

Technical data sheet

327 VAV Compact

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)



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 three different gearboxes available (5 10 15 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	Modbus-System for example with itaMAX system.
Bus operation	The actuator is available with a Modbus RTU 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 and setting	The actuators will be mounted by VAV manufacturer (OEM). The application will be preset and calibrated accordingly. Therefore 327 VAV actuators are sold exclusively to VAV boxmanufacturers (OEM).

Technical data

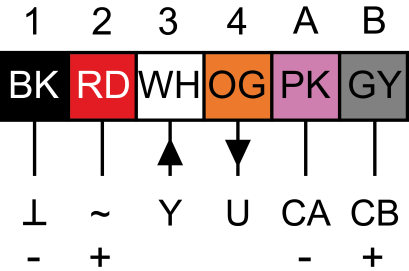
Electrical data	Nominal voltage	24 VAC/DC, 50/60 Hz
	Voltage range	19...29 VAC/DC
	Power consumption motor	< 3,0 W
	Power consumption standby	< 2,0 W
	Wire sizing	< 5,5 VA
	Control	(0)2...10 VDC / Ri > (100kΩ) 50kΩ (0)4...20 mA / Rext. = 500 Ω
	Feedback signal	(0)2...10 VDC, max. 5 mA
	Priority control	close / min / btw / max / open / stop
	Connection motor	cable 1000 mm, 4 x 0,75 mm ² (halogen free) or screw terminals 0,5..1,5 mm ²
	Connection GUIV	via service plug
Modbus	Protocol	Modbus RTU
	Medium	cable 1000 mm, 2 x 0,38 mm ² (halogen free) RS-485, not electrically isolated or screw terminal
	Number of nodes	max. 128
	Baud rates	1200 / 2400 / 4800 / 9600 / 19200 / 38400 / 76800 / 115200 Bd
	Byte sequence	MSB / LSB
	Byte format	1 start bit, 8 data bits, 2 stop bits, none parity 1 start bit, 8 data bits, 1 stop bit, even parity 1 start bit, 8 data bits, 1 stop bit, odd parity
	Termination	external (120Ω)
	Response time	≤ 10 ms + delay
	Standard parameter	19200 Bd, 1 start bit, 8 data bits, 1 stop bit, even parity, 0 ms delay
Sensor	Sensor	differential pressure sensor dynamic version (500 1500 Pa) static version (400 600 1000 Pa)
	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

Technical data

Sensor	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
Functional data	Torque	5 10 15 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	5 Nm: 100 s / 90° (adjustable 20...120 s / 90°) 10 & 15 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	0,5 kV (EN 60730-1)
	Control pollution degree	3 (EN 60730-1)
	Ambient temperature normal operation	0°C...+50°C
	Storage temperature	-20°C...+80°C
	Ambient humidity	5...95% r.F., non-condensing (EN 60730-1)
	Maintenance	maintenance free
Dimensions / Weight	Dimensions	155 x 67 x 66 mm

Technical data

Dimensions / Weight	Weight	5 Nm: 600 g 10/15 Nm: 700 g
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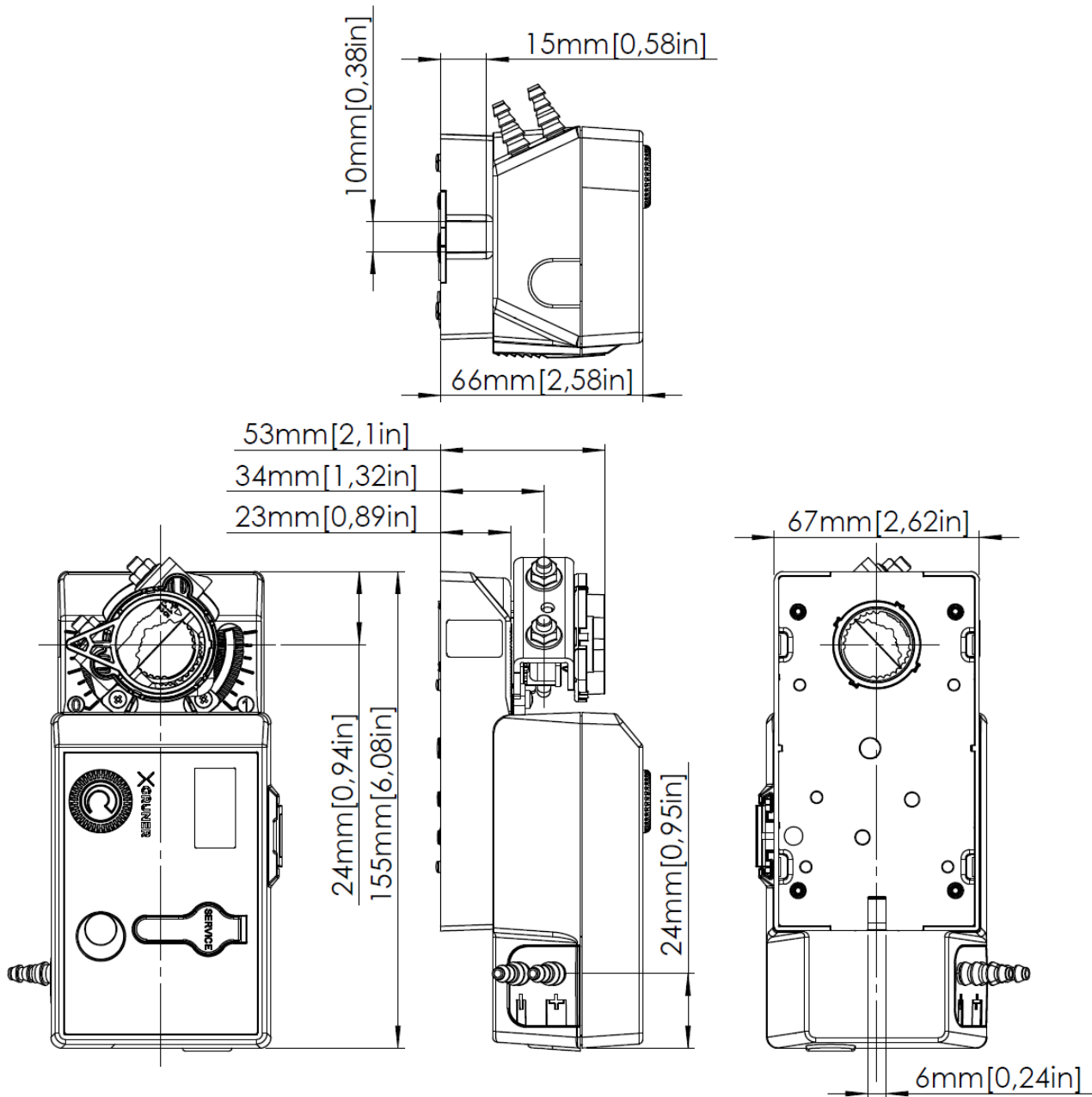
No.	Designation	Wire colour	Function
1	-	black	Power supply
2	+	red	24 VAC/DC
3	Y	white	Setpoint signal 0-10 VDC
4	U	orange	Feedback signal 0-10 VDC
A	CA -	pink	Modbus RTU
B	CB +	grey	Connection (RS485)

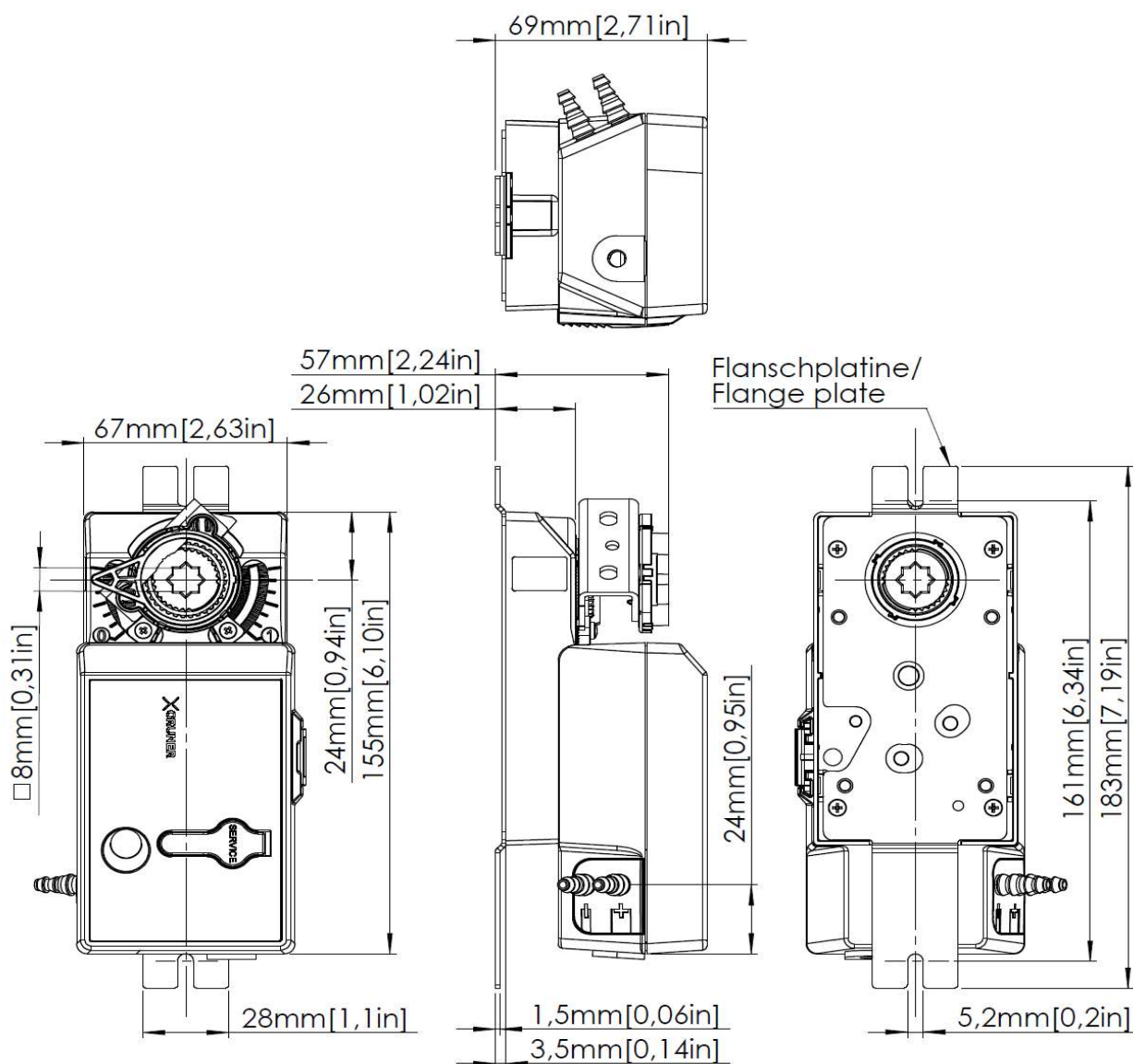
Safety instructions

Safety remarks

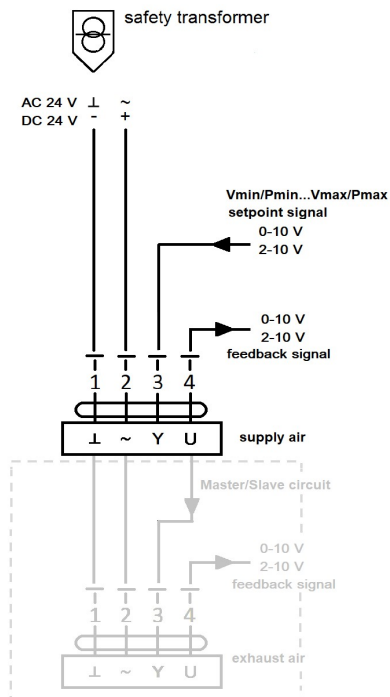
- Connect via safety isolation transformer!
- The device is not allowed to be used outside the specified field of application, especially in airplanes.
- It may only be installed by suitably trained personnel. Any legal regulations or regulations issued by authorities must be observed during assembly.
- 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.

Technical Drawing



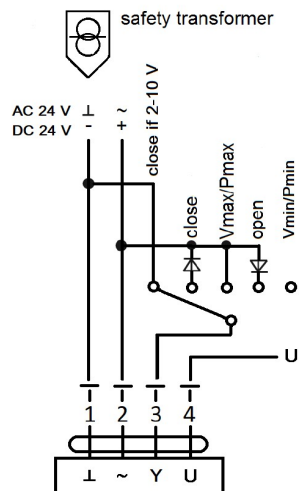


VAV – Variable operation min ... max



- 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

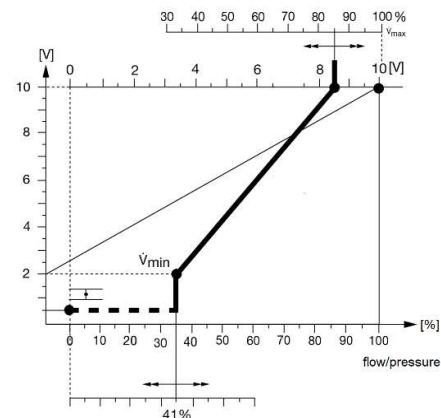
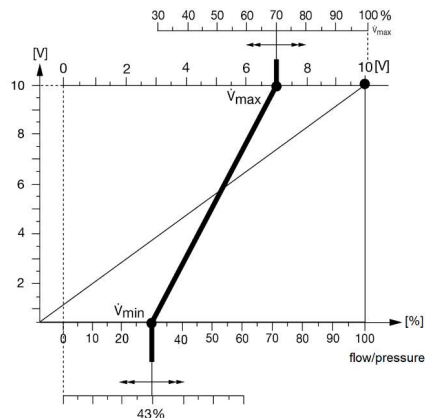


Signal/Function	Min	Max	Btw	Open	Close
Open line	X				
GND (2..10 V)					X
Full-wave		X			
Pos. Half-wave				X	
Neg. Half-wave					X

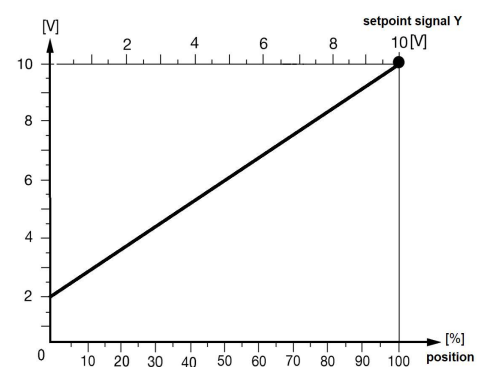
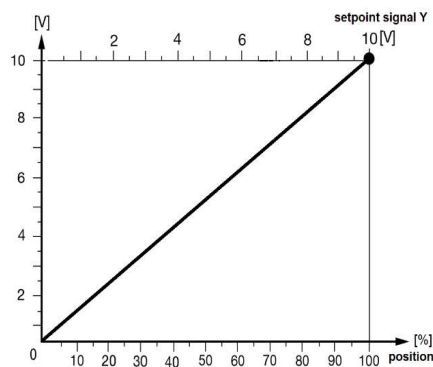
Override matrix can be changed via WIN-VAV2 software

Control functions – VAV / CAV

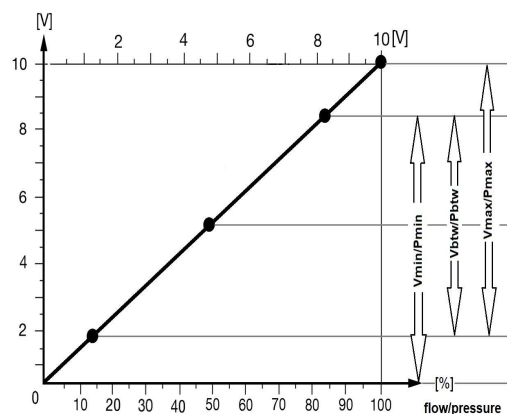
VAV - adjustment

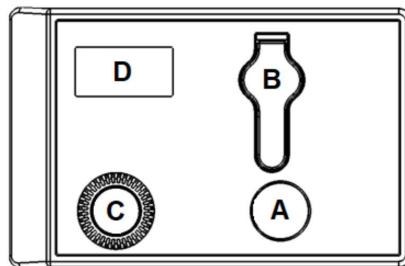


Open - Loop function 0-10 V / 2-10 V



CAV - adjustment





l/s	Pa	α°	%
☐	☐	☐	☐
☐	☐	☐	☐
☐	☐	☐	☐
m³/h	inWC	cfm	
	1000		

Display of 327VM or GUV3-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 GUV, 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 327V

By pressing the LED button (< 3sec) a reference drive starts.

Pressing the LED button (> 3sec) starts an adaption drive.

Operation 327VM

By pressing the LED button (< 3sec) the next menu point can be selected.

Pressing the LED button (> 3sec) the menu point can be edited.

Push LED button for confirming the selected value.

- | | |
|--|---------|
| 1 Act.  | 4 Diag. |
| 2 Set.  | 5 Mode |
| 3 Min. | 6 Com. |
| Max. | 7 Nom. |

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 V DC).

3.Max

Adjust the desired max value (setpoint Y = 10 V DC).

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 (only 15 Nm or Modbus version)

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 the Modbus address (1...247) and communication parameters (if Modbus version).

7.Nom

Volumetric air flow: Shows & setting the nominal value depending on the VAV-Box

Pressure: Setting the correction factor

Settings

327 VAV 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.

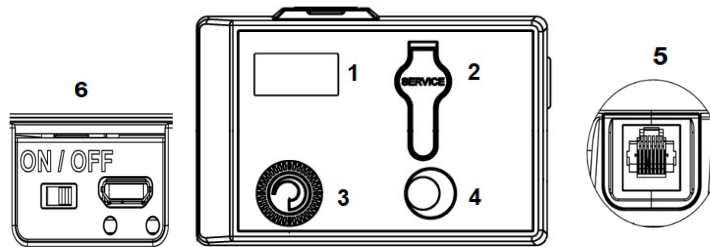
Accessories

GUIV3-M – service connector + handheld tool GUIV3-M WIN-

VAV2-Bundle – service connector + PC interface GUIV3-S +

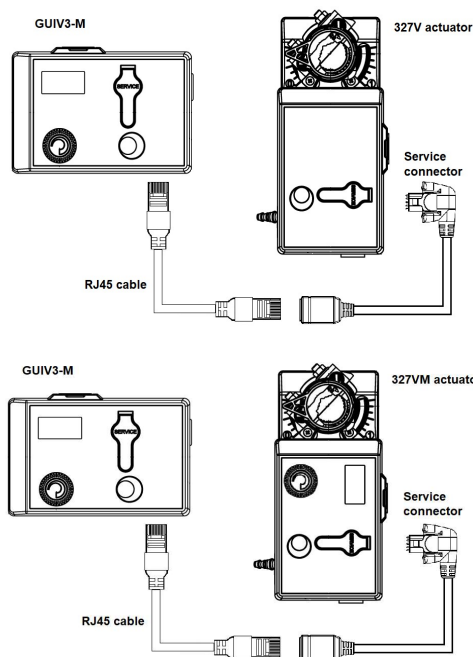
setting software WIN-VAV2.

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 – Modbus address and parameters
- Nom – Nominal value or correction factor

Accessories	Description	
Fan speed controller	itaMax 24 8/1 (see data sheet itaMax)	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	Controller
-	V	Volumetric air flow control
	M	With Display
	Z	Flange plate
Supply voltage	024	24 VAC/DC supply voltage
-	T	Terminal connection
Torque	05	5 Nm torque
-	10	10 Nm torque
	15	15 Nm torque
Sensor	standard	Pressure sensor dynamic 500 Pa
-	DD15	Pressure sensor dynamic 1500 Pa
	DS4	Pressure sensor static 400 Pa
	DS6	Pressure sensor static 600 Pa
	DS10	Pressure sensor static 1500 Pa
Protocol	MB	Modbus RTU Protocol
/		
Shaft coupling	standard	Universal clamp 20 mm diameter
/	8E8	Form fit insert 8x8 mm
	8E10	Form fit insert 10x10 mm
	8E12	Form fit insert 12x12 mm
Configuration	CCOL	Control Open Loop
	CCPC	Pressure Control

Example:

327VM-024-05
volumetric flow control with display, dynamic differential pressure sensor (500 Pa), universal clamp (Ø20mm) for shaft adaptation