

PRODUCT OVERVIEW

SERVOTOUGH SpectraExact 2500

HAZARDOUS AREA



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

| GAS | MEASURES | APPLICATION |
|-----------|-----------|-----------------|
| TOXIC | PERCENT | PROCESS CONTROL |
| FLAMMABLE | TRACE PPM | |
| CORROSIVE | | |

SENSING TECHNOLOGY

GAS FILTER
CORRELATION



INFRARED



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



SERVOMEX.COM

SERVOMEX
a spectris company

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



PBTDSSpectraExact_Rev.1 Date: 01/22

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.

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. © Servomex Group Limited. 2022. A Spectris company. All rights reserved.

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 (T₉₀) | 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"



SERVOMEX.COM

SERVOMEX
a spectris company

| 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 ₂ O NO ₂ Hexane Phosgene Propane Propylene SO ₂ THC Toluene H ₂ O (vap) | H ₂ O in: Acetic acid Acetone EDC Gylcols NMP THF VAM VCM Methanol Ethanol Isobutanol NaOH | Acetylene CO ₂ CO NO SO ₂ N ₂ O CH ₄ C ₂ H ₄ | Chlorine Cl ₂ | C ₂ H ₄ and CO CO ₂ & CO C ₂ H ₄ & CO ₂ C ₂ H ₄ , CO & CO ₂ CH ₄ & CO CH ₄ & CO ₂ CH ₄ , CO & CO ₂ CH ₄ & C ₂ H ₄ Propane & CO Butane, CO & CO ₂ Butane & propylene Ethylene & Propylene CO ₂ & acetylene Butane & H ₂ O (vap) CO & DME Methyl acetylene & propadiene | COS & SO ₂ C ₂ H ₄ & C ₂ H ₆ C ₃ H ₆ & C ₃ H 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 | |



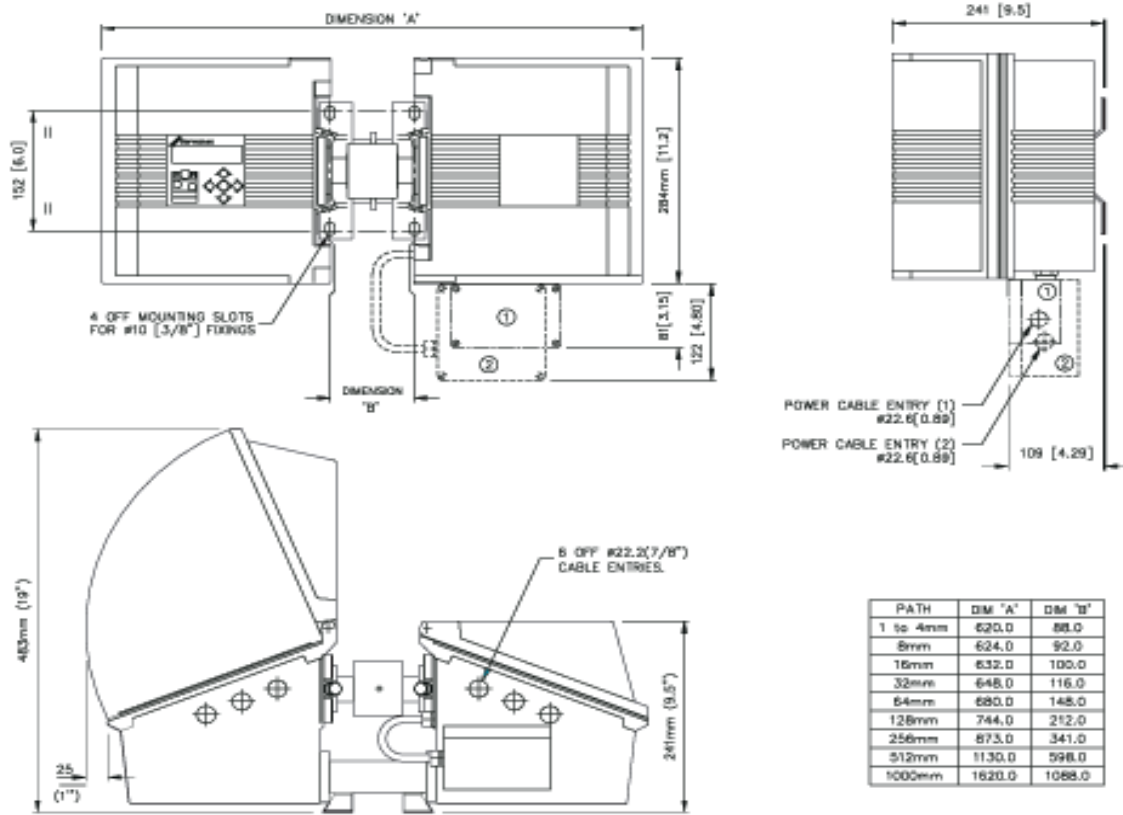
| CONFIGURATION | |
|-----------------------------------|--|
| Measurement | <p>The choice of analyzer will depend on the measurement and application. How many components do you want to measure in one sample stream? What do you want to measure? What measurement range? What other gases are present? In what ranges? What are the temperature, pressure, dewpoint and particulate loading of the sample?</p> <p>Common measurements include:</p> <p>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 % w/ sodium hydroxide in water % & ppm(v) phosgene</p> <p>for the 2510: ppm(v) of carbon dioxide, carbon monoxide, nitric oxide</p> <p>for the 2550: % dual component carbon dioxide/carbon monoxide, triple component carbon dioxide/carbon monoxide/methane</p> <p>for the 2520: % chlorine</p> <p>Other measurements are available. Contact your local Servomex company using the questionnaire to provide details of your application</p> |
| Hazardous area requirement | <p>Is the analyzer to be installed in a hazardous area? If so, what rating?</p> <p>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.</p> <p>* Servomex purge system required.</p> |
| Sample wetted materials | <p>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.</p> <p>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.</p> |
| Additional options | <p>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 analyzer to compensate for changes in sample pressure.</p> <p>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.</p> <p>Heated sample cell For use usually with gas samples, it ensures more reproducible results by making all measurements at a constant temperature.</p> |
| Extra outputs | <p>Two analog isolated mA outputs and three relay contact pairs are fitted as standard.</p> <p>It is possible to fit an extra two relays, or a combination of two extra relays and two extra mA outputs.</p> |



| QUESTIONNAIRE | | | |
|---|--|--|---|
| Measurement(s) | Component to be measured | Range | Units |
| | 1 <input type="text"/> | <input type="text"/> | <input type="text"/> |
| | 2 <input type="text"/> | <input type="text"/> | <input type="text"/> |
| | 3 <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Sample conditions | Temperature | <input type="text"/> °C | <input type="text"/> °F |
| | Pressure | <input type="text"/> psig | <input type="text"/> barg |
| | Dewpoint | <input type="text"/> °C | <input type="text"/> °F |
| | Particulates | <input type="text"/> mg/m ³ | |
| | <p>Is there a sample conditioning system between the sample point and the analyzer? Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>If yes, please provide further details in the box below.</p> <div style="border: 1px solid black; height: 40px; width: 100%;"></div> | | |
| Background gases <small>(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)</small> | Component | Concentration | Units |
| | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| Hazardous area requirements | Is the analyzer to be installed in a hazardous area? Yes <input type="checkbox"/> No <input type="checkbox"/> | | <div style="border: 1px solid black; height: 30px; width: 100%;"></div> |
| | 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. <div style="border: 1px solid black; height: 80px; width: 100%;"></div> |
| | Cell 316 stainless steel <input type="checkbox"/> Hastelloy® C <input type="checkbox"/> Monel® <input type="checkbox"/> Titanium <input type="checkbox"/> Other‡ <input type="checkbox"/> | O-rings Viton® <input type="checkbox"/> Chemraz® <input type="checkbox"/> PTFE <input type="checkbox"/> Other‡ <input type="checkbox"/> | |
| Additional options | Sample pressure compensation | <input type="checkbox"/> | |
| | Sample temperature compensation | <input type="checkbox"/> | |
| | Heated sample cell | <input type="checkbox"/> | |
| Extra outputs | No extra | <input type="checkbox"/> | |
| | 2 extra relay & 2 extra mA output | <input type="checkbox"/> | |
| | 2 extra relay | <input type="checkbox"/> | |
| Power supply | Voltage | <input type="text"/> | |
| | Frequency | <input type="text"/> | |



DIMENSIONAL DRAWINGS



Dimensions shown in millimetres [inches]



> WE'RE READY TO HELP

WHATEVER YOUR GAS ANALYSIS REQUIREMENTS, WHEREVER YOU ARE

PBTDSpectraExact Rev.1 Date: 01/22

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.

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. © Servomex Group Limited. 2022. A Spectris company. All rights reserved.