to the customer to determine the suitability of the product in the application. Specifications may change without notice. The information we supply is believed to be accurate and reliable as of this printing. We assume no responsibility for its use.

## **WARNING**

### **MISUSE OF DOCUMENTATION**

- The information presented in this application note is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information is provided in the instructions supplied with each product.

**Failure to comply with these instructions could result in death or serious injury.**

### **SALES AND SERVICE**

Honeywell serves its customers through a worldwide network of sales offices, representatives and distributors. For application assistance, current specifications, pricing or name of the nearest Authorized Distributor, contact your local sales office or:

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