

## GIR5500 - Biogas Analysers

### Multiparameter analysers for biogas applications

- CH<sub>4</sub>, CO<sub>2</sub>, H<sub>2</sub>S and O<sub>2</sub>
- ATEX Zone 2
- Continuous monitoring
- Robust, weatherproof design
- Field service friendly
- Wireless option
- 2-, 3- or 4-gas option CH<sub>4</sub>, CO<sub>2</sub>, H<sub>2</sub>S and O<sub>2</sub>

#### Applications

- Digester gas analysis
- Landfill gas monitoring
- Flare stack monitoring
- CDM verification
- Gas to grid
- CHP engine protection and efficiency



The **GIR5500 range of analysers** are ideal for biogas applications. These gases are usually a mixture of methane (CH<sub>4</sub>) and carbon dioxide (CO<sub>2</sub>) together with oxygen (O<sub>2</sub>) and hydrogen sulphide (H<sub>2</sub>S) which have implications for efficiency and safety. Two, three or four gas versions are available in a variety of configurations for Zone 2 applications.

**Methane and carbon dioxide** are both greenhouse gases (GHG). Methane is an important fuel gas for CHP engines, if not used as fuel then it is flared off to produce the less harmful carbon dioxide. Hitech use NDIR sensors to measure methane and carbon dioxide. These are sensors specially designed to withstand the damp, corrosive atmosphere often found in these applications.

**Oxygen is an important process indicator** in both landfill and digester gas. In landfill gas, a low reading might indicate the presence of an underground landfill fire, whilst a high reading may indicate over extraction from the site. In digester gas, a high reading may indicate a decrease in microbial activity due to poisoning. For this application Hitech use a special long-life electrochemical cell designed for use in the presence of acidic gases, e.g. carbon dioxide.

**Hydrogen sulphide is present in landfill and digester gas** in varying amounts depending on the substrate composition. Hydrogen sulphide can be extremely corrosive to generator sets and continuous measurement can prevent costly damage. Hitech have developed a unique system which allows for continuous measurement of H<sub>2</sub>S. At 2000ppm H<sub>2</sub>S, good sensor lifetime can still be achieved.

**Sample conditioning is important** in the variable conditions encountered in this application. Hitech provide internal filters, an internal pump and low-flow alarm as standard. An external coalescing filter is highly recommended and cooling options can also be offered to remove water. The enclosure itself contains a heater to ensure that water vapour does not condense in the analyser. Hitech are ready to recommend complete systems on receipt of full gas stream specifications.

**Attention to application specific detail** is a feature of the GIR5500 from the robust, weatherproof case down to the correct internal filter elements. The instrument has a modular design so that if one sensor is requiring maintenance, the others will still work well. All sensor modules are replaceable in the field for minimum downtime.

**These are hazardous area applications** by their very nature. All GIR5500 versions are designed for use in Zone 2 hazardous areas according to the Industry Code of Practice ESA ICoP Edition 2, a decision endorsed by the Health & Safety Executive in the UK.

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## SPECIFICATION

### Gas sensor options

#### Methane:

Range: 0 to 100%  
Resolution: 0.1%

#### Carbon Dioxide:

Range: 0 to 100%  
Resolution: 0.1%

#### Oxygen

Range: 0 to 25%  
Resolution: 0.01%

#### Hydrogen Sulphide

Range: 0 to 5000ppm  
Resolution: 1ppm

Consult Hitech for other gases and ranges, or installations at high altitude.

### Stability (@ STP)

<2 % f.s.d./month

### Accuracy (@ STP)

±2% of f.s.d.

### Sample flow

100 to 250ml/min for optimum performance

### Sample temperature range

-20°C to +55°C (non-condensing)

### Sample pressure

Pump-off: Min. 20 mbarg  
Max. 1 barg

### Sample connections

Inlet and outlet: bulkhead compression fittings suitable for 0.25inch (or 6mm) o.d. tube

### Analogue Outputs

4-20mA for each gas, 0-100% span

### Maximum output load

Oxygen/hydrogen sulphide: 300 ohms  
Methane/carbon dioxide: 400 ohms

### Alarm Outputs

2 x Concentration alarms for each gas  
1 x Fault alarm for low sample flow rate  
1 x Fault alarm for IR sensors

(Volt-free contacts for all alarms)

### Ambient operating temperature range

-5°C to +40°C,  
RH <90% (non-condensing)

### Power

110-120V or 220-240V AC, 50/60Hz  
(internally switchable)

### Enclosure details

Wall mount, ventilated, GRP enclosure  
Protection: IP54 (with door closed)  
Net weight: 42 kg  
Dimensions (mm): 636w x 300d x 847h

### Accessories supplied

Mounting brackets, bushes and screws  
Inner- and outer-cabinet door keys



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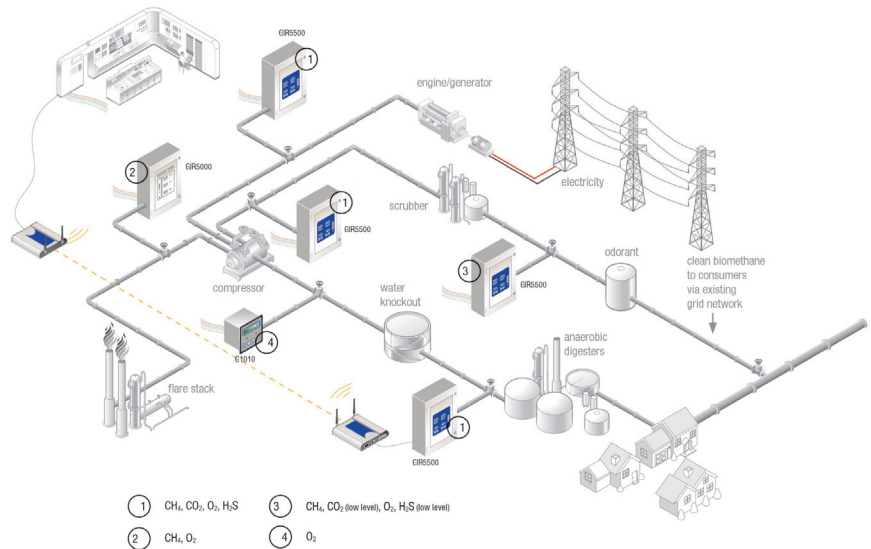
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The given data is only intended as a product description and should not be regarded as a legal warranty of properties or guarantee. In the interest of further technical developments, we reserve the right to make design changes.

## ORDERING INFORMATION

Part no.	Type	Gases measured	Description
<b>GIR5500</b>	811-9100	Methane, carbon dioxide, oxygen and hydrogen sulphide	GIR5500 biogas analyser, ATEX certified, complete with internal pump.
	811-9101	Methane, carbon dioxide and oxygen	
	811-9102	Methane, carbon dioxide and hydrogen sulphide	
	811-9103	Methane, oxygen and hydrogen sulphide	
	811-9104	Methane and oxygen	
	811-9105	Methane and hydrogen sulphide	
	811-9106	Methane and carbon dioxide	
<b>Options</b>	850-0035	Large, external coalescing filter	
	Ask for details	Wireless communications option	Suitable for Zone 2 hazardous areas

## APPLICATION EXAMPLES



## APPROVALS

Country (Authority)	Standards	Certificate number	Approved For
Europe (Eaton)	EN 60079-0:2009 EN 60079-15:2010	Hitech12ATEX160-2308X	Ex nA nC IIC T3 Gc