combustion

efficiency

monitoring

Flue gas oxygen analyzers

General Purpose Applications

LAND instruments international

Combustion & Environmental Monitoring
Genesis is a range of flue gas analyzers for measuring Oxygen within boilers and furnaces. The wide range of products available have the measurement capability, performance and quality to meet most industrial applications.

**Features & Benefits**

- Simple installation and operation - 4-key user interface controls all functions
- Outstanding sensor reliability - Robust design with large surface area and rigid bonding
- High product confidence - 24 month complete probe warranty
- Proven performance - TÜV approved
- Service and maintenance carried out on-site - All parts are field replaceable
- Straightforward integration in plant control system - Modbus communications capability
- Measurement systems for most applications

**Simple User Interface**

Simple push-button operation combined with a clear LED display enable complete electronic control of the probe functions. Full setup and diagnostic information is also accessible through the user interface.

**Serial Communications**

Genesis probes can communicate using the RS485 modbus protocol, for straightforward integration into the plant DCS. There are also both 4-20 mA analog and relay outputs.
Rugged Sensor design

The sensor is manufactured to the highest possible standards - allowing a minimum 2 year warranty. The sensor design gives a large surface area and an excellent bond between the zirconia and stainless steel holder.

Unique Flexibility

Genesis uniquely mounts the user interface onto the probe itself. This enables complete local control at the measurement location and reduces installation costs. Alternatively, the user interface can be detached and located for remote operation.

Probe filter assembly

The probe filter simply fits in place with 4 retaining screws, and maintains the integrity of the probe. Flame arrestors are also available.

Versatile probe and mounting

Genesis oxygen probes are available in various lengths with a range of mounting flange options.

Universal compatibility

The universal control unit is fully compatible with all genesis oxygen probes. It provides remote control, operation and displays readings for the measurement probe. In addition, the universal control unit is fully compatible with existing zirconia sensor oxygen probes from most manufacturers.
g1200 Stand-alone, Low Temperature Fully-integrated Probe

The g1200 is the world’s first fully-integrated oxygen analysis probe. The g1200 combines the measurement probe with the control unit into a single, fully integrated system. For applications where probe access is straightforward, the g1200 is the ideal choice as it reduces both installation time and costs.

g1210 Low Temperature Probe

The g1210 measurement probe is capable of direct, in-situ measurement in all combustion processes up to 600 °C/1112 °F. Display of measurement readings and probe diagnostics is made remotely from the Universal Control Unit (g1220). The g1210 is ideally suited where normal access to the probe is restricted or environmentally hostile.

g1230 High Temperature Probe

The g1230 measurement probe is capable of in-situ oxygen measurement in higher temperature combustion processes (such as furnaces and process heaters) up to 1400 °C/2552 °F. The probes come in varying lengths, with a choice of protection sheaths for specific temperature ranges. Display of measurement readings is made remotely using the Universal Control Unit (g1220).

g1220 Universal Control Unit

The universal control unit has identical functionality to the control module of the g1200, but is mounted in the plant control room or other accessible location for easy access.

- Control, display and diagnostics information
- Simple user interface with LED display
- User programmable for maximum flexibility
- Automatic fault detection
- Modbus communications
- Small and compact
- IP65/NEMA 4 protection
### Specifications

#### g1200 and g1210 Low Temperature Probes

- **Measuring Range:** 0 to 5, 0 to 25 % Vol. O₂ selectable
- **Accuracy:** ±1 % of full scale
- **Repeatability:** ±0.5 % of full scale on analog outputs
- **Response Time:** 90 % of full scale within 5 seconds
- **Measuring Method:** Zirconia oxide sensor
- **Flue Gas Temp. Range:** 0 to 600 °C/32 to 1112 °F
- **Probe Lengths Options:** 0.4/1.0/1.5/2.0 m/1.3/3.3/4.9/6.6 ft
- **Weight:** (g1200) 8.8 to 15.1 kg/19.4 to 33.3 lb
  - (g1210) 6.8 to 13.1 kg/15 to 28.9 lb

#### g1230 High Temperature Probe

- **Measuring Range:** 0 to 5, 0 to 25 % Vol. O₂ selectable
- **Accuracy:** ±1 % of full scale
- **Repeatability:** ±0.5 % of full scale on analog outputs
- **Response Time:** 90 % of full scale within 5 seconds
- **Measuring Method:** Zirconia oxide sensor
- **Flue Gas Temp. Range:**
  - Type R - 600 to 1400 °C* / 1112 to 2552 °F*
  - Type K - 600 to 900 °C /1112 to 1652 °F
- **Probe Lengths Options:** 0.6 or 1.0 m/ 24 or 40 inch
- **Weight:**
  - (2.5 kg (600 mm probe) - 5.51 lb (23.6 “ probe))
  - (2.8 kg (1000 mm probe) - 6.2 lb (39.4 “ probe))

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*Reduced probe life may result if operated above 1250 °C / 2282 °F

#### g1200 Probe Control Unit / g1220 Universal Control Unit

- **Display Type:** Single-line 4 digit LED
- **Parameters:**
  - O₂, concentration; Calibration Gas Concentration;
  - Cell Temperature; Fault Messages;
  - Cell/Thermocouple Information
- **Analog Outputs:**
  - Single channel isolated 0 to 10; 0 to 20; 2 to 20;
  - 4 to 20mA menu selectable
- **Ranges:** Selectable range 0 to 5; 0 to 25 % v/v O₂
- **Serial Output:** RS485 Modbus protocol (2-wire, half-duplex)
- **Alarm Relays:**
  - Single pole changeover 2 A at 30 V a.c./d.e.
  - High/Low customer selectable; System Fault;
  - Maintenance/Cal. in Progress
- **Fault Indication:** LED indication and error codes
- **Calibration:** Option to track or hold
- **Calibration Types:** Manual; *Automatic; *Remote Trig.
- **Power Supply:** 85 to 264 V a.c.; 48 to 62 Hz
- **Power Rating:** 250 W

*Requires optional Automatic Calibration Gas Control Unit

#### Compatibility:

- All Genesis type probes
- Other zirconia type oxygen probes

#### Max. Distance to Probe:

- 300 m/985 ft

#### EMC:

- Conforms to EN 50 081, EN 50 082

#### Safety:

- Conforms to EN61010-1

#### Dimensions:

- 130(l) x152(w) x153(h) mm/
  - 5.120(l) x6(w) x6.02(h) in

#### Weight:

- (g1220) 2.7 kg/5.95 lb

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*Continuous product development may make it necessary to change these details without notice*
Further Information

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Approval applies to products designed and manufactured in the UK
TÜV approved

Accessories

g1270 Automatic Calibration Unit

To help with compliance, as well as reducing maintenance and increasing accuracy, this unit automatically controls the calibration gas (both zero and span) to the Genesis probe at programmed intervals. The g1270 functions are controlled (as with the probe) by the control unit.

Specifications

<table>
<thead>
<tr>
<th>Genesis g1270 Automatic Calibration Unit</th>
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<tbody>
<tr>
<td>Dimensions: 300x200x155 mm/11.8x7.9x6.1 in (HxWxD)</td>
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<tr>
<td>Weight: 6 kg/13.2 lb</td>
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<tr>
<td>Operating Temp: 0 to 50 °C/32 to 122 °F</td>
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<tr>
<td>Enclosure Rating: IP65/NEMA4</td>
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<tr>
<td>Power Supply: 110 V or 240 V a.c. 50-60 Hz 10 VA</td>
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<td>Supply Tolerance: -10 % +20 %</td>
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<td>Gas Inlet Pressure: 1.7 to 2.0 bar/25-30 psi</td>
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<td>Gas Outlet Flow: 3.0 litres/min. for g1200 &amp; g1210 0.8 to 1.0 litres/min. for g1230</td>
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<tr>
<td>Pressure Switch: 1 bar/15 psi trip pressure</td>
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<tr>
<td>Slave Relays: 2- galvanically isolated changeover contacts</td>
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</tbody>
</table>

Continuous product development may make it necessary to change these details without notice

Reference Air Supply Units

To achieve the best measurement performance it is essential that reference air with 20.9 % Oxygen is present at the measurement cell. Land have two options for providing reference air: an air regulator system or an electric air pump.

Hazardous Area Applications

The Genesis range of hazardous area measurement systems are designed for flue gas temperatures ranging between 20 °C and 1250 °C/68 °F and 2282 °F. Genesis systems capably meet the unique measurement conditions demanded by explosive environments.

For complete details request the dedicated information ‘genesis hazardous area flue gas oxygen analysis systems’ (ref. PDS 193)

Land Instruments International has a comprehensive range of Combustion and Environmental Monitoring Instrumentation.