

Rosemount™ Xi Advanced Electronics for Zirconium Oxide Oxygen Probes

Zirconium Oxide Oxygen Probes



Product benefits

- Excellent accuracy
- Large backlit display and keypad
- NEMA 4x enclosure
- Works with Westinghouse/Rosemount, and most competitive O₂ probes
- HART® communications standard (AMS aware)
- Wireless – via THUM™ Adaptor
- Advanced features
- Calibration recommended diagnostic
- Automatic calibration capability
- Extended process temperature ranges
- Stoichiometer feature
- Programmable reference
- Loss-of-flame heater cut-out

Rosemount Analytical Xi Advanced Electronics for Zirconium Oxide Oxygen Probes

The zirconium oxide sensing technology for measuring the excess oxygen in combustion flue gases has gained prominence over the past several decades. This versatile electronics is specifically designed to run most O₂ probes manufactured. The large backlit LCD display makes it easy to set up and operate. Fully automatic calibrations may be executed from this electronics with the addition of a small solenoid box for switching calibration gases

Advanced features

The Xi electronics offers the following unique advanced features never before offered with O₂ probes.

Automatic calibration

Plant personnel often ask how frequently an oxygen analyzer requires calibration. The answer is very application-dependent based upon the fuels being burned, normal levels of oxygen and the sulfur content in the flue gases.

The Xi addresses this concern by providing an on-line diagnostic that determines when a calibration should be conducted, eliminating many unneeded calibrations and the technician and gas resources they consume. The Xi electronics has an on-line impedance measurement for the sensing cell.

This feature can trigger a fully automatic calibration by sequencing solenoids to introduce calibration gases to the sensing cell. The Single Probe Sequencer (SPS) switches CAL gases to a single probe. Many needless calibrations based on “time in service” are eliminated. A contact closure notifies the control room when a calibration is taking place. The oxygen output signal can be held at its last value, or released during calibration. The Xi can also initiate calibrations by traditional methods:

- Contact closure from the user’s control room
- Time since last calibration feature (established by the auto calibration system)
 - established by the auto calibration system
- Xi-enhanced interface
- HART®/AMS

Extended process temperature range

Traditional O₂ electronics will go into alarm if the process temperature exceeds the controlled heater temperature. This feature enables the Rosemount Xi to turn off the internal heater in this event, use the process temperature to heat the cell, and calculate O₂ on the fly from the changing process temperatures. Note that accelerated probe and cell damage may occur as a result of extended operation above 1462 °F (800 °C), but at least the measurement will not go offline during this event.

Stoichiometer

Process upsets can sometimes cause a combustion process to go into substoichiometric or reducing conditions. The oxygen readings from one or more probes may decline all the way to zero. The stoichiometer cell will measure the amount of oxygen deficiency during these reducing conditions. The trends in your DCS can be set up for a lower range limit of -1 or -2% oxygen to depict the level of oxygen deficiency. The operator can see if his control actions to recover are having the desired effect. These types of events do not occur frequently, but knowing the parameters of the situation prevents over correcting while coming out of the reducing condition.


Programmable reference

Enhances operation for the following applications:


- Moisture monitoring – measuring the amount of moisture coming off of industrial dryers by noting the dilution effect water vapor has on the normal 20.95% ambient drying air.
- Enriched oxygen combustion – Pure oxygen sometimes mixed in with the combustion air to increase heat at the flame. This is used in steel and other metals reduction processes and also in some catalyst regenerators.
- Flame safety interlock – dry contact fro a flame safety system removes power from the probe heater in a loss-of-flame event.

Specifications

General purpose certifications

	Description
General purpose certification	
Xi Ambient Temperature limits	-4.0 °F (-20 °C) to 122.0 °F (50 °C)
Xi Temperature limits as measured inside the housing	-4.0 °F (-20 °C) to 131.0 °F (55 °C)
Xi LCD display Temperature limits	-4.0 °F (-20 °C) to 131.0 °F (55 °C)

Installation specifications

	Description
Electrical power of Oxymitter or optional Xi electronics	120 to 240V, ±10% 50/60 Hz
Power consumption of Xi	10 watts maximum
XI alarm relays	2 provided - 2 amps, 30 VDC
XI optional loss of flame contact	Removes heater power
Electrical noise	Meets EN 61326, Class A
Power	100-240V ±10%, 50-60Hz
Power consumption of XI	12VA maximum or 776VA maximum with Traditional Architecture, 120V, Probes. 450VA maximum with Traditional Architecture, 44V Probes
Alarm relay outputs	Two provided - 2 Amperes, 30 VDO, Form-C
Optional loss of flame input	Internally power input to remove heater power, actuated through dry contact output from proof-of-flame device
	Emerson Process Management has satisfied all obligations coming from the European legislation to harmonize the product requirements in Europe. All static performance characteristics are with operating variables constant. Specifications subject to change without notice.

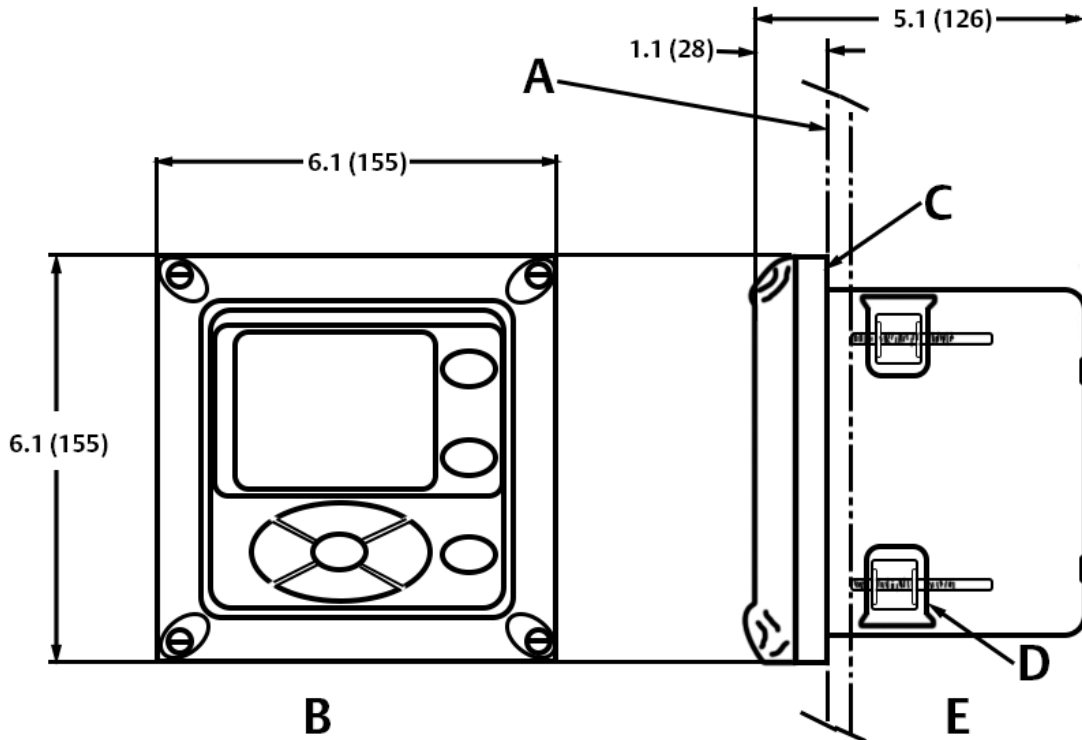
Dimensions

Xi enhanced interface- panel mounting details

Note

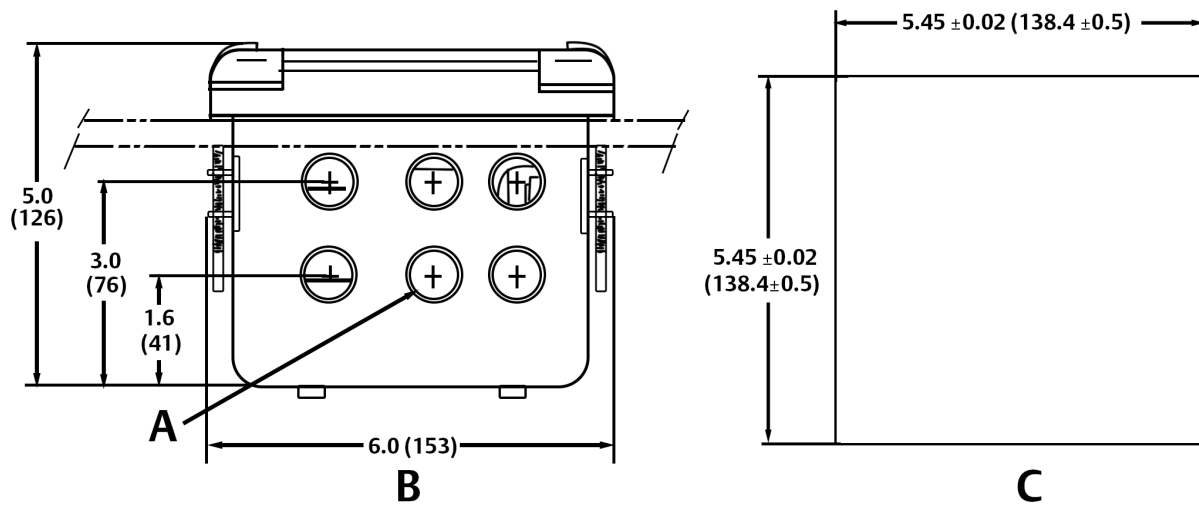
All dimensions are in meters with inches in parentheses.

Figure 1: Front and Side View



- A. Maximum Panel Thickness 0.375 (9.75)
- B. Front View
- C. Panel Mount Gasket
- D. 4x Mounting Brackets and Screws provided
- E. Side View

Figure 2: Bottom View



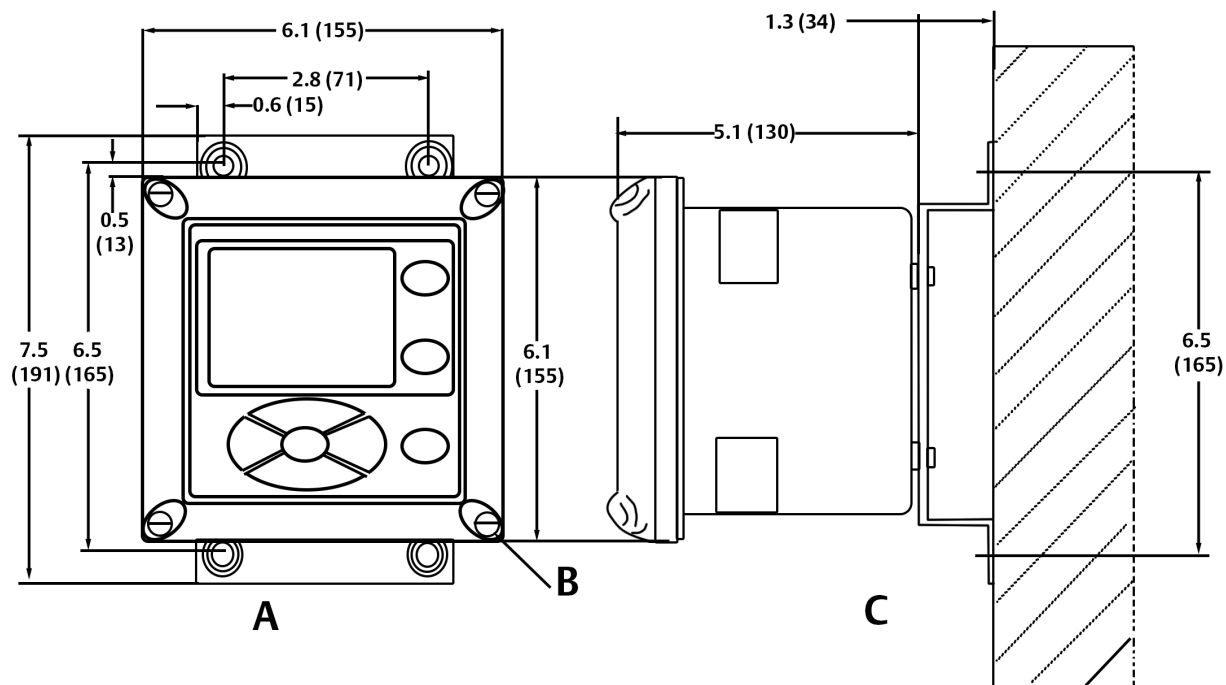
- A. 6X ½ in NPT conduit openings
- B. Bottom View
- C. Panel Cut-Out

Xi enhanced interface- wall/surface and pipe mounting details

Note

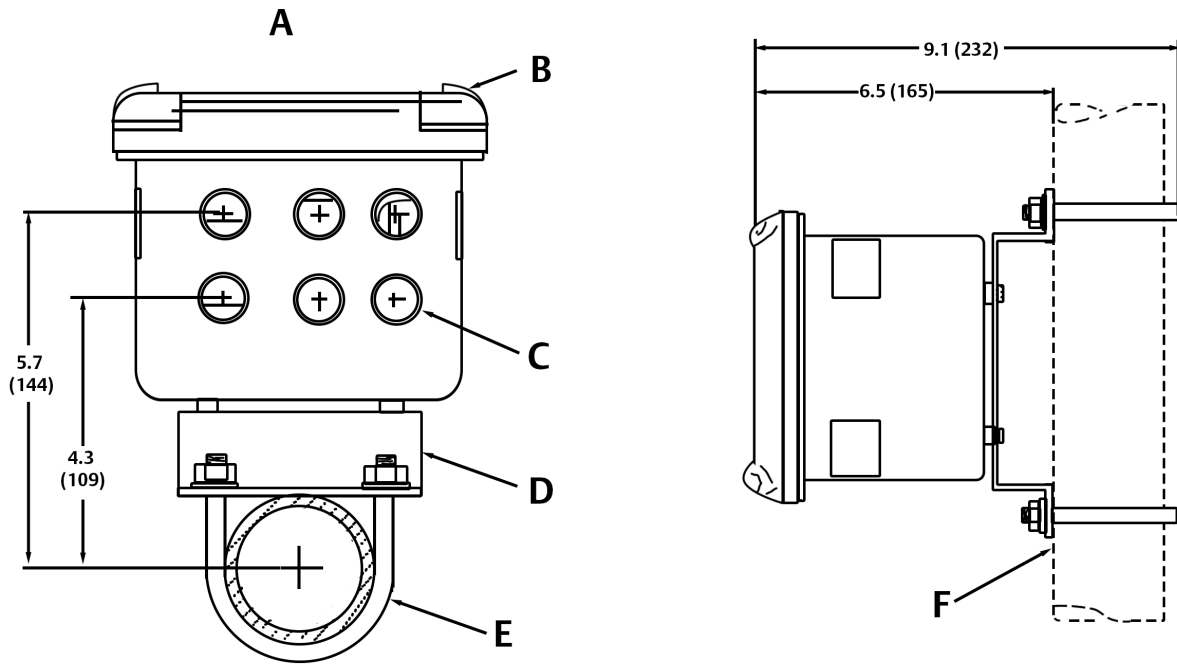
All dimensions are in meters with inches in parentheses.

Figure 3: Front and Side View



- A. Front View
- B. 4K Cover Screw
- C. Side View

Figure 4: Bottom View



- A. Bottom View
- B. Front Panel
- C. 6X 1/2 in NPT Conduit Openings
- D. Mounting Bracket
- E. U-Bolts
- F. 2 in Pipe Supplied by Customer

Ordering information – Xi Advanced Electronics

Product description

Model	Product description
Xi	O ₂ Advanced Electronics

Type

Type	Description
01	Single channel
02	Single channel with flame safety interlock for heater
03	Dual channel
04	Single channel, traditional architecture for 120V probes
05	Single channel, traditional architecture for 44V probes

Mounting

Code	Description
00	None
01	Panel mount kit with gasket
02	2 in pipe/wall mount kit

Cable

Code	Description
00	None
10	20' (6m) cable
11	40' (12m) cable
12	60' (18m) cable
13	80' (24m) cable
14	100' (30m) cable
15	150' (45m) cable
16	200' (60m) cable

Stoichometer function

Code	Description ⁽¹⁾
00	None
01	Single channel
02	Dual channel (second channel not available for traditional architecture Xi.)

(1) Software features may be added in the field after shipment. Wireless THUM™ Adapter is ordered separately.

Programmable reference function

Code	Description ⁽¹⁾
00	None
01	Single channel
02	Dual channel (second channel not available for traditional architecture Xi.)

(1) Software features may be added in the field after shipment. Wireless THUM™ Adapter is ordered separately.

Extended process Temperature (825 °C) heaterless operation

Code	Description ⁽¹⁾
00	None
01	Single channel
02	Dual channel (second channel not available for traditional architecture Xi.)

(1) Software features may be added in the field after shipment. Wireless THUM™ Adapter is ordered separately.

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