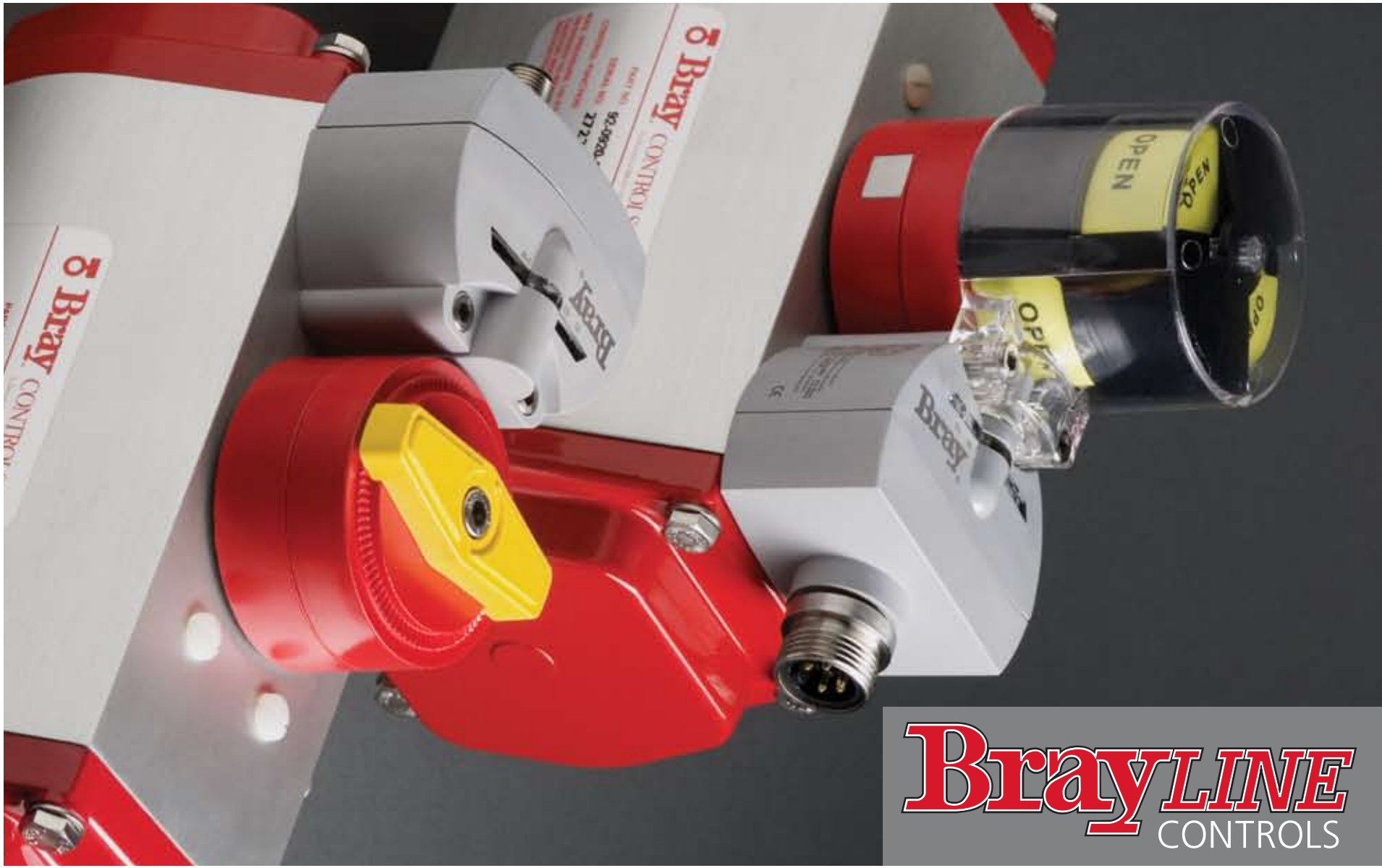



The High Performance Company

BrayLINE CONTROLS

# 2N1™ PROXSENSOR

VALVE STATUS MONITOR

**SERIES 52**

2 PROXIMITY SENSORS IN 1 ENCLOSURE

DC, AC, NAMUR & BUS SMART VERSIONS

SERIES 52

## Bray 2N1™ ProxSensor

### THE FUTURE OF VALVE POSITION SIGNALING

Bray Controls proudly introduces the new 2N1™ ProxSensor valve status monitor. Bray's innovative engineering has uniquely combined 2 proximity sensors in 1 self–contained, fully sealed, compact enclosure. The line has been expanded to further meet the needs of today's discrete manufacturing and process industries. DeviceNet, PROFIBUS DP and AS-i BUS network units with solenoid drive are now available.

The Series 52 offers the bounce–free electronic valve signaling required for all PLC, computer and solid–state circuitry vital to process control and information networks. Costly external junction boxes are eliminated and field wiring costs are greatly reduced. Bray's approach delivers the most compact, reliable and economical valve position monitoring system available.

### ELECTRICAL CONNECTION

A multi–pin electrical connector is designed for full compatibility with today's industrial wiring requirements. Standardized factory pre-wiring prevents field wiring errors and provides quick–connect installation.

### 2N1 POLYMER ENCLOSURE

Bray's design of 2 sensors in 1 rugged enclosure greatly reduces space requirements and expensive housings needed for previous dual switch applications. The epoxy resin encapsulation protects the sensors against vibration or shock.


### LOCAL POSITION INDICATION

A **Valve Position Pointer**, made of highly visible yellow ABS material, shows valve position locally throughout the full range of travel.

**LED Indicators** give positive verification that the sensors are electrically functioning and show the target position has been reached.

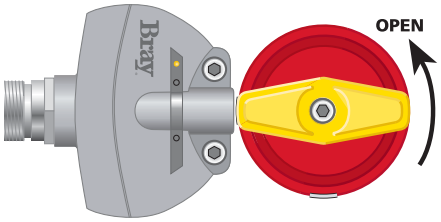
Bray offers a high visibility **Valve Position Display** as an option. Prominently labeled and color coded – yellow for open, black for closed – the display indicates valve position throughout the full range of travel.

### MOISTURE, CHEMICAL AND CORROSION PROTECTION

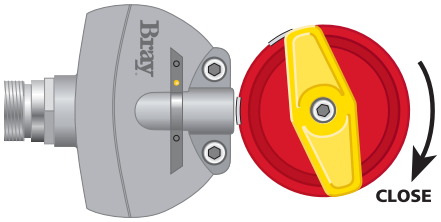
The two proximity sensors are completely encapsulated with epoxy resin in a rigid polymer enclosure that is impervious to moisture and most chemical and corrosive agents. Once the multi–pin connection is made, the cable link to plant wiring is completely sealed. No removable covers or conduit entries are used, eliminating the possibility of failure due to moisture. These protections make the 2N1 ProxSensor the superior choice for hostile environments.

### VALVE POSITION TARGETS

Unique, symmetrically designed targets are mounted inside the valve position carrier. The **Standard Targets** are factory pre-aligned for Bray products. No cams or set screws are required and time consuming field adjustment is eliminated. The standard targets are stainless steel and nonmagnetic. The sensors will not attract and be falsely tripped by loose metal objects. Magnetic targets are used for BUS network sensors. The **Adjustable Target** allows the customer to individually set the valve position signal of both open and closed directions at incremental angles.




**Standard Target** with sensors set at 90° signaling the Open position.




**Adjustable Target** with sensors set signaling near Closed position.

# SERIES 52 MODELS

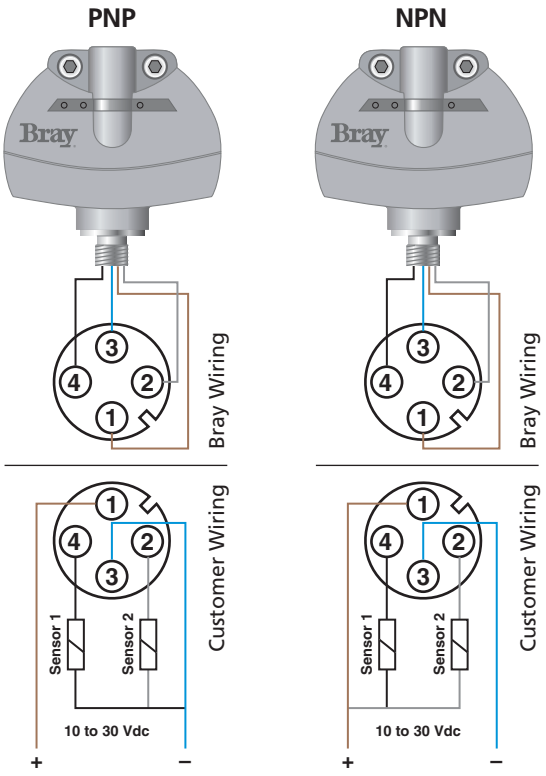
## Inductive Proximity Sensors

These sensors are solid state electronic controls which provide high resolution, are spark free and contain no moving electrical parts to wear out.

**DC** The standard DC sensors, offered as either PNP or NPN, have an economical internal amplifier and operate on 10 to 30 VDC. A NAMUR Intrinsically Safe DC sensor can be supplied for use with an IS barrier amplifier.
The DC connector is 4-pin, M12 thread.

**AC** AC sensors operate on 20 to 250 VAC. No external switching amplifier is needed for AC applications.
The AC connector is 5-pin, 7/8" thread.

### DC Inductive Proximity Sensors



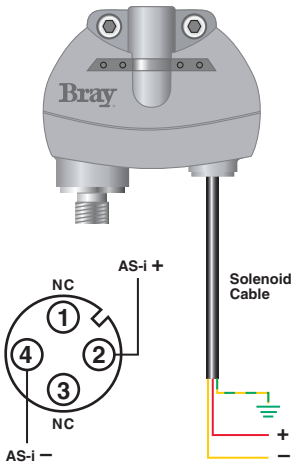

## BUS Network Powered Proximity Sensors with Solenoid Drive

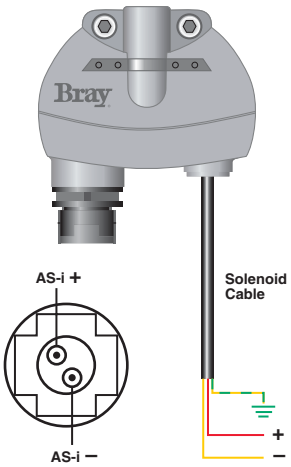
Bray's BUS intelligent valve status monitors offer all the standard Series 52 features plus network communication and remote access to valve position and diagnostics. AS-i, DeviceNet and PROFIBUS DP units are available.
All network units contain two BUS powered proximity sensors, applicable network pin connection and a solenoid drive connection. They can be supplied with a Bray solenoid which may be powered by the network.

### AS-i Proximity Sensors with Solenoid Drive

M12 Connector

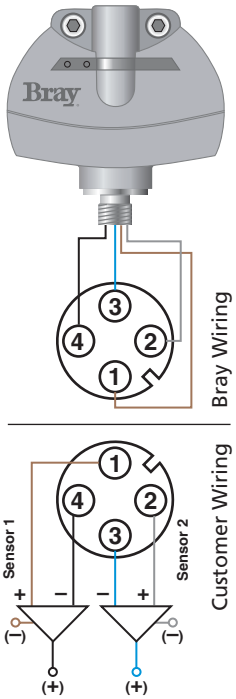
Flat Cable Connector



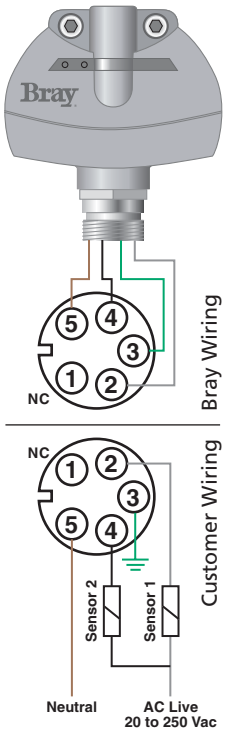



## AC Inductive Proximity Sensors

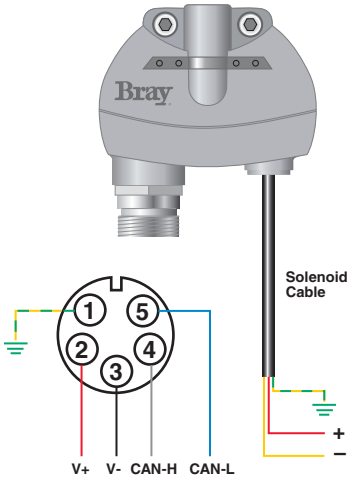
**NAMUR**
Intrinsically Safe



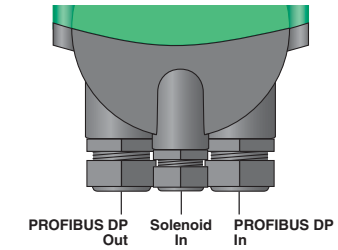




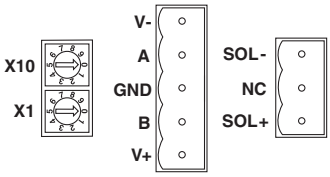

## DeviceNet Proximity Sensors with Solenoid Drive


## PROFIBUS DP Proximity Sensors with Solenoid Drive

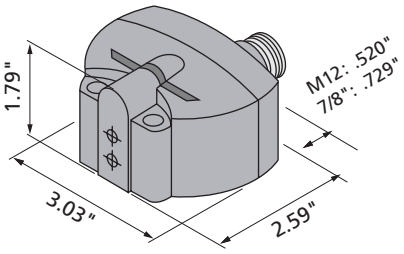




Terminal Strip Connections

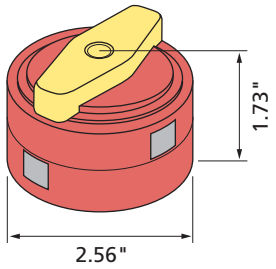



# DIMENSIONS

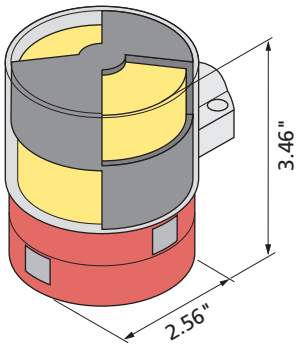
### Sensor Unit




### Target Carrier




### Target with High Visibility Display




# ACCESSORIES

**Cordsets:** quick-connect cable connections to matching pins of the Series 52 and flying leads for traditional customer connections.

**Extension Cords/Receptacles:** quick-connect cable connections at both ends, mates with receptacle at the junction box.

Cordsets and Extension Cords/ Receptacles are available for all Series 52 Sensors.

**Conduit Adapter:** quick-connects conduit to the Series 52. For AC sensors only.

## SERIES 52 ADVANTAGES

The **2N1 ProxSensor** offers the following advantages:

**vs. Mechanical Snap Acting Switches**
- No switch sparking (explosion or wear)
- No contact bounce
- No moving switch elements
- Fully sealed enclosure

**vs. Magnetic Reed Switches**
- No switch sparking (wear)
- No contact bounce
- Nonmagnetic operation
- No attraction of metal objects
- No moving switch elements
- Not fragile to vibration or shock

**vs. Externally Mounted Proximity Switches**
- 2 sensors in 1 enclosure
- No brackets required
- More compact design
- Reduced installation cost

**vs. Two Inductive Proximity Switches in standard switchbox**
- Lower cost
- More compact design
- Fully encapsulated enclosure
- Reduced installation cost

### APPLICATIONS

The Series 52 is the best solution for applications where:
- remote valve position indication is needed.
- fast electronic control systems require an input signal with no contact bounce and low energy consumption.
- rapid response capability and a high sensing rate are needed.
- hostile environments demand excellent moisture, chemical and corrosion resistance.
- long service life and reliability are expected.

### INDUSTRIES

Bray's 2N1 ProxSensor is applicable to a wide range of industries world wide, including: Chemical, Pharmaceutical, Petroleum Refining, Microelectronics, Pulp and Paper, Water and Waste Water Treatment, Brewing, Food Processing, Beverages, Power Generation, Mining, Marine, Textile and HVAC.

### INTEGRAL Y-CONNECTION

Bray offers a "Y" cable to combine a Series 52 and DIN solenoid into a single connection. The Y-Connection can be wired to a remote electrical junction box by either cordset, extension cord or conduit adapter. Bray can supply a Series 52, solenoid and actuator as a completely assembled system.

### FULL 5-YEAR WARRANTY

Bray's confidence in the reliability and long service life of the Series 52 is demonstrated by a unique **5-year warranty** against material or workmanship defects.

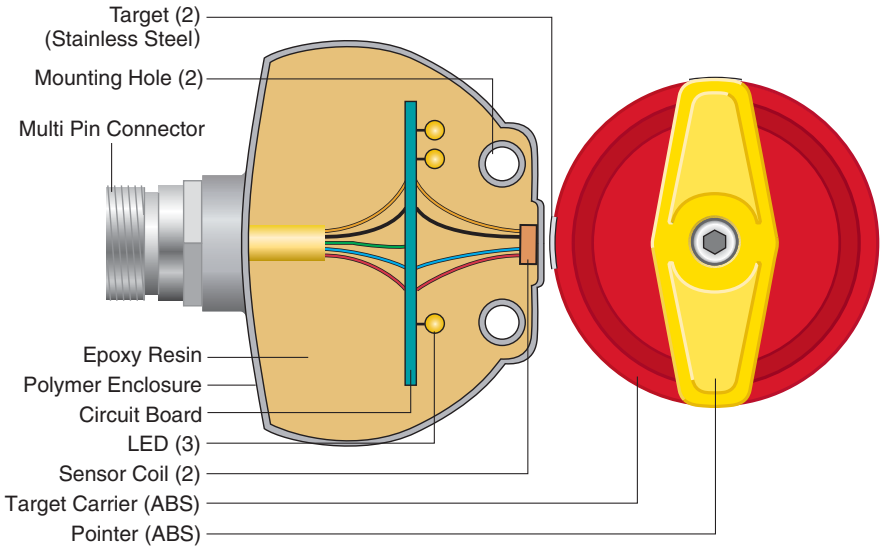
### DIRECT MOUNTING TO BRAY PNEUMATIC ACTUATORS

The 2N1™ ProxSensor mounts directly to Bray pneumatic actuators without using external brackets and adapters, eliminating contamination buildup between sensor and actuator. The mounting pattern complies with VDI/VDE 3845 (NAMUR recommendations).

**MANUAL VALVES** As an option, the Bray 2N1 ProxSensor can be configured to signal valve position of manually operated Bray butterfly valves and a wide variety of other manual quarter turn valves.

2N1 ProxSensor™

## COMPONENTS & MATERIALS




Bray connectors are stainless steel for high corrosion resistance and feature gold plated contact pins, longer threads which completely cover the contact pins, and positive keying that prevents improper assembly. Connections between the Series 52 and cordsets / extension cords provide a secure, weatherproof fit.

# SPECIFICATIONS

## Inductive Proximity Sensors

| Parameter | DC Sensor PNP | DC Sensor NPN | NAMUR Sensor Intrinsically Safe | AC Sensor |
|---|---|---|---|---|
| Operating Voltage | 10 - 30 VDC | 10 - 30 VDC | 7 - 12 VDC from IS barrier | 20 - 250 VAC |
| Power Frequency | N/A | N/A | N/A | 50 - 60 Hz |
| Switch Type | Inductive | Inductive | Inductive | Inductive |
| Target Type | Metal (non-magnetic) | Metal (non-magnetic) | Metal (non-magnetic) | Metal (non-magnetic) |
| Electrical Configuration | DC - PNP - NO | DC - NPN -NO | (IS) NAMUR - NC | AC |
| Maximum Load Current | 200 mA DC | 200 mA DC | Limited by IS barrier | 500 mA AC |
| Output Voltage Drop (powered) | < 2 VDC | < 2 VDC | 8 VDC | < 5 VAC |
| Residual Current (not powered) | < 0.02 mA DC | < 0.02 mA DC | N/A | < 1 mA AC |
| Output Protection | Short Circuit & Overload | Short Circuit & Overload | N/A | None |
| Maximum Switching Frequency | 400 Hz | 400 Hz | 400 Hz | 10 Hz |
| Power Indicator | LED (green) | LED (green) | Uses the Position LEDs | None |
| Sensor Position Indicator | 2 LEDs (yellow) | 2 LEDs (yellow) | 2 LEDs (yellow) | 2 LEDs (yellow) |
| Housing Material | PBT VO Polymer | PBT VO Polymer | PBT VO Polymer | PBT VO Polymer |
| Protection Class | NEMA 4 / IP67 | NEMA 4 / IP67 | NEMA 4 / IP67 | NEMA 4 / IP67 |
| Output Connector | 4-pin M12 | 4-pin M12 | 4-pin M12 | 5-pin 7/8" |
| Operating Temperature | -13°F (-25°C) to 158°F (70°C) | -13°F (-25°C) to 158°F (70°C) | -13°F (-25°C) to 158°F (70°C) | -13°F (-25°C) to 158°F (70°C) |

## BUS Network Powered Proximity Sensors with Solenoid Drive

| Parameter | AS-i Flat Connector | AS-i M12 Connector | DeviceNet | PROFIBUS DP |
|---|---|---|---|---|
| Operating Voltage | 30.5 VDC AS-i Network | 30.5 VDC AS-i Network | 24 VDC DN Network | 24 VDC DP Network |
| Consumption Current | < 30 mA DC | < 30 mA DC | < 20 mA DC | < 30 mA DC |
| Switch Type | Hall Effect | Hall Effect | Hall Effect | Hall Effect |
| Target Type | Magnetic | Magnetic | Magnetic | Magnetic |
| Electrical Configuration | AS-i Spec 3.2 * | AS-i Spec 3.2 * | DeviceNet | PROFIBUS DP |
| Addressing | 62 Addresses | 62 Addresses | 0 to 63 MAC ID | 0 to 99 programmable |
| Data Bits | Input Bit 0: Sensor 1<br>Input Bit 1: Sensor 2<br>Output Bit 0: Solenoid Drive | Input Bit 0: Sensor 1<br>Input Bit 1: Sensor 2<br>Output Bit 0: Solenoid Drive | Input Bit 0: Sensor 1<br>Input Bit 1: Sensor 2<br>Output Bit 0: Solenoid Drive | Input Bit 0: Sensor 1<br>Input Bit 1: Sensor 2<br>Output Bit 0: Solenoid Drive |
| I/O and ID | I/O=3h, ID=Ah, ID2=1h | I/O=3h, ID=Ah, ID2=1h | N/A | N/A |
| Diagnostics | Solenoid Coil Fault | Solenoid Coil Fault | Solenoid Coil Fault<br>Power Supply Fault | Solenoid Coil Fault<br>Power Supply Fault |
| Watchdog Timer | Solenoid Output turns Off without Network Communication | | | |
| Network Indicator | Bicolor LED (red/green) | Bicolor LED (red/green) | Bicolor LED (red/green) | Bicolor LED (red/green) |
| Network Communication Type | Master / Slave | Master / Slave | Polled | Master / Slave |
| Network Comm. Connector | AS-i Flat Displacement | 4-pin M12 thread | 5-pin 7/8" thread | 5-pin inline plug |
| Network Speed | N/A | N/A | 125 / 250 / 500 Kbaud | Up to 1.5 Mbaud |
| Sensor Position Indicator | 2 LEDs (yellow) | 2 LEDs (yellow) | 2 LEDs (yellow) | 2 LEDs (yellow) |
| Solenoid Drive Output | 24 VDC (3.6 W max.) | 24 VDC (3.6 W max.) | 24 VDC (3.6 W max.) | 24 VDC (3.6 W max.) |
| Solenoid Output Indicator | LED (yellow) | LED (yellow) | LED (yellow) | LED (yellow) |
| Solenoid Connection | 3-wire PVC cable 0.7 m long, 6.0 mm diameter black, 20 AWG copper conductors | | | |
| Housing Material | PBT VO Polymer | PBT VO Polymer | PBT VO Polymer | PBT VO Polymer |
| Protection Class | NEMA 4 / IP67 | NEMA 4 / IP67 | NEMA 4 / IP67 | NEMA 4 / IP67 |
| Operating Temperature | -13°F (-25°C) to 158°F (70°C) | -13°F (-25°C) to 158°F (70°C) | -13°F (-25°C) to 158°F (70°C) | -13°F (-25°C) to 158°F (70°C) |

*** Note:** Hardware AS-i version 3.2 configured as AS-i version 2.1.

DISTRIBUTOR

All Series 52 Valve Status Monitors are manufactured under ISO 9001 conditions.



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