



## UNIVERSAL, STATIC

### FOR CONTAMINATED EXTRACT AIR OR FOR PRESSURE CONTROL

Modular control components for VAV terminal units, especially for aggressive media in extract air systems

- Module selection based on application
- Actuators with selected actuator forces

#### Options

- Actuators with safety function for 'damper blade OPEN' and 'damper blade CLOSED' (spring return actuators)

## Application



#### Application

- Electronic volume flow controllers of Type Universal (static) are designed for use with VAV terminal units.
- Volume flow control or differential pressure control based on static differential pressure measurement
- Dynamic differential pressure transducer and electronic controller can be fitted together in one casing or in separate casings
- Actuator or spring return actuator is separate
- The output signals of the room temperature controller, central BMS, air quality controller or similar units control the volume flow rate setpoint
- Override control by means of switches or relays
- Volume flow rate actual value or differential pressure actual value is available as linear voltage signal
- Controller parameters are factory set
- On-site adjusting is not required
- Please note that in critical cases, material compatibility testing must be carried out on the air terminal unit and the differential pressure transducer, taking into consideration the harmful substances involved and the concentrations in which they occur.

## ТЕХНИЧЕСКА ИНФОРМАЦИЯ

Functional description

The volume flow rate is determined by measuring the differential pressure (effective pressure). For this purpose the VAV terminal unit is fitted with a differential pressure sensor.

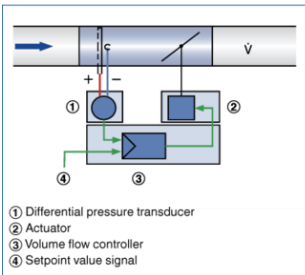
The static differential pressure transducer transforms the effective pressure into a voltage signal. The volume flow rate actual value is hence available as a voltage signal. The factory setting is such that 10 V DC always corresponds to the nominal volume flow rate ( $V_{nom}$ ).

The volume flow rate setpoint value comes from a higher-level controller (e.g. room temperature controller, air quality controller, central BMS) or from switch contacts. Variable volume flow control results in a value between  $V_{min}$  and  $V_{max}$ . It is possible to override the room temperature control, e.g. by a complete shut-off of the duct.

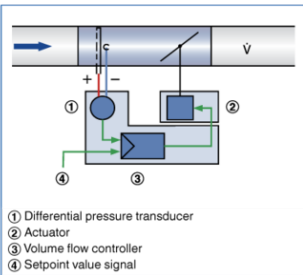
The controller compares the volume flow rate setpoint value to the actual value and controls the actuator accordingly if there is a difference.

The volume flow rate parameters  $V_{min}$  and  $V_{max}$  are set on potentiometers (VRP) or stored in the controller. Voltage ranges are factory stored in the controller. Changes on the customer's site can easily be carried out using a potentiometer, an adjustment device or a notebook with service tool.

Principle of operation – Universal TROX/  
Belimo



Principle of operation – Universal TROX/  
Gruner



Universal controller, static, for VAV terminal units, volume flow control

| Order<br>code<br>detail | Controller     |         | Static differential pressure<br>transducer |         | Actuator       |                                       | VAV terminal<br>units |
|-------------------------|----------------|---------|--|---------|----------------|---------------------------------------|-----------------------|
|                         | Part<br>number | Model   | Part<br>number                             | Model   | Part<br>number | Model                                 | Type                  |
| BP3                     | M466EN6        | VRP-M   | M546EJ1                                    | VFP-300 | M466EQ9        | NM24A-V-ST                            | ① ④                   |
| BP1                     | M466EN6        | VRP-M   | M546EJ1                                    | VFP-300 | M466ER0        | SM24A-V-ST                            | ②                     |
| BPB                     | M466EN6        | VRP-M   | M546EJ1                                    | VFP-300 | M466EQ9        | NF24A-ST (spring return actuator)     | ① ②                   |
| BPG                     | M466EN6        | VRP-M   | M546EJ1                                    | VFP-300 | M466EQ3        | LMQ24A-SRV-ST (last-running actuator) | ① ② ④                 |
| BB3                     | M546EG2        | VRP     | M546EJ1                                    | VFP-300 | M466DJ8        | NM24A-V                               | ① ③ ④                 |
| BB1                     | M546EG2        | VRP     | M546EJ1                                    | VFP-300 | M466DG8        | SM24A-V                               | ②                     |
| BBB                     | M546EG2        | VRP     | M546EJ1                                    | VFP-300 | M466DR1        | NF24A-V (spring return actuator)      | ① ② ③                 |
| XD1                     | M546ED5        | GUAC-S3 | -  | -       | M466EL7        | 227-024-08-V                          | ① ② ③                 |
| XD3                     | M546ED5        | GUAC-S3 | -  | -       | M466EM0        | 238-024-15-V (spring return actuator) | ① ②                   |

① TVR, TZ-Silenzio, TA-Silenzio, TVZ, TVA, TVJ  
② TVT  
③ TVRK  
④ TVLK