



Oxygen Probe

SIRO₂ C700 JS Probe

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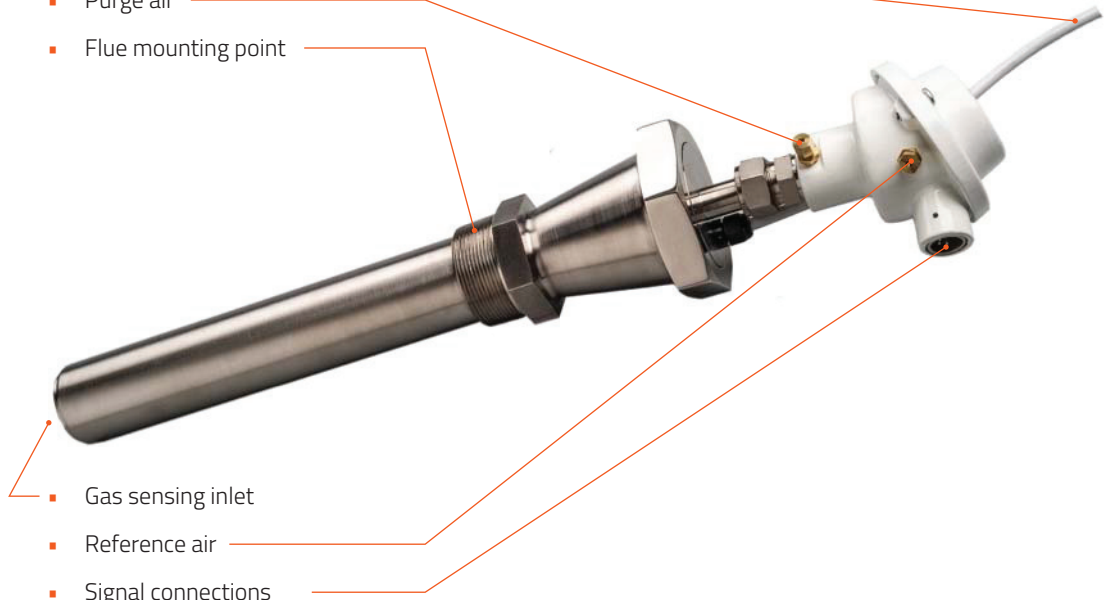
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SIRO₂ C700 JS K Probe

Features

- 110 ACV or 240 ACV
- Purge air
- Flue mounting point

- Gas sensing inlet
- Reference air
- Signal connections



Description

The JS probe is a heated probe that incorporates a SIRO₂ C700 all ceramic oxygen sensor, shielded by a stainless-steel sheath enclosure for extended life in flues and boiler environments. It is used for measurement and control of oxygen sensitive combustion environments. The heated sensor operates *in situ*, and measures oxygen concentration real time, without the need for expensive gas sampling, or gas extraction equipment. The probe comes with a K-type thermocouple.

Features:

- Specific for O₂
- High O₂ sensitivity and selectivity
- High dynamic range of detection
- High temperature of operation
- Rapid responses
- *In situ* measurement
- Solid state electronic component
– rugged sensor
- 240 VAC 50-60 Hz or 110 VAC 50-60 Hz
- Available up to 1000 mm
- Purge air

Applications:

- Fuel combustion efficiency control
- Furnace gas analysis
- Waste management systems
- Flue gas analysis
- O₂ levels at high temperatures
- CO₂ harsh environments

Specification

Note:

- Please note that above 850 °C the probe will experience irreparable damage.
- Heater must not be turned on until control circuitry has been applied using the internal thermocouple of the sensor – failure to do so will result in damage to the probe.

Thermal				
Parameter	Minimum	Typical	Maximum	Unit
Absolute Maximum temperature			850	°C
Operating temperature	50	—	700	°C
Control head operating temperature	—	60	80	°C
Ramp rate	—	—	400	°C/hour
Storage	5	20	50	°C

Electrical				
Parameter	Minimum	Typical	Maximum	Unit
Output voltage range*	2.0	1130	1650††	mV @ T ≥ 700 °C
Output impedance	1.00	2.00	10.00	kΩ @ T ≥ 700 °C
Response time	10	20	10000	ms @ T ≥ 700 °C
Offset Error @ 700 °C **	1	2	—	mV @ pO ₂ = pO ₂
Heater Voltage	210	220	250	VAC
Heater Voltage	95	110	150	VAC
Heater Frequency	45	55	70	Hz

Measurement Range				
Parameter	Minimum	Typical	Maximum	Unit
O ₂ Atmosphere	10 ⁻²⁴	—	1	pO ₂ @ 700 °C
O ₂ Atmosphere	10 ⁻¹²	—	1	pO ₂ @ 1300 °C
Reference air	1	10	20	mL/min

Sheath Mechanical				
Parameter	Minimum	Typical	Maximum	Unit
Outer Diameter	—	51	—	mm
Mounting thread	—	2	—	inch NPT
Weight	3.2	—	8	kg

Electrical Connections			
Description	Pin No	Type	Wiring (internal)
Thermocouple positive leg	1	Output	Black (thermocouple +)
Thermocouple negative leg	2	Output	Red (thermocouple -)
Sensor internal (reference) connection	3	Output	Blue (O ₂ sense-reference)
Sensor external (sense) connection	4	Output	Green (O ₂ sense-chamber)
AC Heater connection (phase)	flying lead	Input	Brown
AC Heater connection (neutral)	flying lead	Input	Brown
Heater Earthing	flying lead	Input	Green & Yellow or Green

Connector type				
Mating connector	Manufacturer	Part Number	Supplier	Supplier code
4 Pin female XLR Cannon	Neutrik	NC4MXX	Mouser	568-NC4MXX

Notes

- * Absolute maximum output voltage without damage to the sensor for the given atmosphere of 10^{-24} oxygen concentration.
- ** Offset error should be subtracted from the voltage reading during measurements for high accuracy applications. Also, note that this offset value is temperature dependent.

Installation

To ensure best probe performance, all seals should remain intact. When fitting the probe, it must only be handled by stainless steel mount, not the control head. No weight or force is to be applied to the connector head assembly.

Since the equipment requires mains power to operate, it should only be installed by qualified personnel as required under the relevant laws for the given country or jurisdiction in which the equipment is installed.

When fitting the probe, carefully insert the into the flue aperture, ensuring the probe is not bumped. The sensor housed inside the probe is much like a glass bulb and knocks to the case can transfer directly to the ceramic sensor, causing damage that will impact on the performance or cause total failure of the probe.

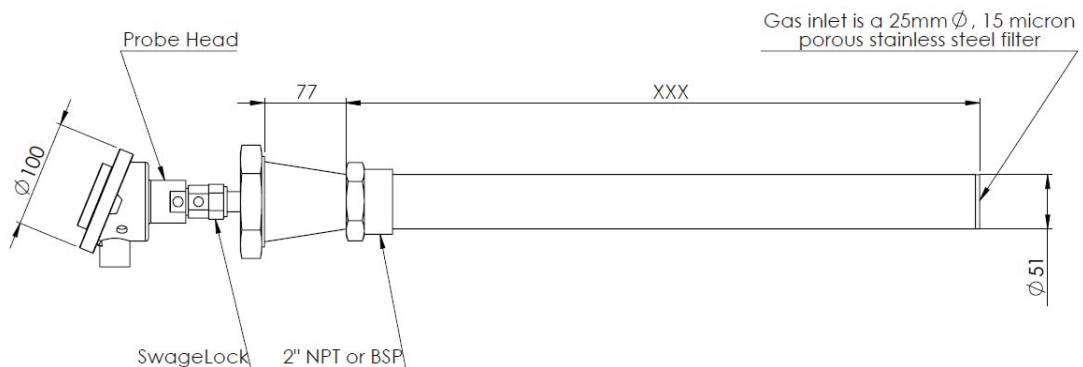
Once the probe has been inserted, the instrument interface cable, reference and purge air may then be connected. Please ensure that all control signals are connected before connecting the mains controller to the heating element. Also ensure the earth lead to the stainless steel case is correctly grounded, before turning on the power.

Please note that the probe can become sufficiently hot to cause mild to severe burns, as the operating temperature at the sensing point is set to 700 degrees Celsius. Ensure the system off and cooled, by monitoring the temperature using the internal thermocouple. Do not attempt to remove the probe when the system is hot, or when connected to live power.

Ordering information

Probe lengths (XXX) are specified from the end of their stainless-steel fixing to the tip of the stainless sheath.

This probe can be ordered in a range of different sizes in steps of 100 mm, and with a K-Type thermocouple. The probe part number has the following format.



JS - 0300 - K - 240

- **Heater voltage** 240 for 220 to 240 VAC 50 - 60 Hz
110 for 110 to 120 VAC 50 - 60 Hz
- **Thermocouple** K for K-type
- **Probe length** 0300 for 300 mm
0400 for 400 mm
...
1400 for 1400 mm