PRODUCT OVERVIEW

SERVOTOUGH SpectraExact 2500

HAZARDOUS AREA

GAS	MEASURES	APPLICATION
TOXIC	PERCENT	PROCESS CONTROL
FLAMMABLE	TRACE PPM	
CORROSIVE		

SENSING TECHNOLOGY

GAS FILTER CORRELATION

INFRARED

HIGHLY ACCURATE AND ADAPTABLE PHOTOMETRIC ANALYZER FOR SINGLE, DUAL OR TRIPLE COMPONENT PROCESS MONITORING

UNRIVALLED PERFORMANCE

- Suitable for mounting in hazardous area locations
- Highly reliable, accurate and stable

FLEXIBLE

- On line, real time analysis
- Multi or single component gas analysis

EASY TO USE

- Modbus RTU/Modbus TCP (Ethernet) options
- Ideal for diverse gas sample types (0-180°C/32-356°F and 0-150psig/0-10barg/ 0-1,000kPag)

LOW COST OF OWNERSHIP

- Separate cell allows simple cleaning and servicing
- Field proven non-depleting technologies

BENCHMARK COMPLIANCE

- IEC Ex and US hazardous area approvals
- Certified for gases and dust
- Certified to measure a continually flammable sample

KEY APPLICATIONS

- Water in ethylene dichloride/ solvents
- Ethylene production
- Toluene di-isocyanate production
- Chlorine production
- Pure Terephthalic Acid (PTA) production

For more information please contact us

Visit servomex.com/contact

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PRODUCT OVERVIEW

SERVOTOUGH SpectraExact 2500

HAZARDOUS AREA

ENHANCED SAFETY FOR THE MOST DANGEROUS LOCATIONS

When you work on applications with complex process application requirements, you need a highly flexible, easy-to-use solution that is adaptable to your exact process specification monitoring needs.

The SpectraExact is certified for gas and dust zone areas.

MORE FEATURES, MORE FLEXIBILITY

With four model variants to choose from, each utilizing industry-leading IR or UV non-depleting sensing technologies, the SpectraExact offers an exceptional range of options to meet your specific application needs.

A full suite of digital communications platforms enable the full functionality of the SpectraExact to be controlled remotely and safely, with Modbus implemented through a choice of MODBUS RTU or MODBUS TCP/IP (Ethernet) protocols.

Options include a High Integrity cell, supplied with specialist Chemraz "O" rings to ensure improved leak tightness for use in high concentration, highly toxic gas measurements. Meanwhile a heated cell is a standard option available on safe area, IEC Ex, and US class 1 division 2 variants.

UNBEATABLE VALUE OVER PRODUCT LIFE

The ability to reduce ongoing costs and leverage maximum efficiency from process control equipment is essential to your business. This is why SpectraExact features an intelligent design that helps to reduce the frequency of maintenance requirements via sample cell and electronics segregation. This, combined with the use of non-depleting IR and UV photometric sensing technologies, ensures the SpectraExact delivers a long life of performance with a low lifetime cost-of-ownership.

USEFUL LINKS

SERVOMEX SERVICE NETWORK
servomex.com/service

SERVOMEX SYSTEMS INTEGRATED SOLUTIONS
servomex.com/systems

SERVOMEX EXPERT UNRIVALLED KNOWLEDGE AND VISION
servomex.com/expert-guidance

PBTDSSpectraExact Rev.1 Date: 01/22

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TECHNICAL DATA SHEET

SERVOTOUGH SpectraExact 2500

SPECIFICATIONS

GAS MEASURED	See "TYPICAL MEASUREMENTS" on next page			
TECHNOLOGY‡	Non-dispersive infrared, gas filter correlation, ultraviolet, multicomponent infrared			
PERFORMANCE				
Analyzer	2500 Infrared	2510 Gas Filter Correlation	2520 Ultraviolet	2550 Multicomponent Infrared
Intrinsic error (accuracy)	<1% FS*	<1% FS*	<1% FS*	<2% FS*
Response time (T_{90})	11 sec†	11 sec†	11 sec†	11 sec†
Drift (zero) per week	<1% FS	<1% FS‡	<2% FS	<2% FS•
Output fluctuation (noise)	<1% FSD peak to peak	<1% FSD peak to peak	<1% FSD peak to peak	<1% FSD peak to peak
Repeatability	<0.5% FS	<0.5% FS	<0.5% FS	<0.5% FS
Ambient temperature influence	Less than 1% FS zero drift due to rate of ambient temperature change of 25°C/hr (45°F/hr) over a maximum of 25°C (45°F) change	3% FS per 10°C (18°F) change	Less than 2% FS zero drift due to rate of ambient temperature change of 25°C/hr (45°F/hr) over a maximum of 25°C (45°F) change	Less than 1% FS zero drift due to rate of ambient temperature change of 25°C/hr (45°F/hr) over a maximum of 25°C (45°F) change
Min. recommended range (application dependent)	10% FS	10% FS	10% FS	10% FS
Recommended calibration frequency	Application dependent			
Cross sensitivity	Application dependent			
SIGNAL OUTPUTS/INPUTS				
Analog output	2 x isolated 4-20mA/0-20mA as standard. Additional outputs can be added			
Output range	Analog output parameters freely selectable over measurement range			
Alarms & relays	3 x volt free single pole relays as standard. Additional relays can be added			
Digital communications	Optional Modbus RTU RS485 or Modbus TCP Ethernet			
PHYSICAL				
Weight	From 27kg (55lbs) to 50kg (110lbs)			
Dimensions, WxDxH	Max: 1620 x 284 x 500mm (63.7 x 11.2 x 20.0") (inc. allowance to open covers) Min: 620 x 284 x 241mm (24.2 x 11.2 x 9.5")			
Mounting	Wall			
SAMPLE CONDITIONS				
Temperature	0°C to +180°C (+32°F to +356°F)			
Sample pressure	0-10barg/0-1,000kPa gauge (0-150psig) (for high pressure operation contact Servomex)			
Flow rate	0.2-5.0l/min gas applications 0.3-1.0l/min liquid applications**			
Condition	Gas: clean and non-condensing at the temperature of operation, free from particulates			

* When used under reference conditions - an additional error of 5% FS may be observed at some frequencies under the influence of radiated RF (radio frequency) fields specified for industrial environments
† Minimum, electronic only, excludes sampling
‡ Drift is application dependent, for ranges <100ppm contact Servomex for more information
• Drift is application dependent, <1% drift is available for certain measurements. Contact Servomex for more information.
** Only available on the 2500 analyzer

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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OPERATING ENVIRONMENT	
Operating temperature	0°C to +55°C (+32°F to +131°F) (Heated cell >130°C: max 50°C (122°F))
Storage temperature	-25°C to +70°C (-13°F to +158°F)
Relative humidity	0-95% RH, non-condensing
Altitude	3,000m
Warm-up time	Typically 2-10h, depending on application and environment
Rate of ambient temperature change	<25°C/h (45°F/h)
Ingress protection	IP66

UTILITIES	
Supply voltage	115/230Vac ±15% or 100/200Vac ±15% 50/60Hz
Rated power	120VA without optional heated cell 300VA with optional electrically heated cell
Zero gas	Typically nitrogen/liquid - application dependent
Span gas	Gas/liquid - application dependent
Sample connection	1/4"OD tube

TYPICAL MEASUREMENTS

2500 Gas	2500 Gas	2500 Liquid	2510	2520	2550	2550
Acetic Acid Acetone Acetylene Ammonia Benzene Butane CO_2 CO CS_2 COS Chloroform Ethane Ethanol Ethylene Ethylene oxide HCl - % Trichlorotrifluoroethene Acetaldehyde Freons	Methane Methanol NCO NO N_2O NO_2 Hexane Phosgene Propane Propylene SO_2 THC Toluene H_2O (vap)	H_2O in: Acetic acid Acetone EDC Gylcols NMP THF VAM VCM Methanol Ethanol Isobutanol NaOH	Acetylene CO_2 CO NO SO_2 N_2O CH_4 C_2H_4	Chlorine Cl_2	C_2H_4 and CO CO_2 & CO C_2H_4 & CO_2 C_2H_4,CO & CO_2 CH_4 & CO CH_4 & CO_2 CH_4, CO & CO_2 CH_4 & C_2H_4 Propane & CO Butane, CO & CO_2 Butane & propyl-ene Ethylene & Pro-pylene CO_2 & acetylene Butane & H_2O (vap) CO & DME Methyl acetylene & propadiene	COS & SO_2 C_2H_4 & C_2H_6 C_3H_6 & C_3H_8 Acetone & CO

SAMPLE WETTED MATERIALS

	Application configurable from
Sample cell options	Stainless steel, Hastelloy®, Monel®, titanium
Seals options	Viton®, Chemraz®, PTFE
Cell window options	Depends on application spectroscopy

COMPLIANCE

HAZARDOUS AREA APPROVALS	Model 2500 Series Gas Analyzer with unheated cell or heated cell up to:	
	130°C Operation	80°C Operation
FM Approval	Non-incendive Class I, Division 2, Group A, B, C, D T3 Class II, Division 2, Groups F, G T3 Dust-ignitionproof Class III, Division 1, 2 T3 Non-Sparking and Enclosed Break Class I, Zone 2 AEx nA nC IIC T3 Gc Protection by Enclosure Zone 21 AEx tD T175°C IP6X Db -10°C ≤ Ta ≤ +55°C	Non-incendive Class I, Division 2, Group A, B, C, D T4 Class II, Division 2, Groups F, G T4 Dust-ignitionproof Class III, Division 1, 2 T4 Non-Sparking and Enclosed Break Class I, Zone 2 AEx nA nC IIC T4 Gc Protection by Enclosure Zone 21 AEx tD T125°C IP6X Db -10°C ≤ Ta ≤ +55°C
IEC Ex Zone 2 Approval - Gases	Ex nA nC IIC T3 Gc (Tamb = -10°C to +55°C) for heated cell and heated cell up to 170°C (130°C maximum operational temperature)	Ex nA nC IIC T4 Gc (Tamb = -10°C to +55°C) for unheated cell and heated cell up to 120°C (80°C operational)
IEC Ex Zone 2 Approval - Dusts	Ex tb IIIB T175°C Db IP6X (Tamb = -10°C to +55°C) and heated cell up to 170°C (130°C maximum operational temperature)	Ex tb IIIB T80°C Db IP6X (Tamb = -10°C to +55°C) for unheated cell Ex tb IIIB T125°C Db IP6X (Tamb = -10°C to +55°C) and heated cell up to 120°C (80°C maximum operational temperature)
IEC Ex Zone 1 Approval - Gases (excluding 2520 Analyzer and electrical heated cells)	Ex px ia [ia] IIC T5 Gb (Tamb = -20°C to +55°C) Ex px ia [ia] IIC T4 Gb (Tamb = -20°C to +55°C), fitted with steam heated cell	
ELECTRICAL SAFETY	Electrical safety to IEC 61010-1	

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CONFIGURATION

Measurement

The choice of analyzer will depend on the measurement and application.
How many components do you want to measure in one sample stream?
What do you want to measure?
What measurement range?
What other gases are present? In what ranges?
What are the temperature, pressure, dewpoint and particulate loading of the sample?

Common measurements include:

for the 2500:

% & ppm(v) carbon dioxide
% & ppm(v) carbon monoxide
% & ppm(v) methane
%, ppm(v) & LEL total hydrocarbons
ppm(v) water in solvents (e.g. EDC)
% water in solvents (e.g. acetic acid)
% & ppm(v) sulphur dioxide
% ethylene
% wl sodium hydroxide in water
% & ppm(v) phosgene

for the 2510:

ppm(v) of carbon dioxide, carbon monoxide, nitric oxide

for the 2550:

% dual component carbon dioxide/carbon monoxide, triple component carbon dioxide/carbon monoxide/methane

for the 2520:

% chlorine

Other measurements are available. Contact your local Servomex company using the questionnaire to provide details of your application

Hazardous area requirement

Is the analyzer to be installed in a hazardous area?
If so, what rating?

There are versions of the 2500/2510/2520/2550 suitable for safe area.
IEC Ex Zone 1* and 2, and US FM2 Class 1 Div 2 locations. The 2520 is suitable for Zone 2.

* Servomex purge system required.

Sample wetted materials

Cell

A 316 stainless steel sample cell is fitted as standard, capable of high temperature and pressure operation. Other metals (e.g. Hastelloy® or Monel®) are available as options if required by a specific application.

O-rings

Viton® sample cell o-rings are fitted as standard. PTFE or Chemraz® o-rings are available as options if required by a specific application.

Additional options

Sample pressure compensation (for gas samples only)

For use when the sample pressure is changing. A pressure transducer, factory calibrated for each specific application, enables the analzyer to compensate for changes in sample pressure.

Sample temperature compensation

For use, usually with liquid samples, when the sample temperature is changing. A thermocouple, factory calibrated for each specific application, enables the analyzer to compensate for changes in sample temperature.

Heated sample cell

For use usually with gas samples, it ensures more reproducable results by making all measurements at a constant temperature.

Extra outputs

Two analog isolated mA outputs and three relay contact pairs are fitted as standard.

It is possible to fit an extra two relays, or a combination of two extra relays and two extra mA outputs.

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QUESTIONNAIRE

Measurement(s)

	Component to be measured	Range	Units
1			
2			
3			

Sample conditions

Temperature	°C	°F
Pressure	psig	barg
Dewpoint	°C	°F
Particulates	mg/m³	

Is there a sample conditioning system between the sample point and the analzyer? Yes ☐ No ☐

If yes, please provide further details in the box below.

Background gases

(If a sample system is installed, please give details of background gases and sample conditions at the outlet of the system. If no sample system is fitted, please show background gases and conditions at the sampling point)

Component	Concentration	Units

Hazardous area requirements

Is the analyzer to be installed in a hazardous area?

Yes ☐ No ☐

If yes, please provide further details

Sample wetted materials

Choose from the following, materials suitable for use with the sample gas:

‡ If you choose other, please give details, including known sample/material incompatibility information.

Cell		O-rings	
316 stainless steel	☐	Viton®	☐
Hastelloy® C	☐	Chemraz®	☐
Monel®	☐	PTFE	☐
Titanium	☐		
Other‡	☐	Other‡	☐

Additional options

Sample pressure compensation	☐
Sample temperature compensation	☐
Heated sample cell	☐

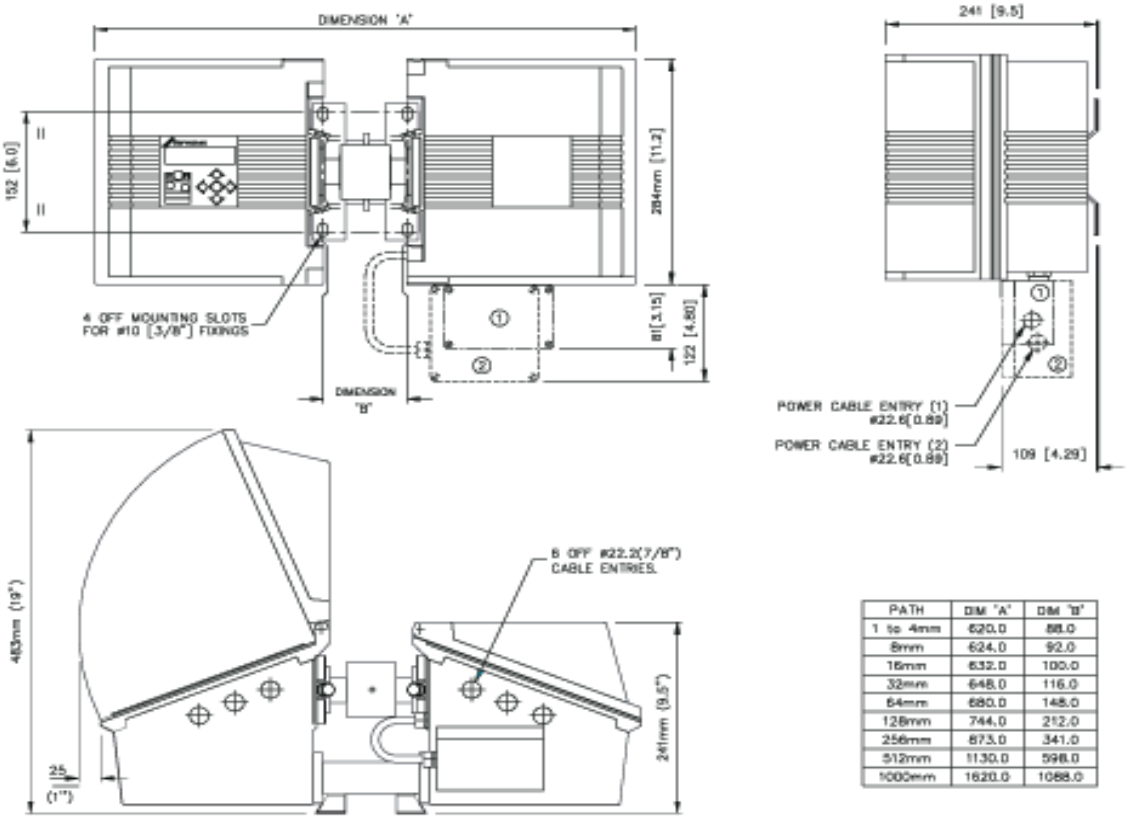
Extra outputs

No extra	☐
2 extra relay & 2 extra mA output	☐
2 extra relay	☐

Power supply

Voltage	
Frequency	

DIMENSIONAL DRAWINGS



PATH	DIM 'A'	DIM 'B'
1 to 4mm	620.0	68.0
8mm	624.0	92.0
16mm	632.0	100.0
32mm	648.0	116.0
64mm	680.0	148.0
128mm	744.0	212.0
256mm	873.0	341.0
512mm	1130.0	598.0
1000mm	1620.0	1088.0

Dimensions shown in millimetres [inches]

WE'RE READY TO HELP

WHATEVER YOUR GAS ANALYSIS REQUIREMENTS, WHEREVER YOU ARE

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