



| GAS    | MEASURES | APPLICATION               |
|--------|----------|---------------------------|
| OXYGEN | PERCENT  | PROCESS CONTROL<br>SAFETY |

### SENSING TECHNOLOGY



## INTRINSICALLY SAFE ANALYZER MEASURES O<sub>2</sub>

### UNRIVALLED PERFORMANCE

- Uses industry-leading patented Paramagnetic technology for stable, non-depleting measurement
- Manufactured by Servomex - over 60 years' experience innovating and pioneering gas analysis, and thousands of units used in the field every year

### LOW COST OF OWNERSHIP

- Uses a non-depleting sensor technology that reduces ongoing maintenance costs
- Advanced Li-Ion rechargeable batteries as standard (up to 18 hour run time)

### BENCHMARK COMPLIANCE

- IEC Ex/ATEX for Zone 0, and FM/CSA Division 1

### FLEXIBLE

- Intrinsically Safe (i.s.) design permits use in any hazard rated location including Zone 0/Division 1
- Gas analysis for O<sub>2</sub>
- Pumped or non-pumped functionality
- IP65 rating

### EASY TO USE

- Intuitive, engineer-friendly interface and icons
- Stores up to 200 measurements for subsequent download
- Ergonomic design with carry strap

### KEY APPLICATIONS

- Process monitoring
- Inerting applications
- Controlled atmosphere monitoring
- Hazardous area combustion optimization

For more information please contact us  
**Visit [servomex.com/contact](http://servomex.com/contact)**



### ENHANCED SAFETY FOR THE MOST DANGEROUS LOCATIONS

When you work in environments where potentially explosive atmospheres may be present, you need the most robust analytical solutions that enhance safety and provide efficient, engineer-friendly gas measurements.

In applications like catalytic regeneration, decoke cycle, combustion optimization and hazardous area process monitoring, i.s. certified solutions help reduce costs and improve efficiency. No matter what your application monitoring requirements are, you'll want a device that offers feature-rich performance, long battery runtime, low operational costs, simplified ongoing maintenance and ease of use. And we don't believe you should have to compromise.

### A NO COMPROMIZE SOLUTION

The Micro i.s. combines intuitive user interaction and a safety-enhanced i.s. design with ultra-sensitive, industry-leading O<sub>2</sub> monitoring capability, providing the ideal portable gas analysis solution for hazardous applications.

With flexible options including pumped and non-pumped formats and a range of features designed to further simplify sample testing, the Micro i.s. doesn't just meet requirements: it adapts perfectly to deliver the efficiency and usability your job demands.

### WORKS AS HARD AS YOU DO

Optimized to deliver a tough and hard-working solution with maximized uptime, the Micro i.s. comes with high-grade, long-life Li-Ion rechargeable batteries as standard. An integrated digital LCD notepad also allows up to 200 measurements to be stored on the device, permitting you to work and test with maximized efficiency.

### USEFUL LINKS



P8TDSMicro i.s. Rev.0 Date: 05/20

*These analyzers are not intended for any form of use on humans and are not medical devices as described in the Medical Devices Directive 93/42EEC.*

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# TECHNICAL DATA SHEET



## SERVOFLEX Micro i.s. 5100

### SPECIFICATIONS

| GAS MEASURED                          | OXYGEN (O <sub>2</sub> )<br>Standard  | OXYGEN (O <sub>2</sub> )<br>High accuracy |      |                             |              |
|---------------------------------------|---|---|------|-----------------------------|--------------|
| TECHNOLOGY                            | Magnetodynamic paramagnetic sensor  |   |      |                             |              |
| PERFORMANCE                           |   |   |      |                             |              |
| Measurement range                     | 0-21% O <sub>2</sub> (0-100% O <sub>2</sub> * in a safe area)   |   |      |                             |              |
| Decimal places                        | 1   | 2   |      |                             |              |
| Linearity error                       | ±0.1% O <sub>2</sub>  | ±0.01% O <sub>2</sub>                     |      |                             |              |
| Repeatability error                   | ±0.1% O <sub>2</sub>  | ±0.05% O <sub>2</sub>                     |      |                             |              |
| Intrinsic error (accuracy)            | ±0.1% O <sub>2</sub>  | ±0.05% O <sub>2</sub>                     |      |                             |              |
| Response time (T <sub>90</sub> )      | <15 seconds   |   |      |                             |              |
| Zero drift per week                   | ±0.4% O <sub>2</sub>  | ±0.2% O <sub>2</sub>                      |      |                             |              |
| Sample flow variations                | ±0.1%   |   |      |                             |              |
| Temperature coefficient               | ±0.2 O <sub>2</sub> per 10°C (18°F)   |   |      |                             |              |
| Zero                                  | ±0.3 O <sub>2</sub> per 10°C (18°F)   |   |      |                             |              |
| Span                                  |   |   |      |                             |              |
| Tilt effect                           | ±0.15% O <sub>2</sub> per 15° of tilt   |   |      |                             |              |
| Pressure effect                       | Directly proportional to ambient barometric pressure  |   |      |                             |              |
| Power cycle                           | ±0.4% O <sub>2</sub> maximum  |   |      |                             |              |
| SIGNAL OUTPUTS                        |   |   |      |                             |              |
| Alarms                                | Two user configurable concentration alarms indicated by an LED, icon display and audible sounder<br>Instrument fault alarm indicated by an LED, icon display and audible sounder  |   |      |                             |              |
| BATTERY<br>(rechargeable lithium ion) | Running times (from fully charged)  |   |      | Charge time<br>(from empty) |              |
|                                       | +50°C   | +20°C                                     | -5°C | -10°C                       |              |
| Li-ion (O <sub>2</sub> ) 5110 Pumped  | 16.5  | 14.8                                      | 10.5 | 9.7                         | 4 to 6 hours |
| Li-ion (O <sub>2</sub> ) 5111 AFCD    | 18.0  | 18.0                                      | -    | -                           |              |
| Power supply                          | The instrument must be charged in a safe area using the 100-240V charger supplied. The unit is not designed to operate from mains power   |   |      |                             |              |
| Note                                  | <p>The 5100 i.s is suitable for operation in hazardous areas only when powered by the internal battery. The power supply must only be used to charge the internal rechargeable battery when in a safe area. Lithium ion batteries have no 'memory effects', so can be recharged, from any charge level, for any duration and as often as preferred, without affecting service life.</p> <p>To ensure optimum service life of the battery, we recommend:</p> <ul style="list-style-type: none"> <li>• recharging the battery after each session of operation</li> <li>• when not in use, storing (with fully charged battery) in a cool environment and recharging every 2 months</li> </ul> |   |      |                             |              |
| OPERATING ENVIRONMENT                 |   |   |      |                             |              |
| Temperature                           | <b>Operation:</b> -10°C to +50°C (+14°F to +122°F)<br><b>Storage:</b> -20°C to +60°C (-4°F to +140°F)   |   |      |                             |              |
| Relative humidity                     | 0-95% RH non condensing   |   |      |                             |              |
| Warm up time                          | Allow 1 hour to meet performance specifications   |   |      |                             |              |
| Operating altitude range              | -500 to 2,000 metres  |   |      |                             |              |
| Ambient pressure                      | 80 to 110 kPa absolute  |   |      |                             |              |

\* Samples in excess of 21% must not be measured in a hazardous area, for further information please contact your local Servomex office

The performance specification has been written and verified in accordance with the international standard IEC 61207-1:1994 "Expression of performance of gas analyzers"



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| SAMPLE CONDITIONS        |   |
|--------------------------|---|
| Sample gas               | Clean, dry at ambient temperature and free from particulates <2µm (conditioning accessories are available to prepare sample where required) |
| Sample inlet connection  | 5mm OD stub with QuickConnect barb fitting for 5mm (1/4") ID tube   |
| Sample outlet connection | 5mm OD stub (sample and bypass)   |
| Optional connector       | QuickConnect fitting to an 1/8" NPT threaded fitting  |
| Maximum inlet pressure   | <b>5110 pumped</b>  |
|                          | minimum 80kPa absolute (11.6psia) maximum 110kPa absolute (16.0psia) typically ±3.4kPa gauge (±0.5psig) at 700ml/min nominal flow           |
|                          | <b>5111 AFCD (pressure driven)</b>  |
|                          | 6.9kPa gauge (1psig) 69kPa gauge (10psig)   |
| PHYSICAL                 |   |
| Ingress protection       | IP65  |
| Weight                   | 1.8kg to 2.3kg (4.0lbs to 5.1lbs)   |
| Dimensions, WxDxH        | 160mm x 140mm x 185mm (6.3" x 5.5" x 7.3") without protective case<br>175mm x 160mm x 195mm (6.9" x 6.3" x 7.7") with protective case       |

## SAMPLE WETTED MATERIALS

|   | Common gas path | Standard and high accuracy oxygen sensor | Optional gas probe | Sample conditioning kit |
|---|-----------------|--|--------------------|-------------------------|
| 316 stainless steel                                   |                 | •  | •                  | •                       |
| Borosilicate glass                                    | •               | •  | •                  |                         |
| Electroless nickel                                    |                 | •  |                    |                         |
| Fibre glass   |                 |  |                    | •                       |
| Fluorocarbon elastomer (FPM)                          |                 |  |                    | •                       |
| Kynar® (PVDF: polyvinylidene disulphide)              | •               |  |                    |                         |
| Nickel  | •               |  | •                  | •                       |
| Nitrile   |                 |  |                    | •                       |
| Nylon   |                 |  | •                  |                         |
| PPS (polyphenylene sulphide) with carbon fibre filler | •               |  |                    |                         |
| PPS (polyphenylene sulphide)                          | •               |  |                    |                         |
| Perspex   |                 |  |                    | •                       |
| Platinum  |                 | •  |                    |                         |
| Platinum/iridium alloy                                |                 | •  |                    |                         |
| Polysulphone  | •               |  |                    |                         |
| Polyurethane  |                 |  | •                  |                         |
| PVC (polyvinylchloride)                               |                 |  | •                  | •                       |
| Silica  |                 |  |                    | •                       |
| Viton®  | •               | •  | •                  | •                       |



## COMPLIANCE

|                                   |   |
|-----------------------------------|---|
| <b>HAZARDOUS AREA APPROVALS</b>   |   |
| <b>ATEX European</b>              | Ex II 1G, Ex ia IIC T4 Ga (-10°C < Ta <+50°C)<br>(+14°F < Ta <+122°F)   |
| <b>IECEX International</b>        | Ex ia IIC T4 Ga (-10°C < Ta <+50°C)<br>(+14°F < Ta <+122°F)   |
| <b>FM approved North American</b> | Class I, Division 1, Group A,B,C,D T4 } Indoor (IP65) Locations<br>Class I, Zone 0, AExia IIC T4 } (-10°C < Ta <+50°C)<br>Class I, Zone 0, Exia IIC T4 } (+14°F < Ta <+122°F) |
| <b>EC DIRECTIVE</b>               | This product is in compliance with the EMC Directive, the RoHS II Directive, and all other applicable directives.   |
| <b>ELECTRICAL SAFETY</b>          | Electrical safety to IEC 61010-1  |

## OXYGEN ENRICHED SAMPLES AND PRESSURE INFORMATION FOR HAZARDOUS AREAS

| OUTSIDE ATMOSPHERE  | SAMPLE GAS                |             |                          |                          |
|---|---------------------------|-------------|--------------------------|--------------------------|
|   | Type                      | Oxygen      | Pressure                 | Permitted                |
| <b>Flammable</b><br>≤21% oxygen<br>11.6 - 16.0psia<br>(80 - 110kPa abs) | All                       | ≥21% oxygen |                          | <b>NO</b>                |
|   | Non-flammable 5110 pumped | ≤21% oxygen | ≤16psia<br>(≤110kPa abs) | Yes                      |
|   | Flammable 5110 pumped     |             |                          |                          |
|   | Non-flammable 5110 pumped |             | ≤21% oxygen              | >16psia<br>(≤110kPa abs) |
|   | Flammable 5110 pumped     |             |                          |                          |
|   | Non-flammable 5111 AFCD   | ≤21% oxygen |                          | ≤26psia<br>(≤180kPa abs) |
|   | Flammable 5111 AFCD       |             |                          |                          |

## OPTIONS

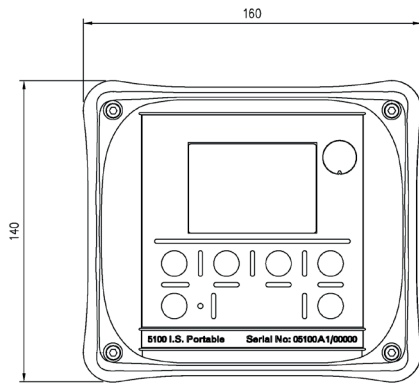
| DESCRIPTION                     |  |                          |
|---------------------------------|--|--------------------------|
| <b>Additional barb fittings</b> | Additional QuickConnect fittings to simplify connection of zero and span gases                         | <input type="checkbox"/> |
| <b>Probe length required</b>    | None   | <input type="checkbox"/> |
|                                 | 25cm   | <input type="checkbox"/> |
|                                 | 1m   | <input type="checkbox"/> |
| <b>2 years spares</b>           | Recommended spares for two years operation, comprising replacement filters (5) and filter cap 'O' ring | <input type="checkbox"/> |
| <b>Carrying case</b>            | Black canvas   | <input type="checkbox"/> |
| <b>Transport case</b>           | For use in a safe area only  | <input type="checkbox"/> |
| <b>Sample conditioning kit</b>  | Pumped versions only   | <input type="checkbox"/> |

Please tick the box for required options

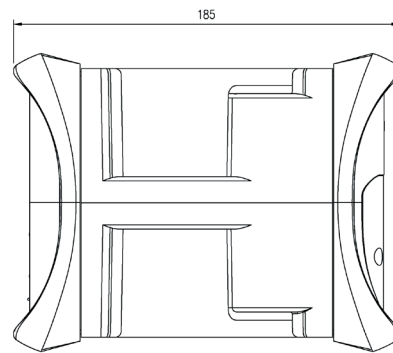


## DIMENSIONAL DRAWINGS

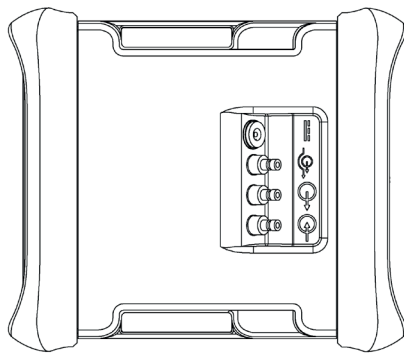
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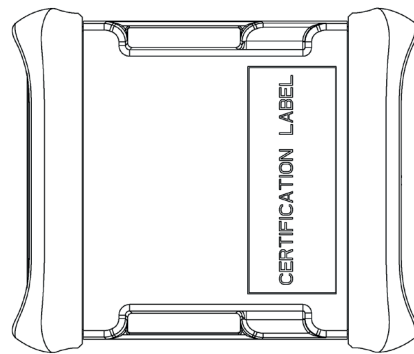
FRONT



SIDE



TOP



BOTTOM

Dimensions shown in millimetres



# > WE'RE READY TO HELP

WHATEVER YOUR GAS ANALYSIS REQUIREMENTS, WHEREVER YOU ARE

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