

## Ashcroft N-Series Electronic Pressure Switch

**For reliability in the toughest applications!**

Pressure sensor is a stable thin film transducer. The signal processed produces an output to an electro-mechanical relay, rated for 10,000,000 cycles at rated load. Narrow deadbands can be adjusted to less than 0.5% of range, solving many pipeline and elevated tank applications that are beyond the reach of mechanical products. The indicating model is ideally suited for applications where both pressure indication and a switch output for alarm, shutdown, control or interlock are needed.

- Thin Film Pressure Sensor (Transducer)
- Diaphragm 17-4 PH SS
- Pressure Connection AISI 316 SS
- Watertight Meets NEMA 3, 4, 4X, 13 and IP66. Optional Enclosure for NEMA 7, 9, Division I or II Hazardous Locations.
- Pressure Settings to 20,000 PSI
- Status Light – Indicate Display Function
  - Process Pressure
  - Setpoint
  - Resetpoint
  - Relay Output Status
- Big and Bright 3 1/2 Digit LED Display Indicates Process Pressure ±1%
- 3/4 NPT Electrical Connection for Easy Wiring
- Multi-Turn Potentiometers Make Setpoint and Deadband Adjustment Easy
- 10 AMP SPDT Relay Contacts for Maximum Flexibility in Electrical Output Needs



D

Pressure/Flow Test Instruments

### Ordering Information

To Order—Insert Number Code for Each Letter to Select Catalog Number. **A** – **B** – **C** – **D** – **E** – **XEA** – **F** Example: MPNPAN7DCS02-100

| A     | Function   | Price & Adders |
|-------|--|----------------|
| MPNPA | Single setpoint, adjustable deadband   |                |
| MPNPI | Single setpoint, adjustable deadband, process and setpoint indication                |                |
| B     | Enclosure  |                |
| N4    | Watertight NEMA 3, 4, 4X, 13 and IP66  | N/C            |
| N7    | Explosion proof NEMA 3, 4, 4X 13, 7, 9 & IP66 Not available with Model NPI (display) |                |
| C     | Output   |                |
| D     | SPDT Relay 10A, 250 VAC; 10A, 30 VDC   | N/C            |
| D     | Power Requirement  |                |
| L     | 110 VAC, 50/60Hz   | N/C            |
| C     | 24 VDC   | N/C            |
| V     | 250 VAC, 50/60 Hz  |                |
| E     | Pressure Port  |                |
| S01   | 1/8 NPT Male   | N/C            |
| S02   | 1/4 NPT Male   | N/C            |
| S03   | 1/8 NPT Female   | N/C            |
| S04   | 1/4 NPT Female   | N/C            |
| S05   | 7/16-20 SAE - 1/4 SAE  | N/C            |
| S06   | 1/2 NPT Male 1/4 & NPT Female  | N/C            |
| S07   | 1/4 AMINCO – Female  | N/C            |

| F | Nominal Range Performance Table (PSI) |                 |           |           | Price & Adders |
|---|---------------------------------------|-----------------|-----------|-----------|----------------|
|   | Nominal Range                         | Setpoint Limits | PSI Proof | PSI Burst |                |
|   | 60                                    | 3-60            | 120       | 480       | N/C            |
|   | 100                                   | 5-100           | 200       | 800       | N/C            |
|   | 200                                   | 10-200          | 400       | 1600      | N/C            |
|   | 300                                   | 15-300          | 600       | 2400      | N/C            |
|   | 500                                   | 25-500          | 1000      | 4000      | N/C            |
|   | 750                                   | 35-750          | 1500      | 6000      | N/C            |
|   | 1000                                  | 50-1000         | 2000      | 8000      | N/C            |
|   | 2000                                  | 100-2000        | 4000      | 16,000    | N/C            |
|   | 3000                                  | 150-3000        | 4500      | 20,000    | N/C            |
|   | 5000                                  | 250-5000        | 7500      | 22,500    | N/C            |
|   | 7500                                  | 375-7500        | 9000      | 25,000    | N/C            |
|   | 10,000                                | 500-10,000      | 12,000    | 30,000    | N/C            |
|   | 15,000                                | 750-15,000      | 18,000    | 45,000    | N/C            |
|   | 20,000                                | 1000-20,000     | 24,000    | 60,000    | N/C            |



See pages A64-A91 for **pressure calibrators.**

## Noshok Smart Switch—Electronic Pressure Switch

- Measuring Ranges from 5 PSI through 15,000 PSI Including Vacuum, Compound and Absolute.
- N.O. or N.C. Switching Functions
- Positive Switching Capability
- Programmable, Tamperproof Set Points

The NOSHOK Smart Switch is truly a "State of the Art" pressure switch. It's design is based upon our proven sputtered thin film and diffused semiconductor pressure transmitters for unparalleled accuracy, stability, overpressure protection and service life. Switching is accomplished digitally by means of an internal signal conditioner which means there are never any mechanical contacts to wear out. They are available with either one or two switch functions of PNP (positive) output either N.O. (normally open) or N.C. (normally closed) configurations.

Because the adjustments are made digitally; set points and hysteresis are fully adjustable and completely tamperproof.

Programming can be done at the factory or in the field by means of a PC running Windows and using the NOSHOK Smart Switch software and programming hardware.

All wetted areas are 316 SS and are welded with no o-rings, gaskets or seals to leak or fail.

### Applications

- Hydraulic and pneumatic systems
- Industrial machinery and machine tools
- Molding and extruding equipment
- Stamping and forming presses
- Pumps and compressors
- Laboratory and test equipment
- HVAC
- Power generation
- Construction equipment
- Medical Transportation equipment
- Water management
- Marine
- Petrochemical



### Specifications

|  |   |
|--|---|
| Pressure Ranges  | 0-5 psi through 0-15,000 PSI including vacuum, compound and absolute  |
| Proof Pressure   | ≤ 200 PSI: 3.5x, 300-10,000 PSI: 2x, above 10,000 PSI: 1.5x   |
| Process Connection   | 1/4" NPT standard; 1/2" NPT optional  |
| Wetted Parts   | 316 SS  |
| Case   | 304 SS  |
| Switching Functions  | 2 N.O. or N.C. p-switching  |
| Adjustment   | Switching point 0-100% of F.S.<br>Hysteresis 1-99% of F.S.<br>Dampening 0-500 ms                              |
| Accuracy   | ≤ 1% of F.S. (limit point setting) ≤ 0.5% of F.S. (BFSL)  |
| Repeatability  | ≤ 0.25% of F.S.   |
| Stability per Year   | ≤ ± 0.2% of F.S. in rated conditions  |
| Power Supply   | 10...30 VDC (>12 VDC for programming mode)<br>Increase time when switching on the supply 50 V/sec.            |
| Switching Power  | 1 channel p-switching 4 ADC (max. 30 VDC)<br>2 channel p-switching 2 ADC (max. 30 VDC)                        |
| Response Time  | p-switching ≤ 6 ms  |
| Temperature Compens. Range                                   | 32°-175°F/0-80°C  |
| Temperature Influence  | ± 0.02% full scale/°F for zero and span   |
| Temperature Ranges   | Storage -40° to 212°F/-40° to 100°C<br>Medium -22° to 212°F/-30° to 100°C<br>Ambient 5° to 175°F/-20° to 80°C |
| Electrical Connection  | 5 pin M12x1, connector  |
| Environmental Protection                                     | Nema 6, 6P: IP 67 (IEC 529)   |
| Electromagnetic Capability per IEC 1000 (EN 50081, EN 50082) | ESD Level 2<br>Fields (RFI) Level 2<br>Burst Level 3<br>Surge Level 2<br>CE Compliant                         |
| Electrical Protection Types                                  | Reverse polarity, overvoltage and short-circuit protection  |
| Weight   | Approximately 0.5 lbs   |

### Ordering Information

**To Order—Insert Number Code for Each Letter to Select Catalog Number.**  
**Order Example: 600-2-2-300-3-ORF**

| A        | B  | C            | D      | E            | F   |
|----------|--|--------------|--------|--------------|-----|
| <b>A</b> | Basic Unit   |              |        |              |     |
| 600      | Smart-Switch Pressure Switch                         |              |        |              |     |
| <b>B</b> | Switch Function (NPN switching available on request) |              |        |              |     |
| 2        | Normally Open or Normally Closed Switch-PNP          |              |        |              | N/C |
|          | Process Connection                                   |              |        |              |     |
| 2        | 1/4" NPT Male  |              |        |              | STD |
| <b>D</b> | Pressure Range                                       |              |        |              |     |
|          | Code   | Range        | Code   | Range        |     |
|          | 30V  | 0-30" VAC    | 30/150 | 30"/150 PSIG |     |
|          | 30/15  | 30"/15 PSIG  | 30/200 | 30"/200 PSIG |     |
|          | 30/30  | 30"/30 PSIG  | 30/300 | 30"/300 PSIG |     |
|          | 30/60  | 30"/60 PSIG  | 30/400 | 30"/400 PSIG |     |
|          | 30/100   | 30"/100 PSIG |        |              |     |
|          | 5  | 0-5 PSIG     | 500    | 0-500 PSIG   |     |
|          | 10   | 0-10 PSIG    | 750    | 0-750 PSIG   |     |
|          | 15   | 0-15 PSIG    | 1000   | 0-1000 PSIG  |     |
|          | 30   | 0-30 PSIG    | 2000   | 0-2000 PSIG  |     |
|          | 60   | 0-60 PSIG    | 3000   | 0-3000 PSIG  | N/C |
|          | 100  | 0-100 PSIG   | 5000   | 0-5000 PSIG  |     |
|          | 150  | 0-150 PSIG   | 7500   | 0-7500 PSIG  |     |
|          | 200  | 0-200 PSIG   | 10000  | 0-10000 PSIG |     |
|          | 300  | 0-300 PSIG   | 15000  | 0-15000 PSIG |     |
|          | 15A  | 0-15 PSIA    | 150A   | 0-150 PSIA   |     |
|          | 30A  | 0-30 PSIA    | 200A   | 0-200 PSIA   |     |
|          | 60A  | 0-60 PSIA    | 300A   | 0-300 PSIA   |     |
|          | 100A   | 0-100 PSIA   |        |              |     |
| <b>E</b> | Electrical Connection                                |              |        |              |     |
| 3        | 5 pin M12 x 1 connector                              |              |        |              | STD |
| <b>F</b> | Options  |              |        |              |     |
| 0        | None   |              |        |              | N/C |
| ORF      | SS Threaded Orifice                                  |              |        |              |     |

### Recommended Accessories

| Order #   | Description  | Price |
|-----------|--|-------|
| MPFS-2-5P | M12 Connector with 2 meter leads (female straight) |       |
| MPFS-4-5P | M12 Connector with 4 meter leads (female straight) |       |
| MPFS-6-5P | M12 Connector with 6 meter leads (female straight) |       |

## Noshok Mag Switch—Electronic Pressure Switch

- Measuring Range from 30" Vacuum through 15,000 PSIG
- Field Adjustable Switch Points
- Semiconductor Switching Relays (no mechanical contacts)
- Integrated LED Switching Indication
- N.O. or N.C. Switching Functions
- Positive (pnp) Switch Functions

### Applications

Hydraulic and pneumatic systems  
 Industrial machinery and machine tools  
 Stamping and forming presses  
 Pumps and compressors  
 Laboratory and test equipment  
 HVAC systems  
 Medical  
 Refrigeration equipment  
 Transportation equipment



The NOSHOK Mag-Switch is an electronic pressure switch that utilizes proven pressure sensing technology coupled with hall effect magnetic field sensing technology and semiconductor switching technology to provide a highly reliable, accurate, repeatable, cost effective pressure switch without mechanical contacts.

### Specifications

|  |   |                            |
|--|---|----------------------------|
| Pressure Ranges  | 0-30" Hg vac through 15,000 PSI                           |                            |
| Proof Pressure   | 30 PSI & lower  | 5x                         |
|  | 60 PSI  | 4x                         |
|  | 150 psi & higher  | 2x                         |
| Process Connection   | Brass (1/4" NPT standard)                                 |                            |
| Wetted Parts   | Copper Alloy  |                            |
|  | 316 SS above 600 PSI                                      |                            |
| Case   | Brass through 350 PSI                                     |                            |
|  | Aluminum Anodized 600 PSI and higher                      |                            |
| Switching Functions  | 1 N.O. or 1 N.C. contact standard                         |                            |
|  | 2 N.O. or 2 N.C. contacts are optional p-switching        |                            |
| Adjustability  | Adjustment screw  |                            |
|  | Switching point   | 10-100% of F.S.            |
| Accuracy & Repeatability                                     | ≤ 1% of F.S.  |                            |
| Switching Hysteresis   | ≤ 10% of F.S.   |                            |
| Power Supply   | 10-30 VDC   |                            |
| Contact Rating   | Max. 100 mA (max. 30 VDC)                                 |                            |
| Temperature Compens. Range                                   | 32° to 175°F/0° to 80°C                                   |                            |
| Temperature Influence  | 0.04% full scale/°F                                       |                            |
| Temperature Ranges   | Storage   | -22° to 175°F/-30° to 80°C |
|  | Media   | -5° to 175°F/-20° to 80°C  |
|  | Ambient   | -5° to 175°F/-20° to 80°C  |
| Environmental Protection                                     | NEMA 4: IP 65 (IEC 529)                                   |                            |
| M12x1 conn.  |   |                            |
| Electromagnetic Capability per IEC 1000 (EN 50081, EN 50082) | ESD Level 1   |                            |
|  | Fields (RFI) Level 2                                      |                            |
|  | Burst Level 2   |                            |
|  | Surge Level 2   |                            |
| CE Compliant   |   |                            |
| Electrical Protection Types                                  | Reverse polarity and overvoltage protection               |                            |
| Weight:  | 0.2 lbs. on 400 psi & below, 0.6 lbs. on 600 psi & higher |                            |

### Ordering Information

To Order—Insert Number Code for Each Letter to Select Catalog Number.

Order Example: 500-2-2-30-2-ORF

|          |   |              |       |              |     |
|----------|---|--------------|-------|--------------|-----|
| A        | B   | C            | D     | E            | F   |
| <b>A</b> | <b>Basic Unit</b>   |              |       |              |     |
| MP500    | Mag-Switch Pressure Switch                                  |              |       |              |     |
| <b>B</b> | <b>Switch Function (NPN switching available on request)</b> |              |       |              |     |
| 1        | 1 Normally Open-pnp   |              |       |              | N/C |
| 2        | 1 Normally Closed-pnp                                       |              |       |              | N/C |
| 3        | 2 Normally Open-pnp   |              |       |              |     |
| 4        | 2 Normally Closed-pnp                                       |              |       |              |     |
| <b>C</b> | <b>Process Connection</b>                                   |              |       |              |     |
| 2        | 1/4" NPT Male   |              |       |              | STD |
| <b>D</b> | <b>Pressure Range</b>                                       |              |       |              |     |
|          | Code  | Range        | Code  | Range        |     |
|          | 30V   | 0-30" Hg VAC | 100   | 0-100 PSIG   |     |
|          | 15  | 0-15 PSIG    | 150   | 0-150 PSIG   | N/C |
|          | 30  | 0-30 PSIG    | 250   | 0-250 PSIG   |     |
|          | 60  | 0-60 PSIG    | 350   | 0-350 PSIG   |     |
|          | 750   | 0-750 PSIG   | 5000  | 0-5000 PSIG  |     |
|          | 1000  | 0-1000 PSIG  | 7500  | 0-7500 PSIG  |     |
|          | 2000  | 0-2000 PSIG  | 10000 | 0-10000 PSIG |     |
|          | 3000  | 0-3000 PSIG  | 15000 | 0-15000 PSIG |     |
| <b>E</b> | <b>Electrical Connection</b>                                |              |       |              |     |
| 2        | 4 pin M12 x 1 connector                                     |              |       |              | STD |
| <b>F</b> | <b>Options</b>  |              |       |              |     |
| ORF      | Brass Threaded Orifice                                      |              |       |              |     |

### Recommended Accessories

| Order #   | Description  | Price |
|-----------|--|-------|
| MPFS-2-4P | M12 Connector with 2 meter leads (female straight) |       |
| MPFS-4-4P | M12 Connector with 4 meter leads (female straight) |       |
| MPFS-6-4P | M12 Connector with 6 meter leads (female straight) |       |

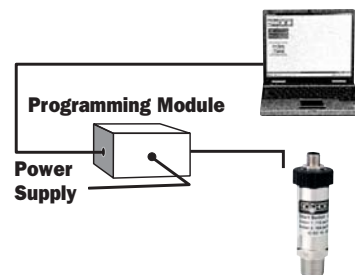
## Noshok Smart Switch Electronic Pressure Switch

### Programming Module

The Smart Switch program module enables the user to fully program the set points and hysteresis of the Smart Switch in the field without any pressure input. The module consists of a Smart Switch Software Diskette and RS232 Programming Connection for your PC. All that's required to complete the programming is a 12-30 volt power supply to the programming module and a PC with Windows 95 (or newer). Then simply follow the instructions and you are ready for installation.

### Ordering Information

| Order #   | Description           | Price |
|-----------|-----------------------|-------|
| MP600-PM  | Program Module 600-PM |       |
| MP600-PSA | Power Supply          |       |



**You now have a fully programmed, completely tamper-proof digital pressure switch ready for installation.**