



OUTDOOR
AIR QUALITY



INDUSTRIAL
EMISSIONS



OCCUPATIONAL
HEALTH

Compliant with:

EN 14385, CEN/TS 13649, EN 12919,
EN 13284, EN 1911, EN 13211, EN 14790,
ISO 9096, EN 16911.

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Continuous Flow Sampler BRAVO X

BRAVO X is the evolution of the "BRAVO PLUS"!

We gave a new "BRAIN" to the PLUS sampler of the BRAVO line, automating some control and data storage functions.

BRAVO X has the same mechanical features as the PLUS version, but the flow is electronically controlled instantaneously, as well as display / memorize the sampled volume.

This means the possibility of not supervising after entering initial settings!

Built-in microprocessor enables DATA STORAGE of all sampling parameters with local recall features and USB port for download.

IP65 keypad and colour display are the user interface to input/modify/access to all the sampler functionality.

With the suppression of flow fluctuations and pressure pneumatic dampener, **BRAVO X** can keep steady flow during all sampling time period

If a more performing pump is required, **BRAVO X-R** version is equipped with a rotary vane pump with graphite: this means linear flow, higher flow rate and higher vacuum.

Sampling in isokinetic conditions: using **FLOWTEST ST** flow via customized cable, **BRAVO X** becomes an isokinetic sampler (optional). If you are a **FLOWTEST ST** owner, we are able to modify it (as an option), to interface it with **BRAVO X**.

Through a Venturi that offers the advantage of instantaneous flow control in any flow condition, a version with flow meter is available as option.

TOUCH-KEYPAD dual display. We created a user interface that meets the needs of everyone in all using conditions. Is possible to operate using the large 5 "colour screen in touch-screen mode, using the keyboard in harsh conditions or both touch and keyboard.

UMTS modem is the latest technological "revolution" that allows remote sampler control.

This option can be used simply by purchasing a SIM data and by subscribing an annual subscription to a web provider that offers REMOTE DESKTOP service.

Sampling data can be downloaded at any time and check the operating status of the sampler.

Another feature of **BRAVO X** is the capability to control sequential systems for particulate sampling (groups of filter holders with 8 positions up to 24 total) and sorbent tubes sampling (outdoor system up to max. 24 tubes).

Due to its special edge protections, mounted in **BRAVO X**, damage from accidental shocks are avoided. Furthermore, these mechanic bumpers reset all structural twist, are easy to change and very cheap.

External LED indicators, visible at long distances, warns about local running conditions.

Possibility to monitor PM10, PM2.5, PM1, Real Time trend concentrations, 24 sizes classes particle distribution, CO₂ and relative humidity.

"The perfect combination of evolution and simplicity of use, this is... BRAVO X"



Main Features

- Automatic portable steady flow sampler with microprocessor based control;
 - Electronic flow controller, data display and acquisition;
 - Flow range: from 0.2 l/min to max 60 l/min (optional: 80 l/min depending on the pump type installed);
 - Pneumatic damper to keep constant the flow during sampling and free of fluctuations;
 - High accuracy and stability of the flow measurement;
 - Volumetric counter (DGM), class 1.5, for accurate measurement of sampled volume;
 - Data storage of all parameters with easy recall by keyboard (up to 512 samples):
 - User, site, measuring point;
 - Sampled volume, air temperature, atmospheric pressure (optional);
 - Data export via USB port (.txt file);
 - Reporting of power failures;
 - Vacuum gauge for leaks;
 - Available power supply: 230 VAC-110 VAC – 24 VDC battery (for diaphragm pump only).
- ✓ Flow rate from 0.2 l/min to 60l/min (optional 80 l/min);
 - ✓ High precision in flow and volume measurement;
 - ✓ Microprocessor data management;



BRAVO X

An Important *New*

The Calibration Area

TCR TECORA® has introduced in the last years an innovative concept of calibration on the whole BRAVO X sampler series.

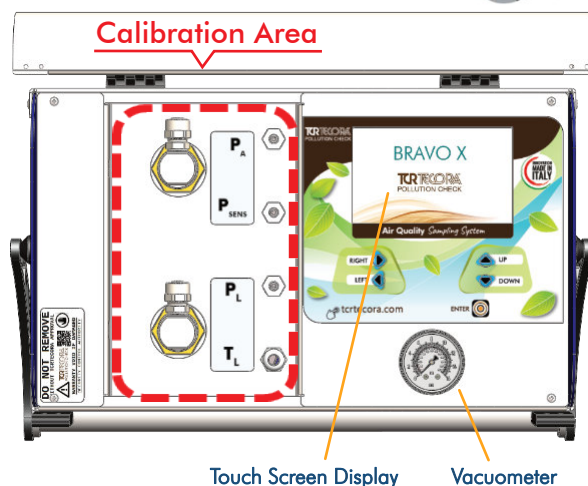
Thanks to the training center (see TCR TECORA® training session on the website) which allows the continuous exchange of information between the sampling technicians and the quality managers / metrological confirmations in line with the and Accredia requirements, the definition of CALIBRATION AREA external to the instrument, which allows you to control the following sensors without having to open the instrument:

- ▶ Temperature of the volumetric meter;
- ▶ Temperature of the air inlet;
- ▶ Volume at the volumetric meter;
- ▶ Ambient pressure;
- ▶ Line pressure the pressure difference at the venturi (e.g. BRAVO BIO) are accessible from the calibration area on the top panel of the instrument.

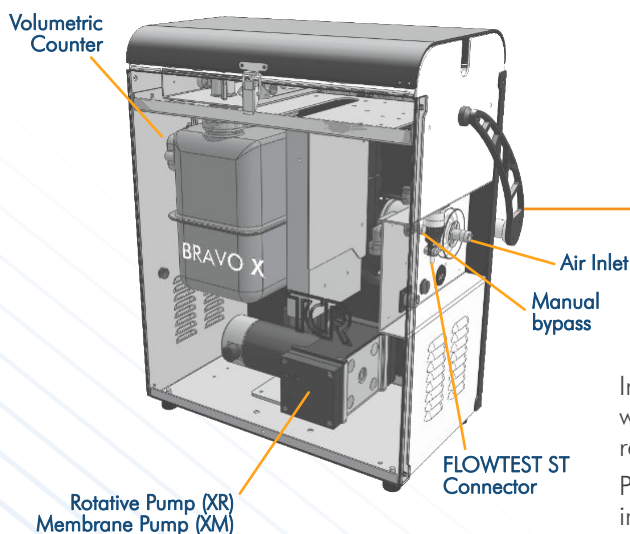
A dedicated software menu of the instrument allows the 5-point calibration of all parameters and the storage of previous calibrations for a continuous verification of linearity over time.

FLOWCAL AIR

Flowcal Air is an accredited (17025) reference instrument for flow, temperature and pressure.



BRAVO X becomes ISOKINETIC



The connection with the external allows you to transform the BRAVO X into a product with functions that simplify the daily verification of the efficiency of the instrument:

- ▶ Self-diagnostic functions
- ▶ Automatic fault reports
- ▶ Training video display
- ▶ F1 online help

In just a few seconds, BRAVO X becomes an isokinetic sampler with a wealth of features and potentialities to meet many regulatory requirements for atmospheric emissions.

Plant conditions are constantly saved by the FLOWTEST ST and the information needed for flow control is instantly sent to the BRAVO X sampler which monitors all sampling parameters.

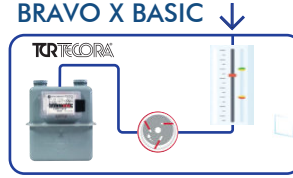
Every data is saved in the memory of the instrument, where logs and final reports are stored and saved.

In addition to the connection with FLOWTEST ST, BRAVO X can be connected to the docking station that automatically checks all the functions and generate a machine status report.



BRAVO X

Technical Features



BRAVO XM Model

Pump double head
 Pump single head

Pump type	Diaphragm pump, single or double head, corrosion resistant
Maximum flowrate (free mouth)	Max 55 l/min double head 22 l/min single head
Pump flowrate adjustment range	0.2-55 l/min double head 0.2-22 l/min single head
Volumetric counter scale range (DGM)	0.016 - 2.5m ³ /h acc. Class 1,5
Flowrate measurement	Encoder on volumetric counter
DGM input temperature scale	-50÷70°C Accuracy ±1°C Resolution 0.1°C
DGM operating temperature	-10÷40 °C
Ambient humidity sensor scale range	10÷ 99 % UR (Optional)
Ambient pressure sensor scale range	0-105 kPa, Accuracy ± 0.1 kPa, resolution 0.01 kPa (optional)
User interface data management	Electronic microprocessor. Membrane keyboard IP65/5" touch screen color display
Weight	11 Kg double head 9 Kg single head
Dimensions	200 x 315 x 460 mm
Power	230 VAC 50-60Hz 110 VAC 50-60 Hz 24 Vdc (option)
Consumption	350W
Codes	AA99-000-0700SP (230 VAC) AA99-000-0701SP (110 VAC)

BRAVO XR Model

Rotative Pump L 5 m³/h or H 8 m³/h version

Pump type	Graphite vane pump (ceramic option)
Maximum flowrate (free mouth)	Max 60 l/min pump L Max 90 pump H
Pump flowrate adjustment range	1-55 l/min pump L 1-77 l/min pump H (bypass low)
Volumetric counter scale range (DGM)	0.016 - 2.5m ³ /h acc. Cl. 1,5 0.016 - 6 m ³ /h pump H
Flowrate measurement	Encoder on volumetric counter
DGM input temperature scale	-50÷70°C Accuracy ±1°C Resolution 0.1°C
DGM operating temperature	-10÷40 °C
Ambient humidity sensor scale range	10÷ 99 % UR (Optional)
Ambient pressure sensor scale range	0-105 kPa, Accuracy ± 0.1 kPa, Resolution 0.01 kPa (Optional)
User interface data management	Electronic microprocessor. Membrane keyboard IP65/5" touch screen color display
Weight	13 Kg pump L 15Kg pump H
Dimensions	200 x 315 x 460 mm
Power	230 VAC 50-60Hz 110 VAC 50-60 Hz
Consumption	350W
Codes	AA99-000-0730SP (230 VAC) AA99-000-0731SP (110 VAC)
Codes (Version H - High Flow)	AA99-000-0733SP (230 VAC) AA99-000-0734SP (110 VAC)