



## 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.

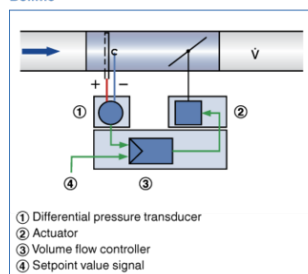
The static differential pressure transducer transforms the effective pressure into a voltage signal. The volume flow rate actual value is hence available as a voltage signal. The factory setting is such that 10 V DC always corresponds to the nominal volume flow rate ( $V_{nom}$ ).

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.

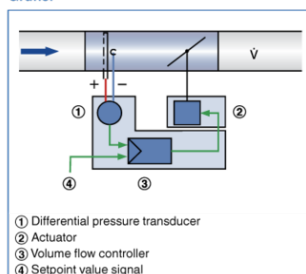
The controller compares the volume flow rate setpoint value to the actual value and controls the actuator accordingly if there is a difference.

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 code detail	Controller		Static differential pressure transducer		Actuator		VAV terminal units
	Part number	Model	Part number	Model	Part 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
BPQ	M466EN6	VRP-M	M546EJ1	VFP-300	M466EQ3	LMQ24A-SRV-ST (fast-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