

# Replacement Flue Gas Oxygen Probe

## Operates on your existing electronics and existing cable:

- Rosemount Analytical
- Westinghouse
- Yokogawa
- Ametek/Thermox
- Enotec
- Many others

## Forward compatible:

When existing electronics require replacement, integral electronics can easily be added.

- 4-20 mA with HART®
- FOUNDATION™ fieldbus

## The world's most accurate probe:

- +/- .75% of reading or .05% oxygen
- Excellent long-term stability
- Excellent sulfur-resistance

## Hazardous area versions:

- ATEX EExd IIB + H<sub>2</sub> T<sub>2</sub>
- CSA Class I, Div. I, Gr. B, C, D

## Achieve maximum boiler/furnace efficiency today, with the world's best oxygen analyzer

Emerson offers an easy and cost-effective way to replace previously installed probes without compromising the ability to upgrade to the latest technology at a later time. The Rosemount Analytical Direct Replacement Oxymitter operates on your existing electronics and cable and still provides you with unsurpassed accuracy, long-term stability and excellent sulfur resistance. When your existing electronics require replacement, integral electronics can easily be added to give you HART® or FOUNDATION™ fieldbus communications as well as full AMS and PlantWeb® compatibility.



Emerson's Rosemount Analytical division invented the zirconium oxide technology for measuring oxygen and still offers the best product available.

The unsurpassed accuracy and reliability of this probe is based upon 35 years of experience in manufacturing oxygen probes for industry.

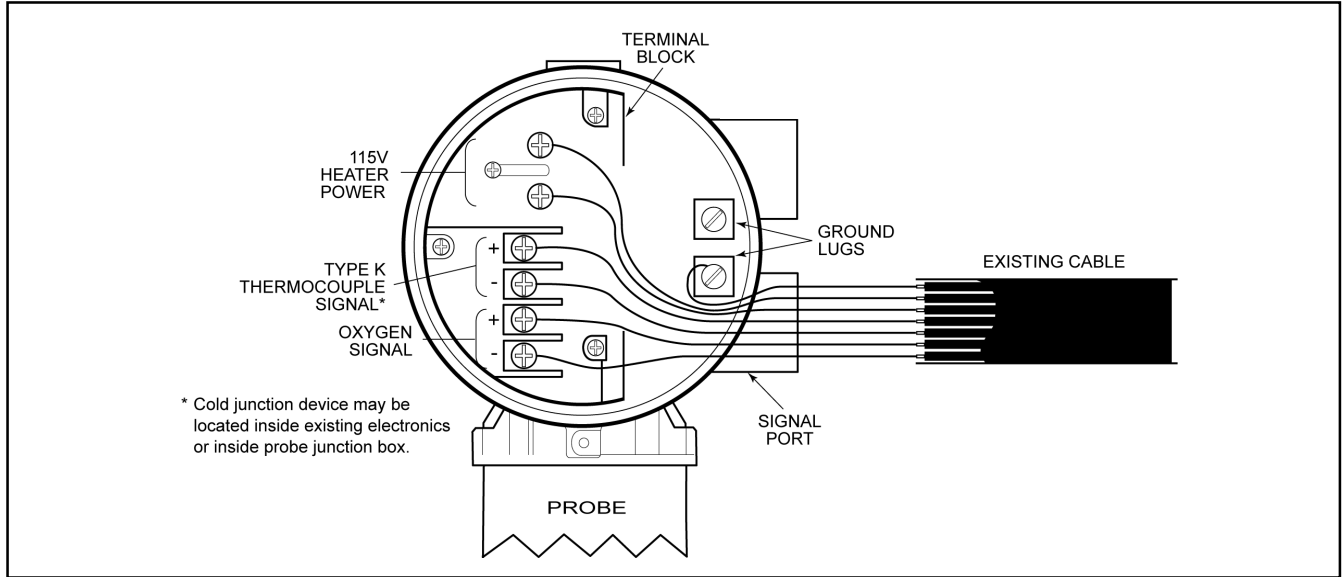
## The DR Oxymitter offers:

- maximized combustion efficiency in boilers, furnaces and kilns
- the most accurate and reliable sensing cell available
- completely rebuildable probe including: sensing cell, heater, thermocouple and diffusion element
- 316L stainless steel construction
- upgrade path to a full Oxymitter when the existing electronics require replacement

## Applications

- Boilers
- Process heater furnaces
- Lime and cement kilns
- Sulfur incinerators
- Garbage incinerators
- Most combustion processes

## WIRING TO EXISTING ELECTRONICS

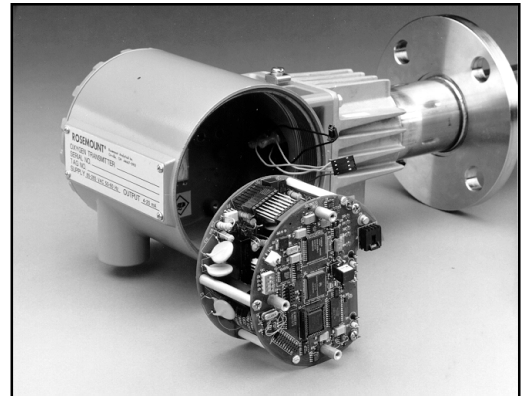


## FUTURE CONVERSION TO FULL OXYMITTER

- Still utilizes existing cable; terminations reassigned
- Old electronics may be removed or remain as a simple junction box

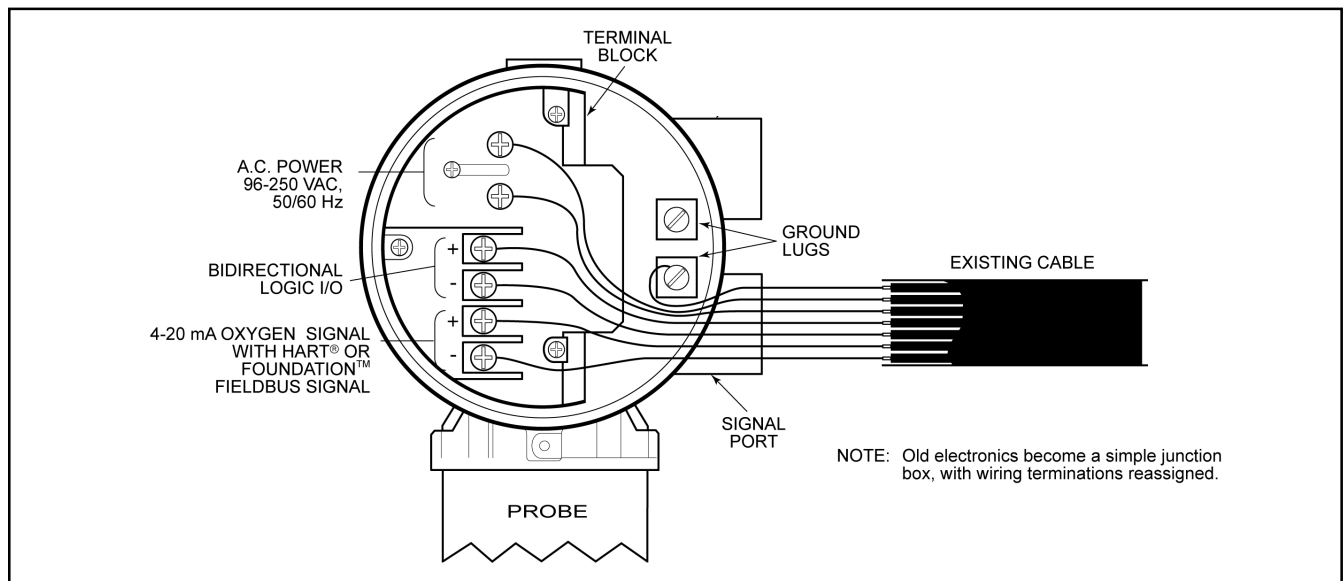
### Oxymitter electronics offer these additional features:

- HART® or FOUNDATION™ fieldbus communications
- On-line "Calibration Recommended" diagnostic
- Full autocalibration capabilities
- Low power consumption
- Universal power supply 100-240 V, 50/60 Hz.
- -40° to +185°F (-40° to 85°C) ambient temperature capability

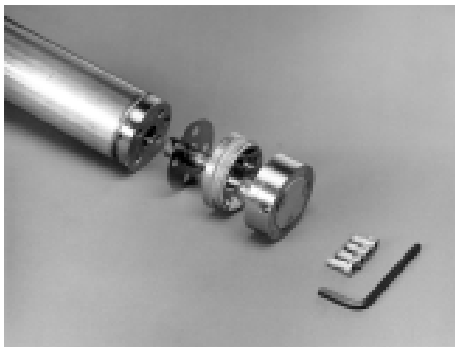


*For Upgrade to Full Oxymitter – Plug-In Electronics Module*

## TERMINATION ASSIGNMENTS FOR CONVERSION TO FULL OXYMITTER



## THE OXYMITTER OXYGEN TRANSMITTER IS COMPLETELY FIELD-REPAIRABLE



*Diffusion Element and Sensor Cell Assembly*



*Heater/Thermocouple Assembly*

### OXYGEN SENSOR

Features	Benefits
Rapid, accurate and reliable measurement of excess oxygen with a single in situ probe	Significant fuel savings normally pay for analyzer in less than one year. Significant enhancement in safety
No sample system, no sample probes, no scrubbers and no pumps are necessary; test gas calibration check without disturbing probe	Low installation and low maintenance costs
High speed of response	Ideal for closed loop control
Solid zirconium oxide electrolyte	Provides high reliability
Field-replaceable cell	Ease of maintenance
Suitable for use in temperatures up to 1300°F (700°C)	May be used with any fuel Absolutely no condensation
Material of construction 316 LSS (all wetted parts)	High resistance to corrosion
Sensitivity of cell increases logarithmically when oxygen decreases	Ideal for low excess air burners and low oxygen levels

### SPECIFICATIONS <sup>1</sup>

#### OXYGEN PROBE

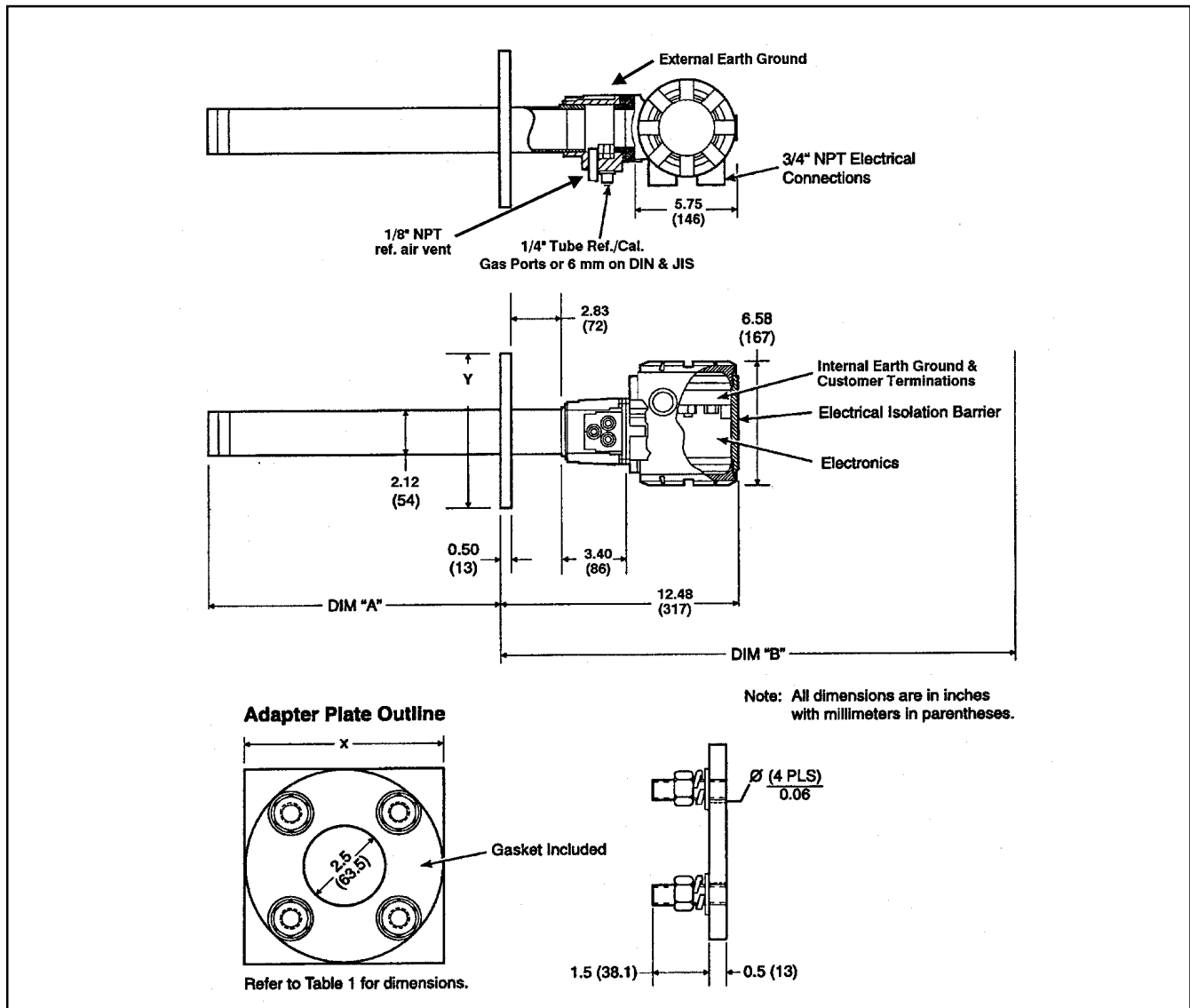
<b>Probe lengths, nominal:</b>	18 in., 3 ft., 6 ft., 9 ft., 12 ft., 15 ft., 18 ft. depending upon duct dimension
<b>Probe material of construction:</b>	316L SS (all wetted parts)
<b>Temperature limits for probe in process measurement area:</b>	50° to 1300°F (10° to 700°C)
<b>Ambient temperature limit for probe junction box:</b>	200°F (93°C)
<b>Sensing cell output – (inverse, logarithmic)</b>	0-150 mV nominal
<b>Sensing cell accuracy <sup>2</sup> –</b>	± .75% of calculated O <sub>2</sub> value or .05% of calculated O <sub>2</sub> value
<b>Cell speed of response to the application of calibration gas –</b>	initial – 3 seconds T <sub>90</sub> – 8 seconds
<b>Resolution sensitivity –</b>	0.01% of calculated O <sub>2</sub> value

<b>Probe reference air flow (optional):</b>	2 SCFH clean, dry, instrument quality air (20.95% O <sub>2</sub> )
<b>Thermocouple:</b>	Type K
<b>Heater design voltage:</b>	115 V
<b>Power consumption:</b>	175 W normal
<b>Calibration gas flow:</b>	
<b>Approximate shipping weights:</b>	
<b>18 in. (457 mm) package:</b>	55 lbs. (24.97 kg)
<b>3 ft. (0.91 m) package:</b>	60 lbs. (27.24 kg)
<b>6 ft. (1.83 m) package:</b>	66 lbs. (29.94 kg)
<b>9 ft. (2.74 m) package:</b>	72 lbs. (32.66 kg)
<b>12 ft. (3.66 m) package:</b>	78 lbs. (35.38 kg)
<b>Hazardous area certifications (OXT4CDR only):</b>	CSA Class I, Div. I, Grp. B, C, D ATEX EExd IIB + H2

<sup>1</sup> All static performance characteristics are with operating variables constant. Specifications subject to change without notification.

<sup>2</sup> Raw oxygen signal as conditioned by Rosemount Analytical electronics.

# OUTLINE DIMENSIONS FOR DIRECT REPLACEMENT OXYMITTER OXYGEN PROBE FOR GENERAL PURPOSE APPLICATIONS



	Dimensions Dia. In. (mm)		
	ANSI	DIN	JIS
Mfg. Plate (x)	6.0 (153)	7.5 (190)	6.5 (165)
Stud Size	5/8" - 11	M16 x 2	M12 x 1.75
4 Studs Eq. Sp. On BC	4.75 BC (121) BC	5.71 BC (145) BC	5.12 BC (130) BC
Flange (Y)	6.0 (153)	7.3 (185)	6.1 (155)

Probe Length	Dim. "A" Insertion Depth	Dim. "B" Removal Envelope
18 in. (457 mm) Probes	16.00 (407)	28.6 (725)
3 ft. (0.91 m) Probes	34.00 (864)	46.6 (1182)
6 ft. (1.83 m) Probes	70.00 (1778)	82.6 (2097)
9 ft. (0.91 m) Probes	106.00 (2692)	118.6 (3011)
12 ft. (3.66 m) Probes	142.00 (3607)	154.6 (3926)

**Note:** Adapter plates are available for most existing oxygen probes. (Provide bolt circle of existing mount).

# ORDERING INFORMATION

**OXT4ADR** Direct Replacement Oxymitter Probe replaces all older Westinghouse and Rosemount Analytical probes, as well as most competitive probes.

Exchange probe-instruction book

Code	Sensing Probe Type
1	Ceramic diffusion element probe (ANSI)
2	Flame arrestor probe (ANSI) (ceramic diffusion element) <sup>1</sup>
3	Snubber diffusion element (ANSI)
4	Ceramic diffusion element probe (DIN)
5	Flame arrestor probe (DIN) (snubber diffusion element)
6	Snubber diffusion element (DIN)
7	Ceramic diffusion element probe (JIS)
8	Flame arrestor probe (JIS) (ceramic diffusion element)
9	Snubber diffusion element (JIS)

Code	Probe Assembly
0	18" Probe
1	18" Probe with abrasive shield
2	3' Probe
3	3' Probe with abrasive shield <sup>4</sup>
4	6' Probe
5	6' Probe with abrasive shield <sup>4</sup>
6	9' Probe
7	9' Probe with abrasive shield <sup>4</sup>
8	12' Probe <sup>1</sup>
9	12' Probe with abrasive shield <sup>4</sup>
A	15' Probe with abrasive shield
B	18' Probe with abrasive shield

Code	Mounting Adapter – Stack Side <sup>2</sup>
0	No adapter plate
1	Mounting to stack (new installation)
2	Mounting to model 218/225/240 mounting plate (with probe support tube removed)
3	Mounting into existing model 218/225/240 probe support tube or bypass
4	Mounting into competitor's mounting <sup>3</sup>
5	Model 132 / World Class 3000 adapter plate

Code	Mounting Adapter – Probe Side
0	No mounting hardware
1	Mounting probe only (ANSI)
2	Mounting probe with abrasive shield (ANSI)
4	Mounting probe only (DIN)
5	Mounting probe with abrasive shield (DIN)
7	Mounting probe only (JIS)
8	Mounting probe with abrasive shield (JIS)

Code	Termination Unit
11	Standard filtered termination
12	Transient protected filtered termination

Code	Arrangement-Existing Electronics
03	For use w/existing analog electronics (including Westinghouse/Rosemount 132/218/225)
04	Westinghouse/Rosemount digital (218A) or universal electronics
05	VeriTrim electronics
07	Model 132 digital electronics
08	For use with Yokogawa electronics (cold junction comp. in probe junction box)
09	For use with other competitive oxygen analyzer systems

OXT4ADR 3 2 2 1 11 03 EXAMPLE

## High Sulfur Service

Cell replacement kits for high sulfur service – substitute P/N 4847B63G02 for standard cell.

### NOTES:

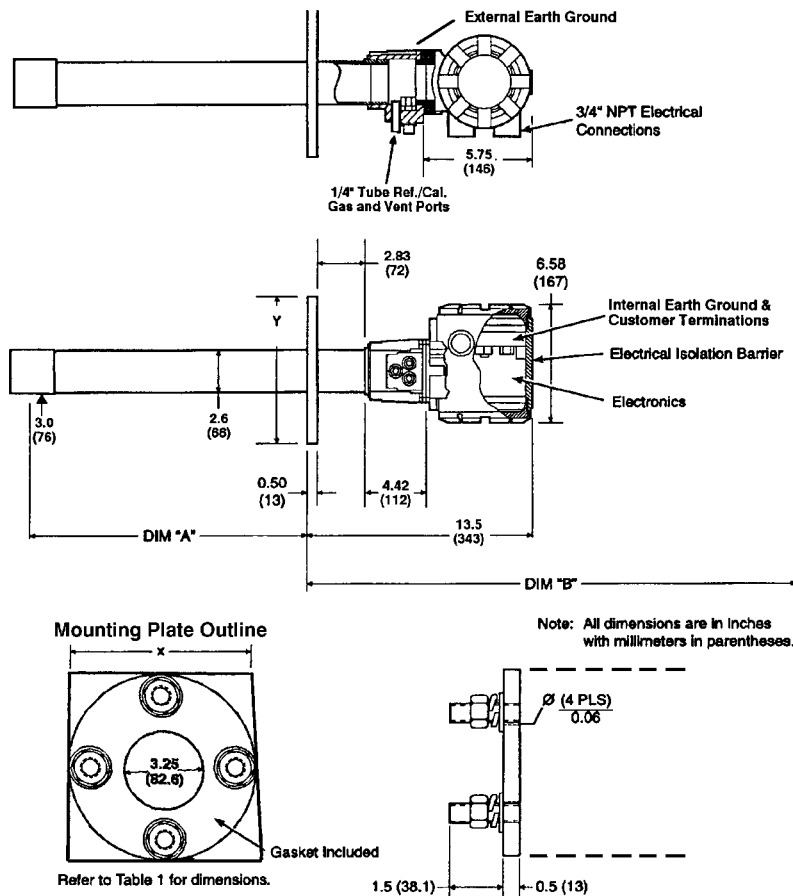
- <sup>1</sup> Direct Replacement probe is not suitable for use in FM-approved applications. See OXT4CDR matrix for hazardous area version.
- <sup>2</sup> On existing mount plates, the minimum hole diameter is as follows:  
 Probe only – 63.5 mm (2.5 inches)      Probe and abrasive shield – 95.3 mm (3.75 inches)      Bypass – 76.2 mm (3.0 inches) (if used)
- <sup>3</sup> Specify the following mounting information:

Plate with studs	Bolt circle diameter, number and arrangement of studs, stud thread, stud height above mounting plate.
Plate without studs	Bolt circle diameter, number and arrangement of holes, thread, depth of stud mounting plate with accessories.

Note: Delivery for this option could be as long as 6 weeks.

- <sup>4</sup> Abrasive shields are recommended for applications with high velocity particulates in flue stream, installation within 3 m (10 ft.) of sootblowers or in applications where chemical attack is possible. Applications include coal fired boilers, recovery boilers, kilns, etc. Support brackets are provided.

## OUTLINE DIMENSIONS FOR DIRECT REPLACEMENT OXYMITTER HAZARDOUS AREA OXYGEN PROBE



	Dimensions Dia. In. (mm)	
	ANSI	DIN
Mfg. Plate (x)	7.75 (197)	8.5 (215)
Stud Size	5/8" - 11	M16 x 2
4 Studs Eq. Sp. On BC	6.00 BC (152.4) BC	6.70 BC (170) BC
Flange (Y)	7.5 (190)	8.27 (210)

Probe Length	Dim. "A" Insertion Depth	Dim. "B" Removal Envelope
18 in. (457 mm) Probes	18.1 (460)	31.6 (803)
3 ft. (0.91 m) Probes	36.1 (917)	57.0 (1448)
6 ft. (1.83 m) Probes	72.1 (1831)	85.6 (2174)

Note: Adapter plates are available for most existing oxygen probes. (Provide bolt circle of existing mount).

# ORDERING INFORMATION

**OXT4CDR** Direct Replacement Oxymitter Probe replaces all older Westinghouse and Rosemount Analytical probes, as well as most competitive probes.

**Exchange probe-instruction book**

Code	Sensing Probe Type, with Flame Arrestor
1	Ceramic diffusion element probe (ANSI)
2	Snubber diffusion element (ANSI)
3	Ceramic diffusion element probe (DIN)
4	Snubber diffusion element (DIN)
5	Ceramic diffusion element probe (JIS)
6	Snubber diffusion element (JIS)
7	Ceramic diffusion element probe (ANSI 3" 300 lb.)
8	Ceramic diffusion element probe (ANSI 4" 300 lb.)
A	44V ceramic diffusion element probe (ANSI), with flame arrestor
B	44V snubber diffusion element (ANSI), with flame arrestor
C	44V ceramic diffusion element probe (DIN), with flame arrestor
D	44V snubber diffusion element (DIN), with flame arrestor
E	44V ceramic diffusion element probe (JIS), with flame arrestor
F	44V snubber diffusion element (JIS), with flame arrestor

Code	Probe Assembly
0	18" Probe
1	18" Probe with 3 ft. by-pass
2	18" Probe with abrasive shield <sup>1</sup>
3	3' Probe
4	3' Probe with abrasive shield <sup>1</sup>
5	6' Probe
6	6' Probe with abrasive shield <sup>1</sup>

Code	Mounting Adapter – Stack Side <sup>2</sup>
0	No adapter plate
1	Mounting to stack (new installation)
2	Mounting to model 218 mounting plate (with model 218 shield removed)
3	Competitor's mount-supply existing flange dimensions

Code	Mounting Adapter – Probe Side
0	No mounting hardware
1	Mounting probe only (ANSI)
2	Mounting probe with abrasive shield (ANSI)
4	Mounting probe only (DIN)
5	Mounting probe with abrasive shield (DIN)
7	Mounting probe only (JIS)
8	Mounting probe with abrasive shield (JIS)

Code	Termination Unit
11	Standard filtered termination
12	Transient protected filtered termination

Code	Arrangement-Existing Electronics
03	Westinghouse/Rosemount analog electronics
04	Westinghouse 218A digital electronics
07	Westinghouse/Rosemount digital 132 electronics
08	Yokogawa Za 8 series electronics – maximum operating temperature of junction box is 65°C
09	Other competitive electronics – specify brand and model

Code	Hazardous Area Approval
10	ATEX – EExd IIB + H2T2
20	CSA NRTL/C – Class I, Div. I, Groups B, C, D, T2

OXT4CDR 3 2 2 1 11 03 10 EXAMPLE

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### NOTES:

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