

All-in-One Flow Controller TrB III Trigger Box

Inhaler Testing – No Assumptions

The TrB III Trigger Box ensures compliance with standard pharmacopeial methods, both recording and storing key system parameters, including the actual flow rate and run duration. Many inhaler test methods rely on critical flow conditions across the flow control valve, aiming to ensure the same flow rate on each test. But the TrB III does more – actually measures the flow of each test – so, there are no assumptions.

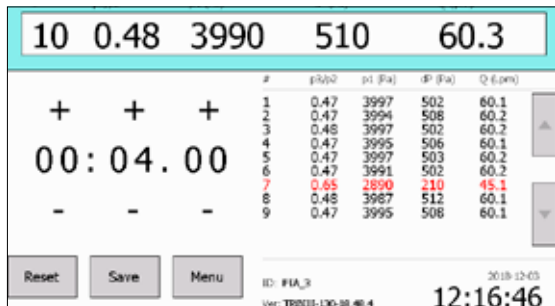
A calibrated laminar flow element (LFE) internal to each TrB III enables the user to set the flow rate at the beginning of a test sequence; with this LFE, the TrB III then records the flow rate of each test, ensuring against drift, leaks, and other non-ideal behavior that may introduce variability in test results. The TrB III also records the other more traditional run-time parameters, such as the test duration, the pressure drop across the inhaler device (P1), and the flow control pressure ratio (P3/P2, critical flow if ≤ 0.5). To measure pressure drop over, e.g., individual impactor stages to detect blockage, additional internal sensors are used.¹

Additional user-friendly functions are leak checking and synchronized device actuation by using the integrated output port. Device actuation enables the flow to start simultaneously with dose actuation of a metered-dose inhaler, allowing a user-defined, fixed flow volume for MDI total dose testing. Query i@fia.se for details of actuator options.



	TRB III
Flow actuation	0-60 min, 0.1s resolution
Actuation counter	Resettable 0-999
Foot switch	Yes
Display	7" touch
P1 measurement	Yes, 0-16 kPa
P3/P2 measurement	Yes
Flow measurement	Calibrated 0 - 120 l/min (operating range possibly higher)
dP (e.g. stage dP)	Yes, high precision 0-6 kPa
Automatic leak test	Yes
Printable data	Prints new actuations continuously or print all actuations from reset. – Date/time of first dose – Instrument ID – Instrument ver – Flow "on" time – External relay timing – Atmospheric pressure – Dose number – P1 and flow – P3/P2 (if < 0.5) – dP (stage pressure drop)
Relay output for actuation of external equipment	Yes, configurable timing of output relative vacuum opening.
Displayed history of recent actuation data	All actuations from reset.
Interfaces	– Relay output for actuation of external equipment – Foot switch actuator – USB for CSV export
Dimensions (cm)	34x13x13





Trigger Model III Screen dump

User-Friendly

With a large-handle flow control valve and easy-to-read display, the TrB III can quickly be set to go. Just press the start button (or foot pedal) and each run clicks off like clock-work – a resettable run counter helps ensure that the correct number of actuations are made.

The TrB III has a 7" touch-screen that allows the system to be set up and measured values to be presented; this screen can be operated with or without gloves.

Specifications

Dimensions are surprisingly compact: 34x13x13 cm. High-quality pressure sensors – for device pressure drop, critical flow control, flow measurement, and stage pressure drop.

Function	Full-Scale	Certified Accuracy
Device pressure drop, P1	16 kPa	± 160 Pa
Atmospheric pressure, Patm	160 kPa	± 800 Pa
Pressure upstream of flow control valve, P2	160 kPa	± 800 Pa
Pressure downstream of flow control valve, P3	160 kPa	± 800 Pa
Pressure drop of laminar flow element	250 Pa	N/A. See Volumetric Flow.
Volumetric flow	N/A	± 0.5 l/min for flows smaller than 20 l/min. ± 2 % for flows between 20 and 60 l/min. ± 1.5 % for flows between 60 and 125 l/min. ± 3 % for flows larger than 125 l/min.
Stage pressure drop sensor, dP*	0-600 Pa 600-6000 Pa	± 6 Pa ± 60 Pa

*The system automatically switches between the two ranges using the same port.

GMP-Friendly and Quality-Friendly

Need a data record from your testing – no problem; the equipment stores the data from each actuation, and at the end of each test the Print sign can be pressed. The TrB III readily connects to many standard laboratory printers; **print, sign, done**. Enquire for more information.



Printing eliminates the uncertainties of how many doses have been taken and under what conditions! It fits equally well within your R&D as in your GMP QC department. For the latter and if desired, simplified versions with less data ports of the TrBIII are available.

In-house calibration – **Possible** – no need to send to FIA for periodic calibration (ask our representative for suggested methods). FIA also provides calibration service if requested.

Reference

1. Roberts, D.L., et. al., Experimental and Theoretical Investigation of a New Approach to In-Use Impactor Quality Specifications, Drug Delivery to the Lungs, DDL2018



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