SCADASense 4012
Modbus Pressure Transmitter

Features:

- Digital absolute or gauge pressure transmitter
- Modbus over Serial or Ethernet communications
- Optional PID controller with analog output
- Direct mount capability, light weight and compact
- CSA Class 1, Division 1, Hazardous Area Rating
- Single Seal Compliance Certification under ANSI/ISA – 12.27.01 *
- 3 year warranty on parts and labor

The SCADASense 4012 Modbus Pressure Transmitter is an accurate and intelligent transmitter that offers precise measurement of process absolute or gauge pressures in a small and lightweight package. As a fully digital transmitter, the product is networked using Modbus over Ethernet or a selectable RS485/232 serial line. Easy to install and operate, any Modbus master can access and control a large number of these transmitters. With a 3 year warranty, and the support of Control Microsystems' comprehensive customer support program, this transmitter is a natural choice for a wide variety of gas, water and industrial applications.

Overview:

Highly Accurate and Dependable - The 4012 integrates a field-proven, high-performance sensor with Control Microsystems' implementation of the industry-standard Modbus communications protocol. The advanced sensor design allows the transmitter to measure process pressures with high tolerance to severe overpressure conditions and with no sensor degradation or zero-shift. The 4012 operates with an accuracy of +/- 0.2% of span, and a long term drift stability of less than +/- 0.05% of the upper range limit, making it a highly accurate and reliable transmitter.

Ease of Installation and Use - With the use of a compact, lightweight design and rugged high-quality materials, the 4012 can mount directly to process piping without a mounting bracket, or if a standard 1/4 NPT internal thread mount is required, an optional bracket is available. Rotatable topworks allow mounting in tight areas and natural orientation of the LCD indicator. Two conduit entrances provide flexibility during installation and efficient drainage for condensate. Rugged terminals offer ease of connection during field installation. The optional integrated LCD unit provides local measurement readouts and configuration capabilities for any measurement or control variable.

Flexible Communications - With serial and 10BaseT ports the 4012 provides flexibility for both communications and configuration. The serial port is RS232/485 -configurable and uses Control Microsystems' native Modbus RTU protocol. This port can be used with radios, local displays or communication with other serial devices. The Ethernet port supports four Modbus protocols, two simultaneous connections and extended addressing. In addition, the Ethernet port supports a friendly IP list that enhances security through limiting IP message recognition from specific addresses or address ranges.

Applications:

As a compact, accurate pressure transmitter with built-in Serial and Ethernet ports, PID control and an analog output, the 4012 can be applied in a wide range of process measurment and control applications. Depending on the application, the 4012 can be used in a low power Serial mode or as an addressed device using Ethernet on a WAN or LAN-based system. From a certification perspective, the unit's CSA Class 1, Div 1, hazardous area rating makes it an ideal product for industrial, petrochemical and below grade municipal applications and the product's Single Seal Compliance Certification, under ANSI/ISA – 12.27.01, allows for process sealing between electrical systems and flammable or combustible fluids. *

Specifications

Features	
Optional Analog Output	0 - 20mA, 12 bit, sinking
Optional PID Controller	Fully configurable control of analog output relative to any measured variable
LCD Interface	Two button control, 2-line interface with 13 characters
Communications	
Serial Port	RS232/485 configurable, 1200 to 38400 baud
Serial Protocol	Modbus RTU
Ethernet Port [1]	10BaseT, terminal block connection
Ethernet Protocols [1]	Modbus/UDP, Modbus RTU in UDP
Accuracy and Stability	
Pressure Accuracy	$\pm$ 0.20% of span [2]
Stability	< $\pm$ 0.05% of URL per year over 5 years
Analog Output Accuracy (optional)	$\pm$ 0.15% of Full Scale at 25℃ (77°F) $\pm$ 0.25% of Full Scale over Temperature Range
Physical Specifications	
Power	9 to 30 VDC. 250mW with LAN @30VDC (60mW with RS232, 70mW with RS485 @12VDC)
Mass	3.25lb (1.47kg) without process connectors
Certifications	CSA Class 1, Div. 1 Groups B, C and D Hazardous locations CSA Class 1, Div. 2 Groups A, B, C and D Hazardous locations Single Seal Compliance under ANSI/ISA – 12.27.01, with maximum working pressures up to 21MPa (3000psi)

1 Optional
2 Accuracy stated includes the effects of Linearity, Hysteresis, and Repeatability.
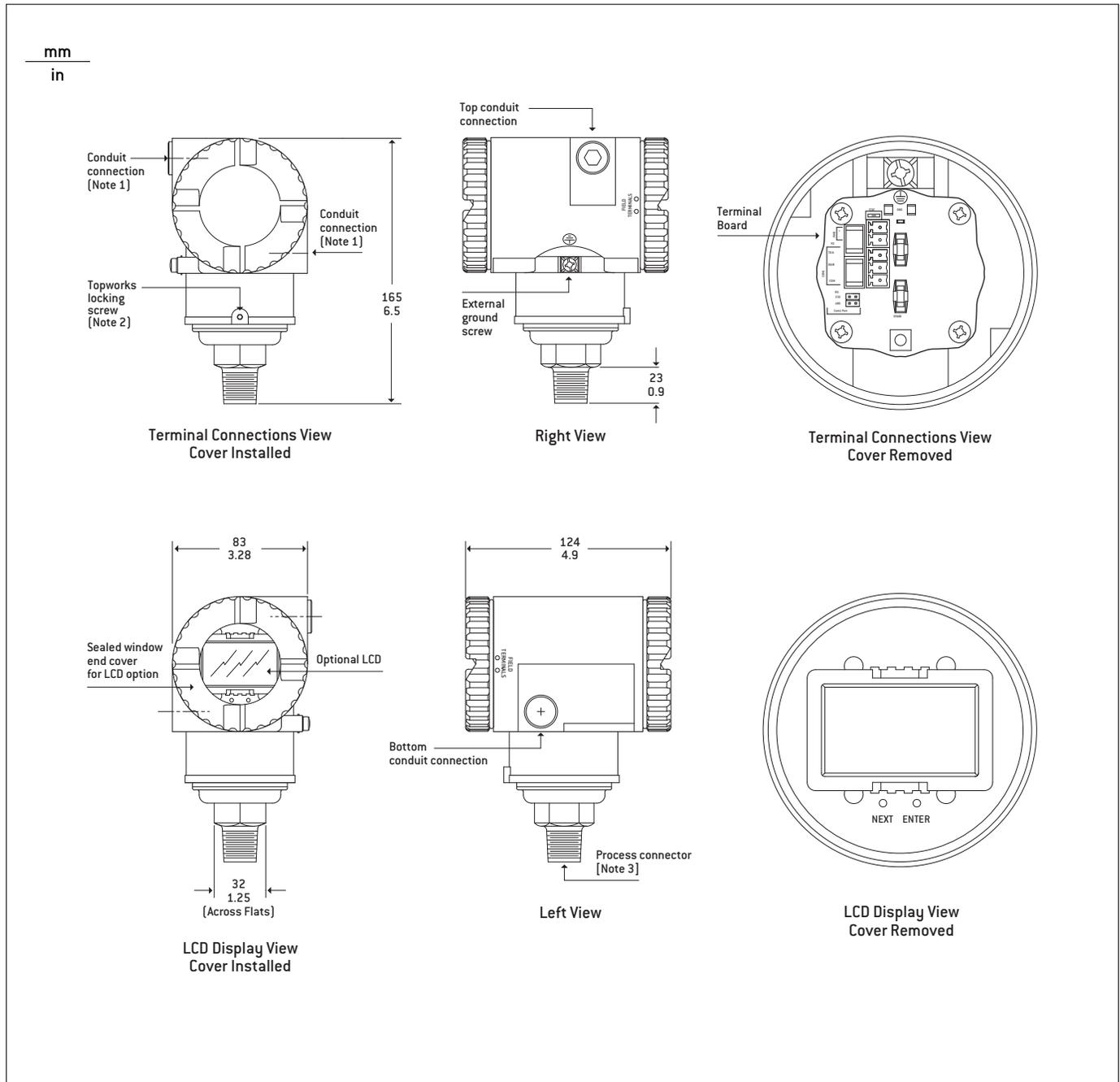
Span Limits for Absolute Pressure

Span Code	Absolute Pressure	
C	1 to 30 psi	(0.007 to 0.21 MPa)
D	10 to 300 psi	(0.07 to 2.10 MPa)
E	100 to 3000 psi	(0.70 to 21 MPa)
F	2000 to 6000 psi	(14 to 42 MPa)

Model Code

4012-APEA22C10 represents a sample code for a 4012 with Ethernet

Model	Select: Product Description
4012-AP	Absolute Pressure Transmitter with Modbus RTU Protocol
4012-GP	Gauge Pressure Transmitter with Modbus RTU Protocol

Code	Select: Output Signal
DM	Digital - Modbus Protocol, Switch selectable RS232 or RS485, de-pluggable screw-type terminal block, 1 Analog O/P
EA	Digital - (1) RS485/232 with Modbus Protocol, (1) 10 BaseT Ethernet with Modbus/UDP protocol, 1 Analog Output

Code	Process Connection	Sensor Material	Sensor Fill Fluid
22	1/2" NPT male 316L SS	316L SS	Silicone

Code	Select: Pressure Span Limits	
	MPa	**PSI**
C	0.007 to 0.21	1 to 30
D	0.07 to 2.1	10 to 300
E	0.7 to 21	100 to 3000
F	14 to 42	2000 to 6000

Code	Select: Transmitter Housing Material	Conduit Entry Sizes
1	Epoxy-coated Aluminium	(2) 1/2 - 14NPT
3	316 SS	(2) 1/2 - 14NPT

Code	Select: Approvals
U	CSA Explosion proof. Class 1, Div. 1 & Class 1, Div. 2, Groups A, B, C and D. Approved for Hazardous locations.

Code	Select: Options
	DIGITAL INDICATOR - Select One Only
-L	Digital Indicator with Push Buttons and Ex-proof Window Cover (Black Epoxy)
-L1	Digital Indicator with Push Buttons and Ex-proof Window Cover (Stainless Steel)

SCADASense 4O12

Dimensions

mm
in

Conduit connection (Note 1)

Conduit connection (Note 1)

Topworks locking screw (Note 2)

165
6.5

Terminal Connections View Cover Installed

Top conduit connection

FIELD TERMINALS

External ground screw

23
0.9

Right View

Terminal Board

Terminal Connections View Cover Removed

83
3.28

Sealed window end cover for LCD option

Optional LCD

32
1.25
(Across Flats)

LCD Display View Cover Installed

124
4.9

FIELD TERMINALS

Bottom conduit connection

Process connector (Note 3)

Left View

NEXT   ENTER

LCD Display View Cover Removed

1. Conduit connection 1/2 NPT or PG 13.5, both sides; unused connection is sealed with supplied metal plug.

2. Topworks can be rotated to any position within one turn counter clockwise of the fully tightened position.

3. Transmitter can be installed directly on process piping without mounting brackets.
   Optional bracket allows connection to standard 1/4 NPT internal thread.