

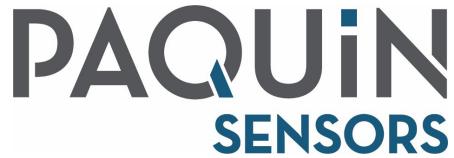
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COMPANY PROFILE

Paquin Sensors offers a range of USA manufactured pressure, vacuum, temperature and differential switches designed for applications in the Industrial and Mobile Hydraulic field as well as Pneumatic, Water Process, Refrigerant, Air Conditioning, Beverage and other associated industries.

The USA designed and manufactured products are complimented by a competitive range of Temperature and Pressure Transducers.

Paquin Sensors offers a complete custom design and manufacturing service providing custom switch products to meet specific customer needs.

From a simple modification to designing a custom sensor, Paquin Sensors engineering and sales staff has an answer for your pressure switch needs.

USA Design, Manufacturing & Sales

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www.paquinsensors.com**

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DEFINITIONS AND TERMINOLOGY

ACCURACY, (REPEATABILITY) - Accuracy is the maximum allowable set point deviation of a single pressure or temperature switch under one given set of environmental and operational conditions.

ACTUATION AND DEACTUATION POINT - The actuation point (sometimes called set point) is the exact point at which the electrical circuit controlled by the switching element is opened (or closed) on increasing pressure or temperature. The deactuation point is the opposite at which the electrical circuit is closed (or opened) on decreasing pressure or temperature.

DEAD BAND - The dead band sometimes referred to as "differential" or "hysteresis" is the change in pressure between actuation and deactuation set points.

PRESSURE SWITCH - An instrument that upon the increase or decrease of a pressure or vacuum, opens or closes one or more electrical switching elements at a predetermined actuation point (setting).

PRESSURE SENSING ELEMENT - That portion of the pressure switch that is in contact with and moves as a result of a change in pressure of the medium. The most common type of pressure sensing elements are diaphragms, accordion bellows, bourdon tubes, and pistons.

SINGLE POLE DOUBLE THROW (SPDT) SWITCHING ELEMENT

A SPDT switching element has one normally open, one normally closed and one common terminal. Three terminals mean that the switch can be wired with the circuit either normally open (N/O) or normally closed (N/C).

NORMALLY CLOSED SWITCHING ELEMENT (NC) - Is one in which the terminals are wired so that current can flow through the switching element until pressure is applied to open the electrical circuit.

NORMALLY OPEN SWITCHING ELEMENT (NO) - Is one in which the terminals are wired so that no current can flow through the switching element until the pressure is applied to close the electrical circuit.

Maximum Overpressure - Maximum pressure which can be applied to any switch without causing permanent degradation.

Electrical Specifications

Please refer to individual data pages for electrical specifications.

Circuit Definitions

Form A - SPST - NO

Single Pole - Single Throw
Normally Open

Form B - SPST - NC

Single Pole - Single Throw
Normally Closed

Form C - SPDT

Single Pole - Double Throw

Standard Electrical Circuit

| Wire Color | DIN 43650 Number | C Circuit |
|------------|------------------|-----------|
| Black | 1 | Common |
| Green | 2 | N. Closed |
| Red | 3 | N. Open |

TECHNICAL DATA

PVS Pressure, Vacuum and Temperature Switches are sealed, vibration resistant and ruggedly built to provide a reliable protection for automatic control of equipment and processes. They are designed for direct or remote mounting and offer a quality product at a competitive price.

Microswitch - Each PVS pressure, vacuum and temperature switch except for the PVA,PMA,DPA,EPA and bi-metal temperature models contain a precision, snap-action microswitch which meets or exceeds industrial standards for reliability; electrical capacity and long life.

The snap action micro switch meets underwriters and CSA specifications for 5 amp or 3 amp rating dependent upon specification type - consult factory for additional data.

Setting - The set point of each switch is preset at the factory as follows:

- Field adjustable series - bottom of range
- Factory set series - at the desired set point

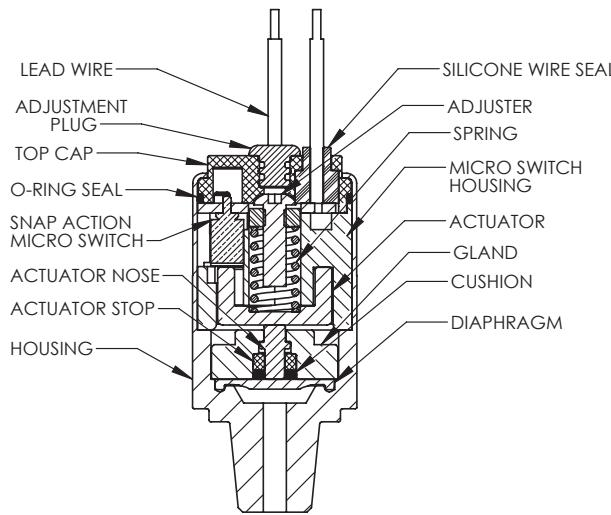
The switches can be ordered for operation with either rising or falling temperature, vacuum or pressure. Reset of the microswitch is automatic and depends upon the dead band or differential of the particular model.

Switch Protection - Standard PVS switches offer excellent protection and long life in most applications. They are also sealed for weatherproof protection. The corrosion-resistant materials in the wetted areas and the standard nitrile diaphragm are suitable for most media. Where required the switches are available with VITON®, KAPTON®, EPDM or Low Temperature Nitrile diaphragms and, in some cases, optional steel, brass or stainless steel housings and wetted areas.

Mechanism - Where the pressure switch is subject to higher pressure, either dynamic or static, of over 700 psi, the diaphragm operating mechanism includes an O-ring cushion which absorbs the slight operation motion required while preventing extrusion of the diaphragm material into the piston-to-cylinder clearance.

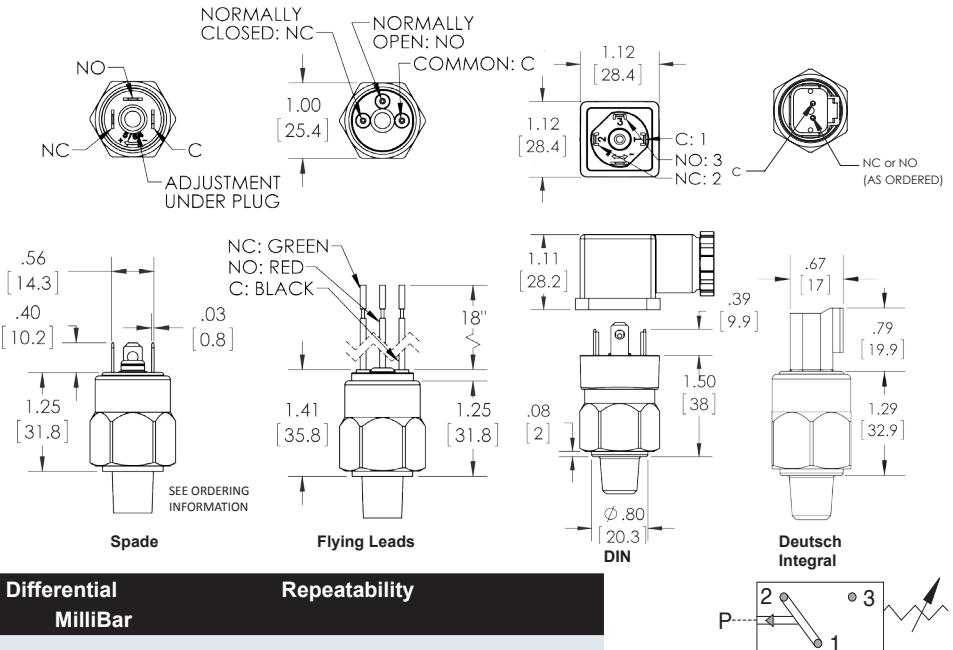
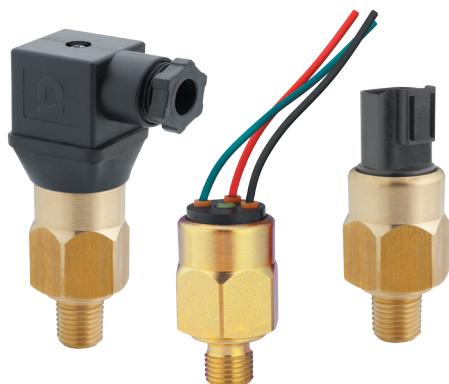
Gold Contacts - May be required for applications where less than 12VDC and 20 Milliamps

Repeatability - Repeatability and set point of units will vary depending on temperature, fluid viscosity, cycle rate and ramp rate. Repeatability values are based on room temperature. Long term inactivation will lead to a high initial set point reading due to the non-linear behavior of the elastomer diaphragms or seals



Model BPA Shown

AVA/AVF Vacuum Switch



| Model | Adjustment Range in Hg MilliBar | Avg. Differential in Hg MilliBar | Repeatability |
|-------|---------------------------------------|--|----------------------------------|
| 1 | 5 - 28 170 - 950 | 4 - 6 135 - 200 | ± 2" Hg (68mbar) + 2% of setting |

ELECTRICAL:

Standard: 5A, 125V/250VAC - U.L. Recognized*
5A, 12/24VDC - U.L. Recognized*
Option -7: 0.02A, 60VDC - U.L. Recognized*
Gold contacts may be required for less than 12 VDC and 20 millamps

PROTECTION:

Exposed Terminals – IP00
DIN HC – IP65
Flying Leads, M12, Deutsch Integral, Packard
Plug – IP69

MEDIA TEMPERATURE RANGE:

Buna – N: -15° to +230°F (-26° to 110°C)
EPDM: -10° to +250°F (-23° to 121°C)
KAPTON®: -40° to +239°F (-40° to 115°C)
VITON®: 0° to +302°F (-18° to 150°C)
(® Registered Trademark of DuPont)

MANUFACTURER'S OTHER RATING:

5A @ 40VDC

SWITCH TYPE:

Snap Action

MAXIMUM OVERPRESSURE:

350 PSI (24 Bar)

WETTED MATERIAL:

Diaphragm: Buna-N (standard)
(optional EPDM, KAPTON®, VITON®)
Housing: Brass
(optional 316 Stainless Steel)

MECHANICAL LIFE:

1,000,000 cycles

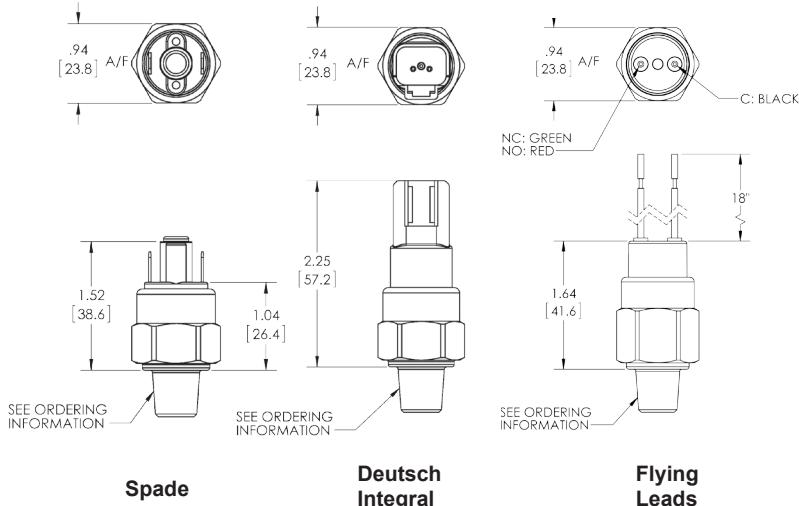
WEIGHT:

0.08 lbs (0.04 kg)

[For Certifications and Approvals: Please Inquire]

ORDERING INFORMATION

| AVA | - * 1 | - * R | - 4M | - A | - FL | - * 1 |
|------------------------|---------------------------------------|--|--|--|---|---|
| Model | Set Point | Direction | Port Size | Circuit | Terminal | Options |
| AVA - Field Adjustable | See Above Adjustment Ranges | R - Rising F - Falling MBR - Millibar Rising MBF - Millibar Falling | 2M - 1/8 NPT 4M - 1/4 NPT 2G - 1/8 BSPP 4G - 1/4 BSPP (undercut for an o-ring seal) | A - SPST / NO B - SPST / NC C - SPDT | SP - 1/4" x 1/32" Spade TS - 6-32 Terminal Screws FL - 18" Flying Leads FLL - Advise additional length of leads if required H - DIN 43650A Male Half Only HC - DIN 43650A Cable Clamp HN - DIN 43650A 1/2 Conduit (female) HCC - XXX (Specify Length in Inches) DI - Deutsch Integral M12 - M12 X 1 PP - Packard Plug | * - Omit If Standard 1 - VITON® Diaphragm 2 - EPDM Diaphragm 2W - EPDM Diaphragm (WRAS) 3 - KAPTON® Diaphragm 4 - 316 SS Housing 5 - Spiral Restrictor 6 - Oxygen Cleaned 7 - Gold Contacts |
| AVF - Factory Set | *Model AVF Specify Set Point Required | *Omit For Model AVA | 4S - 7/16X20 SAE MALE 4SW - 7/16X20 SAE Swivel 6S - 9/16X18 SAE MALE M10 - M10X1 M12 - M12X1.5 | Consult Factory for Non-Standard | * For other Electrical Terminations refer to page 49 | **** Call Factory for Shrink Wrap Options & Pricing |



| Model | Adjustment Range in Hg | Millibar | Avg. Differential | Repeatability |
|-------|---------------------------|-----------|-------------------------------------|-----------------------------------|
| 1 | 3 - 28 | 100 - 950 | Less than 10% of Actuation Point | ± 3" Hg (102mbar) + 2% of setting |

ELECTRICAL:
100 VA Max Voltage 42 VDC
Gold contacts may be required for less than 12 VDC and 20 milliamp

WETTED MATERIAL:
Diaphragm: Buna-N
(optional KAPTON®, EPDM,VITON®)
Housing: Brass
(optional Steel - Electroless Nickel Plated, 316 Stainless Steel)

PROTECTION:
IP69 except exposed terminals – IP00

SWITCH TYPE:
Creep Action

MECHANICAL LIFE:
1,000,000 cycles

MEDIA TEMPERATURE RANGE:
Buna – N: -15° to +230°F (-26° to 110°C)
EPDM: -10° to +250°F (-23° to 121°C)
KAPTON®: -40° to +239°F (-40° to 115°C)
VITON®: 0° to +302°F (-18° to 150°C)
(® Registered Trademark of DuPont)

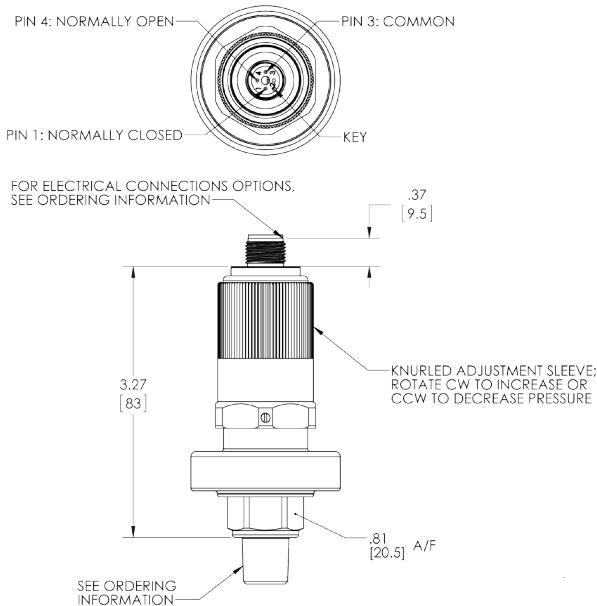
MAXIMUM OVERPRESSURE:
350 PSI (24 Bar)

WEIGHT:
0.15 lbs (0.07 kg)

[For Certifications and Approvals: Please Inquire]

ORDERING INFORMATION

| PVA | - * 1 | - * R | - 4M | - A | - SP | - * 1 |
|------------------------------|---|--|---|--------------------------------|---|--|
| Model | Set Point | Direction | Port Size | Circuit | Terminal | Options |
| PVA - Field Adjustable | See Above Adjustment Range | R - Rising F - Falling MBR - Millibar Rising MBF - Millibar Falling | 2M - 1/8 NPT 4M - 1/4 NPT 2G - 1/8 BSPP 4G - 1/4 BSPP (undercut for an o-ring seal) | A - SPST / NO B - SPST / NC | SP - 1/4" x 1/32" Spade TS - 6-32 Terminal Screws FL - 18" Flying Leads FLL - Advise additional length of leads if required | * - Omit If Standard 1 - VITON® Diaphragm 2 - EPDM Diaphragm 3 - KAPTON® Diaphragm 4 - 316 SS Housing 4A - Steel - Nickel Plated 5 - Spiral Restrictor 6 - Oxygen Cleaned 7 - Gold Contacts |
| PVF - Factory Set | * Model PVF Specify Set Point Required | *Omit For Model PVA | 4S - 7/16X20 SAE MALE 6S - 9/16X18 SAE MALE M10 - M10X1 M12 - M12X1.5 | | FLWTF - Weatherpack Tower Female FLWTM - Weatherpack Tower Male FLWSF - Weatherpack Shroud Female FLWSM - Weatherpack Shroud Male DI - Deutsch Integral | * For other Electrical Terminations refer to page 49 |



| Model | Adjustment Range | | Avg. Differential | Repeatability |
|-------|------------------|-----------|----------------------------------|------------------------------------|
| | in Hg | Millibar | | |
| 1 | 2 - 30 | 68 - 1015 | .3" Hg (10mbar) + 10% of setting | ± 0.5" Hg (17mbar) + 4% of setting |

ELECTRICAL:

Standard: 10A, 125/250VAC - U.L. Recognized
10A, 12/24VDC - U.L. Recognized
Option -7: 0.1A, 125/250VAC,30 VDC - U.L.
Recognized
Gold contacts may be required for less than 12 VDC
and 20 millamps

PROTECTION:

Exposed Terminals - IP00
plastic housing is vented)
DIN HC - IP65
Flying Leads, M12, Deutsch Integral,
Packard- IP69

MEDIA TEMPERATURE RANGE:

Buna – N: -15° to +230°F (-26° to 110°C)
EPDM: -10° to +250°F (-23° to 121°C)
KAPTON®: -40° to +239°F (-40° to 115°C)
VITON®: 0° to +302°F (-18° to 150°C)
(® Registered Trademark of DuPont)
Low Temp Nitrile: -40° to 230°F (-40° to 110°C)

WETTED MATERIAL:

Diaphragm: Buna-N (Standard)
(optional EPDM, KAPTON®, VITON®,
Low Temp Nitrile)
Housing: Brass (standard)
(optional: 316 Stainless Steel)

SWITCH TYPE:

Snap Action

MAXIMUM OVERPRESSURE:

100 PSI (7 Bar)

MECHANICAL LIFE:

1,000,000 cycles

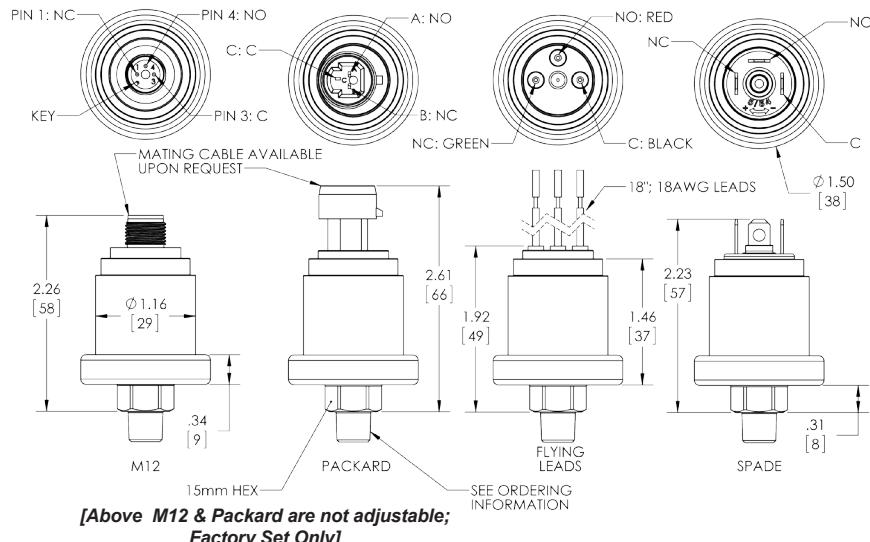
WEIGHT:

Approx. 0.2 lbs (0.09 kg)

[For Certifications and Approvals: Please Inquire]

ORDERING INFORMATION

| PVS | - * 1 | - 4M | - A | - FL | - 1* |
|----------------------------|----------------------------|--|--|---|--|
| Model | Adjustment Range | Port Size | Circuit | Terminal | Options |
| PVS Field Adjustable | See Above Adjustment Range | 2M - 1/8 NPT 4M - 1/4 NPT 2G - 1/8 BSPP 4G - 1/4 BSPP 4S - 7/16X20 SAE MALE Consult Factory for other sizes | A - SPST / NO B - SPST / NC C - SPDT | SP - 1/4" x 1/32" Spade TS - 6-32 Terminal Screws FL - 18" Flying Leads FLL - Advise additional length of leads if required H - DIN 43650A Male Half Only HC - DIN 43650A Cable Clamp HN - DIN 43650A 1/2 Conduit (female) HCC - XXX (Specify Length in Inches) DI - Deutsch Integral (2 pin only) M12 - M12 X 1 * (up to 5 amp rating) PP - Packard Plug | * - Omit If Standard 1 - VITON® Diaphragm 2 - EPDM Diaphragm 3 - KAPTON® Diaphragm 4 - 316 SS Housing 15 - Low Temp Nitrile Diaphragm 6 - Oxygen Cleaned 7 - Gold Contacts ** Factory Set option available - Inquire |



| Model | Adjustment Range | | Avg. Differential | | Repeatability |
|-------|------------------|------------|-------------------|------------|--------------------------------------|
| | In Hg | MilliBar | In Hg | MilliBar | |
| 1 | 1.5 - 10 | 51 - 339 | 0.2 - 0.5 | 0.6 - 0.15 | ± 0.23" Hg (7.8mbar) + 4% of setting |
| 2 | 5 - 30 | 169 - 1016 | 0.2 - 0.5 | 0.6 - 0.15 | ± 0.5" Hg (17mbar) + 4% of setting |

ELECTRICAL:

Standard: 10A, 125/250VAC - U.L. Recognized
10A, 12/24VDC - U.L. Recognized

Option -7: 0.1A, 125/250VAC,30 VDC
- U.L. Recognized

Gold contacts may be required for less than 12 VDC
and 20 millamps

WETTED MATERIAL:

Diaphragm: Buna-N (standard)
(optional EPDM, KAPTON®, VITON®)

Housing: Brass (standard)
(optional: 316 Stainless Steel)

PROTECTION:

Exposed Terminals – IP00
(plastic housing is vented)
DIN HC - IP65
Flying Leads, Packard - IP69

SWITCH TYPE:

Snap Action

MECHANICAL LIFE:

1,000,000 cycles

MEDIA TEMPERATURE RANGE:

Buna – N: -15° to +230°F (-26° to 110°C)
EPDM: -10° to +250°F (-23° to 121°C)
KAPTON®: -40° to +239°F (-40° to 115°C)
VITON®: 0° to +302°F (-18° to 150°C)
(® Registered Trademark of DuPont)

MAXIMUM OVERPRESSURE:

150 PSI (10 Bar)

WEIGHT:

Approx. 0.2 lbs (0.09 kg)

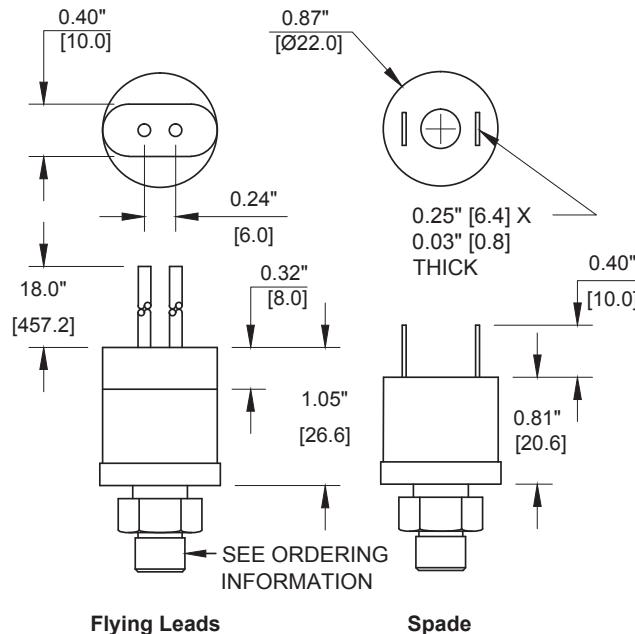
[For Certifications and Approvals: Please Inquire]

ORDERING INFORMATION

| VSA | - * 10 | - R | - 4M | - A | - FL | - 1* |
|----------------------------|---|---|--|--|---|--|
| Model | Set Point | Direction | Port Size | Circuit | Terminal | Options |
| VSA Field Adjustable | Specify Set Point | R - Rising F - Falling BR- Bar Rising BF - Bar Falling | 2M - 1/8 NPT 4M - 1/4 NPT 2G - 1/8 BSPP 4G - 1/4 BSPP | A - SPST / NO B - SPST / NC C - SPDT | SP - 1/4" x 1/32" Spade TS - 6-32 Terminal Screws FL - 18" Flying Leads FLL - Advise additional length of leads if required DI - Deutsch Integral (2 pin only) M12 - M12 X 1 * (<i>up to 5 amp rating</i>) PP - Packard Plug | ** - Omit If Standard 1 - VITON® Diaphragm 2 - EPDM Diaphragm 3 - KAPTON® Diaphragm 4 - 316 SS Housing 5 - Spiral Restrictor 6 - Oxygen Cleaned 7 - Gold Contacts |
| VSF Factory Set | *Model VSF Specify Set Point Required [Please note: Packard Plug & M12 Factory Set Only] | *Omit For Model VSF | Consult Factory for other sizes | | | |

[Please note: Packard Plug & M12 are not adjustable, Factory Set Only]

LPF Pressure Switch



ELECTRICAL:
24V/125VA, 120V/375VA,
240V/375VA, 6A/36VDC
Max Amps @ 12 VDC - 13.5

TEMPERATURE RANGE:
Ambient: -31° to +149°F (-35° to +65°C)
Medium: -31 to +248°F (-35° to +120°C)

WETTED MATERIAL:
Diaphragm: Stainless Steel
Port: Brass

HOUSING:
Plastic

PROTECTION:
IP68 except exposed terminals – IP00

REPEATABILITY:
± 3 PSI (0.21bar) + 5% of setting

SWITCH TYPE:
Snap Action

MECHANICAL LIFE:
100,000 cycles

WEIGHT:
0.10 lbs (0.05 kg)

PRESSURE RANGE:
LPF: 5 - 650 PSI (0.35 - 45 Bar)

MAXIMUM OVERPRESSURE:
375 PSI (26 Bar) for actuation up to 150 PSI (10 Bar)
750 PSI (52 Bar) for actuation from 150-650 PSI (10-45 Bar)

PROOF PRESSURE:
500 PSI (35 Bar)
800 PSI (55 Bar)

[For Certifications and Approvals: Please Inquire]

ORDERING INFORMATION

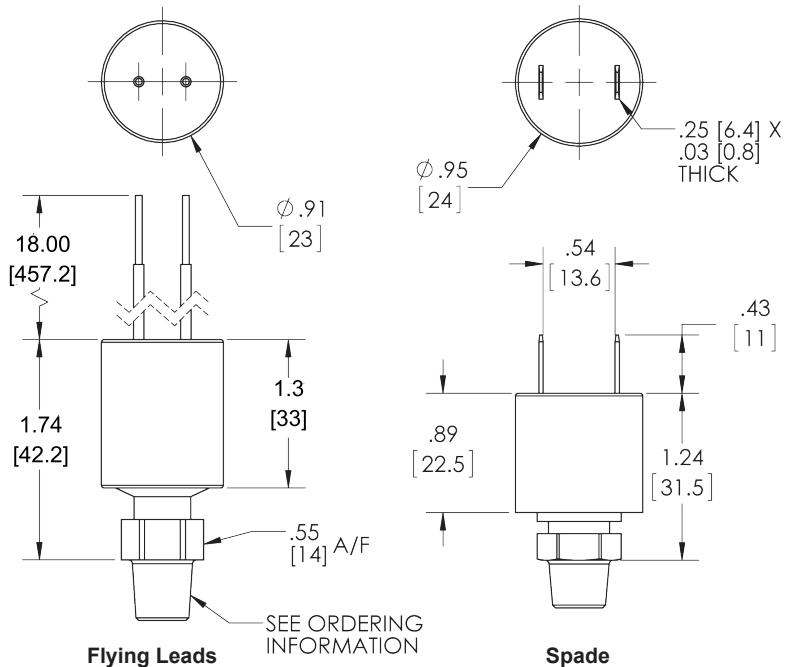
Minimum Order Required - Consult Factory

| LPF | - 35R / 25F | | - 4M | - A | - FL |
|--------------------|--|--|---|--------------------------------|---|
| Model | Rising Set Point | Falling Set Point | Port Size | Circuit | Terminal |
| LPF Factory Set | Specify Set Point 5 - 650 PSI (.35 - 45 Bar) R - PSI Rising BR - Bar Rising | Specify Set Point 5 - 650 PSI (.35 - 45 Bar) F - PSI Falling BF - Bar Falling | 2M - 1/8 NPT* 4M - 1/4 NPT 2G - 1/8 BSPP 4G - 1/4 BSPP 4SF - 7/16 X 20 SAE FEMALE W/Depressor Pin | A - SPST / NO B - SPST / NC | SP - 1/4" x 1/32" Spade FL - 18" Flying Leads FLL - Advise additional length of leads if required FLWTF - Weatherpack Tower Female FLWTM - Weatherpack Tower Male FLWSF - Weatherpack Shroud Female FLWSM - Weatherpack Shroud Male |

*Standard

SPF Pressure Switch

ALL STAINLESS STEEL CONSTRUCTION



ELECTRICAL:

24V/125 VA, 120/240V/375 VA, 6A/36 VDC
Maximum Amperage @ 12 VDC - 13.5 Amp

WETTED MATERIAL:

Diaphragm: Stainless Steel
Port: Stainless Steel
Housing: Stainless Steel

PROTECTION:

IP68 except exposed terminals – IP00

REPEATABILITY:

± 3 PSI (0.21bar) + 5% of setting

SWITCH TYPE:

Snap Action

MECHANICAL LIFE:

100,000 cycles

TEMPERATURE RANGE:

-22° to +180°F (-30° to +82°C)

PRESSURE RANGES:

For Set Points From:
5 - 700 psi (.35 - 48 Bar)
700 - 2000 psi (48 - 138 Bar)

MAXIMUM OVERPRESSURE:

1000 PSI (69 Bar) for set point pressures to
700 PSI (48 Bar)
2500 PSI (172 Bar) for set point pressures from
700 psi (48 Bar) to 2000 PSI (138 Bar)

WEIGHT:

0.10 lbs (0.05 kg)

[For Certifications and Approvals: Please Inquire]

ORDERING INFORMATION

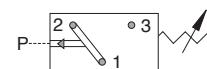
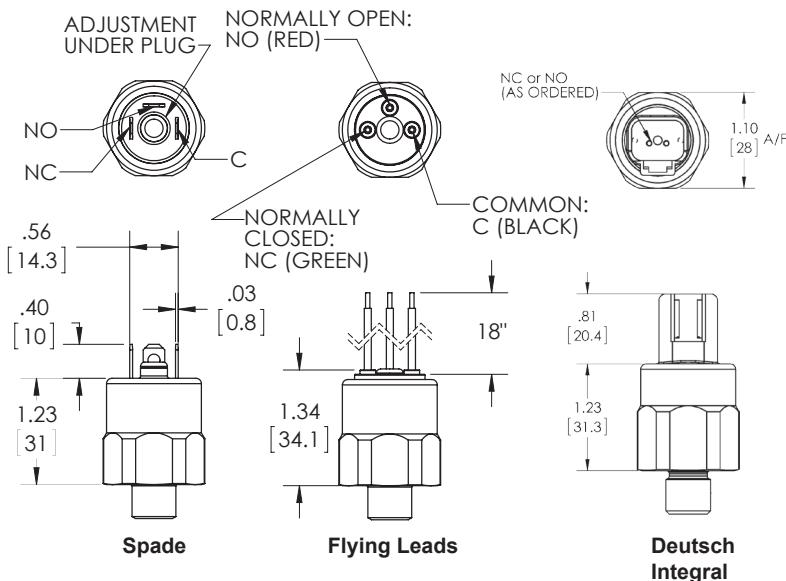
Minimum Order Required - Consult Factory

| SPF | - 320R / 285F | | - 4M | - A | - FL |
|--------------------|---|---|---|--------------------------------|---|
| Model | Rising Set Point | Falling Set Point | Port Size | Circuit | Terminal |
| SPF Factory Set | Specify Set Point 5 - 2000 PSI (.35 - 138 Bar) R - PSI Rising BR - Bar Rising | Specify Set Point 5 - 2000 PSI (.35 - 138 Bar) F - PSI Falling BF - Bar Falling | 2M - 1/8 NPT* 4M - 1/4 NPT 2G - 1/8 BSPP 4G - 1/4 BSPP | A - SPST / NO B - SPST / NC | SP - 1/4" x 1/32" Spade FL - 18" Flying Leads FLL - Advise additional length of leads if required FLWTF - Weatherpack Tower Female FLWTM - Weatherpack Tower Male FLWSF - Weatherpack Shroud Female FLWSM - Weatherpack Shroud Male |

*Standard
All Others Special
Order Only

HPA/HPF Pressure Switch

High Impact Plastic Switch



| Model | Adjustment Range | | Avg. Differential | | Repeatability |
|-------|------------------|-----------|-------------------|------------|--------------------------------------|
| | PSI | Bar | PSI | Bar | |
| 1 | 3 - 20 | 0.2 - 1.4 | 2 - 5 | 0.13 - 0.4 | ± 0.4 psi (0.03 bar) + 2% of setting |
| 2 | 15 - 80 | 1.03 - 6 | 4 - 7 | 0.27 - 0.5 | ± 3 psi (0.14 bar) + 3% of setting |
| 3 | 50 - 150 | 3.5 - 10 | 7 - 15 | 0.5 - 1.0 | ± 4 psi (0.3 bar) + 3% of setting |

ELECTRICAL:

Standard: 5A, 125V/250VAC - U.L. Recognized*
5A, 12/24VDC - U.L. Recognized*

Option -7: 0.02A, 60VDC - U.L. Recognized*

Gold contacts may be required for less than 12 VDC and 20 millamp

MANUFACTURER'S OTHER RATING:

5A @ 40VDC

WETTED MATERIAL:

Diaphragm: Buna-N Standard
(optional EPDM, KAPTON®, VITON®)
Housing: Glass Filled Nylon

PROTECTION:

Exposed Terminals – IP00
Flying Leads, M12, Deutsch Integral - IP69

SWITCH TYPE:

Snap Action

MECHANICAL LIFE:

1,000,000 cycles

TORQUE SPEC:*

Use thread sealant tape and hand tighten plus 1-1/2 to 1-3/4 turns

[For Certifications and Approvals: Please Inquire]

MEDIA TEMPERATURE RANGE:

Buna – N: -15° to +230°F (-26° to 110°C)

EPDM: -10° to +250°F (-23° to 121°C)

KAPTON®: -40° to +239°F (-40° to 115°C)

VITON®: 0° to +302°F (-18° to 150°C)

(® Registered Trademark of DuPont)

MAXIMUM OVERPRESSURE:

250 PSI (17 Bar)

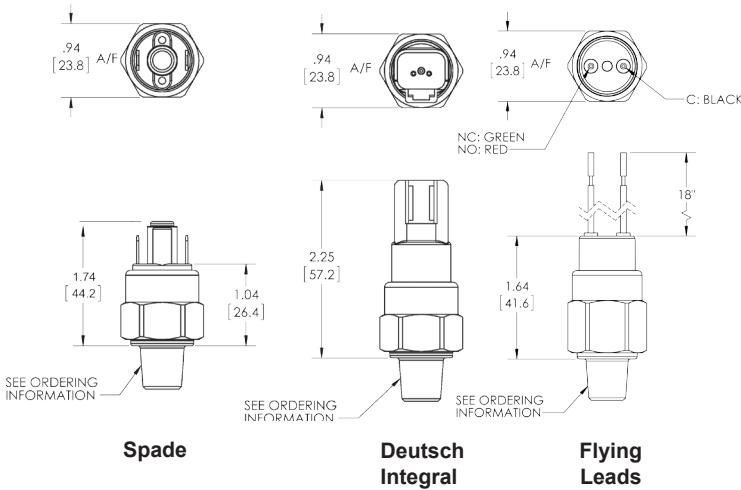
WEIGHT:

0.08 lbs (0.04 kg)

ORDERING INFORMATION

| HPA | - * 2 | - * R | - 4M | - A | - FL | - * 1 |
|------------------------|--|--|--|--|---|--|
| Model | Set Point | Direction | Port Size | Circuit | Terminal | Options |
| HPA - Field Adjustable | See Above Adjustment Ranges | R - PSI Rising F - PSI Falling BR - Bar Rising BF - Bar Falling | 2M - 1/8 NPT 4M - 1/4 NPT 2G - 1/8 BSPP 4G - 1/4 BSPP | A - SPST / NO B - SPST / NC C - SPDT | SP - 1/4" x 1/32" Spade TS - 6-32 Terminal Screws FL - 18" Flying Leads FLL - Advise additional length of leads if required FLWTF - Weatherpack Tower Female FLWTM - Weatherpack Tower Male FLWSF - Weatherpack Shroud Female FLWSM - Weatherpack Shroud Male DI - Deutsch Integral M12 - M12 X 1 PP - Packard Plug | * - Omit If Standard 1 - VITON® Diaphragm 2 - EPDM Diaphragm 3 - KAPTON® Diaphragm 7 - Gold Contacts |
| HPF - Factory Set | * Specify Set Point Required for model HPF | *Omit For Model HPA | * See above for Torque Specs | | | |

PMA/PMF Pressure Switch



| Model | Adjustment Range | | Avg. Differential | Repeatability |
|-------|------------------|------------|----------------------------------|------------------------------------|
| | PSI | Bar | | |
| 1 | 2 - 20 | 0.14 - 1.4 | | |
| 1A | 25 - 85 | 1.7 - 6 | Less than 10% of Actuation Point | |
| 2 | 15 - 100 | 1.03 - 6.9 | | ± 3 psi (0.21 bar) + 5% of setting |
| 3 | 50 - 150 | 3.5 - 10 | | |

ELECTRICAL:

100 VA Max Voltage 42 VDC
Gold contacts may be required for less than 12 VDC and 20 milliamp

WETTED MATERIAL:

Diaphragm: KAPTON®
(optional EPDM, VITON®, Buna-N)
Housing: Brass
(Optional Steel - Electroless Nickel Plated, 316 Stainless Steel)

PROTECTION:

Exposed Terminals - IP00
Flying Leads & Deutsch Integral - IP69

SWITCH TYPE:

Creep Action

MECHANICAL LIFE:

1,000,000 cycles

MEDIA TEMPERATURE RANGE:

Buna - N: -15° to +230°F (-26° to 110°C)
EPDM: -10° to +250°F (-23° to 121°C)
KAPTON®: -40° to +239°F (-40° to 115°C)
VITON®: 0° to +302°F (-18° to 150°C)
(® Registered Trademark of DuPont)

MAXIMUM OVERPRESSURE:

500 PSI (34.5 Bar)

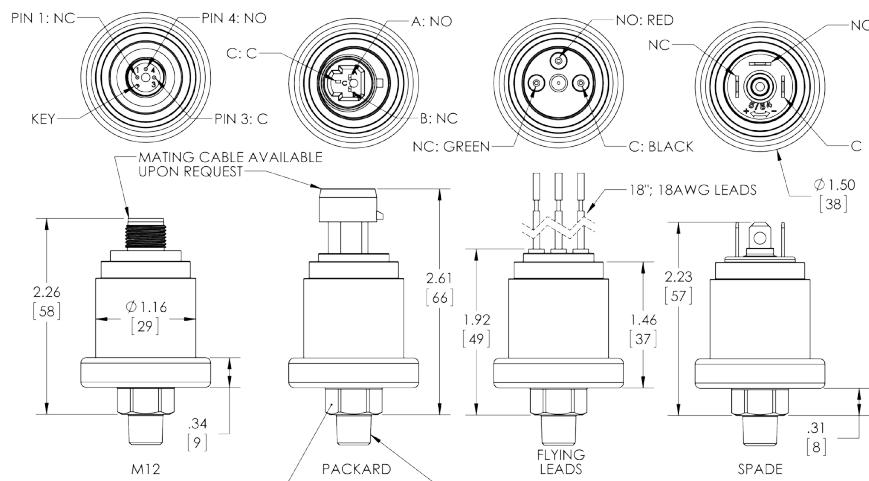
WEIGHT:

0.15 lbs (0.07 kg)

[For Certifications and Approvals: Please Inquire]

ORDERING INFORMATION

| PMA | - * 2 | - * R | - 4M | - A | - SP | - * 1 |
|------------------------|--|--|--|--------------------------------|--|--|
| Model | Set Point | Direction | Port Size | Circuit | Terminal | Options |
| PMA - Field Adjustable | See Above Adjustment Ranges | R - PSI Rising F - PSI Falling BR - Bar Rising BF - Bar Falling | 2M - 1/8 NPT 4M - 1/4 NPT 2G - 1/8 BSPP 4G - 1/4 BSPP (undercut for an o-ring seal) | A - SPST / NO B - SPST / NC | SP - 1/4" x 1/32" Spade TS - 6-32 Terminal Screws FL - 18" Flying Leads FLL - Advise additional length of leads if required FLWTF - Weatherpack Tower Female FLWTF - Weatherpack Tower Male FLWSF - Weatherpack Shroud Female FLWSM - Weatherpack Shroud Male DI - Deutsch Integral C - 18" Cable | * - Omit If Standard 1 - VITON® Diaphragm 2 - EPDM Diaphragm 14 - Buna-N Diaphragm 4 - 316 SS Housing 4A - Steel - Nickel Plated 5 - Spiral Restrictor 6 - Oxygen Cleaned 7 - Gold Contacts RB - Rubber Boot (for Spade or TS terminations) |
| PMF - Factory Set | * Model PMF Specify Set Point Required | *Omit For Model PMA | 4GS- 1/4 BSPP (no undercut) 4S - 7/16X20 SAE MALE 6S - 9/16X18 SAE MALE M10 - M10X1 * M12 - M12X1.5 * *Consult Factory for Specials | | | |



[Above M12 & Packard are not adjustable;
Factory Set Only]

| Model | Adjustment Range PSI | Bar | Avg. Differential | Repeatability |
|-------|-------------------------|-------------|-------------------------------------|--------------------------------------|
| 1 | 0.75 - 3.5 | 0.05 - 0.24 | | ± 0.2 psi (0.014 bar) |
| 2 | 2.5 - 15 | 0.17 - 1.03 | | ± 0.3 psi (0.02 bar) |
| 3 | 10 - 30 | 0.70 - 2.07 | Less than 10% of Actuation Point | ± 0.6 psi (0.04 bar) + 6% of setting |
| 4 | 25 - 75 | 1.72 - 5.17 | | ± 2.0 psi (0.14 bar) + 6% of setting |
| 5 | 65 - 150 | 4.5 - 10.3 | | ± 2.0 psi (0.14 bar) + 6% of setting |

ELECTRICAL:

Standard: 10A, 125/250VAC - U.L. Recognized
10A, 12/24VDC - U.L. Recognized

Option -7: 0.1A, 125/250VAC, 30 VDC - U.L. Recognized

Gold contacts may be required for less than 12 VDC
and 20 millamps

PROTECTION:

Exposed Terminals – IP00
(plastic housing is vented)

DIN HC - IP65
Flying Leads, M12*, Deusch Integral
Packard- IP69

MEDIA TEMPERATURE RANGE:

Buna – N: -15° to +230°F (-26° to 110°C)
EPDM: -10° to +250°F (-23° to 121°C)

KAPTON®: -40° to +239°F (-40° to 115°C)

VITON®: 0° to +302°F (-18° to 150°C)

(® Registered Trademark of DuPont)

Low Temp Nitrile: -40° to 230°F (-40° to 110°C)

WETTED MATERIAL:

Diaphragm: Buna-N (standard)
(optional EPDM, KAPTON®, VITON®)

Housing: Brass (standard)
(optional: 316 Stainless Steel)

SWITCH TYPE:

Snap Action

MECHANICAL LIFE:

1,000,000 cycles

MAXIMUM OVERPRESSURE:

350 PSI (24 Bar) - Dynamic

500 PSI (35 Bar) - Static

WEIGHT:

Approx. 0.2 lbs (0.09 kg)

[For Certifications and Approvals: Please Inquire]

ORDERING INFORMATION

| PSA | - *10 | - *R | - 4M | - A | - FL | - 1* |
|----------------------------|---|--|--|--|--|--|
| Model | Set Point | Direction | Port Size | Circuit | Terminal | Options |
| PSA Field Adjustable | Specify Set Point | R - Rising F - Falling BR - Bar Rising BF - Bar Falling | 2M - 1/8 NPT 4M - 1/4 NPT 2G - 1/8 BSPP 4G - 1/4 BSPP | A - SPST / NO B - SPST / NC C - SPDT | SP - 1/4" x 1/32" Spade TS - 6-32 Terminal Screws FL - 18" Flying Leads FLL - Advise additional length of leads if required DI - Deutsch Integral (2 pin only) M12 - M12 X 1 * (up to 5 amp rating) PP - Packard Plug | ** - Omit If Standard 1 - VITON® Diaphragm 2 - EPDM Diaphragm 3 - KAPTON® Diaphragm 4 - 316 SS Housing 5 - Spiral Restrictor 6 - Oxygen Cleaned 7 - Gold Contacts |
| PSF Factory Set | * Model PSF Specify Set Point Required [Please note: Packard Plug & M12 are Factory Set Only] | *Omit For Model PSA | Consult Factory for other sizes | | | |



PIN 4: NORMALLY OPEN PIN 3: COMMON

PIN 1: NORMALLY CLOSED KEY

FOR ELECTRICAL CONNECTIONS OPTIONS,
SEE ORDERING INFORMATION

.37
[9.5]

3.12
[79.2]

KNURLED ADJUSTMENT KNOB;
ROTATE CW TO INCREASE OR
CCW TO DECREASE PRESSURE

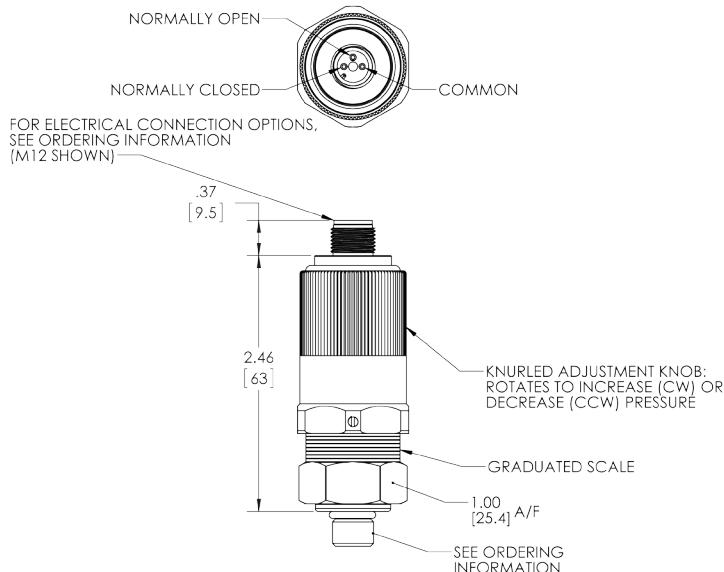
SEE ORDERING
INFORMATION

.81 [20.6] A/F

| Model | Adjustment Range | | Avg. Differential | Repeatability |
|--|------------------|-----------|-----------------------------------|--------------------------------------|
| | PSI | MilliBar | | |
| 1 | 0.5 - 15 | 34 - 1034 | 0.4 psi (26mbar) + 12% of setting | ± 0.3 psi (0.02 bar) + 6% of setting |
| ELECTRICAL: | | | | |
| Standard: 10A, 125/250VAC - U.L. Recognized 10A, 12/24VDC - U.L. Recognized Option -7: 0.1A, 125/250VAC,30 VDC - U.L. Recognized Gold contacts may be required for less than 12 VDC and 20 millamps | | | | |
| PROTECTION: | | | | |
| Exposed Terminals – IP00 plastic housing is vented DIN HC - IP65 Flying Leads , M12, Deutsch Intergal, Packard - IP69 | | | | |
| MEDIA TEMPERATURE RANGE: | | | | |
| Buna – N: -15° to +230°F (-26° to 110°C) EPDM: -10° to +250°F (-23° to 121°C) KAPTON®: -40° to +239°F (-40° to 115°C) VITON®: 0° to +302°F (-18° to 150°C) (® Registered Trademark of DuPont) Low Temp Nitrile: -40° to 230°F (-40° to 110°C) | | | | |
| WETTED MATERIAL: | | | | |
| Diaphragm: Buna-N (Standard) (optional EPDM, KAPTON®, VITON®, Low Temp Nitrile) Housing: Brass (standard) (optional: 316 Stainless Steel) | | | | |
| SWITCH TYPE: | | | | |
| Snap Action | | | | |
| MECHANICAL LIFE: | | | | |
| 1,000,000 cycles | | | | |
| MAXIMUM OVERPRESSURE: | | | | |
| 150 PSI (10 Bar) | | | | |
| WEIGHT: | | | | |
| Approx. 0.2 lbs (0.09 kg) | | | | |
| <i>[For Certifications and Approvals: Please Inquire]</i> | | | | |

ORDERING INFORMATION

| PAS | - * 10 | - * R | - 4M | - A | - FL | - 1* |
|----------------------------|--|---|--|--|--|--|
| Model | Set Point | Direction | Port Size | Circuit | Terminal | Options |
| PAS Field Adjustable | See Above Adjustment Range | R - Rising F - Falling MBR- MilliBar Rising MBF - MilliBar Falling | 2M - 1/8 NPT 4M - 1/4 NPT 2G - 1/8 BSPP 4G - 1/4 BSPP 4S - 7/16X20 SAE MALE | A - SPST / NO B - SPST / NC C - SPDT | SP - 1/4" x 1/32" Spade TS - 6-32 Terminal Screws FL - 18" Flying Leads FLL - Advise additional length of leads if required H - DIN 43650A Male Half Only HC - DIN 43650A Cable Clamp HN - DIN 43650A 1/2 Conduit (female) HCC - 3 ft (1m) standard (Inquire for other lengths) DI - Deutsch Integral (2 pin only) M12 - M12 X 1 * (up to 5 amp rating)) PP- Packard Plug | ** - Omit If Standard 1 - VITON® Diaphragm 2 - EPDM Diaphragm 3 - KAPTON® Diaphragm 4 - 316 SS Housing 5 - Spiral Restrictor 6 - Oxygen Cleaned 7 - Gold Contacts |
| PAF Factory Set | *Model PAF Specify Set Point Required | *Omit For Model PAS | Consult Factory for other sizes | | | |



| Model | Adjustment Range | | Avg. Differential | | Repeatability |
|-------|------------------|----------|-------------------|------------|------------------------------------|
| | PSI | Bar | PSI | Bar | |
| 1 | 5 - 75 | 0.35 - 5 | 3 - 7 | 0.21 - 0.5 | ± 3 psi (0.21 bar) + 3% of setting |
| 2 | 50 - 150 | 3.5 - 10 | 7 - 15 | 0.5 - 1.0 | ± 4 psi (0.3 bar) + 3% of setting |

ELECTRICAL:

Standard: 10A, 125/250VAC - U.L. Recognized
 10A, 12/24VDC - U.L. Recognized
 Option -7: 0.1A, 125/250VAC,30 VDC - U.L. Recognized
 Gold contacts may be required for less than 12 VDC
 and 20 millamps

WETTED MATERIAL:

Diaphragm: Buna-N (Standard)
 (optional: EPDM, VITON®, KAPTON®
 Low Temp Nitrile)
 Brass & stainless steel housing
 Housing: Brass (standard)
 (optional: 316 Stainless Steel)

PROTECTION:

Exposed Terminals – IP00
 DIN HC - IP65
 Flying Leads, M12,
 Deutsch Integral, Packard- IP69

SWITCH TYPE:

Snap Action

MECHANICAL LIFE:

1,000,000 cycles

MEDIA TEMPERATURE RANGE:

Buna – N: -15° to +230°F (-26° to 110°C)
 EPDM: -10° to +250°F (-23° to 121°C)
 KAPTON®: -40° to +230°F (-40° to 115°C)
 VITON®: 0° to +302°F (-18° to 150°C)
 (® Registered Trademark of DuPont)
 Low Temp Nitrile: -40° to 230°F
 (-40° to 110°C)

MAXIMUM OVERPRESSURE:

350 PSI (24 Bar)

WEIGHT:

0.4 lbs (0.16 kg)

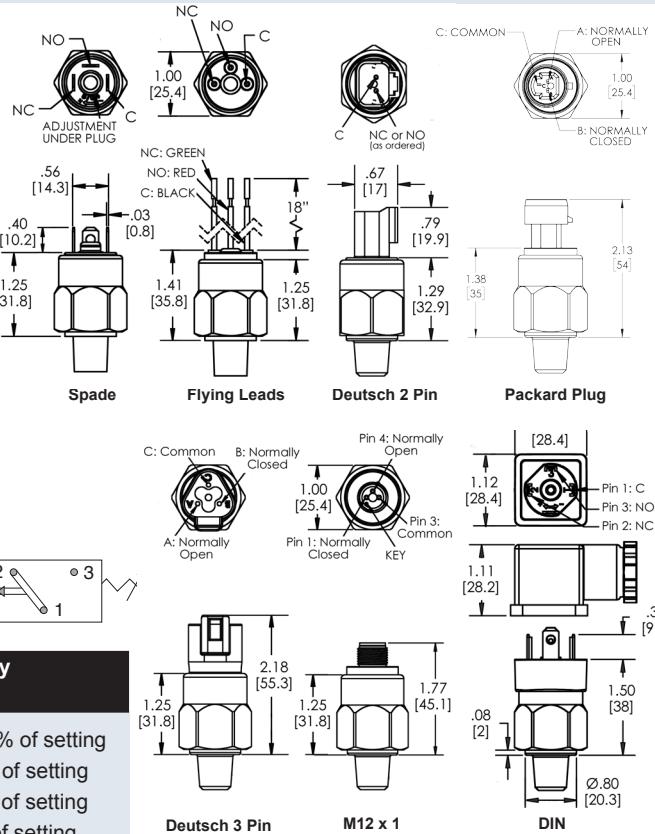
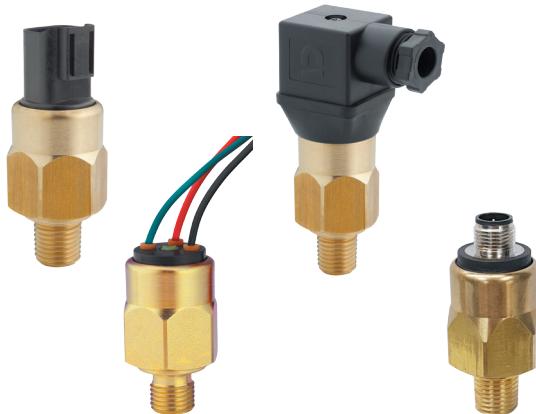
[For Certifications and Approvals: Please Inquire]

ORDERING INFORMATION

| LMA | - * 2 | - * R | - 4M | - C | - H | - * 1 |
|----------------------------|---|--|---|--|--|--|
| Model | Set Point | Direction | Port Size | Circuit | Terminal | Options |
| LMA Field Adjustable | See Above Adjustment Ranges | R - PSI Rising F - PSI Falling BR - Bar Rising BF - Bar Falling | 2M - 1/8 NPT 4M - 1/4 NPT 4MF - 1/4 NPTF (Male Dryseal thread) 2G - 1/8 BSPP 4F - 1/4" NPT Female 4G - 1/4 BSPP (undercut for an o-ring seal) 4GS - 1/4 BSPP (no undercut) 6S - 9/16X18 SAE MALE M10 - M10X1* M12 - M12X1.5 * | A - SPST / NO B - SPST / NC C - SPDT | SP - 1/4" x 1/32" Spade TS - 6-32 Terminal Screws FL - 18" Flying Leads FLL - Advise additional length of leads if required H - DIN 43650A Male Half Only HC - DIN 43650A Cable Clamp HN - DIN 43650A 1/2 Conduit (female) HCC - XXX (Specify Length in Inches) DI - Deutsch Integral (2 pin only) M12 - M12 X 1 (up to 5 amp) PP - Packard Plug (up to 10 amp) M12-6'C - M12 with 6 ft Mating cable M12-12'C - M12 with 12 ft Mating cable | * - Omit If Standard 1 - VITON® Diaphragm 2 - EPDM Diaphragm 3 - KAPTON® Diaphragm 15 - Low Temp Nitrile Diaphragm 4 - 316 SS Housing 6 - Oxygen Cleaned 7 - Gold Contacts |
| LMF Factory Set | *Model LMF Specify Set Point Required | *Omit For Model LMA | | | | |

*Consult Factory
for Specials.

APA/APF Adjustable Low Pressure Switches



| Model | Adjustment Range | | Avg. Differential | | Repeatability |
|-------|------------------|------------|-------------------|------------|--------------------------------------|
| | PSI | Bar | PSI | Bar | |
| 1 | 3 - 15 | 0.2 - 1.04 | 2 - 5 | 0.13 - 0.4 | ± 0.4 psi (0.03 bar) + 2% of setting |
| 1A | 5 - 30 | 0.3 - 2.1 | 3 - 7 | 0.21 - 0.5 | ± 1 psi (0.07 bar) + 3% of setting |
| 2 | 15 - 75 | 1.03 - 5.2 | 4 - 7 | 0.27 - 0.5 | ± 3 psi (0.14 bar) + 3% of setting |
| 3 | 50 - 150 | 3.5 - 10 | 7 - 15 | 0.5 - 1.0 | ± 4 psi (0.3 bar) + 3% of setting |

ELECTRICAL:

Standard: 5A, 125V/250VAC - U.L. Recognized*
 5A, 12/24VDC - U.L. Recognized*
 Option -7: 0.02A, 60VDC - U.L. Recognized*
 Gold contacts may be required for less than 12 VDC and 20 millamps

MANUFACTURER'S OTHER RATING:

5A @ 40VDC

WETTED MATERIAL:

Diaphragm: Buna-N (standard)
 (optional EPDM, KAPTON®, VITON®)
 Housing: Brass (standard)
 (optional: 316 Stainless Steel or Nickel Plated Steel)

PROTECTION:

Exposed Terminals - IP00
 DIN HC - IP65
 Flying Leads, M12, Deutsch Integral,
 Packard - IP69

SWITCH TYPE:

Snap Action

MECHANICAL LIFE:

1,000,000 cycles

MEDIA TEMPERATURE RANGE:

Buna - N: -15° to +230°F (-26° to 110°C)
 EPDM: -10° to +250°F (-23° to 121°C)
 KAPTON®: -40° to +239°F (-40° to 115°C)
 VITON®: 0° to +302°F (-18° to 150°C)
 (@ Registered Trademark of DuPont)

MAXIMUM OVERPRESSURE:

350 PSI (24 Bar)

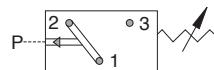
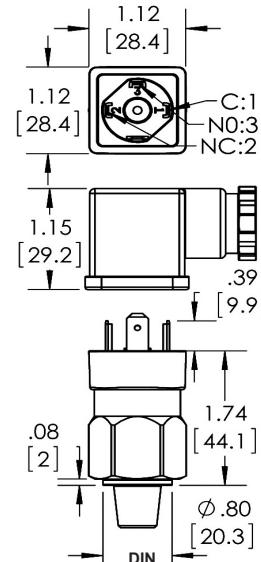
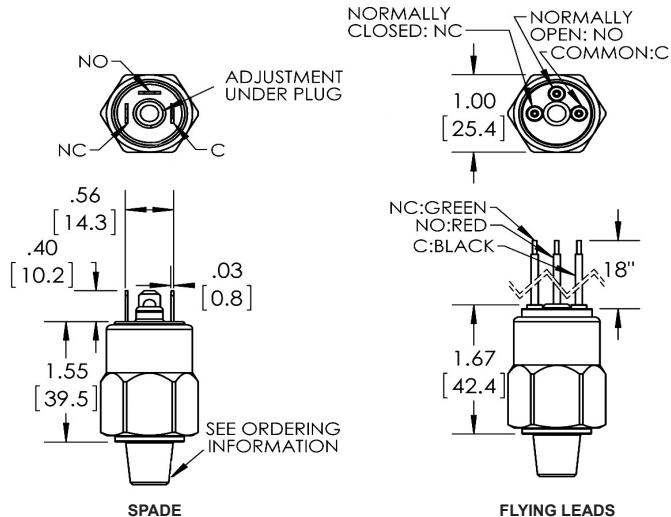
WEIGHT:

0.15 LBS (0.07 kg)

[For Certifications and Approvals: Please Inquire]

ORDERING INFORMATION

| APA | - * 2 | - * R | - 4M | - A | - FL | - * 1 |
|------------------------|--|--|--|--|--|---|
| Model | Set Point | Direction | Port Size | Circuit | Terminal | Options |
| APA - Field Adjustable | See Above Adjustment Ranges | R - PSI Rising F - PSI Falling BR - Bar Rising BF - Bar Falling | 2M - 1/8 NPT 4M - 1/4 NPT 2G - 1/8 BSPP 4G - 1/4 BSPP (undercut for an o-ring seal) 4GS - 1/4 BSPP (no undercut) 4S - 7/16X20 SAE MALE 4SW - 7/16X20 SAE Swivel 6S - 9/16X18 SAE MALE M10 - M10X1* M12 - M12X1.5* | A - SPST / NO B - SPST / NC C - SPDT | SP - 1/4" x 1/32" Spade TS - 6-32 Terminal Screws FL - 18" Flying Leads FLL - Advise additional length of leads if required H - DIN 43650A Male Half Only HC - DIN 43650A Cable Clamp HN - DIN 43650A 1/2 Conduit (female) HCC - XXX (Specify Length in Inches) DI - Deutsch Integral M12 - M12 X 1 PP - Packard Connector | * - Omit If Standard 1 - VITON® Diaphragm 2 - EPDM Diaphragm 3 - KAPTON® Diaphragm 4 - 316 SS Housing 4A - Steel - Nickel Plated 5 - Spiral Restrictor 6 - Oxygen Cleaned (only in Stainless steel) 7 - Gold Contacts |
| APF - Factory Set | * Model APF Specify Set Point Required | *Omit For Model APA | *Consult Factory for Specials | | | |



| Model | Adjustment Range | | Avg. Differential | | Repeatability |
|-------|------------------|----------|-------------------|----------|-------------------------------------|
| | PSI | Bar | PSI | Bar | |
| 1 | 250 - 1500 | 17 - 103 | 30 - 150 | 2 - 10 | ± 35 psi (2.4 bar) + 4% of setting |
| 2 | 500 - 3500 | 35 - 240 | 75 - 350 | 5 - 24 | ± 120 psi (8.3 bar) + 6% of setting |
| 3 | 1000 - 5000 | 70 - 345 | 120 - 500 | 8.5 - 35 | ± 200 psi (2.4 bar) + 7% of setting |

ELECTRICAL:

Standard: 5A, 125V/250VAC - U.L. Recognized*
5A, 12/24VDC - U.L. Recognized*

Option -7: 0.02A, 60VDC - U.L. Recognized*
Gold contacts may be required for less than 12 VDC and 20 millamps

MANUFACTURER'S OTHER RATING:

5A @ 40VDC

WETTED MATERIAL PISTON SEAL:

Piston Seal: Buna-N (Standard)
(optional EPDM, VITON®, Low Temp Nitrile)

Piston: Steel
Housing: Brass
(optional - 316 Stainless Steel)
For Other Materials Consult Factory

PROTECTION:

Exposed Terminals - IP00
DIN HC - IP65

Flying Leads, M12, Deutsch Integral,
Packard - IP69

SWITCH TYPE:

Snap Action

MECHANICAL LIFE:

1,000,000 cycles

MEDIA TEMPERATURE RANGE (Piston Seal):

Buna - N: -15° to +230°F (-26° to 110°C)

EPDM: -10° to +250°F (-23° to 121°C)

VITON®: 0° to +302°F (-18° to 150°C)

(® Registered Trademark of DuPont)

Low Temp Nitrile: -40° to 230°F (-40° to 110°C)

MAXIMUM OVERPRESSURE:

9,000 PSI (620 Bar) - Static

7,500 PSI (517 Bar) - Dynamic

WEIGHT:

Approx. 0.25 lbs (0.12 kg)

[For Certifications and Approvals: Please Inquire]

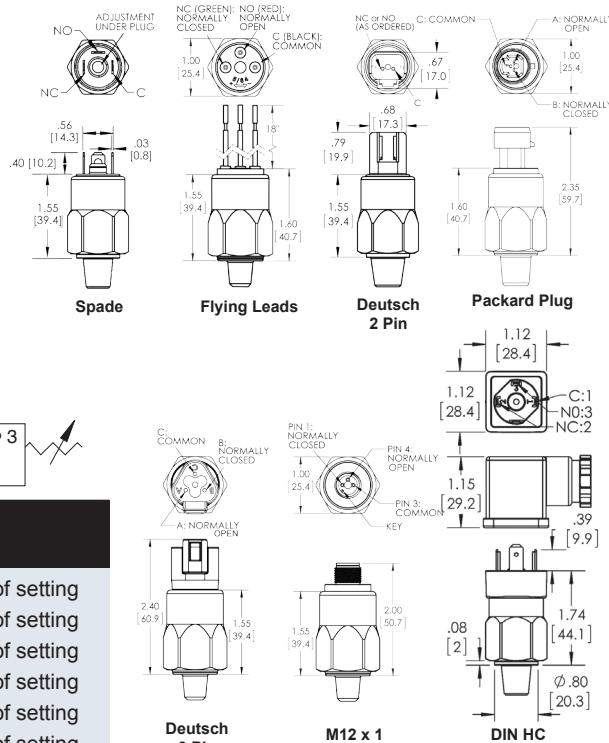
ORDERING INFORMATION

| PBPA | - * 2 | - * R | - 4M | - C | - H | - * 1 |
|-------------------------------------|--|--|--|--|---|--|
| Model | Set Point | Direction | Port Size | Circuit | Terminal | Options |
| PBPA <i>Field Adjustable</i> | See Above Adjustment Ranges | R - PSI Rising F - PSI Falling BR - Bar Rising BF - Bar Falling | 2M - 1/8 NPT 4M - 1/4 NPT 2G - 1/8 BSPP 4G - 1/4 BSPP (undercut for an o-ring seal) | A - SPST / NO B - SPST / NC C - SPDT | SP - 1/4" x 1/32" Spade TS - 6-32 Terminal Screws FL - 18" Flying Leads (Standard) FLL - Specify Wire Length H - DIN 43650A Male Half Only HC - DIN 43650A Cable Clamp HN - DIN 43650A 1/2 Conduit (female) HCC - XXX (Specify Length in Inches) DI - Deutsch Integral M12 - M12 X 1 PP - Packard Connector | * - Omit If Standard 1 - VITON® Seal 2 - EPDM Seal 15 - Low Temp Nitrile Seal 4 - 316 SS Housing (Extended Lead time from standard brass) 5 - Spiral Restrictor 7 - Gold Contacts 16 - Thread Sealant (Taper Threads Only) |
| PBPF <i>Factory Set</i> | *Model PBPF Specify Set Point Required | *Omit For Model PBPA | 4GS - 1/4 BSPP (no undercut) 4S - 7/16X20 SAE MALE 6S - 9/16X18 SAE MALE M10 - M10X1* M12 - M12X1.5 * | | | |

*Consult Factory
for Specials.

* See Page 49 for other electrical
termination options

BPA/BPF Diaphragm High Pressure Switches



| Model | Adjustment Range | | Avg. Differential | | Repeatability |
|-------|------------------|-----------|-------------------|------------|------------------------------------|
| | PSI | Bar | PSI | Bar | |
| 1 | 10 - 85 | .35 - 5.8 | 1.0 - 10 | 0.07 - 0.7 | ± 3 psi (0.21 bar) + 3% of setting |
| 1A | 65 - 300 | 4.5 - 21 | 8 - 30 | 0.55 - 2.1 | ± 5 psi (0.34 bar) + 2% of setting |
| 2 | 125 - 600 | 8.6 - 41 | 20 - 80 | 1.4 - 5.5 | ± 6 psi (0.41 bar) + 3% of setting |
| 3 | 500 - 2500 | 35 - 172 | 70 - 300 | 5 - 21 | ± 25 psi (1.7 bar) + 4% of setting |
| 4 | 1000 - 6000 | 69 - 414 | 150 - 600 | 10 - 41 | ± 35 psi (2.4 bar) + 4% of setting |
| 5 | 500 - 3500 | 35 - 241 | 75 - 300 | 5 - 21 | ± 40 psi (2.8 bar) + 3% of setting |

ELECTRICAL:

Standard: 5A, 125V/250VAC - U.L. Recognized*
 5A, 12/24VDC - U.L. Recognized*
 Option -7: 0.02A, 60VDC - U.L. Recognized*
 Gold contacts may be required for less than 12 VDC and 20 millamps

MANUFACTURER'S OTHER RATING:

5A @ 40VDC

WETTED MATERIAL:

Diaphragm: Buna-N (Standard)
 (optional EPDM, KAPTON®, VITON®, Low Temp Nitrile)
 Housing: Zinc-Nickel Plated Steel
 (optional Steel - Nickel Plated Steel and 316 Stainless Steel)

PROTECTION:

Exposed Terminals - IP00
 DIN HC - IP65
 Flying Leads, M12, Deutsch Integral,
 Packard - IP69

SWITCH TYPE:

Snap Action

MECHANICAL LIFE:

1,000,000 cycles

MEDIA TEMPERATURE RANGE:

Buna - N: -15° to +230°F (-26° to 110°C)
 EPDM: -10° to +250°F (-23° to 121°C)
 KAPTON®: -40° to +239°F (-40° to 115°C)
 VITON®: 0° to +302°F (-18° to 150°C)
 (® Registered Trademark of DuPont)
 Low Temp Nitrile: -40° to 230°F (-40° to 110°C)

MAXIMUM OVERPRESSURE:

Static: 9000 PSI (620 Bar)
 Dynamic: 7500 PSI (517 Bar)

WEIGHT:

Approx. 0.2 lbs (0.09 kg)

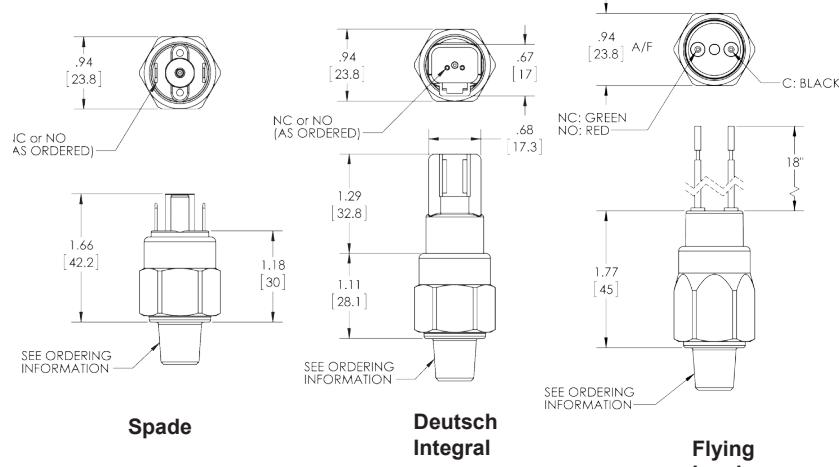
[For Certifications and Approvals: Please Inquire]

ORDERING INFORMATION

| BPA | - * 2 | - * R | - 4M | - C | - H | - * 1 |
|----------------------------|--|--|--|--|---|---|
| Model | Set Point | Direction | Port Size | Circuit | Terminal | Options |
| BPA Field Adjustable | See Above Adjustment Ranges | R - PSI Rising F - PSI Falling BR - Bar Rising BF - Bar Falling | 2M - 1/8 NPT 4M - 1/4 NPT 2G - 1/8 BSPP 4G - 1/4 BSPP (undercut for an o-ring seal) | A - SPST / NO B - SPST / NC C - SPDT | SP - 1/4" x 1/32" Spade TS - 6-32 Terminal Screws FL - 18" Flying Leads FLL - Advise additional length of leads if required H - DIN 43650A Male Half Only HC - DIN 43650A Cable Clamp HN - DIN 43650A 1/2 Conduit (female) HCC - XXX (Specify Length in Inches) DI - Deutsch Integral M12 - M12 X 1 PP - Packard Connector | * - Omit If Standard 1 - VITON® Diaphragm 2 - EPDM Diaphragm 3 - KAPTON® Diaphragm * * For Model Ranges 1, 1A & 2 Only 15 - Low Temp Nitrile Diaphragm 4 - 316 SS Housing 4A - Steel - Nickel Plated 5 - Spiral Restrictor 6 - Oxygen Cleaned (Only available in Stainless Steel) 7 - Gold Contacts |
| BPF Factory Set | *Model BPF Specify Set Point Required | *Omit For Model BPA | 4GS- 1/4 BSPP (no undercut) 4S - 7/16X20 SAE MALE 4SW - 7/16X20 SAE Swivel 6S - 9/16X18 SAE MALE M10 - M10X1* M12 - M12X1.5 * | | | |

*Consult Factory
for Specials.

* See Page 49 for other electrical
termination options



| Model | Adjustment Range PSI | Adjustment Range Bar | Avg. Differential | Repeatability |
|-------|-------------------------|-------------------------|-------------------------------------|-------------------------------------|
| 1 | 1.5 - 30 | 0.10 - 2.0 | | ± 2 psi (0.14 bar) + 3% of setting |
| 1A | 14.5 - 200 | 1.0 - 14 | | ± 3 psi (0.21 bar) + 3% of setting |
| 2 | 125 - 600 | 8.6 - 41 | Less than 10% of Actuation Point | ± 5 psi (0.34 bar) + 3% of setting |
| 3 | 300 - 2500 | 21 - 172 | | ± 15 psi (1.03 bar) + 4% of setting |
| 4 | 3000 - 6000 | 207 - 414 | | ± 20 psi (14 bar) + 6% of setting |
| 5 | 500 - 3500 | 35 - 241 | | ± 20 psi (1.4 bar) + 6% of setting |

ELECTRICAL:

100 VA Max Voltage 42 VDC
Gold contacts may be required for less than 12 VDC and 20 millamp

WETTED MATERIAL:

Diaphragm: Buna-N (Standard)
(optional EPDM, KAPTON®, VITON®
Low Temperature Nitrile)
Housing: Zinc-Nickel Plated Steel
(optional Steel - Nickel
Plated, Steel or 316 Stainless Steel)

PROTECTION:

Exposed Terminals - IP00
Flying Leads & Deutsch Integral - IP69

SWITCH TYPE:

Creep Action

MECHANICAL LIFE:

1,000,000 cycles

MEDIA TEMPERATURE RANGE:

Buna - N: -15° to +230°F (-26° to 110°C)
EPDM: -10° to +250°F (-23° to 121°C)
KAPTON®: -40° to +239°F (-40° to 115°C)
VITON®: 0° to +302°F (-18° to 150°C)
(® Registered Trademark of DuPont)
Low Temp Nitrile: -40° to +230°F (-40° to 110°C)

MAXIMUM OVERPRESSURE:

9000 PSI (620 Bar)

WEIGHT:

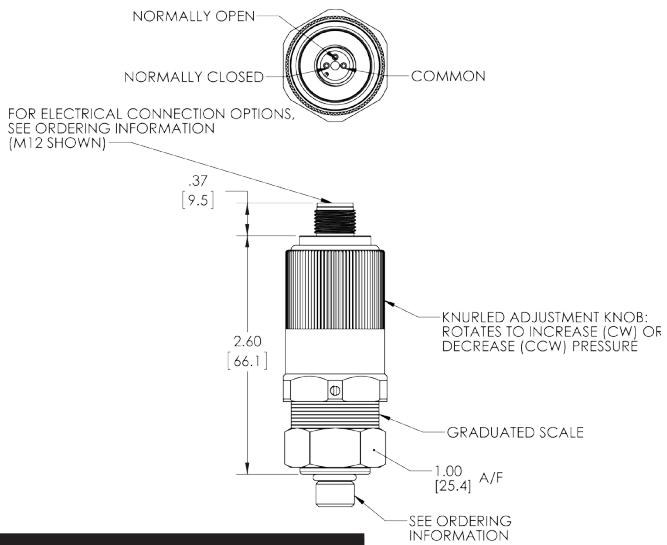
0.15 lbs (0.07 kg)

[For Certifications and Approvals: Please Inquire]

ORDERING INFORMATION

| EPA | - * 2 | - * R | - 4M | - A | - FL | - *1 |
|------------------------------|--|--|--|--------------------------------|---|--|
| Model | Set Point | Direction | Port Size | Circuit | Terminal | Options |
| EPA - Field Adjustable | See Above Adjustment Ranges | R - PSI Rising F - PSI Falling BR - Bar Rising BF - Bar Falling | 2M - 1/8 NPT 4M - 1/4 NPT 2G - 1/8 BSPP 4G - 1/4 BSPP (undercut for an o-ring seal) | A - SPST / NO B - SPST / NC | SP - 1/4 x 1/32 Spade TS - 6 -32 Terminal Screws FL - 18" Flying Leads FLL - Advise additional length of leads if required FLWTF - Weatherpack Tower Female FLWTM - Weatherpack Tower Male FLWSF - Weatherpack Shroud Female FLWSM - Weatherpack Shroud Male DI - Deutsch Integral | * - Omit If Standard 1 - VITON® Diaphragm 2 - EPDM Diaphragm 3 - KAPTON® Diaphragm * * Ranges 1A & 2 Only 15 - Low Temp Nitrile Dia 4 - 316 SS Housing 4A - Steel - Nickel Plated 5 - Spiral Restrictor 6 - Oxygen Cleaned (Only available in Stainless steel) 7 - Gold Contacts |
| EPF - Factory Set | *Model EPF Specify Set Point Required | *Omit for Model EPA | 4GS - 1/4 BSPP (no undercut) 4S - 7/16X20 SAE MALE 6S - 9/16X18 SAE MALE M10 - M10X1 * M12 - M12X1.5 * *Consult Factory for Specials. | | | |

BMA/BMF Pressure Switch Hand Adjustable



| Adjustment Range | | | Avg. Differential | | |
|------------------|-------------|-----------|-------------------------|-----------|-------------------------------------|
| Model | PSI | Bar | of Full Set Point Range | | Repeatability |
| 1 | 10 - 435 | 0.7 - 30 | 10 - 20% | Diaphragm | ± 3 psi (0.21 bar) + 3% of setting |
| 2 | 500 - 5500 | 35 - 379 | 10 - 15% | Piston | ± 15 psi (1.03 bar) + 2% of setting |
| 3 | 5000 - 7500 | 345 - 517 | 10 - 15% | Piston | ± 30 psi (2.07 bar) + 2% of setting |
| 4 | 1500 - 7500 | 103 - 517 | 10 - 15% | Piston | ± 90 psi (6.2 bar) + 5% of setting |

ELECTRICAL:

Standard: 10A, 125/250VAC - U.L. Recognized
10A, 12/24VDC - U.L. Recognized
Option -7: 0.1A, 125/250VAC, 30 VDC - U.L. Recognized
Gold contacts may be required for less than 12 VDC
and 20 millamps

WETTED MATERIAL:

Diaphragm/Seal: Buna-N (Standard)
(optional: EPDM, VITON®,
Low Temp Nitrile)
Piston: Steel (For High Pressure Ranges)
Housing: Brass (standard)
(optional: 316 Stainless Steel)

PROTECTION:

Exposed Terminals – IP00
DIN HC - IP65
Flying Leads, M12, &
Deutsch Integral, Packard - IP69

SWITCH TYPE:

Snap Action

MECHANICAL LIFE:

1,000,000 cycles

MEDIA TEMPERATURE RANGE:

Buna – N: -15° to +230°F (-26° to 110°C)
EPDM: -10° to +250°F (-23° to 121°C)
VITON®: 0° to +302°F (-18° to 150°C)
(® Registered Trademark of DuPont)
Low Temp Nitrile: -40° to 230°F
(-40° to 110°C)

MAXIMUM OVERPRESSURE:

| | | |
|----------------|----------|-----------------------|
| Range 1; | Static | 9000 PSI (620 Bar) |
| | Dynamic | 7500 PSI (517 Bar) |
| Ranges 2,3 & 4 | Static: | 25,000 PSI (1725 Bar) |
| | Dynamic: | 15,000 PSI (1034 Bar) |

WEIGHT:

0.4 lbs (0.18 kg)

[For Certifications and Approvals: Please Inquire]

Please note: Factory Set Switches (Model BMF) are permanently set and are non-adjustable.

ORDERING INFORMATION

| BMA | - * 2 | - * R | - 4M | - C | - H | - * 1 |
|------------------------|--------------------------------------|--|---|--|--|---|
| Model | Set Point | Direction | Port Size | Circuit | Terminal | Options |
| BMA - Field Adjustable | See Above Adjustment Ranges | R - Rising F - Falling BR - Bar Rising BF - Bar Falling | 2M - 1/8 NPT 4M - 1/4 NPT 2G - 1/8 BSPP 4F - 1/4" NPT Female 4G - 1/4 BSPP (undercut for an o-ring seal) 4GS - 1/4 BSPP (no undercut) 4S - 7/16X20 SAE MALE 4SW - 7/16X20 SAE Swivel 6S - 9/16X18 SAE MALE M10 - M10X1 * M12 - M12X1.5 * | A - SPST / NO B - SPST / NC C - SPDT | SP - 1/4" x 1/32" Spade TS - 6-32 Terminal Screws FL - 18" Flying Leads FLL - Advise additional length of leads if required H - DIN 43650A Male Half Only HC - DIN 43650A Cable Clamp HN - DIN 43650A 1/2 Conduit (female) HCC - XXX (Specify Length in Inches) DI - Deutsch Integral (2 pin only) M12 - M12 X 1 * (up to 5 amp rating) PP - Packard Plug (up to 10 amp) | * - Omit If Standard 1 - VITON® 2 - EPDM 3 - Low Temp Nitrile 4 - 316 SS Housing 5 - Spiral Restrictor 6 - Oxygen Cleaned (Only Available for Model 1 - Diaphragm) 7 - Gold Contacts 21 - Large Silver Adjustment Sleeve |
| BMF - Factory Set | Model BMF Specify Set Point Required | *Omit For Model BMA | * Consult Factory for Specials. | | * See Page 49 for other electrical termination options | |



M12 - Mating Connector
with 6 ft or 12 ft cable



M12 - Mating Connector Only



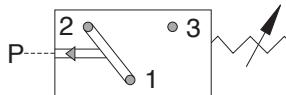
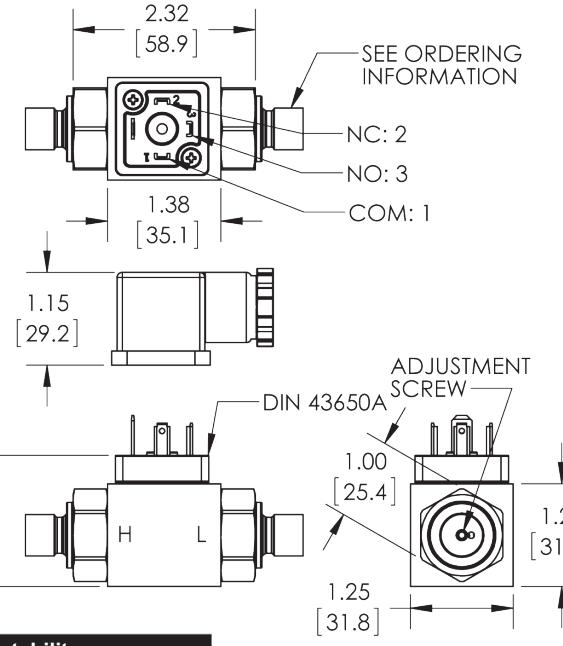
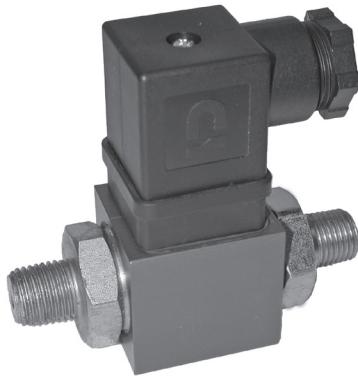
MDP2 - 2 pin Deutsch Mating
Plug with flying leads
(Also available with cable)



MDP3 - 3 pin Deutsch Mating
Plug with flying leads
(Also available with cable)

| ORDERING INFORMATION | | |
|----------------------|---|-----------------------|
| <i>Model</i> | <i>Description</i> | <i>Availability</i> |
| 6'CABLE | M12- 6 FOOT MATING CABLE | Stock |
| 12'CABLE | M12 - 12 FOOT MATING CABLE | Stock |
| 1702197 | M12 - MATING CONNECTOR ONLY | Stock |
| MDP2-18" | 18" FLYING LEADS WITH DEUTSCH 2 PIN PLUG | Call for Availability |
| MDP2-20" | 20" FLYING LEADS WITH DEUTSCH 2 PIN PLUG | Call for Availability |
| MDP2-72 | 72" FLYING LEADS WITH DEUTSCH 2 PIN PLUG | Call for Availability |
| MDP2-120 | 120" FLYING LEADS WITH DEUTSCH 2 PIN PLUG | Call for Availability |
| MDP3-18" | 18" FLYING LEADS WITH DEUTSCH 3 PIN PLUG | Call for Availability |
| MDP3-24" | 24" FLYING LEADS WITH DEUTSCH 3 PIN PLUG | Call for Availability |
| MDP3-36" | 36" FLYING LEADS WITH DEUTSCH 3 PIN PLUG | Call for Availability |
| MDP3-72" | 72" FLYING LEADS WITH DEUTSCH 3 PIN PLUG | Call for Availability |

FDA/FDF Differential Switch



| Model | Adjustment Range | | Avg. Differential | | Repeatability |
|-------|------------------|------------|-------------------|------------|-----------------------------------|
| | PSI | Bar | PSI | Bar | |
| 1 | 5 - 25 | 0.34 - 1.7 | 3 - 8 | 0.2 - 0.55 | |
| 2 | 20 - 45 | 1.4 - 3 | 5 - 15 | 0.35 - 1 | ± 1 psi (0.7 bar) + 3% of setting |
| 3 | 35 - 75 | 2.4 - 5.2 | 10 - 20 | 0.7 - 1.4 | |

ELECTRICAL:

10 AMP - 12/24 VDC - 125/250 VAC
Gold contacts may be required for less than 12 VDC and 20 milliamp
SPDT - Standard Circuit

WETTED MATERIAL:

Diaphragm: Buna-N (standard)
(optional EPDM and VITON®)
Ports: Brass (standard)

HOUSING:

Aluminum 6010-T6 Black Anodized

PROTECTION:

IP65 except exposed terminals – IP00

SWITCH TYPE:

Snap Action

MECHANICAL LIFE:

1,000,000 cycles

MEDIA TEMPERATURE RANGE:

Buna –N: -15° to +230°F (-26° to 110°C)
EPDM: -10° to +250°F (-23° to 121°C)
VITON®: 0° to +302°F (-18° to 150°C)
(® Registered Trademark of DuPont)

MAXIMUM OVERPRESSURE:

500 PSI (35 Bar)

WEIGHT:

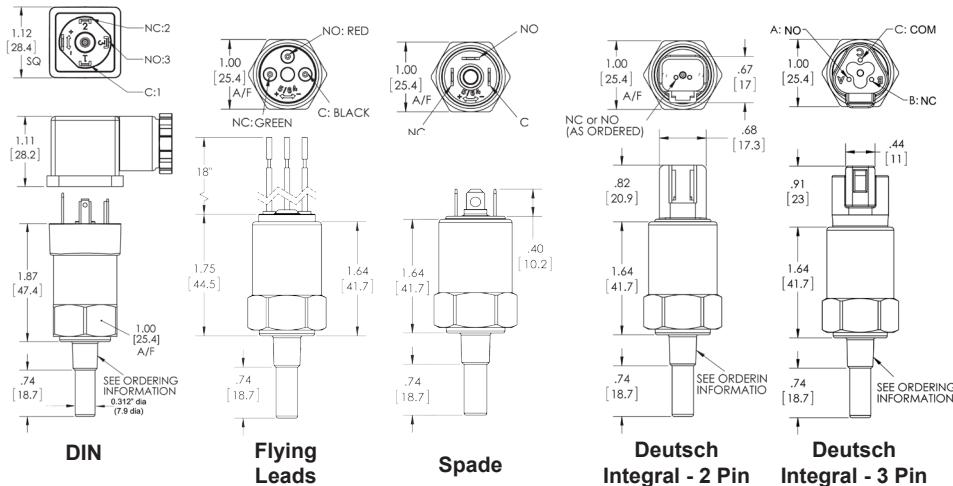
0.40 LBS (0.18 kg)

[For Certifications and Approvals: Please Inquire]

ORDERING INFORMATION

| FDA | - * 1 | - 4M / 4M | | - C | - HC | - *1 |
|------------------------|---------------------------------------|--|---|----------------|--|--|
| Model | Set Point | Port Size | | Circuit | Terminal | Options |
| FDA - Field Adjustable | See Above Adjustment Ranges | Hi Port | Low Port | C - SPDT | H - DIN 43650A Male Half Only HC - DIN 43650A Cable Clamp HN - DIN 43650A 1/2 Conduit (female) HCC - XXX (Specify Length in Inches) HC11A - DIN Light NO/NC 110V HC11B - DIN Light NO/NC 12VDC HC11C - DIN Light NO/NC 24VDC HC11D - Indicating Light Green/Red | * - Omit If Standard 1 - VITON® Diaphragm 2 - EPDM Diaphragm 5 - Spiral Restrictor 7 - Gold Contacts |
| FDF - Factory Set | *Model FDF Specify Set Point Required | 4M - 1/4 NPT MALE 4G - 1/4 BSPP MALE 4S - 7/16X20 SAE MALE | 4M - 1/4 NPT MALE 4G - 1/4 BSPP MALE | | | |

TFS Temperature Switch Fluid Expansion



(Probe length varies per port, .74" is standard for 1/8" npt)

The **TFS** is a temperature switch for protection of all types of engines, pumps, compressors, gear boxes, hydraulic reservoirs, marine and industrial power plants. It provides fast accurate temperature response through a brass probe that protrudes into the application.

ELECTRICAL:

Standard: 5A, 125/250 VAC - UL Recognized
5A, 12/24 VDC - UL Recognized
Option -7: 0.02A, 60 VDC - UL Recognized
Gold contacts may be required for less than 12 VDC and 20 millamp
Electrical Ratings - Other
3 AMP - Up to 30 VDC

CIRCUIT:

SPST - Normally Open
SPST - Normally Closed
SPDT

PROTECTION:

Exposed Terminals – IP00
DIN HC - IP65
Flying Leads & Deutsch Integral - IP69

MAX WORKING PRESSURE:
750 PSI (52 BAR)

HOUSING MATERIAL:
Brass

TOLERANCE:
± 6°F (3°C)

TEMPERATURE SET POINT RANGE:

100°F - 300°F (38°C - 150°C)
(Below 100°F : Consult Factory)

DIFFERENTIAL:
8°F - 16°F

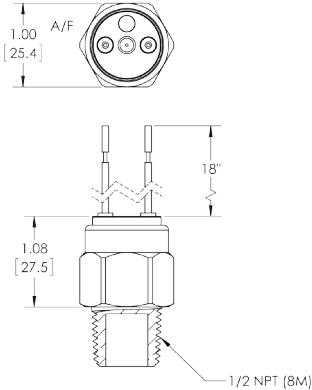
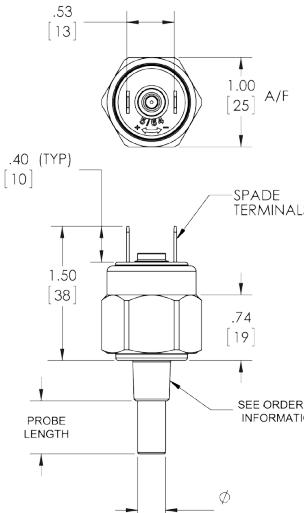
MAXIMUM OPERATING TEMPERATURE:
325°F (163°C)

MAX OVERLOAD:
50°F (28°C) Above set point

[For Certifications and Approvals: Please Inquire]

ORDERING INFORMATION

| TFS | - 120F | - R* | - 4M | - A | - SP | - 7 * |
|----------------------------|---|---|--|--|--|---|
| Model | Temperature Set Point | Direction | Port Size | Circuit | Terminal | Options |
| TFS Factory Set Only | Specify Set Point Required F or C 100°F - 300°F (38° - 150°C) | * Omit for TAS Adjustable Model R - Temperature Rising F - Temperature Falling | 2M - 1/8 NPT 4M - 1/4 NPT 6M - 3/8 NPT 8M - 1/2 NPT 6S - 9/16X18 SAE MALE 4G - 1/4 BSPP (undercut for an o-ring seal) 4GS - 1/4 BSPP (no undercut) 8S - 3/4-16 SAE MALE | A - SPST / NO B - SPST / NC C - SPDT | SP - 1/4" x 1/32" Spade TS - 6-32 Terminal Screws FL - Flying Leads 18" FLL - Advise additional length of leads if required H - DIN43650A Male Half Only HC - DIN43650A Cable Clamp HN - DIN43650A 1/2" Conduit (female) HCC - 36" Cable DI - Deutsch Integral (2 pin and 3 pin) M12 - M12 X 1 | * Omit for Standard 7 - Gold Contacts |



(Hex will vary depending on electrical termination)

The **TBM** series is a Bi-Metal temperature alarm switch with a factory set point. The switches are used for protection of all types of internal combustion engines, pumps, compressors, gear boxes, hydraulic reservoirs, marine and industrial power plants. For more compact and those tight mounting areas use the switch with the recess in the port for where the fluid flows.

ELECTRICAL:

15A - 250 VAC (Resistive)
15A - 24 VDC (Resistive)

CIRCUIT:
SPST - NO
SPST - NC

HOUSING MATERIAL:

Brass
(Hex will vary depending on electrical termination)

PROTECTION:

IP67

SETTING TOLERANCE:
 $\pm 10^{\circ}\text{F}$ ($\pm 5^{\circ}\text{C}$)

MAX PROBE PRESSURE:

7500 PSI (520 Bar)

PROBE LENGTH:
See Ordering Information
[For Certifications and Approvals: Please Inquire]

TEMPERATURE RANGE:

75° - 290°F (24° - 143°C)

MAX WORKING TEMP:
400°F (204°C)

TEMP DIFFERENTIAL:
27°F (15°C) AVERAGE

WEIGHT:

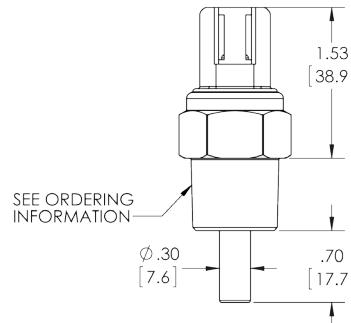
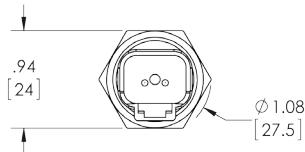
0.70 lbs (0.32 kg)

| Port | Probe Diameter for Cable termination | Probe Diameter for All other terminations |
|------------|--------------------------------------|---|
| 1/8" npt | 5/16" (.312) | .310 |
| 1/4" npt | 3/8" (.375) | .310 |
| 3/8" npt | 1/2" (.500) | .310 |
| 1/2" npt | 1/2" (.500) | .310 |
| 3/4-16 SAE | 1/2" (.500) | .310 |

ORDERING INFORMATION

| TBM | - 100F | - R | - 8M | - B | - FL | - *A | - *4 |
|-------|--|---|---|--------------------------------|---|---|---|
| Model | Temperature Set Point | Direction | Port Size | Circuit | Terminal | Probe Lgth | Options |
| TBM | Specify Set Point Required F or C 75° to 290°F (24° to 143°C) | R - Temperature Rising F - Temperature Falling | 2M - 1/8 NPT 4M - 1/4 NPT 6M - 3/8 NPT 8M - 1/2 NPT 8S - 3/4-16 SAE | A - SPST / NO B - SPST / NC | SP - 1/4" x 1/32" Spade TS - 6-32 Terminal Screws C - Cable (advise length required) (.875" hex size only) FL - 18" Flying Leads FLL - Advise additional length of leads if required H - DIN 43650A Male Half Only HC - DIN 43650A Cable Clamp HN - DIN 43650A 1/2 Conduit (female) HCC - XXX (Specify Length in Inches) DI - Deutsch Integral (2 Pin Only) | * Omit for No Probe A - 1/2" B - 1" C - 2" D - 1-1/2" | * - Omit If Standard 4 - Stainless Steel IG - Internal Ground |

TSS Temperature Sender



Model **TSS** Temperature Sender is ideally suited for use in engines, pumps, compressors, gearboxes and other applications where resistance to the elements is the primary consideration. It is used in conjunction with either a temperature gauge or an ECU (Engine Control Unit) to sense the temperature of your application. The TSS provides fast, accurate temperature response through a thermistor that is located in the tip of the probe protruding from the main body of the unit. A reliable electrical connection, Deutsch DT 2-way connector is rated at IP69.

ELECTRICAL:
5V Nominal

PROTECTION:
IP69 (When connected to mating plug)

ENVIRONMENT TEMPERATURE:
-40°F to +257°F (-40° to +125°C)

INSULATION TYPE:
Isolated Ground

RESISTANCE TOLERANCE:
+/- 10%

WEIGHT:
.08 lbs (0.03 kg)

BODY MATERIAL:
Brass

| TYPE | TEMPERATURE °F (°C) | 77 (25) | 104 (40) | 122 (50) | 140 (60) | 158 (70) | 176 (80) | 194 (90) | 212 (100) | 230 (110) |
|------|---------------------|---------|----------|----------|----------|----------|----------|----------|-----------|-----------|
| A | RESISTANCE OHMS | 500 | 282.1 | 197.6 | 140 | 101.5 | 74.6 | 55.6 | 41.9 | 32 |
| B | RESISTANCE OHMS | 2000 | 1070 | 722.6 | 497.6 | 349 | 248.8 | 179.9 | 131.8 | 98 |
| C | RESISTANCE OHMS | 300 | - | 121 | 87.4 | 64.4 | 48.2 | 36.7 | 28.3 | - |
| D | RESISTANCE OHMS | 8000 | - | 2765 | 1868 | 1284 | 898 | 636.6 | 457.7 | 334.1 |

ORDERING INFORMATION

Minimum Order Required - Consult Factory

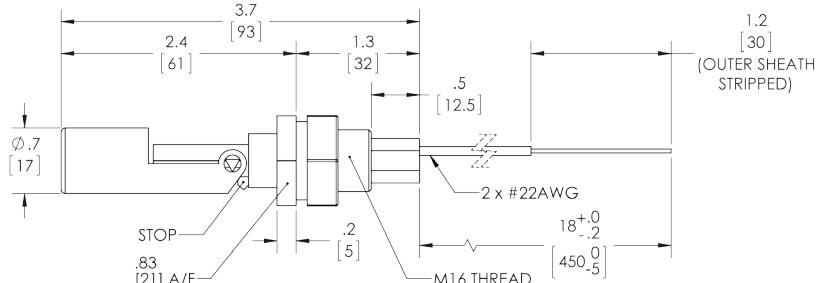
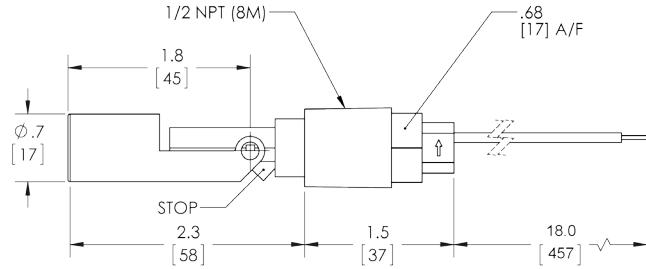
| TSS | - D | - 8M |
|-------|-----------------|---|
| Model | Type | Port Size |
| TSS | See Chart Above | 2M - 1/8" NPT 4M - 1/4" NPT 8M - 1/2" NPT 8S - 3/4-16 SAE M16 - M16 X 1.5 |



Model: SMLN



Model: SMLC



The **SML** series is a horizontal mount level switch ideal for monitoring Water and Oil levels

ELECTRICAL:

Voltage: AC220V/1A; DC24V/0.5A
Switch rating: 70VA
Wires: 18" long cable, 22 gauge

CIRCUIT:

Normally Open / Normally Closed

HOUSING MATERIAL:

Housing: Polypropylene
Optional: Stainless Steel
Float: Polypropylene
Optional: Stainless Steel

WORKING TEMPERATURE:

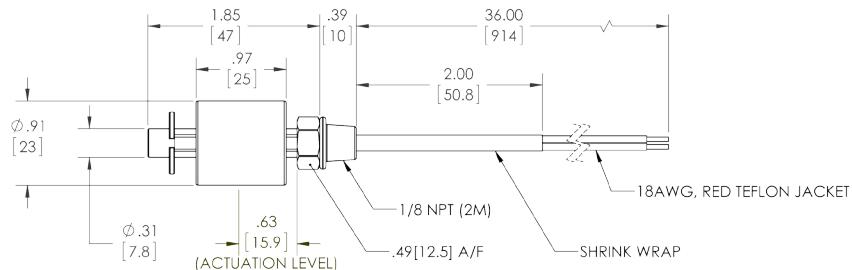
Polypropylene: -4°F to +176°F (-20° to +80°C)
Stainless Steel: -4°F to +212°F (-20° to +100°C)

Depending on the mounting position, the float on the switches can either rise or lower with the liquid level. By rotating the switch 180°, the switch operation can be Normally Open or Normally Closed

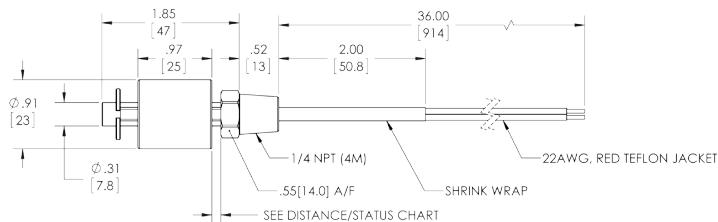
ORDERING INFORMATION

| SMLN | - 8M | - C | - *SS |
|--|---|---|--|
| Model | Connection | Terminal | Options |
| SMLN - npt external mounting SMLC - internal clamp mounting | 8M - 1/2" NPT (SMLN only) M16 - M16 (SMLC only) Consult Factory for Other Connections | C - 18" standard cable length Consult Factory for other than standard length | * - Omit if Standard SS - Stainless Steel |

VLS Float Level Switch



(Above dimensions are for the Plastic Stem design only)



| DISTANCE | SWITCH STATUS |
|--|---------------|
| .118 ±.059/[3 ±1.5] | ON |
| .177 ±.059/[4.5 ±1.5] TO .295 ±.059/[7.5 ±1.5] | TRANSITION |
| .295 ±.059/[7.5 ±1.5] | OFF |



Slosh Shield

The **VLS** series is a Float Level Switch that is ideal for monitoring Water and Oil levels.

ELECTRICAL:

10 w, 1A, 150VAC / 200VDC

Switch: SPST

Units are supplied as normally open unless otherwise specified.

Circuit can be changed by inverting float on the stem

MATERIAL:

Float: Buna

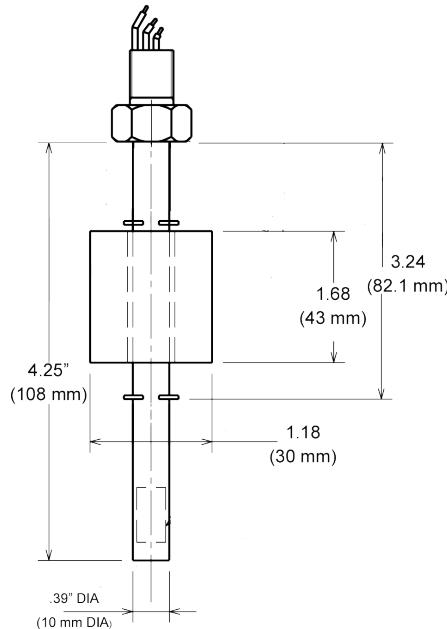
Stem: Nylon(Std)

Optional: Brass,

Stainless Steel

ORDERING INFORMATION

| VLS | - 2M | - FL | - A | - * SS |
|-------|--------------------------------|--|---|---|
| Model | Connection | Terminal | Circuit | Stem Material |
| VLS | 2M - 1/8" NPT 4M - 1/4" NPT | FL36 - Standard 36" leads FLL - Advise additional length of leads if other than standard 36" **** Call Factory for Shrink Wrap Options & Pricing | A - Normally Open (Standard) B - Normally Closed | * Omit if Standard B - Brass SS - Stainless Steel SLS - Slosh Shield |



Wiring:
 Red : Temperature
 Yellow: Level
 Black: Common

The **TFL** series is a combination Level and Temperature Switch that monitors both liquid level and temperature. These switches are used to operate components such as valves, motor start/stop switches, alarms, and warning lights.

ELECTRICAL:

Temperature Switch:
 5.0 Amp, 250VAC/24VDC
 Level:
 50W, 2.5A, 300VAC/350VDC
 Wires: 36" long, 20 AWG, 600v

Float can be inverted to change level switch function N.O.to N.C. or vice versa in the field

SETTING TOLERANCE:
 $\pm 10^{\circ}\text{F}$ ($\pm 5^{\circ}\text{C}$)

MAXIMUM PRESSURE:
 150 psi (10 bar)

OPERATING TEMPERATURE:
 Oil: -40° to + 285°F (-40° to +140°C)

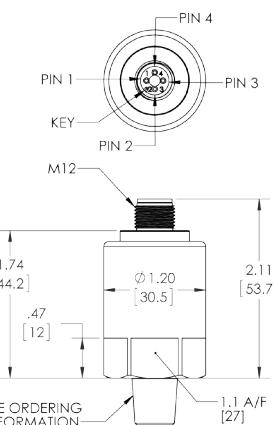
HOUSING MATERIAL:
 Stem and Port : Brass
 Float : Buna (compatible with hydraulic oil)
 Retainer: Stainless Steel

ORDERING INFORMATION

| TFL | - 70F | - R | - 4M | - A | - FL36 | - LNO |
|--------------|---|-------------------------------------|--|---|---------------------------|--|
| Model | Temperature Set Point | Direction | Connection | Switch Circuit | Terminal | Level Circuit |
| TFL | Set Point Range 40°F - 285°F 5°C - 140°C Indicate temperature set point in degrees F (5°C (11°F) increments) | R - Temp Rising F - Temp Falling | 4M - 1/4" NPT 4F - 1/4" NPT Female (17mm hex) | A - Normally Open B - Normally Closed **** Call Factory for Shrink Wrap Options & Pricing | FL36 - 36" standard leads | LNO - Normally Open LNC - Normally Closed (Invert Float to change level switch function N.O.to N.C. or vice versa in the field) LNO = Float Resting on Retaining Ring |



PTT Pressure/Temperature Transducer



| Wiring Data Information | | | | | | | | | | | | | | |
|---------------------------------|-----------|-----------------|-------------|--------|-------------------------------|-----------|-----------------|--------|-------------|------------------|-----------|-----------------|--------|-------------|
| Mini DIN Connector PIN Function | | | | | Cable Connector WIRE Function | | | | | M12 PIN Function | | | | |
| Signal Output | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Signal Output | RED | GREEN | BLACK | WHITE | Signal Output | Pin 1 | Pin 2 | Pin 3 | Pin 4 |
| mA | Supply V+ | Pressure Output | Temp output | N/A | mA | Supply V+ | Pressure Output | N/A | Temp output | mA | Supply V+ | Pressure Output | N/A | Temp output |
| V | Supply V+ | Pressure Output | Temp output | Common | V | Supply V+ | Pressure Output | Common | Temp output | V | Supply V+ | Pressure Output | Common | Temp output |

The **PTT** Pressure / Temperature Transducer in one, offers high quality, high stability, stainless steel compact design, ideal for the industrial environment

Sensing Element: Ceramic core and PT100 temperature sensor

ELECTRICAL:

| | |
|--------------|----------------------|
| 4 - 20mA | 10 - 30 vdc (3 wire) |
| 0 - 5V, | 10 - 30 vdc (4 wire) |
| 0 - 10V | 12 - 30 vdc (4 wire) |
| 0.2 - 10.2 V | 12 - 30 vdc (4 wire) |

RESPONSE TIME:

<10 milliseconds

PRESSURE / TEMPERATURE RANGE:

0 - 30 (0-2 Bar) to 0/8700 PSI (0 - 600 Bar)
-40° to 221°F (-40° to 105°C)

PRESSURE ACCURACY:

± 1.0% (Full Scan)

AMBIENT TEMPERATURE:

-4° to 185°F (-20° to 85°C)

OVERLOAD PRESSURE:

1.5 X Full Scan

TEMPERATURE ACCURACY:

± 1.0% (Full Scan)

STORAGE TEMPERATURE:

-40° to 212°F (-40° to 100°C)

BURST PRESSURE:

2X Full Scan

PROTECTION:

IP65 with DIN, Cable, M12x1

INSULATION:

>100m Ω@100VDC

MATERIAL:

Wetted Area: Ceramic

Body: 304 Stainless Steel

OVERVOLTAGE: 30 VC

VIBRATION:

10g, 5 ~ 200Hz

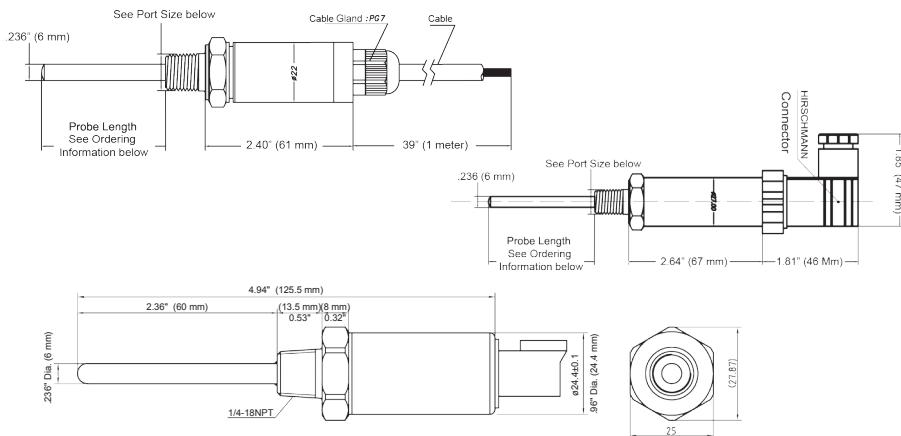
MEDIUM COMPATIBILITY:

Corrosive medium compatible with
Cr18Ni9Ti,ceramics

REVERSE OVERVOLTAGE: -30 VC

ORDERING INFORMATION

| PTT | - A | - 0/3000 | - (-40/221F) | - 4M | - M |
|-------|---|---------------------------------|---|---|--|
| Model | Type | Pressure Range | Temperature Range | Port Size | Terminal |
| PTT | A: 4 - 20 mA (3 wire) B: 0 - 5VDC (4 wire) C: 0 - 10VDC (4 wire) N: 0.2 - 10.2VDC (4 wire) | Specify Pressure Range Required | Specify Temperature Range Required (°F or °C) | 4M - 1/4 NPT 4S - 7/16 x 20 SAE Male 4G - 1/4 BSPP (undercut for o-ring seal) 4GS- 1/4 BSPP (no undercut) Consult Factory for other sizes | C - Cable (39" long) M - M12X1 HC- DIN 43650A Cable Clamp |



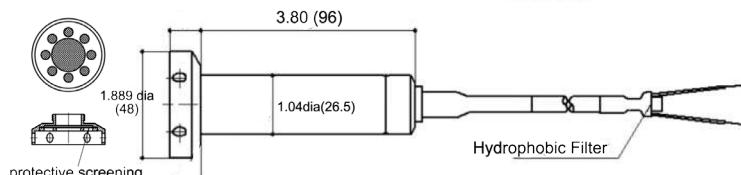
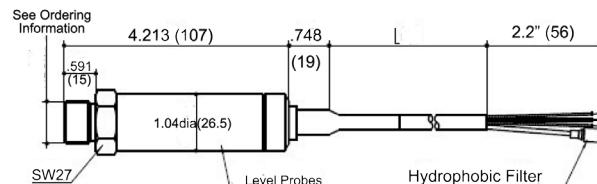
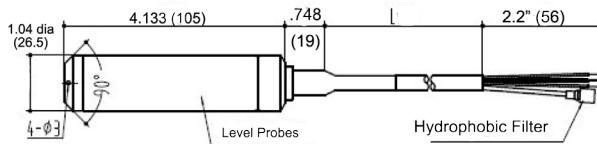
| Wiring Data Information | | | | | | | | | | | | | |
|--|-----------|--------|--------|--------|--|-----------|-----------|--------|------------------------------|---------------|-----------|--------|--------|
| Mini DIN Connector PIN Function (- 80) | | | | | Cable Connector WIRE Function (-.85) | | | | Deutsch 2 Pin Wiring (- 80) | | | | |
| Signal Output | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Signal Output | RED | BLUE | BLACK | WHITE | Signal Output | Pin 1 | Pin 2 | |
| mA | Supply V+ | Output | N/A | N/A | mA | Supply V+ | N/A | Output | N/A | mA | Supply V+ | Output | |
| V | Supply V+ | Output | Common | N/A | V | Supply V+ | N/A | Common | Output | V | N/A | N/A | |
| M12 PIN Function (- 87) | | | | | Packard Plug PIN/WIRE Function (- 89) | | | | Deutsch 3 Pin Wiring (- 81) | | | | |
| Signal Output | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Signal Output | A | B | C | | Signal Output | Pin A | Pin B | Pin C |
| mA | Supply V+ | N/A | N/A | Output | mA | N/A | Supply V+ | Output | | mA | N/A | N/A | N/A |
| V | Supply V+ | N/A | Common | Output | V | Common | Supply V+ | Output | | V | V+ | Common | Output |

The **TTR** series is a temperature transducer consisting of a temperature header, module and housing. A signal conditioned output is proportioned to the applied temperature which is amplified, compensated and trimmed by a built in digital ASIC. Heat conductive silicon grease is filled inside the head to ensure the quick conductive of heat and avoid depress for the resistor. Widely used in the following applications: medical equipment, water and oil tanks, refrigerators and constant temperature equipment.

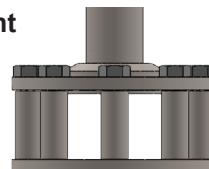
| | | | |
|---|--|--|-----------------------------|
| ELECTRICAL: | PROTECTION: | TEMPERATURE RANGE: (*)(**) | |
| OUTPUT: 4 - 20 mA (2 wire) 0-5V 0-10V 1-5V 0.5 - 4.5 V | SUPPLY: 10 - 30 VDC(2 wire) 10 - 30 VDC(3 wire) 10 - 30 VDC(3 wire) 10 - 30 VDC(3 wire) 5 VDC(3 wire) | IP65 with Standard DIN IP67 with Cable, Packard Plug, Deustch Integral,M12 | -40° - 400°F (-40° - 205°C) |
| STABILITY: < 0.25% / Yr (typical) | RESPONSE TIME: <10 Milliseconds | * Special High Temperature is available - Inquire | |
| ACCURACY: ± 0.5% Full Scale | PROBE DIAMETER: .236" (6mm) | ** Special Calibration Available on Request | |
| MATERIAL: 304 Stainless Steel | STORAGE TEMPERATURE: -58° - 400°F (-50° - 205°C) | TEMPERATURE COEFFICIENT: ≤ ± 0.005%/v | |
| | | ERROR ON SUPPLY VOLTAGE: ≤ ± 0.005%/v | |
| | | MAXIMUM PRESSURE: 232 PSI *** | |
| | | *** Consult Factory for Higher Pressure | |

ORDERING INFORMATION

| TTR | - A | - 0/300 | - 4M | - HCM | - A | - 80 * |
|-------|---|---|--|--|---|--|
| Model | Set Type | Temperature Range | Port Size | Terminal | Probe Length | Pin Out |
| TTR | A: 4 - 20mA (2 Wire) B: 0 - 5V (3 Wire) C: 0 - 10V (3 Wire) D: 0.5 - 4.5V (3 Wire) E: 1 - 5V (3 Wire) | Specify Temperature Range -40° - 400°F (-40° - 205°C) REQUIRED °F or °C | 4M - 1/4 NPT 4S - 7/16 X 20 SAE Male 4G - 1/4 BSPP (undercut for an o-ring seal) 4GS- 1/4 BSPP (no undercut) 8M - 1/2 NPT Consult Factory for other sizes | C - 39" (1 Meter) Cable (Std) M - M12 X 1 PP - Packard Connector H - DIN 43650C Male Half Only HCC - 36" Cable HCM - DIN 43650C Mini DIN DI - Deutsch Integral | A - 4" B - 6" C - 10" D - 1" E - 1-1/2" | * Advise your required Pin Out, Refer to Page 48 other Pin Out Options |



Optional Anti-Clog Attachment



Sensing Element: Piezoresistive Silicon Chip

The PTL pressure transducer is a heavy duty constructed design suitable for many applications for wells, reservoirs, lakes, rivers, sewage treatment plants, water tanks, ground water monitoring and surface water monitoring.

ELECTRICAL:

| OUTPUT: | SUPPLY: |
|-------------|---------------------|
| 4 - 20 mA | 10 - 36 VDC(2 wire) |
| 0-5V | 10 - 36 VDC(3 wire) |
| 0-10V | 10 - 36 VDC(3 wire) |
| 1-5V | 10 - 36 VDC(3 wire) |
| 0.5 - 4.5 V | 5 VDC (3 wire) |

ACCURACY:

± 0.5% Full Scale

INSULATION:

200mΩ/250VDC

PROTECTION:

IP68 with Cable

RESPONSE TIME:

≤1 Millisecond (Up to 90%FS)

MATERIAL:

Sensing Element: Piezoresistive

Silicon Chip

Body: 304 Stainless Steel

PRESSURE RANGE:

0 - 285 PSI (0 - 20 BAR)

STORAGE TEMPERATURE:

-40° - 257°F (-40° - 125°C)

OPERATE TEMPERATURE

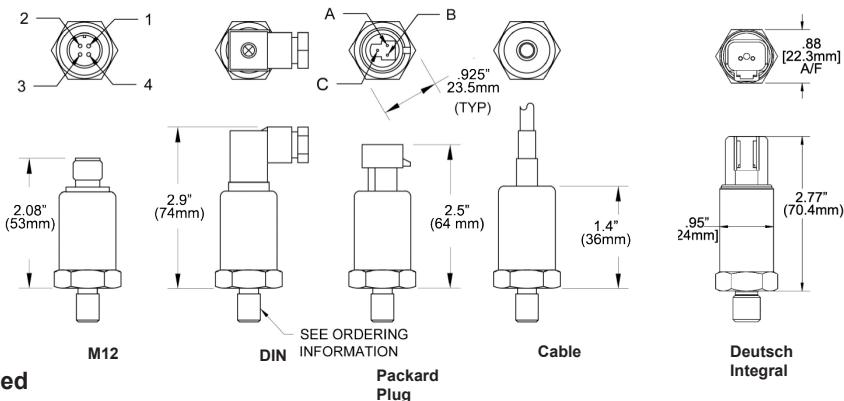
-4° to 185°F (-20° to 85°C)

OVERLOAD PRESSURE:

1.5 times Full Scan

ORDERING INFORMATION

| PTL | - A | - 0/5 | - 4M | - C | - AC* | - 80 * |
|-------|--|--|---|---|---------------------------------|---|
| Model | Type | Pressure Range | Connection | Terminal | Options | Pin Out |
| PTL | A: 4 - 20 mA (2 wire) B: 0 - 5V (3 wire) C: 0 - 10V (3 wire) D: 0.5 - 4.5V (3 wire) E: 1-5V (3 wire) | Specify Pressure Range Required Note: Standard Ranges 0/5 PSI, 0/10 PSI, 0/145 PSI, 0/285 PSI Consult Factory for Other Ranges | 4M - 1/4" NPT 4S - 7/16 X 20 SAE Male 4G - 1/4" BSPP* T - Submersible * Non-standard | C- Cable (Specify Cable Length, Min:3ft) | AC - Anti-Clog Attachment | * Advise your required Pin Out, Refer to Page 48 other Pin Out Options |



| Wiring Data Information | | | | | | | | | | | | | |
|-----------------------------------|-----------|--------|--------|-------|---------------------------------------|-----------|--------|--------|-------|-----------------------------|-----------|--------|--------|
| DIN Connector PIN Function (- 81) | | | | | Cable Connector WIRE Function (- 81) | | | | | Deutsch 2 Pin Wiring (- 80) | | | |
| Signal Output | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Signal Output | RED | GREEN | YELLOW | BLACK | Signal Output | Pin 1 | Pin 2 | |
| mA | Supply V+ | Output | N/A | N/A | mA | Supply V+ | Output | N/A | N/A | mA | Supply V+ | Output | |
| V | Supply V+ | Common | Output | N/A | V | Supply V+ | Common | Output | N/A | V | N/A | N/A | |
| M12 PIN Function (- 80) | | | | | Packard Plug PIN/WIRE Function (- 80) | | | | | Deutsch 3 Pin Wiring (- 81) | | | |
| Signal Output | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Signal Output | PIN A | PIN B | PIN C | | Signal Output | Pin A | Pin B | Pin C |
| mA | Supply V+ | Output | N/A | N/A | mA | Supply V+ | Output | N/A | | mA | N/A | N/A | N/A |
| V | Supply V+ | Output | Common | N/A | V | Supply V+ | Output | Common | | V | V+ | Common | Output |

The **GTC** pressure transducers offer a Glass Micro-Fused sensing element, MEMS technology, Long Term Stability, Stainless Steel Compact design.

ELECTRICAL:

| | |
|--------------------------|---------------------|
| Output: | Supply: |
| 4 - 20mA (2 wire) | 12 -35 vdc (2wire) |
| 0 - 5V | 10 -35 vdc (3 wire) |
| 0 - 10V | 10 -35 vdc (3 wire) |
| 1 - 5V | 10 -35 vdc (3 wire) |
| 0.5 - 4.5V (ratiometric) | 5 vdc (3 wire) |

ACCURACY:

Including Linearity, Hysteresis and Repeatability: $\pm 0.5\%$ (Full Scan)

PROTECTION:

IP65 with DIN, M12X1, Packard Plug, Cable, Integral Deustch

OPERATING TEMPERATURE:

-40° to 257°F (-40° to 125°C)

COMPENSATION TEMP:

14° to 158°F (-10° to 70°C)

STORAGE TEMPERATURE:

-40° to 257°F (-40° to 125°C)

ZERO TEMP. COEFFICIENT:

$\pm 1.5\%$ Full Scan max
14° to 158°F (-10° to 70°C)

SPAN TEMP. COEFFICIENT:

$\pm 1.5\%$ Full Scan max
14° to 158°F (-10° to 70°C)

PRESSURE RANGE:

0 - 8700 PSI (0 - 600 Bar)

OVERLOAD PRESSURE:

3x Full Scan \leq 10PSI, 2x Full Scan \leq 6000PSI
1.3x Full Scan above 6000 psi

MATERIAL:

Body: 304 Stainless Steel
Sensing Element: Glass Micro-Fused

RESPONSE TIME:

<1 millisecond

MECHANICAL LIFE:

1 million cycles

ORDERING INFORMATION

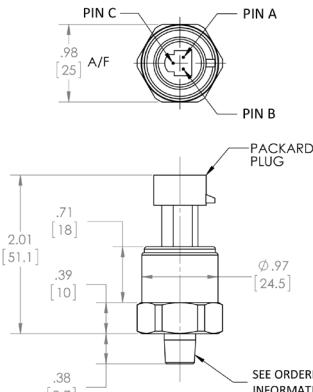
(Minimum Release are required - Consult Factory)

| GTC | - A | - 0/3000 | - 4M | - HCM | - *5 | - 80 * |
|-------|---|--|---|---|--------------------------------|--|
| Model | Type | Pressure Range | Port Size | Terminal | Options | Pin Out |
| GTC | A: 4 - 20mA (2 wire) B: 0 - 5V (3 wire) C: 0 - 10V (3 wire) D: 0.5 - 4.5V (3 wire) E: 1 - 5V (3 wire) | Specify Pressure Range Required Note: Ranges Available 0/70 PSI(0/5 Bar) /0/85 PSI (0/6 Bar), 0/150 PSI (0/10 Bar), 0/300 PSI (0/21 Bar), 0/600PSI (0/40 Bar), 0/1500 PSI(0/100 Bar), 0/3000PSI (0/200 Bar), 0/6000 PSI (0/400 Bar) 0/8700 PSI (0/600 Bar) Consult Factory for Other Ranges | 2M - 1/8" NPT 4M - 1/4 NPT 4S - 7/16 x 20 SAE Male 4G - 1/4 BSPP (undercut for an o-ring seal) 4GS- 1/4 BSPP (no undercut) M12 - M12 X 1.5 M14 - M14 X 1.5 Consult Factory for other sizes | PP - Packard Plug C - Cable (standard 3 ft long) M - M12X1 HCM - DIN 43650C Mini DIN DI - Deutsch Integral | *Omit for 5- Spiral Restrictor | See Above Wire Data Information * For other Electrical Pin Out options refer to page 48 |



Sensing Element: Ceramic Capacitive

VTC Pressure Transducer



(See ordering information for other termination options)

| Wiring Data Information | | | | | | | | | | | |
|-----------------------------------|-----------|--------|--------|-------|--|-----------|--------|--------|-----------------------------|-----------|--------|
| DIN Connector PIN Function (- 81) | | | | | Cable Connector WIRE Function (- 85) | | | | Deutsch 2 Pin Wiring (- 80) | | |
| Signal Output | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Signal Output | RED | BLACK | YELLOW | Signal Output | Pin 1 | Pin 2 |
| mA | Supply V+ | Output | N/A | N/A | mA | Supply V+ | Output | N/A | mA | Supply V+ | Output |
| V | Supply V+ | Common | Output | N/A | V | Supply V+ | Common | Output | V | N/A | N/A |
| M12 PIN Function (- 81) | | | | | Packard Plug PIN/WIRE Function (- 81) | | | | Deutsch 3 Pin Wiring (- 80) | | |
| Signal Output | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Signal Output | PIN A | PIN B | PIN C | Signal Output | Pin A | Pin B |
| mA | Supply V+ | Output | N/A | N/A | mA | Supply V+ | Output | N/A | mA | N/A | N/A |
| V | Supply V+ | Common | Output | N/A | V | Supply V+ | Common | Output | V | V+ | Output |

The VTC pressure transducer offers high quality, stainless steel, high stability, compact design for use in air compressors, air conditioning and refrigeration equipment, automotive and hydraulic controls.

ELECTRICAL:

| OUTPUT: | SUPPLY: |
|-------------|----------------------|
| 4 - 20 mA | 9 - 30 VDC (2 wire) |
| 0-5V | 9 - 30 VDC (3 wire) |
| 1-5V | 9 - 30 VDC (3 wire) |
| 0-10V | 12 - 30 VDC (3 wire) |
| 0.5 - 4.5 V | 5 VDC (3 wire) |

ACCURACY:

1.0%

PROTECTION:

IP67 with DIN, Packard Plug, Cable, M12X1, Integral Deustch

OPERATING TEMPERATURE:

-40° to 257°F (-40° to 125°C)

COMPENSATION TEMPERATURE:

-4° to 158°F (-20° to 70°C)

RESPONSE TIME:

<1 millisecond

PRESSURE RANGE:

0/75(0/5 Bar) up to 0/2000 PSI (0 - 138 Bar)
(See ordering information below)

OVERLOAD PRESSURE:

1.5 X Full Scan

BURST PRESSURE:

3.0 X Full Scan

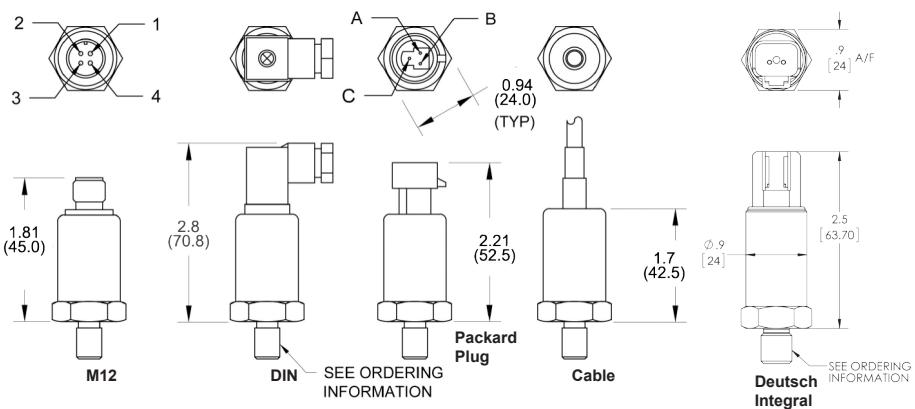
MATERIAL:

Wetted Area: Ceramic

Body: 304 Stainless Steel

ORDERING INFORMATION

| VTC | - D | - 0/150 | - 4M | - PP | - 81 * |
|-------|--|---|--|---|--|
| Model | Type | Pressure Range | Connection | Terminal | Pin Out |
| VTC | A: 4 - 20 mA (2 wire) B: 0 - 5V (3 wire) C: 0 - 10V (3 wire) D: 0.5 - 4.5V (3 wire) E: 1-5V (3 wire) | Specify Pressure Range Required 0/75 PSI, 0/150 PSI 0/200 PSI, 0/250 PSI 0/300 PSI, 0/500 PSI 0/750 PSI, 0/1000 PSI 0/1500 PSI, 0/2000 PSI Consult Factory for Other Ranges Also available in Bar, Consult Factory | 2M - 1/8" NPT 4M - 1/4" NPT 4S - 7/16 X 20 SAE Male 6S - 9/16 X 18 SAE Male 4G - 1/4 BSPP (undercut for an o-ring seal) 4GS - 1/4 BSPP (no undercut) Consult Factory for Other Sizes | PP - Packard Plug M - M12X1 C - 39" (1 Meter) Cable (Std) HCM - DIN 43650C Mini DIN DI - Deutsch Integral | * Standard Pin out as noted above For other Electrical Pin Out options refer to page 48 |



Sensing Element: Ceramic

| Wiring Data Information | | | | | | | | | | | | |
|-----------------------------------|-----------|--------|--------|--------|---------------------------------------|-----------|--------------|---------|--------|-----------------------------|-----------|--------|
| DIN Connector PIN Function (- 81) | | | | | Cable Connector WIRE Function (- 80) | | | | | Deutsch 2 Pin Wiring (- 80) | | |
| Signal Output | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Signal Output | RED | GREEN / BLUE | BLACK | YELLOW | Signal Output | Pin 1 | Pin 2 |
| mA | Supply V+ | Output | N/A | N/A | mA | Supply V+ | Output | N/A | N/A | mA | Supply V+ | Output |
| V | Supply V+ | Common | Output | N/A | V | Supply V+ | Output | Common | N/A | V | N/A | N/A |
| M12 PIN Function (- 82) | | | | | Packard Plug PIN/WIRE Function (- 89) | | | | | Deutsch 3 Pin Wiring (- 81) | | |
| Signal Output | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Signal Output | A/BLACK | B/RED | C/GREEN | | Signal Output | Pin A | Pin B |
| mA | Supply V+ | N/A | Output | N/A | mA | N/A | Supply V+ | Output | | mA | N/A | N/A |
| V | Supply V+ | N/A | Output | Common | V | Common | Supply V+ | Output | | V | V+ | Common |

The **XTC** pressure transducers offer high quality, high stability, stainless steel compact design, ideal for the industrial environment. The transducers are widely used in air compressors, air conditioning and refrigeration equipment, automotive and hydraulic control.

ELECTRICAL:

Output: Supply:
4 - 20mA (2 wire) 12 - 30 vdc (2wire)*
0 - 5V, 8 - 30 vdc (3 wire)*
0 - 10V 12 - 30 vdc (3 wire)*
1 - 5V 8 - 30 vdc (3 wire)*
0.5 - 4.5V (ratiometric) 5 vdc(+/-0.25V) (3 wire)
(* Do not exceed 35VDC, with the exception of 0.5-4.5V)

ACCURACY:
± 0.5% (Full Scan)

PROTECTION:
IP65 with DIN
IP67 with Packard Plug, Cable
M12X1, Integral Deustch

RESPONSE TIME:

<10 milliseconds

OPERATING TEMPERATURE:

-40° to 212°F (-40° to 100°C)

COMPENSATION TEMPERATURE:

14° to 176°F (-10° to 80°C)

STORAGE TEMPERATURE:

-58° to 257°F (-50° to 125°C)

INSULATION:

>100m Ω@50V

PRESSURE RANGE:

0- 30 to 0-3500 PSI (0 - 2 bar to 0-241 Bar)

OVERLOAD PRESSURE:

150% Full Scan

MATERIAL:

Wetted Area: Ceramic
Body: 304 Stainless Steel

MEDIUM COMPATIBILITY:

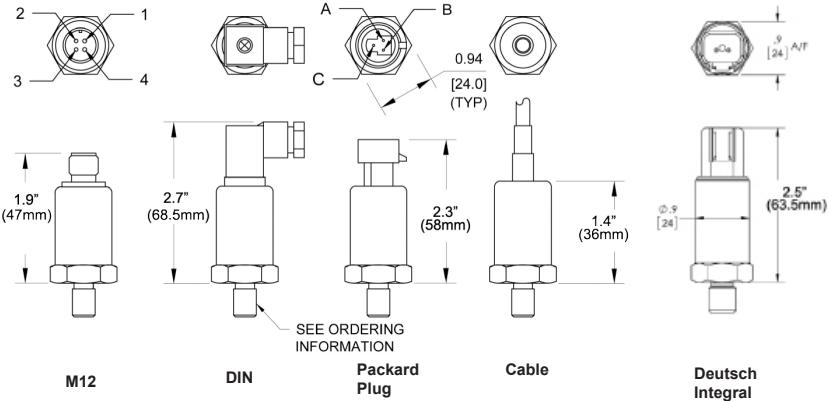
Corrosive medium compatible with Cr18Ni9Ti,ceramics

MECHANICAL LIFE:

10 million cycles

ORDERING INFORMATION

| XTC | - A | - 0/3000 | - 4M | - HCM | - 80 * |
|-------|---|--|--|---|--|
| Model | Type | Pressure Range | Port Size | Terminal | Pin Out |
| XTC | A: 4 - 20mA (2 wire) B: 0 - 5V (3 wire) C: 0 - 10V (3 wire) D: 0.5 - 4.5V (3 wire) E: 1 - 5V (3 wire) | Specify Pressure Range Required Note: Standard Ranges (Minimum range is 0/30 psi) 0/100 PSI, 0/300 PSI, 0/600 PSI, 0/1500 PSI, 0/3000 PSI, 0/3500 PSI, Consult Factory for Other Ranges | 4M - 1/4 NPT 4S - 7/16 X 20 SAE MALE 2G - 1/8 BSPP* 4G - 1/4 BSPP* (undercut for an o-ring seal) 4GS- 1/4 BSPP* (no undercut) *Non Standard | PP - Packard Plug M - M12X1 C - 39" (1 Meter) Cable (Std) HCM - DIN 43650C Mini DIN DI - Deutsch Integral (2 & 3 pin) 4DI - Deutsch Integral (4 pin) | See Above Wire Data Information * For other Electrical Pin Out options refer to page 48 |



Sensing Element: Piezoresistive Silicon Chip

The **STC** pressure transducers are designed with a compact integrated stainless steel structure with a built-in digital processing circuit that converts the millivolt signal of the sensor into standard voltage or current signal output. It's compact design is ideal for the industrial environment. The transducers are widely used in air compressors, air conditioning and refrigeration equipment, automotive and hydraulic control.

ELECTRICAL:

| Output: | Supply: |
|--------------------------|--------------------------|
| 4 - 20mA (2 wire) | 9 - 36 vdc (2wire) |
| 0 - 5V, | 9 - 36 vdc (3 wire) |
| 0 - 10V | 12 - 30 vdc (3 wire) |
| 1 - 5V | 9 - 36 vdc (3 wire) |
| 0.5 - 4.5V (ratiometric) | 5 vdc(+/-0.25V) (3 wire) |

ACCURACY:

± 0.5% (Full Scan) (@ 25°C ± 5°C)

HYSTERESIS & REPEATABILITY:

± 0.1% (Full Scan)

PROTECTION:

IP65 with DIN, M12X1, Packard Plug, Cable, Integral Deustch

VIBRATION RESISTANCE:

Sine curve: 20g, 25Hz-2kHz; IEC 60068-2-6
Random: 7.5grms, 5Hz~1kHz; IEC 60068-2-64

SHOCK RESISTANCE:

Shock:: 200g/1ms; IEC 60068-2-27
Free Fall: 1m; IEC 60068-2-32

AMBIENT TEMPERATURE:

-4° to 185°F (-20° to 85°C)

MEDIUM TEMPERATURE:

-22° to 221°F (-30° to 105°C)

STORAGE TEMPERATURE:

-40° to 257°F (-40° to 125°C)

OPERATING TEMPERATURE:

-22° to 212°F (-30° to 100°C)

TEMP. DRIFT:

1.5% FS (-4° to 185°F) (-20° to 85°C)

EMC - INTERFERENCE:

IEC 61000-6-3

EMC - IMMUNITY

IEC 61000-6-2

INSULATION RESISTANCE:

≥ 100MΩ/250VDC (200MΩ/500VDC)

PRESSURE RANGE:

-14.5 - 14500 PSI (-1 - 1000 Bar) (Gauge)

Consult factory for higher pressure.

Caution: Please specify if application has high pressure fluctuation,a pulse snubber should be added against cavitaion and liquid hammer

OVERLOAD PRESSURE:

1.5x Full Scan ≤ 8700PSI

1.2x Full Scan ≥ 8702 to 14,500 psi

MATERIAL:

Body: 304 Stainless Steel

Sensing Element: Piezoresistive Silicon Chip

RESPONSE TIME:

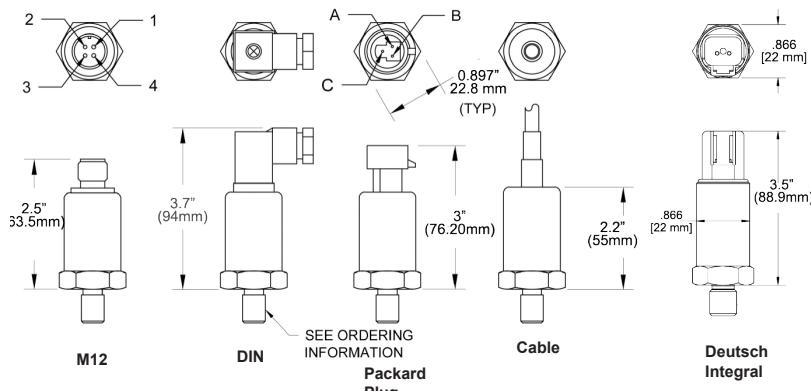
≤ 1 ms (Up to 90%FS)

MECHANICAL LIFE:

1 million cycles

ORDERING INFORMATION

| STC | - A | - 0/3000 | - 4M | - HCM | - 81 * | - 5* |
|-------|---|--|--|---|-------------------------------------|---|
| Model | Type | Pressure Range | Port Size | Terminal | Pin Out | Option |
| STC | A: 4 - 20mA (2 wire) B: 0 - 5V (3 wire) C: 0 - 10V (3 wire) D: 0.5 - 4.5V (3 wire) E: 1 - 5V (3 wire) | Specify Pressure Range Required Note: Ranges Available -14.5/0 PSI (-1/0 BAR), 0/1.5 PSI(0.11 Bar), 0/6 PSI (0/0.4 Bar), 0/14.5 PSI (0/1 Bar), 0/100 PSI (0/7Bar), 0/600 PSI, (0/40 Bar), 0/1500 PSI (0/100 Bar), 0/3000 PSI, (0/200 Bar), 0/ 6000 PSI (0/400 Bar), 0/ 8700 PSI (0/600 Bar) 0/ 14,500 PSI (0/1000 Bar) Consult Factory for Other Ranges | 2M - 1/8" NPT 4M - 1/4 NPT 4S - 7/16 x 20 SAE Male 4G - 1/4 BSPP (undercut for o-ring seal) 6S - 9/16 X 18 SAE Male Consult Factory for other sizes | PP - Packard Plug C - Cable (standard 3 ft long) M - M12X1 HCM - DIN 43650C Mini DIN DI - Deutsch Integral (2 & 3 pin) 4DI- Deutsch Integral (4 pin) | Refer to Electrical Pin Out Page 48 | *Omit if Standard 5 - Spiral Restrictor |



Sensing Element: Silicon Strain Gauge

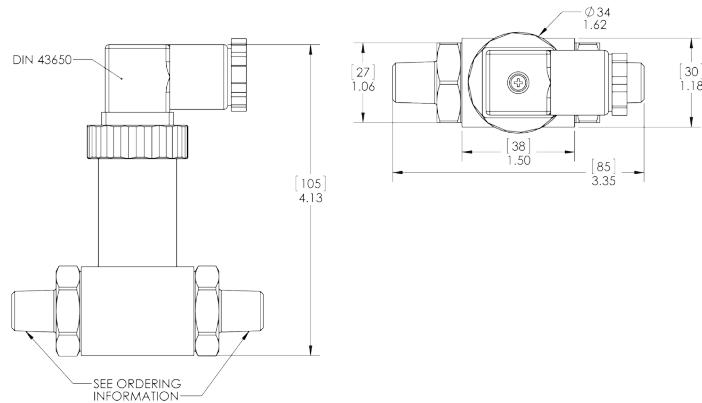
| Wiring Data Information | | | | | | | | | | | | | |
|-----------------------------------|-----------|--------|--------|--------|---------------------------------------|-----------|-----------|---------|--------|-----------------------------|-----------|--------|--------|
| DIN Connector PIN Function (- 80) | | | | | Cable Connector WIRE Function | | | | | Deutsch 2 Pin Wiring (- 80) | | | |
| Signal Output | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Signal Output | RED | BLUE | BLACK | WHITE | Signal Output | Pin 1 | Pin 2 | |
| mA | Supply V+ | Output | N/A | N/A | mA (-82) | Supply V+ | N/A | Output | N/A | mA | Supply V+ | Output | |
| V | Supply V+ | Output | Common | N/A | V (-85) | Supply V+ | N/A | Common | Output | V | N/A | N/A | |
| M12 PIN Function (- 87) | | | | | Packard Plug PIN/WIRE Function (- 89) | | | | | Deutsch 3 Pin Wiring (- 81) | | | |
| Signal Output | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Signal Output | A/BLACK | B/RED | C/GREEN | | Signal Output | Pin A | Pin B | Pin C |
| mA | Supply V+ | N/A | N/A | Output | mA | N/A | Supply V+ | | Output | mA | N/A | N/A | N/A |
| V | Supply V+ | N/A | Common | Output | V | Common | Supply V+ | | Output | V | V+ | Common | Output |

The JTC pressure transducers offer high quality, high stability, stainless steel compact design, ideal for the industrial environment. JTC series uses MEMS technologies, compensated with digital ASIC and designed with EMI/RFI circuit built in. The transducers are widely used in air compressors, air conditioning and refrigeration equipment, automotive and hydraulic control.

| | | |
|--|---|---|
| ELECTRICAL: | PROTECTION: | PRESSURE RANGE: |
| Output: 4 - 20mA (2 wire) 0 - 5V, 0 - 10V 1 - 5V 0.5 - 4.5V (ratiometric) | Supply: 10 -30 vdc (2wire) 10 -30 vdc (3 wire) 10 -30 vdc (3 wire) 5 vdc (3 wire) | IP65 with DIN, Packard Plug, Cable M12X1, Integral Deustch |
| ACCURACY: ± 0.5% (Full Scan) | OPERATING TEMPERATURE: -40° to 257°F (-40° to 125°C) | OVERLOAD PRESSURE: 2x Full Scan |
| RESPONSE TIME: < 10 milliseconds | COMPENSATION TEMPERATURE: 32° to 158°F (0° to 70°C) | MATERIAL: Wetted Area: Silicon Gauge Body: 304 Stainless Steel |
| ZERO OFFSET ≤ +/-1% FS | STORAGE TEMPERATURE: -58° to 257°F (-50° to 125°C) | BURST PRESSURE: 5X of Full Scale (Maximum:21,760 psi) |
| | SPAN OFFSET: ≤ +/-1% FS | |

ORDERING INFORMATION

| JTC | - A | - 0/3000 | - 4M | - HCM | - 80 * |
|-------|--|--|--|---|--|
| Model | Type | Pressure Range | Port Size | Terminal | Pin Out |
| JTC | A: 4 - 20 mA (2 wire) B: 0 - 5V (3 wire) C: 0 - 10V (3 wire) D: 0.5 - 4.5 (3 wire) ratiometric E: 1 - 5V (3 wire) | Specify Pressure Range Required Note: Standard Ranges 0/100 PSI, 0/300 PSI, 0/600 PSI, 0/1500 PSI, 0/3000 PSI, 0/5000 PSI, 0/6000 PSI, 0/9000 PSI Consult Factory for Other Ranges | 4M - 1/4 NPT 4S - 7/16 X 20 SAE MALE 2G - 1/8 BSPP* 4G - 1/4 BSPP* (undercut for an o-ring seal) 4GS - 1/4 BSPP* (no undercut) | PP - Packard Plug M - M12X1 C - 39" (1 Meter) Cable (Std) HCM - DIN 43650C Mini DIN HC - DIN43650A Large DIN Cable Clamp HN - DIN43650A Large DIN 1/2" Conduit (female) DI - Deutsch Integral | See Above Wire Data Information * For other Electrical Pin Out options refer to page 48 |



Sensing Element: Piezoresistive Silicon Chip

| Wiring Data Information | | | | |
|-----------------------------------|-----------|--------|--------|-------|
| DIN Connector PIN Function (- 81) | | | | |
| Signal Output | Pin 1 | Pin 2 | Pin 3 | Pin 4 |
| mA | Supply V+ | Output | N/A | N/A |
| V | Supply V+ | Common | Output | N/A |

The **DPT DIFFERENTIAL** pressure transducers offer Piezoresistive silicon chip, MEMS technology, Long Term Stability, Stainless Steel design, ideal for the industrial environment.

ELECTRICAL:

| | |
|--------------------------|---------------------|
| Output: | Supply: |
| 4 - 20mA (2 wire) | 12 -35 vdc (2wire) |
| 0 - 5V, | 12 -35 vdc (3 wire) |
| 1 - 5V | 12 -35 vdc (3 wire) |
| 0.5 - 4.5V (ratiometric) | 5 vdc (3 wire) |

ACCURACY:

Including Linearity, Hysteresis and Repeatability: ± 0.5% (Full Scan)

PROTECTION:

IP65 with DIN

RESPONSE TIME:

1 millisecond

WEIGHT:

1.04 LBS (0.47KG)

OPERATING TEMPERATURE:

-4° to 185°F (-20° to 85°C)

COMPENSATION TEMP:

32° to 140°F (0° to 60°C)

STORAGE TEMPERATURE:

-40° to 257°F (-40° to 125°C)

ZERO TEMP. COEFFICIENT:

±1.5% Full Scan max
-4° to 185°F (-20° to 85°C)

SPAN TEMP. COEFFICIENT:

±1.5% Full Scan max
-4° to 185°F (-20° to 85°C)

PRESSURE RANGE:

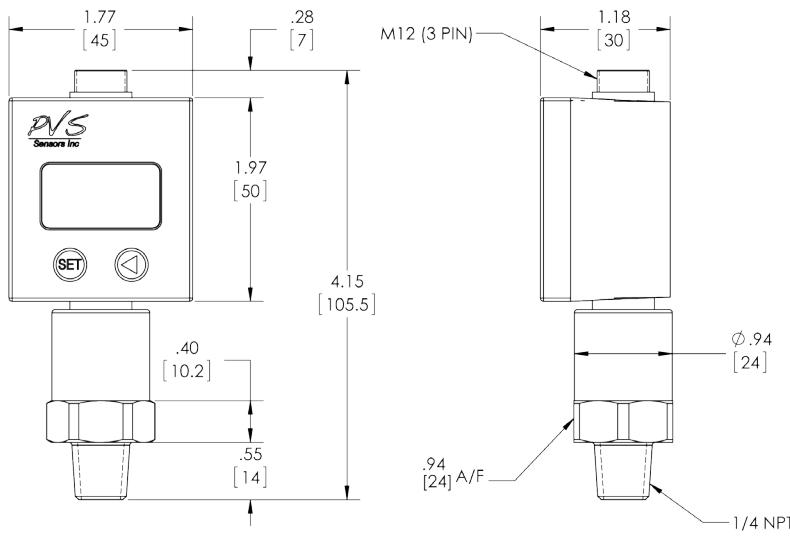
| Range: | Positive Overpressure | Negative Overpressure |
|-------------------|-----------------------|-----------------------|
| 5 psi (0.4 Bar) | 10 psi (0.7 Bar) | 5 psi (0.4Bar) |
| 10 psi (0.7 Bar) | 22 psi (1.5 Bar) | 10 psi (0.7 Bar) |
| 14.5 psi (1 Bar) | 29 psi (2 Bar) | 14.5 psi (1 Bar) |
| 36 psi (2.5 bar) | 73 psi (5 Bar) | 36 psi (2.5 Bar) |
| 58 psi (4 Bar) | 116 psi (8 Bar) | 58 psi (4 Bar) |
| 87 psi (6 Bar) | 174 psi (12 Bar) | 87 psi (6 Bar) |
| 145 psi (10 Bar) | 290 psi (20 Bar) | 145 psi (10 Bar) |
| 232 psi (16 Bar) | 464 psi (32 Bar) | 145 psi (10 Bar) |
| 365 psi (25 Bar) | 725 psi (50 Bar) | 145 psi (10 Bar) |

MATERIAL:

Body: 304 Stainless Steel
Sensing Element: Piezoresistive Silicon Chip

ORDERING INFORMATION

| DPT | - A | - 10 | - 4M | - HC | - 81 |
|-------|--|---|--|------------------------------------|---|
| Model | Type | Pressure Range | Port Size | Terminal | Pin Out |
| DPT | A: 4 - 20 mA (2 wire) B: 0 - 5V (3 wire) D: 0.5 - 4.5 (3 wire) E: 1 - 5V (3 wire) | Specify Pressure Range Required (5 psi, 10 psi, 14.5 psi, 36 psi 58 psi, 87 psi, 145 psi, 232 psi 363 psi) | 2M- 1/8" NPT 4M - 1/4 NPT 4S - 7/16 X 20 SAE Male 4G - 1/4 BSPP* (undercut for an o-ring seal) 4GS- 1/4 BSPP* (no undercut) M12 - M12 X 1.5* M14 - M14 X 1.5* *Non Standard Consult Factory for other sizes | HC - DIN 43650A DIN Cable Clamp | Standard Pin out as per above wire data Information |



Wiring Data Information

| M12 3 PIN (- 80) | | | | DIN Electrical Connections PIN Function (- 80) | | | | |
|------------------|---------------------|-----------------------|-------|--|-----------|--------|-------|-------|
| Signal | Pin 1 (Red Wire) | Pin 2 (Green Wire) | Pin 3 | Signal | Pin 1 | Pin 2 | Pin 3 | Pin 4 |
| mA | V+ | Output | N/A | mA | Supply V+ | Output | N/A | N/A |

The **TDD** series transducer with a digital display readout and a 4-20 mA output. It features high accuracy, long term stability, compact and rugged design to measure gas and liquid pressure in a wide range of applications. The high resolution LCD indicator can display the real time pressure value which provides readable information for field engineers. The display buttons on the indicator also provide adjustment to zero and span calibration, unit change.

ELECTRICAL:

Output: 4 - 20mA (2 wire)
Supplied with standard 79" (2m) connector cable
Power Supply: 24 VDC

ACCURACY:

± 1% (Full Scan)

INDICATOR:

4 digits (-9999 to 9999 adjustable)
Unit: KPa, MPa, Bar, PSI, %, atm, m

PROTECTION:

IP65 - M12 Cable, DIN

PRESSURE RANGE:

0 - 3500 PSI (0 - 241 Bar)

OPERATING TEMPERATURE:

-40° to 275°F (-40° to 135°C)

OVERLOAD PRESSURE:

1.5 times of pressure range

WORKING TEMPERATURE:

14° to 140°F (-10° to 60°C)

MATERIAL:

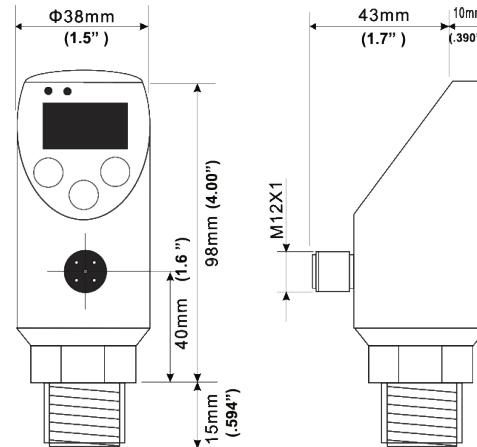
Wetted Area: Ceramic Sensing
Body: Welded Stainless Steel

STORAGE TEMPERATURE:

-4° to 176°F (-20° to 80°C)

ORDERING INFORMATION

| TDD | - A | - 0/100 | - 4M | - M | - 80 |
|-------|-----------------------|--|---|---|---|
| Model | Type | Pressure Range | Port Size | Terminal | Pin Out |
| TDD | A: 4 - 20 mA (2 wire) | Specify Pressure Range Required Note: Standard Ranges 0/100 PSI, 0/300 PSI, 0/600 PSI, 0/1500 PSI, 0/3000 PSI, 0/3500 PSI, Consult Factory for Other Ranges | 4M - 1/4 NPT 4S - 7/16 X 20 SAE MALE 4G - 1/4 BSPP*(undercut for an o-ring seal) 4GS- 1/4 BSPP* (no undercut) 8M - 1/2 NPT *Non Standard | M - M12 (with 79" mating cable) HCM - DIN43650C Mini Din | Standard Pin out as per above wire data Information |



Wiring Data Information

M12 x 1, 5 PINS

| Signal | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 |
|--------|-------|---------------|---------------|---------------|--------|
| mA | V+ | SP2(Switch 2) | GND(Supply -) | SP1(Switch 1) | Output |
| V | V+ | SP1(Switch 1) | GND(Supply -) | SP2(Switch 2) | Output |

The **SPS** series is a Electronic Pressure Switch, Transducer and Digital Display in one device. The SPS is designed for general industrial applications such as hydraulic and pneumatic systems, pressure monitoring and control, pumps and compressors.

- PNP Switching, voltage and current outputs
- Switching Set points are adjustable
- Displays peak pressure value and environmental temperature
- Housing with display and electrical connection rotates 330 degrees

ELECTRICAL:

Output: 4 - 20mA
0 - 20mA
0 - 5 V
0 - 10V
Power Supply: 12 - 30 VDC

ACCURACY:

± 0.5% (Full Scan)

INDICATOR:

3 Display buttons (back lighted)
Unit: PSI, Bar, mBar, Pa, kPa, MPa

PROTECTION:

IP65 - M12 Cable

MEDIA TEMPERATURE:

-22° to 176°F (-30° to 80°C)

WORKING TEMPERATURE:

-22° to 176°F (-30° to 80°C)

STORAGE TEMPERATURE:

-40° to 176°F (-40° to 80°C)

PRESSURE RANGE:

-14.5 - 8700 PSI (-1.0 - 600 Bar)

OVERLOAD PRESSURE:

1.5 times of pressure range

MATERIAL:

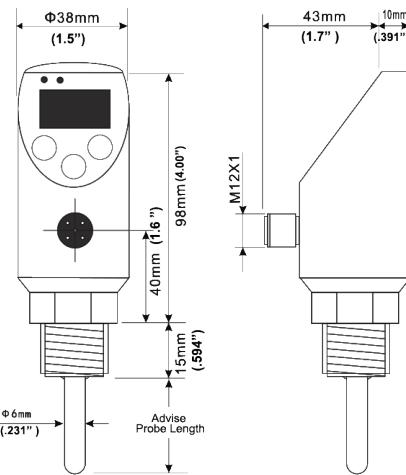
Wetted Area: Stainless steel
Body: 304 Stainless Steel

ORDERING INFORMATION

| SPS | - A | - 0/100 | - 4M | - M5 |
|-------|---|---------------------------------|--|--------------|
| Model | Type | Pressure Range | Port Size | Terminal |
| SPS | A: 4 - 20 mA A1: 0 - 20 mA B: 0 - 5 V C: 0 - 10V | Specify Pressure Range Required | 4M - 1/4 NPT 4S - 7/16 x 20 SAE Male 4G - 1/4 BSPP (undercut for an o-ring seal) 4GS- 1/4 BSPP (no undercut) M12 - M12 X 1.5 M14 - M14 X 1.5 Consult Factory for other sizes | M5 - M12 X 1 |



STS Temperature Switch/Transducer



| Wiring Data Information | | | | | |
|-------------------------|-------|---------------|---------------|---------------|--------|
| M12 x 1, 5 PINS | | | | | |
| Signal | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 |
| mA | V+ | SP2(Switch 2) | GND(Supply -) | SP1(Switch 1) | Output |
| V | V+ | SP1(Switch 1) | GND(Supply -) | SP2(Switch 2) | Output |

The **STS** series is a Electronic Temperature Switch, Transducer and Digital Display in one device. The STS is designed for temperature monitoring, measurement and control such as used in hydraulic oil, lubricants, heat-carrying agents etc.

- PNP Switching, voltage and current outputs
- Switching Set points are adjustable
- Displays peak pressure value and environmental temperature
- Housing with display and electrical connection rotates 330 degrees

ELECTRICAL:

Output: 4 - 20mA
0 - 20mA
0 - 5 V
0 - 10V

Power Supply: 12 - 30 VDC

ACCURACY:

± 0.5% (Full Scan)

INDICATOR:

3 Display buttons (back lighted)
Unit: °F(Fahrenheit), °C (Celsius), K(Kelvin)

PROTECTION:

IP65 - M12 Cable

MEDIA TEMPERATURE:

-22° to 176°F (-30° to 80°C)

WORKING TEMPERATURE:

-22° to 176°F (-30° to 80°C)

STORAGE TEMPERATURE:

-40° to 176°F (-40° to 80°C)

TEMPERATURE RANGE:

-58° to 392°F (-50° to 200°C)

MATERIAL:

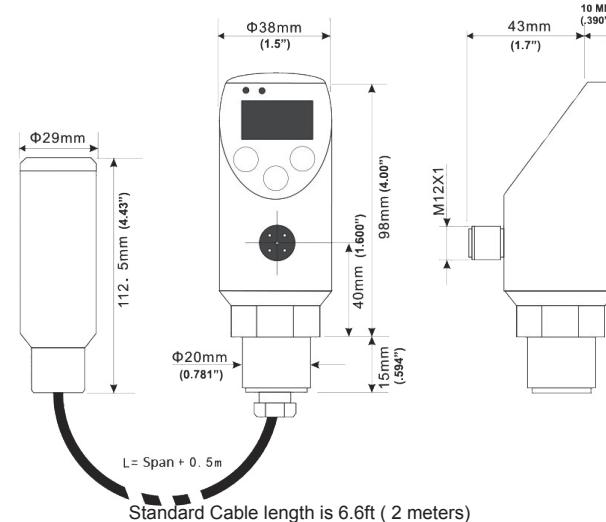
Wetted Area: Stainless Steel
Body: 304 Welded Stainless Steel

TEMPERATURE RESPONSE TIME:

< 5 seconds

ORDERING INFORMATION

| STS | - A | - 0/100F | - 4M | - M5 | - A |
|-------|---|--|--|--------------|-------------------------------|
| Model | Type | Temperature Range | Port Size | Terminal | Probe Length |
| STS | A: 4 - 20 mA A1: 0 - 20 mA B: 0 - 5 V C: 0 - 10V | Specify Temperature Range Required Consult Factory for Other Ranges | 4M - 1/4 NPT 4S - 7/16 x 20 SAE Male 4G - 1/4 BSPP (undercut for an o-ring seal) 4GS- 1/4 BSPP (no undercut) M12 - M12 X 1.5 M14 - M14 X 1.5 Consult Factory for other sizes | M5 - M12 X 1 | A - 4" B - 6" C - 9.84" |



| Wiring Data Information | | | | | |
|-------------------------|-------|---------------|---------------|---------------|--------|
| M12 x 1, 5 PINS | | | | | |
| Signal | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 |
| mA | V+ | SP2(Switch 2) | GND(Supply -) | SP1(Switch 1) | Output |
| V | V+ | SP1(Switch 1) | GND(Supply -) | SP2(Switch 2) | Output |

The **SLS** series is a Electronic Level, Transducer and Digital Display readout in one device. The SLS is designed for level monitoring and measurement of liquid and oil media for use in general industries such as tank, case, liquid cell and deep well.

- PNP Switching, voltage and current outputs
- Switching Set points are adjustable
- Displays peak pressure value and environmental temperature
- Housing with display and electrical connection rotates 330 degrees

ELECTRICAL:

Output: 4 - 20mA
0 - 20mA
0 - 5 V
0 - 10V

Power Supply: 12 - 30 VDC

ACCURACY:

± 0.5% (Full Scan)

INDICATOR:

3 Display buttons (back lighted)
Unit: PSI, Bar, mBar, Pa, kPa, MPa

PROTECTION:

IP65 - M12 Cable

PRESSURE RANGE:

1.4 - 142 psi (3 in HG - 300 in HG)

MEDIA TEMPERATURE:

-22° to 176°F (-30° to 80°C)

OVERLOAD PRESSURE:

1.5 times of pressure range

WORKING TEMPERATURE:

-22° to 176°F (-30° to 80°C)

MATERIAL:

Wetted Area: Stainless Steel
Body: 316 Stainless Steel

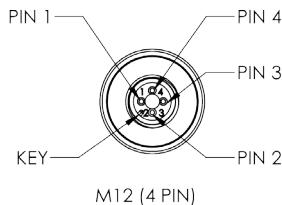
STORAGE TEMPERATURE:

-40° to 176°F (-40° to 80°C)

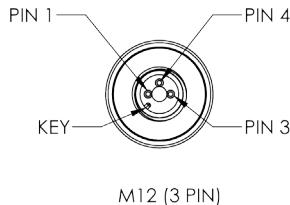
ORDERING INFORMATION

| SLS | - A | - 0/100 | - 4M | - M5 |
|-------|---|---|--|--------------|
| Model | Type | Pressure Range | Port Size | Terminal |
| SLS | A: 4 - 20 mA A1: 0 - 20 mA B: 0 - 5 V C: 0 - 10V | Specify Pressure Range Required Consult Factory for Other Ranges | 4M - 1/4 NPT 4S - 7/16 x 20 SAE Male 4G - 1/4 BSPP (undercut for an o-ring seal) 4GS- 1/4 BSPP (no undercut) M12 - M12 X 1.5 M14 - M14 X 1.5 Consult Factory for other sizes | M5 - M12 X 1 |

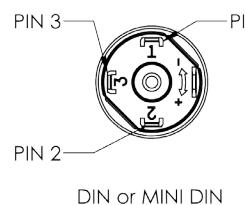
Transducer Electrical Pin Out Information



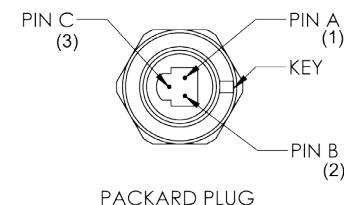
M12 (4 PIN)



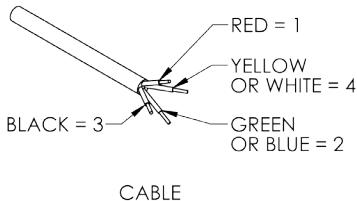
M12 (3 PIN)



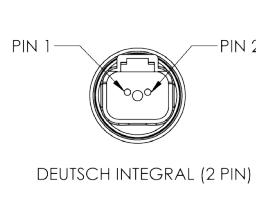
DIN or MINI DIN



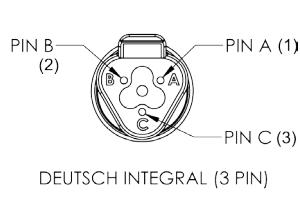
PACKARD PLUG



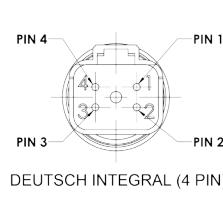
CABLE



DEUTSCH INTEGRAL (2 PIN)



DEUTSCH INTEGRAL (3 PIN)



DEUTSCH INTEGRAL (4 PIN)

Wiring Data Information Options

- 80

| Signal Output | Pin 1 | Pin 2 | Pin 3 | Pin 4 |
|---------------|-----------|--------|--------|-------|
| mA | Supply V+ | Output | N/A | N/A |
| V | Supply V+ | Output | Common | N/A |

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| Signal Output | Pin 1 | Pin 2 | Pin 3 | Pin 4 |
|---------------|-----------|-------|--------|--------|
| mA | Supply V+ | N/A | Output | N/A |
| V | Supply V+ | N/A | Output | Common |

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| Signal Output | Pin 1 | Pin 2 | Pin 3 | Pin 4 |
|---------------|-----------|--------|--------|-------|
| mA | Supply V+ | N/A | Output | N/A |
| V | Supply V+ | Output | Common | N/A |

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| Signal Output | Pin 1 | Pin 2 | Pin 3 | Pin 4 |
|---------------|-----------|-------|-----------|--------|
| mA | Supply V+ | N/A | N/A | Output |
| V | Common | N/A | Supply V+ | Output |

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| Signal Output | Pin 1 | Pin 2 | Pin 3 | Pin 4 |
|---------------|-----------|--------|--------|--------|
| mA | Supply V+ | N/A | Output | N/A |
| V | Supply V+ | Common | N/A | Output |

- 90

| Signal Output | Pin 1 | Pin 2 | Pin 3 | Pin 4 |
|---------------|-----------|-----------|--------|-------|
| mA | Output | Supply V+ | N/A | N/A |
| V | Supply V+ | Output | Common | N/A |

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| Signal Output | Pin 1 | Pin 2 | Pin 3 | Pin 4 |
|---------------|--------|-----------|-------|--------|
| mA | Output | Supply V+ | N/A | N/A |
| V | Common | Supply V+ | N/A | Output |

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| Signal Output | Pin 1 | Pin 2 | Pin 3 | Pin 4 |
|---------------|-----------|--------|--------|-------|
| mA | Supply V+ | Output | N/A | N/A |
| V | Supply V+ | Common | Output | N/A |

- 83

| Signal Output | Pin 1 | Pin 2 | Pin 3 | Pin 4 |
|---------------|-------|-----------|--------|--------|
| mA | N/A | Supply V+ | N/A | Output |
| V | N/A | Supply V+ | Common | Output |

- 85

| Signal Output | Pin 1 | Pin 2 | Pin 3 | Pin 4 |
|---------------|-----------|-------|--------|--------|
| mA | Supply V+ | N/A | Output | N/A |
| V | Supply V+ | N/A | Common | Output |

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| Signal Output | Pin 1 | Pin 2 | Pin 3 | Pin 4 |
|---------------|-----------|-------|--------|--------|
| mA | Supply V+ | N/A | N/A | Output |
| V | Supply V+ | N/A | Common | Output |

- 89

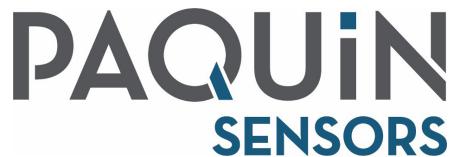
| Signal Output | Pin 1 | Pin 2 | Pin 3 | Pin 4 |
|---------------|--------|-----------|--------|-------|
| mA | N/A | Supply V+ | Output | N/A |
| V | Common | Supply V+ | Output | N/A |

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| Signal Output | Pin 1 | Pin 2 | Pin 3 | Pin 4 |
|---------------|--------|-----------|--------|-------|
| mA | Output | Supply V+ | N/A | N/A |
| V | Output | Supply V+ | Common | N/A |

**For Wiring Data Information
not shown - Please Consult
Factory.**

| | | | |
|---|---|--|---|
|  |  |  |  |
| FL Flying Leads (Call Factory for Shrink Wrap Options & Pricing) | SP "A", "B" or "C" Circuit 1/4" Spades | TS 6-32 Terminal Screws | H DIN 43650A Male Half Only |
|  |  |  |  |
| HC DIN 43650A Cable Clamp | HN DIN 43650A 1/2" Conduit | HC11A(110v), B (12vdc), C (24vdc) DIN 43650A Lighted DIN | HC11D (24vdc) DIN 43650A Indicating Light Green/Red |
|  |  |  |  |
| HCC DIN w/36" Cable | HCM DIN 43650C | MDP2 Deutsch DT06-2S 2 Pin Mating Plug | MDP3 Deutsch DT06-3S 3 Pin Mating Plug |
|  |  |  |  |
| WTF/WTM Weather Pack Tower 2 Pin Male or Female Pins | WSF/WSM Weather Pack Shroud 2 Pin Male or Female Pins | WTF3/WTM3 Weather Pack Tower 3 Pin Male or Female Pins | WSF3/WSM3 Weather Pack Shroud 3 Pin Male or Female Pins |
|  |  |  |  |
| DI Integral Deutsch 2 Pin | DI Integral Deutsch 3 Pin | M12 X 1 2, 3 & 4 Pin | Packard Plug |



Paquin Sensors
2816 Blue Ridge Blvd.
West Union, SC 29696

To better understand your requirements, please fill out the switch application form below.
Copy and either e-mail to paquinsensors@paquin.com or fax to 1-864-653-1047

SWITCH APPLICATION

COMPANY NAME:

CONTACT NAME:

E-MAIL:

ADDRESS:

PHONE:

FAX:

SYSTEM PRESSURE: (NORMAL):

(MAXIMUM):

PORT CONNECTION:

SET POINT:

RISING / FALLING

DEADBAND REQUIREMENTS:

ADJUSTABLE RANGE:

CIRCUIT FORM:

SPST -NO (A)

SPST - NC (B)

SPDT (C)

ELECTRICAL:

VAC:

VDC:

AMPERAGE:

RESISTIVE:

INDUCTIVE:

ELECTRICAL CONNECTION:

TEMPERATURE:

(F°)

MEDIUM:

AMBIENT:

CYCLE RATE:

OTHER SPECIAL REQUIREMENTS:

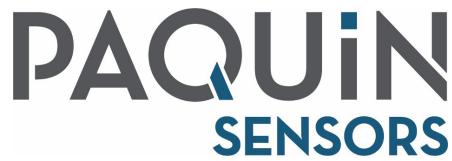
APPLICATION:

YOUR CURRENT SUPPLIER:

SAMPLE PROTOTYPE(S) REQUIRED BY:

ESTIMATED ANNUAL USAGE:

TARGET NET PRICE:



Paquin Sensors
2816 Blue Ridge Blvd.
West Union, SC 29696

To better understand your requirements, please fill out the transducer application form below. Copy and either e-mail to paquinsensors@paquin.com or fax to 1-864-653-1047

TRANSDUCER APPLICATION

| | | | |
|---|--------------------------------|---|---|
| COMPANY NAME: | | | |
| CONTACT NAME: | | E-MAIL: | |
| ADDRESS: | | | |
| PHONE: | | FAX: | |
| WHAT IS THE APPLICATION OF THE TRANSDUCER: | | | |
| APPROXIMATELY, HOW OFTEN WILL THIS APPLICATION CYCLE? | | | |
| ELECTRICAL SUPPLY: | ELECTRICAL OUTPUT: (mA or V) | PORT CONNECTION: | ACCURACY: |
| PSI (BAR) RANGE: | A:Absolute; G: Gauge; S-Sealed | ELECTRICAL TERMINATION (ALSO INCLUDE PIN OUT WIRING): | |
| STORAGE TEMPERATURE (F OR C): | | MEDIUM: | RESPONSE TIME REQUIRED FOR APPLICATION: |
| OVERLOAD PRESSURE: | | SNUBBER REQUIRED? | |
| DO YOU EXPECT RARE, MODERATE, FREQUENT OR CONSTANT PRESSURE SPIKES? | | | |
| WILL PULL DOWN RESISTORS BE USED IN THE SYSTEM? | | | |
| YOUR CURRENT SUPPLIER AND MODEL NUMBER: | | | |
| TARGET PRICE: | | | |
| ESTIMATED ANNUAL USAGE: | | | |
| TIME FRAME FOR REQUIREMENT: | | | |
| SAMPLE PROTOTYPE(S) REQUIRED BY: | | | |
| OTHER SPECIAL REQUIREMENTS: | | | |

The IP Specification

FIRST NUMBER

Protection against solid objects

IP TESTS

0 no protection

1 protected against solid objects up to 50mm (e.g. accidental touch by hands)

2 protected against solid objects up to 12mm (e.g. fingers)

3 protected against solid objects over 2.5mm (tools & wires)

4 protected against solid objects over 1mm (tools, wires & small wires)

5 protected against dust-limited ingress (no harmful deposit)

6 totally protected against dust

SECOND NUMBER

Protection against liquids

IP TESTS

0 no protection

1 protected against vertically falling drops of water (e.g. condensation)

2 protected against direct sprays of water up to 15° from the vertical

3 protected against sprays to 60° from the vertical

4 protected against water sprayed from all directions limited ingress permitted

5 protected against low pressure jets of water from all directions limited ingress permitted

6 protected against strong jets of water (e.g. for use on ship decks limited ingress protection)

7 protected against the affects of immersions between 15cm and 1m

8 protected against long periods of immersion under pressure

9 protected against highly pressurized water and steam jet cleaning

**PIPE RIGID - Tapered Pipe Threads
(NPTF, N/NF) Carbon Steel**

| Pipe Size | Turns-from-Finger | Max Ft-Lbs | Max N-m |
|--------------|-------------------|------------|---------|
| 1/8" (-2) | 3/4 - 1 3/4 | 12 | 16 |
| 1/4" (-4) | 3/4 - 1 3/4 | 25 | 34 |
| 3/8" (-6) | 3/4 - 1 3/4 | 40 | 54 |
| 1/2" (-8) | 1/2 - 1 1/2 | 54 | 73 |
| 3/4" (-12) | 1/2 - 1 1/2 | 78 | 106 |
| 1" (-16) | 1/2 - 1 1/2 | 112 | 152 |
| 1 1/4" (-20) | 1/2 - 1 1/2 | 154 | 209 |
| 1 1/2" (-24) | 1/2 - 1 1/2 | 211 | 286 |
| 2" (-32) | 1/2 - 1 1/2 | 300 | 407 |

**BRITISH STANDARD PARALLEL PIPE
(BSPP, ISO 1179)**

| Pipe Size | Turns-from-Finger | Max Ft-Lbs | Max N-m |
|-------------|-------------------|------------|---------|
| 1/8" - 28 | 2 to 3 | 13 | 18 |
| 1/4" - 19 | 2 to 3 | 37 | 50 |
| 3/8" - 19 | 2 to 3 | 46 | 63 |
| 1/2" - 14 | 2 to 3 | 118 | 160 |
| 3/4" - 14 | 2 to 3 | 148 | 200 |
| 1" - 11 | 2 to 3 | 250 | 340 |
| 1 1/4" - 11 | 1 1/2 - 2 1/2 | 332 | 450 |
| 1 1/2" - 11 | 1 1/2 - 2 1/2 | 413 | 560 |
| 2" - 11 | 1 1/2 - 2 1/2 | | |

**STUD END O-RING BOSS (ORB)
SAE (U/UF)**

| Pipe Size | Thread UNF-2A | Max Ft-Lbs | Max N-m |
|-----------|---------------|------------|---------|
| -2 | 5/16" - 24 | 6-7 | 8-9 |
| -3 | 3/8" - 24 | 8-9 | 11-12 |
| -4 | 7/16" - 20 | 13-15 | 18-20 |
| -5 | 1/2" - 20 | 17-19 | 23-26 |
| -6 | 9/16" - 18 | 22-24 | 29-33 |
| -8 | 3/4" - 16 | 40-43 | 49-53 |
| -10 | 7/8" - 14 | 43-48 | 59-64 |
| -12 | 1 1/16" - 12 | 68-75 | 93-102 |
| -14 | 1 3/16" - 12 | 90-99 | 122-134 |
| -16 | 1 5/16" - 12 | 112-123 | 151-166 |
| -20 | 1 5/8" - 12 | 146-161 | 198-218 |
| -24 | 1 7/8" - 12 | 154-170 | 209-231 |

**STUD END O-RING BOSS (ORB)
Metric**

| Pipe Size | ME/MCA (Torque N·m) | MCB Max Ft-Lbs | MB Max N-m |
|-----------|---------------------|----------------|------------|
| M8x1 | 8 | n/a | n/a |
| M10x1 | 15 | 9 | 18 |
| M12x1.5 | 25 | 20 | 30 |
| M14x1.5 | 35 | 35 | 45 |
| M16x1.5 | 40 | 45 | 65 |
| M18x1.5 | 45 | 55 | 80 |
| M22x1.5 | 60 | 65 | 140 |
| M27x2 | 100 | 90 | 190 |
| M30x2 | 130 | n/a | n/a |
| M33x2 | 160 | 150 | 340 |
| M42x2 | 210 | 240 | 500 |
| M48x2 | 260 | 290 | 630 |
| M60x2 | 315 | n/a | n/a |

Material Compatibility

| Media | Buna | EPDM | Viton |
|----------------------------|------|------|-------|
| Acetic Acid | | * | |
| Acetone | | * | |
| Acetylene | * | | |
| Air | * | | |
| Alcohols | * | | |
| Alkalies (Weak) | * | | |
| Alkalies (Strong) | | * | |
| Ammonia (Anhydrous) | * | | |
| Ammonia (Hydroxide) | | * | |
| Asphalt | | | * |
| Automotive Oils | * | | |
| Beer | * | | |
| Benzene | | | * |
| Boric Acid | * | | |
| Brake Fluid | | * | |
| Bunker Oil | * | | |
| Butane | * | | |
| Butyl Cellosolve | | * | |
| Carbon Dioxide | * | | |
| Carbon Monoxide | * | | |
| Cellube | | * | |
| Chlorobenzene | | | * |
| Citric Acid | * | | |
| Coke Oven Gas | | | * |
| Coolant | * | | |
| Diesel Fuels | * | | |
| Di-Ester Lube (MIL-L-7808) | | | * |
| Dowtherm A&E | | * | |
| Ethanol | * | | |
| Ether | | * | |
| Ethylene | * | | |
| Ethylene Glycol | * | | |
| Freon 11, 12, 112, 114 | * | | |
| Freon 22 | | * | |
| Fyrquel | | * | |
| Fuel Oil | * | | |
| Gasoline | * | | |
| Glycerin | * | | |
| Helium | * | | |
| Hexane | * | | |

| Media | Buna | EPDM | Viton |
|--------------------------|------|------|-------|
| Hydraulic Oil (PET Base) | * | | |
| Hydrocarbons | * | | |
| Isopropanol | | | * |
| JP-3-6 | * | | |
| Kerosene | * | | |
| LPG | * | | |
| Lube Oil (PET Base) | * | | |
| Methanol | * | | |
| MEK | | | * |
| Mineral Oil | * | | |
| Motor Oils | * | | |
| Naphtha | | | * |
| Natural Gas | * | | |
| Nitric Acid | | | * |
| Nitrogen | * | | |
| Cleum Spirits | | | * |
| Ozone | | | * |
| Crude Oil | * | | |
| Phosphoric Acid | | | * |
| Propane | * | | |
| Propanol | * | | |
| Pydraul | | | * |
| Shell Iris 902 | * | | |
| Silicone Greases | * | | |
| Silicone Oils | * | | |
| Skydrol 500 & 7000 | | | * |
| Soap Solutions | * | | |
| Steam Below 320°F | | | * |
| Stoddard Solvent | * | | |
| Sulfuric Acid | | | * |
| Toluene | | | * |
| Transmission Fluid A | * | | |
| Trisodium Phosphate | * | | |
| Turpentine | * | * | |
| Water to 220°F (104°C) | * | | |
| Water to 302°F (150°C) | | | * |

PAYMENT TERMS

Net 30 days. Automatic C.O.D. after 60 days without prior notification, FOB: West Union, SC

WARRANTY

Paquin Sensors LLC., (the "manufacturer") warrants this product only (the "product") to the original purchaser only (the "purchaser") against defective workmanship and materials under normal use of the product for a period of twelve (12) months from the date of shipment by Paquin Sensors LLC.. This warranty is absolutely conditional upon the product having been properly installed, maintained and operated under conditions of normal use in accordance with the manufacturers recommended installation and operation instructions. Products which have become defective for any other reason, according to the manufacturer's discretion, such as improper installation, failure to follow recommended installation and operational instructions, neglect, willful damage, misuse, accidental damage, alteration or tampering, or repair by anyone other than the manufacturer, are not covered under this warranty.

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Paquin Sensors LLC.. reserves the right to assess a restocking fee on all items returned for credit.

PRICING - Subject to change without prior notification.

SPECIAL ORDERS - Special orders are not cancellable.

CONDITIONS - Paquin Sensors LLC. must have a copy of your sales tax exemption certificate on file. Any discrepancies in either billing or shipping must be reported within 30 days from receipt of order. The carrier must be contacted if package is damaged when received and goods must be kept with original packaging for inspection by the carrier.

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Pneumatic
Refrigerant
Water Pumps

Air Conditioning
Waste Compaction
Mining
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CNC

