

SERVOMEX

EMISSIONS ANALYSERS



SERVOPRO

4900

The Servomex 4900 analyser is a cost effective, high performance solution for Continuous Emission Monitoring applications

FEATURES

- Multiple gas capability including O₂, CO, CO₂, NO, SO₂
- Extremely stable and reliable sensors
- MCERTS/QAL1 certified to EN15267-3 and TÜV approved for specific gases and ranges, when used with an accepted sample system
- FM/CSA Approved - Process Control Equipment
- Easy integration with other systems
- Digital Comms: RS232/RS485, Modbus protocol
- Low cost of ownership

APPLICATIONS

- Power Stations
- Refineries
- Iron and Steel
- Cement
- Incineration
- Industrial Boilers

SPECIFICATION

Gases measured:	O ₂	SO ₂ Standard Sensitivity	SO ₂ High Sensitivity	NO	CO Standard Sensitivity	CO High Sensitivity	N ₂ O	CO ₂
PERFORMANCE								
Technology:	Paramagnetic	Infrared (Gfx) ⁵	Infrared (Gfx) ⁵	Infrared (Gfx) ⁵	Infrared (Gfx) ⁵	Infrared (Gfx) ⁵	Infrared (Gfx) ⁵	Infrared(sbsw) ⁶
Range:	0-25% O ₂	0-200 ² /2500ppm(v) SO ₂	0-100/1000ppm(v) SO ₂	0-100/1000ppm(v) NO	0-200/3000ppm(v) CO	0-50/500ppm(v) CO	0-50/500ppm(v) N ₂ O	0-25% CO ₂
Intrinsic error (accuracy)	<0.05% O ₂	5ppm(v) SO ₂ ¹	2ppm(v) SO ₂ ¹	2ppm(v) NO ¹	2ppm(v) CO ¹	0.5ppm(v) CO ¹	0.5ppm(v) N ₂ O ¹	<1% of selected range
Linearity error	<0.05% O ₂	5ppm(v) SO ₂ ¹	2ppm(v) SO ₂ ¹	2ppm(v) NO ¹	2ppm(v) CO ¹	0.5ppm(v) CO ¹	0.5ppm(v) N ₂ O ¹	<1% of selected range
Repeatability	0.05% of reading	5ppm(v) SO ₂ ¹	2ppm(v) SO ₂ ¹	2ppm(v) NO ¹	2ppm(v) CO ¹	0.5ppm(v) CO ¹	0.5ppm(v) N ₂ O ¹	<1% of selected range
Response time (T ₉₀) at max. sample flow rate	15sec	<30sec	<30sec	<30sec	<30sec	<30sec	<30sec	<30sec
Zero drift/week	<0.05% O ₂	10ppm(v) SO ₂	4ppm(v) SO ₂	2ppm(v) NO	4ppm(v)CO	1ppm(v)	1ppm(v) N ₂ O	2% of selected range
Span drift	<0.05% O ₂ /week	2% of reading or 10ppm(v)SO ₂ ⁴ /week	2% of reading or 4ppm(v) SO ₂ ⁴ /week	2% of reading or 1ppm(v) NO ⁴ /week	2% of reading or 4ppm(v)CO ⁴ /week	2% of reading or 1ppm(v) CO ⁴ /week	2% of reading or 1ppm(v) N ₂ O ⁴ /week	1% reading/day
Recommended minimum output range	0-5% O ₂	0-500ppm(v) SO ₂	0-100ppm(v) SO ₂	0-100ppm(v) NO	0-200ppm(v) CO	0-50ppm(v) CO	0-10ppm(v) N ₂ O	80% of selected range
Output fluctuation (peak to peak noise)	<0.01% O ₂	5ppm(v) SO ₂ ¹	2ppm(v) SO ₂ ¹	2ppm(v) NO ¹	2ppm(v) CO ¹	0.5ppm(v) CO ¹	0.5ppm(v) N ₂ O ¹	1% of reading or 0.5% of selected range
Cross sensitivity (zero on nitrogen) ³	20% CO ₂ will have an effect of 0.06% O ₂	20% CO ₂ will have an effect of 5ppm(v) SO ₂ 0.5% H ₂ O will have an effect of -15ppm(v) SO ₂	20% CO ₂ will have an effect of 2ppm(v) SO ₂ 0.5% H ₂ O will have an effect of 15ppm(v) SO ₂	20% CO ₂ will have an effect of 2ppm(v) NO 0.5% H ₂ O will have an effect of -2ppm(v) NO	20% CO ₂ will have an effect of 2ppm(v) CO 2% H ₂ O will have an effect of 0.5ppm(v) CO	20% CO ₂ will have an effect of 1ppm(v) CO 2% H ₂ O will have an effect of 0.5ppm(v) CO	20% CO ₂ will have an effect of 3ppm(v) N ₂ O 2% H ₂ O will have an effect of 0.5ppm(v) N ₂ O	No effects
Ambient pressure coefficient (per 1% change in vent pressure)	1% of reading	0.75% of reading	0.65% of reading	0.3% of reading	0.25% of reading	0.25% of reading	0.5% of reading	<2% of reading
Ambient temperature coefficient (per 10°C/°18 F)	0.1% O ₂ ¹	3% of reading or 15ppm(v) SO ₂ ⁴	3% of reading or 5ppm(v) SO ₂ ⁴	3% of reading or 3ppm(v) NO ⁴	3% of reading or 4ppm(v) CO ⁴	3% of reading or 1ppm(v) CO ⁴	3% of reading or 1ppm(v) N ₂ O ⁴	2% of reading or 1% of selected range ⁴
Sample flow effect for analyser flow rate 500-1500ml/min	0.1% O ₂ ¹	5ppm(v) SO ₂ ¹	2ppm(v) SO ₂ ¹	2ppm(v) NO ¹	2ppm(v) CO ¹	0.5ppm(v) CO ¹	0.5ppm(v) N ₂ O ¹	<3% of reading or 1.5% of selected range ⁴
SIGNAL INPUTS/OUTPUTS								
Analogue outputs	Two Isolated 4-20mA/0-20mA as standard. Additional outputs may be added							
Analogue inputs	Two Isolated 4-20mA/0-20mA as standard							
Analogue output range	Freely selectable over the measurement range							
Alarms	Three volt free single pole relays (264Vac or 30Vdc at 1.0A). Additional relays may be added							
Digital communications	RS232/RS485 Modbus protocol							
PHYSICAL								
Dimensions (WxDxH)	482.6mm (19") x 478mm (18.8") Short Chassis depth or 608mm (23.9") Long Chassis depth x 132.5mm (3U) nominal							
Weight	Typical 22Kg (48.4lb)							

¹ or <1% of reading, whichever is greater

² TÜV validated range

³ data quoted for fluegas applications

⁴ whichever is greater

⁵ Gfx = gas filter correlation infrared technology

⁶ sbsw = single beam single wavelength infrared technology

Note: Other measurements available on request

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EC DIRECTIVE COMPLIANCE

The 4900 analyser complies with the Low Voltage Directive and the EMC Directive

It conforms to the following harmonised European standards for product safety and electromagnetic compatibility:

EN 61010-1: Safety requirements for electrical equipment for measurement, control and laboratory use.

EN 61326-1: Electrical equipment for measurement, control and laboratory use - EMC requirements (All induced errors are less than the intrinsic error).

This product is rated for Overvoltage Category II.

This product is rated for Pollution Degree 2.

SAMPLE GAS

Maximum Temperature:	60°C
Dew Point:	5°C/9°F below minimum ambient
Condition:	Oil free, non-corrosive, non-condensing, non-flammable
Particulates:	<1µm
Pressure:	Sample Pressure externally regulated to typically <1psig to provide specified flow rate.
Flow Rate:	500-1500ml/min.
Gas Connection:	Inlet 1/8" NPT female Outlet 1/4" NPT female

OPERATING ENVIRONMENT

Temperature:	Operating: 5°C to 45°C/41°F to 113°F Storage: -20°C to 60°C/-4°F to 140°F
Atmospheric Pressure:	11 to 18psia/79 to 124 kPaa (for operation up to 2000m altitude.)
Warm Up Time	typically 1 hour from ambient (20°C)
Relative Humidity:	10-90% RH, non-condensing

POWER SUPPLY

The analyser is CSA/FM Approved for only 110-120/220-240V ac ($\pm 10\%$), 50/60Hz, 350VA maximum, but will function correctly for 85-132/170-264V ac, 47-62Hz, 350VA maximum.

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