

TRTECORAPOLLUTION CHECK



OUTDOOR
AIR QUALITY



INDUSTRIAL
EMISSIONS



OCCUPATIONAL
HEALTH

In compliance with:

EN 13284, EN 14385, EN 1948-1,
EN 21877, EN 17286, CEN-TS 17340,
ISO 23210, CEN-TS 13649, EN 14790,
EN 13211, EN 1911, EN 12341 (PM10-PM2.5)
UNI EN 12919, EPA 5,17, 23, 26A, 29

Constant Flow Sampler Double Line BRAVO X DUO

BRAVO X DUO is the more complete version of new generation sampler of Bravo X series.

This sampler is equipped with two lines totally independent that can be connected also in parallel to increase the hydraulic head and the maximum suction flow.

That instrument can be configured with rotary or membrane pumps also combined two different technologies in the same product.

It is available the PLUS version, complete of touch screen 7" with lot of automatic functionalities or the BASIC version with manual flow regulation and automatic mechanical compensation of the pressure drop.

BRAVO X DUO is the ideal solution in each situation where is needs to reduce the quantity of instruments to bring on the field to perform planned sampling.

Count on two independent sampling lines, allows you to manage different sampling at the same time, with a one single control unit.

For example **BRAVO X DUO** can become an ISOKINETIC instrument (using the **Flowtest ST** flowmeter, in compliance with UNI EN 16911; so, it is possible to set one line as isokinetic sampling and one line as DERIVATIVE sampling at constant flow.

The version with rotary vane pump and flowmeter with Venturi system allows to sample in each situation, both for environment and for emissions. External LED indicators visible from long distance signaled operating sampler status.

Another features that make unique the **BRAVO DUO** is the possibility to manage sequential sampling ramp for total dusts or adsorbent vials.



*Also available in metal version.

Main Features

- Automatic, portable, double lines at constant flow sampler with electronic flow regulation;
- Maximum flexibility for emissions sampling, outdoor air, and work environments;
- Flow measurements precise and reliable;
- 2 simultaneous sampling lines with automatic INDEPENDENT flow regulation;
- Temperature measurements line 1 and line 2;
- Environmental relative humidity measurements (option);
- Environmental pressure measurements line 1 and line 2;
- Volume sampled measurements line 1 and line 2;
- Flow range from 0.20 l/min (with manual valve) to 60 l/min (max) on each line;
- Each line can be equipped with rotary or membrane pumps – customizable configuration;
- User interface touch screen 7" resistive;
- Report stored in memory to consult through recall function;
- Data export through USB port with pen Drive;
- Sequential system piloting for dust sampling/gas vials;
- Optional external battery (only for membrane pump version and flow up to 55 l/min per line);
- Available power supply: 230 VAC 50/60 Hz | 110 VAC 50/60 Hz;
- 24 Vdc for flow up to 55 l/min per line with membrane pumps;
- 12 Vdc for flow up to 22,5 l/min per line with membrane pumps.



"BRAVO DUO

is multi-role instrument able to sample in isokinetic conditions, working environment or outdoor."

Two simultaneous sampling lines:

Line 1
Isokinetic
or Constant

Line 2
Constant or
Derivative Sampling





BRAVO X DUO

Plus Version Rotary Membrane Pumps

The Plus version, with embedded electronic and touch screen 7" is the more complete version of the new generation of Bravo X sampler. Automatic flow regulation by direct control of suction pump and electrical automatic compensation of pressure drops on the filter. All data are stored in the internal memory and download data and logs available through USB pen drive.

Possibility to have one line with membrane pump and the other one with rotary pump.

Possibility to install many accessories in optional wind sonic sensor, OPC for real time PM data, gas sensor in PPB range, isokinetic, external valve ramp for sampling of gas/dust, UMTS modem, HEPA filter for bioaerosol monitoring...**and much more!**



BRAVO X DUO **PLUS**

Basic Version Rotary Membrane Pumps

The BASIC version allows manual flow regulation on TWO lines totally independent through pneumatic valve.

There are 2 regulation valves for each sampling line for a better suction flow regulation.

Both lines are equipped with mechanical pressure drop compensator caused by filter clogging.

Both lines are equipped with independent high resolution volumetric counter.

A high-capacity filter is placed at the inlet to avoid insertion of any harmful material inside the pneumatic circuit.

The instrument is equipped with two electronic timers to program sampling cycles.



BRAVO X DUO **BASIC**

"Bravo X DUO version BASIC or PLUS is the instrument suitable for every sampling application"

Example: BRAVO X **PLUS RM**

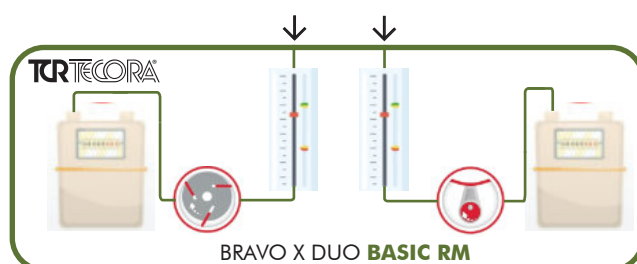


Sampler with isokinetic line and line for sampling at constant derived flow; using a software for configuration of sampling parameters, saving data on pen drive, logs and reports for analysis of complete signal acquisition.



Example: BRAVO X **BASIC RM**

Sampler with sampling lines with manual regulation through 2 valves per line. Each line has an analogic flowmeter double scale to allow precise manual flow regulation. An electronic timer manages sampler start/stop.





TRTECORA[®]

POLLUTION CHECK

BRAVO X DUO

List of available versions and options



4M



Bravo X DUO 4M

- > 2 membrane pumps double head
- > Range max 55 l/min per line
- > Total 110 l/min
- > Power supply 230 Vac - 24 Vdc



2M



Bravo X DUO 2M

- > 2 membrane pumps single head
- > Range max 25 l/min per line
- > Total 45 l/min
- > Power supply 230 Vac - 12 Vdc



2R



Bravo X DUO 2R

- > 2 dry rotary pumps
- > Range max 60 l/min per line
- > Total 120 l/min
- > Power supply 230 Vac



2RM



Bravo X DUO 2RM

- > 2 membrane pumps double head
- > Range max 55 l/min per line
- > Total 110 l/min
- > Power supply 230 Vac



1R+2M



Bravo X DUO 1R+2M

- > 2 rotary pumps, membrane double head
- > Range max 60 l/min L1 , 55 l/min L2
- > Total 115 l/min
- > Power supply 230 Vac



2HR



Bravo X DUO 2HR

- > 2 rotary pumps H dry
- > Range max 100 l/min per line
- > Total 200 l/min
- > Power supply 230 Vac



BRAVO X DUO PLUS



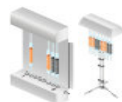
USB data download
Remote connection software **TCR CONNECT**;



Complete programming, cycles, measurements test, calibrations, calibration area;



Sequential dust sampling 8-16-24 Vie - modular;



Sequential gas sampling 8-16-24 Vie - modular;



OPC - Optical particle counter 24 dimensional classes: PM10 PM2.5 PM1



HEPA Filter for Bioaerosol sampling
Avoid contamination of work environment, placed at the outlet of the sampler;



Sonic sensor for speed and wind direction
Relative humidity and ambient temperature conditional sampling;



Isokinetic emission sampling
Through connection to Flowtest ST;



Connection to Docking Station panel for checks and automatic calibrations with reference system EN 17025;



BRAVO X DUO BASIC



Sampling of TPS - PM10 - PM2.5 - PM1
Sampling of odors/gas;



Emission sampling dust / gas.

Configuration of desired suction elements and of functionalities required define name product:

Example: BRAVO X BASIC RM or BRAVO X PLUS RM define the same product but with manual functionality regulation in the Basic version or with total autonomy in the electronic management through dedicated software and touch screen to manage all product functionalities.

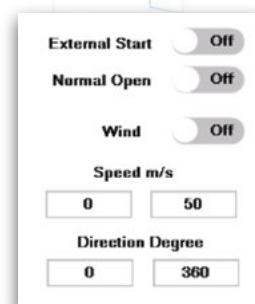


BRAVO X DUO

SELECTIVE SAMPLING "EVENT BASED".

Through a digital input (from data logger or other device) it is possible to control a sequence of samplings.

Furthermore, through a wind speed/direction sensor (optional) and dedicated programming, sampling actives with flow and timing established in advance.



PRODUCTS CODES:

TECHNICAL FEATURES

	BRAVO X DUO BASIC AA99-000-0750SP	BRAVO X DUO PLUS AA99-000-0760SP
Pump type	Membrane single or double head corrosion resistant Rotary	
Maximum flow (free mouth)	200 l/min (max) depends on selected configuration	
Flowmeter	Gas meter with digital reading	
Regulation flow range	0.2-200 l/min (manual valve for low flow)	
Sampled volume measurement	Volumetric counter, precision 2% v. m.	
Volumetric counter range - DIG-X	0.006-4 m ³ /h or G6	
Temperature sensor or volumetric counter	Thermal resistance PT100, precision ± 0.1 °C	
Vial numbers	Optional module for connection to external gas unit (vials) or dusts in blocks of 8 or 16 or 24 Vie	
Parts in contact with the fluid	Stainless steel AISI316L, anodized aluminum, silicone, PVDF	
Sensor scale range of depression sampling	0 ÷ 103 kPa Acc. ± 0.1 kPa, resolution 0.01 kPa	
Sensor scale range of ambient temperature	-20 ÷ 50 °C – Precision ± 0.1 °C	
Sensor scale range of ambient humidity	10 ÷ 99 % RH (optional)	
Sensor scale range of ambient pressure	0-103 kPa, Acc. ± 0.1 kPa, resolution 0.01 kPa (optional)	
Data management	Electronic with microprocessor	
User interface	Touch screen 7" resistive	
Data storage	Internal, on USB memory and with USB cable or remote PC	
Environmental operating condition	External temperature: -20÷50°C, humidity 10÷ 95% RH not condensed	
Weight	Settable based on suction system from 12 kg	
Dimensions	467 x 216 x 555 (h instrument) mm	
Power supply	230 VAC 50-60Hz 110 VAC 50-60 Hz 24 Vdc or 12 Vdc	
Consumption	From 250W based on chosen version	

