CH88
In Situ Flue Gas Oxygen Transmitter

- **World-Class™** performance
- **Outstanding accuracy**
  - ±1% full scale
- **1056 Combustion local operator interface**, with large backlit LCD display
- **Adaptable** to any existing O₂ probe installation
  - Westinghouse World Class
  - Rosemount Oxymitter
  - Most competitive O₂ Probe installations

**Accurate, reliable combustion measurement of combustion flue gas excess oxygen**

The CH88 in situ O₂ transmitter provides accurate measurement of the oxygen remaining in the flue gases coming from any combustion process. Optimal combustion efficiency can be obtained by controlling fuel/air ratios to maintain the ideal level of oxygen in the flue gases coming from these processes. Additionally, the lowest levels of NOₓ, CO, and CO₂ are produced.

Easy to use and easy to integrate. This in situ analyzer was designed with customer ease-of-use in mind. There are no moving parts or sampling apparatus, resulting in an extremely reliable probe that requires very little maintenance.
The latest breakthrough for combustion flue gas analysis

The CH88 in situ O₂ analyzer provides accurate measurement of the oxygen remaining in the flue gases coming from any combustion process, including:

- Boilers
- Kilns
- Incinerators
- Process heaters
- Industrial heating furnaces

By maintaining the ideal level of oxygen in the flue gases coming from these processes, optimal efficiency is gained, and the lowest levels of NOx, CO, and CO₂ are produced.

This in situ design places a zirconium oxide sensing element at the end of a probe, which inserts directly into a flue gas stream. There are no moving parts or sampling apparatus, resulting in an extremely reliable analyzer that requires very little maintenance. Probe lengths are available from .5 m to 2 m. Accessories are available for process temperatures between 700 °C and 1050 °C (1292 °F and 1922 °F).

Calibrations may be performed on-line, while the furnace is in operation.

The 1056 Combustion electronics provides a convenient method for setting up and operating the CH88 analyzer. A bright back-lit display and keypad make calibrations easy.
1056 combustion electronics

The 1056 combustion electronics provide a bright back-lit display and an easy-to-use keypad. These electronics make set-up, calibration, and operation of this O₂ system easy and also provide extensive diagnostics of any problem with the probe or electronics.
Specifications

System measurement specifications

**Net O\textsubscript{2} range**
Variable 0-10% to 0-50%

**Accuracy in oxidizing conditions**
±1% full scale for 0-10% range and above

**Lowest detectable limit**
0.05%

**Process temperature effect**
less than 0.05% O\textsubscript{2} from 100 to 700 °C (212 to 1292 °F)

**System speed of response to calibration gas**
Initial response in less than 3 seconds, T\textsubscript{90} in less than 8 seconds. Response to process gas changes will vary depending on process gas velocity and particulate loading of the diffuser

**Calibration validity**
Presentation of calibration gases matches the bottle value to within ±0.1% O\textsubscript{2}

Environmental specifications

**Probe**
Process-wetted materials are 304 stainless steel

**Process temperature limits**
-40 to 705 °C (-40 to 1300 °F)
optional bypass and jacket accessories permit operation to 1050 °C (1922 °F)

**Probe terminations**
CH88 probe ambient temperature limits
-4° to 90 °C (-40 to 194 °F)

1056 combustion electronics
Polycarbonate material

1056 combustion ambient temperature limits
-20 to 50 °C (-4 to 122 °F)

Installation Specifications

**Probe mounting flange**
Vertical or horizontal — 2” 150# (4.75” (121mm) bolt circle) and DIN145

Note: Flanges are flat-faced, and for mounting only. Flanges are not pressure-rated. A 2.5” diameter hole in the process is required.

Spool piece P/N 3D39761G02 is available, to offset probe housing from hot ductwork.

Many adapter flanges are available to mate to existing flanges.

**Probe lengths and approximate shipping weights**
.5 m (19.68 in.) package:
7.3 kg (16 lb)
1 m (39.37 in.) package:
9.5 kg (21 lb)
2 m (78.74 in.) package:
12.2 kg (27 lb)

**Reference air**
No instrument air required. Ambient air diffuses into the probe passively. Ensure that ambient air is fresh (20.95% O\textsubscript{2})

**Calibration**
Semi-automatic manual gas switching. New calibration values are calculated in the 1056 Combustion electronics.

**Cal gases**
.4% and 8% O\textsubscript{2}, balance N\textsubscript{2} recommended.
Instrument air may be used as a high cal gas, but is not recommended.
100% nitrogen cannot be used as the low cal gas.

**Calibration gas flow**
5scfh (2.5l/min)

**Heater electrical power**
220V ±10%, 50 Hz

**Traditional architecture cable**
Customer supplied

**Power consumption of probe heater**
150 watts max. during initial warm-up
Specifications

Installation specifications

1056 combustion electronics

Electrical power of 1056 combustion electronics
220V ±10%, 50 Hz

Power consumption of 1056 combustion electronics
150 Watts during initial warm-up

Analog output
4-20 mA, max load 550 ohms

1056 combustion alarms relays
2 provided – 5 A, 30 Vdc, 120 Vac, or 230 Vac

1056 combustion alarms relays
Customer supplied cable recommended

Probe sensing cable
3 twisted pair; 16 to 24 ga., shield connected to ground at 1056 combustion electronics.

Heater cable
12-18 ga. power cable

For lengths 200 and 500 feet
use 16 to 22 ga. signal wires and 12 to 14 ga. heater wires
Dimensional drawings

Probe installation dimensions

Note: All dimensions are in meters with inches in parentheses.

<table>
<thead>
<tr>
<th>Removal/installation</th>
<th>Probe length</th>
<th>Removal envelope</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>.5 m (19.68 in.)</td>
<td>750 mm (30 in.)</td>
</tr>
<tr>
<td></td>
<td>1 m (39.37 in.)</td>
<td>1250 mm (49 in.)</td>
</tr>
<tr>
<td></td>
<td>2 m (78.74 in.)</td>
<td>2250 mm (89 in.)</td>
</tr>
</tbody>
</table>
Dimensional drawings
CH88 probe installation dimensions

Note: All dimensions are in meters with inches in parentheses

Mounting flange

<table>
<thead>
<tr>
<th></th>
<th>ANSI</th>
<th>DIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flange dia</td>
<td>185 mm</td>
<td>7.28 in.</td>
</tr>
<tr>
<td>Hold dia</td>
<td>19.1 mm</td>
<td>.75 in.</td>
</tr>
<tr>
<td>(4) Holes Eq</td>
<td>120.7 mm</td>
<td>4.75 in.</td>
</tr>
<tr>
<td>Sp on BC</td>
<td>145 mm</td>
<td>5.71 in.</td>
</tr>
</tbody>
</table>

4512C36G01 Square weld plate, ANSI pattern, Part 4512C34G01

Square weld plate, DIN pattern, Part
Dimensional drawings

Xi Enhanced Interface - Panel Mounting Details

Xi Enhanced Interface - Wall/Surface and Pipe Mounting Details
## Ordering information

<table>
<thead>
<tr>
<th>Probe Length</th>
<th>Part #</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5 m (19.68 in)</td>
<td>6A00507G01</td>
<td>7.3 Kg (16 lbs)</td>
</tr>
<tr>
<td>1 m (39.37 in)</td>
<td>6A00507G02</td>
<td>9.5 Kg (21 lbs)</td>
</tr>
<tr>
<td>2 m (78.74 in)</td>
<td>6A00507G03</td>
<td>12.2 Kg (27 lbs)</td>
</tr>
</tbody>
</table>

### Electronics

<table>
<thead>
<tr>
<th>Part #</th>
</tr>
</thead>
<tbody>
<tr>
<td>1056 Combustion</td>
</tr>
</tbody>
</table>

### Accessory

<table>
<thead>
<tr>
<th>Part #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calibration flowmeter</td>
</tr>
<tr>
<td>Cal gas adaptor kit to mate to a 1/4&quot; female fitting on the probe.</td>
</tr>
<tr>
<td>Replacement sensor board</td>
</tr>
<tr>
<td>Replacement power supply board</td>
</tr>
<tr>
<td>Replacement display board</td>
</tr>
</tbody>
</table>
CH88 Accessories

Bypass Packages

The specially designed Rosemount Analytical Bypass Package for oxygen analyzers has proven to withstand the high temperatures (to 1050°C/1922°F) in process heaters while providing the same advantages offered by the in situ sensor. Inconel tubes provide effective resistance to corrosion, and the other components common to other sampling systems.

O₂ Calibration Gas Kits
pn. 6296A27G01

Rosemount Analytical’s O₂ Calibration Gas and Service Kits have been carefully designed to provide a more convenient and fully portable means of testing, calibrating, and servicing Rosemount Analytical’s oxygen analyzers. These lightweight, disposable gas cylinders eliminate the need to rent gas bottles.