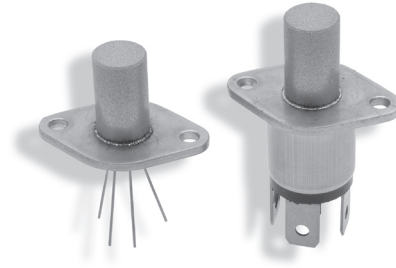


# Oxygen Sensors Line Guide



**Breathe easier, with unparalleled reliability.** Honeywell Sensing and Control (S&C) offers a comprehensive range of oxygen sensors unmatched in the industry. Simply stated, our sensors are engineered to perform better and last longer. Our design employs two Zirconium Dioxide ( $ZrO_2$ ) discs with a small, hermetically sealed chamber between each disc.  $ZrO_2$  technology provides oxygen measurement without reference

gas, providing enhanced accuracy and durability. That's why Honeywell S&C sensors are commonly found in potential applications from industrial processes, agriculture, and on-board aircraft oxygen generation system controls to automotive exhaust gas diagnostics, service instruments, environmental oxygen monitoring, combustion systems, and environmental controls.

## FEATURES

### OXYGEN SENSORS

#### KGZ-10 Series.

**Features:** Small, enhanced accuracy, wide measuring range • Low power consumption • No reference gas necessary • Stainless steel construction, both externally and internally • Often resistant against vibration, moisture and high pressures • Fail safe measuring principle • Linear output signal • No need for temperature stabilization • Function testing and calibration in ambient air

- Rugged construction • Easy calibration
- Long life

**Benefits:** Dynamic sensing principle allowing failsafe operation. Electronics necessary to operate the sensor can either be incorporated into the customer's own electronic circuits or be purchased as a separate interface board (DE800, Oxymac50 or ELECDITT). High resistance to corrosion allows the sensor to be used in aggressive, harsh environments. Can be used directly in high temperature, high pressure, and polluted gases. Often ideal for potential applications including heating boiler control, industrial process control, control of aircraft on-board oxygen generation systems, automotive exhaust gas diagnostics, service instruments, monitoring environmental oxygen, agriculture, composting, and fruit storage.

#### KGZ-12 Series.

**Features:** Long sensor probe, enhanced accuracy, wide measuring range • Low power consumption • No reference gas necessary • Stainless steel construction, both externally and internally • Resistant to vibration, moisture, and high pressures

- Failsafe measuring principle • Linear output signal • No need for temperature stabilization • Function testing and calibration in ambient air • Easy calibration • Enhanced life

**Benefits:** Dynamic sensing principle allowing failsafe operation. Electronics necessary to operate the sensor can be incorporated into the customer's own electronic circuits or be purchased as a separate interface board. High resistance to corrosion allows the sensor to be used in aggressive, harsh environments. Can be used directly in high temperature, high pressure, and polluted gases. Often ideal for potential applications including heating boiler control, industrial process control, control of aircraft on-board oxygen generation systems, automotive exhaust gas diagnostics, service instruments, monitoring environmental oxygen, agriculture, composting, and fruit storage.

#### GMS-10 Series.

**Features:** Small, enhanced accuracy,

wide measuring range • Low power consumption • No reference gas necessary • Linear output signal

- No need for temperature stabilization
- Function testing and calibration in ambient air • Rugged construction • Easy calibration • Enhanced life

**Benefits:** Dynamic sensing principle allowing failsafe operation. Electronics necessary to operate the sensor can be incorporated into the customer's own electronic circuits or be purchased as a separate interface board. Can be used directly in high temperature, high pressure, and polluted gases. Often ideal for potential applications including heating boiler control, industrial process control, control of aircraft on-board oxygen generation systems, automotive exhaust gas diagnostics, service instruments, and monitoring environmental oxygen.

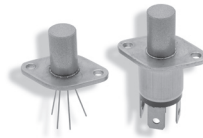
#### MF010 Series.

**Features:** Combines an oxygen sensor probe with electronics mounted at the back of the probe electromechanical pump • No moving parts • IP65 • No reference gas necessary • Stainless steel construction, both externally and internally

- Resistant to vibration, moisture, and high pressures • Failsafe measuring principle

continued on page 4

# Oxygen Sensors Line Guide



**Uncommon sensing. Unmatched leadership.** Honeywell S&C's dual disc, Zirconium Dioxide ( $ZrO_2$ ) design offers advantages over the competition — because it's built for enhanced accuracy. The first disc functions as a reversible oxygen pump, which sequentially fills and empties the chamber. The second disc measures the ratio of the partial pressure difference, and then generates a corresponding voltage. A heat element produces the 700 °C [1292 °F] required for the  $ZrO_2$  to operate as an  $O_2$  pump. The time needed for the pump to reach specific minimum and maximum pressures within the chamber provides a measure of the partial oxygen pressure of the environment.

Trust Honeywell S&C for top-flight engineering, and world-class performance: enhanced accuracy measurement; low power consumption; no reference gas or temperature stabilization required; linear output signal; function testing and calibration in ambient air; and enhanced life.

## Oxygen Sensors

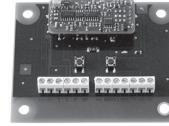
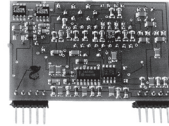
|  | KGZ-10 Series  | KGZ-12 Series              | GMS-10 Series  |
|--|--|----------------------------|--|
| <b>Sensor voltage levels (recommended)</b> | 45-64-85 mV  | 45-64-85 mV                | 45-64-85 mV  |
| <b>Pump current (recommended)</b>          | 40 $\mu$ A   | 40 $\mu$ A                 | 40 $\mu$ A   |
| <b>Housing</b>                             | flange mounted   | 400 mm probe; 220 mm probe | 80 mm probe; screw fit probe (28 mm, 45 mm, 55 mm)   |
| <b>Response time</b>                       | < 4 s  | < 15 s                     | < 15 s   |
| <b>Warm up time</b>                        | < 100 s  | < 100 s                    | < 100 s  |
| <b>Heater supply</b>                       | 4.35 V (1.85 A)  | 4.0 V (1.7 A)              | 4.0 V (1.7 A)  |
| <b>Oxygen pressure range</b>               | 2 mbar - 3 bar   | 2 mbar - 3 bar             | 2 mbar - 3 bar                                       |
| <b>Operational temperature</b>             | 700 °C [1292 °F]   | 700 °C [1292 °F]           | 700 °C [1292 °F]                                     |
| <b>Sensitivity</b>                         | 1.05 ms/mbar   | 1.05 ms/mbar               | 1.05 ms/mbar   |
| <b>Accuracy</b>                            | < 5 mbar   | < 5 mbar                   | < 5 mbar   |
| <b>Termination</b>                         | 0,6 mm [0.024 in] diameter, 4-pin, nickel-plated steel; 4,0 mm x 8,0 mm x 7,00 mm [0.157 in x 0.315 in x 0.028 in] Faston contact tabs; 0,6 mm [0.024 in] diameter, 5-pin, nickel-plated steel | 5 Teflon coated wires      | 5 Teflon coated wires (with 6 fold Molex connectors) |



## Oxygen Sensors

|  | MF010 Series                                      |
|--|---|
| <b>Supply voltage</b>                          | 24 Vdc $\pm$ 5 %                                  |
| <b>Supply current</b>                          | 500 mA  |
| <b>Output signal</b>                           | 0 Vdc to 10 Vdc or 4 mA to 20 mA                  |
| <b>Housing</b>                                 | 220 mm probe; 400 mm probe; 600 mm probe          |
| <b>Oxygen concentration range</b>              | 0.1 % to 25 % (0 % to 100 % on request) by volume |
| <b>Ambient temperature</b>                     | -10 °C to 50 °C [14 °F to 122 °F]                 |
| <b>Permissible gas temperature (probe tip)</b> | -148 °C to 482 °C or -148 °C to 752 °C            |
| <b>Resolution</b>                              | 12 bit  |
| <b>Sensitivity</b>                             | 1.05 ms/mbar                                      |
| <b>Accuracy</b>                                | $\pm$ 2 %   |
| <b>Termination</b>                             | binder connector, 693 series                      |
| <b>Repeatability</b>                           | $\pm$ 1%  |
| <b>Warm up time</b>                            | 10 min. (approx.)                                 |

## Oxygen Sensor Interface Boards



|                                      | Oxymac50   | Elecdit   | DE800  |
|--------------------------------------|--|---|--|
| <b>Supply voltage</b>                | 24 Vdc $\pm$ 20 %                                    | 15 Vdc $\pm$ 10 %                                     | 24 Vdc $\pm$ 20 %                                    |
| <b>Supply current</b>                | 100 mA   | 100 mA  | 100 mA   |
| <b>Power consumption (interface)</b> | <250 mW  | <250 mW   | <500 mW  |
| <b>Output signal</b>                 | 0 Vdc to 10 Vdc or<br>4 mA to 20 mA                  | 0 Vdc to 10 Vdc                                       | 0 Vdc to 10 Vdc or<br>4 mA to 20 mA                  |
| <b>Oxygen concentration range</b>    | 0.1 % to 25 %<br>(0 % to 100 % on request) by volume | 0.1 % to 25 %<br>(0 % to 100 % on request) by volume  | 0.1 % to 25 %<br>(0 % to 100 % on request) by volume |
| <b>Ambient temperature</b>           | -10 °C to 50 °C<br>[14 °F to 122 °F]                 | -10 °C to 50 °C<br>[14 °F to 122 °F]                  | -10 °C to 50 °C<br>[14 °F to 122 °F]                 |
| <b>Resolution</b>                    | 12 bit   | 12 bit  | 12 bit   |
| <b>Sensitivity</b>                   | 1.05 ms/mbar   | 1.05 ms/mbar  | 1.05 ms/mbar   |
| <b>Accuracy</b>                      | $\pm$ 2 %  | $\pm$ 2 %   | $\pm$ 2 %  |
| <b>Repeatability</b>                 | $\pm$ 1 %  | $\pm$ 1 %   | $\pm$ 1 %  |
| <b>Connector</b>                     | 15-pin D type connector                              | 2,5 mm x 2,5 mm<br>(0.1 in x 0.1 in)<br>pin connector | screw connector block                                |

- Low power consumption
- No need for temperature stabilization
- Functional testing and calibration in ambient air
- Suitable for use in gases up to 300 °C [572 °F]
- Lower running costs
- Enhanced life

**Benefits:** No reference gas pressure required, creating an ability to measure ambient oxygen content. Can be operated by simple, low-cost electronics. Allows failsafe operation. Can be mounted directly into the flue. High resistance to corrosion allows the sensor to be used in aggressive, harsh environments. No additional electronic circuit needed. Potential applications include heating boiler control, industrial process control, combustion systems, compost systems, and environmental control.

## OXYGEN SENSOR INTERFACE BOARDS – KGZ SERIES

### Oxymac50.

**Features:** Provides the necessary circuits to control Honeywell oxygen sensors

- Functional testing and calibration in ambient air
- PCB board format
- Linear output of measured oxygen content in voltage or current format
- Requires an external heater power supply
- Low power consumption
- Flexible interconnection
- Lower running costs

**Benefits:** Removes the need to implement sensor control circuits within equipment. Removes effects of barometric or application pressure changes and sensor drift for enhanced accuracy. Ease of mounting and access for calibration. Potential applications include heating boiler control, industrial process control, combustion systems, compost systems, environmental control, medical, and aerospace.

### Elecdit.

**Features:** Provides the necessary circuits to control Honeywell oxygen sensors

- Functional testing and calibration in

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- ambient air
- PCB board format
- Linear output of measured oxygen content in voltage or current format
- Requires an external heater power supply
- Low power consumption
- Flexible interconnection
- Lower running costs

**Benefits:** Removes the need to implement sensor control circuits within equipment. Removes effects of barometric or application pressure changes and sensor drift for enhanced accuracy. Offers a level of noise protection. Ease of mounting and access for calibration. Potential applications include heating boiler control, industrial process control, combustion systems, compost systems, environmental control, medical, and aerospace.

### DE800.

**Features:** Provides the necessary circuits to control Honeywell oxygen sensors

- Functional testing and calibration in ambient air
- PCB board format
- Linear output of measured oxygen content in voltage or current format
- Requires no external heater power supply
- Low power consumption
- Flexible interconnection
- Lower running costs

**Benefits:** Removes the need to implement sensor control circuits within equipment. Removes effects of barometric or application pressure changes and sensor drift for best accuracy. Ease of mounting and access for calibration. Potential applications include heating boiler control, industrial process control, combustion systems, compost systems, environmental control, medical, and aerospace.

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- DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

**Failure to comply with these instructions could result in death or serious injury.**

### **WARNING** **MISUSE OF DOCUMENTATION**

- The information presented in this catalogue is for reference only. DO NOT USE this document as product installation information.
- Complete installation, operation and maintenance information is provided in the instructions supplied with each product.

**Failure to comply with these instructions could result in death or serious injury.**

# Honeywell