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Electronic Measurement Solutions

The Instrumentation Company
NOSHOK INCORPORATED

Pressure
Level
Temperature
Transmitters
Transducers
Switches
Indicators

Established in 1967, NOSHOK was one of the first companies to offer liquid filled pressure gauges. More important NOSHOK was the first company to offer an extended three year warranty on pressure gauges. That standard of quality has endured for over 40 years. This commitment to product performance and service...and our sincere desire to be the best...is a continuing successful policy applied today to our electronic measurement solutions.

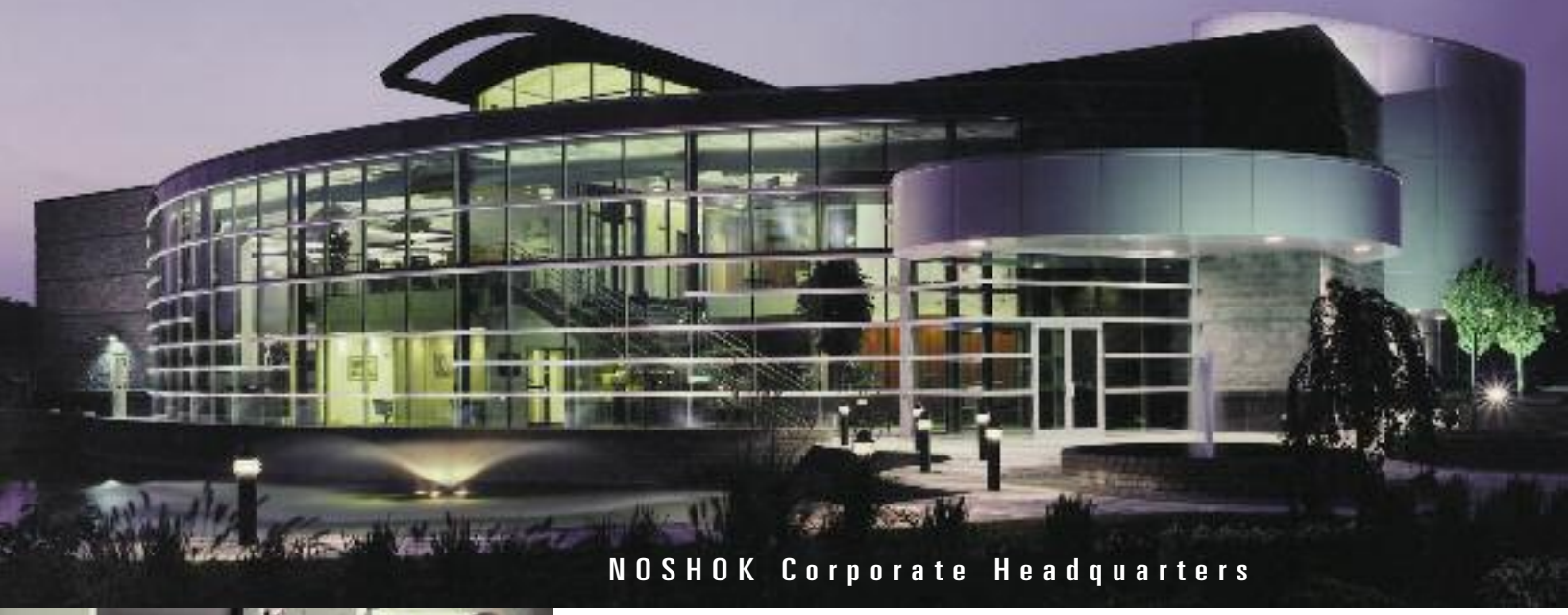
We fully test and calibrate NOSHOK transmitters, transducers, switches and indicators to assure 100% "out of the box" reliability. All of NOSHOK'S indicators can be pre-programmed and calibrated to our customer's specifications. NOSHOK makes installation easy and performance dependable.

NOSHOK also has built the capacity to provide you with the assistance to put together that special requirement which is so often hard to find. If it is not in this catalog, chances are we can still put it together.

NOSHOK proudly backs its commitment to excellence and while you are viewing our catalog, I believe this commitment will become more apparent.

Thank you for choosing NOSHOK Products.

James B. Cole
Chief Executive Officer



NOSHOK Corporate Headquarters

NOSHOK is a member and actively supports:

FCI Fluid Controls Institute, Inc. THE FPDA MOTION & CONTROL NETWORK ASME

NOSHOK is an ISO 9001:2000 registered company

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The Instrumentation Company
NOSHOK INCORPORATED

Current Output Pressure Transmitters

SERIES 100

HIGH PERFORMANCE CURRENT OUTPUT PRESSURE TRANSMITTERS

NOSHOK 100 Series Current Output Pressure Transmitters are designed to provide a previously unequalled level of performance, utilizing diffused semiconductor and sputtered thin film strain gage technology. 100 Series transmitters are highly repeatable, shock resistant and are extremely stable over long periods of time. CE compliance which includes substantial levels of RFI, EMI and ESD protection combined with reverse polarity and over-voltage protection insure they perform well in the most demanding applications.

Advanced manufacturing techniques combined with technologically advanced standard features allow NOSHOK to offer a level of performance previously found only on transducers costing hundreds of dollars more. Final calibration tests performed on all NOSHOK transmitters prior to shipment ensures 100% “out of the box” reliability

FEATURES

- Accuracy up to ±0.25 % Full Scale (Best Fit Straight Line)
- Welded stainless steel pressure chamber
- Advanced diffused semi-conductor and sputtered thin film sensor for maximum stability
- Compact size
- High alternating load resistance
- High overpressure protection
- CE compliant to suppress RFI, EMI and ESD
- Compatible with NOSHOK Smart System Indicators

APPLICATIONS

- Hydraulic and pneumatic systems
- Injection molding machines
- Railroad engine controls
- HVAC systems
- Stamping and forming presses
- Refrigeration controls
- Industrial machinery and machine tools
- Pumps and compressors

SPECIFICATIONS

Output signal	4 mA to 20 mA, 2-wire
Pressure ranges	Standard gauge ranges from vacuum to 15000 psi; Standard Absolute ranges from 15 psia to 300 psia
Proof pressure	3 times Full Scale for ranges 0 psi to 5 psi through 0 psi to 200 psi 1.75 times Full Scale for ranges 0 psi to 300 psi through 0 psi to 10000 psi 1.5 times Full Scale for 0 to 15000 psi range
Burst pressure	3.8 times Full Scale for ranges 0 psi to 5 psi through 0 psi to 200 psi 4 times Full Scale for ranges 0 psi to 300 psi through 0 psi to 10000 psi 3 times Full Scale for 0 to 15000 psi range
Accuracy	±0.5 % Full Scale (Best Fit Straight Line); ±0.25 % optional (Includes the combined effects of linearity, hysteresis and repeatability)
Repeatability	≤ ±0.05 % Full Scale
Hysteresis	≤ ±0.1 % Full Scale
Stability	≤ ±0.2 % Full Scale for 1 year, non-accumulating
Response time	≤ 1 ms (between 10 % and 90 % Full Scale)
Power supply	10 Vdc to 30 Vdc, unregulated
Load limitations	Load in resistance must be ≤ (Vpower supply –10)/.020 Amp
Wetted materials	316 stainless steel for vacuum through 300 psi; 17-4PH stainless steel sensing diaphragm and 316 stainless steel process connection for higher ranges
Housing material	316 stainless steel
Adjustment	±10 % Full Scale for zero and span
Pressure cycle limit	150 Hz
Durability	> 100,000,000 Full Scale cycles
Temperature ranges	Compensated 32 °F to 176 °F (0 °C to 80 °C) Effect ±0.017 % Full Scale/°F for zero and span Ambient -40 °F to 185 °F (-40 °C to 85 °C) Media -22 °F to 212 °F (-30 °C to 100 °C) Storage -40 °F to 212 °F (-40 °C to 100 °C)
Environmental rating	IP65, NEMA 4X according to EN 60529/IEC 529
Electromagnetic rating	CE compliant to EMC norm EN 61326:1997/A1:1998 RFI, EMI and ESD protection
Electrical protection	Reverse polarity, over-voltage and short circuit protection
Shock	1000 g’s per IEC 770
Vibration	30 g’s per IEC 770
Weight	Approximately 3.5 oz.

ORDERING INFORMATION

SERIES 100

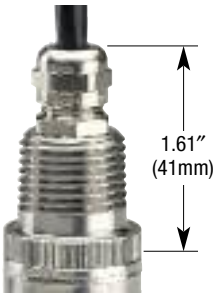
PRESSURE RANGES	-30 inHg to 0 psig	**30V**	0 psig to 5 psig	**5**	0 psig to 200 psig	**200**	0 psig to 2000 psig	**2000**	0 psia to 15 psia	**15A**
	-30 inHg to 15 psig	**30/15**	0 psig to 10 psig	**10**	0 psig to 300 psig	**300**	0 psig to 3000 psig	**3000**	0 psia to 30 psia	**30A**
	-30 inHg to 30 psig	**30/30**	0 psig to 15 psig	**15**	0 psig to 500 psig	**500**	0 psig to 5000 psig	**5000**	0 psia to 60 psia	**60A**
	-30 inHg to 60 psig	**30/60**	0 psig to 30 psig	**30**	0 psig to 600 psig	**600**	0 psig to 6000 psig	**6000**	0 psia to 100 psia	**100A**
	-30 inHg to 100 psig	**30/100**	0 psig to 60 psig	**60**	0 psig to 750 psig	**750**	0 psig to 7500 psig	**7500**	0 psia to 150 psia	**150A**
	-30 inHg to 150 psig	**30/150**	0 psig to 100 psig	**100**	0 psig to 1000 psig	**1000**	0 psig to 10000 psig	**10000**	0 psia to 200 psia	**200A**
	-30 inHg to 200 psig	**30/200**	0 psig to 150 psig	**150**	0 psig to 1500 psig	**1500**	0 psig to 15000 psig	**15000**	0 psia to 300 psia	**300A**
	-30 inHg to 300 psig	**30/300**	psig = gauge pressure		psia = absolute pressure		Other ranges available on special request ranges			
ACCURACY	**1** ±0.5 % Full Scale (Best Fit Straight Line)				**2** ±0.25 % Full Scale (Best Fit Straight Line)					
OUTPUT	**1** 4 mA to 20 mA, 2-wire									
PROCESS CONNECTIONS	**1** 1/8 ″ NPT male		**2** 1/4 ″ NPT male		**3** 7/16 ″ -20 UNF #4 SAE J-514 male				**4** 1/8 ″ NPT female	
	9 7/16 ″ -20 UNF #4 SAE J-514 female				**10** 1/4 ″ BSP male					
ELECTRICAL CONNECTION	**1** 36 ″ cable (connected to option 7)		**2** 4-pin bendix		**3** 6-pin bendix		**6** 1/2 ″ NPT conduit (with 36″ cable)			
	7 Mini-Hirschmann (DIN 43650C with mate)				**25** M12 x 1 4-pin		**36** Integral cable 36″			
OPTIONS	**ORF** Threaded orifice									

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

EXAMPLE **100 – 500 – 1 – 1 – 2 – 7 – ORF**

Series 100
Pressure Range . . . . . 0 psig to 500 psig
Accuracy . . . . . ±0.50 % Full Scale
Output Signal . . . . . 4 mA to 20 mA
Process Connection . . . . . 1/4 ″ NPT male
Electrical Connection . . . Mini-Hirschmann
Option . . . . . Orifice

Outline Dimensions



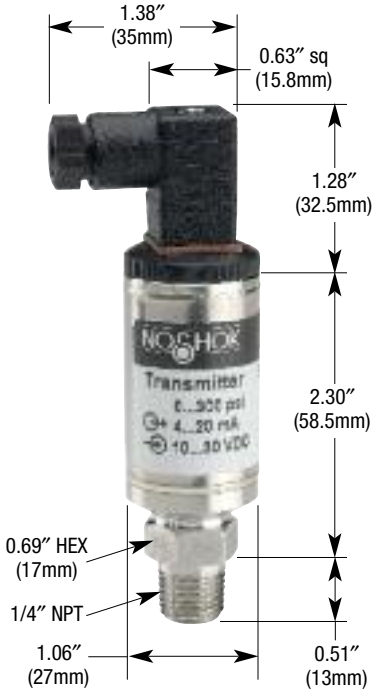
1/2 ″ NPT Conduit with 36 ″ jacketed cable

*6 pin Bendix *4 pin Bendix *M12 x 1

WIRING

Wire	Bendix 4-pin or 6-pin	Mini-Hirschmann	Cable	M12 x 1
+ Supply	pin A	pin 1	Red	pin 1
+ Output	pin B	pin 2	Black	pin 3

*Note: mate supplied separately or customer supplied



Mini-Hirschmann

Voltage Output Pressure Transducers

SERIES 200

HIGH PERFORMANCE VOLTAGE OUTPUT PRESSURE TRANSDUCERS

NOSHOK 200 Series Voltage Output Pressure Transducers are designed to provide a previously unequalled level of performance, utilizing diffused semiconductor and sputtered thin film strain gage technology. 200 Series transducers are highly repeatable, shock resistant and are extremely stable over long periods of time. CE compliance which includes substantial levels of RFI, EMI and ESD noise protection combined with reverse polarity and over-voltage protection hardens the product so it performs well in the most demanding applications.

Advanced manufacturing techniques combined with technologically advanced standard features allow NOSHOK to offer a level of performance previously found only on transducers costing hundreds of dollars more. Final calibration tests performed on all NOSHOK transmitters prior to shipment ensures 100% “out of the box” reliability

FEATURES

- Accuracy up to ±0.25 % Full Scale (Best Fit Straight Line)
- Welded stainless steel pressure chamber
- Advanced diffused semi-conductor and sputtered thin film sensor for maximum stability
- Compact size
- High alternating load resistance
- High overpressure protection
- CE compliant to suppress RFI, EMI and ESD
- Compatible with NOSHOK Smart System Indicators

APPLICATIONS

- Hydraulic and pneumatic systems
- Injection molding machines
- Railroad engine controls
- HVAC systems
- Stamping and forming presses
- Refrigeration controls
- Industrial machinery and machine tools
- Pumps and compressors

SPECIFICATIONS

Output signals	0 Vdc to 5 Vdc, 3-wire; 0 Vdc to 10 Vdc, 3-wire; 1 Vdc to 5 Vdc, 3-wire; 1 Vdc to 6 Vdc, 3-wire; 1 Vdc to 11 Vdc, 3-wire;
Pressure ranges	Standard gauge ranges from vacuum to 15000 psi; Standard absolute ranges from 15 psia to 300 psia
Proof Pressure	3 times Full Scale for ranges 0 psi to 5 psi through 0 psi to 200 psi 1.75 times Full Scale for ranges 0 psi to 300 psi through 0 psi to 10000 psi 1.5 times Full Scale for 0 psi to 15000 psi range
Burst Pressure	3.8 times Full Scale for ranges 0 psi to 5 psi through 0 psi to 200 psi 4 times Full Scale for ranges 0 psi to 300 psi through 0 psi to 10000 psi 3 times Full Scale for 0 psi to 15000 psi range
Accuracy	±0.5 % Full Scale (Best Fit Straight Line); ±0.25 % optional (Includes the combined effects of linearity, hysteresis and repeatability)
Repeatability	≤ ±0.05 % Full Scale
Hysteresis	≤ ±0.1 % Full Scale
Stability	≤ ±0.2 % Full Scale per year, non-accumulating
Response time	≤ 1 ms (between 10 % and 90 % Full Scale)
Power supply	10 Vdc to 30 Vdc, 14 Vdc to 30 Vdc for 1 Vdc to 11 Vdc and 0 Vdc to 10 Vdc unregulated
Load limitations	Load in resistance must be ≥ 5000 for 0 Vdc to 5 Vdc, 1 Vdc to 5 Vdc, and 1 Vdc to 6 Vdc outputs; load in resistance must be ≥10000 for 0 Vdc to 10 Vdc and 1 Vdc to 11 Vdc outputs. Current consumption 8 mA
Wetted materials	316 stainless steel for vacuum through 300 psi; 17-4PH stainless steel sensing diaphragm and 316 stainless steel pressure connection for higher ranges
Housing material	316 stainless steel
Adjustment	±10 % Full Scale for zero and span
Pressure cycle limit	150 Hz
Durability	> 100,000,000 Full Scale cycles
Temperature ranges	Compensated 32 °F to 176 °F (0 °C to 80 °C) Effect ±0.017 % Full Scale/°F for zero and span Ambient -40 °F to 185 °F (-40 °C to 85 °C) Media -22 °F to 212 °F (-30 °C to 100 °C) Storage -40 °F to 212 °F (-40 °C to 100 °C)
Environmental rating	IP65, NEMA 4X according to EN 60529/IEC 529
Electromagnetic rating	CE compliant to EMC norm EN61326: 1997/A1: 1998 RFI, EMI and ESD protection
Electrical protection	Reverse polarity, over-voltage and short circuit protection
Shock	1000 g's per IEC 770
Vibration	30 g's per IEC 770
Weight	Approximately 3.5 oz.

ORDERING INFORMATION

SERIES 200

PRESSURE RANGES	-30 inHg to 0 psig	**30V**	-30 inHg to 300 psig	**30/300**	0 psig to 150 psig	**150**	0 psig to 1500 psig	**1500**	0 psia to 15 psia	**15A**
	-30 inHg to 15 psig	**30/15**	0 psig to 5 psig	**5**	0 psig to 200 psig	**200**	0 psig to 2000 psig	**2000**	0 psia to 30 psia	**30A**
	-30 inHg to 30 psig	**30/30**	0 psig to 10 psig	**10**	0 psig to 300 psig	**300**	0 psig to 3000 psig	**3000**	0 psia to 60 psia	**60A**
	-30 inHg to 60 psig	**30/60**	0 psig to 15 psig	**15**	0 psig to 500 psig	**500**	0 psig to 5000 psig	**5000**	0 psia to 100 psia	**100A**
	-30 inHg to 100 psig	**30/100**	0 psig to 30 psig	**30**	0 psig to 600 psig	**600**	0 psig to 6000 psig	**6000**	0 psia to 150 psia	**150A**
	-30 inHg to 150 psig	**30/150**	0 psig to 60 psig	**60**	0 psig to 750 psig	**750**	0 psig to 7500 psig	**7500**	0 psia to 200 psia	**200A**
	-30 inHg to 200 psig	**30/200**	0 psig to 100 psig	**100**	0 psig to 1000 psig	**1000**	0 psig to 10000 psig	**10000**	0 psia to 300 psia	**300A**
	psig = Gauge Pressure		psia = Absolute Pressure		Other ranges available on special request		0 psig to 15000 psig	**15000**		

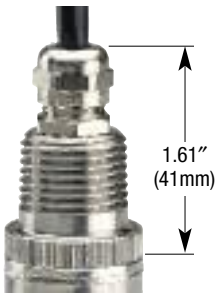
ACCURACY	**1** ±0.5 % Full Scale (Best Fit Straight Line)			**2** ±0.25 % Full Scale (Best Fit Straight Line)					
OUTPUT SIGNALS	**2** 0 Vdc to 5 Vdc, 3-wire	**3** 1 Vdc to 5 Vdc, 3-wire	**4** 1 Vdc to 6 Vdc, 3-wire	**5** 0 Vdc to 10 Vdc, 3-wire	**6** 1 Vdc to 11 Vdc, 3-wire				
PROCESS CONNECTIONS	**1** 1/8 ″ NPT male	**2** 1/4 ″ NPT male	**3** 7/16 ″ -20 UNF #4 SAE J-514 male	**4** 1/8 ″ NPT female					
	9 7/16 ″ -20 UNF #4 SAE J-514 female		**10** 1/4 ″ BSP male						
ELECTRICAL CONNECTIONS	**1** 36 ″ cable (connected to option 7)		**2** 4-pin bendix	**3** 6-pin bendix	**36** Integral cable 36″				
	6 1/2 ″ NPT conduit (with 36 ″ cable)		**7** Mini-Hirschmann (DIN 43650C with mate)		**25** M12 x 1 4-pin				
	NOTE: 0 Vdc to 5 Vdc and 0 Vdc to 10 Vdc outputs are also available in 4-wire configurations for use with other electrical systems.								
OPTIONS	**ORF** Threaded Orifice								

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

EXAMPLE **200 – 500 – 1 – 2 – 2 – 7 – ORF**

Series 200
Pressure Range . . . . . .0 psig to 500 psig
Accuracy . . . . . .±0.50 % Full Scale
Output Signal . . . . . .0 Vdc to 5 Vdc
Process Connection . . . . . .1/4 ″ NPT Male
Electrical Connection . . . . .Mini-Hirschmann
Option . . . . . .Orifice

Outline Dimensions



1/2 ″ NPT Conduit with 36 ″ jacketed cable

*6 pin Bendix *4 pin Bendix *M12 x 1

Mini-Hirschmann

WIRING

Wire	Bendix 4-pin or 6-pin	Mini-Hirschmann	Cable	M12 x 1
+ Supply	pin A	pin 1	Red	pin 1
Common	pin B	pin 2	Black	pin 3
+ Output	pin C	pin 3	White	pin 4

*Note: mate supplied separately or customer supplied

Submersible Level Transmitters

SERIES 612

SUBMERSIBLE LEVEL TRANSMITTERS

NOSHOK Series 612 Submersible Level Transmitters were designed to provide a previously unequalled level of performance. Utilizing diffused semiconductor and thin film technologies, Series 612 transducers are accurate, shock resistant and extremely stable over long periods of time. Reverse polarity protection, short circuit protection and lightning protection have been installed as standard features.

Advanced manufacturing techniques combined with technologically advanced standard features allow NOSHOK to offer a level of performance previously found on transducers costing hundreds of dollars more.

A final electrical output and calibration inspection is performed on all NOSHOK transducers prior to shipment to ensure 100% “out of the box” reliability.

FEATURES

- Advanced diffused semi-conductor and sputtered thin film sensor for maximum stability
- High accuracy and long term stability
- Ranges from 0 inH_2O to 50 inH_2O through 0 psi to 1000 psi
- Corrosion resistant stainless steel construction
- Nosecone standard
- Optional 6 VDC input .5 to 2.5 output for field applications

APPLICATIONS

- Irrigation
- Food and beverage
- Waste water
- Water distribution
- Level and depth
- Bore hole
- Offshore
- R&D

SPECIFICATIONS

Output signals	4 mA to 20 mA, 2-wire; 0 Vdc to 5 Vdc and 0 Vdc to 10 Vdc, 3-wire; 0.5 Vdc to 2.5 Vdc, 3-wire
Pressure ranges	0 inH_2O to 50 inH_2O through 0 psig to 1000 psig
Proof pressure	2 times range
Burst pressure	4 times range
Accuracy	± 0.25 % Full Scale (best fit straight line) (Includes the combined effects of linearity, hysteresis and repeatability) ± .125 % Full Scale (optional)
Repeatability	≤ ± 0.05 % Full Scale
Hysteresis	≤ ± 0.1 % Full Scale
Stability	≤ ± 0.2 % Full Scale for 1 year, non accumulating
Load limitations	≤ (VPower–10)/0.020 Amp–(0.043 Ω x length of cable in feet) Voltage output ≥ 100,000 Ω
Wetted materials	Housing: 316 stainless steel Cap: Polyamide, 316 stainless steel with weighted nosecone Cable: Polyurethane, Teflon available on special versions PVC with double water block
Power supply	10 Vdc to 30 Vdc for current output 14 Vdc to 30 Vdc for voltage output 6 Vdc for 0.5 Vdc to 2.5 Vdc output
Temperature ranges	Compensated 32 °F to 122 °F/0 °C to 50 °C Effect ± 0.01 %/°F for zero and span Storage -22 °F to 175 °F/-30 °C to 80 °C Medium 14 °F to 122 °F /-10 °C to 50 °C
Response time	≤ 1 ms (between 10 % to 90 % Full Scale)
Durability	>100,000,000 Full Scale cycles
Environmental protection	NEMA 6P, IP68
Electromagnetic rating	CE compliant to EMC norm EN61326: 1997/A1: 1998 RFI, EMI and ESD protection
Electrical protection	Reverse polarity protection, short circuit and optional lightning protection
Shock	Less than ± 0.05 % Full Scale effect for 100 g's @ 20 ms on any axis
Vibration	Less than ± 0.01 % Full Scale effect for 15 g's @ 0 Hz to 2000 Hz on any axis
Weight	Approximately 7 oz. with standard nosecone – cable extra

ORDERING INFORMATION

SERIES 612

PRESSURE RANGES	0 inH_2O to 50 inH_2O	**50 IN**	0 psig to 2 psig (4.6 ftH_2O)	**2**	0 psig to 20 psig (46.2 ftH_2O)	**20**	0 psig to 200 psig (461.3 ftH_2O)	**200**
	0 inH_2O to 100 inH_2O	**100 IN**	0 psig to 3 psig (6.9 ftH_2O)	**3**	0 psig to 25 psig (57.7 ftH_2O)	**25**	0 psig to 300 psig (692.5 ftH_2O)	**300**
	0 inH_2O to 150 inH_2O	**150 IN**	0 psig to 5 psig (11.5 ftH_2O)	**5**	0 psig to 30 psig (69.2 ftH_2O)	**30**	0 psig to 350 psig (807.9 ftH_2O)	**350**
	0 inH_2O to 200 inH_2O	**200 IN**	0 psig to 10 psig (23.1 ftH_2O)	**10**	0 psig to 60 psig (138.5 ftH_2O)	**60**	0 psig to 500 psig (1154.2 ftH_2O)	**500**
	0 inH_2O to 400 inH_2O	**400 IN**	0 psig to 15 psig (34.6 ftH_2O)	**15**	0 psig to 100 psig (230.8 ftH_2O)	**100**	0 psig to 750 psig (1733.3 ftH20)	**750**
	psig = Gauge Pressure		Other ranges available on special request		0 psig to 150 psig (346.3 ftH_2O)	**150**	0 psig to 1000 psig (2311.0 ftH20)	**1000**

ACCURACY	**1**	± 0.25 % Full Scale (Best fit straight line)	**2**	± 0.125 % Full Scale (Best fit straight line)
OUTPUT SIGNALS	**1**	4 mA to 20 mA, 2-wire	**5**	0 Vdc to 10 Vdc, 3-wire
	2	0 Vdc to 5 Vdc, 3-wire	**11**	0.5 Vdc to 2.5 Vdc, 3-wire
PROCESS CONNECTIONS	**N**	nosecone	**W**	nosecone w/added weight (1.1 lbs.)
	T	NPT adapter, 1/2 ″ NPT male outer thread with 1/4 ″ NPT female inner thread attached to transmitter process connection with straight thread and O-ring seal		
ELECTRICAL CONNECTIONS		Submersible cable (specify length in feet)		

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

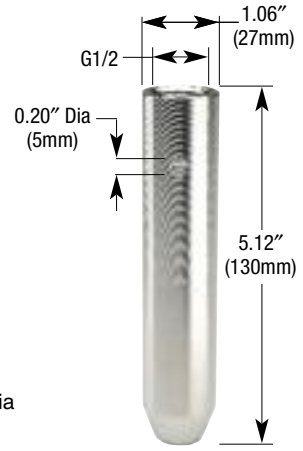
EXAMPLE

612 – 5 – 1 – 1 – N – 50'

Series 612
Pressure Range . . . . . .0 psig to 5 psig
Accuracy . . . . . .± 0.25 %
Output Signal . . . . . .4 mA to 20 mA, 2-Wire
Process Connection . . . . . .nosecone
Electrical Connection . . . . .Submersible Cable

Outline Dimensions

Weighted nosecone



NPT adapter

2-WIRE WIRING

Wiring	Cable
+ Supply	Red
+ Output	Black

3-WIRE WIRING

Wiring	Cable
+ Supply	Red
Common	Black
+ Output	White

Optional Accessories

Moisture filter	**612-Filter-Element**
Desiccant Cartridge	**612-Desiccant Cartridge**
Cable Clamp	**612-Cable Clamp**

High Accuracy Heavy Duty Pressure Transducers

SERIES 615/616

HIGH ACCURACY HEAVY DUTY PRESSURE TRANSDUCERS

NOSHOK Series 615/616 Pressure Transducers are designed for heavy duty applications requiring high accuracy and durability. Utilizing similar diffused semiconductor or sputtered Thin Film technology found in the 100 series, these transducers are stable, accurate, shock resistant, and extremely durable.

The durability is coupled with the mechanical integrity of the case, process connection, and wetted parts constructed of corrosion resistant stainless steel, completing the NOSHOK product characteristics you have come to expect.

Available in a wide variety of electrical and process configurations and fully adaptable to the 1800, 1900 and 2000 Series Smart System Digital Indicators, the Series 615/616 Pressure Transducers are the choice for heavy duty applications.

A final electrical output and calibration inspection is performed on all NOSHOK transducers prior to shipment to ensure 100% “out of the box” reliability.

FEATURES

- Advanced diffused semi-conductor and sputtered thin film sensor for maximum stability
- High accuracy and long term stability
- Ranges from vacuum to 120000 psi
- Corrosion resistant stainless steel construction
- Span and zero adjustments
- Compatible with NOSHOK 1800, 1900 and 2000 Series Smart System Indicators

APPLICATIONS

- Hydraulic and pneumatic systems
- Industrial machinery and machine tools
- Injection molding machines
- Stamping and forming presses
- Pumps and compressors
- Laboratory and test equipment
- Railroad equipment
- HVAC systems
- Medical
- Refrigeration equipment
- Marine
- Power generation
- Construction
- Petrochemical
- Water management

Also available with our 1800 Series Attachable Loop Indicator.
See page 44 for more information.

SPECIFICATIONS

Output signals	4 mA to 20 mA, 2-wire; 1 Vdc to 5 Vdc, 1 Vdc to 6 Vdc, 1 Vdc to 11 Vdc, 3-wire; 0 Vdc to 5 Vdc and 0 Vdc to 10 Vdc, 3-wire; 0 Vdc to 5 Vdc and 0 Vdc to 10 Vdc, 4-wire
Pressure ranges	Standard gauge ranges from vacuum to 120000 psig; Standard absolute ranges from 15 psia to 300 psia
Proof pressure	3 times Full Scale for ranges 0 psi to 2 psi through 0 psi to 200 psi 1.75 times Full Scale for ranges 0 psi to 300 psi through 0 psi to 10000 psi 1.5 times Full Scale for 0 psi to 15000 psi range 1.2 times Full Scale for ranges 0 psi to 20000 psi through 0 psi to 120000 psi
Burst pressure	3.8 times Full Scale for ranges 0 psi to 2 psi through 0 psi to 200 psi 4 times Full Scale for ranges 0 psi to 300 psi through o psi to 10000 psi 3 times Full Scale for 0 psi to 15000 psi range 1.5 times Full Scale for ranges 0 psi to 20000 psi through 0 psi to 120000 psi
Accuracy	± 0.25 % Full Scale (best fit straight line) Includes the combined effects of linearity, hysteresis and repeatability ± 0.125 % Full Scale (optional)
Repeatability	≤ ± 0.05 % Full Scale
Hysteresis	≤ ± 0.1 % Full Scale
Stability	≤ ± 0.2 % Full Scale for 1 year, non accumulating
Power supply	10 Vdc to 30 Vdc for current output 14 Vdc to 30 Vdc for voltage output
Load limitations	≤ (VPower–10)/0.020 Amp for 4 mA to 20 mA ≥ 10,000 Ω for 0 Vdc to 10 Vdc, 3-wire ≥ 5,000 Ω for 0 Vdc to 5 Vdc, 3-wire
Wetted materials	316 stainless steel for vacuum through 300 psi; 17-4PH stainless steel sensing diaphragm and 316 stainless steel process connection for higher ranges
Housing materials	316 stainless steel
Temperature ranges	Compensated 32 °F to 175 °F/0 °C to 80 °C Effect ± 0.01 %/°F for zero and span Storage - 40 °F to 212 °F/-40 °C to 100 °C Medium - 20 °F to 212 °F/-30 °C to 100 °C Ambient - 15 °F to 175 °F/-10 °C to 80 °C High temperature version available on request
Response time	Less than 1 ms (between 10 % and 90 % Full Scale)
Durability	>100,000,000 Full Scale cycles
Adjustment	± 10 % Full Scale for zero and span
Environmental protection	NEMA 4X, IP65 (IEC 529)
Electromagnetic rating	CE compliant to EMC norm EN61326: 1997/A1: 1998 RFI, EMI and ESD protection
Electrical protection	Reverse polarity, overvoltage and short circuit protection
Shock	Less than ± 0.05 % Full Scale effect or 1000 g’s @ 20 ms on any axis
Vibration	Less than ± 0.01 % Full Scale effect for 15 g’s @ 0 Hz to 2000 Hz on any axis
Weight	Approximately 7.2 oz.

ORDERING INFORMATION

SERIES 615 (internal diaphragm) **SERIES 616** (front flush diaphragm)

PRESSURE RANGES	-30 inHg to 0 psig	**30V**	0 psig to 2 psig	**2**	0 psig to 150 psig	**150**	0 psig to 3000 psig	**3000**	0 psig to 30000 psig	**30000**	0 psia to 15 psia	**15A**
	-30 inHg to 15 psig	**30/15**	0 psig to 3 psig	**3**	0 psig to 200 psig	**200**	0 psig to 4000 psig	**4000**	0 psig to 40000 psig	**40000**	0 psia to 30 psia	**30A**
	-30 inHg to 30 psig	**30/30**	0 psig to 5 psig	**5**	0 psig to 300 psig	**300**	0 psig to 5000 psig	**5000**	0 psig to 50000 psig	**50000**	0 psia to 60 psia	**60A**
	-30 inHg to 60 psig	**30/60**	0 psig to 10 psig	**10**	0 psig to 500 psig	**500**	0 psig to 6000 psig	**6000**	0 psig to 60000 psig	**60000**	0 psia to 100 psia	**100A**
	-30 inHg to 100 psig	**30/100**	0 psig to 15 psig	**15**	0 psig to 600 psig	**600**	0 psig to 7500 psig	**7500**	0 psig to 75000 psig	**75000**	0 psia to 150 psia	**150A**
	-30 inHg to 150 psig	**30/150**	0 psig to 30 psig	**30**	0 psig to 750 psig	**750**	0 psig to 10000 psig	**10000**	0 psig to 85000 psig	**85000**	0 psia to 200 psia	**200A**
	-30 inHg to 200 psig	**30/200**	0 psig to 60 psig	**60**	0 psig to 1000 psig	**1000**	0 psig to 15000 psig	**15000**	0 psig to 100000 psig	**100000**	0 psia to 300 psia	**300A**
	-30 inHg to 300 psig	**30/300**	0 psig to 100 psig	**100**	0 psig to 2000 psig	**2000**	0 psig to 20000 psig	**20000**	0 psig to 120000 psig	**120000**		

psig = Gauge Pressure psia = Absolute Pressure Other ranges available on special request NOTE: Series 616 is not available in pressure ranges 10,000 psig and above.

ACCURACY
1 ± 0.25 % Full Scale (Best fit straight line) **2** ± 0.125 % Full Scale (Best fit straight line)

OUTPUT SIGNALS
*Ranges up to 0 psig to 60000 psig

1 4 mA to 20 mA, 2-wire
2 0 Vdc to 5 Vdc, 3-wire
3 1 Vdc to 5 Vdc, 3-wire
4 1 Vdc to 6 Vdc, 3-wire*
5 0 Vdc to 10 Vdc, 3-wire
6 1 Vdc to 11 Vdc, 3-wire*

NOTE: 0 Vdc to 5 Vdc and 0 Vdc to 10 Vdc outputs are also available in 4-wire configurations for use with other electrical systems.

PROCESS CONNECTIONS
615: **2** 1/4 ″ NPT male **6** 9/16 ″-18 aminco (std on 30000 to 120000 psig) **8** 1/2 ″ NPT male
616: **11** G 1/2 B (pressure ranges 0 psig to 60 psig and higher) **13** G 1 B (pressure ranges 0 psig to 30 psig and below)
Other connections available upon request

ELECTRICAL CONNECTIONS
1 36 ″ cable (connected to option 8)
3 6-pin Bendix
6 1/2 ″ NPT conduit w/36 ″ cable
8 Hirschmann w/mating connector
14 Hirschmann type with 1/2 ″ NPT female conduit
25 M12 x 1 4-pin
36 Integral 36 ″ Cable

OPTIONS
ORF SS Threaded Orifice

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

EXAMPLE **615 – 500 – 1 – 1 – 8 – 1 – ORF**

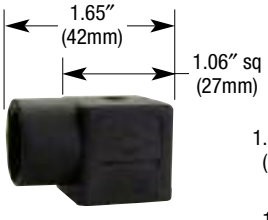
Series 615
Pressure Range . . . . . .500 psig
Accuracy . . . . . .± 0.25 %
Output Signal . . . . . .4 mA to 20 mA, 2-Wire
Process Connection . . . . . .1/2 ″ NPT Male
Electrical Connection . . . . . .36 ″ Cable
Option . . . . . .Orifice

1/2 ″ NPT Conduit with 36 ″ jacketed cable

Integral 36″ cable

*6 pin Bendix *M12 x 1

*Note: mate supplied separately or customer supplied



Hirschmann with 1/2″ NPT female conduit

Outline Dimensions

Hirschmann

2-WIRE WIRING

	Hirschmann	Cable	M12	Bendix
+ Supply	1	Red	1	A
+ Output	2	Black	3	B

3-WIRE WIRING

	Hirschmann	Cable	M12	Bendix
+ Supply	1	Red	1	A
Common	2	Black	3	B
+ Output	3	White	4	C

Precision Pressure Transducers

SERIES 640

PRECISION HEAVY DUTY PRESSURE TRANSDUCERS WITH SERIAL INTERFACE

NOSHOK Series 640 Transducers have been designed for industrial and laboratory applications requiring high accuracy and repeatability with excellent compensation for the effects of temperature. The temperature compensation system practically eliminates temperature induced errors from 50 °F to 104 °F.

Series 640 Transducers utilize thin film and diffused semiconductor technology dependent on pressure range. These sensors are highly accurate, shock resistant and extremely stable over long periods of time.

Standard output is a digital output with an RS232-C serial interface. Other outputs and electrical connections are available to meet the demands of almost any precision application.

A final electrical output and calibration inspection is performed on all NOSHOK Series 640 Transducers prior to shipment to ensure 100% “out of the box” reliability.

FEATURES

- Advanced diffused semi-conductor and sputtered thin film sensor for maximum stability
- Gauge or absolute
- High accuracy and long term stability
- Ranges include vacuum through 15000 psi
- High over range protection
- Serial or analog outputs
- Standard 1/2 ″ NPT process connection
- Corrosion resistant stainless steel construction

APPLICATIONS

- Research
- Testing
- Aeronautical
- Calibration
- Precision controls
- Marine
- Power generation
- Medical

SPECIFICATIONS

Output signals	4 mA to 20 mA, 2-wire; 0 Vdc to 5 Vdc and 0 Vdc to 10 Vdc, 3-wire; RS232-C digital output
Pressure ranges	Standard gauge ranges from vacuum to 15000 psig Standard absolute ranges from 15 psia to 300 psia
Proof pressure	3 times Full Scale for ranges 0 psi to 5 psi through 0 psi to 200 psi 2 times Full Scale for ranges 0 psi to 300 psi through 0 psi to 10000 psi 1.5 times Full Scale for 0 psi to 15000 psi range
Burst pressure	4 times Full Scale for ranges 0 psi to 5 psi through 0 psi to 200 psi 4 times Full Scale for ranges 0 psi to 300 psi through 0 psi to 10000 psi 3 times Full Scale for 0 psi to 15000 psi range
Accuracy	± 0.05 % Full Scale (Best fit straight line) (Includes the combined effects of linearity, hysteresis and repeatability) ± 0.025 % Full Scale (optional)
Hysteresis	≤ ± 0.03 % Full Scale
Stability	≤ ± 0.1 % Full Scale; 5 psi ± 0.2 % Full Scale per year
Power supply	10 Vdc to 30 Vdc for analog output 14 Vdc to 30 Vdc for 0 to 10 Vdc output Voltage supply from interface for RS232-C
Repeatability	≤ ±0.03 % of Full Scale
Load limitations	≤ (VPower –10)/0.020 Amp for 4 mA to 20 mA ≥10,000 Ω for 0 Vdc to 10 Vdc, 3-wire >5,000 Ω for 0 Vdc to 5 Vdc, 3-wire
Wetted materials	316 stainless steel for vacuum through 300 psi; 17-4PH stainless steel sensing diaphragm and 316 stainless steel process connection for higher ranges
Housing materials	316 stainless steel
Temperature ranges	Compensated 32 °F to 160 °F/0 °C to 70 °C Effect: ± 0.005 %/°F (32 °F-50 °F) to zero point and pressure range no effect (50 °F-104 °F) for zero and span ± 0.005 %/°F (104 °F-158 °F) to zero point and pressure range Storage -5 °F to 160 °F/-20 °C to 70 °C Medium - 5 °F to 160 °F/-20 °C to 70 °C Ambient 32 °F to 160 °F/0 °C to 70 °C
Response time	< 300 ms (between 10 % to 90 % Full Scale)
Durability	> 100,000,000 Full Scale cycles
Adjustment	± 5 % Full Scale of zero and span (programmable with serial interface, communication software included)
Environmental protection	NEMA 4x, IP65 (IEC 529)
Electromagnetic rating	CE compliant to EMC norm EN61326: 1997/A1: 1998 RFI, EMI and ESD protection
Electrical protection	Reverse polarity, overvoltage and short circuit protection
Shock	Less than ± 0.05 % Full Scale effect for 100 g’s @ 20 ms on any axis
Vibration	Less than ± 0.01 % Full Scale effect for 15 g’s @ 5 Hz to 2000 Hz on any axis
Weight	Approximately 11 oz.

ORDERING INFORMATION

SERIES 640

PRESSURE RANGES	-30 inHg to 0 psig	**30V**	-30 inHg to 200 psig	**30/200**	0 psig to 60 psig	**60**	0 psig to 500 psig	**500**	0 psig to 5000 psig	**5000**	0 psia to 15 psia	**15A**
	-30 inHg to 15 psig	**30/15**	-30 inHg to 300 psig	**30/300**	0 psig to 100 psig	**100**	0 psig to 750 psig	**750**	0 psig to 6000 psig	**6000**	0 psia to 30 psia	**30A**
	-30 inHg to 30 psig	**30/30**	0 psig to 5 psig	**5**	0 psig to 150 psig	**150**	0 psig to 1000 psig	**1000**	0 psig to 7500 psig	**7500**	0 psia to 60 psia	**60A**
	-30 inHg to 60 psig	**30/60**	0 psig to 10 psig	**10**	0 psig to 200 psig	**200**	0 psig to 2000 psig	**2000**	0 psig to 10000 psig	**10000**	0 psia to 100 psia	**100A**
	-30 inHg to 100 psig	**30/100**	0 psig to 15 psig	**15**	0 psig to 300 psig	**300**	0 psig to 3000 psig	**3000**	0 psig to 15000 psig	**15000**	0 psia to 150 psia	**150A**
	-30 inHg to 150 psig	**30/150**	0 psig to 30 psig	**30**							0 psia to 200 psia	**200A**
			psig = Gauge Pressure		psia = Absolute Pressure		Other ranges available on special request				0 psia to 300 psia	**300A**

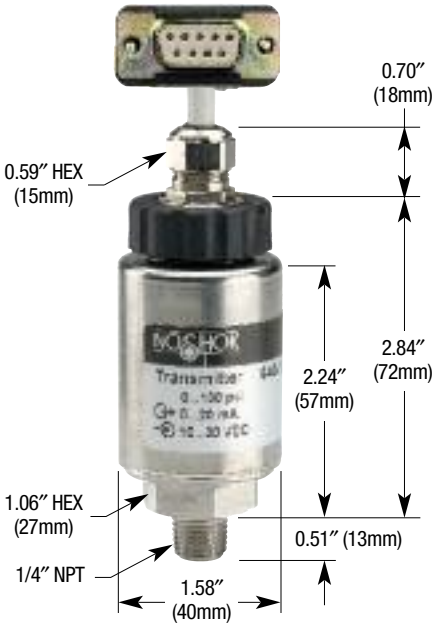
ACCURACY	**1**	±0.05 % Full Scale (Best fit straight line)	**2**	±0.025 % Full Scale (Best fit straight line)		
OUTPUT SIGNALS	**1**	4 mA to 20 mA, 2-wire analog	**2**	0 Vdc to 5 Vdc, 3-wire analog	**5**	0 Vdc to 10 Vdc, 3-wire analog
	12	RS232-C serial interface digital				
PROCESS CONNECTIONS	**2**	1/4 ″ NPT male	**8**	1/2 ″ NPT male other connections available upon request		
ELECTRICAL CONNECTIONS	**1**	54 ″ Integral cable	**10**	RS232-C w/58 ″ cable & plug	**25**	M12 x 1 4-pin
OPTIONS	**ORF**	SS Threaded Orifice				

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

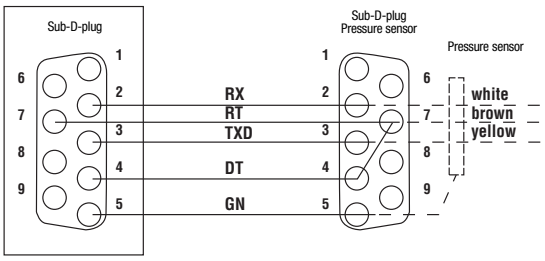
EXAMPLE **640 – 3000 – 1 – 12 – 8 – 10 – ORF**

Series 640
Pressure Range . . . . . .3000 psig
Accuracy . . . . . .±0.05 %
Output Signal . . . . . .RS232-C Serial Digital
Process Connection . . . . . .1/2 ″ NPT Male
Electrical Connection RS232-C
Option . . . . . .Orifice

Outline Dimensions



RS232-C Interface



2-WIRE WIRING

Wiring	M12	Cable
+ Supply	1	Brown
+ Output	3	Green

3-WIRE WIRING

Wiring	M12	Cable
+ Supply	1	Brown
Common	3	Green
+ Output	4	White

Micro Size Pressure Transducers

FEATURES

- Accuracy to ±0.25 % Full Scale (Best Fit Straight Line)
- Welded stainless steel pressure chamber
- Sputtered thin film sensor for maximum stability
- Designed to handle pressure spikes and process pulsation
- Off road capable due to high vibration and shock resistance
- CE compliant

APPLICATIONS

- Hydraulic and pneumatic systems
- Off road vehicles
- Refrigeration controls
- Industrial machinery and machine tools
- Pumps and compressors

SERIES 660

HIGH PERFORMANCE MICRO-SIZE PRESSURE TRANSDUCERS

NOSHOK Series 660 pressure transducers combine high performance with small size to produce an exceptional product. These transducers are designed with high overpressure capability to provide reliability and long life in hydraulic and pneumatic applications containing process pulsations and high vibration. The sensor utilizes sputtered thin film strain gage technology that provides stainless steel media compatibility and long term measurement stability. All of this in a small package that is more easily designed into applications than conventional transducers. This package is all metal and welded for reliable and trouble-free performance in high shock and vibration conditions often found in off road applications. Variations in pressure connections, outputs and electrical connections are available and custom configurations are possible for volume applications.

SPECIFICATIONS

Output signal	4 mA to 20 mA 2-wire, 1 Vdc to 5 Vdc 3-wire; 0.1 Vdc to 10 Vdc, 3-wire
Pressure ranges	Standard gauge ranges from 200 psig to 15000 psig
Proof pressure	2 times Full Scale for ranges 0 psi to 200 psi through 0 psi to 10000 psi 1.5 times Full Scale for 0 psi to 15000 psi range
Burst pressure	9 times Full Scale for 0 psi to 200 psi through 0 psi to 1000 psi 3 times Full Scale for ranges 0 to 3000 psi through 0 psi to 15000 psi
Accuracy	±0.25 % Full Scale (Best Fit Straight Line) (Includes the combined effects of linearity, hysteresis and repeatability)
Repeatability	≤ ±0.05 % Full Scale
Hysteresis	≤ ±0.5 % Full Scale
Stability	≤ ±.2 % Full Scale for 1 year, non-accumulating
Response time	<2 ms (between 10 % and 90 % Full Scale)
Power supply	10 Vdc to 30 Vdc for 4 mA to 20 mA, 2-wire; 8 Vdc to 30 Vdc for 1 Vdc to 5 Vdc, 3-wire; 0.1 Vdc to 10 Vdc, 3-wire
Load limitations	Requires 10 Vdc across transmitter connections minimum for the 4 mA to 20 mA output; requires receiving instrument input resistance greater than 5000 Ω for the 1 Vdc to 5 Vdc, 0.1 Vdc to 10 Vdc outputs
Wetted materials	17-4PH stainless steel sensing diaphragm and 316 stainless steel pressure connection
Housing material	316 stainless steel
Temperature ranges	Compensated -4 °F to 185 °F (-20 °C to 85 °C) Zero effect ±0.01 % Full Scale/°F Span effect ±0.01 % Full Scale/°F Ambient -4 °F to 185 °F (-25 °C to 85 °C) Media -13 °F to 185 °F (-40 °C to 100 °C); -40 °F to 257 °F (-40 °C to 125 °C) available on special request Storage -40 °F to 212 °F (-40 °C to 100 °C)
Environmental rating	IP65, NEMA 4X according to EN 60529/IEC 529; IP67 M12x1 electrical connection for pressure ranges 0 psig to 1500 psig or higher
Electromagnetic rating	CE compliant to EMC norm EN 61326:1997/A1:1998 RFI, EMI and ESD protection
Electrical protection	Reverse polarity, over-voltage and short circuit protection
Shock	1000 g's per IEC 770
Vibration	20 g's per IEC 770
Weight	Approximately 1.75 oz.

ORDERING INFORMATION

SERIES 660								
PRESSURE RANGES	0 psig to 200 psig	**200**	0 psig to 500 psig	**500**	0 psig to 3000 psig	**3000**	0 psig to 10000 psig	**10000**
	0 psig to 300 psig	**300**	0 psig to 1000 psig	**1000**	0 psig to 5000 psig	**5000**	0 psig to 15000 psig	**15000**
	psig = Gauge Pressure		Other ranges available on special request					
ACCURACY	**1** ±0.25 % Full Scale (Best Fit Straight Line)							
OUTPUT SIGNALS	**1** 4 mA to 20 mA, 2-wire		**3** 1 Vdc to 5 Vdc, 3-wire		**27** 0.1 Vdc to 10 Vdc, 3-wire			
PROCESS CONNECTIONS	**1** 1/8 ″ NPT male		**2** 1/4 ″ NPT male		**3** 7/16 ″-20 UNF adjustable per SAE J-514 male			
ELECTRICAL CONNECTIONS	**1** 36 ″ cable (connected to option 7)		**7** Mini-Hirschmann (DIN 43650C with mate)		**25** M12 x 1 4-pin			
OPTIONS	**ORF** Threaded Orifice							

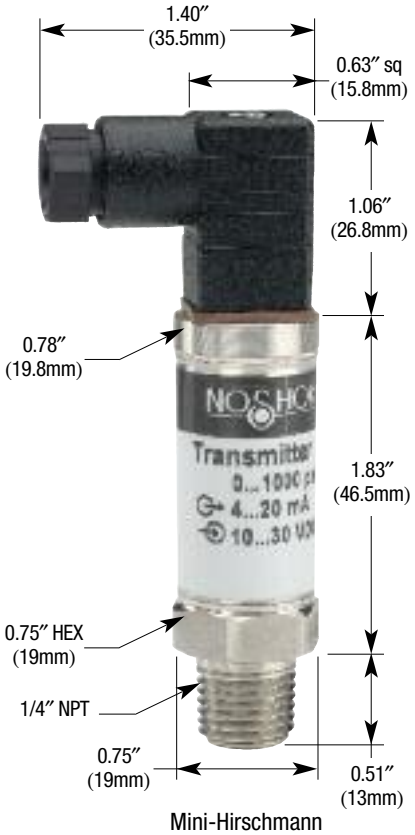
Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

EXAMPLE **660 – 500 – 1 – 1 – 2 – 25 – ORF**

Series 660
Pressure Range . . . . . .0 psig to 500 psig
Accuracy . . . . . .±0.25 % Full Scale
Output Signal . . . . . .4 mA to 20 mA
Process Connection . . . . . .1/4 ″ NPT Male
Electrical Connection . . . . . .M12 x 1
Option . . . . . .Orifice

Outline Dimensions

M12 X 1



Mini-Hirschmann

2-WIRE WIRING

Wiring	M12	Mini-Hirschmann	Cable
+ Supply	1	1	Red
+ Output	3	2	Black

3-WIRE WIRING

Wiring	M12	Mini-Hirschmann	Cable
+ Supply	1	1	Red
Common	3	2	Black
+ Output	4	3	White

Digital Pressure Transmitters

SERIES 755/756

FEATURES

- Accuracy to ±0.05 % Full Scale (Best Fit Straight Line)
- Up to 20:1 span turn down
- Advanced diffused semi-conductor and sputtered thin film sensor for maximum stability
- Built-in process temperature display
- Built-in selectable process digital filtering
- Welded 316 stainless steel pressure chamber
- 32 point process linearization
- Adjustable display for easy viewing
- 12 different measurement units
- CE compliant

APPLICATIONS

- Hydraulic and pneumatic systems
- Pumps and compressors
- Test equipment and systems
- Industrial machinery and machine tools
- HVAC systems
- Power generation
- Water and wastewater
- Refrigeration equipment
- Laboratory and test equipment
- Chemical/Petrochemical
- Marine

HIGH PERFORMANCE DIGITAL PRESSURE TRANSMITTERS

The NOSHOK Series 755 and 756 digital pressure transmitters combine the reliability and long life of diffused semiconductor and sputtered thin film strain gage sensors with digital electronics for outstanding performance and value. With up to 20:1 span turn down and -2.5 to 99% zero point adjustment there is maximum flexibility to meet the most unusual application requirements.

Additional features including 32 point process linearization, adjustable display orientation and integral process temperature measurement give the Series 755 and 756 an advantage over many other pressure transmitters.

The high contrast easily readable display provides the pressure value in digital bar graph representation, measurement tendency indication, maximum/minimum pressure, and temperature value. User programming includes menus to allow the setting of user language, engineering units, zero and span calibration points and digital filtering to dampen pressure fluctuations. All wetted parts are made of stainless steel, totally welded with no internal O-rings, gaskets or seals.

SPECIFICATIONS

Output	4 mA to 20 mA, 2 wire
Accuracy	±0.05 % Full Scale (Best Fit Straight Line), including the effects of linearity, hysteresis and repeatability; ±0.15 % Full Scale for 0 psig to 15000 psig range
Total accuracy	±0.05 % Full Scale (BFSL) including the effects of linearity, hysteresis, repeatability and thermal effects from 50 °F to 104 °F; ±0.15 % Full Scale for 0 psig to 15000 psig
Hysteresis	≤ ±0.04 % Full Scale
Repeatability	≤ ±0.05 % Full Scale
Stability	≤ ±0.1 % Full Scale for 1 year non-accumulating
Pressure ranges	Standard ranges from vacuum through 15000 psig
Proof pressure	5 times Full Scale for ranges 0 psi to 5 psi through 0 psi to 250 psi 2 times Full Scale for ranges 0 psi to 500 psi through 0 psi to 7500 psi 1.5 times Full Scale for 0 psi to 15000 psi range *Proof pressure is based on Full Scale range prior to turndown
Burst pressure	6 times Full Scale for ranges 0 psi to 5 psi through 0 psi to 250 psi 4 times Full Scale for ranges 0 psi to 500 psi through 0 psi to 7500 psi 3 times Full Scale for 0 psi to 15000 psi range *Burst pressure is based on Full Scale range prior to turndown
Power supply	10 Vdc to 30 Vdc, unregulated
Load limitations	≤ (VPower – 10)/0.020 Amp
Zero adjustability	From –2.5 % Full Scale up to 99 % Full Scale
Span adjustability	20:1 turndown for ranges up through 0 psig to 15000 psig
Turn down effect on accuracy	Turn down up to 5:1, no effect on accuracy Turn down greater than 5:1, accuracy x turndown/5
Response time	<10 milliseconds (between 10 % and 90 % Full Scale)
Durability	>100,000,000 Full Scale cycles
Digital filtering	User selectable from 0 sec. to 40 sec. for display and output signal
Temperature ranges	Compensated -4 °F to 176 °F (-20 °C to 80 °C) Zero effect is ±0.01 % Full Scale/°F Span effect is ±0.01 % Full Scale/°F Ambient -4 °F to 158 °F (-20 °C to 70 °C) Media –22 °F to 221 °F (-30 °C to 105 °C) Storage –31 °F to 176 °F (-35 °C to 80 °C)
Wetted materials	Model 755 is 316 stainless steel (ranges up through 0 psig to 250 psig) 316 stainless steel with 17-4PH stainless steel diaphragm (ranges 0 psig to 500 psig and higher); Model 756 is 316 stainless steel with buna N O-ring; Hastelloy® C4 optional; Viton O-ring optional
Housing material	Fiberglass reinforced PBT (polybutene terephthlate)
Environmental rating	IP65, NEMA 4X according to EN 60529/IEC529
Electromagnetic rating	CE compliant to EMC norm EN 61326:1997/A1:1998 RFI, EMI and ESD protection
Electrical rating	Reverse polarity, over-voltage and short circuit protection
Shock	100 g's according to IEC770 for mechanical shock
Vibration	5 g's according to IEC770 under resonance conditions
Weight	Approximately 24 oz.

ORDERING INFORMATION

SERIES 755 Stainless steel threaded		**SERIES 756S** 316 SS flush		**SERIES 756H** Hastelloy C4 flush			
PRESSURE RANGES	0 psig to 5 psig **5** 0 psig to 25 psig **25** 0 psig to 100 psig **100**	0 psig to 250 psig **250** 0 psig to 500 psig **500** 0 psig to 1500 psig **1500**		0 psig to 3000 psig **3000** 0 psig to 7500 psig **7500** 0 psig to 15000 psig **15000**		0 psia to 5 psia **5A** 0 psia to 25 psia **25A** 0 psia to 100 psia **100A** 0 psia to 250 psia **250A**	
	psig = Gauge Pressure psia = Absolute Pressure						
ACCURACY	**1** ±0.05 % Full Scale (Best Fit Straight Line)						
OUTPUT	**1** 4 mA to 20 mA, 2-wire						
PROCESS CONNECTION	**2** 1/4 ″ NPT male **11** G1/2B male flush (model 756 only) (pressure ranges 0 psig to 100 psig and higher)			**8** 1/2 ″ NPT male **13** G1B male flush (model 756 only) (pressure ranges less than 0 psig to 100 psig)			
ELECTRICAL CONNECTION	**24** Cable gland M20x1.5 with internal terminal block, accepts cable diameter from .25 ″ to .5 ″						
OPTION	**ORF** Threaded orifice (Model 755 Only)						

Specify actual calibration, otherwise transmitter will be set for full scale range

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

EXAMPLE **755 – 500 – 1 – 1 – 8 – 24 – ORF**

Series 755
Pressure Range . . . . . .0 psig to 500 psig
Accuracy . . . . . .±0.05 % Full Scale
Output . . . . . .4 mA to 20 mA
Process Connection . . . . . .1/2 ″ NPT Male
Electrical Connection . . . . . .Cable gland
Option . . . . . .Orifice

Outline Dimensions

Wiring Diagram

Wiring	Internal Junction Box
+ Supply	L+
+ Output	L-
Ground	⏚
Test Circuit	I

See 621/622 Series for G1/2B and G1B Front Flush Process Connection Dimensions

Compact OEM Pressure Transducers

SERIES 300

Ruggedness and long term stability during operation were the focus in the design of this NOSHOK 300 series pressure transducer. As a result of this we were able to develop a transducer for use in general industrial applications with technical specifications exceeding those of transducers costing much more.

A wide variety of electrical and mechanical connections are available for easy installation into most applications along with most popular analog output signals. All electrical components carry a high degree of EMC protection compliant with EN 61 326 which make it ideal for areas where RFI, EMI or ESD signals are present.

The compact size makes it very attractive for applications where space is limited. Constructed of high quality stainless steel makes it compatible with chemically aggressive media. The sensor is welded directly to the process connection eliminating the need for any gaskets or seals while also increasing the resistance to mechanical stress.

FEATURES

- Ranges from 0 psig to 15 psig to 0 psig to 10,000 psig
- RoHS compliant
- Constructed of high quality stainless steel
- Excellent EMC-protection compliant with EN 61 326
- Compact size
- All welded design with no internal seals
- Highly resistant to shock and vibration
- Excellent for use in dynamic or static measurement
- Standard absolute ranges from 15 psia to 200 psia

APPLICATIONS

- Hydraulic and pneumatic systems
- Pumps and compressors
- Stamping and forming presses
- Test equipment and systems
- Industrial machinery and machine tools

SPECIFICATIONS

Output signals	4 mA to 20 mA, 2-wire; 0 Vdc to 5 Vdc, 3-wire; 1 Vdc to 5 Vdc, 3-wire; 0 Vdc to 10 Vdc, 3-wire; 0.5 Vdc to 4.5 Vdc ratiometric, 3-wire
Pressure ranges	Standard gauge ranges from 0 psig to 15 psig; through psig to 10,000 psig Standard absolute ranges 15 psig through 200 psig
Proof Pressure	2 times Full Scale
Burst Pressure	6 times Full Scale
Accuracy	±0.5 % Full Scale (Best Fit Straight Line); ±0.25 % optional (Includes the combined effects of linearity, hysteresis and repeatability)
Repeatability	≤ ±0.05 % Full Scale
Hysteresis	≤ ±0.1 % Full Scale
Stability	≤ ±0.2 % Full Scale per year, non-accumulating
Response time	≤ 4 ms (between 10 % and 90 % Full Scale)
Power supply	8 Vdc to 30 Vdc unregulated for 4 mA to 20 mA output, 0 Vdc to 5 Vdc output and 1 Vdc to 5 Vdc outputs; 5 Vdc ±0.5 Vdc for 0.5 Vdc to 4.5 Vdc output
Load limitations	≤ (VPower -10)/0.020 Amp for 4 mA to 20 mA output >5.000 Ω for 1 Vdc to 5 Vdc output >10,000 Ω for 0 Vdc to 10 Vdc output >4,500 Ω for 0.5 Vdc to 4.5 Vdc output
Wetted materials	316 stainless steel for absolute through 150psi 13-8PH stainless steel sensing diaphragm and 316 stainless steel process connection for higher ranges
Housing material	316L stainless steel
Pressure cycle limit	150 Hz
Durability	> 100,000,000 Full Scale cycles
Temperature ranges	Compensated 32 °F to 176 °F (0 °C to 80 °C) Storage -4°F to 176°F (0°C to 80°C) Media 32°F to 176°F (0°C to 80°C) Ambient 32°F to 176°F (0°C to 80°C)
Environmental rating	IP65 to IP67 depending on electrical connection
Electromagnetic rating	CE compliant to EMC norm EN61326: 1997/A1: 1998 RFI, EMI and ESD protection
Electrical protection	Reverse polarity, over-voltage and short circuit protection
Shock	100 g's per IEC 68-2-27
Vibration	10 g's per IEC 68-2-6
Weight	Approximately 2.8 oz.

ORDERING INFORMATION

SERIES 300

PRESSURE RANGES	0 psig to 15 psig	**15**	0 psig to 200 psig	**200**	0 psig to 2000 psig	**2000**	0 psia to 15 psia	**15A**
	0 psig to 30 psig	**30**	0 psig to 300 psig	**300**	0 psig to 3000 psig	**3000**	0 psia to 30 psia	**30A**
	0 psig to 60 psig	**60**	0 psig to 500 psig	**500**	0 psig to 5000 psig	**5000**	0 psia to 60 psia	**60A**
	0 psig to 100 psig	**100**	0 psig to 1000 psig	**1000**	0 psig to 10000 psig	**10000**	0 psia to 100 psia	**100A**
	0 psig to 150 psig	**150**	0 psig to 1500 psig	**1500**			0 psia to 150 psia	**150A**
							0 psia to 200 psia	**200A**

psig = Gauge Pressure psia = Absolute Pressure Other ranges available on special request

ACCURACY	**1** ±0.5 % Full Scale (Best Fit Straight Line)			**2** ±0.25 % Full Scale (Best Fit Straight Line)			
OUTPUT	**1** 4 mA to 20 mA, 2-wire	**2** 0 Vdc to 5 Vdc, 3-wire	**3** 1 Vdc to 5 Vdc, 3-wire	**5** 0 Vdc to 10 Vdc, 3-wire			
PROCESS CONNECTIONS	**2** 1/4 ″ NPT male	**45** 7/16 ″ -20 UNF #4 SAE	**8** 1/2 ″ NPT male				
ELECTRICAL CONNECTIONS	**1** 36 ″ cable (connected to option 7)	**8** Hirschmann (DIN 43650 with mate)	**36** 6 ft Intergral Cable				
	7 Mini-Hirschmann (DIN 43650C with mate)	**25** M12 x 1 4-pin					
OPTIONS	**ORF** Threaded Orifice (.3mm)						

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

EXAMPLE **300 – 500 – 1 – 2 – 2 – 7 – ORF**

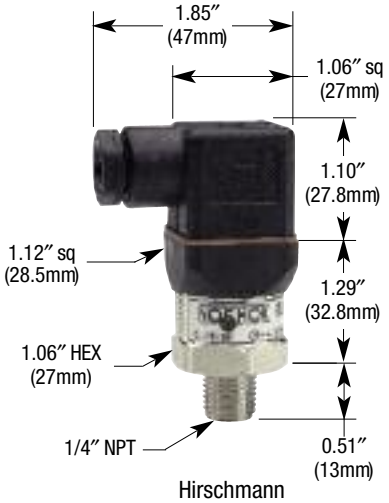
Series 300
Pressure Range . . . . . .0 psig to 500 psig
Accuracy . . . . . .±0.50 % Full Scale
Output Signal . . . . . .0 Vdc to 5 Vdc
Process Connection . . . . . .1/4 ″ NPT Male
Electrical Connection . . . . . .Mini-Hirschmann
Option . . . . . .Orifice

Outline Dimensions

Integral Cable

Mini-Hirschmann

*M12 x 1
*Note: (mate supplied separately or customer supplied)



Hirschmann

2-WIRE WIRING

Wiring	M12	Hirschmann	Cable
+ Supply	1	1	Brown
+ Output	3	2	Blue

3-WIRE WIRING

Wiring	M12	Hirschmann	Cable
+ Supply	1	1	Brown
Common	3	2	Blue
+ Output	4	3	White

Heavy Duty OEM Pressure Transducers

SERIES 600

HEAVY DUTY OEM PRESSURE TRANSDUCERS

NOSHOK Series 600 Pressure Transducers combine high accuracy heavy duty thin film and piezoresistive sensor technology with automated production techniques to offer a durable, affordable OEM pressure transducer.

The high overpressure capability of these transducers and all stainless steel construction ensure their long term reliability in a broad range of applications. Reliability is also enhanced by the high levels of RFI, EMI and ESD protection built into series 600 pressure transducers.

Available in a variety of electrical and process configurations and fully compatible with the 1800, 1900 and 2000 Series Smart Systems Digital Indicators, Series 600 pressure transducers are the ideal choices for heavy duty, high volume applications.

A final electrical output and calibration inspection is performed on all NOSHOK transducers prior to shipment to ensure 100% “out of the box” reliability.

FEATURES

- Advanced diffused semiconductor and sputtered thin film sensor for maximum stability
- Excellent overpressure protection
- High accuracy & long term stability
- Ranges from 15 psig to 15000 psig
- Standard 1/4″ NPT male process connection
- Corrosion resistant stainless steel construction
- CE compliant
- Current & voltage output signals
- Hirschmann or cable electrical connections
- Compatible with NOSHOK 1800, 1900 and 2000 Series Indicators

APPLICATIONS

- Hydraulic and pneumatic systems
- Industrial machinery and machine tools
- Injection molding machines
- Stamping and forming presses
- Pumps and compressors
- Laboratory and test equipment
- Railroad equipment
- HVAC systems
- Medical
- Refrigeration equipment
- Marine
- Power generation
- Construction
- Petrochemical
- Water management

Also available with our 1800 Series Attachable Loop Indicator.
See page 44 for more information.

SPECIFICATIONS

Output signals	4 mA to 20 mA, 2-wire, 1 Vdc to 5 Vdc, 3-wire; 1 Vdc to 6 Vdc, 3-wire: 0 Vdc to 10 Vdc, 3-wire
Pressure ranges	Standard gauge ranges from vacuum to 15000 psig; Standard absolute ranges from 15 psia to 150 psia
Proof pressure	3 times Full Scale for ranges 0 psi to 15 psi through 0 psi to 200 psi 1.75 times Full Scale for ranges 0 psi to 300 psi through 0psi to 10000 psi 1.5 times Full Scale for 0 psi to 15000 psi range
Burst pressure	4 times Full Scale for ranges 0 psi to 15 psi through 0 psi to 200 psi 2.6 times Full Scale for ranges 0 psi to 300 psi through 0 psi to 10000 psi 3 times Full Scale for 0 psi to 15000 psi range
Accuracy	± 0.5 % Full Scale (Best fit straight line) (Includes the combined effects of linearity, hysteresis and repeatability)
Repeatability	≤ ± 0.2 % Full Scale
Hysteresis	≤ ± 0.1 % Full Scale
Stability	≤ ± 0.5 % Full Scale for 1 year, non accumulating
Power supply	10 Vdc to 30 Vdc 14 Vdc to 30 Vdc for 0 Vdc to 10 Vdc output
Load limitations	≤ (VPower–10)/0.020 Amp for 4 mA to 20 mA ≥ 10000 Ω for 0 Vdc to 10 Vdc, 3-wire ≥ 5000 Ω for 1 Vdc to 5 Vdc, 3-wire
Wetted materials	316 stainless steel for vacuum through 300 psi; 17-4PH stainless steel sensing diaphragm and 316 stainless steel pressure connection for higher ranges
Housing materials	316 stainless steel
Temperature ranges	Compensated 32 °F to 175 °F/0 °C to 80 °C Effect ± 0.02 %/°F for zero and span Storage - 40 °F to 212 ° F/-40 °C to 100 °C Medium - 22 °F to 212 °F/-30 °C to 100 °C Ambient - 22 °F to 175 °F/-30 °C to 80 °C
Response time	≤ 5 ms (between 10 % to 90 % Full Scale)
Pressure cycle limit	150 Hz
Durability	> 100,000,000 full scale cycles
Environmental protection	NEMA 4X, IP65 (IEC 529)
Electromagnetic rating	CE compliant to EMC norm EN61326: 1997/A1: 1998 RFI, EMI and ESD protection
Electrical protection	Reverse polarity, overvoltage and short circuit protection
Shock	Less than ± 0.05 % Full Scale effect for 600 g's @ 20 ms on any axis
Vibration	Less than ± 0.01 % Full Scale effect for 15 g's @ 15 Hz to 2000 Hz on any axis
Weight	Approximately 3.5 oz.

ORDERING INFORMATION

SERIES 600

PRESSURE RANGES	-30 inHg to 0 psig	**30V**	0 psig to 150 psig	**150**	0 psig to 750 psig	**750**	0 psig to 5000 psig	**5000**	0 psia to 15 psia	**15A**
	0 psig to 15 psig	**15**	0 psig to 200 psig	**200**	0 psig to 1000 psig	**1000**	0 psig to 6000 psig	**6000**	0 psia to 30 psia	**30A**
	0 psig to 30 psig	**30**	0 psig to 300 psig	**300**	0 psig to 1500 psig	**1500**	0 psig to 7500 psig	**7500**	0 psia to 60 psia	**60A**
	0 psig to 60 psig	**60**	0 psig to 500 psig	**500**	0 psig to 2000 psig	**2000**	0 psig to 10000 psig	**10000**	0 psia to 100 psia	**100A**
	0 psig to 100 psig	**100**	0 psig to 600 psig	**600**	0 psig to 3000 psig	**3000**	0 psig to 15000 psig	**15000**	0 psia to 150 psia	**150A**

psig = Gauge Pressure psia= Absolute Pressure Other ranges available on special request

ACCURACY	**1** ± 0.5 % Full Scale (Best fit straight line)			
OUTPUT SIGNALS	**1** 4 mA to 20 mA, 2-wire	**3** 1 Vdc to 5 Vdc, 3-wire	**4** 1 Vdc to 6 Vdc, 3-wire	**5** 0 Vdc to 10 Vdc, 3-wire
PROCESS CONNECTIONS	**1** 1/8 ″ NPT male*	**2** 1/4 ″ NPT male	*Not available on pressure ranges less than 60 psi	
ELECTRICAL CONNECTIONS	**1** 36 ″ cable (connected to option 8) **36** 36 ″ Integral Cable	**8** Hirschmann w/mating connector	**14** Hirschmann type with 1/2 ″ NPT female conduit connection	
OPTIONS	**ORF** SS Threaded Orifice			

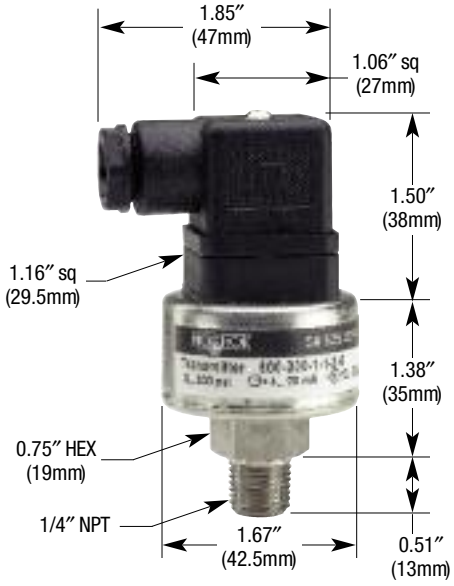
Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

EXAMPLE **600 – 1000 – 1 – 1 – 2 – 8 – ORF**

Series 600
Pressure Range . . . . . .1000 psig
Accuracy . . . . . .± 0.5 %
Output Signal . . . . . .4 mA to 20 mA, 2-Wire
Process Connection . . . . . .1/4 ″ NPT Male
Electrical Connection . . . . . .Hirschmann
Option . . . . . .Orifice

Outline Dimensions

36″ Integral cable



Hirschmann

2-WIRE WIRING

Wiring	Cable	Hirschmann
+ Supply	Brown (or Red)	1
+ Output	Green (or Black)	2

3-WIRE WIRING

Wiring	Cable	Hirschmann
+ Supply	Brown (or Red)	1
Common	Green (or Black)	2
+ Output	White	3

Hall Effect Pressure Transducers

SERIES 630

HALL EFFECT PRESSURE TRANSDUCERS

The NOSHOK 630 pressure transducer is designed to provide excellent performance and reliability at an economical price. This transducer uses a proven diaphragm capsule with an attached highly stable ceramic magnet that is magnetically coupled to a Hall Effect sensing device.

Because it does not use links, levers or any other similar techniques, the nearly frictionless transduction method provides exceptional repeatability, long service life and high reliability. As are all NOSHOK transducers, the 630 is CE compliant, providing significant suppression of radio interference and magnetic interference found in most factory environments.

A rigorous inspection is performed on all NOSHOK Series 630 pressure transducers prior to shipment to ensure 100% “out of the box” reliability.

Please consult your local NOSHOK Distributor or NOSHOK for minimum quantity requirements.

FEATURES

- Proven Hall Effect sensor
- Excellent reliability
- Wide variety of pressure ranges, connections and outputs
- Available ratio-metric output
- CE compliant

APPLICATIONS

- OEM equipment
- Pumps and compressors
- Industrial machinery and machine tools
- HVAC systems
- Medical equipment
- Refrigeration systems

SPECIFICATIONS

Output signals	0 Vdc to 5 Vdc, 3-wire; 0 Vdc to 10 Vdc, 3-wire; 1 Vdc to 5 Vdc, 3-wire .5 Vdc to 4.5 Vdc, 3-wire ratio-metric to the power supply
Accuracy	±1 % Full Scale (Best Fit Straight Line) Includes the combined effects of linearity, hysteresis and repeatability
Hysteresis **Repeatability** **Stability**	≤ ±0.4 % Full Scale ≤ ±0.06 % Full Scale ≤ ±0.4 % Full Scale for 1 year, non-accumulating
Pressure ranges	Standard gauge ranges from vacuum through 300 psig
Proof pressure	3 times Full Scale for ranges 0 psi to 2 psi through 0 psi to 100 psi 2 times Full Scale for ranges 0 psi to 150 psi through 0 psi to 300 psi
Power supply	9 Vdc to 30 Vdc for 0 Vdc to 5 Vdc, 3-wire; 1 Vdc to 5 Vdc, 3-wire 12 Vdc to 30 Vdc for 0 Vdc to 10 Vdc, 3-wire 5 Vdc ±10 % for .5 Vdc to 4.5 Vdc, 3-wire ratiometric
Load Limitations	>10,000 Ω for 0 Vdc to 10 Vdc, 3-wire >5,000 Ω for 0 Vdc to 5 Vdc, 3-wire; 1 Vdc to 5 Vdc, 3-wire >4,500 Ω for .5 Vdc to 4.5 Vdc, 3-wire ratiometric
Wetted materials	Nickel-Copper diaphragm (ranges up through 0 psig to 30 psig) and Nickel-Beryllium diaphragm (ranges greater than 0 psig to 30 psig) and Copper alloy body
Housing material	Copper alloy with Polyamid top cap
Temperature ranges	Compensated -4 °F to 176 °F (-20 °C to 80 °C) Zero effect ±0.022 % Full Scale/°F Span effect ±0.011 % Full Scale/°F Ambient -20 °F to 176 °F (-20 °C to 80 °C) Media -20 °F to 176 °F (-20 °C to 80 °C) Storage -40 °F to 212 °F (-40 °C to 100 °C)
Environmental rating	IP67, NEMA 4X according to EN 60529/IEC529
Electromagnetic rating	CE compliant to EMC norm EN61326: 1997/A1:1998 RFI, EMI and ESD protected
Electrical protection	Reverse polarity, over-voltage and short circuit protection
Weight	Approximately 3.5 oz.

ORDERING INFORMATION

SERIES 630C (copper alloy wetted parts)

PRESSURE RANGES	-30 inHg to 0 psig	**30V**	-30 inHg to 200 psig	**30/200**	0 psig to 30 psig	**30**
	-30 inHg to 15 psig	**30/15**	-30 inHg to 300 psig	**30/300**	0 psig to 60 psig	**60**
	-30 inHg to 30 psig	**30/30**	0 psig to 2 psig	**2**	0 psig to 100 psig	**100**
	-30 inHg to 60 psig	**30/60**	0 psig to 5 psig	**5**	0 psig to 150 psig	**150**
	-30 inHg to 100 psig	**30/100**	0 psig to 10 psig	**10**	0 psig to 200 psig	**200**
	-30 inHg to 150 psig	**30/150**	0 psig to 15 psig	**15**	0 psig to 300 psig	**300**

psig = Gauge Pressure Other ranges available on special request

ACCURACY	**1**	±1.0 % Full Scale (Best Fit Straight Line)		**2**	±0.5% Full Scale (Best Fit Straight Line)
OUTPUT	**2**	0 Vdc to 5 Vdc, 3-wire	**5**	0 Vdc to 10 Vdc, 3-wire	**13** . 5 Vdc to 4.5 Vdc ratio-metric to power supply, 3-wire
	3	1 Vdc to 5 Vdc, 3-wire		Other outputs available on special request	
PROCESS CONNECTIONS	**1**	1/8 ″ NPT male	**2**	1/4 ″ NPT male	
ELECTRICAL CONNECTIONS	**1**	36 ″ cable	**25**	M12 x 1 4-pin	
OPTIONS	**ORF**	Threaded Orifice			

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for minimum quantity requirements and delivery information.

EXAMPLE **630C – 300 – 1 – 2 – 2 – 25 – ORF**

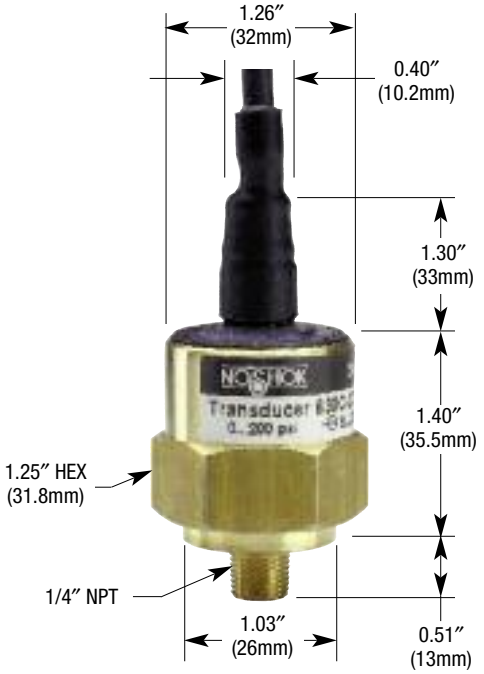
Series 630C
Pressure Range . . . . . .0 psig to 300 psig
Accuracy . . . . . .± 1.0 % Full Scale
Output Signal . . . . . .0 Vdc to 5 Vdc
Process Connection . . . . . .1/4 ″ NPT Male
Electrical Connection . . . . . .M12 x 1
Option . . . . . .Orifice

Outline Dimensions

M12 X 1

3-WIRE WIRING

Wire	M12	Cable
+ Supply	1	Brown
Common	3	Blue
+ Output	4	Black



36” Integral Cable

High Volume OEM Pressure Transducers

SERIES 650

HIGH PERFORMANCE HIGH VOLUME OEM PRESSURE TRANSDUCERS

NOSHOK Series 650 pressure transducers combine high performance with off road vehicle reliability under severe process and environmental conditions. The all welded pressure sensor is located in the pressure connection low enough to prevent damage due to physical abuse. These transducers are designed with high overpressure capability to provide reliability and long life in hydraulic and pneumatic applications containing severe process pulsations and high vibration. The sensor utilizes sputtered thin film strain gage technology that provides stainless steel media capability and long term measurement stability. All of this in a small package that is more easily designed into applications than conventional transducers. The pressure chamber is all stainless steel and welded for reliable and trouble-free performance in high shock and vibration conditions often found in off road applications. Variations in pressure connections, outputs and electrical connections are available and custom configurations are possible for volume applications.

Due to a high degree of automation used to produce these OEM pressure transducers, this product is intended for a large commitment.

Please consult your local NOSHOK Distributor or NOSHOK for minimum quantity requirements.

FEATURES

- Welded stainless steel pressure chamber
- Advanced diffused semi-conductor and sputtered thin film sensor for maximum stability
- Designed to handle pressure spikes and process pulsation
- Off road capable due to high vibration and shock resistance
- CE compliant to suppress RFI, EMI and ESD

APPLICATIONS

- Hydraulic and pneumatic systems
- Off road vehicles
- Refrigeration controls
- Industrial machinery and machine tools
- Pumps and compressors

SPECIFICATIONS

Output signal	4 mA to 20 mA 2-wire, or 1 Vdc to 5 Vdc 3-wire
Pressure ranges	Standard gauge ranges from 100 psig to 8000 psig
Proof pressure	2 times Full Scale
Burst pressure	8 times Full Scale for ranges 0 psi to 100 psi through 0 psi to 1500 psi 4 times Full Scale for ranges 0 psi to 2000 psi through 0 psi to 8000 psi
Accuracy	±0.50 % Full Scale (Best Fit Straight Line) Includes the combined effects of linearity, hysteresis and repeatability
Repeatability	±0.1 % Full Scale
Stability	±.2 % Full Scale for 1 year, non-accumulating
Response time	<5 ms (between 10 % and 90 % Full Scale); restrictor port I.D. to dampen pulsations
Power supply	10 Vdc to 36 Vdc for 4 mA to 20 mA output and 1 Vdc to 5 Vdc outputs; 14 Vdc to 36 Vdc for 0 Vdc to 10 Vdc output; 5 Vdc ±.5 Vdc for .5 Vdc to 4.5 Vdc output
Load limitations	≤ (VPower -10)/0.020 Amp for 4 mA to 20 mA output >5.000 Ω for 1 Vdc to 5 Vdc output >10,000 Ω for 0 Vdc to 10 Vdc output >4,500 Ω for 0.5 Vdc to 4.5 Vdc output
Wetted materials	17-4PH stainless steel sensing diaphragm and 316 stainless steel pressure connection
Housing material	PBT - fiber reinforced plastic
Temperature ranges	Compensated 32 °F to 176 °F (0 °C to 80 °C) Zero effect ±0.008 % Full Scale/°F Span effect ±0.008 % Full Scale/°F Ambient -40 °F to 212 °F (-40 °C to 100 °C) Media -40 °F to 257 °F (-40 °C to 125 °C) Storage -40 °F to 248 °F (-40 °C to 120 °C)
Environmental rating	IP67 for M12x1 electrical connection and Metri Pack connection; IP69K (steam jet cleaning) for cable connection
Electromagnetic rating	CE compliant to EMC norm EN 61326:1997/A1:1998 RFI, EMI and ESD protection
Electrical protection	Reverse polarity, over-voltage and short circuit protection
Shock	500 g's per DIN EN 837
Vibration	20 g's per IEC 68-2
Weight	Approximately 2.5 oz.

ORDERING INFORMATION

SERIES 650											
PRESSURE RANGES	0 psig to 100 psig	**100**	0 psig to 300 psig	**300**	0 psig to 600 psig	**600**	0 psig to 1500 psig	**1500**	0 psig to 5000 psig	**5000**	
	0 psig to 150 psig	**150**	0 psig to 400 psig	**400**	0 psig to 750 psig	**750**	0 psig to 2000 psig	**2000**	0 psig to 8000 psig	**8000**	
	0 psig to 200 psig	**200**	0 psig to 500 psig	**500**	0 psig to 1000 psig	**1000**	0 psig to 3000 psig	**3000**			
	psig = Gauge Pressure		Other ranges available on special request								
ACCURACY	**1** ±0.5 % Full Scale (Best Fit Straight Line)										
OUTPUT SIGNALS	**1** 4 mA to 20 mA, 3-wire		**3** 1 Vdc to 5 Vdc, 3-wire		**5** 0 Vdc to 10 Vdc, 3-wire		**13** .5 Vdc to 4.5 Vdc ratio-metric, 3-wire				
PROCESS CONNECTIONS	**2** 1/4 ″ NPT male		**45** 7/16 ″-20 UNF #4 SAE J 514 male		**10** G1/4B Male		**24** 7/16-20 2B Schrader		**35** 7/16-20 SAE with 45° flare		
ELECTRICAL CONNECTIONS	**39** 36″ Integral cable IP69K		**25** M12 x 1 4-pin		**34** Metri Pack 150 series		**36** 36″ Integral cable IP67		**45** AMP Superseal 1.5		**46** Deutsch 3 pin DT04-3P

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for minimum quantity requirements and delivery information.

EXAMPLE **650 – 500 – 1 – 1 – 2 – 25**

Series 650
Pressure Range . . . . . .0 psig to 500 psig
Accuracy . . . . . .±0.5 % Full Scale
Output Signal . . . . . .4 mA to 20 mA
Process Connection . . . . . .1/4 ″ NPT Male
Electrical Connection . . . . . .M12 x 1

Outline Dimensions

2-WIRE WIRING

Wiring	Cable	M12	Metripac	AMP Superseal	Deutsch DT04-3P
+ Supply	Brown	1	B	3	A
+ Output	Green	3	A	1	B

3-WIRE WIRING

Wiring	Cable	M12	Metripac	AMP Superseal	Deutsch DT04-3P
+ Supply	Brown	1	B	3	A
Common	Green	3	A	1	B
+ Output	White	4	C	2	C

Thick Film Pressure Transducers

SERIES 680

HIGH PERFORMANCE THICK FILM PRESSURE TRANSDUCERS

The NOSHOK Series 680 pressure transducer provides an unbeatable level of performance at a competitive price. Using the proven reliability and stability of ceramic thick film strain gage technology, this transducer offers a broad array of choices for the OEM and user alike. The sensing element is a high purity ceramic diaphragm which together with either copper alloy or stainless steel pressure connection and appropriate seal form a corrosive resistant pressure chamber. Several output signal choices and either an M12x1 or Mini-Hirschmann (DIN 43650C) electrical connection complete the package.

A rigorous inspection is performed on all NOSHOK pressure transducers after final assembly and prior to shipment to ensure 100% “out of the box” reliability.

Please consult your local NOSHOK Distributor or NOSHOK for minimum quantity requirements.

FEATURES

- Proven ceramic thick film strain gage sensor
- Maximum reliability
- Wide variety of pressure ranges, connections and outputs
- Cost effective for volume applications
- CE compliant

APPLICATIONS

- OEM applications
- Pumps and compressors
- Industrial machinery and machine tools
- HVAC systems
- Medical applications
- Refrigeration systems

SPECIFICATIONS

Output signal	4 mA to 20 mA, 2 wire; .1 Vdc to 10 Vdc, 3 wire; .1 Vdc to 5 Vdc, 3 wire; .5 Vdc to 4.5 Vdc, 3 wire ratio-metric to power supply
Pressure ranges	Standard gauge ranges from vacuum through 1500 psig
Proof pressure	2 times Full Scale
Burst pressure	2.5 times Full Scale
Accuracy	±0.5 % Full Scale (Best Fit Straight Line)
Response time	< 5 ms (between 10 % and 90 % Full Scale)
Repeatability	≤ ±0.1 % Full Scale
Stability	≤ ±.3 % Full Scale for 1 year, non-accumulating
Power supply	8 Vdc to 30 Vdc for 4 mA to 20 mA, 2-wire and .1 Vdc to 5 Vdc, 3 wire output signals;14 Vdc to 30 Vdc for .1 Vdc to 10 Vdc, 3-wire output; 5 Vdc ±10% for .5 Vdc to 4.5 Vdc, 3-wire ratio-metric output
Load limitations	≤ (VPower -10)/0.020 Amp for 4 mA to 20 mA output >5.000 Ω for 1 Vdc to 5 Vdc output >10,000 Ω for 0 Vdc to 10 Vdc output >4,500 Ω for 0.5 Vdc to 4.5 Vdc output
Wetted materials	Ceramic diaphragm, copper alloy or 316 stainless steel body and Buna N seal (EPDM or Viton® available)
Housing material	Copper alloy or stainless steel dependent upon wetted materials
Temperature ranges	Compensated 32 °F to 176 °F (0 °C to 80 °C) Zero effect ±0.022 % Full Scale/°F Span effect ±0.011 % Full Scale/°F Ambient -13 °F to 185 °F (-25 °C to 85 °C) Media -13 °F to 185 °F (-25 °C to 85 °C) Storage -40 °F to 212 °F (-40 °C to 100 °C)
Environmental rating	Nema 4 IP65 according to EN 60529/IEC 529
Electromagnetic rating	CE compliant to EMC norm EN 61326:1997/A1:1998 RFI, EMI and ESD protection
Electrical protection	Reverse polarity, over-voltage and short circuit protection
Weight	Approximately 4 oz.

ORDERING INFORMATION

SERIES 680C Copper alloy	**SERIES 680S** Stainless steel						
PRESSURE RANGES	0 psig to 30 psig	**30**	0 psig to 150 psig	**150**	0 psig to 750 psig	**750**	
	0 psig to 50 psig	**50**	0 psig to 250 psig	**250**	0 psig to 1000 psig	**1000**	
	0 psig to 100 psig	**100**	0 psig to 500 psig	**500**	0 psig to 1500 psig	**1500**	
	psig = Gauge Pressure		Other ranges available on special request				
ACCURACY	**1** ±0.5 % Full Scale (Best Fit Straight Line)						
OUTPUT SIGNALS	**1** 4 mA to 20 mA, 2-wire	**13** .5 Vdc to 4.5 Vdc ratio-metric, 3-wire	**27** .1 Vdc to 10 Vdc, 3-wire	**28** .1 Vdc to 5 Vdc, 3-wire			
PROCESS CONNECTIONS	**1** 1/8 ″ NPT male	**2** 1/4 ″ NPT male					
ELECTRICAL CONNECTIONS	**1** 36 ″ cable (connected to option 7)	**7** Mini-Hirschmann (DIN 43650C with mating connector)	**25** M12 x 1 4-pin	**36** 36″ Integral cable			
OPTIONS	**ORF** Threaded Orifice						

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for minimum quantity requirements and delivery information.

EXAMPLE

680C – 500 – 1 – 1 – 2 – 25 – ORF

Series 680C
Pressure Range . . . . . 0 psig to 500 psig
Accuracy . . . . . ±0.5 % Full Scale
Output Signal . . . . . 4 mA to 20 mA
Process Connection . . . . . 1/4 ″ NPT Male
Electrical Connection . . . . . M12 X 1
Option . . . . . Orifice

Outline Dimensions

36″ Integral cable

M12 X 1

Mini-Hirschmann

2-WIRE WIRING

Wiring	M12	Mini-Hirschmann	Cable
+ Supply	1	1	Red
+ Output	3	2	Black

3-WIRE WIRING

Wiring	M12	Mini-Hirschmann	Cable
+ Supply	1	1	Red
Common	3	2	Black
+ Output	4	3	White

Explosion-Proof Pressure Transducers

APPROVED C US

SERIES 621/622

HAZARDOUS ENVIRONMENT APPROVED PRESSURE TRANSMITTERS

The NOSHOK Series 621 and 622 pressure transmitters combine the reliability and long life of diffused semiconductor and sputtered thin film strain gage sensors with safe electronics for outstanding performance and value. These transmitters were designed for applications that require pressure measurement in hazardous environments. All wetted parts are made of stainless steel and Elgiloy welded with no internal O-rings, gaskets or seals.

These transmitters are available with a wide variety of pressure ranges to suit most applications. All units undergo extensive testing during the manufacturing process to ensure that the highest performance is achieved in the demanding environments found in today's applications. The transmitters are available with a standard threaded connection as well as a flush diaphragm configuration and are Factory Mutual approved. All models incorporate significant levels of RFI, EMI and ESD protection.

FEATURES

- Accuracy to ±0.25 % Full Scale (Best Fit Straight Line)
- Advanced diffused semiconductor and sputtered thin film sensor for maximum stability
- Welded 316 stainless steel, and Elgiloy
- 1/2″ NPT conduit connection
- NACE MR-01-75 compliant
- Low power voltage outputs available

APPLICATIONS

- Hydraulic and pneumatic systems
- Pumps and compressors
- Test equipment and systems
- HVAC systems
- Power generation
- Water and wastewater
- Refrigeration equipment
- Laboratory and test equipment
- Chemical/Petrochemical
- Marine
- Pipeline gas compressors
- Oil field
- Offshore

SPECIFICATIONS

Output signals	4 mA to 20 mA, 2-wire; 1 Vdc to 5 Vdc, 3-wire; .5 Vdc to 4.5 Vdc, 3-wire
Accuracy	±0.25 % Full Scale (Best Fit Straight Line), including the effects of linearity, hysteresis and repeatability
Hysteresis	≤ ±0.1 % Full Scale
Repeatability	≤ ±0.05 % Full Scale
Stability	≤ ±0.2 % Full Scale for 1 year, non-accumulating
Pressure ranges	Standard ranges from vacuum to 15000 psi
Proof pressure	3 times Full Scale for ranges 0 psi to 15 psi through 0 psi to 200 psi 1.75 times Full Scale for ranges 0 psi to 300 psi through 0 psi to 10000 psi 1.5 times Full Scale for 0 psi to 15000 psi range
Burst pressure	3.8 times Full Scale for ranges 0 psi to 15 psi through 0 psi to 200 psi 4 times Full Scale for ranges 0 psi to 300 psi through 0 psi to 10000 psi 3 times Full Scale for 0 psi to 15000 psi range
Power supply	10 Vdc to 30 Vdc unregulated, for 4 mA to 20 mA output, 6 Vdc to 30 Vdc for 1 Vdc to 5 Vdc low power and .5 Vdc to 4.5 Vdc low power (≤ 2 mA for Power Supply ≤ 12 Vdc) output
Load limitations	≤ (VPower–10)/0.020 Amp for 4 mA to 20 mA ≥ 10,000 Ω for 1 Vdc to 5 Vdc, 3-wire
Zero/Span offset	≤ 0.5 % Full Scale
Response time	≤1 ms (between 10 % and 90 % Full Scale)
Durability	>100,000,000 Full Scale cycles
Temperature ranges	Compensated 32 °F to 176 °F (0 °C to 80 °C) Zero effect is ±0.011 % Full Scale/°F Span effect is ±0.011 % Full Scale/°F Ambient -22 °F to 212 °F (-30 °C to 100 °C); -46 °F to 220 °F optional Media –25 °F to 212 °F (-32 °C to 100 °C); -46 °F to 220 °F optional Storage –40 °F to 212 °F (-40 °C to 100 °C)
Wetted materials	Model 621 is 316 stainless steel for ranges up through 0 psi to 300 psi, 316 stainless steel with Elgiloy ranges 0 psig to 500 psig and higher; Model 622 is 316 stainless steel with BUNA N O-ring; (Viton® O-ring optional)
Housing material	316 stainless steel
Environmental rating	NEMA 4x (IP67)
Electromagnetic rating	RFI, EMI and ESD protection
Electrical rating	Reverse polarity, over-voltage and short circuit protected
Shock	1000 g's according to IEC 770 for mechanical shock
Vibration	20 g's according to IEC 770 under resonance conditions
Hazardous approvals	Factory mutual and CSA approved Explosion-proof with entity approve for: Class I, Division 1, Groups A, B, C and D Dust Ignition-proof with entity approval for class II/III, Division 1, Groups E, F and G Maximum electrical ratings 30V, 20 mA
Weight	Approximately 12 oz.

ORDERING INFORMATION

Series 621 Stainless steel threaded connection **Series 622S** 316 stainless steel flush diaphragm **Series 622H** Hastalloy C flush diaphragm

PRESSURE RANGES	-30 inHg to 0 psig	**30V**	0 psig to 30 psig	**30**	0 psig to 500 psig	**500**	0 psig to 5000 psig	**5000**
	-30 inHg to 30 psig	**30/30**	0 psig to 60 psig	**60**	0 psig to 1000 psig	**1000**	0 psig to 8000 psig	**8000**
	-30 inHg to 60 psig	**30/60**	0 psig to 100 psig	**100**	0 psig to 1500 psig	**1500**	0 psig to 10000 psig	**10000**
	-30 inHg to 100 psig	**30/100**	0 psig to 200 psig	**200**	0 psig to 2000 psig	**2000**	0 psig to 15000 psig	**15000**
	0 psig to 15 psig	**15**	0 psig to 300 psig	**300**	0 psig to 3000 psig	**3000**	0 psia to 15 psia	**15A**
	psig = Gauge Pressure		psia = Absolute Pressure		Other ranges available on special request		0 psia to 100 psia	**100A**

NOTE: Series 622 is available for pressure ranges up to 0 psig to 8000 psig

ACCURACY	**1** ±0.25 % Full Scale (Best Fit Straight Line)	
OUTPUT SIGNALS	**1** 4 mA to 20 mA, 2-wire	**3** 1 Vdc to 5 Vdc, 3-wire, Low Power **31** .5 Vdc to 4.5 Vdc 3-wire, Low Power
PROCESS CONNECTIONS	**2** 1/4 ″ NPT male **11** G1/2B male flush (model 622 only) (pressure ranges 0 psi to 30 psi and higher)	**8** 1/2 ″ NPT male **13** G1B male flush (model 622 only) (pressure ranges less than 0 psi to 30 psi)
ELECTRICAL CONNECTIONS	**6** 1/2 ″ NPT male conduit with 6 foot integral cable	**37** 1/2 ″ NPT male conduit with 6 foot flying leads with epoxy seal
OPTIONS	**ORF** Threaded Orifice (model 621 only)	

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

EXAMPLE

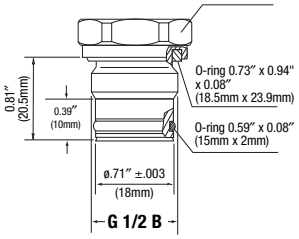
621 – 500 – 1 – 1 – 8 – 6 – ORF

Series 621
Pressure Range . . . . . .0 psig to 500 psig
Accuracy . . . . . .±0.25 % Full Scale
Output Signal . . . . . .4 mA to 20 mA
Process Connection . . . . . .1/2 ″ NPT male
Electrical Connection . . . . . .Integral cable
Option . . . . . .Threaded orifice

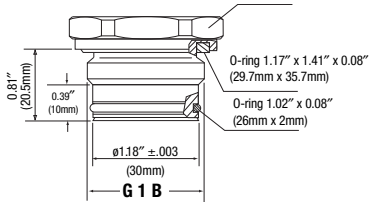
Outline Dimensions

Front flush process connections

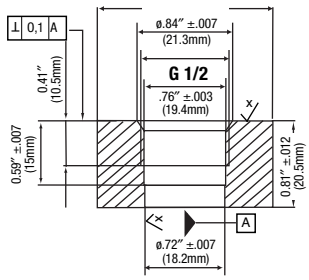
For ranges 0 psi to 30 psi and higher

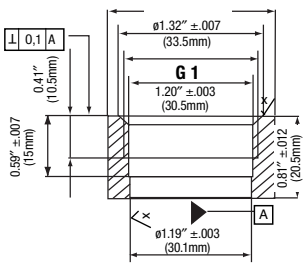


For ranges less than 0 psi to 30 psi



Flush corresponding port weld-on adapters





2-WIRE WIRING

+ Supply	Red
+ Output	Black

3-WIRE WIRING

+ Supply	Red
Common	Black
+ Output	Brown

Non-Incendive Pressure Transducers

FM APPROVED C SA US

SERIES 623/624

HAZARDOUS ENVIRONMENT APPROVED PRESSURE TRANSMITTERS

The NOSHOK Series 623 and 624 pressure transmitters combine the reliability and long life of diffused semiconductor and sputtered thin film strain gage sensors with safe electronics for outstanding performance and value. These transmitters were designed for applications that require pressure measurement in hazardous environments. The pressure chamber is welded with no internal O-rings, gaskets or seals.

These transmitters are available with a wide variety of pressure ranges to suit most applications. All units undergo extensive testing during the manufacturing process to ensure that the highest performance is achieved in the demanding environments found in today's applications. The transmitters are available with a standard threaded connection as well as a flush diaphragm configuration and are Factory Mutual and Canadian Standards Association approved. All models incorporate significant levels of RFI, EMI and ESD protection.

FEATURES

- Accuracy to ±0.25 % Full Scale (Best Fit Straight Line)
- Advanced diffused semi-conductor and sputtered thin film sensor for maximum stability
- Welded 316 stainless steel, optional Hastelloy C4 on flush diaphragm model
- 1/2 ″ NPT conduit connection
- Low power voltage outputs available
- NACE MR-01-75 compliant
- Zener barriers are not required to meet non-Incendive approval

APPLICATIONS

- Hydraulic and pneumatic systems
- Pumps and compressors
- Test equipment and systems
- HVAC systems
- Power generation
- Water and wastewater
- Refrigeration equipment
- Laboratory and test equipment
- Chemical/Petrochemical
- Marine
- Pipeline gas compressors
- Oil field
- Offshore

SPECIFICATIONS

Output signals	4 mA to 20 mA, 2-wire; 1 Vdc to 5 Vdc low power, 3-wire; .5 Vdc to 4.5 Vdc low power, 3-wire
Accuracy	±0.25 % Full Scale (Best Fit Straight Line), including the effects of linearity, hysteresis and repeatability
Hysteresis	≤ ±0.1 % Full Scale
Repeatability	≤ ±0.05 % Full Scale
Stability	≤ ±0.2 % Full Scale for 1 year, non-accumulating
Pressure ranges	Standard ranges from vacuum to 15000 psi
Proof pressure	3 times Full Scale for ranges 0 psi to 15 psi through 0 psi to 200 psi 1.75 times Full Scale for ranges 0 psi to 300 psi through 0 psi to 10000 psi 1.5 times Full Scale for 0 psi to 15000 psi range
Burst pressure	3.8 times Full Scale for ranges 0 psi to 15 psi through 0 psi to 200 psi 4 times Full Scale for ranges 0 psi to 300 psi through 0 psi to 10000 psi 3 times Full Scale for 0 psi to 15000 psi range
Power supply	10 Vdc to 30 Vdc unregulated for 4 mA to 20 mA; 6 Vdc to 30 Vdc for 1 Vdc to 5 Vdc, and .5 Vdc to 4.5 Vdc output
Load limitations	≤ (VPower –10)/0.020 Amp for 4 mA to 20 mA ≥ 10,000 Ω for 1 Vdc to 5 Vdc, 3-wire
Power consumption	20 mA maximum for 4 mA to 20 mA output and 2 mA for 1 Vdc to 5 Vdc and .5 Vdc to 4.5 Vdc outputs with power supply ≤12 Vdc
Response time	≤1 ms (between 10 % and 90 % Full Scale)
Durability	>100,000,000 Full Scale cycles
Temperature ranges	Compensated 32 °F to 176 °F (0 °C to 80 °C) Zero effect is ±0.011 % Full Scale/°F within compensated range Span effect is ±0.011 % Full Scale/°F within compensated range Ambient -22 °F to 212 °F (-30 °C to 100 °C); -46 °F to 220 °F optional Media –25 °F to 212 °F (-32 °C to 100 °C); -46 °F to 220 °F optional Storage –40 °F to 212 °F (-40 °C to 100 °C)
Wetted materials	Model 623 is 316 stainless steel for ranges up through 0 psi to 300 psi, 316 stainless steel and Elgiloy for ranges 0 psig to 500 psig and higher; Model 624 is 316 stainless steel with BUNA N O-ring; Viton® O-ring optional
Housing material	316 stainless steel
Environmental rating	NEMA 4x, IP65 to IP67 dependent upon electrical connection
Electromagnetic Rating	RFI, EMI and ESD protection
Electrical rating	Reverse polarity, over-voltage and short circuit protected
Shock	1000 g's according to IEC 770 for mechanical shock
Vibration	20 g's according to IEC 770 under resonance conditions
Hazardous approvals	Factory Mutual and Canadian Standards Association approved Non Incendive with entity approval for: Class I, Division 2, Groups A, B, C and D; Class II and III, Division 1, Groups E, F and G Maximum ratings 30 Vdc, 20 mA
Weight	Approximately 12 oz.

ORDERING INFORMATION

Series 623 Stainless steel threaded connection **Series 624S** 316 stainless steel flush diaphragm **Series 624H** Hastelloy flush diaphragm

PRESSURE RANGES	-30 inHg to 0 psig	**30V**	0 psig to 30 psig	**30**	0 psig to 500 psig	**500**	0 psig to 5000 psig	**5000**
	-30 inHg to 30 psig	**30/30**	0 psig to 60 psig	**60**	0 psig to 1000 psig	**1000**	0 psig to 8000 psig	**8000**
	-30 inHg to 60 psig	**30/60**	0 psig to 100 psig	**100**	0 psig to 1500 psig	**1500**	0 psig to 10000 psig	**10000**
	-30 inHg to 100 psig	**30/100**	0 psig to 200 psig	**200**	0 psig to 2000 psig	**2000**	0 psig to 15000 psig	**15000**
	0 psig to 15 psig	**15**	0 psig to 300 psig	**300**	0 psig to 3000 psig	**3000**	0 psia to 15 psia	**15A**
	psig = Gauge Pressure		psia = Absolute Pressure		Other ranges available on special request		0 psia to 100 psia	**100A**
	NOTE: Series 624 is available for pressure ranges up to 0 psig to 8000 psig							

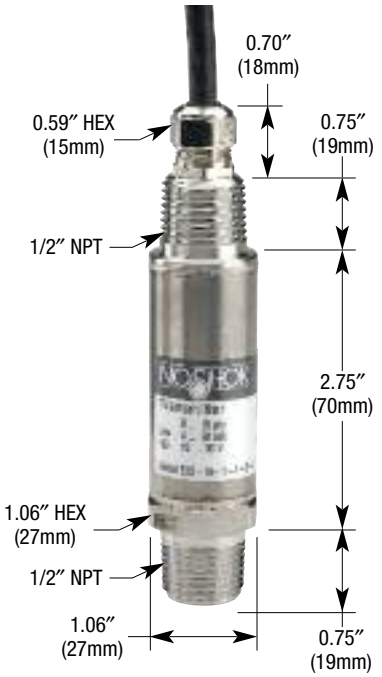
ACCURACY	**1** ±0.25 % Full Scale (Best Fit Straight Line)		
OUTPUT SIGNALS	**1** 4 mA to 20 mA, 2-wire	**3** 1 Vdc to 5 Vdc, 3-wire Low Power	**31** .5 Vdc to 4.5 Vdc, 3-wire Low Power
PROCESS CONNECTIONS	**2** 1/4 ″ NPT male **11** G1/2B male flush (model 624 only) (pressure ranges 0 psi to 30 psi and higher)		**8** 1/2 ″ NPT male **13** G1B male flush (model 624 only) (pressure ranges less than 0 psi to 30 psi)
ELECTRICAL CONNECTIONS	**6** 1/2 ″ NPT male conduit with 5 foot integral cable		
OPTIONS	**ORF** Threaded Orifice (model 623 only)		

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

EXAMPLE **623 – 500 – 1 – 1 – 8 – 6 – ORF**

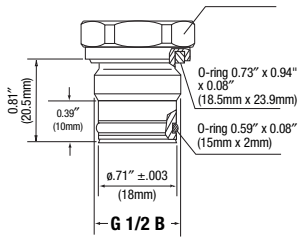
Series 623
Pressure Range . . . . . .0 psig to 500 psig
Accuracy . . . . . .±0.25 % Full Scale
Output Signal . . . . . .4 mA to 20 mA
Process Connection . . . . . .1/2 ″ NPT male
Electrical Connection . . . . . .Integral cable
Option . . . . . .Threaded orifice

Outline Dimensions

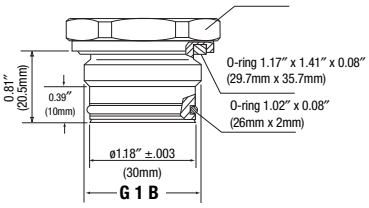


Front flush process connections

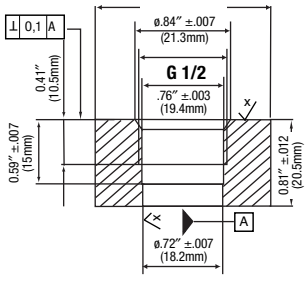
For ranges 0 psi to 30 psi and higher

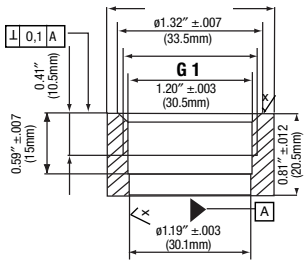


For ranges less than 0 psi to 30 psi



Flush corresponding port weld-on adapters





2-WIRE WIRING

+ Supply	Brown
+ Output	Green

3-WIRE WIRING

+ Supply	Brown
Common	Green
+ Output	White

Intrinsically Safe Pressure Transmitters

APPROVED C US

SERIES 625/626

HAZARDOUS ENVIRONMENT APPROVED PRESSURE TRANSMITTERS

The NOSHOK Series 625 and 626 pressure transmitters combine the reliability and long life of diffused semiconductor and sputtered thin film strain gage sensors with safe electronics for outstanding performance and value. These transmitters were designed for applications that require pressure measurement in hazardous environments. All wetted parts are made of stainless steel (Hastelloy® C4 optional on front flush model), welded with no internal O-rings, gaskets or seals.

These transmitters are available with a wide variety of pressure connections, ranges and electrical connections to suit most applications. All units undergo extensive testing during the manufacturing process to ensure that the highest performance is achieved in the demanding environments found in today's applications. The transmitters are available with standard threaded connections as well as flush diaphragm configurations and are Factory Mutual and Canadian Standards Association approved. All models incorporate significant levels of RFI, EMI and ESD protection.

FEATURES

- Accuracy to ±0.125 % Full Scale (Best Fit Straight Line)
- Advanced diffused semi-conductor and sputtered thin film sensor for maximum stability
- Welded 316 stainless steel, optional Hastelloy C4 on flush diaphragm model
- 1/2 ″ NPT conduit connection
- Entity approved for use with all approved zener barriers where required

APPLICATIONS

- Hydraulic and pneumatic systems
- Pumps and compressors
- Test equipment and systems
- HVAC systems
- Power generation
- Water and wastewater
- Refrigeration equipment
- Laboratory and test equipment
- Chemical/Petrochemical
- Marine
- Pipeline gas compressors
- Oil field
- Offshore

NOSHOK Model 625 and 626 transmitters are approved for use in hazardous location applications as follows:
Intrinsically Safe, entity approval for Class I, II and III, Division 1, Groups A, B, C, D, E, F and G; and Class I, Zone 0 Aex ia IIC
Dust Ignition-proof for Class II and III, Division 1, Groups E, F and G
Non incendive for Class I, Division 2, Groups A, B, C and D
FMRC 3600, 3610, 3611, 3810 (including supplement #1), ISA-S12.0. 01, IEC 60529 (including amendment #1)

SPECIFICATIONS

Output signal	4 mA to 20 mA, 2-wire
Accuracy	±0.25 % Full Scale (Best Fit Straight Line), including the effects of linearity, hysteresis and repeatability ±0.125 % Full Scale accuracy optional
Hysteresis	≤ ±0.1 % Full Scale
Repeatability	≤ ±0.05 % Full Scale
Stability	≤ ±0.2 % Full Scale for 1 year, non-accumulating
Pressure ranges	Standard ranges from vacuum to 60000 psi
Proof pressure	3.5 times Full Scale for ranges 0 psi to 5 psi through 0 psi to 200 psi 2 times Full Scale for ranges 0 psi to 300 psi through 0 psi to 10000 psi 1.5 times Full Scale for 0 psi to 15000 psi range 1.2 times Full Scale for ranges 0 psi to 25000 psi and 0 psi to 60000 psi
Burst pressure	4 times Full Scale for ranges 0 psi to 5 psi through 0 psi to 200 psi 4 times Full Scale for ranges 0 psi to 300 psi through 0 psi to 10000 psi 3 times Full Scale for 0 psi to 15000 psi range 2 times Full Scale for ranges 0 psi to 25000 psi and 0 psi to 60000 psi
Power supply	10 Vdc to 30 Vdc unregulated Minimum voltage across transmitter connections is 10 Vdc
Load limitations	≤ (VPower–10)/0.020 Amp
Response time	≤ 1 ms (between 10 % and 90 % Full Scale)
Durability	> 100,000,000 Full Scale cycles
Adjustment	± 10 % Full Scale for zero and span
Temperature ranges	Compensated 32 °F to 176 °F (0 °C to 80 °C) Zero effect is ±0.011 % Full Scale/°F Span effect is ±0.011 % Full Scale/°F Ambient -22 °F to 212 °F (-30 °C to 100 °C); -58 °F to 220 °F optional Media –25 °F to 212 °F (-32 °C to 100 °C); -58 °F to 220 °F optional Storage –40 °F to 212 °F (-40 °C to 100 °C)
Wetted materials	Model 625 is 316 stainless steel for ranges up through 0 psi to 300 psi, 316 stainless steel with 17-4PH stainless steel diaphragm for ranges 0 psi to 300 psi and higher: Model 626 is 316 stainless steel with BUNA N O-ring; Hastelloy® C4 optional; Viton® O-ring optional
Housing material	316 stainless steel
Environmental rating	IP65 to IP67 depending upon electrical connection
Electromagnetic rating	Meets EMC norm EN61326: 1997/A1 1998 RFI, EMI and ESD protected
Electrical rating	Reverse polarity, over-voltage and short circuit protected
Shock	1000 g's according to IEC770 for mechanical shock
Vibration	20 g's according to IEC770 under resonance conditions
Hazardous approvals	Factory Mutual and Canadian Standards Association approved as indicated
Weight	Approximately 7 oz.

ORDERING INFORMATION

SERIES 625 Stainless steel threaded connection **Series 626S** 316 stainless steel flush diaphragm **Series 626H** Hastelloy flush diaphragm

PRESSURE RANGES												
	0 inH_2O to 50 inH_2O	**50 IN**	0 psig to 2 psig	**2**	0 psig to 200 psig	**200**	0 psig to 5000 psig	**5000**	0 psia to 15 psia	**15A**
	0 inH_2O to 100 inH_2O	**100 IN**	0 psig to 3 psig	**3**	0 psig to 300 psig	**300**	0 psig to 8000 psig	**8000**	0 psia to 30 psia	**30A**
	-30 inHg to 0 psig	**30V**	0 psig to 5 psig	**5**	0 psig to 500 psig	**500**	0 psig to 10000 psig	**10000**	0 psia to 60 psia	**60A**
	-30 inHg to 30 psig	**30/30**	0 psig to 15 psig	**15**	0 psig to 750 psig	**750**	0 psig to 15000 psig	**15000**	0 psia to 100 psia	**100A**
	-30 inHg to 60 psig	**30/60**	0 psig to 30 psig	**30**	0 psig to 1000 psig	**1000**	0 psig to 25000 psig	**25000**	0 psia to 150 psia	**150A**
	-30 inHg to 100 psig	**30/100**	0 psig to 50 psig	**50**	0 psig to 1500 psig	**1500**	0 psig to 40000 psig	**40000**	0 psia to 200 psia	**200A**
	-30 inHg to 150 psig	**30/150**	0 psig to 100 psig	**100**	0 psig to 2000 psig	**2000**	0 psig to 60000 psig	**60000**	0 psito 300 psia	**300A**
	-30 inHg to 200 psig	**30/200**	0 psig to 150 psig	**150**	0 psig to 3000 psig	**3000**				

psig = Gauge Pressure psia = Absolute Pressure Other ranges available on special request **NOTE:** Series 626 is available for pressure ranges up to 0 psig to 8000 psig

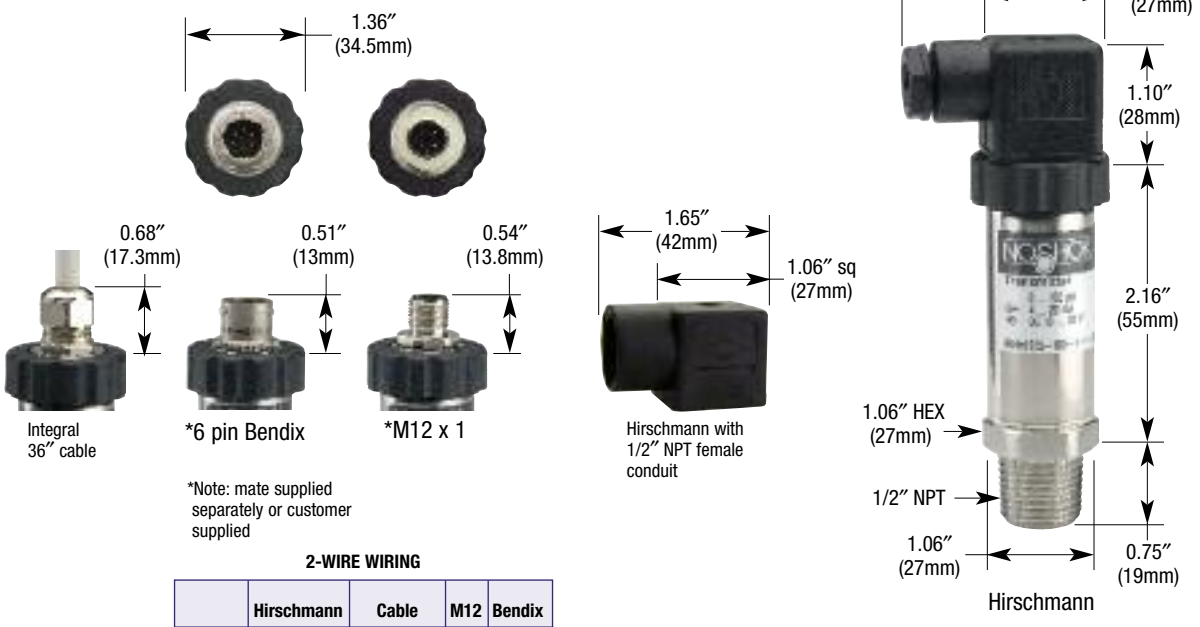
ACCURACY	**1** ±0.25 % Full Scale (Best Fit Straight Line)	**2** ±0.125 % Full Scale (Best Fit Straight Line)
OUTPUT SIGNALS	**1** 4 mA to 20 mA, 2-wire	
PROCESS CONNECTIONS	**2** 1/4 ″ NPT male **11** G1/2B male flush (model 626 only) (pressure ranges 0 psig to 30 psig and higher)	**3** 7/16 ″-20 UNF SAE #4 male **8** 1/2 ″ NPT male **13** G1B male flush (model 626 only) (pressure ranges less than 0 psig to 30 psig
ELECTRICAL CONNECTIONS	**1** 36 ″ cable (connected to option 8) **3** 6-pin bendix - IP65 **8** Hirschmann connector PG9 cable gland - IP65 **14** Hirschmann connector 1/2 ″ NPT conduit - IP65	**25** M12x1 4-pin IP67 **36** Integral cable 36″ - IP67
OPTIONS	**ORF** Threaded Orifice (model 625 only)	

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

EXAMPLE **625 – 500 – 1 – 1 – 8 – 8 – ORF**

Series 625
Pressure Range . . . . . 0 psig to 500 psig
Accuracy . . . . . ± 0.25 % Full Scale
Output Signal . . . . . 4 mA to 20 mA
Process Connection . . . . . 1/2 ″ NPT Male
Electrical Connection . . . . . Hirschmann
Option . . . . . Threaded Orifice

Outline Dimensions



*Note: mate supplied separately or customer supplied

2-WIRE WIRING

	Hirschmann	Cable	M12	Bendix
+ Supply	1	Red/Brown	1	A
+ Output	2	Black/Green	3	B

See 621/622 Series for G1/2B and G1B Front Flush Process Connection Dimensions

Intrinsically Safe Submersible Level Transmitters

FM APPROVED C SA US CE

SERIES 627

HAZARDOUS ENVIRONMENT APPROVED LIQUID LEVEL TRANSMITTERS

The NOSHOK Series 627 level transmitter combines the reliability and long life of diffused semiconductor and sputtered thin film strain gage sensors with safe electronics for outstanding performance and value. These transmitters were designed for applications that require liquid level measurement in hazardous environments. All wetted parts are made of stainless steel welded with no internal O-rings, gaskets or seals.

These transmitters are available with a stainless steel nosecone, a stainless steel weighted nosecone or NPT adapter and ranges to suit most applications. All units undergo extensive testing during the manufacturing process to ensure that the highest performance is achieved in the demanding environments found in today's applications. Series 627 transmitters are Factory Mutual and Canadian Standards Association approved.

FEATURES

- Accuracy to ±0.125 % Full Scale (Best Fit Straight Line)
- Advanced diffused semi-conductor and sputtered thin film sensor for maximum stability
- Welded 316 stainless steel pressure chamber

APPLICATIONS

- Water and wastewater
- Chemical tanks
- Methane wells
- Marine applications

NOSHOK Model 627 transmitters are approved for use in hazardous location applications as follows:
Intrinsically Safe, entity approval for Class I, II and III, Division 1, Groups A, B, C, D, E, F and G; and Class I, Zone 0 Aex ia IIC
Dust Ignition-proof for Class II and III, Division 1, Groups E, F and G
Non incendive for Class I, Division 2, Groups A, B, C and D
FMRC 3600, 3610, 3611, 3810 (including supplement #1), ISA-S12.0. 01, IEC 60529 (including amendment #1)

SPECIFICATIONS

Output signal	4 mA to 20 mA, 2-wire
Accuracy	±0.25 % Full Scale (Best Fit Straight Line), including the effects of linearity, hysteresis and repeatability; ±0.125 % Full Scale accuracy optional
Hysteresis	≤ ±0.1 % Full Scale
Repeatability	≤ ±0.05 % Full Scale
Stability	≤ ±0.2 % Full Scale for 1 year, non-accumulating
Pressure ranges	Standard ranges from 0 inH_2O to 50 inH_2O through 0 psig to 350 psig
Proof pressure	2 times range
Burst pressure	3 times range
Power supply	10 Vdc to 30 Vdc unregulated
Load limitations	≤ (VPower–10)/0.020 Amp–(0.043 Ω x length of cable in feet)
Wetted materials	Housing, diaphragm and cap: 316 stainless steel 17-4PH stainless steel diaphragm for 0 psig to 350 psig Cable: Fluorinated Ethylene Propylene for 0 to 50 inH_2O through 0 psi to 150 psi Polyurethane with Polyolefin shrink tubing for 0 psi to 200 psi through 0 psi to 350 psi
Response time	≤1 ms (between 10 % and 90 % Full Scale)
Durability	>100,000,000 Full Scale cycles
Temperature ranges	Compensated 32 °F to 122 °F (0 °C to 50 °C) Zero effect is ±0.011 % Full Scale/°F within compensated range Span effect is ±0.011 % Full Scale/°F within compensated range Ambient 15 °F to 122 °F (-10 °C to 50 °C); Media 15 °F to 175 °F (-10 °C to 60 °C); Storage -30 °F to 175 °F (-34 °C to 60 °C)
Environmental rating	IP68, NEMA 6P continuously submersible
Electromagnetic rating	Meets EMC norm EN61326: 1997/A1 1998 RFI, EMI and ESD protected
Electrical rating	Reverse polarity, over-voltage and short circuit protected; lightning protection is available as an option
Hazardous approvals	Factory Mutual and Canadian Standards Association approved
Weight	Approximately 7 oz. with standard nosecone - cable extra

ORDERING INFORMATION

SERIES 627 FM and CSA approved liquid level transmitter

PRESSURE RANGES	0 inH_2O to 50 inH_2O	**50IN**	0 psig to 5 psig (11.5 ftH_2O)	**5**	0 psig to 50 psig (115.3 ftH_2O)	**50**
	0 inH_2O to 100 inH_2O	**100IN**	0 psig to 10 psig (23.1 ftH_2O)	**10**	0 psig to 100 psig (230.7 ftH_2O)	**100**
	0 inH_2O to 150 inH_2O	**150IN**	0 psig to 15 psig (34.6 ftH_2O)	**15**	0 psig to 200 psig (461.3 ftH_2O)	**200**
	0 inH_2O to 250 inH_2O	**250IN**	0 psig to 25 psig (57.7 ftH_2O)	**25**	0 psig to 350 psig (807.3 ftH_2O)	**350**
	0 inH_2O to 400 inH_2O	**400IN**	0 psig to 30 psig (69.2 ftH_2O)	**30**		
	psig = Gauge Pressure		inH_2O = Inches of water		ftH_2O = feet of water	Other ranges available on special request

ACCURACY	**1**	±0.25 % Full Scale (Best Fit Straight Line)
	2	±0.125 % Full Scale (Best Fit Straight Line)
OUTPUT SIGNALS	**1**	4 mA to 20 mA, 2-wire
PROCESS CONNECTIONS	**N**	Stainless steel nosecone **W** Stainless steel weighted nosecone (1.1 lbs.)
	T	NPT adapter, 1/2 ″ NPT male outer thread with 1/4 ″ NPT female inner thread attached to transmitter process connection with straight thread and O-ring seal
ELECTRICAL CONNECTIONS	**Specify length**	Vented polyurethane cable Other cable material available on special request

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

EXAMPLE

627 – 350 – 1 – 1 – N – 300

Series 627
Pressure Range . . . . . .0 psig to 350 psig
Accuracy . . . . . .±0.25 % Full Scale
Output Signal . . . . . .4 mA to 20 mA
Process Connection . . . . . .Nosecone
Electrical Connection . .300 foot cable, polyurethane

Optional Accessories

Moisture filter	**612-Filter-Element**
Desiccant Cartridge	**612-Desiccant Cartridge**
Cable Clamp	**612-Cable Clamp**

Outline Dimensions

2-WIRE WIRING

+ Supply	Brown
+ Output	Green

Weighted nosecone

NPT adapter

Platinum Resistance Temperature Transmitters

SERIES 800

HIGH PERFORMANCE PLATINUM RESISTANCE TEMPERATURE TRANSMITTERS

The NOSHOK Series 800 temperature transmitter provides an unbeatable level of performance at an economical price. Using the proven reliability and stability of 100 ohm platinum resistance technology, this transmitter offers a broad array of choices for the OEM and user alike.

A rigorous test and inspection process is performed on all NOSHOK temperature transmitters prior to shipment to further ensure 100% "out of the box" reliability.

FEATURES

- Proven platinum 100 ohm sensor
- Maximum reliability
- Wide variety of temperature ranges and connections
- CE compliant
- Quick response time

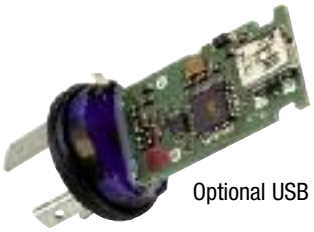
APPLICATIONS

- Water systems
- Storage tanks
- Industrial machinery and machine tools
- HVAC systems
- Refrigeration systems

Also available with our 1800 Series Attachable Loop Indicator.
See page 44 for more information.

SPECIFICATIONS

Output signals	4 mA to 20 mA 2-wire, 0 Vdc to 5 Vdc 3-wire 0 Vdc to 10 Vdc 3-wire, 1 Vdc to 5 Vdc 3-wire
Temperature ranges	Standard ranges from -40 °F to 1000 °F
Accuracy	
Measuring Element	Class B per EN 60751 (IEC 751) ±[0.30 +0.005*|t|] °C
Output	±0.25% Full Scale
Sensor protection	Burnout protected from 3.3 mA to 23 mA
Power supply	10 Vdc to 30 Vdc for 4 mA to 20 mA, 0 Vdc to 5 Vdc, 1 Vdc to 5 Vdc 12 Vdc to 30 Vdc for 0 Vdc to 10 Vdc
Wetted materials	316 stainless steel
Housing material	316 stainless steel
Ambient Temperature	-40 °F to 185 °F (-40 °C to 85 °C)
Storage Temperature	-40 °F to 185 °F (-40 °C to 85 °C)
Environmental rating	IP65 according to EN 60529/IEC 529
Electromagnetic rating	CE compliant to EMC norm EN 61326:1997/A1:1998 RFI, EMI and ESD protection
Electrical protection	Reverse polarity, over-voltage and short circuit protection
Weight	Approximately 4 oz.



Optional USB programmable output

ORDERING INFORMATION

SERIES 800									
TEMPERATURE RANGES	-40/120°F	**-40/120**	0/200°F	**0/200**	0/300°F	**0/300**	0/750°F	**0/750**	
	25/125°F	**25/125**	20/240°F	**20/240**	50/300°F	**50/300**	0/1000°F	**0/1000**	
	0/140°F	**0/140**	0/250°F	**0/250**	50/500°F	**50/500**			
	Other ranges available on special request								
ACCURACY	**1** Class B + (±0.25 % BFSL)								
OUTPUT SIGNALS	**1** 4 mA to 20 mA, 2-wire	**2** 0 Vdc to 5 Vdc, 3-wire	**3** 1 Vdc to 5 Vdc, 3-wire	**5** 0 Vdc to 10 Vdc, 3-wire	**34** 4 mA to 20 mA, 2-wire, USB programmable				
PROCESS CONNECTIONS	**2** 1/4 ″ NPT male		**8** 1/2 ″ NPT male						
	48 1/2 ″ NPT male w/Adjustable Compression Fitting								
ELECTRICAL CONNECTIONS	**1** 36 ″ cable (connected to option 8)		**8** Hirschmann w/mating connector		**14** Hirschmann connection w/ISO 4400 1/2 ″ NPT conduit				
STEM LENGTH	**025** 2.5 inch		**060** 6 inch		**120** 12 inch				
	040 4 inch		**090** 9 inch						
STEM DIAMETER	**3** 3 mm		**6** 6 mm		**8** 8 mm				

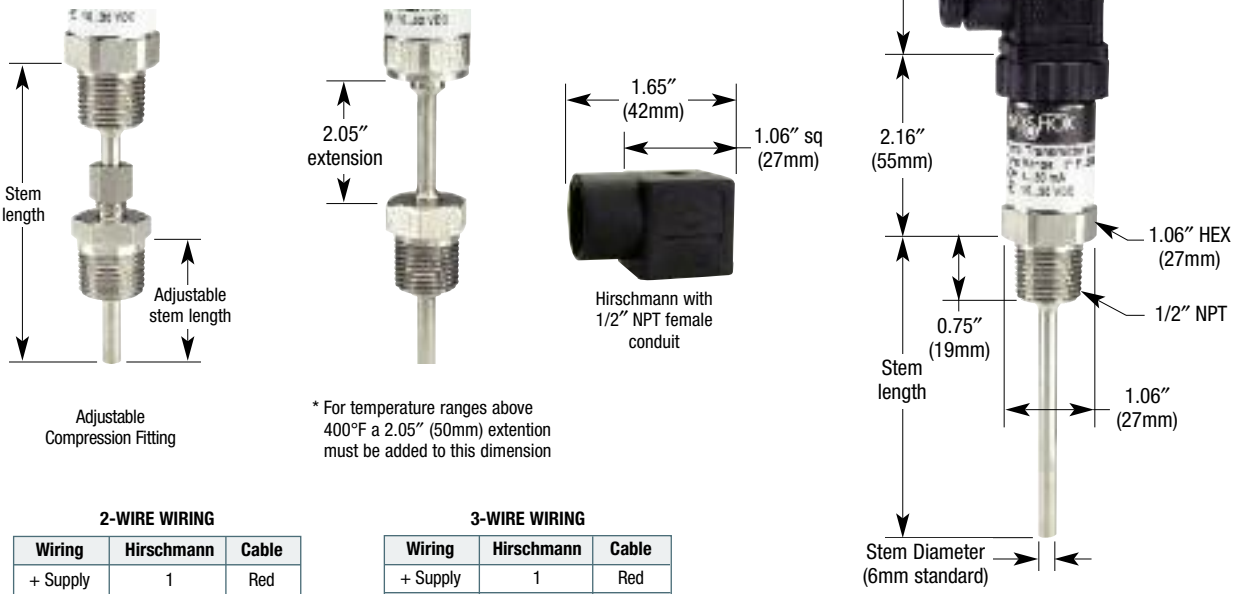
Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

EXAMPLE

800 – 50/300 – 1 – 1 – 8 – 8 – 040 – 6

- **Series** 800
- **Temperature Range** . . . . .50 °F to 300 °F
- **Accuracy** . . . . . .±0.25% BFSL
- **Output Signal** . . . . . .4 mA to 20 mA
- **Process Connection** . . . . .1/2 ″ NPT male
- **Electrical Connection** . . . . . .Hirschmann
- **Stem length** . . . . . .4 inch
- **Stem diameter** . . . . . .6 mm

Outline Dimensions



2-WIRE WIRING

Wiring	Hirschmann	Cable
+ Supply	1	Red
+ Output	2	Black

3-WIRE WIRING

Wiring	Hirschmann	Cable
+ Supply	1	Red
Common	2	Black
+ Output	3	White

Optional thermowells available in 316 SS, 304 SS and Brass.

High Accuracy Heavy Duty Sanitary Pressure Transmitters

meets 3A requirements for the food & beverage, dairy, pharmaceutical and biotechnology industries in addition to ASME BPE-2002 and CE compliant.

FEATURES

- Meets current 3A standards and ASME BPE-2002
- CE compliant
- Current or voltage output signals available to suit most applications
- NEMA 4X, IP65 (IEC529)
- Diffused semiconductor or sputtered thin film sensor for maximum stability
- Can be cleaned-in-place or steamed-in-place
- High accuracy and long term stability
- Integral cooling extension allows for higher media temperatures

SERIES 11

HIGH PERFORMANCE SANITARY PRESSURE TRANSMITTERS

The NOSHOK Series 11 Sanitary Pressure Transmitter is designed for heavy duty sanitary applications where high accuracy and durability are required. Using diffused semiconductor or sputtered thin film sensor technology these transducers are stable, accurate, shock resistant and extremely durable.

The housing is constructed of 316SS and welded to the process connection for greater strength and integrity. The available 1 1/2 inch or 2 inch Tri-Clamp® connection, with its integral cooling extension, is 316L stainless steel and wetted parts are electro-polished to Ra25 microinch or better.

NOSHOK Series 11 Sanitary Transmitters meet 3A requirements for the food & beverage, dairy, pharmaceutical and biotechnology industries in addition to ASME BPE-2002 and CE compliant.

A final electrical output and calibration inspection is performed on all NOSHOK transmitters prior to shipment to ensure 100% “out-of-the-box” reliability.

SPECIFICATIONS

Output Signals	4mA to 20mA 2-wire, 0Vdc to 5Vdc 3-wire, 1Vdc to 5Vdc 3-wire, 1Vdc to 6Vdc 3-wire, 0Vdc to 10Vdc, 3-wire, 1Vdc to 11Vdc 3-wire
Pressure Ranges	Standard gauge ranges from vacuum to 400 psig
Proof Pressure	3 times Full Scale for ranges 0 psig to 2 psig through 0 psig to 200 psig 1.75 times Full Scale for ranges 0 psig to 300 psig through 0 psig to 400 psig
Burst Pressure	3.8 times Full Scale for ranges 0 psig to 2 psig through 0 psig to 200 psig 4 times Full Scale for ranges 0 psig to 300 psig through 0 psig to 400 psig
Accuracy	±0.25% Full Scale (B.F.S.L) ±0.125% Full Scale (optional)
Repeatability	±0.05% Full Scale
Hysteresis	±0.1% Full Scale
Stability	±0.2% Full Scale for 1 year, non accumulating
Power Supply	10Vdc to 30Vdc for current output 14Vdc to 30Vdc for voltage output
Case Materials	316 stainless steel
Temperature Ranges	Compensated 32ºF to 175ºF (0ºC to 80ºC) Effect ±0.01%/ºF for zero and span Ambient -40ºF to 176ºF (-40ºC to 80ºC)
Adjustment	±10% Full Scale for zero and span
Environment Protection	NEMA 4X, IP65 (IEC 529)
Electromagnetic Rating	CE compliant to EMC norm EN61326: 1997/A1: 1998 RFI, EMI, ESD protection
Electrical Protection	Reverse polarity, overvoltage and short circuit protection
Process Connection	1 1/2 inch or 2 inch Tri-Clamp®
Seal Housing Material	316L stainless steel
Diaphragm Material	316L stainless steel electropolished to Ra25 or better
Fill Fluid	White Oil (FFL 77), USP grade
Media Temperature	-40ºF to 300ºF (-40ºC to 150ºC)

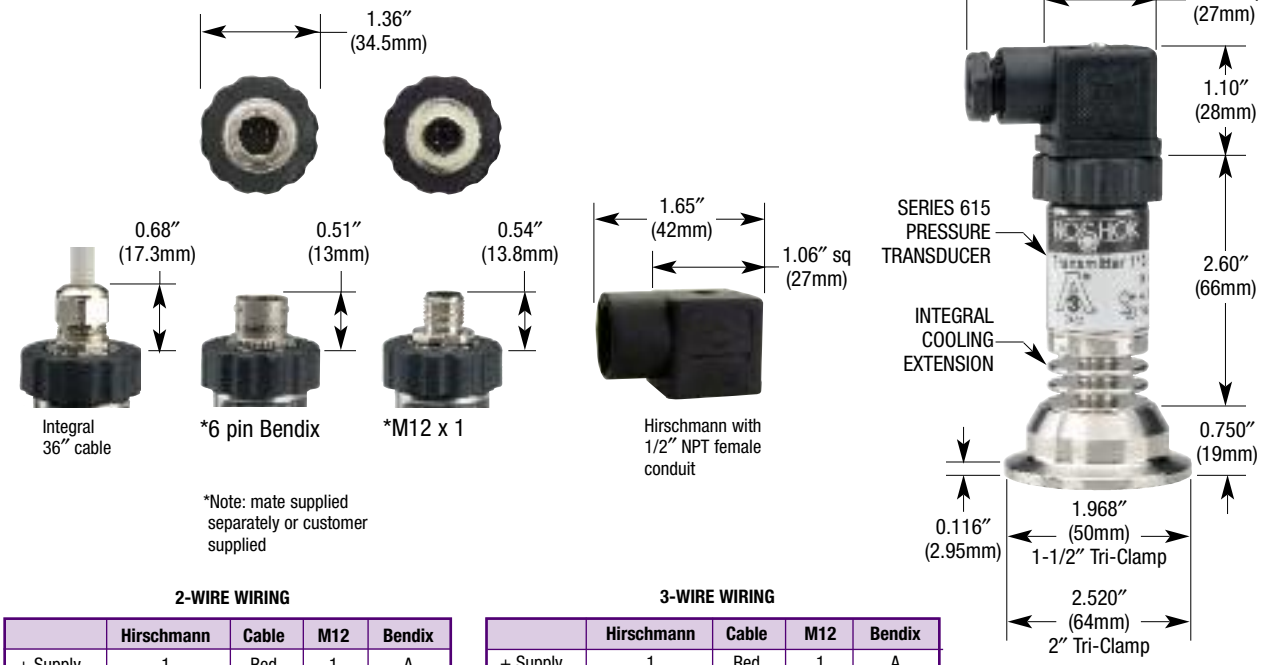
ORDERING INFORMATION

SERIES 11	**110**								
CLAMP SIZE	**12**	1 1/2 Inch	**16**	2 Inch					
SEAL FILL FLUID	**4**	FFL77 White Oil	**Other Food Grade Quality Fill Fluids Available – Please Consult Factory**						
TRANSMITTER	**615**	Series 615 Transmitter							
ACCURACY	**1**	±0.25% Full Scale (Best fit straight line)			**2**	±0.125% Full Scale			
PRESSURE RANGE	30 ″ Hg to 0 psig	**01**	30 ″ Hg to 150 psig	**16**	0 psig to 10 psig	**37**	0 psig to 150 psig	**52**	
	30 ″ Hg to 15 psig	**04**	30 ″ Hg to 200 psig	**19**	0 psig to 15 psig	**40**	0 psig to 200 psig	**58**	
	30 ″ Hg to 30 psig	**07**	30 ″ Hg to 300 psig	**22**	0 psig to 30 psig	**43**	0 psig to 300 psig	**61**	
	30 ″ Hg to 60 psig	**10**	0 psig to 100 ″ H_2O	**31**	0 psig to 60 psig	**46**	0 psig to 400 psig	**64**	
	30 ″ Hg to 100 psig	**13**	0 psig to 5 psig	**34**	0 psig to 100 psig	**49**			
OUTPUT SIGNAL	**1** 4 mA to 20 mA, 2-wire		**2** 0 Vdc to 5 Vdc, 3-wire		**3** 1 Vdc to 5 Vdc, 3-wire				
	4 1 Vdc to 6 Vdc, 3-wire		**5** 0 Vdc to 10 Vdc, 3-wire		**6** 1 Vdc to 11 Vdc, 3-wire				
ELECTRICAL CONNECTION	**1** 36 ″ cable attached to Hirschmann				**14** 1/2 ″ ISO 4400 Conduit				
	3 6-pin Bendix				**25** M12 X 1 4-pin				
	8 Hirschmann (DIN 43650A)				**36** Integral 36 ″ Cable				

EXAMPLE **110 – 12 – 4 – 615 – 1 – 34 – 1 – 1**

Series . . . . . .Series 11 Sanitary Transmitter
Clamp Size . . . . . .1 1/2 ″ Tri-Clamp®
Seal Fill Fluid . . . . . .White oil
Transmitter . . . . . .615 Series
Accuracy . . . . . .±0.25% Full Scale
Pressure Range . . . . . .0 psig to 5 psig
Output Signal . . . . . .4 mA to 20 mA, 2-wire
Electrical Connection . . . . . .Hirschmann with 3 feet of cable

Outline Dimensions



*Note: mate supplied separately or customer supplied

2-WIRE WIRING

	Hirschmann	Cable	M12	Bendix
+ Supply	1	Red	1	A
+ Output	2	Black	3	B

3-WIRE WIRING

	Hirschmann	Cable	M12	Bendix
+ Supply	1	Red	1	A
Common	2	Black	3	B
+ Output	3	White	4	C

Homogenizer Pressure Transmitters & Transducers

Meets 3A requirements for the food & beverage, dairy, pharmaceutical and biotechnology industries in addition to ASME BPE-2002 and CE compliant.

FEATURES

- Meets current 3A standards and ASME BPE-2002
- CE compliant
- Current or voltage output signals available to suit most applications
- Span and zero adjustments
- NEMA 4X, IP65 (IEC529)
- Sputtered thin film sensor for maximum stability and shock resistance
- Ranges from 1000 psig to 15000 psig
- High accuracy and long term stability
- Can be cleaned-in-place or steamed-in-place

SERIES 21

HIGH PERFORMANCE HOMOGENIZER TRANSMITTERS

The NOSHOK Series 21 Homogenizer Pressure Transmitter is a high accuracy, heavy duty pressure transmitter designed for the demanding requirements found in high pressure sanitary homogenizer applications. Using proven sputtered thin film sensor technology these transducers are stable, highly accurate, shock resistant and extremely durable.

The NOSHOK Series 21 is offered in a variety of Current or Voltage output signals and is constructed of 316SS. The housing is welded to the 316L stainless steel process connection for greater strength and durability while providing exceptional corrosion resistance. Wetted parts are electro polished to Ra25 or better providing a cleaner, more sanitary surface.

NOSHOK Series 21 homogenizer transmitters meet the current standards for 3A and ASME BPE-2002 in addition to being CE compliant. A final electrical output and calibration inspection is performed on all NOSHOK transmitters prior to shipment to ensure 100% “out-of-the-box” reliability.

SPECIFICATIONS

Output Signals	4mA to 20mA 2-wire, 0Vdc to 5Vdc 3-wire, 1Vdc to 5Vdc 3-wire, 1Vdc to 6Vdc 3-wire, 0Vdc to 10Vdc, 3-wire, 1Vdc to 11Vdc 3-wire
Pressure Ranges	Standard gauge ranges from 1000 psig to 15000 psig
Proof Pressure	1.75 times full scale for ranges 0 psig to 300 psig through 0 psig to 10000 psig 1.5 times full scale for ranges 0 psig to 15000 psig
Burst Pressure	4 times Full Scale for ranges 0 psig to 300 psig through 0 psig to 10000 psig 3 times full scale for ranges 0 psig to 15000 psig
Accuracy	±0.25% Full Scale (B.F.S.L) ±0.125% Full Scale (optional)
Repeatability	≤±0.05% Full Scale
Hysteresis	≤±0.1% Full Scale
Stability	≤±0.2% Full Scale for 1 year, non accumulating
Power Supply	10Vdc to 30Vdc for current output 14Vdc to 30Vdc for voltage output
Housing Materials	316 stainless steel
Temperature Ranges	Compensated 32ºF to 175ºF (0ºC to 80ºCº) Effect ±0.01%/ºF for zero and span Ambient -40ºF to 176ºF (-40ºC to 80ºC)
Adjustment	±10% Full Scale for zero and span
Environment Protection	NEMA 4X, IP65 (IEC 529)
Electromagnetic Rating	CE compliant to EMC norm EN61326: 1997/A1: 1998 RFI, EMI, ESD protection
Electrical Protection	Reverse polarity, overvoltage and short circuit protection
Process Connection	1 1/8 inch Homogenizer Flange
Seal Housing Material	316L stainless steel
Diaphragm Material	316L stainless steel electropolished to Ra25 or better
Fill Fluid	White Oil (FFL 77), USP grade
Media Temperature	-40ºF to 300ºF (-40ºC to 150ºC)

ORDERING INFORMATION

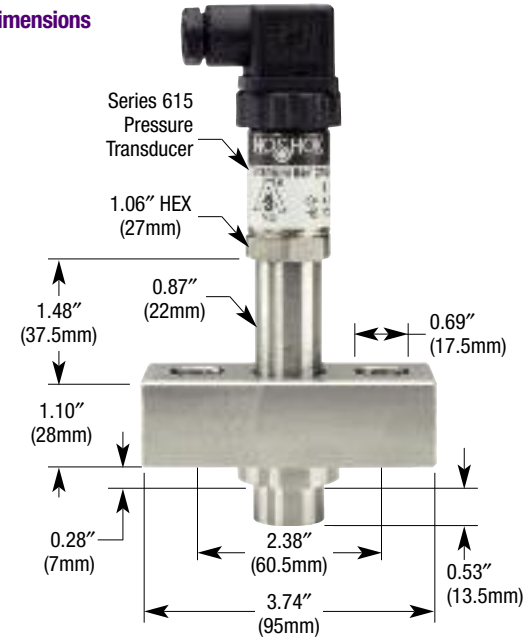
SERIES 21	**210**								
CLAMP SIZE	**42** 1 1/8 Inch Flange								
SEAL FILL FLUID	**4** FFL77 White Oil **(Other Fill Fluids Available - Please Consult Factory)**								
TRANSMITTER	**615** Series 615 Transmitter								
ACCURACY	**1** ±0.25% Full Scale (Best fit straight line)		**2** ±0.125% (Best fit straight line)						
PRESSURE RANGE	0 psig to 1000 psig	**73**	0 psig to 2000 psig	**79**	0 psig to 5000 psig	**85**	0 psig to 10000 psig	**91**	
	0 psig to 1500 psig	**76**	0 psig to 3000 psig	**82**	0 psig to 6000 psig	**88**	0 psig to 15000 psig	**94**	
OUTPUT SIGNAL	**1** 4 mA to 20 mA, 2-wire		**3** 1 Vdc to 5 Vdc, 3-wire		**5** 0 Vdc to 10 Vdc, 3-wire				
	2 0 Vdc to 5 Vdc, 3-wire		**4** 1 Vdc to 6 Vdc, 3-wire		**6** 1 Vdc to 11 Vdc, 3-wire				
ELECTRICAL CONNECTION	**1** 36 ″ cable attached to Hirschmann			**14** 1/2 ″ ISO 4400 Conduit					
	3 6-Pin Bendix			**25** M12 X 1 4-pin					
	8 Hirschmann (DIN 43650A)			**36** Integral 36 ″					

EXAMPLE

210 – 42 – 4 – 615 – 1 – 85 – 1 – 8

Series . . . . . Series 21 homogenizer transmitter
Clamp Size . . . . . 1 1/8 ″ homogenizer flange
Seal Fill Fluid . . . . . White oil
Transmitter . . . . . 615 Series
Accuracy . . . . . ±0.25% Full Scale
Pressure Range . . . . . 0 psig to 5000 psig
Output Signal . . . . . 4 mA to 20 mA, 2-wire
Electrical Connection . . . . . Hirschmann (DIN 43650A)

Outline Dimensions



2-WIRE WIRING

	Hirschmann	Cable	M12	Bendix
+ Supply	1	Red	1	A
+ Output	2	Black	3	B

3-WIRE WIRING

	Hirschmann	Cable	M12	Bendix
+ Supply	1	Red	1	A
Common	2	Black	3	B
+ Output	3	White	4	C

(Custom Flange Dimensions To Your Specification – Please Consult Factory)

Digital Pressure Gauges

SERIES 1000

HIGH PERFORMANCE DIGITAL PRESSURE GAUGES

The NOSHOK 1000 Series Digital Pressure Gauge allows for local digital indication of pressure where once mechanical gauges could be installed. The integrated battery allows digital indication to be done without the use of any fixed power supplies.

Accuracy, reliability and mechanical resilience make this digital gauge suitable for pressure measurement in a multitude of applications.

Standard pressure ranges are available from 0 psig to 30 psig and as high as 0 psig to 10000 psig. For pressure ranges above 750 psig the wetted parts are made of stainless steel which is resistant to many chemically aggressive media.

The display has an integrated bar graph with a trailing indicating pointer to show the trends in a working pressure system. There is also an additional 4 1/2 digit display for a direct readout of the peak value, tare and other functions. An internal light ensures the display is optimally lit for a clear readout even in unfavorable lighting conditions. The buttons on the front of the display are used for easy adjustment of the programmable functions.

This digital pressure gauge meets all electromagnetic compatibillity requirements (EMC) to EN 61326.

FEATURES

- Pressure Ranges from 30 psig to 10000 psig
- High resolution of standard pressure ranges
- LC-Display with 0.43″ numerals
- Bar graph with trailing pointer function

APPLICATIONS

- Machine construction
- Plant and apparatus construction
- Hydraulics, pneumatics
- Measuring equipment monitoring

OPTIONAL ENHANCED SOFTWARE FEATURES

- Tare function
- Password protection
- Min./max. memory
- Internal lighting
- 300° Rotatable base

SPECIFICATIONS

Display	0.43 ″ high Liquid Crystal Display
Digits	4 STD. 4½, up to 9999
Accuracy	±0.5 % Full Scale (BFSL)
Update rate	5 times/second
Pressure ranges	Standard ranges from 30 psig to 10000 psig
Proof pressure	2 times Full Scale range, maximum 15000 psi
Wetted materials	≤750 psig stainless steel, aluminum, NBR, ceramic measuring element ≥ 1000 psig stainless steel, thin-film measuring element
Housing material	Stainless steel
Power supply	2 x 1.5V “AA” Battery 4000 hrs (“AA” 2000 mAh)
Programmable Functions **Tare** **On/Off** **Measuring Unit**	Adjustable through front key pad ±20% of Full Scale range Adjustable automatic turn off bar, psi, MPa
Temperature Influence	Compensated 32 °F to 140 °F (0 °C to 60 °C) Effect ±0.15 % per 10K at zero and span Span effect is ±0.005 % Full Scale/°F
Temperature Ranges	Storage -4°F to 158°F (20°C to 70°C) Media -22°F to 185°F (-30°C to 85°C) Ambient 14°F to 140°F (-10°C to 60°C)
Environmental rating	NEMA 4X (IP 65 according to EN60529/IEC529)
Electromagnetic rating	Compliant to EN 61326, EMI and ESD protection
Weight	0.88 lbs.

ORDERING INFORMATION

SERIES 1000

PRESSURE RANGES	0 psig to 30 psig	**30**	0 psig to 600 psig	**600**	0 psig to 5000 psig	**5000**
	0 psig to 60 psig	**60**	0 psig to 1450 psig	**1450**	0 psig to 6000 psig	**6000**
	0 psig to 145 psig	**145**	0 psig to 2000 psig	**2000**	0 psig to 7500 psig	**7500**
	0 psig to 300 psig	**300**	0 psig to 3000 psig	**3000**	0 psig to 10000 psig	**10000**
	psig = Gauge Pressure		Other ranges available on special request			
PROCESS CONNECTIONS	**2** 1/4 ″ NPT male					
OPTIONS	**1** Peak memory - Standard			**ORF** Threaded orifice		
	6 Enhanced Software			**RCP** Robber Case Protector		

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

EXAMPLE

1000 – 600 – 2 – 1 – ORF

Series 1000
Pressure Range . . . . . .0 psig to 600 psig
Process Connection . . . . . .1/4 ″ NPT Male
Options . . . . . .Peak memory
. . . . . .Orifice

Outline Dimensions

Attachable Loop-Powered Digital Indicators

SERIES 1800

HIGH ACCURACY 4 mA to 20 mA LOOP-POWERED INDICATORS (for series 300, 600, 615, 616 and 800 transmitters)

The Model 1800 Attachable Loop-Powered Digital Indicator can be fitted to NOSHOK pressure transmitters utilizing a 4 mA to 20 mA output signal and the Hirschmann (DIN 43650A) connector. It is simply inserted between the transmitter body and the connector. The indicator is programmable to display a range of –1999 to 9999, and it may be tilted for better viewing. Also, there is user selectable digital filtering to improve readability in rapidly varying pressure applications. All parameters are stored in non-volatile memory so that reprogramming is not necessary in the event of a power failure.

NOSHOK will calibrate the indicator to your transmitter at no additional cost. Simply tell us how you want it set up and it is done.

FEATURES

- 4 digit local display
- Easy menu-driven programming
- Powered by the 4 mA to 20 mA loop
- No extra wiring needed, inserts between the Hirschmann connector and transmitter body
- Selectable digital filtering
- CE Compliant

APPLICATIONS

- Hydraulic and pneumatic systems
- Pumps and compressors
- Test equipment and systems
- Industrial machinery and machine tools
- HVAC systems
- Power generation
- Water and wastewater
- Stamping and forming presses

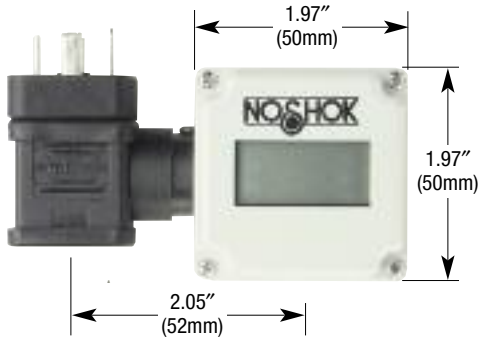
SPECIFICATIONS

Display	0.4 ″ Liquid Crystal Display
Digits	4, from –1999 to 9999
Accuracy	±0.2 % Full Scale, ±1 digit
Update rate	5 times/second
Filtering	Digital, field selectable .2, .5, 1 or 1.5 seconds, display only
Range	The 4 mA to 20 mA signal from the transmitter can be assigned any display value within the display range. Both scaling points are individually adjustable using the push buttons inside the case
Power	Loop-powered - no additional power supply required. Maximum current rating is 40 mA and voltage drop of 3 Vdc
Temperature ranges	Ambient 32 °F to 122 °F (0 °C to 50 °C) Effect is ±0.006 % Full Scale/°F Storage –22 °F to 176 °F (-30 °C to 80 °C)
Electrical	Requires NOSHOK transmitter with 4 mA to 20 mA (2-wire) output and Hirschmann (DIN 43650A) connector
Environmental Protection	IP65, NEMA 4X according to EN 60529/IEC 529
Electromagnetic rating	CE compliant to EMC norm EN 61326:1997/A1:1998 RFI, EMI and ESD protection
Case material	ABS plastic with polycarbonate window
Weight	Approximately 3 oz.

ORDERING INFORMATION

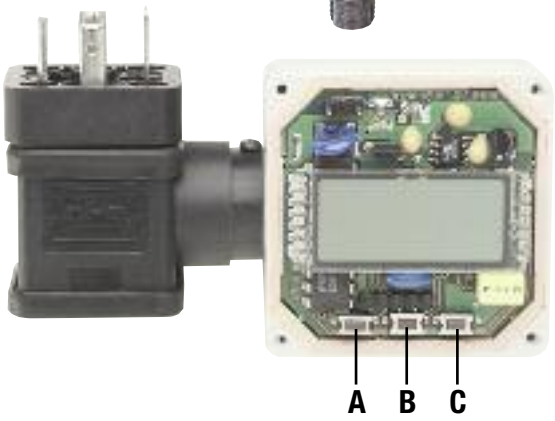
1. Order Series 1800-0
2. Indicate display range on order eg. 0-1000 for 4 mA to 20 mA

Outline Dimensions



To install, remove the DIN 43650A plug and insert indicator on top of transducer and reinstall the plug. This indicator can be used with NOSHOK and some competitive transmitters with 2-wire 4 mA to 20 mA output, Hirschmann connector with the same pin configuration.
(Pin 1 + supply, Pin 2 + output)

To program, first remove the cover from the indicator housing and identify the buttons A, B, and C. These buttons are used to program the indicator to match the pressure range of the transmitter.



A → down
B → program steps
C → up

1. → Set the decimal point
1 x B: | d | P | | |
→ C/A up or down

2. Set the lower end of the range
2 x B: | A | n | | 4 |
→ C/A up or down

3. Set the upper end of the range
3 x B: | A | n | 2 | 0 |
C/A up or down

4. To enable error codes
3 x B: | L | 1 | | |
1 x C: | | | | 1 | on
→ 1 x A: | | | | 0 | off
C/A up or down
Errors are shown as F1 for an underrange condition, and F2 for an overrange condition

5. Set digital filtering value
5 x B: | F | I | L | T |
1 x C: | | | | 0 | 0.2 seconds
2 x C: | | | | 1 | 0.5 seconds
3 x C: | | | | 2 | 1.0 seconds
→ 4 x C: | | | | 3 | 1.5 seconds
C/A up or down

6. Return to measurement mode
2 x A

Compact Loop Powered Digital Indicators

SERIES 1900C

LOOP POWERED DIGITAL INDICATORS

Noshok Series 1900 Compact Digital Indicators provide digital display of any desired unit of pressure, temperature, level, force or flow measurement. Their 3 1/2 digit display has a span range of 0 to 1999 and is available in a positive image reflective LCD or in an optional back-lit version.

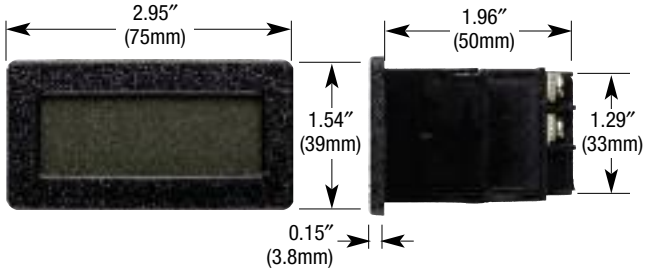
They are housed in a compact, lightweight, impact resistant plastic case with a clear viewing lens. The sealed front panel installation also meets NEMA 4x/IP65 specifications for wash down and dusty environments, when properly installed.

NOSHOK calibrates all of its indicators to your transducer at no additional cost. Simply tell us how you want it set up, then plug it in and go; no muss, no fuss, no charge!

FEATURES

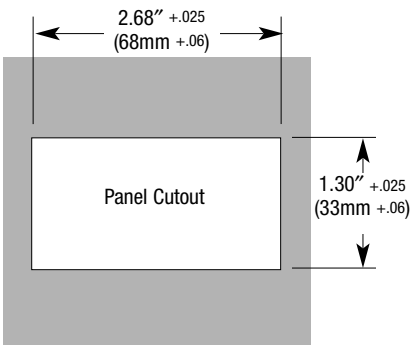
- Factory scaled and calibrated
- Dual range 4 mA to 20 mA or 10 mA to 50 mA
- 3 1/2 digit, 0.6″ high display
- Positive image reflective LCD–standard
- Red or yellow/green back-lit versions–optional
- Span and zero offset capabilities
- Negative pressure and overpressure indication
- Selectable decimal point position
- NEMA 4X, IP65 sealed front bezel
- Fits DIN standard cut-out 2.68 (68mm) x 1.30 (33mm)

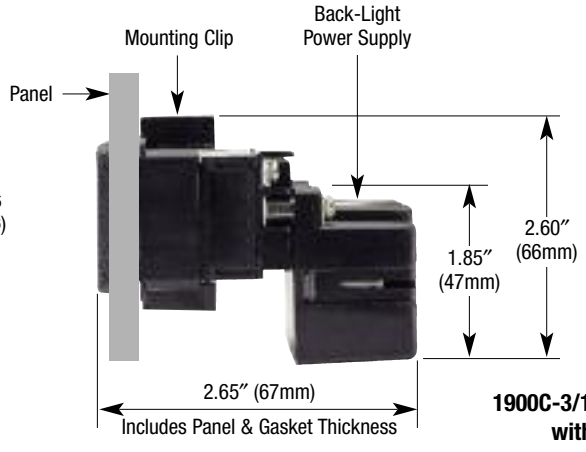
Outline Dimensions



SPECIFICATIONS

Display	3 1/2 digit (- 1999 to 1999), 0.6 ″ tall LCD
Display type	Positive image reflective LCD standard; red or yellow/green backlight transflective LCD optional
Power supply	1900C-1/1900C-2: Loop Powered, 4 mA to 20 mA or 10 mA to 50 mA 1900C-3/1900C-4: Loop Powered Display w/backlight power supply 115/230 Vac, 50/60 Hz, 3VA required for backlight power supply
Input signal	4 mA to 20 mA or 10 mA to 50 mA
Input impedence	160 ohms max @ 20 mA; 60 ohms max @ 50 mA
Maximum input current	100 mA
Span range	0 to 1999
Offset range	-1999 to 1999
Linearity	±0.1 % to 1 digit
Reading rate	2.5 Readings per second, nominal
Response time	1.5 seconds to settle for a step change
Temperature ranges	Storage -40 ° to 175 °F/-40 ° to 80 °C Operating 32 ° to 140 °F/0° to 60 °C
Thermal effect (reference temperature 68°F/20°C)	Span: 100PPM/°C Offset: 0.2 digits/°C
Electromagnetic rating	CE compliant to EMC norm EN 61326:1997/A1:1998 RFI, EMI and ESD protection





1900C-3/1900C-4: Loop Powered Display with backlight power supply

ORDERING INFORMATION

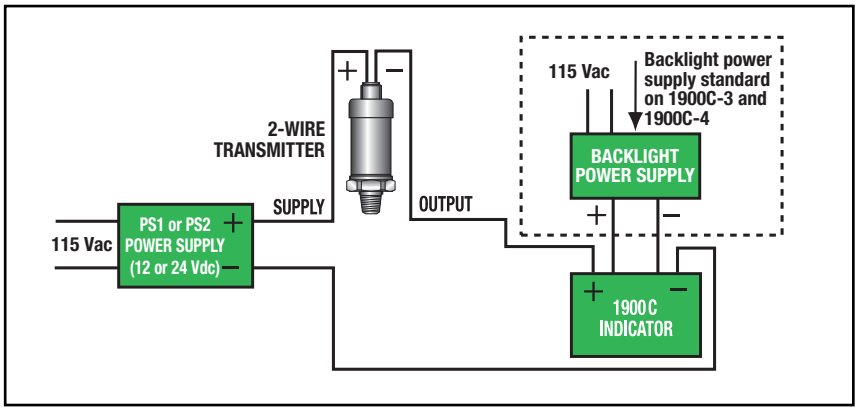
SERIES 1900C		
MODEL 1900C		
INDICATION	**1** Positive image reflective LCD	**3** Yellow/green backlight transflective LCD with backlight power supply
	2 Positive image reflective LCD backlight	**4** Red backlight transflective LCD with backlight power supply

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

OPTIONAL POWER SUPPLIES		
MODEL	**INPUT**	**OUTPUT**
PS1	**115 Vac**	**12 Vdc**
PS2	**115 Vac**	**24 Vdc**

EXAMPLE **1900C – 4**

Model 1900C
Indication . . . . . .Red backlight LCD



Typical wiring for the 1900C including the optional back light feature. See the photos below showing both the green and red color backlight versions.

Green Backlight Version
1900C-3

Available PS1 (12 Vdc) and PS2 (24 Vdc) power supply for powering a typical 2 wire loop or 3 wire configuration.

Red Backlight Version
1900C-4

1900C-3/1900C-4: Loop Powered Display with backlight power supply

1900C-1/1900C-2: Loop Powered

Compact Smart System Digital Indicators

SERIES 1950

NOSHOK Series 1950 Compact Smart System Digital Indicator offers the features of a full size panel meter compressed into a small design for ease of installation in almost any application. The 5 digit display has a span range of -9999 to 99999 and is available in a reflective LCD or backlit versions.

The display can accept a variety of process signals for applications in pressure, flow, level, force and temperature. All programming can be done through the front of the meter with little difficulty. The display is fully expandable to accommodate applications requiring relays, dual sinking outputs, and serial communications by RS232 or RS485.

NOSHOK calibrates all of its indicators to your transducer requirements at no additional cost. Simply tell us how you want it set up, then plug it in and go; no muss, no fuss and no charge!

FEATURES

- 0.46" LCD display
- LCD, reflective or selectable red of green backlighting
- Fully scalable
- Field upgradeable
- Simple programming through front panel
- NEMA 4X/IP65 sealed front panel

SPECIFICATIONS

Input signals	Current, voltage or resistance
Process display	5 digit, 0.48 ″ high, (-9999 to 99999)
Power requirement	9 Vdc to 28 Vdc (Optional power supply available for 85 Vac to 250 Vac excitation)
Connections	Terminal block in rear Recommended wire: 30-14 AWG copper
Memory	Nonvolatile E2PROM memory retains all programming parameters and max/min values when power is removed
Accuracy	0.1% of span
Response time	< 500 msec
Temperature ranges	Operating -35°C to 75°C Storage -35°C to 85°C
Operating and Storage Humidity	0 to 85% max. relative, non-condensing
Vibration	5 to 500 Hz, in X,Y,Z direction for 1.5 hours, 5 g's. According to IEC 68-2-6
Shock	Operational 30 g, 11 msec in 3 directions. According to IEC 68-2-27
Electromagnetic rating	Emissions and immunity to EN 61326
Environmental protection	NEMA 4X/IP65, sealed bezel only
Weight	3.2 oz (100 g)
Relay option card	Type: Single FORM-C relay Isolation To Sensor & User Input Commons: 1400 Vrms for 1 min. Working Voltage: 150 Vrms Contact Rating: 1 amp @ 30 Vdc resistive; 0.3 amp @ 125 Vac resistive Life Expectancy: 100,000 minimum operations Response Time: Turn On Time: 4 msec max. Turn Off Time: 4 msec max.
Communications option card	RS485 multi-point balanced interface (non-isolated) Baud Rate: 300 to 38.4k Data Format: 7/8 bits; odd, even, or no parity Bus Address: 0 to 99; max 32 meters per line Transmit Delay: Selectable RS232 half duplex (non-isolated) Baud Rate: 300 to 38.4k Data Format: 7/8 bits; odd, even, or no parity
Dual sinking output option card	Non-isolated switched DC, N Channel open drain MOSFET Current Rating: 100 mA max. VDS ON: 0.7 V @ 100 mA VDS MAX: 30 VDC Offstate Leakage Current: 0.5 mA max.

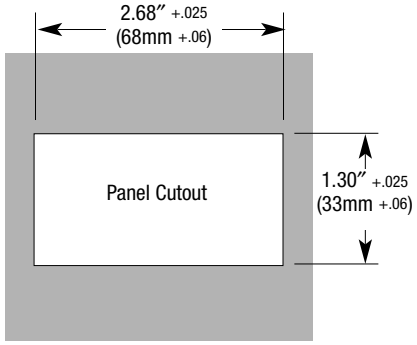
ORDERING INFORMATION

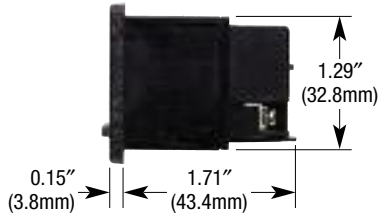
SERIES 1950			
Input signal	**C** Current	**V** Voltage	**R** Resistance
Display	**1** Reflective	**2** Backlight	
Option cards	**0** None **6** RS232 Comm	**1** Single Relay **7** RS485 Comm	**2** Dual Sinking Open Collector
Optional power Supplies	**PS1** 115 Vac to 12 Vdc (400 mA) **PS3** 115 Vac to 12 Vdc (80 mA)	**PS2** 115 Vac to 24 Vdc (200 mA)	
Optional Enclosures	**ENC1** Black Painted Steel	**ENC2** Off-White Fiberglass	

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

EXAMPLE **1950 – C – 1 – 1 – ENC1**

Model 1950
Input Signal . . . . . .Current
Display . . . . . .Reflective
Option Cards . . . . . .Single relay
Options . . . . . .Enclosure black painted steel





Smart System "Intelligent" Digital Indicators

SERIES 2000/2100

FIELD UPGRADEABLE DIGITAL PROCESS INDICATORS
SINGLE INPUT OR DUAL INPUT

The Series 2000/2100 Smart System Digital Indicator embodies many features and performance capabilities to suit a wide range of indication and control requirements. It can accept a variety of standard process signals and precisely scale them into any desired unit of measurement. The indicator employs advanced technology for stable, drift free readout, while incorporating features that provide flexibility now and in the future with plug-in option cards. The option cards afford the opportunity to easily configure the indicator for the needs of the present while providing an upward migration path as control and indication needs evolve.

A full complement of options include relays, analog output and serial communication. NOSHOK calibrates all of its indicators to your transducer requirements at no additional cost. Simply tell us how you want it set up, then plug it in and go; no muss, no fuss and no charge!

FEATURES

- Field upgradeable with plug-in option cards
- 24 Vdc transmitter power supply
- 16 point scaling for non-linear processes
- Max. and min. value display
- Easy menu-driven programming
- NEMA 4X/IP65 sealed front bezel
- 4 set point alarms (with plug-in card)
- Analog output (with plug-in card)
- Serial communication (with plug-in card)
- PC software available for configuration
- AC or DC input power
- Signal totalizer for batch weighing or other timed input processes
- CE compliant
- Programmable signal response time
- Standard DIN panel cutout

APPLICATIONS

- Process indication
- On/Off pump controls
- Compressor controls
- Safety or shutdown alarms
- Local indication with signal retransmission to computer control system

SPECIFICATIONS

Input signals	Current, voltage or resistance
Process display	5 digit, 0.56 ″ red LED, (-19999 to 99999)
Keypad	3 programmable function keys, 5 keys total
Power requirement	115/230 Vac or 11 Vdc to 36 Vdc (18 Vdc to 36 Vdc for 2100 Series)
Internal power supply	24 Vdc (18 Vdc for 2100 Series)
Electrical connection	Terminal blocks in rear
Memory	Non-volatile Eprom, will hold set up data for 10 years without power
Accuracy	±0.03 % of reading +3 ″ A for 4 mA to 20 mA input; ±0.03 % of reading +3 mV for 0 Vdc to 5 Vdc and 0 Vdc to 10 Vdc inputs over the range of 18 °C to 28 °C
Update rate	Up to 20 times per second, adjustable (Up to 105 time per second, adjustable for 2100 Series)
Temperature ranges	Operating 32 °F to 122 °F (0 °C to 50 °C) Storage -40 °F to 140 °F (-40 °C to 60 °C)
Electromagnetic rating	CE compliant to EMC norm EN 61326:1997/A1:1998 RFI, EMI and ESD protection
Environmental protection	Nema 4X/IP65 sealed bezel only
Linearization	16 point scaling of non linear input
Dual relay option card	Two FORM-C relays. Rating: One relay energized; 5 amps @ 120/240 Vac115/230 Vac or 28 Vdc (resistive load), 1/8 HP @ 120 Vac, inductive load. Total current not to exceed 5 amps with both relays energized
Quad relay option card	Four FORM-A relays. Rating: One relay energized; 3 amps @ 240 Vac or 30 Vdc (resistive load), 1/10 HP @ 120 Vac, inductive load. Total current not to exceed 4 amps with all four relays energized
Analog output option card	0 mA to 20 mA, 4 mA to 20 mA or 0 Vdc to 10 Vdc retransmitted signal
Quad NPN-OC option card	4 isolated open collector sinking transistors, 100 mA at maximum 30 Vdc
Quad PNP-OC option card	4 isolated open collector sourcing transistors, 24 Vdc with 30 mA total maximum
Communication option cards	RS232C or RS485

ORDERING INFORMATION

SERIES 2000 (Single Input)	SERIES 2100 (Dual Input)				
Input signal	**1** 4 mA to 20 mA	**2** 0 Vdc to 5 Vdc	**4** 1 Vdc to 6 Vdc	**5** 0 Vdc to 10 Vdc	**6** 1 Vdc to 11 Vdc
Power requirements	**1** 115/230 Vac	**3** 11 Vdc to 36 Vdc			
Option cards	**1** Dual relay option card	**2** Quad relay option card	**3** Quad NPN-OC option card		
	4 Quad PNP-OC option card	**5** Analog output option card	**6** RS 232-C serial communications option card		
	7 RS 485 serial communications option card		**0** No option card		

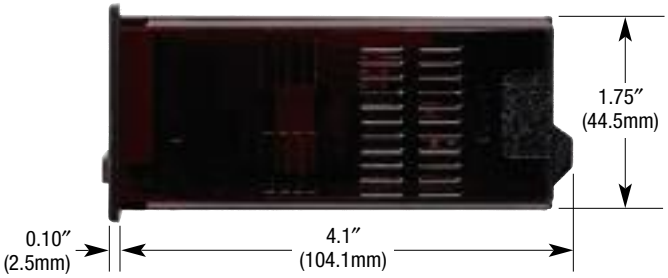
Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

EXAMPLE **2000 – 1 – 1 – 1**

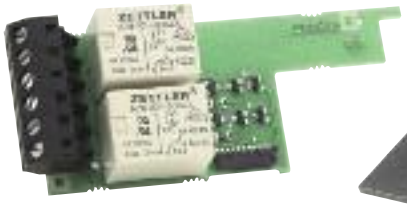
Series 2000
Input signal . . . . . .4 mA to 20 mA
Power requirements . . . . . .115/230 Vac
Option cards . . . . . .Dual relay option card

OPTIONAL ACCESSORIES
RS232C Mating Connector
RS485 Mating Connector
2000-50000 NEMA 4 Enclosure

Outline Dimensions



Typical Plug-in option card with on board terminals



NEMA 4 Enclosure

Available options are plug-in cards that provide alarm and setpoint relay outputs, analog and digital outputs, including RS 232-C and RS 485 functions.

Miniature, Low Pressure Mechanical Switch

NC

NO

SERIES 100

The NOSHOK 100 Series Mechanical Pressure switch is constructed of a one piece housing that makes it highly durable for use in the most rugged applications. The compact design of the switch allows it to be installed in locations where space is limited. The 100 Series switch utilizes a proven diaphragm type sensing element and has an external adjustment screw for ease of setting the switching point on-site. Special versions are available with alternate diaphragm, housing and contact materials to meet most requirements.

The NOSHOK 100 Series Mechanical switch is the ideal choice when reliability, accuracy and cost are a priority.

FEATURES

- One piece machined housing
- Compact size
- External adjustment screw

APPLICATIONS

- Hydraulic systems
- Industrial machinery or machine tools
- Pumps and compressors

SPECIFICATIONS

Pressure Ranges	0 psig to 30 psig through 0 psig to 150 psig	
Measuring Element	NBR diaphragm, optional Viton or EPDM	
Process Connection	1/8 ″ npt male	
Connection Material	Brass, optional stainless steel	
Case	Brass, optional stainless steel	
Switching Function	1 N.O. or 1 N.C. contact	
Adjustment	Adjustment screw from 5 psig to 150 psig dependent on full scale range	
Hysteresis	< 10% of the adjusted valve	
Repeatability	5% of the adjusted value	
Contact Rating	up to 42 VDC	- 2 A
Contact Material	Silver plated, optional gold plated	
Temperature Ranges	Storage Media Ambient	-13° F to 185° F (-25° C to 85° C) -13° F to 185° F (-25° C to 85° C) -13° F to 185° F (-25° C to 85° C)
Electrical Connection	6.3mm Spade terminals	
Environmental Protection	Housing NEMA 4:IP65	
Weight	Approximately 0.07 lbs	

ORDERING INFORMATION

SERIES	**100**
SWITCH FUNCTION	**1** 1 Normally Open **2** 1 Normally Closed
PROCESS CONNECTION	**1** 1/8 ″ NPT Male
ADJUSTABLE RANGE	5 psig to 30 psig **5/30** 15 psig to 150 psig **15/150**
ELECTRICAL CONNECTION	**4** 6.3mm Spade Terminals
SWITCH POINT (If Required)	Specify Pressure

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

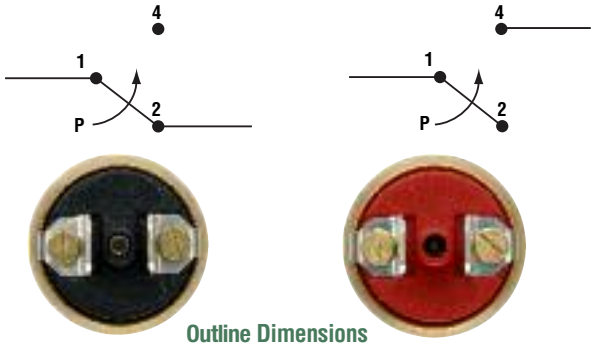
EXAMPLE

100 – 2 – 1 – 15/150 – 4 – 100

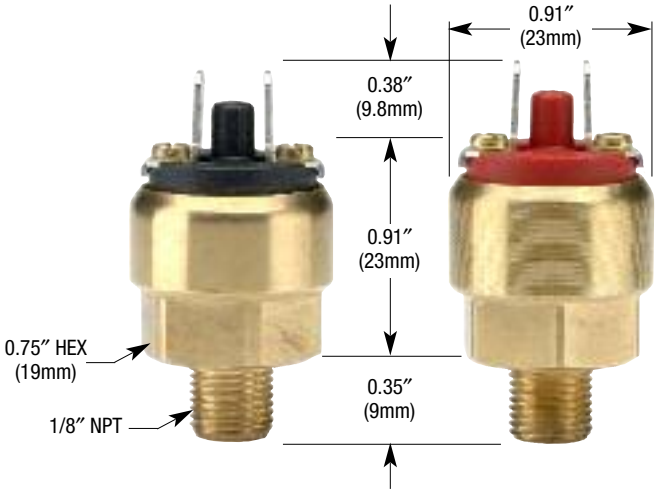
Series.....100
Switch Function.....1 Normally closed
Process Connection.....1/8 ″ NPT male
Adjustible Range.....15 psig to 150 psig
Electrical Connection.....6.3mm Spade terminals
Switch Point.....100 psig

Switch Wiring and Schematics

Normally Closed **Normally Open**



Outline Dimensions



Compact Mechanical Pressure Switches

SERIES 200

The NOSHOK 200 Series Mechanical Pressure switch is one of the most versatile that we offer. It is available in a multitude of pressure ranges with either normally open or normally closed contacts. There is an external adjustment screw for on-site setting of the switch point and is available with a rubber cover to protect it from tampering or adverse environmental conditions. The 200 series mechanical switch operates using a high quality diaphragm or piston element to open or close a micro-switch. There is a built in mechanical overload stop to protect both the spring and micro-switch from damage caused by over pressure.

The NOSHOK 200 Series Mechanical Pressure switch is available in special versions with stainless steel or brass housing, EPDM, Viton or PTFE elastomers and gold contacts for low switching currents.

FEATURES

- High over pressure protection
- Compact size
- External adjustment screw

APPLICATIONS

- Hydraulic systems
- Industrial machinery or machine tools
- Pumps and compressors

SPECIFICATIONS

Pressure Ranges	0 psig to 5 psig through 0 psig to 6000 psig	
Measuring Element	NBR diaphragm, optional Viton, EPDM or PTFE	
Process Connection	1/4 ″ npt male, optional 1/8 ″ npt male	
Connection Material	Zinc plated steel, optional stainless steel or brass	
Case	Zinc plated steel, optional stainless steel or brass	
Switching Function	1 N.O. or 1 N.C. contact	
Adjustment	Adjustment screw from 5 psig to 6000 psig dependent on full scale range	
Hysteresis	Diaphragm type Piston type	< 10% of the adjusted value < 15% of the adjusted value
Repeatability	5% of the adjusted value	
Contact Rating	up to 48 VDC up to 48 VAC	1 A 2 A
Contact Material	Silver plated, optional gold plated	
Temperature Ranges	Storage Media Ambient	-13° F to 185° F (-25° C to 85° C) -13° F to 185° F (-25° C to 85° C) -13° F to 185° F (-25° C to 85° C)
Electrical Connection	6.3mm Spade terminals	
Environmental Protection	Housing Electrical connection	NEMA 4:IP65 NEMA 0:IP00, optional NEMA 3:IP54
Weight	Approximately 0.07 lbs	

ORDERING INFORMATION

SERIES	**200**				
SWITCH FUNCTION	**1** 1 Normally Open **2** 1 Normally Closed				
PROCESS CONNECTION	**2** 1/4 ″ NPT Male				
ADJUSTABLE RANGE ***(Max. working Pressure)***	5 psig to 30 psig (30 psig) 3 psig to 35 psig (350 psig) 15 psig to 150 psig (150 psig) 15 psig to 175 psig (350 psig) 70 psig to 700 psig (3000 psig)	**5/30** **3/35** **15/150** **15/175** **70/700**	150 psig to 1000 psig (1000 psig) 150 psig to 1500 psig (4500 psig) 300 psig to 3000 psig (4500 psig) 750 psig to 3000 psig (3000 psig) 750 psig to 6000 psig (7500 psig)	**150/1000** **150/1500** **300/3000** **750/3000** **750/6000**
ELECTRICAL CONNECTION	**4** 6.3mm Spade Terminals				
SWITCH POINT (If Required)	Specify Pressure				

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

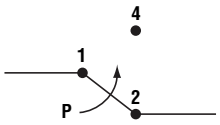
EXAMPLE

200 – 2 – 2 – 15/175 – 4 – 150

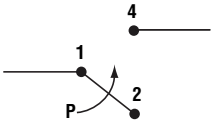
Series.....200
Switch Function.....1 Normally closed
Process Connection.....1/4 ″ NPT male
Adjustible Range.....15 psig to 175 psig
Electrical Connection.....6.3mm Spade terminals
Switch Point.....150 psig

Switch Wiring and Schematics

Normally Closed



Normally Open



Outline Dimensions

Mechanical Pressure Switch

SERIES 300

The NOSHOK 300 Series Mechanical Pressure switch is constructed with a thermoplastic housing and zinc plated steel process connection. Utilizing a proven diaphragm or piston type sensing technology it provides a highly reliable, accurate and cost effective pressure switch for many applications. The micro switch contacts are silver plated for extended service life and exceptional reliability. Switching functions are field adjustable, while under pressure, and is available in SPDT single changeover contact configuration.

The NOSHOK 300 Series Mechanical Switch is available in a wide variety of ranges and comes standard with a Hirschmann electrical connection.

FEATURES

- Measuring ranges from 375 psig to 7500 psig
- Field adjustable switching point
- Diaphragm or piston type sensing element
- Micro-switch technology
- Hirschmann electrical connection

APPLICATIONS

- Hydraulic systems
- Industrial machinery and machine tools
- Stamping and forming presses
- Pumps and compressors

SPECIFICATIONS

Pressure Ranges	0 psig to 375 psig through 0 psig to 7500 psig
Measuring Element	Viton® diaphragm < 750 psig Steel piston with Viton® seal > 750 psig
Process Connection	1/4 ″ NPT standard, others available on request
Connection Material	Zinc plated steel
Case	Thermoplastic
Switching Function	SPDT, micro switch with silver plated contacts, gold plated contacts available on request
Adjustment	Adjustment screw from 3 psig to 6000 psig dependent on full scale range
Hysteresis	10% to 20% of the adjusted value
Repeatability	4% of the adjusted value
Contact Rating	up to 42 VDC 1A up to 110 VDC 0.15A up to 42 VAC 3A up to 125 VAC 3A up to 250 VAC 0.5A
Temperature Ranges	Storage -13° F to 185° F/-25° C to 85° C Media -13° F to 185° F/-25° C to 85° C Ambient -13° F to 185° F/-25° C to 85° C
Electrical Connection	Hirschmann (DIN 43650A)
Environmental Protection	NEMA 4: IP65
Weight	Approximately 0.2 lbs

Viton® is a registered trademark of DuPont Dow Elastomers

ORDERING INFORMATION

SERIES 300					
SWITCH FUNCTION	**1** Single Changeover contact, SPDT				
PROCESS CONNECTIONS	**1** 1/8 ″ NPT Male		**2** 1/4 ″ NPT Male		
SWITCH ADJUSTMENT RANGE (MAXIMUM WORK PRESSURE)	3 psig to 40 psig (375 psig) 15 psig to 200 psig (375 psig) 75 psig to 750 psig (3000 psig)	**3/40** **15/200** **75/750**	150 psig to 1500 psig (4500 psig) 300 psig to 3000 psig (4500 psig) 750 psig to 6000 psig (7500 psig)	**150/1500** **300/3000** **750/6000**
ELECTRICAL CONNECTIONS	**1** 36 ″ Cable (connected to option 8)		**8** Hirschmann (DIN 43650A)		

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

EXAMPLE

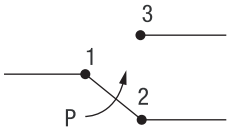
300 – 1 – 2 –75/750 – 1

Series 300
Switch Function . . . . . .Single changeover
Process Connection . . . . . .1/4 ″ NPT male
Switch Adjustment Range . . .75 psig to 750 psig
Electrical Connection . . . . . .36 ″ cable

Additional Ordering Information
Switch Set Point(s) (please specify)

Outline Dimensions

Switching Output Schematic



Mag Switch

SERIES 500

The NOSHOK Mag-Switch is an electronic pressure switch that utilizes proven diaphragm 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.

NOSHOK Mag-Switches are available with either one or two switch functions of either PNP (positive) output or NPN (negative) output in either N.O. (normally open) or N.C. (normally closed) configurations. The switch points are field adjustable utilizing readily accessible adjustment screws with an adjustment range of 10-100% of full scale value.

NOSHOK Mag-Switches come in a wide variety of pressure ranges to suit a wide variety of applications. The standard electrical connection is a 4 pin M12 x 1 threaded connector.

FEATURES

- Measuring range from 30 vacuum through 15,000 PSIG
- Field adjustable switch points
- Semiconductor switching relays (no mechanical contacts)
- Suitable for direct connection to PLC's
- Integrated LED switching indication
- N.O. or N.C. switching functions
- Positive (pnp) or negative (npn) switch functions
- Single or dual switch setpoint 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

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 or n-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 Effect	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	Cable conn. NEMA 6: IP 67 (IEC 529) M12x1 conn. NEMA 4: IP 65 (IEC 529)
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

SERIES 500							
SWITCH FUNCTION	**1** 1 N.O.-pnp	**3** 2 N.O.-pnp	**5** 1 N.O.-npn	**7** 2 N.O.-npn			
	2 1 N.C.-pnp	**4** 2 N.C.-pnp	**6** 1 N.C.-npn	**8** 2 N.C.-npn			
PROCESS CONNECTIONS	**1** 1/8 ″ NPT Male	**2** 1/4 ″ NPT Male					
PRESSURE RANGES	-30 ″ Hg to 0 psig **30V**	0 psig to 150 psig **150**	0 psig to 1000 psig **1000**	0 psig to 7500 psig **7500**			
	0 psig to 15 psig **15**	0 psig to 250 psig **250**	0 psig to 2000 psig **2000**	0 psig to 10000 psig **10000**			
	0 psig to 30 psig **30**	0 psig to 350 psig **350**	0 psig to 3000 psig **3000**	0 psig to 15000 psig **15000**			
	0 psig to 60 psig **60**	0 psig to 750 psig **750**	0 psig to 5000 psig **5000**				
	0 psig to 100 psig **100**						
ELECTRICAL CONNECTIONS	**1** 5 foot cable		**2** 4 pin M12x1 connector				
OPTIONS	**1** Additional Cable Length (specify length) (available with cable connection only)		**ORF** THREADED ORIFICE **note:** M12 mating connectors & cordsets are available as separate options. Please refer to price list for details.				

EXAMPLE

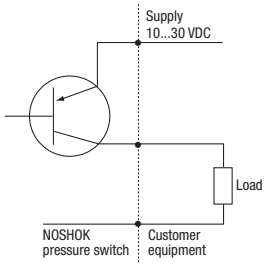
500 – 3 – 2 – 750 – 2 – ORF

Series.....500
Switch Function.....2 N.O. pnp
Process Connection.....1/4 ″ NPT male
Adjustible Range.....0 psig to 750 psig
Electrical Connection.....4 pin M12 x 1 connector
Options.....ORIFICE

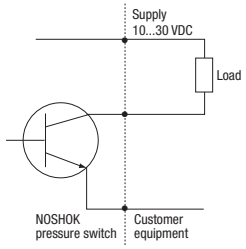
Additional Ordering Information Switch Set Point(s) (please specify)

Switching Output Schematic

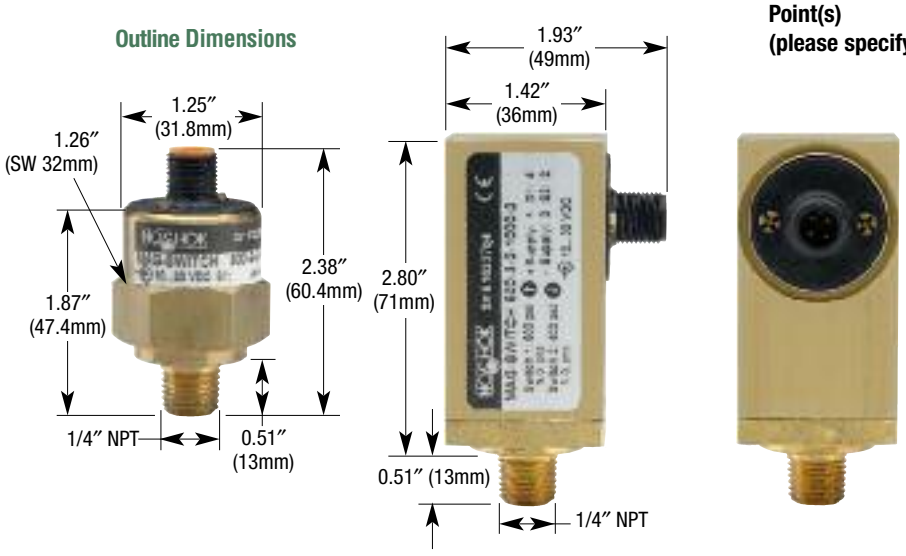
P-switching output



N-switching output



Outline Dimensions



400 PSI & lower **600 PSI & higher**

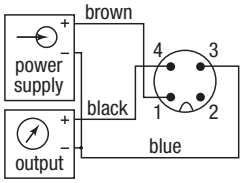
Connection table for 4 PIN M12x1 connector

Function	Connector M12x1
Power supply: +	1 brown
Power supply: -	3 blue
Switching output: S1	4 black
Switching output: S2	2 white

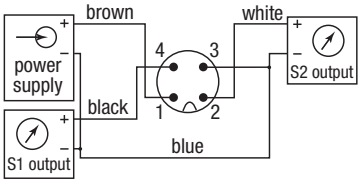
Wiring Diagrams

P-switching, cable or connector

1 switching output

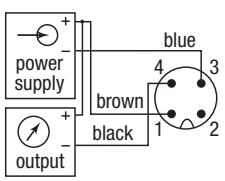


2 switching outputs

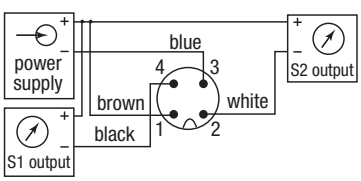


N-switching, cable or connector

1 switching output



2 switching outputs



Smart Switch

SERIES 600

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 either PNP (positive) output or NPN (negative) output in 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.

Available pressure ranges are from 0-5 PSIG through 15,000 PSIG including vacuum, compound and absolute ranges.

They also process the highest EMC capabilities along with the highest mechanical shock and vibration resistance available anywhere.

When only the best will do, the NOSHOK Smart Switch is the only choice.

FEATURES

- Measuring ranges from 5 PSI through 15,000 PSI including vacuum, compound and absolute.
- Corrosion resistant 316 SS welded construction
- Single or Dual switch setpoint functions
- N.O. or N.C. switching functions
- Positive or negative switching capability
- Programmable, tamperproof setpoints
- High overpressure protection
- Highly resistant to mechanical shock and vibration

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
- Refrigeration
- Medical
- Water management
- Petrochemical
- Power generation
- Construction equipment
- Transportation equipment
- Marine

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	1 or 2 N.O. or N.C. p-or n-switching
Adjustment	Switching point 0...100% of F.S. Hysteresis 1...99% of F.S. Dampening 0...500ms
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) Increase time when switching on the supply 50 V/sec.
Switching Power	1 channel p-switching 4 ADC (max. 30 VDC) n-switching 0.3 ADC (max. 30 VDC) 2 channel p-switching 2 ADC (max. 30 VDC) n-switching 0.3 ADC (max. 30 VDC)
Response Time	p-switching ≤ 6 ms n-switching ≤ 10 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 Medium -22° to 212°F/-30° to 100°C 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 Fields (RFI) Level 2 Burst Level 3 Surge Level 2 CE Compliant
Electrical Protection Types	Reverse polarity, overvoltage and short-circuit protection
Weight	Approximately 0.5 lbs

ORDERING INFORMATION

SERIES 600

SWITCH FUNCTION
1 1 N.O. or N.C. Switch-pnp
2 2 N.O. or N.C. Switch-pnp
3 1 N.O. or N.C. Switch-npn
4 2 N.O. or N.C. Switch-npn

PROCESS CONNECTIONS
2 1/4 ″ NPT Male
8 1/2 ″ NPT Male

PRESSURE RANGES

0 inHg to 30 ″ vac	**30V**	30 inHg to 300 psig	**30/300**	0 psig to 100 psig	**100**	0 psig to 2000 psig	**2000**	0 psig to 15 psia	**15A**
30 inHg to 15 psig	**30/15**	30 inHg to 400 psig	**40/400**	0 psig to 150 psig	**150**	0 psig to 3000 psig	**3000**	0 psig to 30 psia	**30A**
30 inHg to 30 psig	**30/30**	0 psig to 5 psig	**5**	0 psig to 200 psig	**200**	0 psig to 5000 psig	**5000**	0 psig to 60 psia	**60A**
30 inHg to 60 psig	**30/60**	0 psig to 10 psig	**10**	0 psig to 300 psig	**300**	0 psig to 7500 psig	**7500**	0 psig to 100 psia	**100A**
30 inHg to 100 psig	**30/100**	0 psig to 15 psig	**15**	0 psig to 500 psig	**500**	0 psig to 10000 psig	**10000**	0 psig to 150 psia	**150A**
30 inHg to 150 psig	**30/150**	0 psig to 30 psig	**30**	0 psig to 750 psig	**750**	0 psig to 15000 psig	**15000**	0 psig to 200 psia	**200A**
30 inHg to 200 psig	**30/200**	0 psig to 60 psig	**60**	0 psig to 1000 psig	**1000**			0 psig to 300 psia	**300A**

PSIG = Gauge Pressure PSIA = Absolute Pressure Other ranges available on special request

ELECTRICAL CONNECTIONS
3 5 pin M12x1 connector

OPTIONS
ORF SS THREADED ORIFICE

note: M12 mating connectors & cordsets are available as separate options. Please refer to price list for details.

EXAMPLE

600 – 3 – 8 – 150 – 3

Series 600
Switch Function . . . . . .1 N.O. or N.C. Switch npn
Process Connection . . . . . .1/2 ″ NPT male
Switch Adjustment Range . . . .0 psig to 150 psig
Electrical Connection . .5 pin M12 x 1 connection

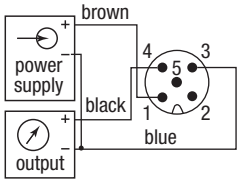
Additional Ordering Information
Switch Set Point(s) (please specify)
Set Point Hysteresis (please specify as a % F.S.)

Outline Dimensions

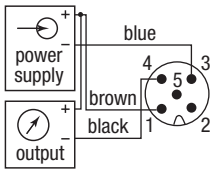
Wiring Diagrams

1 switching output

p-switching

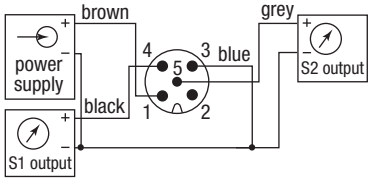


n-switching

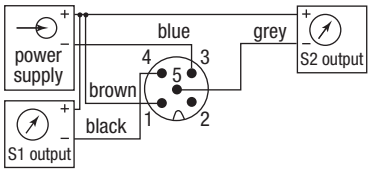


2 switching outputs

p-switching

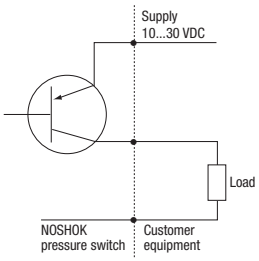


n-switching

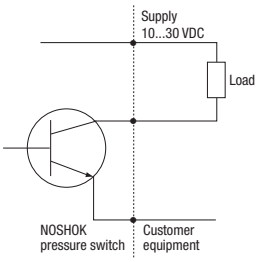


Switching Output Schematic

P-switching output



N-switching output



Connection table for 5 PIN M12x1 connector

Function	Connector M12x1
Power supply: +	1 brown
Power supply: -	3 blue
Switching output: S1	4 black
Switching output: S2	5 grey

Electronic Indicating Pressure Switch/Transmitter

SERIES 800/810

Two switching outputs, or one switching output and an analog (4-20 mA or 0-10 Vdc) transducer output

The NOSHOK 800 Series Electronic Indicating Pressure Switch/Transmitter provides continuous pressure monitoring and allows the programming of the set points without applying pressure. The set points, contact functions (normally open / normally closed), reset points, contact types (npn / pnp) and switching function (hysteresis / gate) are simple to adjust via the two buttons.

By the use of proven ceramic or thin film sensors, this pressure switch features a high level of repeatability and durability. The turnable display and the optional turnable process connection allow ease of installation and wiring.

FEATURES

- Pressure Ranges from -14.5 psig to 9999 psig
- 330° Rotatable Display-Head
- Integrated Password Protection
- Simple 2-Key Programming
- Four-Digit LED-Display
- Scaleable Analog Output
- Fast Response Time

OPTIONAL FEATURES

- 330° Rotatable Pressure Connection
- Minimum/Maximum Value Memory
- Output Dampening up to 2,000 msec
- Switching Time Delay

APPLICATIONS

- Hydraulic and Pnuematic Systems
- Molding and Extruding Equipment
- Stamping and Forming Presses
- Pumps and Compressors
- HVAC
- Power Generation
- Transportation Equipment
- Marine

SPECIFICATIONS

Pressure Ranges	Standard gauge ranges from -14.5 psig to 30 psig through 0 psig to 9999 psig
Pressure Sensor	Thick film ceramic strain gage for renges through -15 psig to 750 psig Sputtered thin film strain gage for all higher pressure ranges
Proof Pressure	2 times Full Scale for ranges Vacuum through 0 psig to 750 psig. 1.75 times Full scale for ranges 0 psig to 1500 psig through 0 psig to 10000 psig
Burst Pressure	2.5 times Full Scale for ranges Vacuum through 0 psig to 750 psig. 4 times Full scale for ranges 0 psig to 1500 psig through 0 psig to 10000 psig.
Wetted Materials	Stainless Steel with ceramic sensor and viton seal on ranges through 0 psig to 230 psig (other sealing materials available upon request) Stainless Steel only for higher pressure ranges.
Housing Material	Stainless Steel
Power Supply	12 - 30 Vdc
Signal Output	4 to 20 mA or 0 to 10 Vdc; programmable and freely adjustable
Switch Points	Individually adjustable via external control keys
Number	1 or 2 (PNP or NPN)
Function	NO/NC; windows - and hysteresis function freely adjustable
Switching rating	0.5 A max
Response time	<10 ms
Accuracy	<1% Full Scale
Display	7-Segment-LED, red 4-digit, height 0.3
Adjustment	Programmable on the display
Switch Point	0.5 to 100% of Full Scale
Hysteresis	0.5 to 99% of Full Scale
Current Consumption	<50 mA (without load)
Accuracy	<0.5% Full Scale (Best Fit Straight Line)
Hysteresis	<0.5% Full Scale (<0.3 with pressure range <0 psi - 230 psi)
Repeatability	<0.2% Full Scale
Stability	<0.2% Full Scale (<0.3 with pressure range <0 psi - 230 psi)
Temperature Limits Media	-4°F to 176°F (-20°C to 85°C) (Thin Film Sensor) -4°F to 176°F (-20°C to 85°C) (Ceramic Sensor)
Ambient	-4°F to 158°F (-20°C to 70°C)
Storage	-22°F to 176°F (-30°C to 80°C)
Compensated Temp Range	32°F to 176°F (0°C to 80°C)
Thermal Zero Effect	± 0.07% Full Scale/°F
Thermal Span Effect	± 0.07% Full Scale/°F
CE compliance	89/336EWG interference emission and immunity see EN 61 326 97/23/EG Pressure equipment directive, Appendix 1
Electrical Protection	Protected against reverse polarity, overvoltage and short circuit
Environmental Protection	NEMA 4 Per IEC 60529/EN 60529
Durability	>10 million Full Scale Cycles
Weight	Approx 0.62 lbs

ORDERING INFORMATION

SERIES 800/810							
SWITCH FUNCTION	**1** 2 N.O. or 2 N.C. (PNP or NPN)		**2** 1 N.O. or 1 N.C. (PNP or NPN) with 4 mA to 20 mA Analog Output				
	3 1 N.O. or 1 N.C. (PNP or NPN) with 0 Vdc to 10 Vdc Analog Output						
PROCESS CONNECTIONS	**2** 1/4 ″ NPT male	**5** 1/4 ″ NPT female	**8** 1/2 ″ NPT male	**10** G 1/4 B male			
	11 G1/2B male	**19** G1/4B female	**45** 7/16-20 UNF SAE #4 (Non-Adjustable)				
SWITCH ADJUSTMENT RANGE (MAXIMUM WORK PRESSURE)	-14.5 psig to 30 psig	**14.5/30**	0 psig to 145 psig	**145**	0 psig to 3750 psig	**3750**	
	-14.5 psig to 75 psig	**14.5/75**	0 psig to 300 psig	**300**	0 psig to 6000 psig	**6000**	
	-14.5 psig to 145 psig	**14.5/145**	0 psig to 750 psig	**750**	0 psig to 9000 psig	**9000**	
	0 psig to 30 psig	**30**	0 psig to 1500 psig	**1500**			
	0 psig to 75 psig	**75**	0 psig to 2400 psig	**2400**			
ELECTRICAL CONNECTIONS	**2** M12 x 1 (4-Pin)						
OPTIONS	**ORF** Threaded Orifice		**RB** Rotatable Base		**EH** Enhanced Software[1]		

[1]Includes Minimum/Maximum Value Memory, Output Dampening, Switching Time Delay

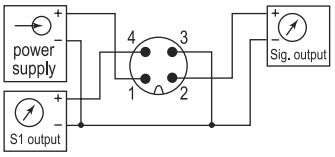
EXAMPLE

800 – 1 – 2 – 145 – 2 – ORF

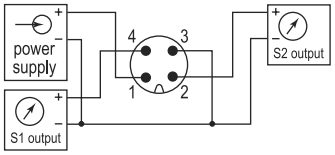
Series 800
Switch Function . . .2 N.O. or N.C. (pnp or npn)
Process Connection . . . . . .1/4 ″ NPT male
Switch Adjustment Range .0 psig to 145 psig
Electrical Connection . . . . . .M12 x 1 (4-pin)
Option . . . . . Orifice

Wiring Diagrams

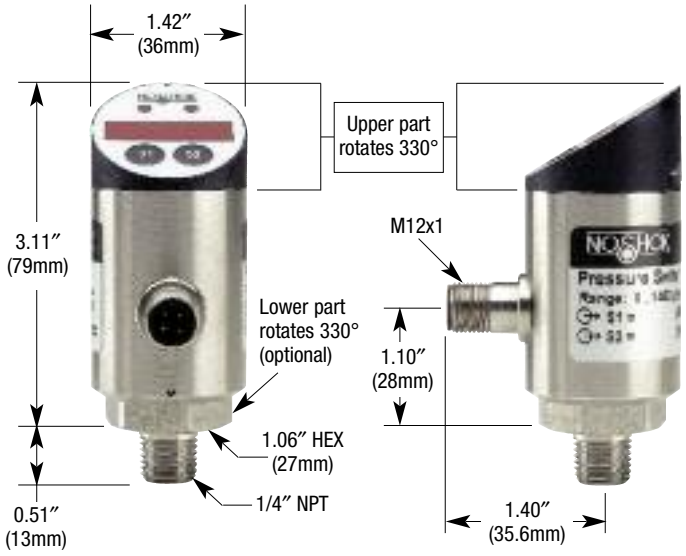
1 switching output (M12 x 1) with 4mA to 20 mA Signal
p-switching



2 switching output (M12 x 1)
p-switching



Outline Dimensions



800 Series

810 Series
Black anodized Aluminum Housing

Electronic Indicating Temperature Switch/Transmitter

SERIES 850

With two programmable switching outputs, or one programmable switching output and one programmable analog output

The NOSHOK 850 Temperature Switch measures and displays temperature and has one or two switching outputs as well as an optional analog output. The temperature set points, reset points, switching functions and the measuring range of the optional analog output are simple to adjust via two buttons. All these features and measuring range between –300°F and 1100°F (-200°C and 600°C) cover the majority of temperature measuring and switching tasks. Different process connections, which are also available as adjustable screw connections, underline the versatility of the NOSHOK 850 Series. For fast response times a version with tapered stem is also available. All wetted parts as well as the housing are made of stainless steel. The housing and the replaceable measuring insert are screwed together. This allows the exchange of the measuring insert without opening the connection to the process.

FEATURES

- Compact dimensions
- Simple handling
- Cost effective
- Service-friendly
- Customized solutions

APPLICATIONS

- Mechanical engineering
- Heating and cooling circuits
- Air conditioning technology
- Plant construction
- Environmental technology

TEMPERATURE RANGES

-50 to +400°F

-50 to +1100°F

-50 to +750°F

-300 to +1100°F

SPECIFICATIONS

Temperature Ranges	Standard ranges from -300°F to 1100°F (-200°C to 600°C) Selectable display for °F or °C
Temperature Sensor	Platinum resistor (PT100 2-Wire, ClassB)
Wetted Materials	316Ti Stainless steel
Housing Material	Stainless steel
Working Pressure	6 mm Stem Diameter; 600 psi 8 mm Stem Diameter; 1500 psi
Power Supply	12 Vdc to 30 Vdc
Power Consumption	≤ 50 mA, without load
Signal Output	4 mA to 20 mA Scaleable from 20-100% of range
Switch Points **Number** **Function** **Adjustment**	Individually adjustable via external control keys 1 or 2 (PNP) NO / NC; windows-and hysteresis function freely adjustable Set point: 0.1° steps within temperature range Reset point: 0.1° steps from beginning temperature range until (set point -0.1°)
Switch Rating	100 mA per switch
Electrical Connection	M12 x 1 (4-Pin)
Accuracy	Class B +0.1% of the temperature range
Display	7 Segment-LED, red 4-digit, height 0.3"
Temperature Ranges **Storage** **Ambient** **Influence**	 -22°F to 176°F (-30°C to 80°C) -13°F to 158°F (-25°C to 70°C) ±0.006% of measuring range per °F
Environmental Protection	NEMA 4; IP65 (IEC 529)
Weight	0.66 lbs. depending on stem length

ORDERING INFORMATION

SERIES 850						
SWITCH FUNCTION	**1** 2 N.O. or N.C. Switch-PNP **2** 1 N.C. or N.C. Switch-PNP (with 4 mA to 20 mA Analog Output)					
PROCESS CONNECTIONS	**2** 1/4 ″ NPT Male			**8** 1/2 ″ NPT Male		
TEMPERATURE RANGES	-50°F to 400°F -50°F to 750°F	**-50/400** **-50/750**		-50°F to 1100°F -300°F to 1100°F	**-50/1100** **-300/1100**	
ELECTRICAL CONNECTIONS	**2** M12 x 1 (4-PIN)					
STEM LENGTH	**025** 2.5 inch **040** 4 inch	**060** 6 inch **090** 9 inch		**120** 12 inch		
STEM DIAMETER	**3** 3mm	**6** 6mm		**8** 8mm		

Please consult your local NOSHOK Distributor or NOSHOK, Inc. for availability and delivery information.

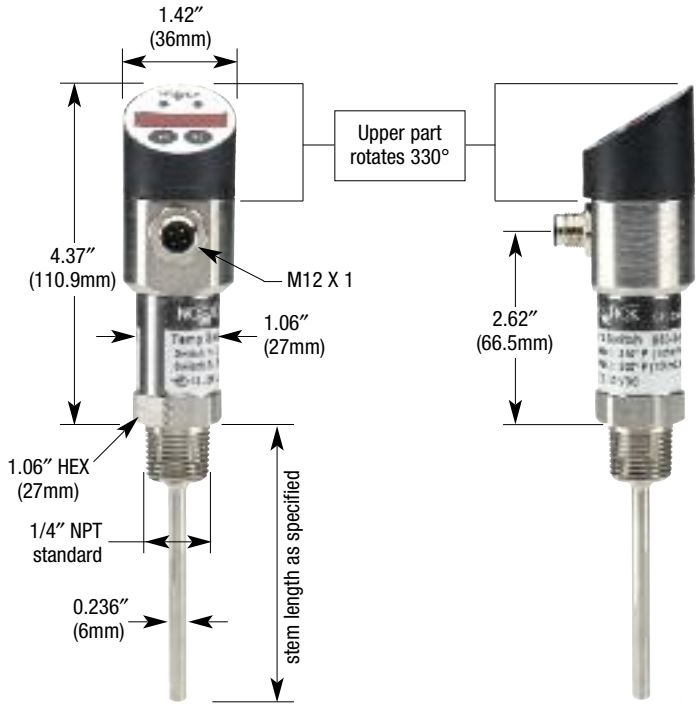
EXAMPLE

Series 850
Switch Function . . . . . .2 N.O. or N.C. -pnp
Process Connection . . . . . .1/4 ″ NPT male
Temperature Range . . . . . .50°F to 400°F
Electrical Connection . . . . . .M12 x 1 (4-pin)
Stem Length . . . . . .2.5″
Stem Diameter 6mm

850 – 1 – 2 – 50/400 – 2 – 025 – 6

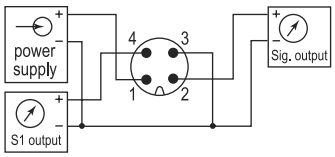
Additional Ordering Information Switch Set Point(s) (please specify)

Outline Dimensions

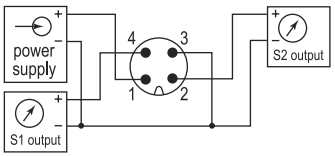


Wiring Diagrams

1 switching output (M12 x 1)
with 4mA to 20 mA Signal
p-switching



2 switching output (M12 x 1)
p-switching



NOSHOK REFERENCE GUIDE
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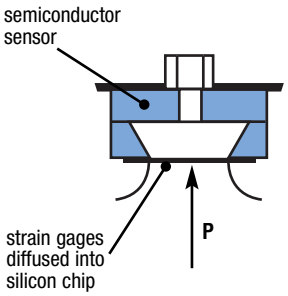
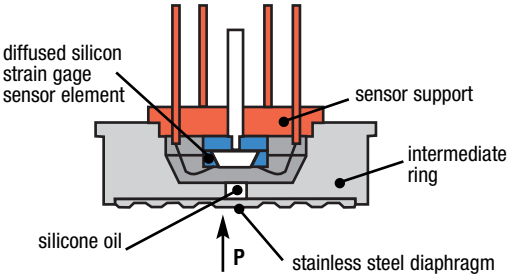
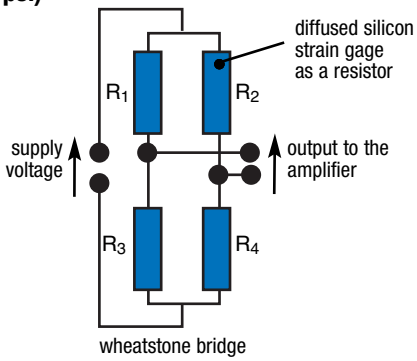
NOSHOK Transducer and Transmitter Pressure Sensing Technologies

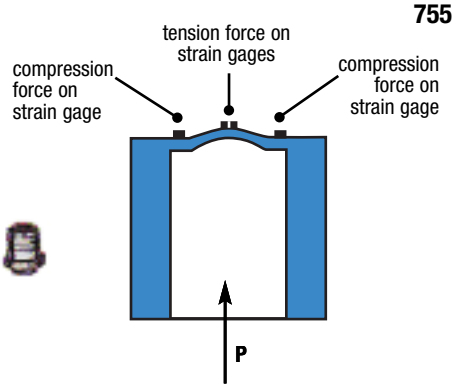
Diffused Silicon Semiconductor Strain Gage Sensor (used in 100, 200, 600, 612, 615, 616, 621, 622, 623, 624, 625, 626, 627, 640, 650, 755 and 756 series - ranges up to 0 psi to 300 psi)

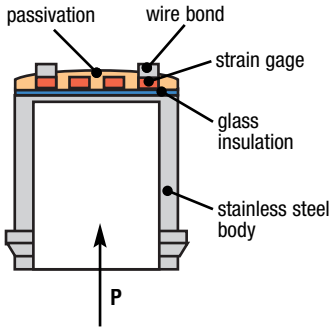


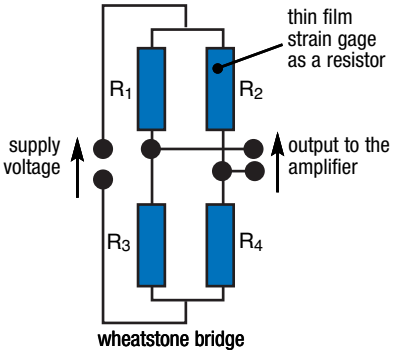




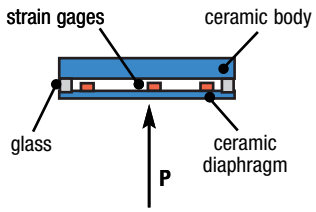
Sputtered Thin Film Strain Gage Sensor (used in 100, 200, 600, 612, 615, 616, 621, 622, 623, 624, 625, 626, 627, 640, 650, 660, 755 and 756 series - ranges 0 psi to 500 psi and higher)

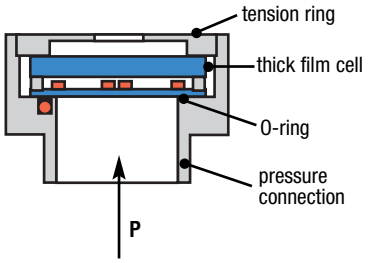


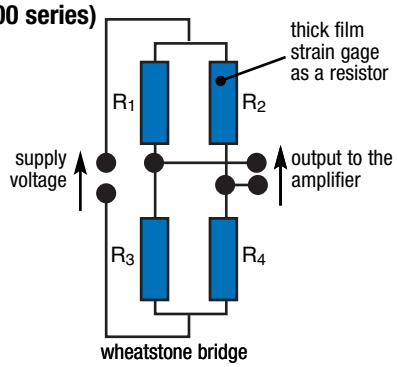




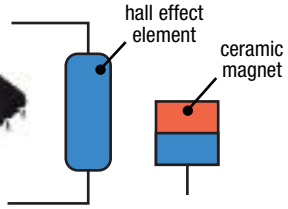
Ceramic Thick Film Strain Gage Sensor (used in 680 and 1000 series)

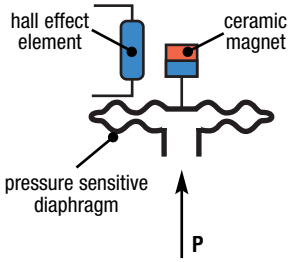


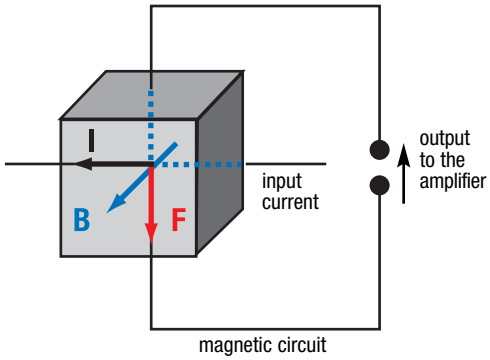




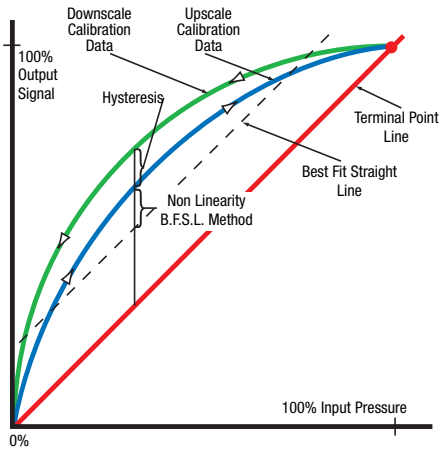
Hall Effect Sensor (used in 630 series)







Best Fit Straight Line (B.F.S.L.) Accuracy Illustration



The diagram illustrates the components of the Best Fit Straight Line (B.F.S.L) accuracy specification used on NOSHOK pressure transducers and transmitters. The shape of the curve is "single lobed" and is exaggerated for explanation purposes. The individual terms are defined as follows:

Upscale and downscale calibration data are the results of plotting the output of the transducer when a known variable input source is applied. A minimum of 6 pressure points of increasing pressure and 5 pressure points of decreasing pressure are used. In practice a second calibration cycle would be performed to provide the means to calculate the repeatability which is described below.

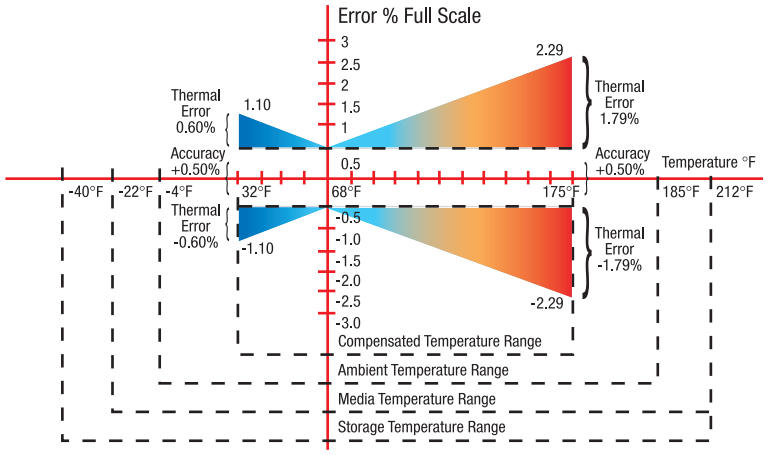
Linearity is the closeness of the calibration to a specified straight line. It is usually measured as non-linearity and expressed as linearity. It is the maximum non-linearity measuring from the upscale data of the calibration curve relative to the Best Fit Straight Line.

Hysteresis is the maximum difference in output when a pressure value is first approached with increasing pressure (upscale) and then with decreasing pressure (downscale). It is obtained from one calibration cycle and is usually expressed as percent full scale output.

Repeatability is usually measured as non-repeatability and expressed as repeatability in percent of full scale output, and is given by the maximum difference between output readings from two calibration cycles always approaching from the same direction. The above diagram shows a single calibration cycle for clarity.

Best Fit Straight Line (BFSL) is a method of expressing linearity based upon a straight line positioned as to minimize the maximum deviation. The calculations are performed using a Least Squares curve fit method.

Thermal Performance of NOSHOK Pressure Transducers



Temperature Performance 100 Series Pressure Transmitter

The above diagram illustrates transducer performance related to the temperature of the environment and media being measured. The graph shows the worst case performance of the series 100 pressure transmitter as an example (other series follow the same pattern). The thermal specification as indicated in the 100 series specifications is given in a worst case coefficient for the combined effects on zero and span. The definitions are as follows.

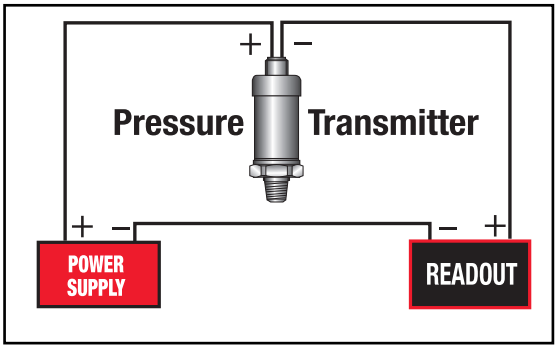
The Compensated Temperature Range is the thermal band over which the effect specification is guaranteed. For the 100 series, the coefficient is +/-0.0167% Full Scale per degree F. This means that over the compensated temperature range the thermal boundaries are straight lines as shown. This is sometimes called a "bow-tie effect" or "butterfly effect".

The Ambient Temperature Range is the maximum and minimum ratings over which the transducer will output a correct signal.

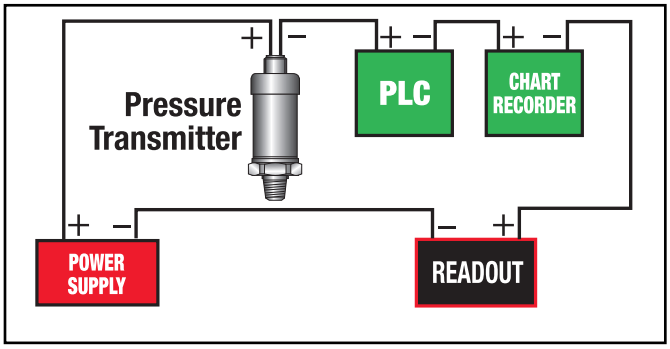
The Media Temperature Range is the maximum and minimum ratings of the media at the process connection.

The Storage Temperature Range is the maximum and minimum ratings for no damage on the shelf.

The Minimum Power Supply Voltage Required for a 2 Wire 4 mA to 20 mA Loop



Single instrument 2 wire current loop



Multiple instrument 2 wire current loop

For the single instrument 2 wire current loop, the minimum power supply voltage is equal to the required voltage across the transmitter plus the voltage drop across the instrumentation plus the voltage drop caused by the resistance of the wiring.

As an example, for a 100 series (4 mA to 20 mA output) pressure transmitter, Vtransmitter = 10 Vdc

Vwiring = Resistance of the wiring (handbook data) X 20 mA maximum current flow in the circuit. If the instrumentation has an input resistance of 250 Ω and if the resistance of the wiring is minimal (100 ft of 24 AWG leadwire has less than 0. 6 Ω (negligible) of resistance), then the calculation including the leadwire is as follows:

Vmin = 10 Vdc + (250 Ω) x .020 Amp + (0.6 Ω) x .020 Amp = 15.012 Vdc

The power supply must provide at least this voltage with the current consumption of .020 Amp.

In a multiple instrument 2 wire current loop, if the second instrument also has an input resistance of 250 Ω, then a second component on the right side of the equation must be included. In this case, the Vmin= 20.012 Vdc. A power supply of 24 Vdc, 1 Amp would be a typical choice.

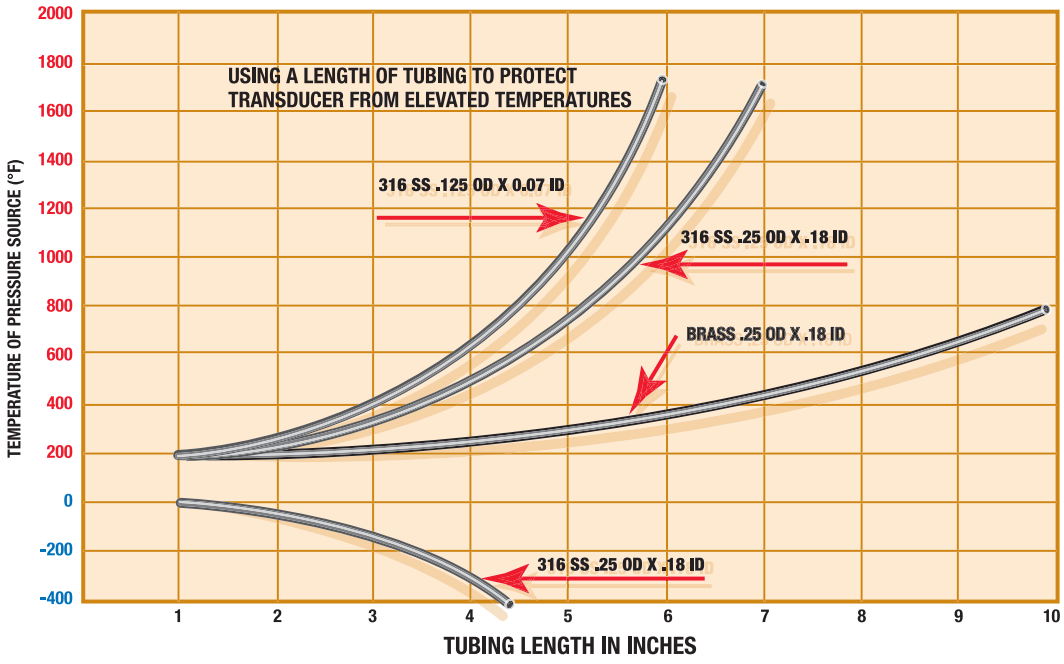
If there is more than 1 transmitter loop operating off of the same power supply then the current (.020 Amp) must be multiplied by the number of loops. It is recommended that the power supply provide 20 % to 30 % higher excitation voltage than that calculated above.

Measuring the Pressure of High Temperature Media

In many applications the medium that the transducer or transmitter will contact may be at an elevated temperature beyond the operational limit of the measuring instrument. Selecting an instrument with a high temperature rating or using diaphragm seals to provide isolation from the medium may not be feasible from a design or economic standpoint.

One way to address this situation is to mount the instrument with a short length of tubing away from the hot area where the measurement needs to be made. With a dead ended pressure chamber, the tubing will effectively dissipate much of the heat and bring the medium in contact with the measuring instrument down to a lower temperature that is within its safe and accurate limit.

The following chart provides the basic information needed to determine the size and material of the tubing needed.



These curves are based upon the following assumptions:

1. The pressure vessel is insulated to limit radiant heat transfer to the transducer – the major source of thermal input is via the connecting tube.
2. The pressure medium has a coefficient of thermal conductivity less than .4btu/hr/ft^2/ft/°F. This figure encompasses a wide range of liquids and gases.
3. The ambient temperature TA around the transducer is 100 °F.
4. The heat transfer rate (convection) from the tubing to still air is 1.44btu/ft^2/hr/°F.

Environmental Ratings

IP Environmental Protection Codes

First Numeral - Protection from Particles	*Second Numeral - Protection from Water*
0 No protection	**0** No protection
1 Particles >50mm	**1** Vertical falling water
2 Particles >12mm	**2** Direct sprays up to 15° from vertical
3 Particles >2.5mm	**3** Direct sprays up to 60° from vertical
4 Particles >1mm	**4** Direct sprays from all directions - limited ingress permitted
5 Dust protected - limited ingress, no deposits	**5** Low pressure jets of water from all directions - limited ingress permitted
6 Dust tight - totally protected	**6** Strong jets of water from all directions
	7 Immersion in water from 15cm to 1m
IP (first numeral, second numeral), for example IP67	**8** Immersion in water under pressure for long periods of time
	9 High pressure steam jet up to 100 bar

Environmental ratings on NOSHOK transducers are indicated with the individual specifications throughout this catalog. The following ratings are used and this is how they are defined.

IP65 Totally protected from dust as well as protection from low pressure jets of water from all directions – limited ingress permitted (no effect on performance)

IP67 Dust tight and capable of immersion in water from 15 cm to 1 m.

IP68 Capable of immersion in water for long periods of time.

IP69K Capable of steam jet washdown.

Since IP65, NEMA 4 and NEMA 4X are related, the differences are in the standards used in qualification. Here they are:

	IP65	**NEMA 4**
Method	Stream of water	Stream of water
Nozzle Size	1/2 ″	1 ″
Distance	10 ft	10 ft
Duration	15 minutes	5 minutes
Direction	All angles	All angles
Pressure/Flow	10 m of water	65 gallons/min.

In order to meet the standard, the IP65 test results allow some ingress of water as long as it does not affect the performance of the instrument.

In order to meet the standard, the NEMA 4 test results do not allow any ingress of water.

NEMA 4X includes the NEMA 4 standard requirements plus corrosion resistance.

Hazardous Location Pressure Measurement with NOSHOK Pressure Transmitters

NOSHOK has solutions to your applications in areas with flammable gases and liquids. Let's start with the definitions related to equipment used in hazardous environments:

Intrinsic Safety Protection

Protection in which the measurement system contains only transmitters and associated equipment that are incapable of causing ignition of the surrounding flammable atmosphere. Normally an intrinsic safety barrier is employed between the transmitter which is located in the hazardous area and the downstream receiving equipment. This barrier contains a electrical network designed to limit the energy (voltage and current) available to the protected circuit in the hazardous location under specified fault conditions. NOSHOK models 625, 626 and 627 are Factory Mutual and Canadian Standards Association approved as intrinsically safe.

Non-incendive Protection

Protection in which the measurement may contain arcing or sparking equipment but is still incapable, under specified test conditions, of igniting the flammable gas, vapor or dust-air mixture. This applies only in Division 2 environments. An intrinsic safety barrier is not required in this measurement system. No special wiring is required. NOSHOK models 623 and 624 are Factory Mutual and Canadian Standards Association approved as non-incendive.

Explosion proof Protection

Protection in which the enclosure of the transmitter is capable of withstanding an explosion of the specified gas or vapor that may occur within it and of preventing the ignition of a specified gas or vapor surrounding the enclosure by sparks, flashes or explosion of the gas or vapor within, and that operates at such an external temperature that a surrounding flammable atmosphere will not be ignited. Explosion proof installation techniques are required including special electrical conduit and junction boxes. NOSHOK models 621 and 622 are Factory Mutual approved as explosion proof.

Hazardous Location Classifications (NEC)

Class I: Areas in which flammable gases or vapors may be present in the air in sufficient quantities to be explosive

Group A: Atmospheres containing acetylene

Group B: Atmospheres such as butadiene, ethylene oxide, propylene oxide, acrolein, or hydrogen (gases or vapors equivalent in hazard to hydrogen, such as manufactured gas)

Group C: Atmospheres such as cyclopropane, ethyl ether, ethylene, gas or vapors of equivalent hazard

Group D: Atmospheres such as acetone, alcohol, ammonia, benzene, benzol, butane, gasoline, hexane, lacquer solvent vapors, naphtha, natural gas, propane, or gas or vapors of equivalent hazard

Class II: Areas made hazardous by the presence of combustible dust

Group E: Atmospheres containing combustible metal dusts, regardless of resistivity; dust of similarly hazardous characteristics having a resistivity of less than 100 Kohms-cm; electrically conductive dusts

Group F: Atmospheres containing combustible carbon black, charcoal, or coke dusts having more than 8% total volatile material; dusts so sensitized that they present an explosion hazard, and dusts having a resistivity of greater than 100 ohm-cm but less than or equal to $1x10^8$ ohm-cm

Group G: Atmospheres containing combustible dust having resistivity equal to or greater than 100K ohm-cm; electrically nonconductive dusts

Class III: Areas made hazardous by the presence of easily ignitable fibers or dust, but which are not likely to be in suspension in the air in quantities that are sufficient to ignite

Division 1: Atmospheres where hazardous concentrations exist continuously, intermittently or periodic under normal operating conditions

Division 2: Atmospheres where hazardous concentrations exist only in case of accidental rupture or breakdown of equipment

Why NOSHOK is the Best Choice

- Stable sensing technologies mean that there is no need for periodic recalibration. NOSHOK transducers do not have glues, epoxies or adhesives in the transduction portion of the sensor module because such organic agents cause calibration drift with temperature and pressure cycling, and over time in some applications, cause complete failure.
- Broad product offering results in best fit of product configuration to customer application requirements.
- CE compliance and an environmentally hardened design mean maximum performance and reliability in difficult real world applications. Products are manufactured in an ISO 9001 certified facility.
- All product specifications are conservatively stated in the literature so that product performance exceeds customer expectations. No specsmanship or games are ever employed, only honest information.
- The calibration of every product is verified in NOSHOK's modern facility with the best available pressure controllers and computerized readout equipment that are at least 4 times the accuracy of the product being checked.
- Highly automated production minimizing the variations in product caused by human labor mean more consistency from unit to unit resulting in interchangeability and consistent performance.
- Simple and proven dc electronics improves reliability and longer mean time between failure (MTBF) characteristics.
- While field failures are few, NOSHOK backs it's electronic products with a 3-year warranty that is the best in the market.
- Products provide significant performance and application flexibility at competitive prices addressing the needs of the OEM and the user alike.
- As a privately owned and run business, NOSHOK employees focus on continually improving customer satisfaction.

Specsmanship – What to Look for in Comparing Other Transducers and Transmitters to NOSHOK Products

- Be on the lookout for suppliers specifying "high accuracy" with a low price. In many cases you will find indications of zero offsets and span offsets of up to 2% each. The specified accuracy of NOSHOK transducers includes any offsets and is a true accuracy upon which you can depend.
- If the competitors do not specify a long term stability specification, then this bears out our contention that many of these other sensing technologies do not yield an attractive stability specification otherwise it would be printed in the literature.
- Look out for the "typical" nomenclature or the Root-Sum-Square (RSS) designation. While these methods provide a statistical probability of how most of the products will perform, it means that if a quantity of units is considered then a percentage of the products will not meet the listed specification. NOSHOK specifications are worst case, so all the transducers meet that specification.

Frequently Asked Questions

Q. What is the difference between a transducer and transmitter?

A. When these terms originated there was a distinctive difference between the two. A transmitter was referred to as an instrument with a current signal (i.e. 4 mA to 20 mA) and a transducer was referred to as an instrument with a voltage signal (i.e. 0 Vdc to 10 Vdc). As time as progressed these terms are now commonly interchanged for reference to either output signal.

Q. What is the difference between the proof pressure and burst pressure specifications?

A. Proof pressure which is higher than the full scale pressure point is the limit that you can go to without affecting the performance and calibration of the transducer. The burst pressure on the other hand is the limit that you can go before there is pressure chamber rupture and damage. An overload limit specification used sometimes means that proof and burst ratings are identical.

Q. Will the series 1800 Attachable Loop Indicator work with transmitters not made by NOSHOK?

A. The series 1800 indicator will work with any brand that has the same pin connections and style Hirschmann connector and sufficient power supply voltage to drive all instruments in the loop. The series 1800 will use 3 Vdc to operate.

Q. What does RFI, EMI and ESD mean related to pressure transducers and transmitter?

A. Radio Frequency Interference, Electromagnetic Interference and Electrostatic Discharge all refer to the effects electrical noise can have on instruments. RFI frequently comes from hand held walkie-talkies and EMI comes from AC motors in the vicinity of the instrument. ESD comes from many sources including the application itself. CE compliant transmitters and transducers incorporate protection techniques and components to minimize most of the interference.

Q. Can traditional diaphragm seals or gauge protectors be used with pressure transducers and transmitters?

A. Most diaphragm seals can be used with pressure transducers and transmitters. The real key is to assemble and fill the seal properly, being careful not to entrap air in the fill fluid.

Q. Are pigtail steam syphons used in transmitter applications?

A. The steam syphon is necessary in steam pressure applications. It is important to isolate the transmitter sensing diaphragm from the high temperature encountered with steam pressure applications.

Q. Can orifices and snubbers be used and why would they be needed?

A. As with other pressure measurement instruments including gauges, pressure pulsations and spikes, are issues with pressure transmitters. Whenever the pressure of an incompressible fluid is measured, there is the potential for pulsations and spikes, which can damage pressure transmitters. An orifice installed in the pressure connection by NOSHOK can protect the transmitter from damage. Where there is the possibility of clogging the small orifice, an attachable piston snubber is recommended.

Q. What is the reason for the vent tube in the cable of the model 612 and 627 submersible level tansmitters?

A. All pressure measurements are inherently differential in theory. Gauge pressure is referenced to ambient atmospheric, absolute pressure is referenced to vacuum contained in an evacuated chamber within the transmitter. The level measurement is also a differential
measurement, with its reference to ambient atmospheric pressure. In order for the submersible level measurement to be referenced to atmospheric, the cable contains a vent tube which runs the complete length of the cable and “vents” into the atmospheric pressure at the junction box connection which is out of the liquid.

Q. How does the series 612 and 627 submersible level transmitter measure level?

A. The transmitter measures the hydrostatic pressure produced by the liquid level higher than the point where the instrument is located. The higher the liquid, the higher the pressure.

Q. NOSHOK transducers and transmitters are normally 2 wire or 3 wire in output configuration. Is a 4 wire transducer available?

A. Voltage output transducers are available with a 4th connection which is electrically the same as the power supply common to connect to wiring configurations that require it.

WARRANTY INFORMATION

INDUSTRIAL PRESSURE & LEVEL TRANSMITTERS & TRANSDUCERS

NOSHOK'S Three Year Warranty applies to the following series:
100, 200, 612, 615/616, 640, 660, 755/756 and 800 Series Transmitters & Transducers

OEM TRANSMITTERS & TRANSDUCERS

NOSHOK'S Three Year Warranty applies to the following series:
300, 600, 630, 650 and 680 Series Transmitters & Transducers

HAZARDOUS LOCATION PRESSURE & LEVEL TRANSMITTERS & TRANSDUCERS

NOSHOK'S Three Year Warranty applies to the following series:
621/622, 623/624, 625/626 and 627 Series Transmitters & Transducers

TEMPERATURE TRANSMITTERS

NOSHOK'S Three Year Warranty applies to the following series:
800 and 850 Series Transmitters & Switches

SANITARY PRESSURE TRANSMITTERS & TRANSDUCERS

NOSHOK'S Three Year Warranty applies to the following series:
11 and 21 Sanitary Transmitters

DIGITAL PRESSURE GAUGES & INDICATORS

NOSHOK'S Three Year Warranty applies to the following series:
1000 Digital Gauges

NOSHOK'S One Year Warranty applies to the following series:
1800, 1900C, 1950 and 2000/2100 Indicators

PRESSURE & TEMPERATURE SWITCHES

NOSHOK'S Three Year Warranty applies to the following series:
500, 600, 800, 810 and 850 Series Electronic Switch Products

NOSHOK'S One Year Warranty applies to the following series:
100, 200 and 300 Series Mechanical Switch Products

NOSHOK guarantees all products to be:

- Free from defects in materials and workmanship.
- To remain within catalogued accuracy specifications.
- To operate within the catalogued performance specifications.

These units must be operated within the catalogued environmental and application parameters. Determination of failure will be made by NOSHOK, Inc.'s equipment and personnel or a certified test facility specializing in this type of evaluation.

NOTES

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All from world class technology.

Combined with real-world stamina.

The highest value with the industry's best warranty.

And all from a company with a 40+ year record of customer satisfaction.

All from your Single Source Instrumentation Company.

The Instrumentation Company

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