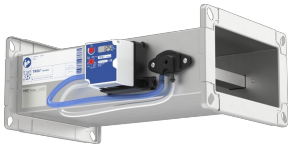
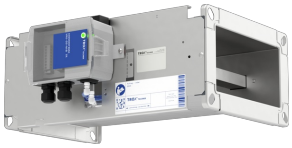
TROX® TECHNIK
The art of handling air



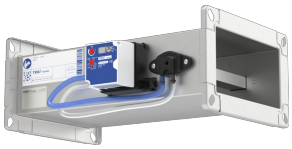
VOLUME FLOW RATE MEASURING UNIT VME WITH ATTACHMENT XTS/XTD



VOLUME FLOW RATE MEASURING UNIT VME WITH CONTROL COMPONENTS BTD AND BTS

VME with control component BTD

VME with control component BTD



VOLUME FLOW RATE MEASURING UNIT VME WITH CONTROL COMPONENT XTS/XTD

Type VME with control component XTD

Type VME with control component ELAB TCU3

TESTED TO VDI 6022

Tested to VDI 6022

VME

FOR THE MEASUREMENT OF VOLUME FLOW RATES IN DUCTS

Rectangular volume flow rate measuring unit for recording or monitoring

of volume flow rates

- Manual volume flow rate measuring
- Continuous volume flow rate measuring
- Recording of measured values for other controllers or for the LABCONTROL air management system
- Optional effective pressure transducer for the automatic recording of measured values, factory mounted and complete with wiring and tubing
- Casing air leakage to EN 15727, up to class D

Optional equipment and accessories

- Surface powder-coated, silver grey (RAL 7001)
- Dynamic or static effective pressure transducers

General Information

Application

- Rectangular volume flow rate measuring unit for the manual recording or automatic measuring of volume flow rates
- Simplified commissioning, approval and maintenance
- Optional dynamic effective pressure transducer for systems with clean air
- Optional static effective pressure transducer for systems with contaminated air

Special features

- Suitable for permanent installation because of low differential pressure
- High accuracy of volume flow rate measurements

Nominal sizes

- 39 nominal sizes from 200 × 100 to 1000 × 1000

Construction

- Galvanised sheet steel
- P1: Powder-coated, silver grey (RAL 7001)

Parts and characteristics

- Ready-to-commission unit which consists of mechanical parts and an optional differential pressure transducer.
- Averaging effective pressure sensor for volume flow rate measurement

Only for variant with optional differential pressure transducer as add-on part:

- Optional differential pressure transducer, factory mounted and wired
- Aerodynamic functional testing on a special test rig before shipping of each unit
- Set-up data is given on a label or volume flow rate scale affixed to the unit

Attachments

- Dynamic effective pressure transducer (BTD, XTD)
- Static effective pressure transducer (BTS, XTS)
- LABCONTROL: Components for air management systems

Construction features

- Rectangular casing
- Flanges on both ends, suitable for duct connection
- Connection points for effective pressure measuring tubes with 6 mm inside diameter

Materials and surfaces

Galvanised sheet steel variant

- Casing made of galvanised sheet steel
- Effective pressure sensor made of aluminium

Powder-coated construction (P1)

- Casing made of galvanised sheet steel, powder-coated
- Differential pressure sensor made of aluminium profiles with powder coating

Standards and guidelines

Meets the hygiene requirements of

- EN 16798, Part 3
- VDI 6022, Sheet 1
- DIN 1946, Part 4
- For other applicable standards and guidelines refer to the hygiene certificate

Casing air leakage

- EN 15727, class D except B+H ≤ 700, class C

Maintenance

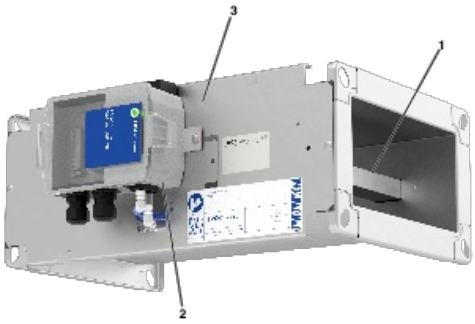
- Maintenance-free as construction and materials are not subject to wear

TECHNICAL INFORMATION

Function, Technical data, Quick sizing, Specification text, Order code

The volume flow rate measuring unit is fitted with an effective pressure sensor for measuring the volume flow rate. The effective pressure recorded with this sensor is either measured and evaluated manually, or transformed into an electrical signal by a measuring transducer (effective pressure transducer).

VME with attachment BTD



1: Effective pressure sensor
2: Transmitter (optional add-on part)
3: Casing

Nominal sizes	200 × 100 – 1000 × 1000 mm
Volume flow rate range	42 – 14246 l/s or 149 – 51289 m³/h
Effective pressure range	approx. 2 – 260 Pa *
Operating temperature	10 to 50 °C
Measurement accuracy	±4 – 13% of the measured value
Maximum differential pressure	1000 Pa

For more information about quick sizing clickhere.

Specification text

Rectangular volume flow rate measuring unit for the measurement of volume flow rates in air conditioning systems, available in 39 nominal sizes. For the manual volume flow rate measuring or for the continuous monitoring of the actual value signal. Ready-to-commission unit which consists of the casing with an averaging differential pressure sensor. Differential pressure sensor with 3 mm measuring holes (resistant to dust and pollution). Meets the hygiene requirements of EN 16798, Part 3, VDI 6022, Sheet 1, and DIN 1946, Part 4.

Special features

- Suitable for permanent installation because of low differential pressure
- High accuracy of volume flow rate measurements

Materials and surfaces

Galvanised sheet steel construction

- Casing made of galvanised sheet steel
- Effective pressure sensor made of aluminium

Powder-coated construction (P1)

- Casing made of galvanised sheet steel
- Surface powder-coated, silver grey (RAL 7001)
- Effective pressure sensor made of aluminium

Connection type

- Flanges on both ends, suitable for duct connection

Technical data

- Nominal sizes: 200 × 100 to 1000 × 1000 mm
- Volume flow rate range: 42 – 14246 l/s or 149 – 51289 m³/h
- Effective pressure range: approx. 2 – 260 Pa
- Operating temperature: 10 to 50 °C
- EN 15727, class D except B+H ≤ 700, class C

VME	–	P1	/	600 × 400	/	XTD	/	0
1		2		3		4		5

1 Type
VME Volume flow rate measuring unit, rectangular

2 Material
No entry: galvanised sheet steel
P1 Powder-coated RAL 7001 (silver grey)

3 Nominal size [mm]
Specify size (width × height)

4 Attachment
No entry: without attachment
XTD dynamic effective pressure transducer, analogue, display
BTD dynamic effective pressure transducer, analogue, MP bus, Modbus RTU, BACnet MS/TP
XTS static effective pressure transducer, analogue, display
BTS static effective pressure transducer, analogue, MP bus, Modbus RTU, BACnet MS/TP

5 Signal voltage range
For the actual value signal (required only if an attachment has been selected)
0 0 – 10 V DC
2 2 – 10 V DC

Order example: VME-P1/600x400/XTD/0

Type	VME
Material	Powder-coated RAL 7001 (silver grey)
Nominal size [mm]	Width 600, height 400
Attachment	Dynamic differential pressure transducer, analogue, display
Signal voltage range	0 – 10 V DC

,

VME	–	P1	/	600 × 400	/	ELAB	/	EC	–	E0	/	UMZ
1		2		3		4		5		6		7

1 Type
VME Volume flow rate measuring unit, rectangular

2 Material
No entry: galvanised sheet steel
P1 Powder-coated RAL 7001 (silver grey)

3 Nominal size [mm]
Specify size (width × height)

4 Attachment (control component)
ELAB EASYLAB TCU3

5 Equipment function
SC Supply air capture
EC Extract air capture

6 Signal voltage range
For the actual value signal
E0 0 – 10 V DC
E2 2 – 10 V DC

7 Expansion modules
Option 1: Power supply
No entry: 24 V AC/DC
T with EM-TRF for 230 V AC mains supply
U with EM-TRF-USV (including battery pack) for uninterruptible 230 V AC power supply (UPS)

Option 2: Communication interface
No entry: without communication interface
B with EM-BAC-MOD for BACnet MS/TP
M with EM-BAC-MOD for Modbus RTU
I with EM-IP for BACnet IP, Modbus IP and web server
R with EM-IP (including real time clock, RTC) for BACnet IP, Modbus IP and web server

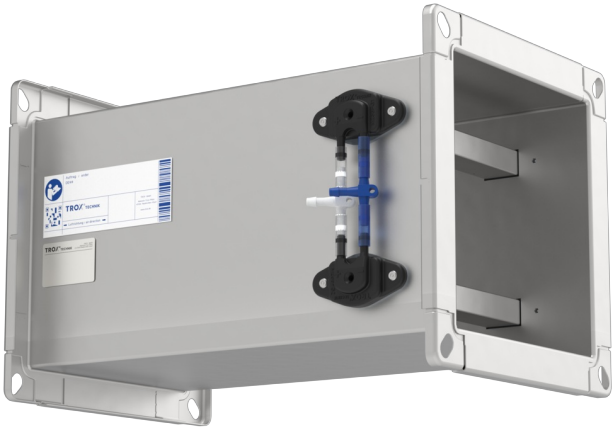
Option 3: Automatic zero point correction
No entry: without automatic zero point adjustment
Z with EM-AUTOZERO solenoid valve for automatic zero point correction

Order example: VME-P1/600×400/ELAB/EC-E0/UMZ

Type	VME
Material	Powder-coated RAL 7001 (silver grey)
Nominal size [mm]	Width 600, height 400
Attachment (control component)	EASYLAB TCU3
Equipment function	Extract air capture
Signal voltage range	0 – 10 V DC
Expansion modules	Power supply: with EM-TRF UPS (incl. battery) for 230 V AC uninterruptible mains supply (UPS) Communication interface: with EM-BAC-MOD for Modbus RTU Automatic zero point adjustment: with EM-AUTOZERO, solenoid valve for automatic zero point adjustment

Variants, Product details, Additional product information

Volume flow rate measuring unit VME without attachment



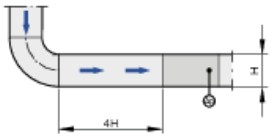
Installation and commissioning

- The installation orientation of ELAB must be as shown on the sticker
- The installation orientation of XTD/XTS or BTD/BTS is not critical

Upstream conditions

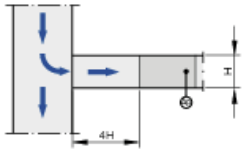
The volume flow rate accuracy Δq_v applies to a straight upstream section of the duct. Bends, junctions or a narrowing or widening of the duct cause turbulence that may affect measurement. Duct connections, e.g. branches off the main duct, must comply with EN 1505. Some installation situations require straight duct sections upstream.

Bend, vertical



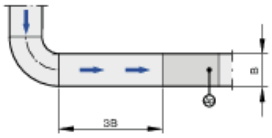
A bend – with a straight duct section of at least 4H upstream of the measuring unit – has only a negligible effect on the volume flow rate accuracy.

Junction, vertical



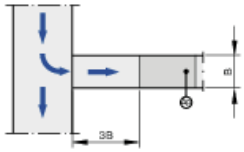
A junction causes strong turbulence. The stated volume flow rate accuracy Δq_v can only be achieved with a straight duct section of at least 4H upstream.

Bend, horizontal



A bend – with a straight duct section of at least 3B upstream of the measuring unit – has only a negligible effect on the volume flow rate accuracy.

Junction, horizontal



A junction causes strong turbulence. The stated volume flow rate accuracy Δq_v can only be achieved with a straight duct section of at least 3B upstream.

Optional attachments for effective pressure transducers

Attachment	Interface	Effective pressure transducer	Manufacturer
Differential pressure transducer, dynamic			
XTD	0 – 10 V or 2 – 10 V	integrated	①
BTD	0 - 10 V or 2 - 10 V or MP-Bus or Modbus RTU or BACnet MS/TP	integrated	②
Differential pressure transducer, static			
XTS	0 – 10 V or 2 – 10 V	integrated	①
BTS	0 - 10 V or 2 - 10 V or MP-Bus or Modbus RTU or BACnet MS/TP	integrated	②
ELAB	TROX plug and play communication system and 0 - 10 V or 2 - 10 V or with optional accessories: Modbus, BACnet, web server	integrated	③

① TROX/Gruner, ② TROX/Belimo, ③ TROX