VV110.31
Touch Button VAV Controller

For VAV Units

Features

- Manual or automatic proportional (0-10V) VAV level control
- Auto, Heat and Cool Modes
- Manual or automatic heating/cooling changeover
- Proportional Heater Control
- On/off Electric Heater Control
- Universal input for external sensors or window/overheating contact etc.
- User setpoint limitation
- Clock and time schedule functions
- User key lock
- Configurable user parameters
- Modbus RTU communication
- Modern ve dokunmatik tuşlar
- White backlight LCD
- Different color options; black and white
- EU box flush-mount

Applications

VV1xx Series VAV Controllers are used in individual rooms or zones in buildings. VV110 has a universal input as external sensor or open/close contact input, three analog outputs, a relay output and a RS-485 port. Controller controls the VAV depending on the internal room sensor or external sensor temperature.

Notes on Usage

Please read this datasheet carefully. VV110 VAV controller is designed and manufactured in accordance with latest technological developments and safety rules. To avoid injury and property damage, safety rules must be observed.

Security Advice-Caution

Assembly, maintenance and repair must be done by authorized services. The power supply of the device is 24V AC/DC and has no internal fuse. For external protection, max C 5 A circuit breaker is required. Disconnect from the power supply before separating the front plate.

Ordering Information

Product Code	Description	Power	Communication
VV110.31	2 Analog Outputs (0-10 V) VAV Control 1 Proportional Heater (0-10V) Control 1 Digital Output (Relay) Electric Heater Control 1 Universal Input 1 RS-485 Port	24 V AC/DC	Modbus RTU
VV110.32			BACnet MS/TP

Technical Specifications

|	
Power Supply	24 V AC/DC
Power Consumption	Max ~ 3.0 VA
Electrical Connection	Terminal Connectors
Battery for Real Time Clock (RTC)	Lithium CR1220 3.3V
Measuring Range	-10°C … +100°C (+14°F … +212°F)
Calibration	0.1°C (1°F)
Inputs	1 Universal Input (NTC 10K or Dry Contact)
Outputs	3 Analog Outputs (0-10 V), 1 Digital Output (5 (2) A Relay)
Communication	1 x RS-485 Port
Setpoint Settings	5°C … 40°C (Adjustable) (41°F … 104°F (Adjustable)
Dimensions	86 x 86 x 52 mm
Mounting	Flush Mounted (Standart AB Box)

Mounting Place

Controller is suggested to be installed indoors, a place with around 1.5m height above the floor so that it measures the average room temperature. It should be away from direct sunlight, any cover or any heat source, to avoid false signals for temperature control.

CAUTION: Cut off the power at the max C 5A circuit breaker or glass fuse before installation to avoid fire, shock or death!

Mounting Instructions
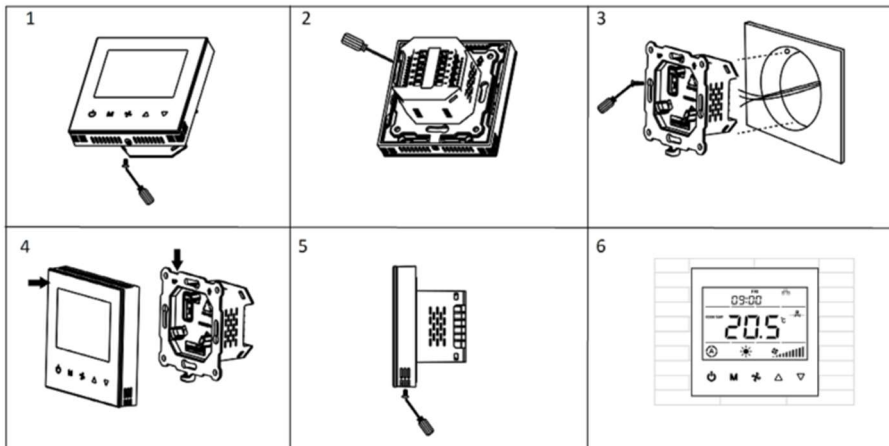
Please, follow the steps below during mounting.
Step 1: Take the controller and the datasheet out from the package.
Step 2: Connect the wires properly according to the diagram below.
Step 3: Separate the front plate and back plate, then by using a screwdriver fix the back panel to the wall with 4 screws included in the product package.
Step 4: Attach the front panel to the back panel, ensure the pin plates on each side are well matched..
Step 5: Compare it with the pictures after installation.
**Step 6:** Power up to run the controller.

Important Note 1: It is recommended to use the following flush mount boxes for better mounting:
Alternative 1: Manufacturer: Viko by Panosonic, Part Number: 90926006 (Depth must be minimum 50 mm!)
Alternative 2: Manufacturer: Legrand, Part Number: 0 801 21 (Depth must be minimum 50 mm!)

Important Note 2: It is recommended to use the screws included in the product box. Otherwise there could be fitting problems during the mounting.

Connection Diagrams
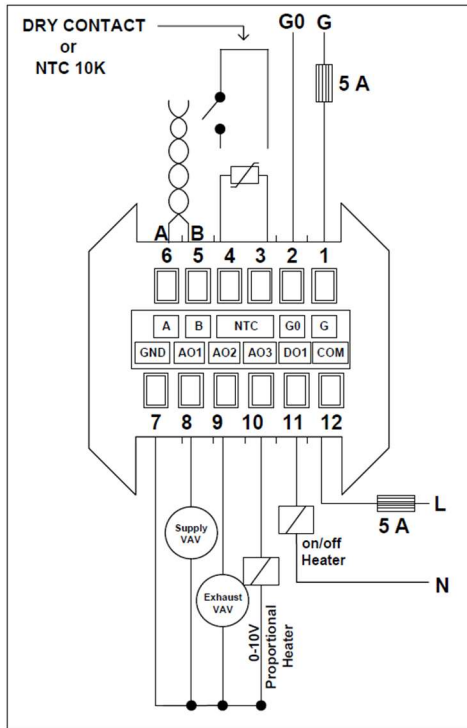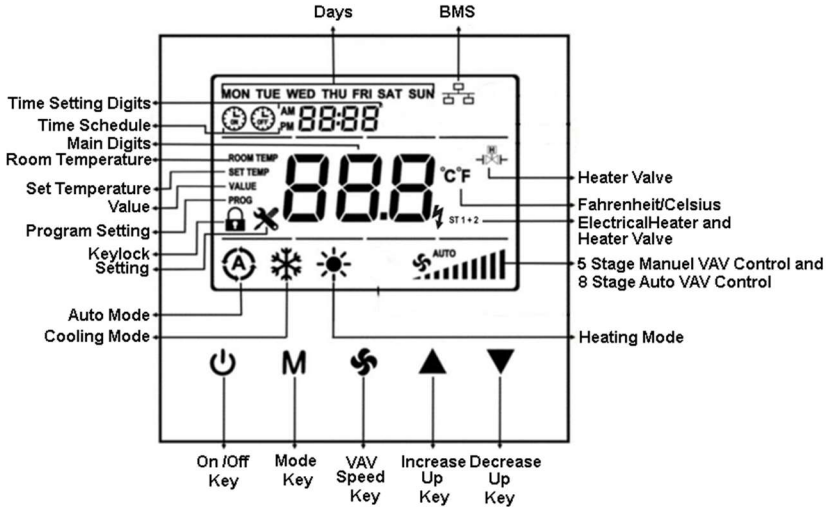

Wiring Diagram for VV110 Controller

Note: Controller has no internal fuse. External protection with max C 5 A circuit breaker required in all cases. Isolate the cables of NTC - dry contact from G, G0 from 24 V power supply.

Display and Operatio

● **Mode Selection:** For changing the mode, press the "M" key. There are three modes: Auto, Cooling and Heating.

● **Level Selection:** Press the " 🌀 " key to adjust the VAV level of the device. Changes in VAV speeds are level 1, level 2, level 3, level 4, level 5 and auto. In auto mode, VAV levels are determined by PID.

● **Time Settings:** ● After pressing the "**M**" key for 3 seconds, year digits flashes on the panel. While year digits flashes on the panel, pressing the "**M**" key for once changes the digits from year to month. While month digits flashes, pressing the "**M**" key once again changes the digits from month to day. While day digits flashes, pressing the "**M**" key once changes the digits from day to hour. While hour digits flashes, pressing the "**M**" key changes the digits from hour to minute. While minute digits are flashes, pressing the "**M**" key changes the digits from minute to day of the week. Year, month, day, hour, minute and day of the week information are changed by "▲" ve "▼" keys.
Time Setting Order: Year -> Month -> Day -> Hour -> Minute -> Day of the week.

● **Schedule Operations:** Be sure to set the time settings, before making schedule operations. After setting the day, to enter the Schedule menu, press the "**M**" key one time. While in the Schedule menu, "**Monday opening time hour digit**" flashes on the panel. When the "**M**" key is pressed once again, "**Monday opening time minute digit**" flashes on the panel. Then, when the "**M**" key is pressed one more time, "**Monday closing time hour digit**" flashes on the pamel. After that when the "**M**" key is pressed once again, "**Monday closing time minute digit**" flashes on the panel. While the digits flashing, hour and minute can be changed by "▲" and "▼" keys. Use the "**M**" key to set the other days' schedule.
Note: When the time schedule is set, the on/off lock will be activated.

● **Key Lock Operations:** Pressing both "**M**" and "▲" keys, key lock digit displays on the panel. The panel is locked. When the panel is locked, press the "**M**" and "▲" keys to unlock the panel. "Key Lock" options can be changed via parameter P6. To lock two or more keys at the same time; sum the numbers of the keys. To lock mode key and on/off key, 1 (on/off) and 2 (mode) should be added and written 3 to the parameter P6. To lock setpoint and VAV speed, 4 (setpoint) and 8 (VAV speed) should be added and written 12 to the parameter P6.

Configuration

Configuration Menu Description

When the device is on or off position, press together "Main Parameter Increase Key" (**M**) and "Value Decrease Key" (▼) for 3 seconds, to enter the Configuration Menu. In the password screen, Password digits can be changed by "Main Parameter Increase Key" (**M**), Password value can be changed by "Value Increase Key" (▲) and "Value Decrease Key" (▼). Password must be entered as "**203**" and "Main Parameter Increase Key"

(�`) must be pressed to confirm. When the correct password is written, the configuration menu will be entered. If the wrong password is entered, it will fail, and the password will reset. Password screen will return to the main screen when there is no action for 10 seconds. Parameter setting screen will return to the main screen when there is no action for 30 seconds. All parameters are stored within an EEPROM ensuring no data loss if the Thermostat is powered off.
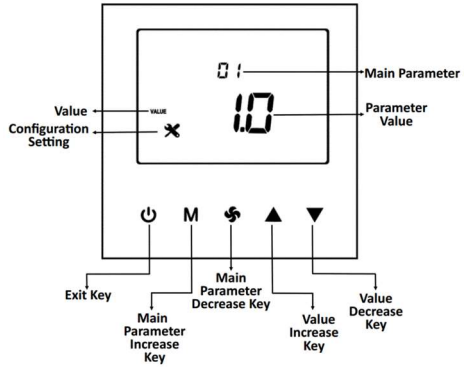
Universal Input Parameter (Parameter P33 or Modbus)

- External Room Temperature Sensor (parameter P33 = 1)

The device operates according to the value read from the external room temperature sensor.

- External Temperature Sensor (parameter P33 = 2)

The device operates according to the value read from the internal temperature sensor. The value read from the external temperature sensor can be checked from **P34** and the related BMS point.

- Window contact/Energy saving-On/Off (NC Contact) (parameter P33=4)

When this contact is closed, the device is in the "ON" position. If this condition is not met, the device will show "**OPEN**" on the panel and all the outputs of the device are passive.

- Window contact/Energy saving-On/Off(NO Contact) (parameter P33=5)

When this contact is open, the device is in the "ON" position. If this condition is not met, the device will show "**OPEN**" on the panel and all the outputs of the device are passive.

- Heater Overheating Contact (NC Contact) (parameter P33 = 6)

When this contact is on, the output of the electric heater is passive. "**AL 04**" is displayed on the screen.

- Heater Overheating Contact (NO Contact) (parameter P33 = 7)

When this contact is off, the output of the electric heater is passive. "**AL 04**" is displayed on the screen.

Heater Level Selection (Parameter 39 or Modbus)

In the auto mode or heat mode, when the SET value is higher than the Room Temperature value by 1°C/°F or more, the heater will be on.

Heater Level Selection: When this parameter is equal to 1, analog heater and digital heater operate independently.

Heater Level Selection: When this parameter is equal to 2, analog heater and digital heater operate as a cascade system.

Heater is controlled by proportion between the Heater Proportional Band (Parameter P37 or Modbus) and Heater Reset Band (Parameter P38 or Modbus). When the SET value and the Room Temperature value are equal to each other, heaters will be off.
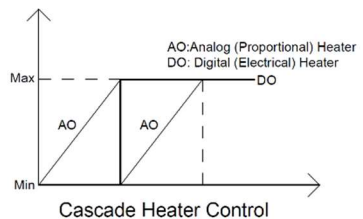
Note: For making the Heater Level Selection properly, check the Heater Type Selection Parameter (Parameter P40 or Modbus).

 Hysteresis (Heater Hysteresis: Parameter P36, VAV Histerezis: Parameter P40 or Modbus)

Valve output diagram according to the relation between T_s and T_o is given below.
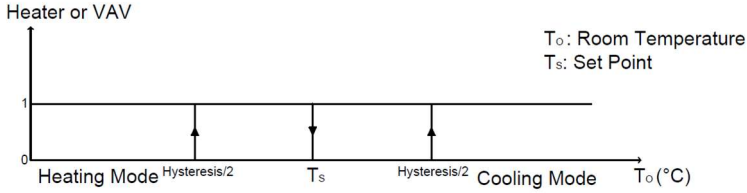
Calculation of VAV Output Value

Supply VAV output value calculation is as follows;

When VAV Level is equal X, Supply VAV Output Value = Minimum VAV level value + Variable Value* VAV Level X

Variable Value calculation is as follows;

Variable Value = (Maximum VAV Level Value- Minimum VAV Level Value) / 5

Exhaust VAV output value calculation is as follows;

Supply VAV output value * Factor Value

For example;

Calculation of Supply VAV output value;

Minimum VAV Level Value (Parameter P44 or Modbus) = 20

Maximum VAV Level Value (Parameter P45 or Modbus) = 80

Variable Value = (80 – 20) / 5 = 12

When VAV Level is 1, Supply VAV Output Value = 20 + 12 * 1 = 32

When VAV Level is 2, Supply VAV Output Value = 20 + 12 * 2 = 44

When VAV Level is 3, Supply VAV Output Value = 20 + 12 * 3 = 56

When VAV Level is 4, Supply VAV Output Value = 20 + 12 * 4 = 68

When VAV Level is 5, Supply VAV Output Value = 20 + 12 * 5 = 80

Calculation of Exhaust VAV output value;

Factor Value (Parameter P49 or Modbus) = 0.5

When VAV Level is 1, Exhaust VAV Output Value = 32 * 0.5 = 16

When VAV Level is 1, Exhaust VAV Output Value = 44 * 0.5 = 22

When VAV Level is 1, Exhaust VAV Output Value = 56 * 0.5 = 28

When VAV Level is 1, Exhaust VAV Output Value = 68 * 0.5 = 34

When VAV Level is 1, Exhaust VAV Output Value = 80 * 0.5 = 40

Note: In Auto VAV mode, PID determines maximum and minimum VAV output and VAV levels are set by PID.

Restore Factory Settings (Parameter P51 or Modbus)

If the parameter P51 is set to "1" from the Configuration menu and then the "Exit Key" (⏻) is pressed, factory reset will be done. While in the factory reset process, lines on the top and the bottom will be running from left to right for 3 seconds.

Alarms

Alarm Code will appear on the screen, if one of the alarm conditions is met. If more than one alarm condition is met, Alarm Codes will appear on the screen alternately.

- Internal Temperature Sensor Alarm:
If the internal temperature sensor fails, "**AL 01**" will appear on the screen and "**Err**" will be shown on the main digits. During the alarm condition, all of the outputs are passive. If the "Universal Input" parameter is set to "External Temperature Sensor", the device will operate properly.
- External Temperature Sensor Alarm:
If the "Universal Input" parameter is set to "External Temperature Sensor" and the sensor is not connected or connection breaks down, "**AL 02**" will appear on the screen and "**Err**" will be shown on the main digits. During the alarm condition, all of the outputs are passive.
- Heater Contact Alarm:
If the "Universal Input" parameter is set to "Heater Contact (NO-NC)" and heater contact is not connected or connection breaks down, "**AL 04**" will appear on the screen and "**Err**" will be shown on the main digits. During the contact alarm condition, output of the electric heater is passive**.**

Configuration Menu Parameters

No.	Parameter Name	Parameter Definition	Default
P1	Hardware Version	Device hardware version	2.0
P2	Firmware Version	Device firmware version	1.1
P3	Setpoint High Limit	Range: 5°C ... 40°C (Range: 41°F … 104°F)	30°C (86°F)
P4	Setpoint Low Limit	Range: 5°C ... 40°C (Range: 41°F … 104°F)	5°C (41°F)
P5	Main Screen	0 = Room temperature 1 = Setpoint temperature 2 = Room Temperature and Setpoint Temperature alternately	0
P6	Key Lock	0 = Unlocked 1 = Lock On/Off 2 = Lock Mode 4 = Lock Setpoint 8 = Lock VAV Speed 16 = Lock Time Settings 32 = Lock Time Schedule Settings 63 = Locked All (*) To lock two or more keys at the same time; sum the numbers of the keys. To lock setpoint and VAV speed, 4 (Setpoint) and 8 (VAV Speed) should be added and written 12.	0
P7	Celsius or Fahrenheit	0 = Celsius 1 = Fahrenheit	0
P8	Time Format	0 = 24 hours clock 1 = 12 hours clock (AM/PM) (*) The system Time Format is 24 hours. This parameter adjusts how the clock format on the panel/screen will be shown.	1
P9	Time Schedule Enable	0 = Disable 1 = Enable	0
P10	Screen Saver	0 = Screen Saver Disabled 1 = Display On 2 = Display Off 3 = Main Screen 4 = Main Screen and Clock 5 = Room Temperature and Setpoint alternately, and Clock (*) When the Main Screen parameter is set to "2", 3. and 4. parameters shows Room Temperature instead of Main Screen.	4

P11	Screen Saver Mode Delay	Range: 10 … 150 seconds	60 sec
P12	LCD Brightness	Range: 1 … 5 stage	5
P13	Buzzer Stage	Range: 0 … 5 stage	3
P14	Power Failure	This parameter adjusts the condition that the device will continue when the power failure happens. 0 = Device starts off 1 = Device starts on 2 = Keep State Before Power Failure	2
P15	Screen Off State Status	0: Screen off 1: Room Temperature 2: Room Temperature and Off 3: Room Temperature and Clock	1
P16	Heater Enable	0 = Disable 1 = Enable	1
P17 …. P29	Reserved	-	-
P30	Mode Change Delay	Range: 0 … 255 minutes	1 min
P31	Auto Mode Enable	0 = Disable 1 = Enable	1
P32	Internal Temperature Sensor Calibration	Range: -10°C … 10°C and 0.1°C steps (Range: -18°F … 18°F and 1°F steps)	0°C (0°F)
P33	Universal Input	0 = Not used 1 = External Temperature sensor for room (NTC 10K) 2 = External Temperature sensor (NTC 10K) (Monitoring purpose) 4 = Windows contact/Energy saving-On/Off (NC Contact) 5 = Windows contact/Energy saving-Off/On (NO Contact) 6 = Heater Overheating Contact (NC Contact) 7 = Heater Overheating Contact (NO Contact)	0
P34	Universal Input Temperature	If P33 is set to "2", this parameter shows temperature read from the external sensor	0°C (0°F)
P35	Universal Input Temperature Calibration	Range: -10°C … 10°C and 0.1°C steps (Range: -18°F … 18°F and 1°F steps)	0°C (0°F)
P36	Heater Hysteresis	Range: 0°C … 15°C (Range: 0°F … 27°F)	1°C (1°F)
P37	Heater Proportional Band Value	Range: 1 … 100	40
P38	Heater Reset Time Value	Range: 0 … 100 minutes	30 min
P39	Heater Level Selection	1: Analog heater and digital heater operate independently. 2: Analog heater and digital heater operate as a cascade system.	1
P40	Heater Type Selection	0: Heater Level Selection can be only set to "1" 1: Heater Level Selection can be set to "1" and "2".	0
P41	Minimum Heater Value	Range: 0 … 100 => 0V … 10V.	0
P42	Maksimum Heater Value	Range: 0 … 100 => 0V … 10V.	1
P43	VAV Hysteresis	Range: 0°C … 15°C (Range: 0°F … 27°F)	1°C (1°F)
P44	Minimum VAV Level Value	Range: 0 … 100 => 0V … 10V.	0
P45	Maximum VAV Level Value	Range: 0 … 100 => 0V … 10V.	100
P46	VAV Off Delay	Range: 0 … 60 seconds	0 sec
P47	VAV Proportional Band	Range: 1 … 100 => 0-1	20
P48	VAV Reset Time	Range: 0 … 100 minutes	30 min
P49	VAV Factor Value	Range: 0…100 => 0-1	100

| P50	BMS Icon Enable	0 = Disable 1 = Enable	1
P51	Restore Factory Setting	0 = Factory Setting Disable 1 = Factory Setting Started	0
P52	Baudrate	1 = 9600 bps 2 = 19200 bps 3 = 38400 bps 4 = 76800 bps	2
P53	Parity	0 = Odd 1 = Even 2 = None	1

Modbus Parameters

Slave Address : 1 … 247. **Default 1**
Baudrate : 9600, 19200, 38400, 76800. **Default 19200**
Parity : Odd, Even, None. **Default Even**

Not: Changes in slave address, baudrate and parity will be valid after the power is turned off and on.

End of Line (EOL) Resistor
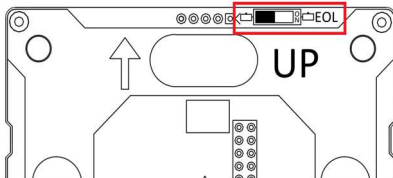
When the thermostat front plate is flipped, the EOL resistor DIP switch is seen on the upper right side of the back plate. This resistor's default position is **OFF**. When the End of Line (EOL) resistor is needed to be used, the DIP Switch position should be switched to **ON**.

OFF Position   **ON** Position

VV110.31 Modbus Parameters

Address (Decimal)	Parameter Name	Read (R) / Write (W)	Default	Min	Max	Description
0	Hardware Version	R	17	0	999	Device hardware version 20 => 2.0
1	Firmware Version	R	11	0	999	Device firmware version 11 => 1.1
2	Start/Stop	R/W	1	0	1	0 = Stop 1 = Start
3	Mode	R/W	3	0	3	1 = Heat 2 = Cool 3 = Auto
4	VAV Speed	R/W	1	1	6	1 = 1. Level 2 = 2. Level 3 = 3. Level 4 = 4. Level 5 = 5. Level 6 = Auto
5	Set Point	R/W	210 (698)	Set Point Low Limit	Set Point High Limit	This parameter is the desired room temperature value. 210 => 21.0°C (698 => 69.8°F)

6	Set Point High Limit	R/W	300 (860)	50 (410)	400 (1040)	This parameter adjusts the high limit for desired room 50 … 400 => 5°C … 40°C (410 … 1040 => 41°F … 104°F)
7	Set Point Low Limit	R/W	50 (410)	50 (410)	400 (1040)	This parameter adjusts the low limit for desired room 50 … 400 => 5°C … 40°C (410 … 1040 => 41°F … 104°F)
8	Main Screen	R/W	0	0	2	0 = Room temperature 1 = Setpoint temperature 2 = Room Temperature and Setpoint Temperature alternately
9	Key Lock	R/W	0	0	63	0 = Unlocked 1 = Lock On/Off 2 = Lock Mode 4 = Lock Setpoint 8 = Lock VAV Speed 16 = Lock Time Settings 32 = Lock Time Schedule Settings 63 = Locked All (*) To lock two or more keys at the same time; sum the numbers of the keys. To lock setpoint and VAV speed, 4 (Setpoint) and 8 (VAV Speed) should be added and written 12.
10	Celsius or Fahrenheit	R/W	0	0	1	0 = Celsius 1 = Fahrenheit
11	Time Format	R/W	1	0	1	0 = 24 hours clock 1 = 12 hours clock (AM/PM) (*) The system Time Format is 24 hours. This parameter adjusts how the clock format on the panel/screen will be shown.
12	Time Schedule Enable	R/W	0	0	1	0 = Disable 1 = Enable
13	Screen Saver	R/W	4	0	5	0 = Screen Saver Disabled 1 = Display On 2 = Display Off 3 = Main Screen 4 = Main Screen and Clock 5 = Room Temperature and Setpoint alternately, and Clock (*) When the Main Screen parameter is set to "2", 3. and 4. parameters shows Room Temperature instead of Main Screen.
14	Screen Saver Mode Delay	R/W	60 sec.	10 sec.	150 sec.	This parameter controls the screen saver mode delay of the panel.
15	LCD Brightness	R/W	5	1	5	This parameter controls the backlight of the panel.
16	Buzzer Stage	R/W	3	0	5	This parameter controls the key sounds.

17	Power Failure	R/W	2	0	2	This parameter adjusts the condition that the device will continue when the power failure happens. 0 = Device starts off 1 = Device starts on 2 = Keep State Before Power Failure
18	Screen Off State Status	R/W	1	0	3	0: Screen off 1: Room Temperature 2: Room Temperature and Off 3: Room Temperature and Clock
19	Time Schedule Local/Remote Selection	R/W	0	0	1	0 = Local Time Schedule 1 = Remote Time Schedule
20	Heater Enable	R/W	0	0	1	This parameter enables or disables the heater. 0 = Heater is Passive 1 = Heater is Active
21 32	Reserved	-	-	-	-	-
33	Room Temperature	R	-	-99 (141)	999 (2118)	This parameter shows the Room Temperature. -99 … 999 => -9.9°C … 99.9°C (141 … 2118 => 14.1°F … 211.8°F)
34	Internal Temperature Sensor Calibration	R/W	0 (0)	-100 (-180)	100 (180)	-100 … 100 => -10°C … 10°C (-180 … 180 => -18°F … 18°F)
35	Universal Input	R/W	0	0	7	0 = Not used 1 = External Temperature sensor for room (NTC 10K) 2 = External Temperature sensor (NTC 10K) (Monitoring purpose) 4 = Windows contact/Energy saving-On/Off (NC Contact) 5 = Windows contact/Energy saving-Off/On (NO Contact) 6 = Heater Overheating Contact (NC Contact) 7 = Heater Overheating Contact (NO Contact)
36	Universal Input Temperature	R	-	-99 (141)	999 (2118)	If the "Universal Input" is set to "1", "2" or "3", this parameter shows temperature read from the external sensor -99 … 999 => -9.9°C … 99.9°C (141 … 2118 => 14.1°F … 211.8°F)
37	Universal Input Temperature Calibration	R/W	0 (0)	-100 (-180)	100 (180)	-100 … 100 => -10°C … 10°C (-180 … 180 => -18°F … 18°F)

38	Universal Input Digital Input Value	R	-	0	1	0 = Off 1 = On
39	Auto Mode Enable	R/W	1	0	1	0 = Disable 1 = Enable
40	Mode Change Delay	R/W	1 min.	0 min.	255 min.	This parameter adjusts delay time between heat and cool modes.
41	VAV Hysteresis	R/W	10 (18)	0 (0)	150 (270)	This parameter controls VAV hysteresis temperature. 0 … 150 => 0°C … 15°C (0 … 270 => 0°F … 27°F)
42	VAV Factor Value	R/W	100	0	100	This parameter controls VAV Factor Value. 0 … 100 => 0-1 Factor Value
43	Minimum VAV Level Value	R/W	0	0	100	Range: 0 … 100 => 0V … 10V
44	Maximum VAV Level Value	R/W	100	0	100	Range: 0 … 100 => 0V … 10V
45	VAV Proportional Band	R/W	20	1	100	This parameter determines proportionally the output value of VAV depending on the difference between the Room Temperature and the Set Point. When the difference between the Room Temperature and the Set Point is equal to this paremeter's value, VAV output is set to Maximum VAV Level Value. 1 … 100 => 0.1… 10
46	VAV Reset Time	R/W	30 min.	0 min.	100 min.	When the time specified in this parameter has elapsed, a VAV output value equal to the VAV output value produced due to the proportional band is generated. (*) If this value is set to "0", VAV output depends only on the proportional band value.
47	VAV Off Delay	R/W	0 sec.	0 sec.	60 sec.	This parameter adjusts the delay of the closing time of the VAV.
48	Supply VAV Output Value	R	0	0	100	This parameter shows the supply VAV output value.
49	Exhaust VAV Output Value	R	0	0	100	This parameter shows the exhaust VAV output value.

50	Heater Level Selection	R/W	1	1	2	1: Analog heater and digital heater operate independently. 2: Analog heater and digital heater operate as a cascade system.
51	Heater Type Selection	R/W	0	0	1	0: Heater Level Selection can be only set to "1" 1: Heater Level Selection can be set to "1" and "2".
52	Minimum Heater Value	R/W	0	0	100	Range: 0 ... 100 => 0V ... 10V
53	Maximum Heater Value	R/W	100	0	100	Range: 0 ... 100 => 0V ... 10V
54	Heater Hysteresis	R/W	10 (18)	0 (0)	150 (270)	This parameter controls heater hysteresis temperature. 0 ... 150 => 0°C ... 15°C (0 ... 270 => 0°F ... 27°F)
55	Heater Proportional Band Value	R/W	40	1	100	This parameter adjusts the Kp value of the heater.
56	Heater Reset Time Value	R/W	30	0	100	This parameter adjusts the Ki value of the heater.
57	Electric Heater Output	R	0	0	1	This parameter shows if the electric heater is on or off. 0: Electric heater off. 1: Electric heater on.
58	Proportional Heater Output Value	R	0	0	100	This parameter shows the value of the proportional heater.
59	Alarm	R	0	0	4	This parameter shows the alarm status. 0 = No alarm 1 = Internal Temperature Sensor Alarm 2 = External Temperature Sensor Alarm 3 = Heater Contact Alarm
60	BMS Icon Enable	R/W	1	0	1	0 = Disable 1 = Enable
61	Monday Start Time	R/W	0	0	2359	The hour and minute values written in this parameter are set to turn on the device on Monday
62	Monday Stop Time	R/W	0	0	2359	The hour and minute values written in this parameter are set

						to turn off the device on Monday.
63	Tuesday Start Time	R/W	0	0	2359	The hour and minute values written in this parameter are set to turn on the device on Tuesday
64	Tuesday Stop Time	R/W	0	0	2359	The hour and minute values written in this parameter are set to turn off the device on Tuesday.
65	Wednesday Start Time	R/W	0	0	2359	The hour and minute values written in this parameter are set to turn on the device on Wednesday
66	Wednesday Stop Time	R/W	0	0	2359	The hour and minute values written in this parameter are set to turn off the device on Wednesday.
67	Thursday Start Time	R/W	0	0	2359	The hour and minute values written in this parameter are set to turn on the device on Thursday
68	Thursday Stop Time	R/W	0	0	2359	The hour and minute values written in this parameter are set to turn off the device on Thursday.
69	Friday Start Time	R/W	0	0	2359	The hour and minute values written in this parameter are set to turn on the device on Friday
70	Friday Stop Time	R/W	0	0	2359	The hour and minute values written in this parameter are set to turn off the device on Friday.
71	Saturday Start Time	R/W	0	0	2359	The hour and minute values written in this parameter are set to turn on the device on Saturday
72	Saturday Stop Time	R/W	0	0	2359	The hour and minute values written in this parameter are set to turn off the device on Saturday.
73	Sunday Start Time	R/W	0	0	2359	The hour and minute values written in this parameter are set to turn on the device on Sunday
74	Sunday Stop Time	R/W	0	0	2359	The hour and minute values written in this parameter are set to turn off the device on Sunday.
75	Current Year	R/W	2022	2017	2099	This parameter adjusts the current year.
76	Current Month	R/W	-	1	12	This parameter adjusts the current month.
77	Current Day	R/W	-	1	31	This parameter adjusts the current day.
78	Current Hour	R/W	-	00	23	This parameter adjusts the current hour.
79	Current Minute	R/W	-	00	59	This parameter adjusts the current minute.

80	Restore Factory Settings	R/W	0	0	1	0 = Current Settings 1 = Load Factory Settings
81	Baudrate	R/W	2	1	4	1 = 9600bps 3 = 38400bps 2= 19200bps 4 = 76800bps
82	Parity	R/W	1	0	2	0 = Odd 1 = Even 2 = None
83	Slave Address	R/W	1	1	247	This parameter shows the address of the device.
84	Parameter Menu Password	R/W	203	1	999	This parameter sets the parameter menu password.

Dimensions (mm)