Industrial Pressure Transducers

User's Manual

E Model

E Model

Introduction

Swagelok® industrial pressure transducers allow for electronic monitoring of system pressures in a variety of industrial applications. The E model transducer is specifically designed to meet durability and performance demands of industrial applications where explosion-proof ratings are required.

Contents

General information and Ratings

FM Approval Ratings

Explosion-proof
for Class I, Division 1, Groups A, B, C, D
Dust-ignition proof
for Class II and III, Division 1, Groups E, F, G
FM standards according to
FMRC 3600, 3615, and 3810

CSA Approval

CSA Standards according to CSA 25-1966, 30-M1986, 94-M91, and 142-M1987

Safety Instructions

⚠ **For proper and safe operation, Swagelok E model transducers must be installed, operated, and serviced according to NEC, applicable local regulations, and these instructions. Otherwise, serious personal injuries, damage or both can occur.**

⚠ **Except for adjusting the length of the wires, the electrical connection provided on the transducer must be used as originally supplied and not bypassed. Only qualified persons should work on theses instruments.**

⚠ **The shield / ground connection must be wired to ground to protect the instrument from electromagnetic disturbances.**

⚠ **Do not exceed the overpressure rating.**

Safe Product Use

Follow any enclosed instructions and refer to the product catalog for detailed product information. When using a transducer, the total system design must be considered to ensure safe, trouble-free performance. Function, material compatibility, adequate ratings, proper installation, operation, and maintenance are the responsibilities of the system designer and user.

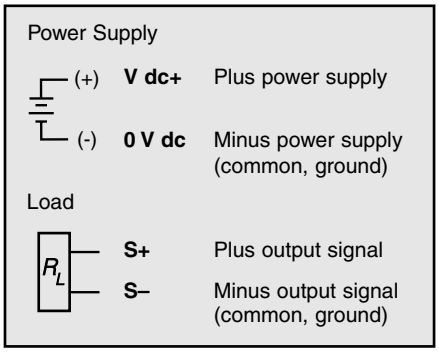
Mechanical Installation

Using the appropriate mating process connection, install the transducer away from excessive heat and vibration whenever possible. Be sure to install the system in accordance with NEC requirements.

Electrical Installation

- Connect the transducer to a power supply and an indicator or other recording device as shown below.
- Use a NEC Class 02 power supply
- Connect the cable shield or the yellow/green wire to ground.

Legend



4 to 20 mA, 2-Wire System

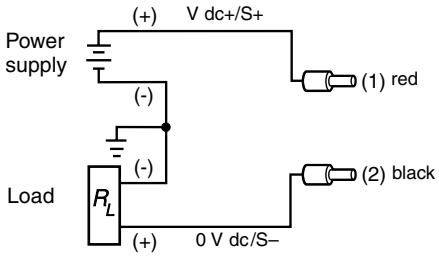
The 2-wire system connects the power supply, transducer, and indicating/recording instrument in a series circuit. This creates a “current loop’ with the transducer functioning as a current regulation device.

Maximum Load Equations

Millampere output signal, 2 wire

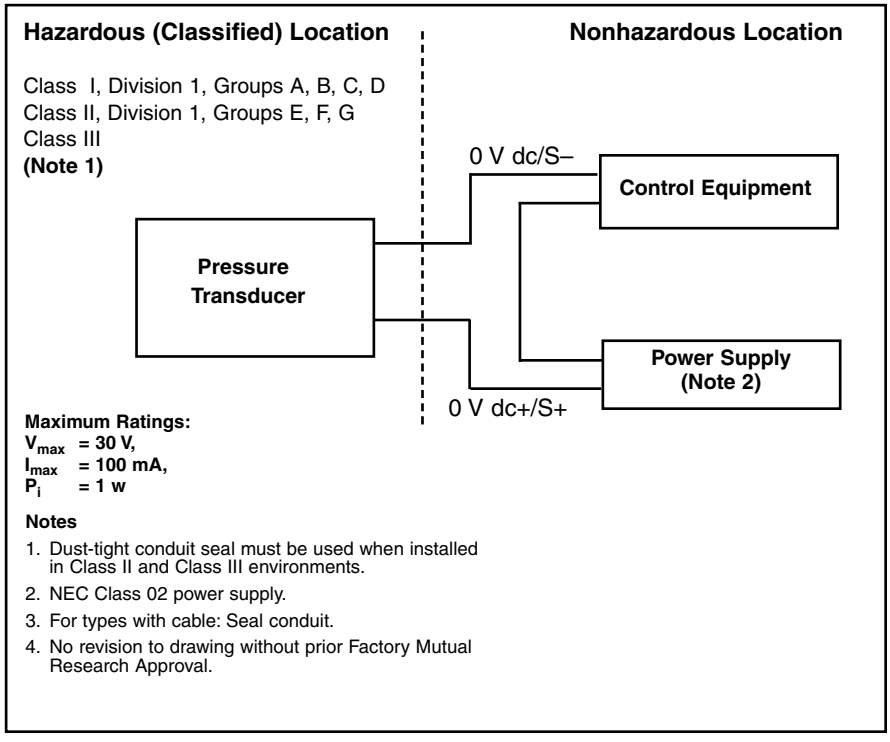
Output	4 to 20 mA
Supply	V dc = 10 to 30 V
Max. Load	R_L = (V dc – 10) / 0.02
Terminals	See drawings

Wiring Diagram



Wire	Coding	Color
Supply+	V dc+/S+	red
Signal–	0 V dc/S–	black

Use yellow/green wire or braided conductor for shield/ground connection.



1 to 5 V, 3-Wire System

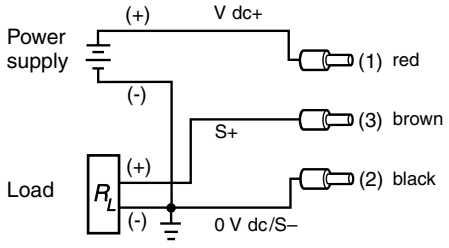
The 3-wire system features separate leads for the signal and power supply. The third lead is common negative for both devices. The signal source and indication/recording instruments are connected in series, the power supply in parallel.

Maximum Load Equations

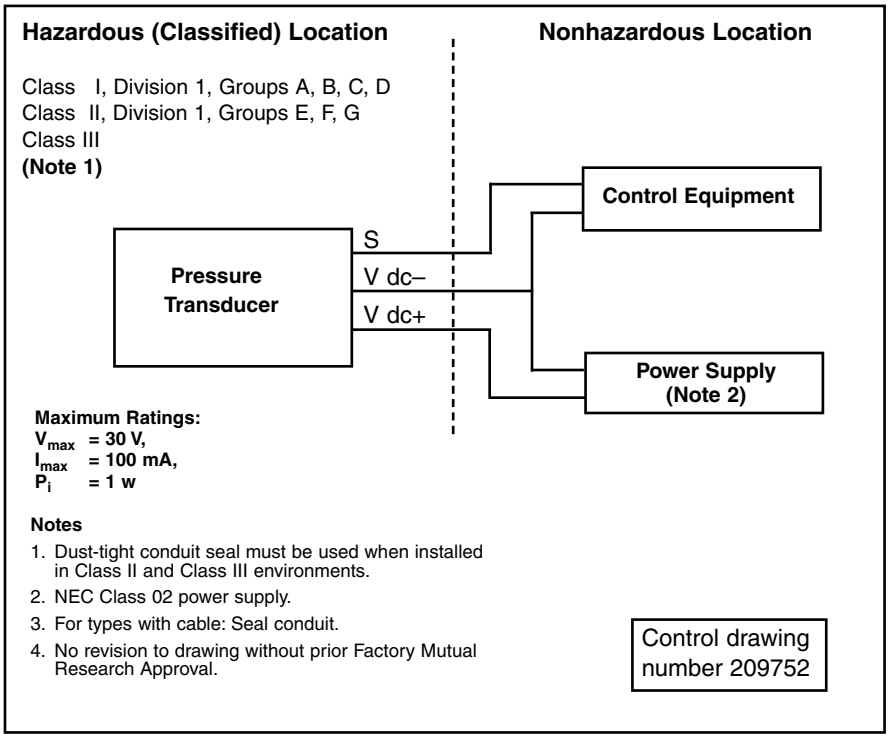
Voltage output signal, 3 wire

Output	1 to 5 V
Supply	V dc = 10 to 30 V
Min. Load	R_L > 5 k Ohms
Terminals	See drawings

Wiring Diagram



Wire	Coding	Color
Supply+	V dc+	red
Supply– Signal–	0 V dc/S–	black
Signal+	S+	brown



Maintenance

Swagelok E model pressure transducers are tested and calibrated at the factory. There are no user serviceable components inside the case. **DO NOT ATTEMPT TO REMOVE THE CABLE CONNECTION. REMOVING THE CABLE CONNECTION WILL DAMAGE THE TRANSDUCER AND VOID THE FACTORY WARRANTY AND FM APPROVAL.**

Caution:

Do not attempt to clear the pressure port with a screwdriver or other sharp objects as this may damage the sensing element of the transducer.

Troubleshooting Guide

Problem	Possible Causes	Remedy
No output	Power supply failure	Check power supply
	Open wiring	Check continuity
	Wiring reversed	Correct polarity
	No pressure or port blocked	Check pressure port
	Transducer failure due to wrong supply voltage or power surge	Replace transducer
Output steady as pressure changes	Pressure port blocked	Check pressure port
	Transducer over-pressurized	Replace transducer
	Transducer failure due to wrong supply voltage or power surge	Replace transducer
Full span output low	Supply voltage too low	Check voltage supply
	Load impedance wrong	Adjust load or supply voltage
	Transducer over-pressurized	Replace transducer①
Zero signal too low	Transducer over-pressurized	Replace transducer①
Zero signal too high	Transducer over-pressurized	Replace transducer①
Non-linear output	Transducer over-pressurized	Replace transducer

① Adjusting the controller or display device can usually compensate for small changes in the output signal. Test the system for proper operation after adjustments are made. An excessive change in the output signal indicates possible transducer damage. This may cause the output to be non-linear, requiring transducer replacement.

For product technical data, including materials of construction, see the *Swagelok® Industrial Pressure Transducers* catalog.

These instructions are also available in Chinese, French, German, and Japanese. Visit Swagelok.com

Caution: Do not mix or interchange parts with those of other manufacturers.

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