



EN (Generation 3) with actuator



VFC with actuator



VFR with actuator

# Constant volume flow control CAV terminal units

## Retrofit kit E03



### For motorised setpoint value adjustment on CAV terminal units and flow adjustment dampers, e.g. switching between $q_{vmin}$ and $q_{vmax}$

Actuators for mechanically automatic CAV terminal units EN (Generation 3) and VFC as well as flow adjustment damper VFR

- Motorised, variable setpoint adjustment
- Supply voltage 24 V AC/DC
- Control input signal: Voltage signal 0 – 10 V DC
- Setting the setpoint range by adjusting the potentiometer on the actuator
- Positive lock connection with CAV terminal unit or flow adjustment damper
- Retrofit possible

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## General information

### Application

- Variable setpoint adjustment for mechanically automatic CAV terminal units EN, up to a height of 300 mm (generation 3 with setpoint adjustment on blue rotary knob)
- Variable setpoint adjustment for mechanically automatic CAV terminal units VFC
- Variable setpoint adjustment for flow adjustment dampers VFR
- Variable control input signal: Setpoint signal 0 - 10 V DC corresponds to the set operating range  $V_{\min}$  -  $V_{\max}$
- Working range adjustable via potentiometer

### Parts and characteristics

- Overload-proof actuator 224C-024-03-003
- Positive lock connection with scale adjustment
- 24 V AC/DC supply voltage
- 2 Potentiometers  $V_{\min}$ ,  $V_{\max}$  for setting the working range
- Control input signal: Setpoint value signal 0 – 10 V DC, corresponds to the working range (set on potentiometers)
- Position feedback: 0 - 10 V DC (related to 0 - 93°)
- Control LED for signalling operating states
- Button for test function

### Commissioning

- Set volume flow adjustment range by means of adjustment potentiometer  $V_{\min}$  and  $V_{\max}$ .
- For further information on setting and control, see installation instructions, e.g. CAV terminal unit VFC

## Functional description

Actuators for CAV terminal units and flow adjustment dampers enable motorisation of the setpoint adjustment, which would otherwise have to be carried out manually on the setting scale. The actuator E03 moves the scale adjustment variably between a minimum and a maximum position.

The setpoint adjustment on the scale is controlled by a 0 - 10 V DC voltage signal.

For actuator E03, this voltage signal is mapped by the setting potentiometer  $V_{\min}$  and  $V_{\max}$  to the defined angle of rotation.

The scale range to be used for the setpoint specification must be set during commissioning of the CAV terminal unit using the setting potentiometer.

The 0 - 10 V DC output signal of the CAV actuator is merely a position feedback and not an actual volume flow rate value.

The output signal is mapped to the entire rotation angle 0 - 93° of the actuator.

### Actuator 224C-024-03-003



1 Indicator light (target position reached, actuator movement or blockage)

2 Setting rotation stop  $V_{\min}$  position

3 Setting rotation stop  $V_{\max}$  position

4 Button for triggering the test function (press for 2 s to trigger test run  $\pm 30^\circ$ , can only be triggered when the damper is in idle position)

## Technical data

### Modulating actuator for CAV terminal unit EN (Generation 3) and VFC as well as flow adjustment damper VFR

Order code detail	Part number	Type	Setpoint value adjustment	Supply voltage
E03	A00000038360	224C-024-03-003	potentiometer	24 V AC/DC

#### Actuator 224C-024-03-003

Supply voltage (AC voltage)	24 V AC $\pm$ 20%, 50/60 Hz
Supply voltage (DC voltage)	24 V DC $\pm$ 20 %
Power rating (AC voltage)	4.5 VA
Power rating (DC voltage)	2.5 W
Control signal	0 – 10 V DC, Ra > 100 k $\Omega$
Position feedback	0 – 10 V DC, 1 mA
Torque	2.5 Nm
Runtime for 90°	20 – 60 s
Connecting cable	3 $\times$ 0.75 mm <sup>2</sup> , approx. 1 m long
IEC protection class	III (Protective extra-low voltage)
Protection level	IP 42
EC conformity	EMC according to 2014/30/EU, RoHS according to 2011/65/EU
Operating temperature (depends on the operating range of the control unit)	10 – 50 °C
Weight	0.32 kg

## Specification text

This specification text describes the general properties of the product. Texts for variants can be generated with our Easy Product Finder design programme.

### Category

- Constant actuator

### Application

- Variable setpoint specification for constant volume flow controllers and flow adjustment dampers

### Supply voltage

- 24 V AC/DC

### Interface/signalling

- 0 – 10 V DC for setpoint position

### Connection

- Connection cable 4-wire

### Interface information

- Min/Max setpoint value position can be easily adjusted by potentiometer on site

### Factory condition

- Actuator factory-mounted on control unit/flow adjustment damper
- Potentiometer  $V_{\min}$ ,  $V_{\max}$  Factory-set to position 4 and 8

## Order code

NR-VAV – EN – E03

1      2      3

### 1 Type

**NR-VAV** Retrofit kit

rotary knob)

**VFC-E03** variable actuator 24 V AC/DC with potentiometer setting for CAV terminal unit VFC

### 2 Variant

**EN-E03** variable actuator 24 V AC/DC with potentiometer setting for CAV terminal unit EN Generation 3 (setpoint adjustment with

**VFR-E03** variable actuator 24 V AC/DC with potentiometer setting for CAV terminal unit VFR

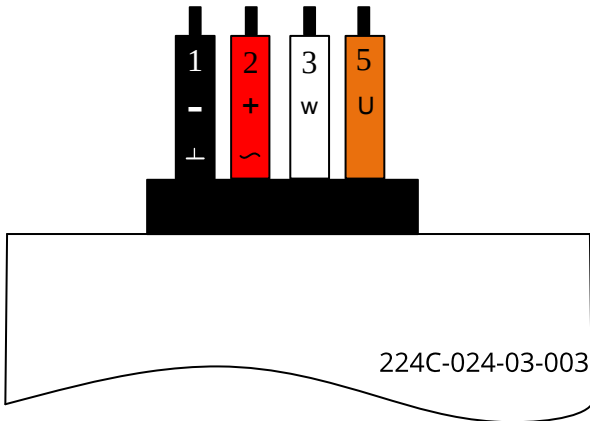
### Note:

This is the order code for retrofitting the actuator for a CAV terminal unit or flow adjustment damper.

Generally, the actuator is specified in the initial order via the order code of the basic terminal unit under the section "Actuator for setpoint adjustment" with the order code E03.

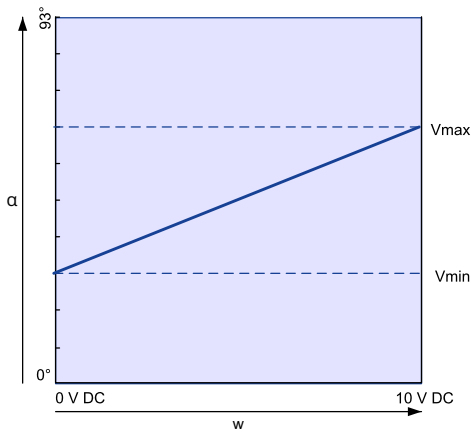
## Variants

### 224C-024-03-003, connecting cable assignment

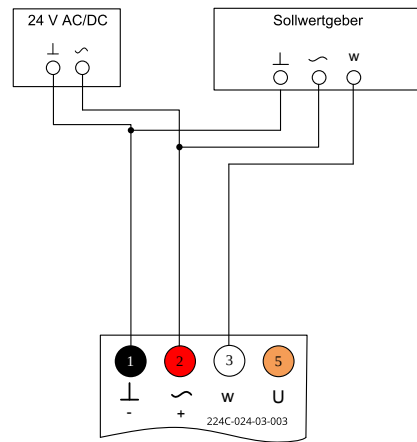


- 1  $\perp$ , -: Ground, Zero
- 2,  $\sim$ , +: Supply voltage
- 3, w: Setpoint value signal 0 – 10 V DC
- 4, U: Position feedback

### Characteristic curve setpoint value signal Y to angle of rotation



### Variable control initiated by a voltage signal



- 1  $\perp$ , -: Ground, Zero
- 2,  $\sim$ , +: Supply voltage
- 3, w: Setpoint value signal 0 – 10 V DC
- 4, U: Position feedback

### Characteristic curve for position feedback U

