

The art of handling air

Type TVM



FOR DUAL DUCT SYSTEMS

VAV dual duct terminal units for dual duct systems with variable volume flows in buildings with demanding acoustic requirements

- Individual temperature control for each room or zone
- Highly effective integral attenuator
- Electronic control components for different applications (Compact and Universal)
- Suitable for airflow velocities up to 13 m/s
- Closed blade air leakage to EN 1751, class 4
- Casing air leakage to EN 1751, class A

Optional equipment and accessories

- Acoustic cladding for the reduction of case-radiated noise
- Secondary silencer Type TS for the reduction of air-regenerated noise



Application

- VARYCONTROL VAV dual duct terminal units of Type TVM for the supply air control in dual duct variable or constant air volume systems
- Closed-loop volume flow control using an external power supply
- For maximum acoustic and thermal comfort
- Demand-based mixing of cold and warm air
- Shut-off by means of switching (equipment supplied by others)

Special features

- Integral differential pressure sensor with 3 mm measuring holes (resistant to dust and pollution)
- Integral attenuator with at least 26 dB insertion loss at 250 Hz
- Factory set-up or programming and aerodynamic function testing
- Volume flow rate can later be measured and adjusted on site; additional adjustment device may be necessary

Variants

- TVM-S Dual duct unit, 60° spigot arrangement
- TVM-S-D Dual duct unit with acoustic cladding, 60° spigot arrangement
- TVM: Dual duct unit, 90° spigot arrangement
- TVM-D: Dual duct unit with acoustic cladding, 90° spigot arrangement
- Units with acoustic cladding and/or secondary silencer Type TS for very demanding acoustic requirements
- Acoustic cladding cannot be retrofitted

Parts and characteristics

- Ready-to-commission unit which consists of mechanical parts and control components.
- Averaging differential pressure sensors for volume flow rate measurement, one in the cold air spigot and one in the silencer
- Damper blade
- Integral attenuator
- Inspection access for cleaning to VDI 6022
- Factory-assembled control components complete with wiring and tubing
- Aerodynamic function testing on a special test rig prior to shipping of each unit
- Set-up data is given on a label or volume flow rate scale affixed to the unit
- High control accuracy (even with upstream bend $R = 1D$)

Attachments

- Compact controller: Compact unit consisting of controller, differential pressure transducer and actuator
- Universal controller: Controller, differential pressure transducer and actuators for special applications

Accessories

- Lip seals (factory fitted)

Useful additions

- Secondary silencer Type TS

Construction features

- Rectangular casing
- Spigot on the fan end suitable for circular ducts to EN 1506 or EN 13180
- Spigot with groove for lip seal
- Connection on the room end suitable for air duct profiles
- Baffle plate is fitted after the damper blade for optimum aerodynamic performance
- Position of the damper blade indicated externally at shaft extension
- Thermal and acoustic insulation (lining)

Materials and surfaces

- Casing and damper blade made of galvanised sheet steel
- Damper blade seal made of TPE plastic
- Lining is mineral wool
- Differential pressure sensor made of aluminium
- Plastic bearings

TVM-S-D, TVM-D

- Acoustic cladding made of galvanised sheet steel
- Lining is mineral wool
- Rubber elements for the insulation of structure-borne noise

Mineral wool

- To EN 13501, fire rating class A1, non-combustible
- RAL quality mark RAL-GZ 388
- Biosoluble and hence hygienically safe according to the German TRGS 905 (Technical Rules for Hazardous Substances) and EU directive 97/69/EG
- Faced with glass fibre fabric as protection against erosion through airflow velocities of up to 20 m/s
- Inert to fungal and bacterial growth

INFORMACIÓN TÉCNICA

Functional description

The VAV terminal unit is fitted with two differential pressure sensors for measuring the volume flow rates, one in the cold air flow and one in the total air flow.

The control components (attachments) include two differential pressure transducers that transform the differential pressure (effective pressure) into an electric signal, two controllers, and two actuators; the control functions can be achieved with a Compact controller or with individual components.

For most applications, the setpoint value comes from a room temperature controller.

The controller compares the actual value with the setpoint value and alters the control signal of the damper actuator if there is a difference between the two values.

The room temperature controller alters the setpoint for the cold air flow rate between 0 and the maximum volume flow rate V_{\max} .

The warm/total air controller is set to the minimum volume flow rate V_{\min} and controls the warm air damper blade. As a consequence, a corresponding proportion of warm air is added. As the demand for cooling increases, the warm air damper blade closes such that eventually only cold air flows.

An integral attenuator reduces the noise that is created by the restriction of the airflow.

The airflow velocity at the room end is, due to the larger rectangular cross section, about half the velocity in the circular duct.



Rectangular VAV dual duct terminal units for dual duct systems with variable and constant volume flows, available in 6 nominal sizes.

Connecting spigots for warm and cold air arranged at an angle of 90° . Up to nominal size 200 an angle of 60° is also possible, hence ideal for the refurbishment of older systems with dual duct units.

High control accuracy (even with upstream bend $R = 1D$).

Ready-to-commission unit which consists of the mechanical parts and the electronic control components. Each unit contains two averaging differential pressure sensors for volume flow rate measurement, one in the cold air flow and one in the total air flow, two damper blades, and an integral attenuator. Factory-assembled control components complete with wiring and tubing.

Differential pressure sensor with 3 mm measuring holes (resistant to dust and pollution)

On the fan end, spigot with groove for lip seal, suitable for connecting ducts to EN 1506 or EN 13180.

Room end suitable for the connection of air duct profiles.

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Two baffle plates, one fitted after each damper blade for optimum acoustic and aerodynamic performance.

Casing with acoustic and thermal insulation.

Position of the damper blade indicated externally at shaft extension.

Closed blade air leakage to EN 1751, class 4 (nominal sizes 125 and 160, class 3).

Casing air leakage to EN 1751, class B.

Complies with VDI 2083, clean room class 3, and US standard 209E, class 100. Hygiene complies with VDI 6022, DIN 1946, part 4, as well as EN 13779 and VDI 3803.

Special features

- Integral differential pressure sensor with 3 mm measuring holes (resistant to dust and pollution)
- Integral attenuator with at least 26 dB insertion loss at 250 Hz
- Factory set-up or programming and aerodynamic function testing
- Volume flow rate can later be measured and adjusted on site; additional adjustment device may be necessary

Materials and surfaces

- Casing and damper blade made of galvanised sheet steel
- Damper blade seal made of TPE plastic
- Lining is mineral wool
- Differential pressure sensor made of aluminium
- Plastic bearings

TVM-S-D, TVM-D

- Acoustic cladding made of galvanised sheet steel
- Lining is mineral wool
- Rubber elements for the insulation of structure-borne noise

Mineral wool

- To EN 13501, fire rating class A1, non-combustible
- RAL quality mark RAL-GZ 388
- Biosoluble and hence hygienically safe according to the German TRGS 905 (Technical Rules for Hazardous Substances) and EU directive 97/69/EG
- Faced with glass fibre fabric as protection against erosion through airflow velocities of up to 20 m/s
- Inert to fungal and bacterial growth

Technical data

- Nominal sizes: 125 – 400 mm
- Volume flow rate range: 45 to 1680 l/s or 160 to 6050 m³/h
- Volume flow rate control range: approx. 30 – 100 % of the nominal volume flow rate
- Differential pressure: 120 – 1500 Pa

Attachments

Variable volume flow control with electronic Compact controller to switch an external control signal and an actual value signal for integration into the central BMS.

- Supply voltage 24 V AC/DC
- Signal voltages 0 – 10 V DC or 2 – 10 V DC

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- Possible override controls with external switches using volt-free contacts: CLOSED, OPEN, V_{\min} and V_{\max}
- Volume flow rate approx. 30 – 100 % of the nominal volume flow rate



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