

Automatic Isokinetic Sampler **ST5**





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## Description

The ST5 is the next generation isokinetic sampler, developed to be efficient, rugged, accurate and user friendly. The perfect companion for stack testers.

The ST5 includes all the measuring sensors, inside its robust structure making it a single practical device to be taken on the stack and reducing the need of maintenance.

Precise isokinetic condition, sampling flowrate is directly controlled with a mass flow meter which allows the fastest correction and have the flow velocity entering the nozzle asymptotic to the stack gas velocity.

Despite the apparent higher costs when compared to a manual solution, the automatic isokinetic sampler allow to save money and time thanks faster startup, stack libraries, possibility to sample for longer periods unattended (e.g. for pcdd/pcdf or heavy metals), all those characteristics reduce the risk of compromising the operation or losing data.

Superior protection against liquids, the ST5 has built-in sensor that “feels” the presence of liquids

passing through the inlet, in this case, the ST5 goes automatically in stand-by preventing any internal damage.

Higher quality of the data due to automated parameters control which also grants high accuracy and compliance to the most diffused standard, especially when sampling micropollutants in low concentrations.

Bigger LCD color display with cycling screens reporting each the essential data to keep the sampling operation under control.

The ST5 can work with all Pitot tubes and thermocouples, it's possible to enter the information related to Pitot tubes in the internal library.

Powerful pumps, the ST5 is available with a 4,5m<sup>3</sup>/h or with a 8,5 m<sup>3</sup>/h pump.

All those features make the ST5 the best tool for stack sampling, allowing at the same time a high degree of traceability to make your life easier with quality procedures.



## Main Characteristics

- Automatic isokinetic sampler for the pollutants evaluation in stack emission
- Velocity and flowrate determination in ducts in accordance with UNI EN16911-1 method and EN15259
- Meets and exceeds the requirements defined in the sampling methods such as UNI EN 13284, EN1948-1, EN 14385, EN 13211 and US EPA M2, M5, M17
- Grants high standards of accuracy and traceability of measurements and calibrations.
- Easy to use and possibility of integration with PC, smartphones and tablet
- Download of the sampling, calibration and traceability data to all operative systems and computers.
- The ST5 is equipped with a standard USB2.0 and wireless bluetooth for future connection to compatible PCs, tablets or smartphones

## Technical Characteristics :

Flowrate operative range:	5 - 60 l/min
Sampled gas conditions:	Dehydrated, max temperature 45°C
Gas inlet:	with protection filter for particulate and liquids
Connection:	with quick connectors
Operation conditions:	-20 ÷ 40°C 95% UR
Stock conditions:	-10 ÷ 50°C 95% UR
Display:	3.5" Graphic LCD (QVGA)
Data Port:	USB 2.0
Internal Memory:	16GB
Power supply:	220 Vac ±10% 50/60Hz
Materials:	Steel/Aluminum combined structure
Keyboard:	Polycarbonate, tactile effect keys
Dimensions:	370 x 250 x 500 mm (W x D x H)
Weight:	16 kg [4,5 m <sup>3</sup> /h pump]

### Characteristics and accuracy of the measures

#### Sampled Volume

Gas Meter Class:	Dry Gas Meter, class G4, certified 2004/22/CE, in compliance to EN 1359
Flowrate range:	0.4 m <sup>3</sup> /h ÷ 6.0 m <sup>3</sup> /h
Accuracy:	2% (± 0.2%)
Encoder resolution:	0.02 liters

#### Sampling flowrate

Device:	mass flow, in compliance with UNI EN ISO 5167-2
Range:	5 ÷ 60 l/min
Resolution:	0.01 l/min
Accuracy:	± 1%

<b>Differential Pressure</b> [ Pitot ]:	-100 ÷ 2600 Pa (-10 ÷ 260 mmH <sub>2</sub> O)
Hysteresis and Linearity:	0.25 % F.S
Accuracy:	Better than 1% (± 2Pa)
Resolution:	0.1 Pa (0.01 mmH <sub>2</sub> O)
Differential Pressure:	max. 10 000 Pa (1000 mmH <sub>2</sub> O)

<b>Abs. Pressure</b> [static/barometric]:	10 ÷ 105 kPa (1050 mBar)
Hysteresis and Linearity:	0.25 % F.S
Resolution:	0.01 kPa (0.1 mBar)
Accuracy:	Better than 1% (± 0.25 kPa)

#### Thermocouples input [std programmed curve type "K" as per ITS 1990]

Range:	0 ÷ 1200 °C
Resolution:	0.01 °C
Accuracy:	1% (± 0.4 °C)

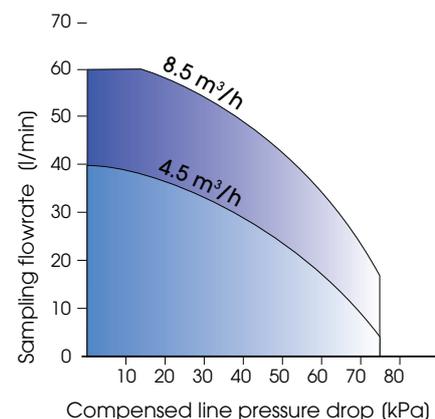
#### DGM Temperature [Pt100 Ohm sensor]

Range:	-20 ÷ 100 °C
Resolution:	0.01 °C
Accuracy:	1% (± 0.2)

Dimensions (mm)



Pumps operative range



## Integrated Functions

- **Operative Modes:**
  - Duct velocity
  - Constant flow operation
  - Isokinetic sampling
  - PMx sampling
- **Utilities :**
  - Sampling nozzle determination
  - Automatic leak test
  - Density calculations
  - V'a and Ta constant
- **Libraries management :**
  - Sampling reports
  - Measures log
  - Alarms log
  - Frequently visited stacks
  - Pitot terminals
  - Stack thermocouples
- **Calibration Manager**
  - Temperature measurement
  - Dry gas meter check
  - Mass Flow check
- **Alarms Management:**
  - Thermocouples
  - Pump
  - Presence of liquid
  - Dry Gas Meter
  - Mass Flowmeter
  - Isokinetic Deviation
  - Pressure Sensors
- **Automatic restart after :**
  - Power failure
  - Duct velocity alarm
  - Isokinetic deviation alarm
- **Automatic creation of the sampling reports**
  - Full measure report
  - Weighted average of the duct parameters
  - Evaluation of the sampling compliance criteria in accordance with ISO 10780 and EN13284



## Calibration, Accuracy and Traceability

The ST5 is supplied by DadoLab with traceable calibration report made with internal Accredia certified references and including data related to nominal and actual values, deviation errors of all instrument sensors.

For all measured parameter is possible to enter multi-point correction curves freely programmable by the user through Dadolab's utility.

The ST5 features a user friendly interface, setup and operation is fast and easy, without the need of complicated procedures.



## Rugged design and attention to details

Ergonomy was also considered during development. ST5 is protected by rubber profiles with rounded angles. Display and keyboard are protected by transparent shell.

Thermocouples connectors are made with different colors to easy the connection. Protection filter is located behind a transparent, easy to remove cover.

Power is protected by interchangeable fuse, replaceable easily without opening the instrument.

Every detail of the ST5 is designed to make it the best work companion for stack testers.

## Models, accessories and spare parts



- 101 101 1001 **ST5 V4.5 standard supply:**
- 4.5 mc / h pump
  - Heated units control
  - Liquids Protection of the inlet
  - Inputs for 5 thermocouples
  - Test and Calibration report
  - USB key
  - Power cable
  - User Manual
  - Transport Case



- 101 101 1002 **ST5 V8.5 :**  
(same as the V4.5 except for:  
- 8.5 mc/h pump)

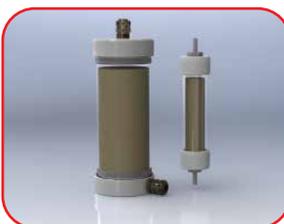
- 101 101 2001 **Zero dp Sensor**  
Integrated module for the Pitot tube auto-zero without disconnecting it



- 101 101 2100 **Connection cable, 5 meters**
- Suction tube complete with quick connectors
  - 3 thermocouples
  - Heated units cables
  - Pitot pneumatic signals
- 101 101 2110 **Connection cable, 10 meters**
- 101 101 2120 **Connection cable, 15 meters**
- 101 101 2130 **Connection cable, 20 meters**
- 101 101 2140 **Connection cable, 25 meters**
- Other lengths available on request.



- 101 101 3010 **Sampled gas protection filters**  
Set of 10 pieces.



- 101 101 4002 **Silica Gel/Charcoal Trap**
- 101 101 4003 - 100 cc
- 1 liter