Technical data sheet

327 VAV Compact - BACNET

8 Nm	16 Nm
327V-024-08I-BN	327V-024-16I-BN
327VM-024-08I-BN	327VM-024-16I-BN

Description

Compact controller for pressure and volumetric air flow control

- Pressure sensor, controller and damper actuator in one unit (compact)
- Sensor signal conversion into flow or pressure
- Parameterization via service connector using handheld (GUIV3-M) or PC-software (WIN-VAV2 with interfaces GUIV3-S or GUIV3-M)
- The Damper Actuators is available with BACNET MS/TP (RS485)

Detailed Description

Application	The compact VAV controllers of 327 series are used for pressure and volumetric air flow control of VAV dampers in HVAC installations.
Sensor	The differential pressure sensor is available as dynamic version (500|1500 Pa) or static version (400|600|1000 Pa).
Actuator	There are two different gearboxes available (08 | 16 Nm).
Control function	Pressure, volumetric air flow or "Open-Loop“ (continuous control).
Pressure or volumetric air flow control	Reference value (min…max) via analogue setpoint or digital communication (for example BMS).
Building management system	BACNET-System for example with itaMAX system.
Bus operation	The actuator is available with a BACNET MS/TP protocol. The device receives a setpoint via system and reports the actual status. Different hybrid types are possible.
Parameterization	Settings via Service connector possible by using handheld (GUIV3-M) or PC-software (WIN-VAV2 with Interface GUIV3-S or GUIV3-M).
Operating and service devices	Setting tool GUIV3-M, PC interface GUIV3-S + PC software WIN-VAV2.
Electrical connection	See electrical installation.
Sales, mounting & setting	The actuators will be mounted by VAV manufacturer (OEM). The application will be preset and calibrated accordingly.

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Technical data

Electronic data

Nominal voltage	24 VAC/DC, 50/60 Hz
Nominal voltage range	19...29 VAC/DC
Power consumption motor	< 3.0 W
Power consumption standby	< 2.0 W
Wire sizing	< 5.5 VA
Control	(0) 2...10 VDC / Ri > (100kΩ) 50k Ω (0)4...20 mA / Rext. = 500 Ω
Feedback signal	(0) 2...10 VDC, max. 5 mA
Priority control	Close / min / btw / max / open / stop
Connection motor	Cable 1000 mm, 4 x 0.75 mm² (halogen free) or screw terminals 0.5..1.5 mm²
Connection GUIV	Via service plug

BACNET

Protocol	BACNET MS/TP
BACnet standard device profile	BACnet Application Specific Controller (B-ASC)
Addresses	0...127 (Default:1)
Baud rates	9600 / 19200/ 38400 / 76800 / 115200 Bd
Number of nodes	max. 128 (1/4 Unit Load)
Termination	external (120Ω)
Character sets supported	ISO 10646 (UTF-8)
Conformation	Listed by BTL

Sensor

Sensor	Differential pressure sensor dynamic version (500|1500 Pa) static version (400|600|1000Pa)
Burst pressure	1 bar
Nominal value	Damper manufacturer specific value min / btw / max based on nominal
Medium	Air - 40°C…85°C / 5…95% r.H., non condensing
Mounting position	Independent of position
Material	PA, glass, LCPT (dynamic version) Tygon-ST (R-3607), PA66 GF25 V0 (static version)
Connection	Tube clip Ø 4-6 mm

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Functional data

Torque	08 | 16 Nm
Synchronized speed	± 5 %
Direction of rotation	Adjustable
Manual override	Gear de-clutch with pushbutton, lockable
Angle of rotation	0°…max. 95° can be limited with adjustable mechanical end stops
Running time	8 Nm: 100 s / 90° (adjustable 20...120 s / 90°) 16 Nm: 150 s / 90° (adjustable 70...420 s / 90°)
Sound power level	< 35 dB(A) @ standard running time
Shaft coupling	Universal clamp (Ø 20 mm) or form fit 8/10/12 mm
Position indication	Mechanical with pointer
Service life	> 100.000 cycles (0°...95°...0°) > 1.500.000 cycles (max. ± 5°)

Safety

Protection class	III (safety extra-low voltage)
Degree of protection	IP 42 (cable downwards, tube clip connected) IP 20 (with screw terminals)
EMC	CE (2014/30/EU)
LVD	CE (2014/35/EU)
RoHS	CE (2011/65/EU - 2015/863/EU - 2017/2101/EU)
Mode of operation	Typ 1 (EN 60730- 1)
Rated impulse voltage supply / control	0.8 kV (EN 60730- 1)
Control pollution degree	3 (EN 60730- 1)
Ambient temperature normal operation	0°C...+50°C
Storage temperature	- 30°C...+80°C
Ambient humidity	5...95% r.H., non-condensing (EN 60730-1)
Maintenance	Maintenance free

Dimensions / weight

Dimensions	155 x 67 x 66 mm
Weight	8 Nm: 600 g 16 Nm :700 g

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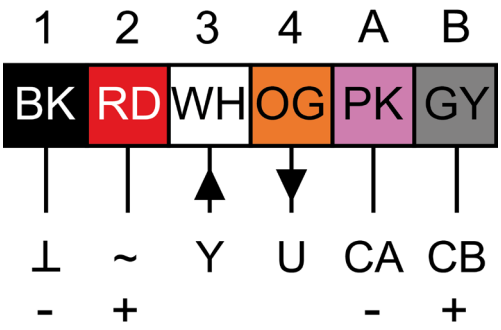
Connection



No.	Designation	Wire colour	Function
1	-	Black	Power supply 24 VAC/DC
2	+	Red	
3	Y	White	Setpoint signal 0-10 VDC
4	U	Orange	Feedback signal 0-10 VDC
A	CA -	Pink	BACNET MS/TP Connection (RS485)
B	CB +	Grey	

Safety Instructions

Safety remarks

- Connect via safety isolation transformer!
- The device is not allowed to be used outside the specified field of application, especially in airplanes.
- It may only be installed by suitably trained personnel. Any legal regulations or regulations issued by authorities must be observed during assembly.
- The device may only be opened at the manufacturer´s site.
- The device is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.

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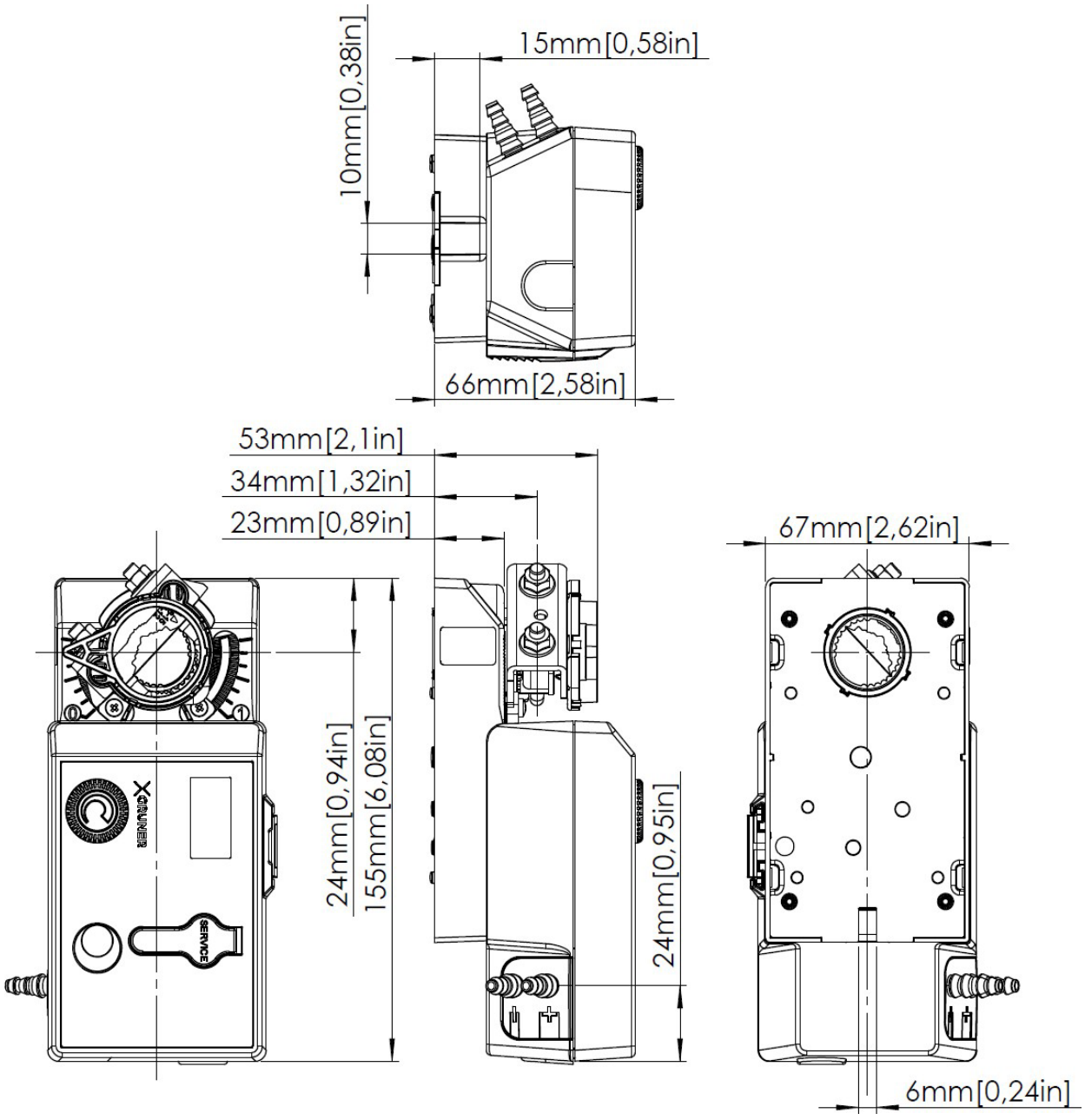
Technical Drawing



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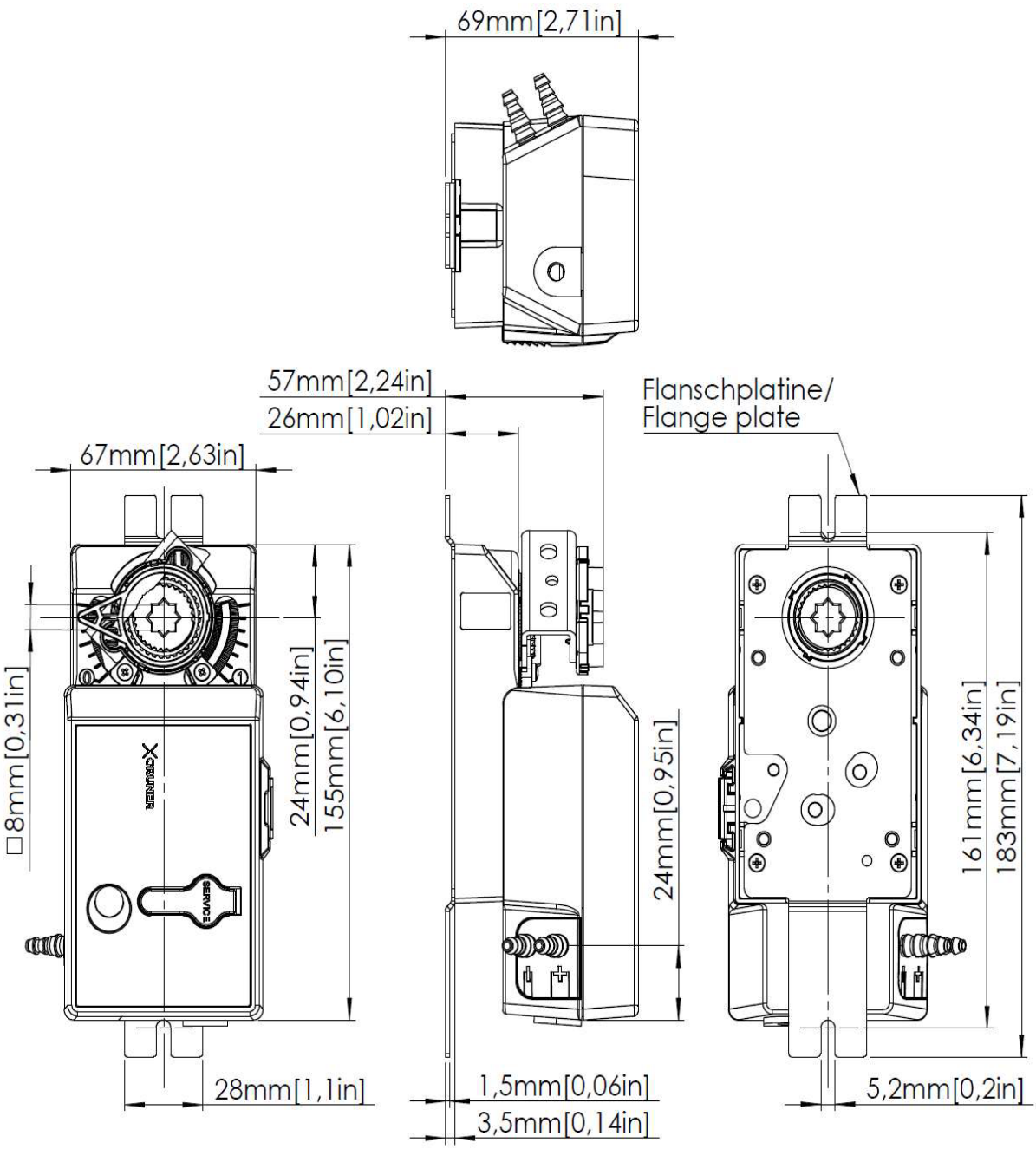

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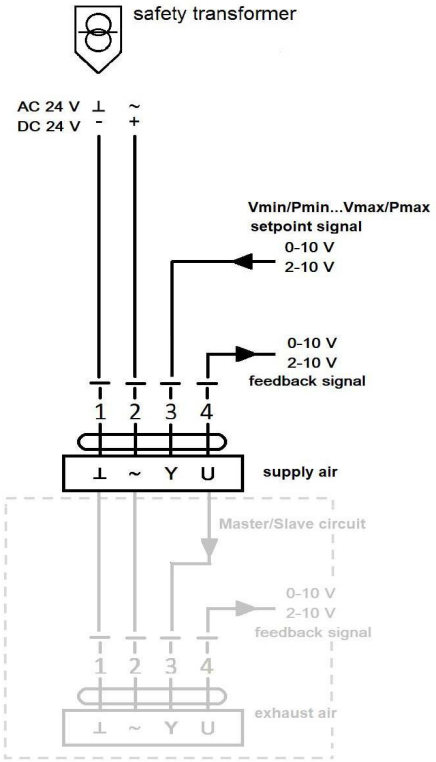
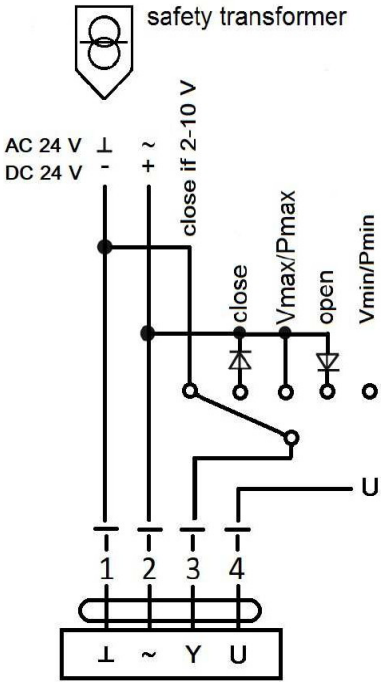
VAV – Variable operation min … max



- Mode 2-10V:
  Damper closed < 0.8 V (adjustable via WIN-VAV2 0.2 V … 1.8 V)

- Master/Slave circuit possible

CAV – step operation close / min / btw / max / open



Signal/Function	Min	Max	Btw	Open	Close
Open line	X				
GND (2..10 V)					X
Full-wave		X			
Pos. Half-wave				X	
Neg. Half-wave					X

Over ride matrix can be changed via WIN-VAV2 software

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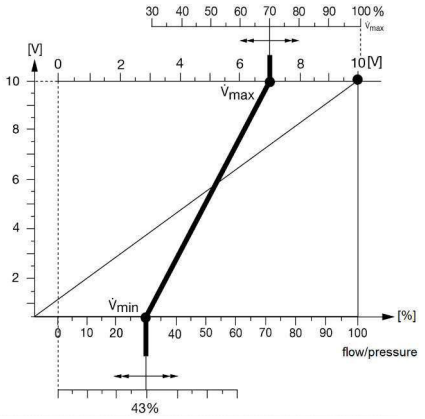
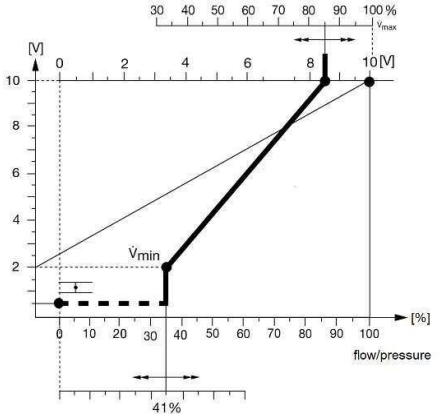
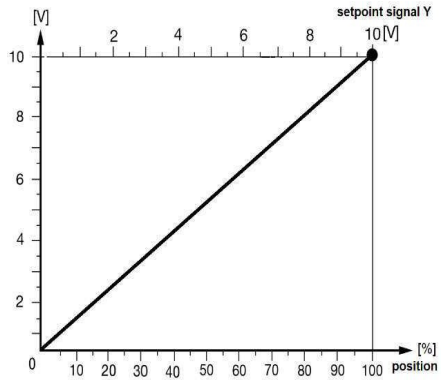
Control functions – VAV / CAV

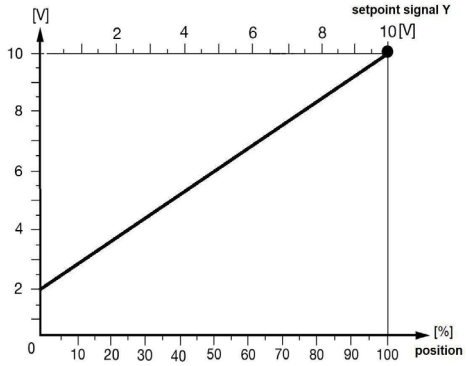
VAV - Adjustment



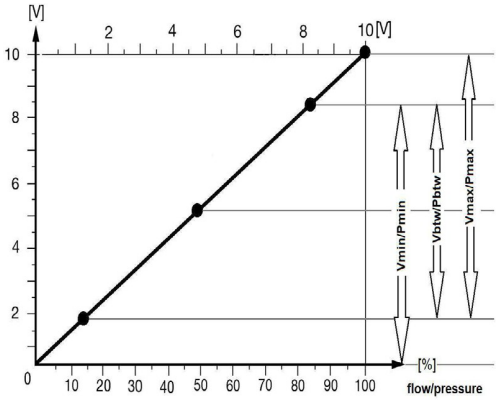


Open - Loop function 0-10 V / 2-10 V





CAV - Adjustment



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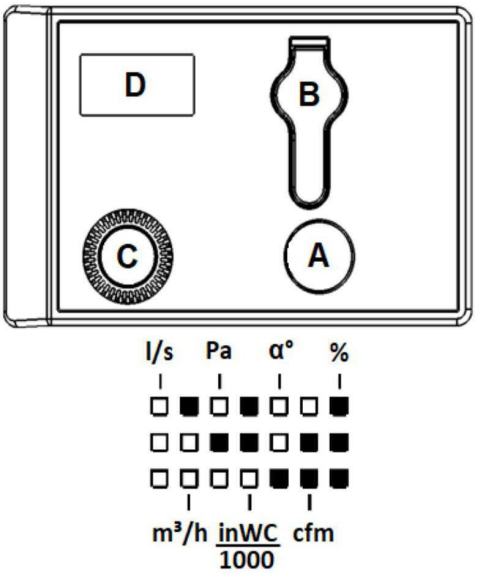

Display of 327VM or GUIV3-M

LED button (A)

LED off - no power supply
LED on - actuator is on position
LED blinks - actuator drives on position, hasn´t reached his desired values.

Service connector (B)

The service connector serves in combination with GUIV, for parameterization and diagnostic of the controller.

Value selector (C)

The rotary selector can be used to change the values shown in the display.

Display (D)

The display with backlight is used for setting different values directly on the actuator without additional setting tools. The unit matrix can read out on label / can check with desired values in display.

l/s (Volumetric) = No square is shown in display
m³/h (Volumetric) = Only upper square is shown in display
Pa (Pressure) = Only middle square is shown in display
inWC/1000 = Upper & middle square are shown in display
α° (Angle) = Only lower square is shown in display
Cfm = Middle & lower square are shown in display

Operation 327VM-024-xx

By pressing the LED button in 5sec, the actuator is operated in learn-in process.
Pressing the LED button (>3sec) the menu point can be edited. Push LED button for confirming the selected value.

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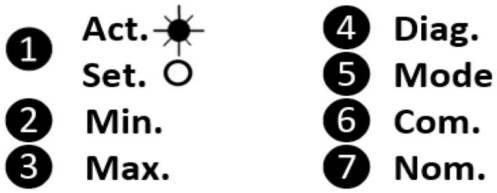

Menu points 327VM or GUIV3-M

1. Act / Set
Shows actual value / setpoint (override function).

2. Min
Adjust the desired min value (setpoint Y = 0 / 2 VDC).

3. Max
Adjust the desired max value (setpoint Y = 10 VDC).

4. Diag

Diagnostic menu:

y/u – shows setpoint / feedback signal
off – return to first level
oP – opens the damper
cL – closes the damper
Hi – activates max. value
Lo – activates min. value
bE – activates between value
St – diagnostic mode on, motor off
Adp – adaption drive
123 – software version

5. Mode
0An (0-10 VDC | normal direction of rotation) 2An (2-10 VDC | normal direction of rotation)

2Ai (0-10 VDC | inverse direction of rotation) 2Ai (2-10 VDC | inverse direction of rotation)

6. Com
Setting of the Modbus address (1...247) and parameters Or
Setting of the BACnet address (1...127) and parameters

7. Nom
Volumetric air flow: Shows & setting the nominal value depending on the VAV-Box
Pressure: Setting the correction factor

Settings

327VM-024-xx actuators can be set directly on the display. All 327 VAV actuators can communicate via service connector with setting tool GUIV3-M or with setting software WIN-VAV2. GUIV3-S is used as an interface for setting software WIN-VAV2.

Accessories

GUIV3-M – service connector + handheld tool GUIV3-M WIN-VAV2-Bundle – service connector + PC interface GUIV3-S + setting software WIN-VAV2.

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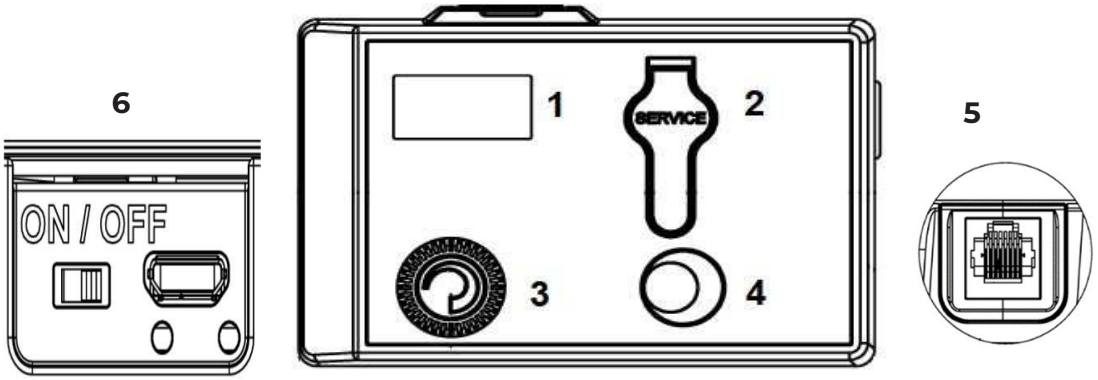
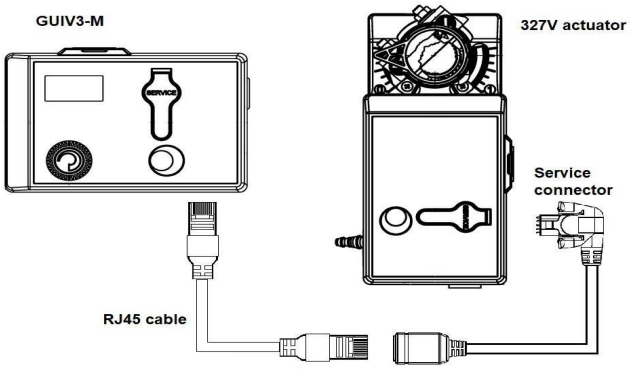
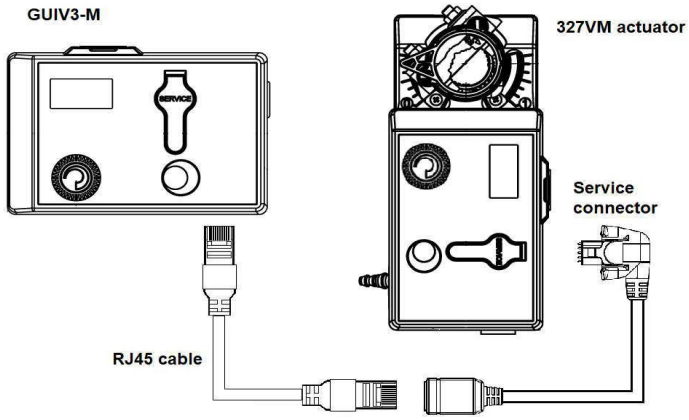
Settings and tool functions for 327V / VM actuators via GUIV3-M



1) Display
2) Port for service-plug
3) Rotary selector switch
4) LED push button
5) RJ45 socket
6) On/off Switch and Micro-USB Interface



GUIV will start via on/off switch. If GUIV is connected to an actuator, the data will be read out and shown in the display. The control panel is used to set various operating modes, override controls and parameter settings.
The GUIV features a micro USB. This allows to use the GUIV as an interface converter between WINVAV2 software and actuator or for loading a battery pack.



Menu items:

- Act/set – Actual value/setpoint
- Min
- Max
- Diag – override control
- Mode – 0..10 V or 2..10 V
- Com – BACNET address and parameters
- Nom – Nominal value or correction factor.

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Accessories

Accessories		Description
Fan speed controller	Ita Max 24 8/1 (see data sheet ita Max)	Controller for optimization of the fan speed (supply + exhaust air) in a ventilation system with VAV controllers
Tools	WIN-VAV2	Windows Software
	GUIV3-S	Interface WIN-VAV2 and PC only
	GUIV3-M	Manual setting device and interface for WIN-VAV2
Electrical accessories	Service connector	For service interface
	Connection cable RJ45	Connection to Service connector and GUIV3-M/GUIV3-S
	Micro-USB to USB cable	Connection GUIV3-S and PC
Bundles	WIN-VAV2-A-Bundle	Includes WIN-VAV2 software, Micro- USB to USB cable, service connector, RJ45 cable, GUIV3-S, Manual

Order Code

Basic type -	327 V M Z	Controller Volumetric air flow control With Display Flange plate
Supply voltage -	024 T	24 VAC/DC supply voltage Terminal connection
Torque -	08 16 I	8 Nm torque 16 Nm torque 100 s
Sensor -	Standard DD15 DS4 DS6 DS10	Pressure sensor dynamic 500 Pa Pressure sensor dynamic 1500 Pa Pressure sensor static 400 Pa Pressure sensor static 600 Pa Pressure sensor static 1500 Pa
Protocol /	BN	BACnet MS/TP Protocol

Example:

327VM-024-08I-BN

- 327-Controller
- V-Volumetric air flow control
- M-With Display
- 024-24V AC/DC supply voltage
- 08-8 Nm torque
- I-100 s
- BN-BACnet

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