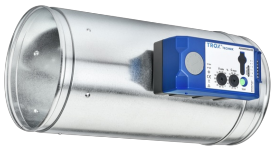
TROX® TECHNIK
The art of handling air

Set flow rates

VAV TERMINAL UNIT
TYPE TVR/160/EASY

VAV terminal unit type TVR with an Easy controller



VAV terminal unit type TVE with an Easy controller

VAV CONTROL UNIT
VARIANT TVE-Q-P1
(POWDER-COATED)

Easy controller for TVE-Q series

EASY

FOR EASY ADJUSTMENT

Control components for VAV terminal units, to be mounted on the terminal unit for easy operation

- Simplified ordering and on-site assignment to rooms as selection is based on the nominal size of the duct
- Simple volume flow rate setting without additional device
- Indicator light simplifies functional checking
- With push button for triggering a function test
- Proven technology of the Compact volume flow controllers
- Suitable for constant and variable volume flow rates and q_{vmin}-, q_{vmax}-

Switching

General information

Application

- All-in-one control devices for VAV terminal units
- Dynamic effective pressure transducer, electronic controller and actuator are fitted together in one casing
- Dynamic differential pressure transducer for clean air in ventilation and air-conditioning systems
- Standard filtration in comfort air-conditioning systems allows the controller to be used in the supply air without additional dust protection measures
- Various control options based on setpoint value default setting
- Volume flow rate control is based on setpoint values received from room temperature controller, central BMS, air quality controller or other devices as an analogue signal.
- Override control for activating q_{vmin}, q_{vmax}, shut-off or OPEN position can be set with a switch or relay
- The volume flow rate actual value is available as a linear voltage signal

If air is contaminated with dust, lint, sticky, moist or slightly aggressive particles:

- Do not use an Easy controller

Construction

- LMV-D3AL-F TR for LVC
- TR0VE-024T-05I-DD15 for TVE, TVE-Q
- LMV-D3A-F TR for TVR
- LMV-D3A TR for TZ-Silenzio, TA-Silenzio, TVZ, TVA
- 227V-024T-05-002 for TVR
- 227V-024T-05-002/RE20 for TZ-Silenzio, TA-Silenzio, TVZ, TVA
- 227V-024T-15-002 for TVJ, TVT up to and including 1000 × 500
- SMV-D3A TR for TVT from 1000 x 600

Parts and characteristics

- Transmitter based on dynamic measuring principle, can only be used with clean air, as a partial volume flow is passed through the transducer
- Mechanical stops for limiting the damper positions (not for TVE and TVE-Q)
- Actuators with overload protection
- Transparent protective cap or terminal cover (for TVE and TVE-Q)

Interface

- Analogue signal 0 – 10 V DC

Control strategy

- The volume flow controller works independent of the duct pressure
- Differential pressure fluctuations do not result in permanent volume flow rate changes
- To prevent the control from becoming unstable, a dead band is allowed within which the damper blade does not move
- Volume flow parameters can be easily changed by the customer

Operating modes

- Operating mode variable volume flow rate, q_{vmin}: minimum volume flow rate, q_{vmax}: maximum volume flow rate
- Operating mode Constant value, q_{vmin}: Constant volume flow rate, q_{vmax}: 100 %

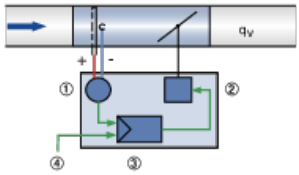
Commissioning

- Operating values q_{vmin}, q_{vmax} to be set on site with potentiometer on the outside of the housing without additional adjustment tools

TECHNICAL INFORMATION

Air terminal units control the volume flow in a closed loop, which means: measurement – comparison – adjustment.
The volume flow rate is obtained by measuring a differential pressure. This is done with a differential pressure sensor. The integrated differential pressure transducer converts the differential pressure into a voltage signal. The actual volume flow rate is available as a voltage signal. The factory setting is such that 10 V DC always corresponds to the nominal flow rate (q_{vNom}).
The volume flow setpoint is specified by a higher-level controller (e.g. room temperature controller, air quality controller, building management system) or by switching contacts. Variable volume flow control can be set between$_{vmin}$ and q_{vmax}. It is possible to override the room temperature control by forced switching, e.g. for a shut-off
The controller compares the volume flow setpoint with the current actual value and adjusts the internal actuator according to the control deviation.
Volume flow parameter q_{vmin} and q_{vmax}can be set on potentiometers.

Principle of operation – LVC, TVR, TZ-Silenzio, TA-Silenzio, TVZ, TVA, TVJ, TVT



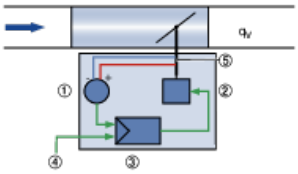
① Effective pressure transducer

② Actuator

③ Volume flow controller

④ Setpoint value signal

Functional principle of the TVE and TVE-Q control unit series



① Differential pressure transducer

② Actuator

③ Volume flow controller

④ Setpoint value signal

⑤ Shaft with effective pressure channel

Category

Easy controller for volume flow with potentiometer setting for q_{vmin}, q_{vmax}

Application

- Control of a constant or variable volume flow rate setpoint
- Electronic controller for applying a reference value and capturing an actual value signal
- The actual value signal relates to the nominal volume flow rate so that commissioning and subsequent adjustment are simplified
- Stand-alone operation or integration with a central BMS

Area of application

- Dynamic transducer for clean air in ventilation and air conditioning systems

Actuator

- Integral; slow running (run time 100–270 s for 90°)

Installation orientation

- Either direction

Connection

- Double terminal for supply voltage to connect up to 3 controllers
- No terminal box required.

Supply voltage

- 24 V AC/DC

Interface/signalling

- Analogue signal 0 – 10 V DC

Interface information

- Volume flow setpoint; actual volume flow rate
- The actual value signal relates to the nominal volume flow rate so that commissioning and subsequent adjustment are simplified

Special functions

- Clearly visible external indicator light for signalling the functions: Set, not set, and power failure
- Activation of V_{min}, V_{max}, closed, open by external switch contacts/circuitry

Parameter setting

- Specific parameters for VAV terminal unit are factory-set
- Operating values q_{vmin}, q_{vmax} to be set on site with potentiometer on the outside of the housing without additional adjustment tools

Factory condition

- Electronic controller is factory mounted on the control unit
- Factory-set parameters
- Functional test with air (see sticker)

Control component Easy (shown together with TVR as an example)

TVR	–	D	/	200	/	D2	/	Easy
|		|		|		|		|
1		2		5		6		7

1 Type
TVR VAV terminal unit

2 Acoustic cladding
No entry: none
D With acoustic cladding

5 Nominal size [mm]
100, 125, 160, 200, 250, 315, 400

6 Accessories
No entry: without accessories
D2 Lip seals on both ends
G2 Matching flanges for both ends

7 Attachments (control component)
Easy Easy controller

Order example: TVR-D/200/D2/Easy

Type	TVR
Acoustic cladding	With acoustic cladding
Nominal size [mm]	200
Accessories	Double lip seal both ends
Attachments (control component)	Easy controller