

General Instructions

These instructions provide information for installation, process connection, electrical connection, operation and maintenance of the 3820 pressure switch-transmitter. The 3820 consists of a field proven sputtered thin film stainless steel pressure transducer and a reliable switching output. The housing features a stainless steel construction.

The 3820 is capable of powering long cable lengths. See Formula on page 3 for maximum loop resistance.

NOTE: If you suspect that an instrument is defective, contact the factory or the representative in your area for a return authorization number (RMA). This product should only be installed by trained and competent personnel.



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Design and specifications are subject to change without notice.

For latest revision, go to gemssensors.com

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Installation

Ensure that wiring conforms to all applicable local and national electrical codes and install unit(s) according to relevant national and local safety codes.

Normally, line mounting provides adequate support for the instrument.

1st Step: Make the Process Connection

- ❶ The process connection is threaded onto a fitting within an adequately supported process piping system.
- ❷ Use two open end wrenches when connecting the pressure port to a process piping system: one wrench to hold the process fitting, the other at the hex flat to tighten the electronic pressure switch-transmitter.
- ❸ Process connection pipe or tubing may be rigid or flexible.

NOTE: Do not use the 1/2" NPT(M) connection on pressures higher than 5000 psi.

2nd Step: Make the Electrical Connection

- 1 The electrical connection may be installed on an adequately supported rigid conduit system. Use suitable locknuts (not provided) when mounting the instrument to an unthreaded (knockout) hole.
- 2 Securely connect the conduit pipe or fitting by holding the flats on the electrical connection while tightening.
- 3 Electrical connection may be rigid or flexible conduit.



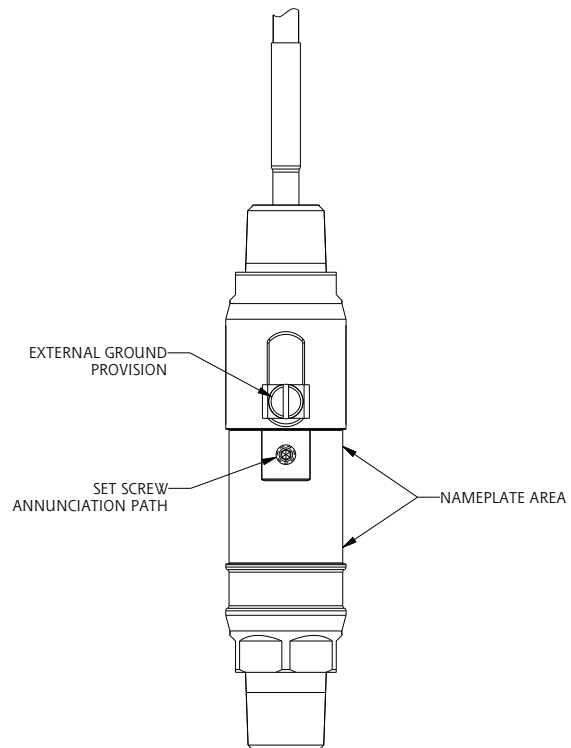
Unit in Hazardous Locations - Prior to removal from service, make sure that the work area is declassified. Failure to do so could result in severe personal injury or substantial property damage.

Additional Install Steps for Dual Seal Units

Failure to follow these additional installation instructions may diminish the “Ingress Protection” and “NEMA” ratings of the “Dual Seal” instruments. An improper installation will void the warranty.

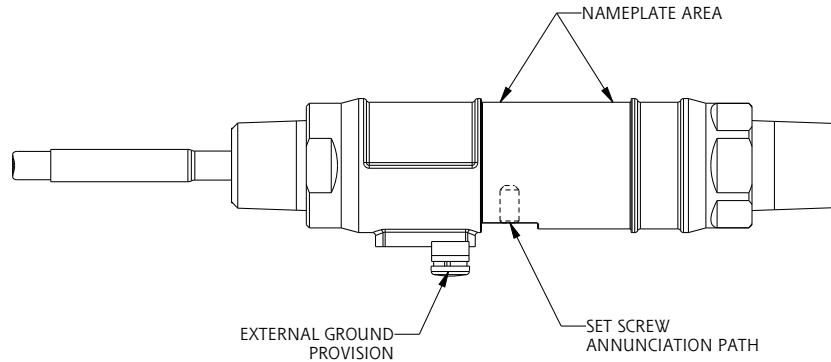
Vertical Installation

- 1 The figure on the right depicts the vertical installation profile; with the electrical leads on top. The instrument may be installed with the electrical leads on the bottom.
- 2 The nameplate (tag) should cover the set screw (annunciation path). Position the nameplate slot opposite the set screw; i.e., the nameplate slot should be located 180° from the set screw.



Horizontal Installation

- 1 The following figure depicts the proper horizontal installation profile; with the external ground provision and set screw (annunciation path) oriented downward.
- 2 The nameplate (tag) should not cover the set screw. Align the nameplate slot with the set screw; i.e., the set screw should be visible in the nameplate slot.



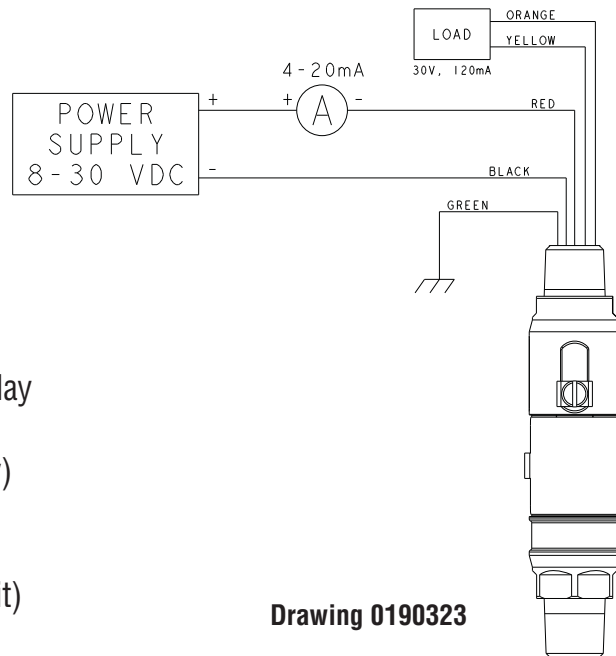
Electrical Termination - 3820-C

72" flying leads are provided for connection to a terminal strip within a cabinet or a splice within an outlet box:

Red (+) } Loop Voltage: 8 to 30 VDC
 Black (-) } Output: 4 to 20 mA

Orange } Switch Contacts
 Yellow } Normally-Open Solid-State Relay

Blue (Used for 3820-V Models Only)
 Green Earth Ground
 White Calibration
 (Requires GEMS Calibration Kit)
 Brown Not Used (trimmed at factory)
 Bare Drain Wire - Connected to
 Earth Ground (trimmed at factory)



Drawing 0190323

NOTE: An external ground screw is included for additional earth ground connection.

Formula for determining maximum loop resistance

$$R_L (\text{MAX}) = \frac{V_{\text{Supply}} - 8V}{20\text{mA}}$$

Electrical Termination - 3820-V

72" flying leads are provided for connection to a terminal strip within a cabinet or a splice within an outlet box:

Red (+) } 8-30 VDC + Power Connection
 Black (-) } Power Supply Ground

Orange } Switch Contacts;
 Yellow } Normally-Open Solid-State Relay

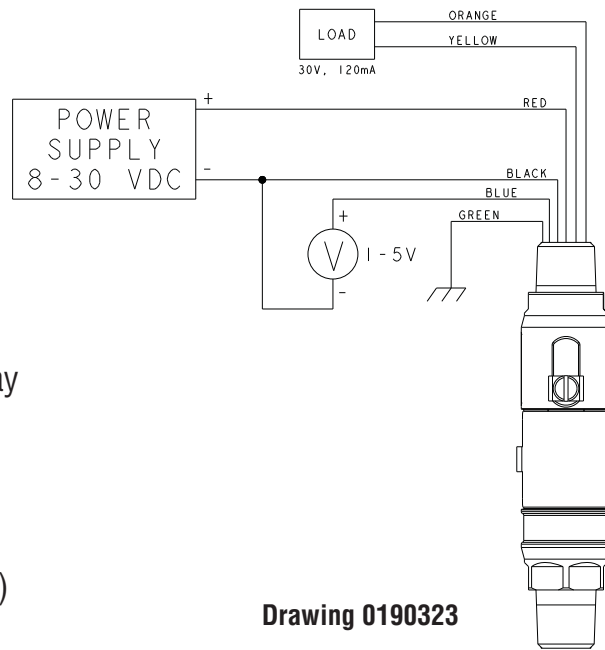
Blue 1-5 VDC Output

Green Earth Ground

White Calibration
 (Requires GEMS Calibration Kit)

Brown Not Used (trimmed at factory)

Bare Drain Wire - Connected to
 Earth Ground (trimmed at factory)



Drawing 0190323

NOTE: An external ground screw is included for additional earth ground connection.

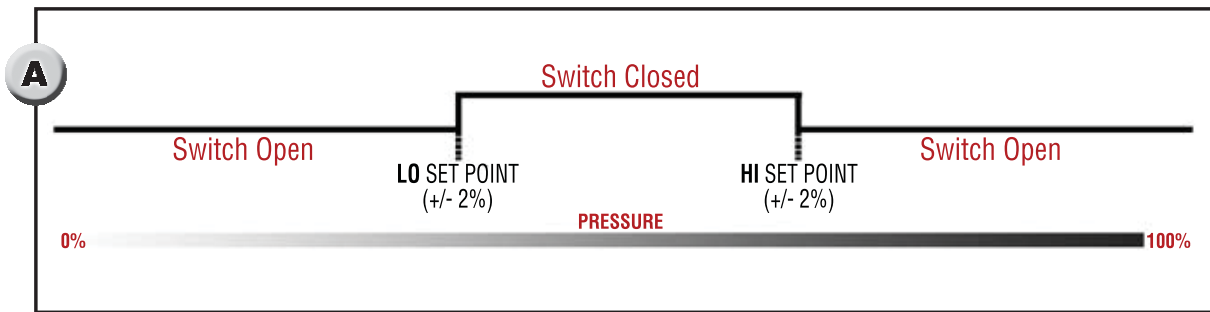
Switch Operation

The 3820 switch output is a solid state, normally open relay that is rated to 30V, 120mA. This switch can be configured three different ways depending on your application requirements as noted below. Specific switch action can be requested at the time of order or can be selected via the optional GEMS Calibration Kit at any time. In all three configurations, the fail-safe state for the 3820 switch output will be open (i.e., if power is removed from the 3820, the switch contacts will open automatically). Please note that the 3820 has a $\pm 2\%$ URL accuracy tolerance around each switch setpoint. For best results, GEMS recommends the use of some form of switch latching logic in conjunction with the 3820.

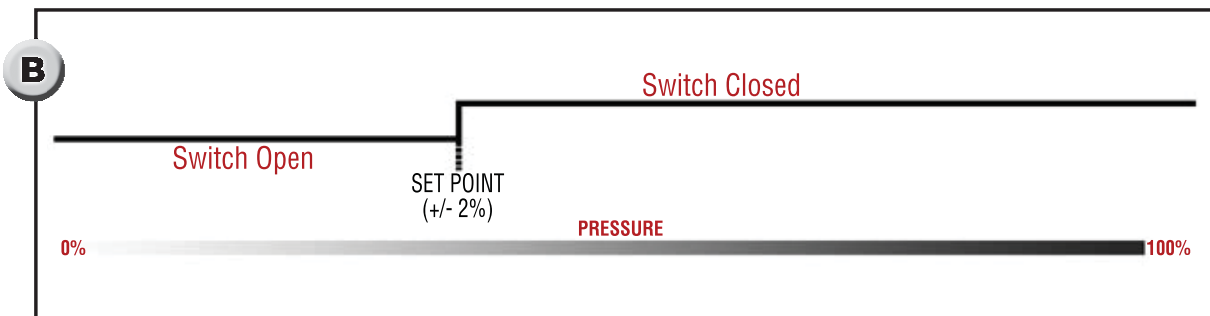
NOTE: Make certain you are using GEMS Calibration Manager software version 3.0.0.6 or greater.

Pressure “Window” Monitoring – This is the default configuration for the 3820 switch output. In this mode the switch output is closed when the process pressure is within a user selectable range and open when the pressure is outside of these boundaries. This is designed for applications where there is a known acceptable operating pressure range. For example, the “window” could be set for an acceptable operating range of 50PSI to 150PSI. The 3820 switch output will be closed when the pressure being monitored is between 50 and 150 PSI. If the pressure goes below 50PSI or above 150PSI, the 3820 switch output will open. (See **A**)

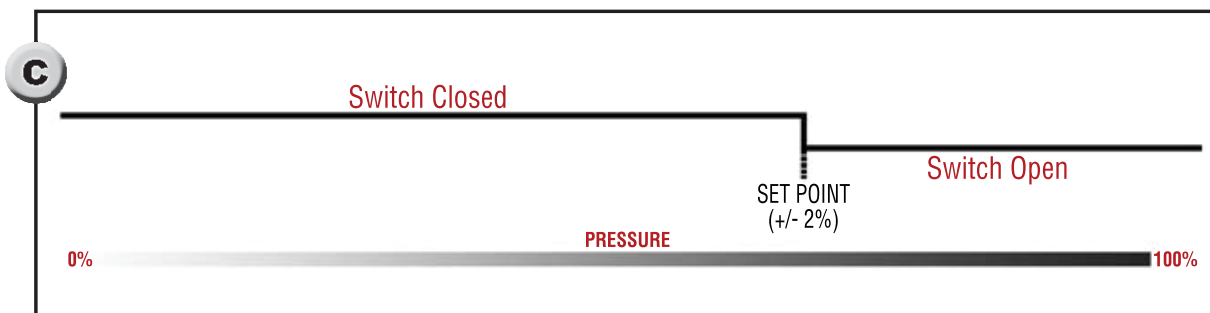
Window Mode



Single Point: Close on Rise/Open on Fall – In this configuration, the switch output will be open for pressures less than the selected setpoint. The switch output would then be closed for pressures greater than the setpoint. (See **B**)



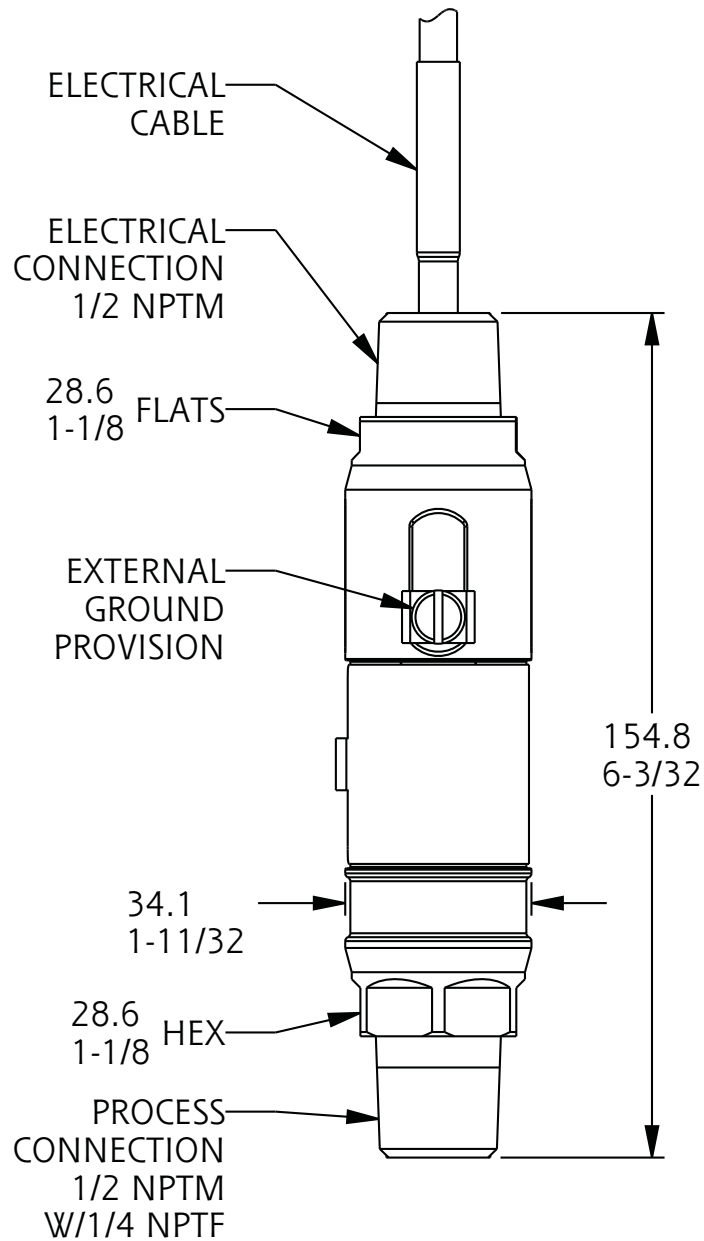
Single Point: Open on Rise/Close on Fall – In this configuration, the switch output will be closed for pressures less than the selected setpoint. The switch output would then be open for pressures greater than the setpoint. (See **C**)



Once the switch is installed and wired into a control or display loop, it is ready for use. Before applying power, check that the polarity and excitation voltage are correct.

Dimensions

*Dimensions are for reference only.
Contact the factory
for certified drawings
for a particular model number.*



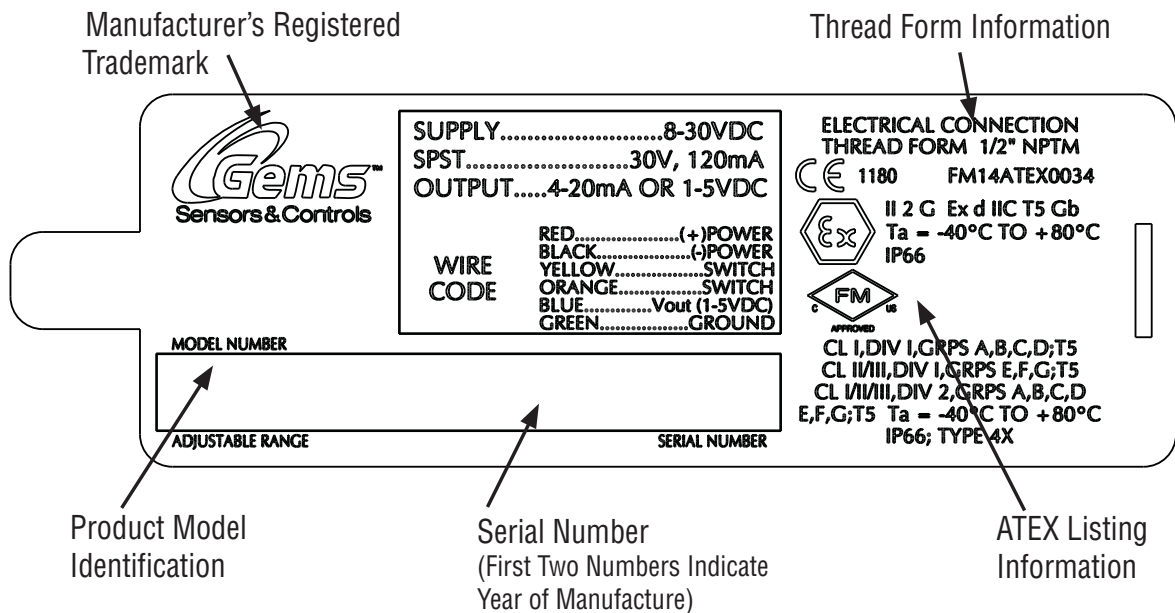
Maintenance

The 3820 contains no user serviceable parts and cannot be repaired on site. It must be returned to the factory. Disassembly of the instrument by unauthorized persons will invalidate the warranty. If there is a risk of debris accumulating in the pressure port, it should be cleaned. Care and caution must be taken when cleaning the pressure port to prevent damage to the diaphragm.

ATEX Marking Details

For ATEX Certified Models

Drawing 720555G





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