Immission Line 2.003.01

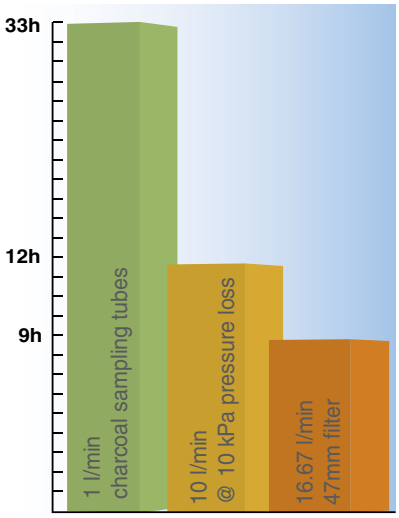
Battery and power operator sampler

Delta Mk2

Main Features:

- **In accordance with official method EN12919**
- **External power supply 110/220 Vac without any adapter and 12 Vdc with Delta Battery Pack**
- **Intergrated dry gas meter version available**
- **Operating flow range 0.2 - 25 l/min without any external devices**
- **Battery consumption optimized according to the sampling flow rate**
- **Electronic controlled flow rate at standard and actual conditions**
- Adjustable flow rate during the sampling mode without any stop
- Measured and logged parameters:
  - Instant flow rate,
  - Total volumes,
  - Ambient and Temperature pressure
  - Loss of pressure across the filter
- Liquid protection trap
- Logging of more than 60 sampling reports
- SMS remote control (*)

Delta Mk2 is the evolution of Delta battery sampler. The main topics of the new version are the removal of the battery adapter, now as built-in device, and the integration of the dry gas meter (DGM), as requested by the official methods.
The DGM version supplies a double control (flow and volume) on effective sampling performance: this comparision is unique to find in a portable equipement, with the result of high accuracy for output data.
An innovative electronic flow control system, optimized for battery consumption, manages the power used in relation to the flow rate.



Autonomy with Delta Battery Pack

Thanks to its modular structure, changing the battery pack in the field, without stopping the sampling, is a quick and easy operation that increases the autonomy of the sampler. In this new version, the sampler built in system allows both 110/220 Vac and Delta battery pack power supply.
Compared to the old version, the new built-in power supply system allows battery charging and instrument running using a simple power cord (included).

* Optional

TCR TECORA s.r.l. Via Alessandro Volta, 22/24 - 20094 Corsico (Mi) Italy - Tel. 02 4505501 Fax. 02 48601811 - www.tecora.it e-mail: tcrtec@tecora.it

Product Data Immission Line 2.003.1 Ed. 3 03/09 - Technical specifications may change without previous warning

Immission Line 2.003.01

Flow Checking

The control of the flow is effective to obtain fast response time, even at low flow ranges.
The response time (only 5 seconds) allows the instrument to adjust itself to changing ranges and pressure drops.

The new pneumatic system doesn't need any external device and is free from pulsations, even at lower flows.

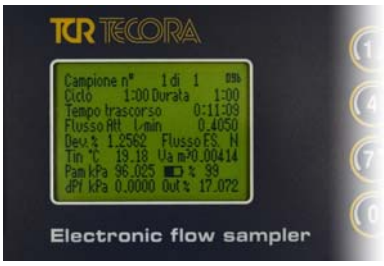
A trap secures the instrument from damages caused by the accidental liquid suction.

Sequentiality

Equipping Delta with the TCR sequential manifold module, it is possible to connect to the sampler all TCR sequential modules.
The module is connected to the instrument in the place of the battery pack and it is supplied with 110/220 Vac.
The programming modes allow to perform multiple samplings, daily or with established duration and pause.
A sequential pump function allows to spread the samplig duration. This function is very useful with sampling on tubes or impingers, because allows to have a representative sample for 24 hours, without the risk to overload the tube or the adsorbent liquid.

Data processing

Measurement reports are saved on the internal flash memory.
Using the function "Explore memory", through the wide graphic display, it is possible to see all stored reports.
Through the RS232 interface, it is possible to download all stored data on a PC.



Utility software

The dedicated **Downloader** software, compatible with Echo and Bravo series, allows to convert all stored data in an Excel™ sheet with a simple click.
The software is supplied with the instrument and the connecting cables in a CD format.

Software Downloader

Delta with Battery Pack

Delta with TCR sequential manifold module

TCR TECORA s.r.l. Via Alessandro Volta, 22/24 - 20094 Corsico (Mi) Italy - Tel. 02 4505501 Fax. 02 48601811 - www.tecora.it e-mail: tcrtec@tecora.it

Product Data Immission Line 2.003.1 Ed. 3 03/09 - Technical specifications may change without previous warning

Immission Line 2.003.01

Every sampler is supplied with:
- carrying case
- Rauclair tube 3 mt
- kit universal adaptors for tubes
- power supply cable
- instructions manual
- calibration certificate

Delta Mk2 with DGM

Delta Battery Pack with integrated battery charger

Delta module for TCR manifold

Technical characteristics

Measured sizes

Range regulation	0.2 - 25 l/min
Maximum flowrate range	> 30 l/min
Mass flow	Precision better than ±2%
Volume flow	Precision better than ±2%
Secondary volume *	With dry gas meter precision ±2%
Atmospheric pressure	
Range	20-110kPa (200-1100 mBar)
Precision	better than 1% f.s. ± 0.5 kPa
Resolution	0.01 kPa (0.1 mBar)
Lost of charge on filter	
Range	20-110kPa (200-1100 mBar)
Sucked air temperature	
(associated with amb. temp.)	
Used sensor	Pt 100
Range [resolution]	-30 +50 °C [0.01 °C]
Precision	better than 1% f.s. ± 0.5 °C
Gas temperature at DGM*	
Used sensor	Pt 100
Range [resolution]	-10 +60 °C [0.01 °C]
Precision	better than 1% f.s. ± 0.5 °C

Specifications

Flow regulation	Electronic automatic
Reaction time T_{90} (regulation)	<30 sec
Pump	Membrane
Operating temperature	-5 +40 °C 95% UR
Power supply	110/220 Vac 50/60Hz or with Delta Battery Pack
Autonomy	See graphic on page 1
Display	Graphic LCD 128x64 pixel
Keypad	Tactile membrane
Interface	RS 232
Data memory	over 60 report
Logging interval	Average 5 min
Weight [Battery pack]	5.4 Kg [Batt. 5.5 Kg]
Dimensions [Battery pack] bxpxh	23x26x30 cm [Batt. 23x26x12 cm]

Codes for orders

Delta MK2 (basic)	AC99-004-0001SP
Delta MK2V (with dry gas meter)	AC99-004-0002SP
Battery Pack	AA99-004-9907SP
Delta interface for manifold module	AA99-004-9920SP
Delta module for TCR manifold	AA99-004-9921SP
Software Downloader - CD and connecting cable RS232	AA99-009-9909SP
GSM Modem for control via SMS	AA99-004-9910SP
Portable battery Printer	AA99-000-9907SP

TCR TECORA s.r.l. Via Alessandro Volta, 22/24 - 20094 Corsico (Mi) Italy - Tel. 02 4505501 Fax. 02 48601811 - www.tecora.it e-mail: tcrtec@tecora.it

Product Data Immission Line 2.003.1 Ed. 3 03/09 - Technical specifications may change without previous warning

Emission Line 1.003.01

Stack gas velocity and flow meter with Pitot Tube

FLOWTEST St

USB

Main Characteristics:

- In accordance with UNI EN 13284, ISO 9096, UNI 10169, EPA M2.
- Compatible with major Pitot tubes and thermocouples in the market.
- **USB** interface to download data.
- Graphic interface hightly intuitive and simple.
- Pressure sensors hightly accurate, with thermical drift compensation device.
- **Wide library** with specifications of the most common ducts
- **Datalogger** function with saving data on USB key (supplied with the instrument).
- Power supply with alkaline batteries and/or rechargeable AA type, replaceable by the customer.
- Battery autonomy up to 24 hours.
- Available with COFRAC certificate (for laboratory accredited with ISO 17025)

Flowtest ST establish new standards for stack gas velocity and flow meters with Pitot tubes.

Completely renewed compared to the old model, it boasts characteristics that highlight it compared to similar instruments in the market.

The classic functions of velocity performance and isokinetic sampling have been improved and made easier and more flexible.

With the new software the user can change the time duration per point, repeat a measurement point or recover an incomplete profile already stored in an easy and simple manner.

The new Flowtest ST uses an USB port: to download data, simply insert and copy files onto a common USB key.

File format is compatible with all browser and the most common spreadsheet.

Sensor calibration has been performed with high accuracy and care.

Each sensor is calibrated through an accurate procedure and is traceable to standards.

Each instrument is supplied with a calibration certificate or with a COFRAC certificate (optional).

TCR TECORA s.r.l. Via Alessandro Volta, 22/24 - 20094 Corsico (Mi) Italy - Tel. 02 4505501 Fax. 02 48601811 - www.tecora.it e-mail: tcrtec@tecora.it

Product Data Emission Line 1.003.01 Ed. 0 03/09 - Thecnical specifications may change without previous warning

TCR TECORA

COMPANY WITH QUALITY MANAGEMENT SYSTEM CERTIFIED BY DNV =ISO 9001 : 2000=

Emission Line 1.003.02

The most important parameters are easily seen on the wide graphic display.

The status bar shows the name of the site in which you are working and the battery life.

The lower bar shows a menu that, through the function keys, allows quick and intuitive navigation.

Display during measure range

The numeric keypad simplifies the data entry procedures.

Flowtest ST is supplied with a large carrying case for cables and accessories.

Utility programs and functions

Flowtest ST includes the following utility programs:

- Programmable library with the specifications of the most common ducts exportable through USB onto PC
- Indication of duct measurement grid and calculation of the sampling points for circular and rectangular ducts
- Determination of the velocity profile and storage of the measurement report
- Nozzle calculation to use, based on the characteristics of the duct and the suction unit used
- Automatic autozero function: the differential pressure sensor zero can be performed with the probe in the duct, without disconnecting the tubes (optional)
- Surveillance function (data logging on a fix point) with continuously logging of the measured parameters with time interval between 30 seconds and 1 hour, with storage on USB key
- Isokinetic samplig program that includes:
  - Identification of the measurement flow to set;
  - Storage of instrument's volume and temperature readings;
  - Storage and measurement report with indication of duct parameters and sampled volumes.
- Wide preconfigured report:
  - velocity profile with point-by-point and summary report;
  - isokinetig sampling with point-by-point and summary report;
  - log of all measure point's thermodynamic parameters

Saving and exporting data on a USB key (supplied with the instrument)

TCR TECORA s.r.l. Via Alessandro Volta, 22/24 - 20094 Corsico (Mi) Italy - Tel. 02 4505501 Fax. 02 48601811 - www.tecora.it e-mail: tcrtec@tecora.it

Product Data Emission Line 1.003.02 Ed. 0 03/09 - Technical specifications may change without previous warning

TCR TECORA

COMPANY WITH QUALITY MANAGEMENT SYSTEM CERTIFIED BY DNV =ISO 9001:2000=

Emission Line 1.003.03

A wide selection of Pitot tubes are available for different application. For more information, see Product Data 1.100.03

Technical characteristics

Differential pressure	
Range	0 - 1000 Pa (0 - 100 mmH_2O)
Combined hysteresis and linearity	0.25 % F.S.
Accuracy	better than 1% of measure ± 2 Pa
Resolution	0.1 Pa (0.001 mmH_2O)
Differential pressure max	30 000 Pa (3000 mmH_2O)
Absolute Pressure (static or barometric)	
Range	0 - 105 kPa (1050 mBar) absolute
Combined hysteresis and linearity	0.25 % F.S.
Accuracy	better than 1% of measure ± 0.1 kPa
Resolution	0.01 kPa (0.1 mBar)
Temperature Measure	
Resolution	0.1 °C
Usable Thermocouples:	
Thermocouple type "K"	0 + 1200 °C
Accuracy	1% of measure ± 0.4 °C
Thermocouple type "J"	-20 + 600 °C
Accuracy	1% of measure ± 0.4 °C
Thermocouple type "T"	-200 + 400 °C
Accuracy	1% of measure ± 0.4 °C
General specifications	
Working Temperature	-20 +40 °C 95% UR
Power supply	n°4 alkaline battery type AA (or rechargeable)
Battery autonomy	up to 24 hours
Display	Graphic LCD 128x64 pixel
Keypad	Membrane with tactile effect
USB Port	USB 1.0; 1.1 e 2.0
Weight	550 g (including batteries)
Dimensions	115 x 230 x 45 mm

Codes for orders

Flowtest ST	P/N	AC99-004-0010SP
supplied with: - USB key 1 Gb - Carrying case - Quick connection kit - User's manual - Calibration certificate - 4 alkaline batteries type AA		
Connecting cable for measurement probe	Lenght P/N Lenght P/N	1,3 mt AC99-004-9920SP 3 mt AC99-004-9921SP
4 rechargeable batteries type AA	P/N	AC99-004-9931SR
Battery charger for rechargeable batteries	P/N	AC99-004-9930SR

Carrying case

TCR TECORA s.r.l. Via Alessandro Volta, 22/24 - 20094 Corsico (Mi) Italy - Tel. 02 4505501 Fax. 02 48601811 - www.tecora.it e-mail: tcrtec@tecora.it

Product Data Emission Line 1.003.03 Ed. 0 03/09 - Technical specifications may change without previous warning

Schéma zapojenia manuálnej aparatúry DELTA - FLOWTEST - izokinetický odber TZL

TCR TECORA

Odberová sonda MINISTACK

Zápis priamo na USB kľúč

Merací dataloger FLOWTEST ST

Môže byť použitý aj samostane pri meraniach rýchlosti a objemového prietoku v potrubiach so záznamom nameraných a celkových údajov.

Kondenzačný chladič vzorky

Elektronická odberová jednotka DELTA Mk2

Merané parametre:
- diferenčný tlak plynu
- absolútny tlak plynu
- teplota plynu

Vypočítané parametre:
- počet a rozmiestnenie mer. bodov v priereze potrubia
- ideálny priemer hubice
- rýchlosť a prietok plynu
- objem odobratej vzorky
- prietok vzorky pre nastavenie odber. jednotky (izokinetický odber)
- vygeneruje merací protokol

MERATEX
Meracia technika

Predajca pre SR a ČR:
Meratex, s.r.o.
Szakkayho 1
040 01 Košice

Tel.: 055/6711988 / 0907992078
www.meratex.sk
e-mail: demko@meratex.sk