



Multi-Component Gas Analyzer

## VA-5000 Series

Sample Gas Conditioning System

## VS-5000 Series



# Simple, Flexible, and Reliable!

## Multi-Component Gas Analyzer VA-5000

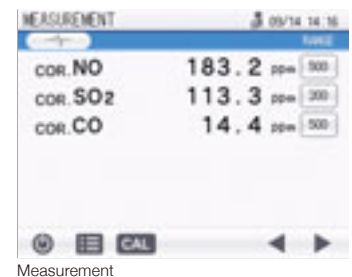
### Flexibility for a Various of Applications

- Wide selection of measurement range from ppm to percent.
- Capability to simultaneously measure up to four gas components (e.g. NDIR, NDIR, CLA, and Galvanic cell. In case of four gas components, one should be Galvanic cell.).
- Internal automated correction of measurements such as O<sub>2</sub> corrected value. It is no need to use additional external PLC.
- Thermostat for optical unit allows us to use for tougher sample gas condition.



### User Friendly Display

- Real time analysis by the color trend graph on 5.7-inch LCD touch screen. It makes easier to recognize when the measurement value becomes stable.
- Compact size: 430mm(W) x 380mm(D) x 132mm(H) with 3 height units (HU) fits to 19" rack and can be easily used for replacement and installation in places with tight space.
- Standard Modbus™ TCP communication with optional analog and digital I/O.
- Internal data storage for up to 15 days of data accessible by USB (1GB).



### Plug & Play Functions

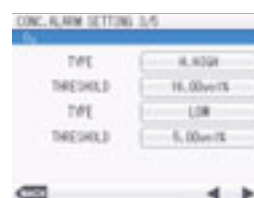
- Modular design allows flexible upgrade of analyzer starting from one component.
- Modular design minimizes break down time by quick replacement of required parameter.
- Just connect the line and upload setting data via USB. No need of any special and time consuming adjustments at site.



# Series

## Other Features

- Availability of auto calibration function in combination with sampling unit VS-5000 or by controlling external solenoid valves.
- Blowback control function enables measurement of sample gas with high dust concentration. Our system can control blowback via digital output with internal sequencer.  
\*Please consult us for the details.
- Ability to have multiple analog outputs even for same parameter within max. 8 channels.  
\*Please consult us for the details. It needs adjustment at factory.
- Self-diagnosis function enables high/low concentration alarms, calibration error alarm, etc.
- Ability to show the internal signal data such as "Internal temperature control data", "Detector voltage signal", etc. for quick system diagnosis. This data can be logged through Modbus™ TCP to your data logger.



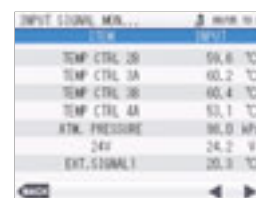
Concentration Alarm Setting



Auto Calibration Setting



Blowback Setting



Indication of Internal Signals

## Sample Gas Conditioning System VS-5000 Series

- Compact 19-inch rack mount size for easy installation.
- All sample conditioning components (pumps, coolers, filters, flow controls, NO<sub>x</sub> converter, etc.) are integrated into a single case.
- Capability to support two VA-5000 analyzers with a single VS-5000 depending on application.  
\*Please consult us for the detail.



## Application examples

- The VA-5000 Series provides a wide range of measurements enabling the analyzers to be used in R&D settings, Quality control and also as Continuous Emission Monitoring System (CEMS) in industry.
  - CEMS (Continuous Emission Monitoring System)
  - Emission monitoring of N<sub>2</sub>O for sludge waste incinerator
  - Research of SCR catalyst
  - Research of fuel cell
  - Research of green house gas
  - Research of metabolism for animal farming
  - Quality check of calibration gas
  - Quality check of combustion appliances
  - Combustion efficiency control in small boilers
  - Monitoring of biogas and fermentation
  - Process control on the steel production plant such as direct reduced iron manufacturing.
  - Process control of O<sub>2</sub> in aeration tank of water treatment plant
  - Process control in shape memorize shirts production
  - Process control of combustion furnace in ceramic production (porcelain, sanitary, advanced materials etc.)

The free combination of modules and sampling units can satisfy diverse measurement needs.

| Module | Analysis unit | NDIR1                                                                                     | NDIR2 | NDIR3 | CLA             | MPA | Galvanic       | Zirconia | PMA | Sampling Unit |         |         |         |
|--------|---------------|-------------------------------------------------------------------------------------------|-------|-------|-----------------|-----|----------------|----------|-----|---------------|---------|---------|---------|
|        |               | CO·CO <sub>2</sub> ·CH <sub>4</sub> ·N <sub>2</sub> O·NO·SO <sub>2</sub> ·NH <sub>3</sub> |       |       | NO <sub>x</sub> |     | O <sub>2</sub> |          |     | VS-5001       | VS-5002 | VS-5003 | VS-5004 |
| 1      | VA-5001       | •                                                                                         |       |       |                 |     |                |          |     | •             |         |         |         |
|        | VA-5002       |                                                                                           |       |       | •               |     |                |          |     |               |         | •       |         |
|        | VA-5003       |                                                                                           |       |       |                 | •   |                |          |     |               | •       |         |         |
|        | VA-5004       |                                                                                           |       |       |                 |     | •              |          |     | •             |         |         |         |
|        | VA-5005       |                                                                                           |       |       |                 |     |                | •        |     | •             |         |         |         |
|        | VA-5006       |                                                                                           |       |       |                 |     |                |          | •   | •             |         |         |         |
| 2      | VA-5011       | •                                                                                         | •     |       |                 |     |                |          |     | •             |         |         |         |
|        | VA-5012       | •                                                                                         |       |       | •               |     |                |          |     |               |         | •       |         |
|        | VA-5013       | •                                                                                         |       |       |                 | •   |                |          |     |               | •       |         |         |
|        | VA-5014       | •                                                                                         |       |       |                 |     | •              |          |     | •             |         |         |         |
|        | VA-5015       | •                                                                                         |       |       |                 |     |                | •        |     | •             |         |         |         |
|        | VA-5016       | •                                                                                         |       |       |                 |     |                |          | •   | •             |         |         |         |
|        | VA-5023       |                                                                                           |       |       | •               | •   |                |          |     |               |         |         | •       |
|        | VA-5024       |                                                                                           |       |       | •               |     | •              |          |     |               |         | •       |         |
|        | VA-5025       |                                                                                           |       |       | •               |     |                | •        |     |               |         | •       |         |
|        | VA-5026       |                                                                                           |       |       | •               |     |                |          | •   |               |         | •       |         |
| 3      | VA-5111       | •                                                                                         | •     | •     |                 |     |                |          |     | •             |         |         |         |
|        | VA-5112       | •                                                                                         | •     |       | •               |     |                |          |     |               |         | •       |         |
|        | VA-5113       | •                                                                                         | •     |       |                 | •   |                |          |     |               | •       |         |         |
|        | VA-5114       | •                                                                                         | •     |       |                 |     | •              |          |     | •             |         |         |         |
|        | VA-5115       | •                                                                                         | •     |       |                 |     |                | •        |     | •             |         |         |         |
|        | VA-5116       | •                                                                                         | •     |       |                 |     |                |          | •   | •             |         |         |         |
|        | VA-5123       | •                                                                                         |       |       | •               | •   |                |          |     |               |         |         | •       |
|        | VA-5124       | •                                                                                         |       |       | •               |     | •              |          |     |               |         | •       |         |
|        | VA-5125       | •                                                                                         |       |       | •               |     |                | •        |     |               |         | •       |         |
|        | VA-5126       | •                                                                                         |       |       | •               |     |                |          | •   |               |         | •       |         |
| 4      | VA-5111G      | •                                                                                         | •     | •     |                 |     | •              |          |     | •             |         |         |         |
|        | VA-5112G      | •                                                                                         | •     |       | •               |     | •              |          |     |               |         | •       |         |

\*Please consult us for detailed combinations.

Wide measurement ranges are provided for each module

| Measurement method | Component          | Option range              | Standard range |            | Zero drift         |                                                                                                                   | Span drift*1       |                                                                                                                   | Repeatability |
|--------------------|--------------------|---------------------------|----------------|------------|--------------------|-------------------------------------------------------------------------------------------------------------------|--------------------|-------------------------------------------------------------------------------------------------------------------|---------------|
|                    |                    | High Sensitive Min. range | Min. range     | Max. range | Standard range     | High Sensitive                                                                                                    | Standard range     | High Sensitive                                                                                                    |               |
| NDIR               | CO                 | 0-50 ppm                  | 0-200 ppm      | 0-100 vol% | ±2.0%/week of F.S. | ±2.0%/day<br>(CO : 0-50-99 ppm range, CO <sub>2</sub> : 0-50-99 ppm range, SO <sub>2</sub> : 0-100-199 ppm range) | ±2.0%/week of F.S. | ±2.0%/day<br>(CO : 0-50-99 ppm range, CO <sub>2</sub> : 0-50-99 ppm range, SO <sub>2</sub> : 0-100-199 ppm range) | ±0.5% of F.S. |
|                    | CO <sub>2</sub>    | 0-50 ppm                  | 0-100 ppm      | 0-100 vol% |                    |                                                                                                                   |                    |                                                                                                                   |               |
|                    | CH <sub>4</sub>    | 0-100 ppm                 | 0-200 ppm      | 0-100 vol% |                    |                                                                                                                   |                    |                                                                                                                   |               |
|                    | N <sub>2</sub> O   | NA                        | 0-100 ppm      | 0-5000 ppm |                    |                                                                                                                   |                    |                                                                                                                   |               |
|                    | NO                 | NA                        | 0-500 ppm      | 0-1 vol%   |                    |                                                                                                                   |                    |                                                                                                                   |               |
|                    | SO <sub>2</sub>    | 0-100 ppm                 | 0-200 ppm      | 0-10 vol%  |                    |                                                                                                                   |                    |                                                                                                                   |               |
|                    | NH <sub>3</sub>    | NA                        | 0-100 ppm      | 0-1000 ppm |                    |                                                                                                                   |                    |                                                                                                                   |               |
| CLA                | NO/NO <sub>x</sub> | NA                        | 0-20 ppm       | 0-5000 ppm | ±2.0%/week of F.S. |                                                                                                                   |                    |                                                                                                                   | ±0.5% of F.S. |
| MPA                | O <sub>2</sub>     | NA                        | 0-5 vol%       | 0-100 vol% | ±2.0%/week of F.S. |                                                                                                                   | ±2.0%/week of F.S. |                                                                                                                   | ±0.5% of F.S. |
| Galvanic           |                    | NA                        | 0-5 vol%       | 0-25 vol%  | ±1.0% /day of F.S. |                                                                                                                   | ±1.0% /day of F.S. |                                                                                                                   | ±0.5% of F.S. |
| Zirconia           |                    | NA                        | 0-5 vol%       | 0-25 vol%  | ±1.0%/week of F.S. |                                                                                                                   | ±2.0%/week of F.S. |                                                                                                                   | ±0.5% of F.S. |
| PMA                |                    | NA                        | 0-5 vol%       | 0-100 vol% | ±2.0%/week of F.S. |                                                                                                                   | ±2.0%/week of F.S. |                                                                                                                   | ±0.5% of F.S. |

Note 1: Select the lowest range and maximum range ratio within the above concentration ranges according to the following conditions.

[NDIR] 5 ranges with a maximum ratio between the lowest and highest range (range ratio) of 10x (or 20x as an option, although this may be limited by the cell length).

[CLA] 8 ranges with a maximum range ratio of 100x (if the maximum range exceeds 2000ppm, the minimum range should be 50ppm or more).

[MPA] 5 ranges with a maximum range ratio of 10x; [Galvanic] 5 ranges with a maximum range ratio of 5x; [Zirconia] 5 ranges with a maximum range ratio of 5x.

[PMA] 3 ranges with a maximum range ratio of 10x.

Note 2: Contact us if you require measurement of special gases such as NH<sub>3</sub>.

\*1% of span drift is achievable with special adjustment at factory. Please contact us for the details.

## Various combinations of sensor modules furnish excellent flexibility

The free combination of measurement modules utilizing different technologies to measure different gases makes the VA-5000 Series truly applicable to the diverse needs of gas analysis for process control, environmental monitoring or R&D testing, etc. The sensors lineup includes the NDIR method to measure 9 different gases in a wide ranges, the CLA method which allows the measurement of NO<sub>x</sub> in low concentrations, and four types of O<sub>2</sub> detectors to be selected as per your measurement requirements.

### SO<sub>2</sub>, CO, CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, NO, NH<sub>3</sub>

#### NDIR

#### Dual-beam Non-Dispersive Infrared Absorption Method

As sample gas flow through the measurement cell, a beam of infrared energy (at a wavelength appropriate for the gas being measured) travels through the sample gas and strikes the infrared detector. The gas being measured absorbs infrared energy and reduces the energy reaching the IR detector. As a result, the pressure of the gas in the first chamber of the detector is reduced causing gas to flow from this chamber to the other. This gas flow passes over the precise temperature sensor between the chambers and reduces the resistance value of the sensor element. Since the resistance value was previously calibrated relative to a specific gas concentration, the measured resistance value can be displayed as a gas concentration reading for the sample gas. HORIBA's MEMS (Micro Electro Mechanical Systems) technology allows HORIBA to manufacture IR temperature sensor that is very small yet very sensitive, highly reliable, and vibration-resistant.

\*When using the NDIR carbon dioxide (CO<sub>2</sub>) analyzer, assure that the background concentration of CO<sub>2</sub> in the operating environment is stable.

\*CO interference for N<sub>2</sub>O measurement is eliminated by improved NDIR detector.

### NO/NO<sub>x</sub>

#### CLA

#### Chemiluminescence method

The NO<sub>x</sub> analysis module uses the sensitive chemiluminescence method (CLA) which permits NO<sub>x</sub> measurements in the range as low as 0-20 ppm. The chemiluminescence analyzer has virtually zero interference. HORIBA special technology and experience has virtually eliminated CO<sub>2</sub> quenching and water vapor interference; operates at atmospheric pressure.

### O<sub>2</sub>

Choose from four analysis methods for the oxygen analyzer module.  
Select the sensor module based on your specific requirements and sample gas conditions.

#### MPA

#### Magnetopneumatic

Highly accurate and stable measurement unaffected by coexisting gases or external vibration.

#### Zirconia

#### Zirconia

Stable measurement unaffected by environmental conditions

#### Galvanic Cell

#### Galvanic cell

Stable measurement with a compact and lightweight sensor

#### PMA

#### Paramagnetic

High accuracy, fast response time and absolute linearity provide advantage in the measurement.

### Characteristics of O<sub>2</sub> analyzers

|                          |                                          | MPA | Zirconia | Galvanic | PMA |
|--------------------------|------------------------------------------|-----|----------|----------|-----|
| Performance              | Stability of design                      | ●   | ●        | ●        | ●   |
|                          | Warm-up start up performance             | ●   | ●        | ●        | ●   |
| Sample gas condition     | Flammable gas is present                 | ●   |          |          |     |
|                          | High-concentration acidic gas is present | ●   |          |          |     |
|                          | Alkaline gas is present                  |     |          |          |     |
| Installation environment | Sample flow rate should be minimized     | ●   |          |          | ●   |
|                          | Carrier gas is not available             |     | ●        | ●        | ●   |
|                          | VS-5000 sampling system not used         |     | ●        | ●        | ●   |
|                          | Installation environmental is vibrating  |     | ●        | ●        |     |
| Cost and other points    | Operation costs should be minimized      |     | ●        |          | ●   |
|                          | Maintenance should be minimized          | ●   | ●        |          | ●   |

\*When using the zirconia oxygen (O<sub>2</sub>) analyzer and the sample gas contains reducing gases (carbon monoxide (CO), total hydrocarbons (THC), and/or hydrogen (H<sub>2</sub>), to prevent rapid deterioration of the zirconia sensor, the coexisting oxygen and water vapor concentrations must exceed the total concentration of the reducing gases.

The sample gas must meet this requirement: Reducing gas + H<sub>2</sub> < H<sub>2</sub>O + O<sub>2</sub>

Types of reducing gas: CO, H<sub>2</sub>, and THC

Allowable concentrations: CO < 5000 ppm,

H<sub>2</sub> < 1000ppm, when THC is included, CO + H<sub>2</sub> < H<sub>2</sub>O + O<sub>2</sub>

Types of reducing gas: CO, H<sub>2</sub>, THC

Allowable concentrations: CO < 5000 ppm, H<sub>2</sub> < 1000 ppm. When THC is included, CO + H<sub>2</sub> < H<sub>2</sub>O + O<sub>2</sub>

Example 1:  $\frac{\text{THC}}{1000\text{ppm}} + \frac{\text{CO}}{2000\text{ppm}} + \frac{\text{H}_2}{1000\text{ppm}} < \frac{\text{H}_2\text{O}}{8000\text{ppm}} + \frac{\text{O}_2}{1000\text{ppm}}$  (acceptable)

Example 2:  $\frac{\text{THC}}{5000\text{ppm}} + \frac{\text{CO}}{4000\text{ppm}} + \frac{\text{H}_2}{1000\text{ppm}} < \frac{\text{H}_2\text{O}}{8000\text{ppm}} + \frac{\text{O}_2}{1000\text{ppm}}$  (unacceptable)

## Specifications

### VA-5000 Analysis unit

| Measurement principle |                 |          | NDIR                                                                                                                                                                                                                                                                              | CLA      | Magnetopneumatic | Galvanic cell                                                | Zirconia | Paramagnetic |
|-----------------------|-----------------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|------------------|--------------------------------------------------------------|----------|--------------|
| Performance           | Linearity       | Standard | ±1.0% F.S.                                                                                                                                                                                                                                                                        |          |                  |                                                              |          |              |
|                       |                 | Option   | ±2.0% F.S.(range ratio 1:20)                                                                                                                                                                                                                                                      | -        | -                | -                                                            | -        | -            |
|                       | Response time*1 |          | 30 sec (T <sub>90</sub> ), 40 sec (Td+T <sub>90</sub> ); single component                                                                                                                                                                                                         |          |                  |                                                              |          |              |
| Flow rate             | Warm-up time    |          | 60 min (90 min for SO <sub>2</sub> )                                                                                                                                                                                                                                              | 60 min   | 60 min           | 40 min                                                       | 20 min   | 120 min      |
|                       | Standard        |          | 0.5L/min                                                                                                                                                                                                                                                                          | 0.3L/min | 0.3L/min         | 0.5L/min                                                     | 0.5L/min | 0.5L/min     |
|                       | Option          |          | 1.0L/min*2                                                                                                                                                                                                                                                                        | -        |                  |                                                              |          | 1.0L/min     |
| Communication         |                 |          | Ethernet (Modbus™/TCP)                                                                                                                                                                                                                                                            |          |                  |                                                              |          |              |
| Data storage          |                 |          | USB memory                                                                                                                                                                                                                                                                        |          |                  |                                                              |          |              |
| Input/Output (option) | Analog          | Input    | Maximum 4ch, 0-16 mA / 4-20 mA / 0-20 mA or 0-1 V isolated                                                                                                                                                                                                                        |          |                  |                                                              |          |              |
|                       |                 | Output   | Maximum 8ch, 0-16 mA / 4-20 mA / 0-20 mA or 0-1 V isolated, Current output: load resistance < 750Ω, Voltage output: input impedance > 100k Ω                                                                                                                                      |          |                  |                                                              |          |              |
|                       | Digital         | Input    | Maximum 16ch, isolated, Open voltage: 24 V, Short-circuit current 10mA                                                                                                                                                                                                            |          |                  | Maximum load resistance < 50 Ω, Minimum pulse width: 0.5 sec |          |              |
|                       |                 | Output   | Maximum 16ch isolated, Maximum voltage DC 30 V, Maximum current 1A                                                                                                                                                                                                                |          |                  | Minimum voltage DC 0.1 V, Minimum current 0.1 A              |          |              |
| Sample condition      |                 |          | Ambient temperature, dust free, H <sub>2</sub> O less than 5°C saturation, Pressure 0 to 5kPa                                                                                                                                                                                     |          |                  |                                                              |          |              |
| Gas connections       |                 |          | Inlet and outlet - 6 mm/4 mm PTFE: a single gas inlet is provided standard; the gas flows sequentially from one module to the next; as an option separate gas inlets can be provided for each module.                                                                             |          |                  |                                                              |          |              |
| Gas tubing            |                 |          | PTFE; stainless steel optional                                                                                                                                                                                                                                                    |          |                  |                                                              |          |              |
| Joint                 |                 |          | Sample Inlet: Rc 1/8(φ6/φ4mm PTFE joint), Exhaust: φ6/φ4mm PTFE joint<br>Air Inlet: Rc 1/8(φ6/φ4mm PTFE joint); installed CLA. CLA: Exhaust: φ6/φ4mm PTFE joint; installed CLA, MPA Outlet: φ6/φ4mm PTFE joint; installed MPA, Zero gas Outlet: φ6/φ4mm PTFE joint; installed MPA |          |                  |                                                              |          |              |
| Installation          |                 |          | Temperature 0-45°C, Humidity 90% (No condensation), Altitude Max 3000m (combination with only NDIR), (combination with Zirconia, Galvani, MPA, and CLA: max 2000m), No fluctuation of backpressure                                                                                |          |                  |                                                              |          |              |
| Power                 |                 |          | 100-240 V AC (±10%, maximum voltage 250 VAC), 50/60 Hz (±1.0%), Consumption: 100 to 350 VA                                                                                                                                                                                        |          |                  |                                                              |          |              |
| Display               |                 |          | 5.7-inch touch screen                                                                                                                                                                                                                                                             |          |                  |                                                              |          |              |
| Case                  |                 |          | 19-inch panel mount                                                                                                                                                                                                                                                               |          |                  |                                                              |          |              |
| Exterior dimensions   |                 |          | Analyzer: 430 (W) x 380 (D) x 132 (H) mm / Approx. 17 (W) x 15 (D) x 5.2 (H) in<br>Deoionator unit for CLA: 111 (W) x 95 (D) x 100 (H) mm / Approx. 4.4 (W) x 3.7 (D) x 3.9 (H) in (protrusions excluded)                                                                         |          |                  |                                                              |          |              |
| Mass                  |                 |          | 7 -18 kg / Approx. 15 - 40lb                                                                                                                                                                                                                                                      |          |                  |                                                              |          |              |

\*1 Flow rate: 0.5L/min, Faster response time (T<sub>90</sub>) such as 7sec is achievable as special option

\*2 Selectable when all components are NDIR and PMA

### VS-5000 Sampling Unit

| Model                 | VS-5001                                                                                                                                                                                                                                                                                                               | VS-5002                                 | VS-5003                                      | VS-5004                                      |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|----------------------------------------------|----------------------------------------------|
| Applicable principles | NDIR, Zirconia, Galvanic cell, MPA, PMA                                                                                                                                                                                                                                                                               | NDIR, Zirconia, Galvanic cell, MPA, PMA | NDIR, Zirconia, Galvanic cell, MPA, CLA, PMA | NDIR, Zirconia, Galvanic cell, MPA, CLA, PMA |
| Form                  | 19 inch panel mount                                                                                                                                                                                                                                                                                                   |                                         |                                              |                                              |
| Sampling method       | 5°C dry sampling                                                                                                                                                                                                                                                                                                      |                                         |                                              |                                              |
| Materials             | SUS, PP, PVC, PVDF, PTFE, FKM, CR, Glass                                                                                                                                                                                                                                                                              |                                         |                                              |                                              |
| Flow rate             | 1.5~5.0 L/min                                                                                                                                                                                                                                                                                                         |                                         |                                              |                                              |
| Sample supply         | 0.5 L/min x 2 systems*1                                                                                                                                                                                                                                                                                               |                                         | 0.3L/min x 1system                           |                                              |
| Power                 | 100~240 V AC (±10%, maximum voltage 250V AC), 50/60 Hz (±1%)                                                                                                                                                                                                                                                          |                                         |                                              |                                              |
| Power consumption     | 150 VA                                                                                                                                                                                                                                                                                                                |                                         | 200 VA                                       |                                              |
| Joint                 | Sample inlet: φ8/φ6 mm PTFE joint, Sample outlet: φ6/φ4 mm PTFE joint                                                                                                                                                                                                                                                 |                                         |                                              |                                              |
|                       | Air outlet: φ6/φ4 mm PTFE joint, MPA inlet: φ6/φ4 mm PTFE joint                                                                                                                                                                                                                                                       |                                         |                                              |                                              |
|                       | Regulator: φ6/φ4 mm PTFE joint, Calibration inlet: RC1/8(φ6/φ4mm PTFE joint)<br>Bypass outlet/Exhaust/Drain outlet: φ8mm hose end                                                                                                                                                                                     |                                         |                                              |                                              |
| Sample gas            | Ambient temperature, Dust: less than 0.1mg/m <sup>3</sup> , H <sub>2</sub> O: less than 60°C saturation with drain pot (Approx. 25% H <sub>2</sub> O), Pressure: ±980 Pa,<br>SO <sub>3</sub> : less than 50ppm, NO <sub>2</sub> : less than 6ppm*2, (Corrosive gas, flammable gas and explosive gas are not included) |                                         |                                              |                                              |
| Dimension             | 430 (W) x 550 (D) x 221 (H) mm / Approx. 17 (W) x 22 (D) x 8.7 (H) in (protrusions excluded)                                                                                                                                                                                                                          |                                         |                                              |                                              |
| Mass                  | 14kg / 31lb                                                                                                                                                                                                                                                                                                           | 16kg / 35lb                             | 19kg / 42lb                                  | 20kg / 44lb                                  |

\*1 Environmental temperature needs to be less than 35°C. If it's over 35°C, please consult us.

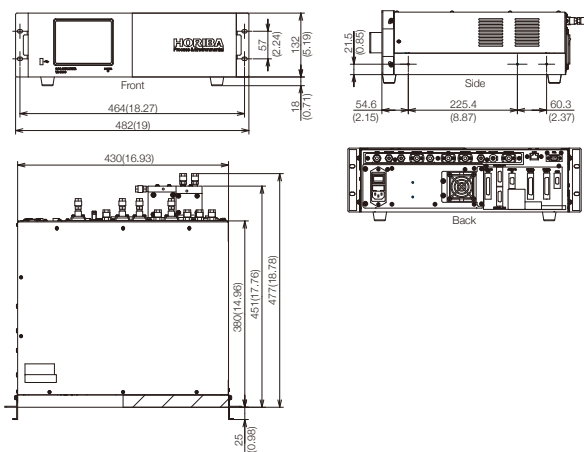
\*2 When the sample gas includes more than 6ppm NO<sub>2</sub>, it needs to use optional NO<sub>x</sub> converter.

## Dimensional Outlines

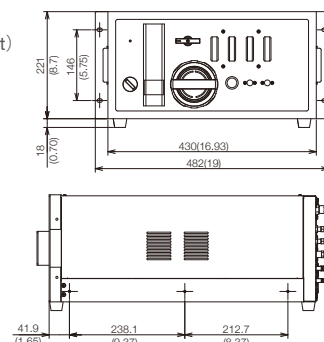
Rubber feet, deoionator unit and mounting brackets (e.g., slide rails, rack mounting plates) are optional.

Unit: mm(in)

VA-5000  
(Analyzer Unit)

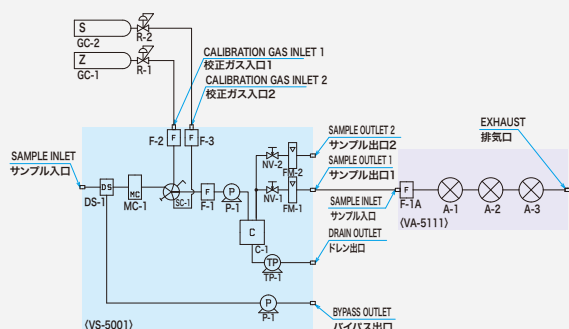


VS-5000  
(Sampling Unit)

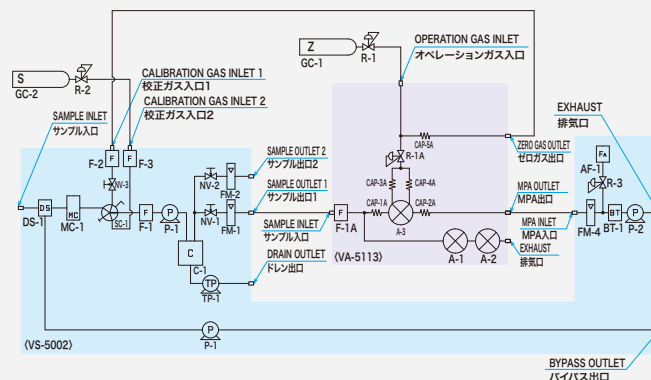


## Flow sheet

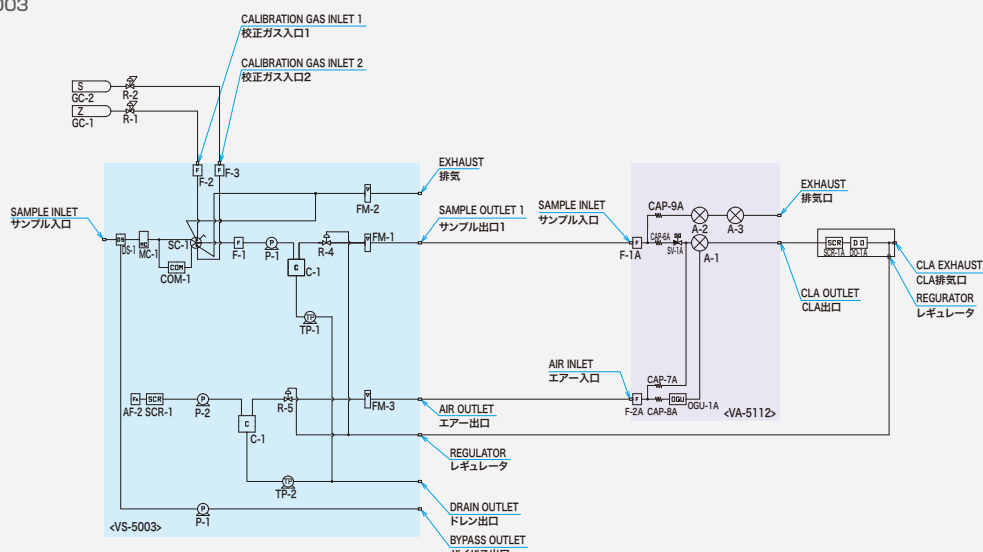
VA-5111+VS-5001



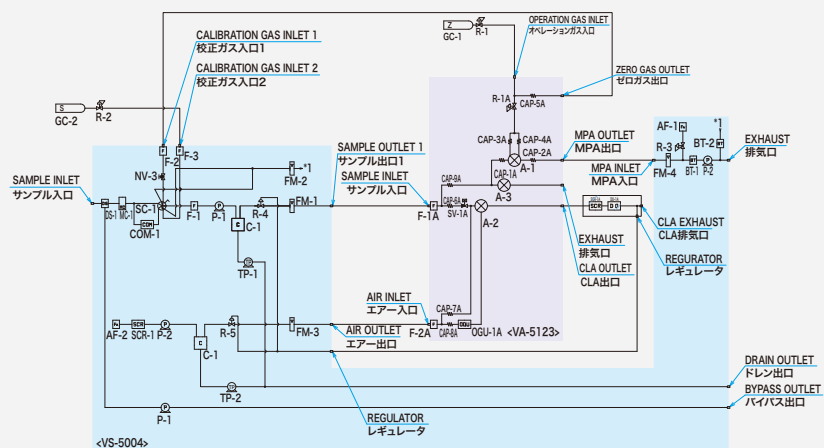
VA-5113+VS-5002



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## Wide range of solutions for various fields and applications by combination with VA/VS-5000 series.

HORIBA is the expert of gas analysis. We line up analyzers for wide range of gases. By combination of existing analyzers with brand new VA/VS-5000 series, we could provide diverse tailor-made system solutions and answer every customer's field needs.



**Portable Gas Analyzer**  
**PG-300 Series**

Measurement of max. 5 different components by single portable, lightweight and robust unit.  
Used for emission monitoring, R&D (fuel cell), stack cross check.

NOx SO<sub>2</sub> CO CO<sub>2</sub> O<sub>2</sub> CH<sub>4</sub>



**Air Quality Analyzer**  
**AP-370 Series**

Monitoring of ambient air pollutants: harmful oxides and particulate.  
Used for ambient air, clean room, indoor air and trace gas monitoring.

Fit in a standard 19-inch rack

O<sub>3</sub> SO<sub>2</sub> NOx CO CO<sub>2</sub> NH<sub>3</sub> H<sub>2</sub>S THC NMHC CH<sub>4</sub> SPM PM<sub>2.5</sub> PM<sub>10</sub> PM<sub>1</sub> PM<sub>4</sub> SPM



**Stack Gas Analyzer**  
**GI-700 Series**

Designed for continuous measurement of up to 6 combustion gases simultaneously. The integral sample conditioning system insures accurate measurement.

Fit in a standard 19-inch rack

NOx CO<sub>2</sub> CO SO<sub>2</sub> NH<sub>3</sub> O<sub>2</sub>



The HORIBA Group adopts IMS (Integrated Management System) which integrates Quality Management System ISO9001, Environmental Management System ISO14001, and Occupational Health and Safety Management System OHSAS18001. We have now integrated Business Continuity Management System ISO22301 in order to provide our products and services in a stable manner, even in emergencies.



**Please read the operation manual before using this product to assure safe and proper handling of the product.**

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