SERVOFLEX

Micro i.s. 5100

Product overview

Portables

Gas	Measures	Application
Oxygen	Percent	Process control Safety

SENSING TECHNOLOGY

Paramagnetic

Intrinsically safe analyzer measures O_2

Unrivalled performance

- Uses industry-leading patented Paramagnetic technology for stable, non-depleting measurement
- Manufactured by Servomex - over 70 years' experience innovating and pioneering gas analysis, and thousands of units used in the field every year

Flexible

- Intrinsically Safe (i.s.) design permits use in any hazard rated location including Zone 0/Division 1
- Gas analysis for O_2
- Pumped or non-pumped (AFCD pressure driven) gas sampling
- IP65 rating

Easy to use

- Intuitive, engineer-friendly interface and icons
- Stores up to 200 measurement points for subsequent review
- Ergonomic design with carry strap

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

- IECEx/ATEX/UKEX for Zone 0, and FM (USA & Canada) Division 1

Key applications

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

For more information visit **servomex.com/contact**

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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 compromize.

A no compromise solution

The Micro i.s. 5100 combines intuitive user interaction and a safety-enhanced i.s. design with ultra-sensitive, industry-leading O_2 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:

SERVOMEX SERVICE NETWORK

servomex.com/**service**

SERVOMEX SYSTEMS

servomex.com/**systems**

SERVOMEX EXPERT

servomex.com/**expert-guidance**

PBTDSMicro i.s. Rev.2 Date: 10/24

Technical data sheet

SERVOFLEX Micro i.s. 5100

Specifications

Gas measured	Oxygen (O_2) Industrial accurancy sensor	Oxygen (O_2) High accuracy sensor
Technology	Magnetodynamic paramagnetic sensor	
Performance		
Measurement range	0-21% O_2 (0-100% O_2* in safe area locations only)	
Decimal places displayed	1	2
Linearity error	±0.1% O_2	±0.01% O_2
Repeatability error	±0.1% O_2	±0.05% O_2
Intrinsic error (accuracy)	±0.1% O_2	±0.05% O_2
Response time (T_{90})	<15 seconds	
Zero drift per week	±0.4% O_2	±0.2% O_2
Sample flow variations	±0.1%	
Temperature coefficient Zero Span	±0.2 O_2 per 10°C (18°F) ±0.3 O_2 per 10°C (18°F)	
Tilt effect	±0.15% O_2 per 15° of tilt	
Pressure effect	Directly proportional to ambient barometric pressure	
Power cycle	±0.4% O_2 maximum	

Signal outputs	
Alarms	Two user configurable concentration alarms indicated by an LED, icon display and audible sounder Instrument fault alarm indicated by an LED, icon display and audible sounder

BATTERY (rechargeable lithium ion)	Typical running times hours (from fully charged)				Charge time (from empty)
	+50°C	+20°C	-5°C	-10°C	
Li-ion (O_2) 5110 Pumped	16.5	14.8	10.5	9.7	4 to 6 hours
Li-ion (O_2) 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	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. To ensure optimum service life of the battery, we recommend: • recharging the battery after each session of operation • when not in use, storing (with fully charged battery) in a cool environment and recharging every 2 months				

* Sample gases containing levels of oxygen 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"

Operating environment	
Temperature	Operation: -10°C to +50°C (+14°F to +122°F) Storage: -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

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	**5110 pumped (internal sample pump)**	**5111 AFCD (with internal automatic flow control device - sample pressure driven)**
	Minimum 80kPa absolute (11.6psia) maximum 110kPa absolute (16.0psia) typically ±3.4kPa gauge (±0.5psig) at 700ml/min nominal flow	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 175mm x 160mm x 195mm (6.9" x 6.3" x 7.7") with protective case

Sample wetted materials

	Common Gas Path (inc O_2 transducer)	5110 (Pump option) adds	5111 (AFCD option) adds	Sample Probe option adds	Sample conditioning panel option adds
302 stainless steel			•		
316 stainless steel	•				
Borosilicate glass	•				
Electroless nickel	•				
Fibre glass					•
Fluorocarbon elastomer (FPM)	•				
Kynar® (PVDF: polyvinylidene disulphide)		•			
Nickel Plated Brass	•				
Nitrile				•	•
PPS (polyphenylene sulphide) with carbon fibre filler	•				
PPS (polyphenylene sulphide)	•				
Perspex					•
Platinum	•				
Platinum/iridium alloy	•				
Polycarbonate				•	
Polypropylene				•	
Polysulphone	•				
Polyurethane				•	
PTFE				•	•
PVC (polyvinylchloride)					•
Ruby			•		
Silica Gel					•
Silicone				•	
Viton®	•				

Compliance

Hazardous area approvals	
ATEX European	Ⓔx II 1G, Ex ia IIC T4 Ga (-10°C < Ta <+50°C) (+14°F < Ta <+122°F)
UKEX Great Britain	Ⓔx II 1G, Ex ia IIC T4 Ga (-10°C < Ta <+50°C) (+14°F < Ta <+122°F)
IECEx International	Ex ia IIC T4 Ga (-10°C < Ta <+50°C) (+14°F < Ta <+122°F)
FM approved (USA)	FM: IS/I/1/ABCD/T4; -10°C≤Ta≤+50°C: IP65 (Division 1) FM: IS/I/0/AEx ia/IIC/T4; -10°C≤Ta≤50°C: IP65 (Zone 0) Indoor (IP65) locations
FM approved (Canada)	FM: IS/I/1/ABCD/T4; -10°C≤Ta≤+50°C: IP65 (Division 1) FM: IS/I/0/Ex ia/IIC/T4; -10°C≤Ta≤+50°C: IP65 (Zone 0) Indoor (IP65) locations
EC directive	This product is in compliance with the EMC Directive, the RoHS Directive, and all other applicable directives.
Electrical safety	Electrical safety to IEC 61010-1

Permitted oxygen measurement and sample pressure ranges for hazardous area location use

Outside atmosphere (external environment)	Portable type	Maximum permitted Oxygen level	Sample gas flammability	Sample pressure	Permitted
Zone 1 or Zone 0 Certified Location ≤21% oxygen 11.6 - 16.0psia (80 - 110kPa abs)	5110 pumped	≤21% oxygen	Non-flammable or Flammable	≤16psia (≤110kPa abs)	Yes
				>16psia (>110kPa abs)	No
	5111 AFCD	≤21% oxygen	Non-flammable or Flammable	≤26psia (≤180kPa abs)	Yes
				>26psia (>180kPa abs)	No

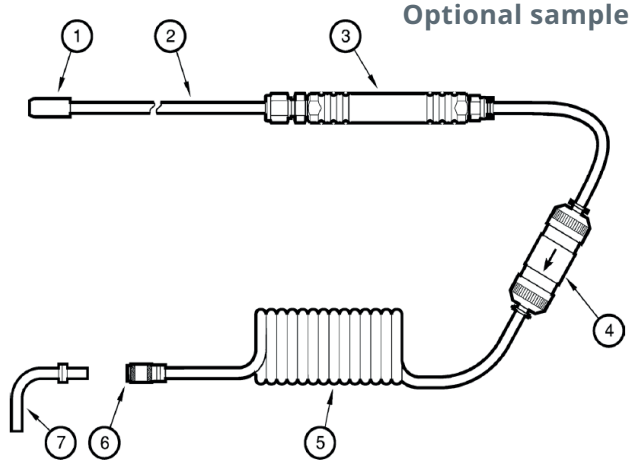
Options - 5110 (internal pump)

Configuration				
5110 Micro i.s Variants	We have two pre-configured 5110 (internal pump) builds that cover the most common chosen option configurations to enable a quick turnaround from specification to delivery.			
Standard Variant 01 (SV01)	The pre-configured standard variant 1 base level configuration, including the Industrial Accuracy oxygen measurement, for general oxygen measurement requirements.			
Standard Variant 02 (SV02)	The pre-configured standard variant 2 base level configuration, including the High Accuracy oxygen measurement, for general oxygen measurement requirements.			
User Configured (UC)	Other analyzer configurations not covered by the two above standard variant configurations.			
Micro i.s. 5110 (Pumped) Portable Analyzer		SV01	SV02	UC
Product Certification	ATEX Cat1(Zone0)/IECEx/c<FM>us	☑	☑	☑
Supply power Lithium ion batteries providing 8-36 hours use, depending on sensor selections	Rechargeable battery UK Rechargeable battery US Rechargeable battery European	☐ ☐ ☐	☐ ☐ ☐	☐ ☐ ☐
Measurement	Oxygen, Industrial Accuracy Oxygen, High Accuracy	☑ ■	■ ☑	☐ ☐
Sampling system	Internal pump with user configurable timer	☑	☑	☑
Inlet coupler	1/4" Barb (standard) 1/8" NPT thread	☐ ☐	☐ ☐	☐ ☐
User manual	English	☑	☑	☑
Sample accessories	Not supplied Sample Conditioning Kit Supplied	☐ ☐	☐ ☐	☐ ☐
Protective Black Bag	Not supplied Supplied*	☐ ☐	☐ ☐	☐ ☐
Probe holder	Not supplied Supplied: Includes in-line filter if sample conditioning kit is not selected	☐ ☐	☐ ☐	☐ ☐
Sample probe++	Not supplied 25cm, 316 stainless steel, with protective silicone tip (remove protective silicone tip for process temperatures >180°C) 1m 316 stainless steel without protective silicone tip	☐ ☐ ☐	☐ ☐ ☐	☐ ☐ ☐
Transport/storage case (safe area only)	Not supplied Supplied	☐ ☐	☐ ☐	☐ ☐
Tick a single box for each selectable option				

☐ Option selectable
■ Option not available in that variant
☑ Pre-selected option

* Supplied by default if sample conditioning kit selected
++ Option applicable if Probe holder option is selected

Optional sample gas probe assembly



1. Protective tip*
2. Probe (25cm or 100cm in length)
3. Handle
4. Filter†
5. Coiled sampled pipe
6. Outlet connector
7. Catchpot inlet adaptor#

* *Removable: only supplied fitted to the 25cm Probe.*
† *Optional - Filter only fitted if sample conditioning kit is not supplied.*
# *Only supplied if sample conditioning kit is selected.*

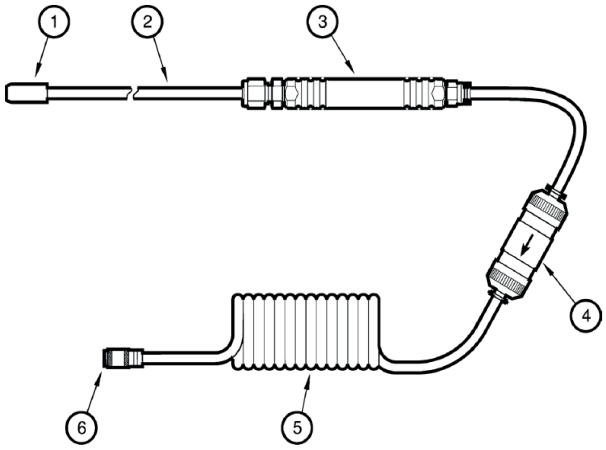
Options - 5111 (AFCD pressure driven)

Configuration				
5111 Micro i.s Variants	We have two pre-configured 5111 (AFCD) builds that cover the most common chosen option configurations to enable a quick turnaround from specification to delivery.			
Standard Variant 01 (SV01)	The pre-configured standard variant 1 base level configuration, including the Industrial Accuracy oxygen measurement, for general oxygen measurement requirements.			
Standard Variant 02 (SV02)	The pre-configured standard variant 2 base level configuration, including the High Accuracy oxygen measurement, for general oxygen measurement requirements.			
User Configured (UC)	Other analyzer configurations not covered by the two above standard variant configurations.			
Micro i.s. 5111 (AFCD) Portable Analyzer		SV01	SV02	UC
Product Certification	ATEX Cat1(Zone0)/IECEx/c<FM>us	☑	☑	☑
Supply power Lithium ion batteries providing 8-36 hours use, depending on sensor selections	Rechargeable battery UK Rechargeable battery US Rechargeable battery European	☐ ☐ ☐	☐ ☐ ☐	☐ ☐ ☐
Measurement	Oxygen, Industrial Accuracy Oxygen, High Accuracy	☑ ■	■ ☑	☐ ☐
Sampling system	Pressure driven AFCD (Automatic Flow Control Device)	☑	☑	☑
Inlet coupler	1/4" Barb (standard) 1/8" NPT thread	☐ ☐	☐ ☐	☐ ☐
User manual	English	☑	☑	☑
Protective Black Bag	Not supplied Supplied	☐ ☐	☐ ☐	☐ ☐
Probe holder	Not supplied Supplied: Includes in-line filter if sample conditioning kit is not selected	☐ ☐	☐ ☐	☐ ☐
Sample probe ++	Not supplied 25cm, 316 stainless steel, with protective tip (remove protective tip for process temperatures >180°C) 1m 316 stainless steel without protective tip	☐ ☐ ☐	☐ ☐ ☐	☐ ☐ ☐
Transport/storage case (safe area only)	Not supplied Supplied	☐ ☐	☐ ☐	☐ ☐
Tick a single box for each selectable option				

☐ Option selectable
■ Option not available in that variant
☑ Pre-selected option

++ Option applicable if Probe holder option is selected

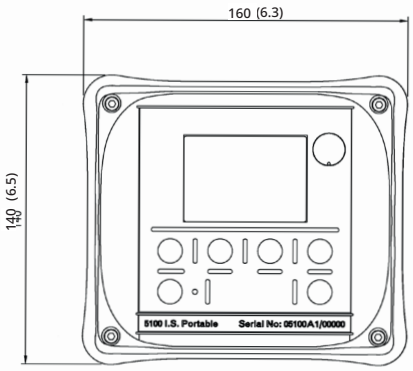
Optional sample gas probe assembly



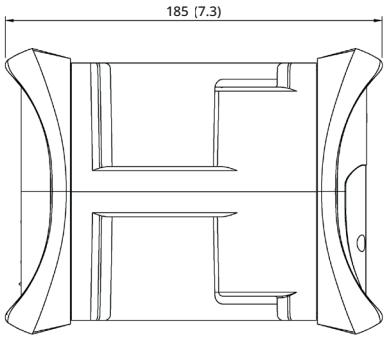
1. Protective tip*
2. Probe (25cm or 100cm in length)
3. Handle
4. Filter
5. Coiled sampled pipe
6. Outlet connector

* Removable: only supplied fitted to the 25cm Probe.

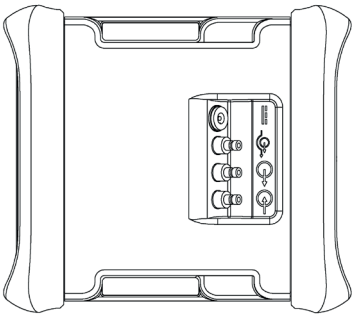
Dimensional drawings



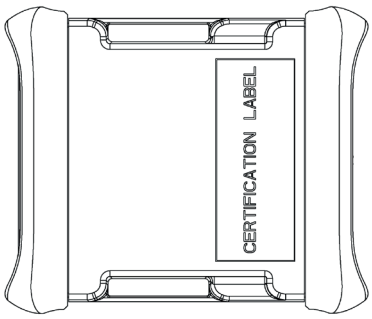
Front



Side



Top



Bottom

Dimensions shown in millimetres
(dimensions in brackets are in inches)

We're ready to help

Whatever your gas analysis requirements, wherever you are.

These analyzers are not intended for any form of use on humans and are not medical devices as described in the Medical Devices legislation or regulation.

Please note: Whilst every effort has been made to ensure accuracy, no responsibility can be accepted for errors and omissions. Data may change, as well as legislation, and you are strongly advised to obtain copies of the most recently issued regulations, standards and guidelines.
This document is not intended to form the basis of a contract.

Servomex has a policy of constant product improvement and reserves the right to change specifications without notice.

PBTDSMicro i.s. Rev.2 Date: 10/24

Analysis that **empowers**

SERVOMEX
a **spectris** company