

Control Point

User Manual

Hardware



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1 Introduction

The Control Point is a modern comfort management wall panel with two most popular open communication protocols: Modbus RTU/ASCII and BACnet MS/TP.

The panel can be configured using the iSMA Configurator software or Modbus registers/ BACnet objects.

1.1 Revision History

Date	Rev.	Description
30 Jan 2025	1.0	First edition

Table 1. Revision history

2 Safety Rules

- Improper wiring of the product can damage it and lead to other hazards. Make sure that the product has been correctly wired before turning the power on.
- Before wiring or removing/mounting the product, make sure to turn the power off. Failure to do so might cause an electric shock.
- Do not touch electrically charged parts such as power terminals. Doing so might cause an electric shock.
- Do not disassemble the product. Doing so might cause an electric shock or faulty operation.
- Use the product only within the operating ranges recommended in the specification (temperature, humidity, voltage, shock, mounting direction, atmosphere, etc.). Failure to do so might cause a fire or faulty operation.
- Firmly tighten the wires to the terminal. Failure to do so might cause a fire.
- Avoid installing the product in close proximity to high-power electrical devices and cables, inductive loads, and switching devices. Proximity of such objects may cause an uncontrolled interference, resulting in an instable operation of the product.
- Proper arrangement of the power and signal cabling affects the operation of the entire control system. Avoid laying the power and signal wiring in parallel cable trays. It can cause interferences in monitored and control signals.
- It is recommended to power controllers/modules with AC/DC power suppliers. They provide better and more stable insulation for devices compared to AC/AC transformer systems, which transmit disturbances and transient phenomena like surges and bursts to devices. They also isolate products from inductive phenomena from other transformers and loads.
- Power supply systems for the product should be protected by external devices limiting overvoltage and effects of lightning discharges.
- Avoid powering the product and its controlled/monitored devices, especially high power and inductive loads, from a single power source. Powering devices from a single power source causes a risk of introducing disturbances from the loads to the control devices.
- If an AC/AC transformer is used to supply control devices, it is strongly recommended to use a maximum 100 VA Class 2 transformer to avoid unwanted inductive effects, which are dangerous for devices.
- Long monitoring and control lines may cause loops in connection with the shared power supply, causing disturbances in the operation of devices, including external communication. It is recommended to use galvanic separators.
- To protect signal and communication lines against external electromagnetic interferences, use properly grounded shielded cables and ferrite beads.
- Switching the digital output relays of large (exceeding specification) inductive loads can cause interference pulses to the electronics installed inside the product. Therefore, it is recommended to use external relays/contactors, etc. to switch such loads. The use of controllers with triac outputs also limits similar overvoltage phenomena.

3 Technical Specification

		Control Point	Control Point VAV
Power Supply	DC	20-34 V	
	AC	24 V \pm 20%	
	Power consumption	0.6 W at 24 V DC - panels without CO ₂ sensor 0.9 W at 24 V DC - panels with CO ₂ sensor 1.8 VA at 24 V AC - panels without CO ₂ sensor 2.5 VA at 24 V AC - panels with CO ₂ sensor	
Built-in Sensors	Temperature sensor	10k NTC type, range: 0-50°C, accuracy: \pm 0.5°C, resolution: \pm 0.1°C	
	Humidity sensor (applies to versions with humidity sensor)	Range: 0-100% RH, accuracy: \pm 2% RH in range of 10-90% RH, resolution: \pm 1% RH	
	CO ₂ sensor (applies to versions with CO ₂ sensor)	Range: 400-2000 ppm, accuracy: 50 ppm + 5% of reading	
COM1	RS485 interface	Up to 128 devices	
		Half-duplex	
	Communication protocols	Modbus RTU/ASCII, BACnet MS/TP	
	Ports	2 RJ45, screw connector	
	Baud rate	2400-115200	
USB	Type	USB type C	
	Power supply	5 V DC	
Front Panel	Display	LCD 2.6"	
	Buttons	4 buttons (fan, up +, down -, occupancy)	4 buttons (menu, up +, down -, confirmation)
Ingress Protection	IP rating	IP20 for indoor installation	
Temperature	Operating	From 0°C to +50°C (32°F to 122°F)	
	Storage	From -40°C to 85°C (-40°F to 185°F)	

Humidity	Relative	From 5% to 95% RH (without condensation)
Screw Connector	Type	Removable screw terminals
	Maximum cable size	1.5 mm ² (26...16 AWG)
Housing	Material	PC/ABS
	Mounting	<ul style="list-style-type: none"> • Flush wall box 60 mm • US 1-gang electrical outlet box
Dimensions	Width	86.30 mm/3.40 in
	Length	129.30 mm/5.10 in
	Height	24.80 mm/0.98 in

Table 2. Technical specification

4 Hardware Specification

This section outlines all details regarding hardware specification of the Control Point panel.

4.1 Panel Versions

Model	Panel Code	Sensors			Display	Color	
		Temperature	Humidity	CO2	Yes	Black	White
Control Point	CP-DISP-B	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	CP-DISP-W	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
	CP-H-DISP-B	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	CP-H-DISP-W	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
	CP-C-DISP-B	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	CP-C-DISP-W	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
	CP-HC-DISP-B	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	CP-HC-DISP-W	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
	CP-VAV-DISP-B	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	CP-VAV-DISP-W	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
	CP-VAV-H-DISP-B	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	CP-VAV-H-DISP-W	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
	CP-VAV-C-DISP-B	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	CP-VAV-C-DISP-W	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
	CP-VAV-HC-DISP-B	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	CP-VAV-HC-DISP-W	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>

Table 3. Control Point panel models

Legend:

- H - a version with temperature and humidity sensors;
- C - a version with temperature and CO₂ sensors;
- HC - a version with temperature, humidity, and CO₂ sensors;
- B - black version;
- W - white version.

4.2 Dimensions [mm]

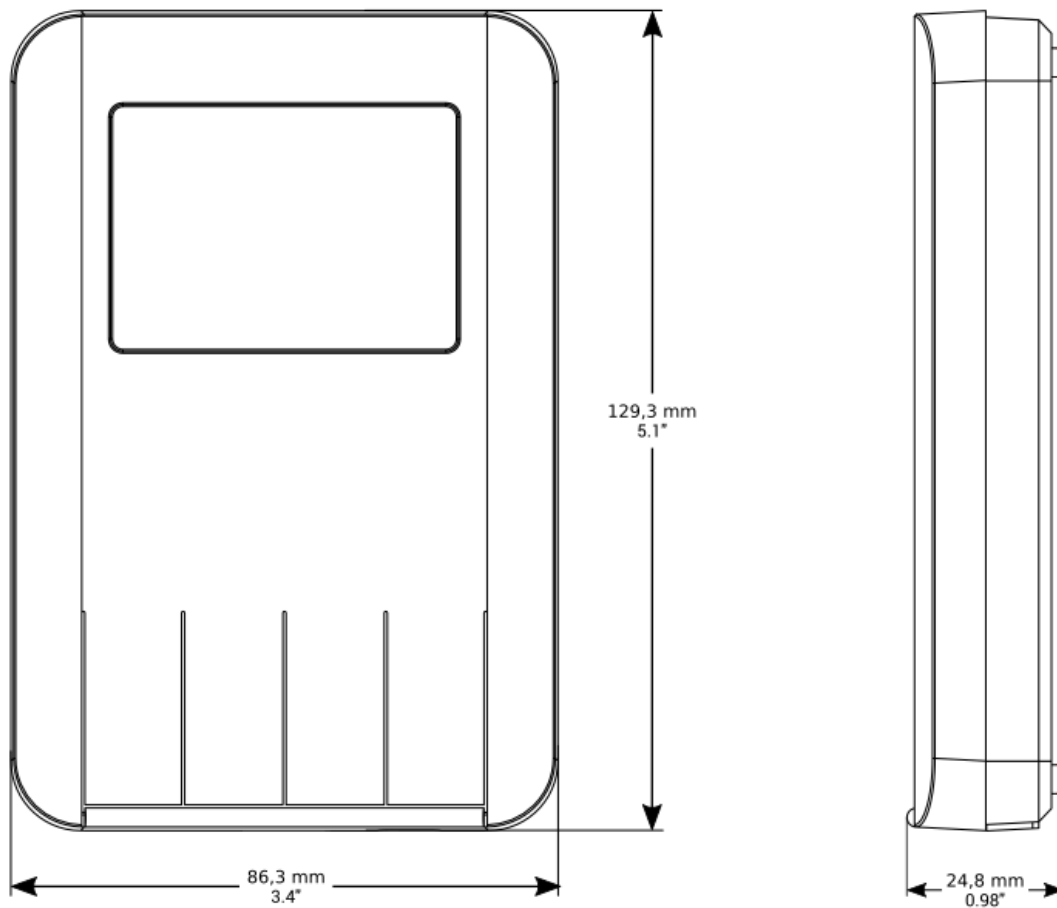


Figure 1. Control Point panel's dimensions

4.3 Front Panel

4.3.1 Display

The panel is equipped with an LCD display, which shows the information about:

- temperature setpoint (after pushing a + or – button, setpoint can be adjusted);
- temperature current value with unit;
- humidity current value with unit (optionally);
- CO₂ current value with unit (optionally).

Note: Currently displayed parameters change with a frequency set in the 40217 register.

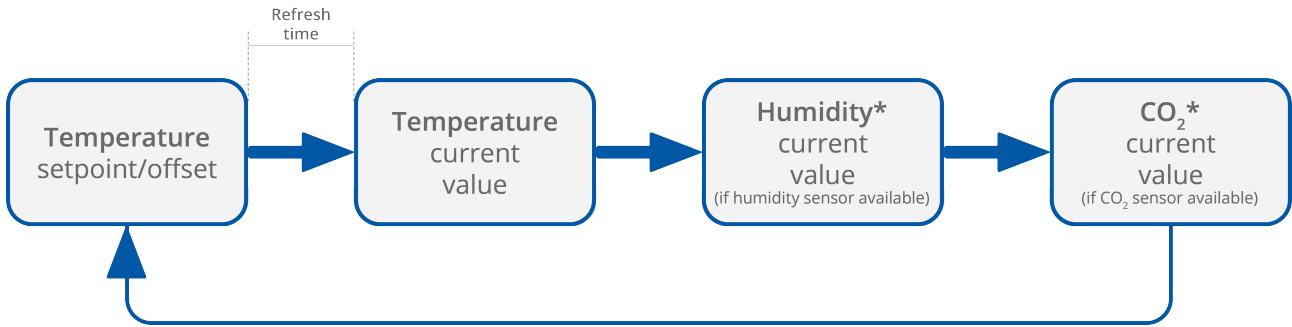


Figure 2. Display sequence

Depending on the panel's version, Control Point or Control Point VAV, the display shows different information.

In the Control Point line, the display additionally shows the information about:

- current fan mode;
- current occupancy status.

In the Control Point VAV line, the display additionally shows the information about:

- current occupancy status.

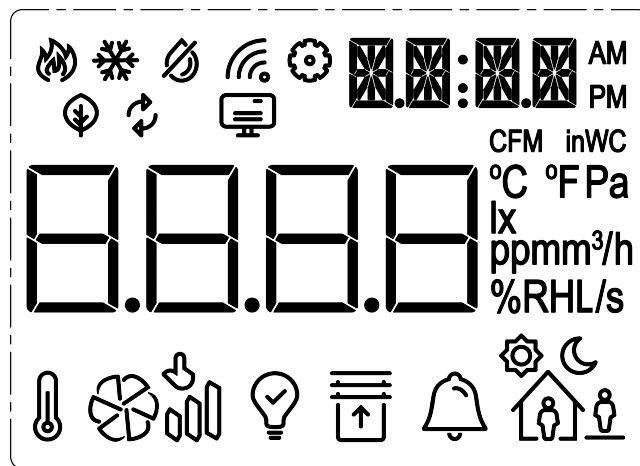


Figure 3. Display with all available icons

4.3.2 Keypad



Figure 4. Control Point line



Figure 5. Control Point VAV line

The Control Point panel has 4 functional buttons, which differ between the panel's Control Point line and the Control Point VAV version.

In Control Point line, the buttons are the following:

- fan;
- decrement (-);
- increment (+);
- occupancy.

Note: In order to change the fan modes or occupancy status, use the increment/decrement buttons.

In the Control Point VAV line, which has no fan control, the buttons are the following:

- menu;
- decrement (-);
- increment (+);
- confirmation.

4.4 Buzzer

The Control Point panel is equipped with a buzzer, which signals each pushing of a button with a sound and/or provides a CO₂ alarm function emitting a sound once the CO₂ level exceeds a set alarm value. The alarm can be confirmed and muted by pressing any button.

The buzzer may be activated or deactivated using the DEVICE_CONFIGURATION register/object (bit 0, BUZZER for activating/deactivating the buzzer, and bit 6 for activating or deactivating CO₂ alarm function).

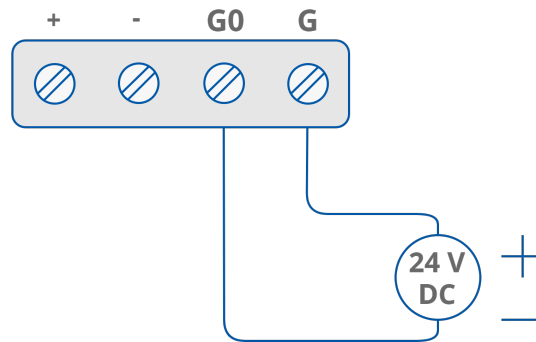
Bit	Register Value	Description
Bit 0	0	Buzzer deactivated
	1	Buzzer activated
Bit 6	0	Buzzer for CO ₂ alarm deactivated
	1	Buzzer for CO ₂ alarm activated

Table 4. The BUZZER values

By default, the buzzer is active, and the CO₂ alarm buzzer is deactivated.

4.5 Power Supply

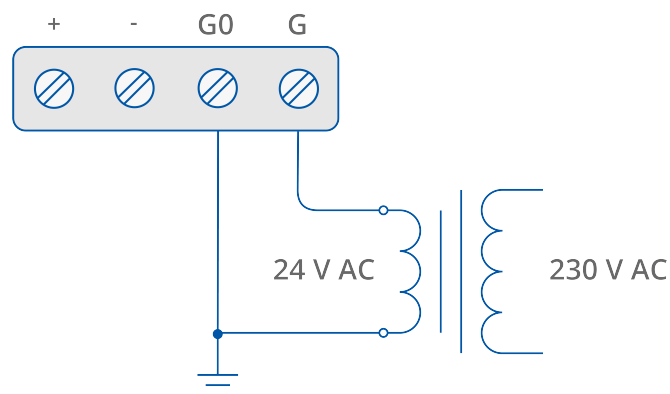
4.5.1 DC Power Supply Connection



Power supply from PELV/SELV source

Figure 6. DC power supply connection

4.5.2 AC Power Supply Connection



Power supply from a PELV/SELV source

Figure 7. AC power supply connection

4.5.3 RJ45 Power Supply Connection

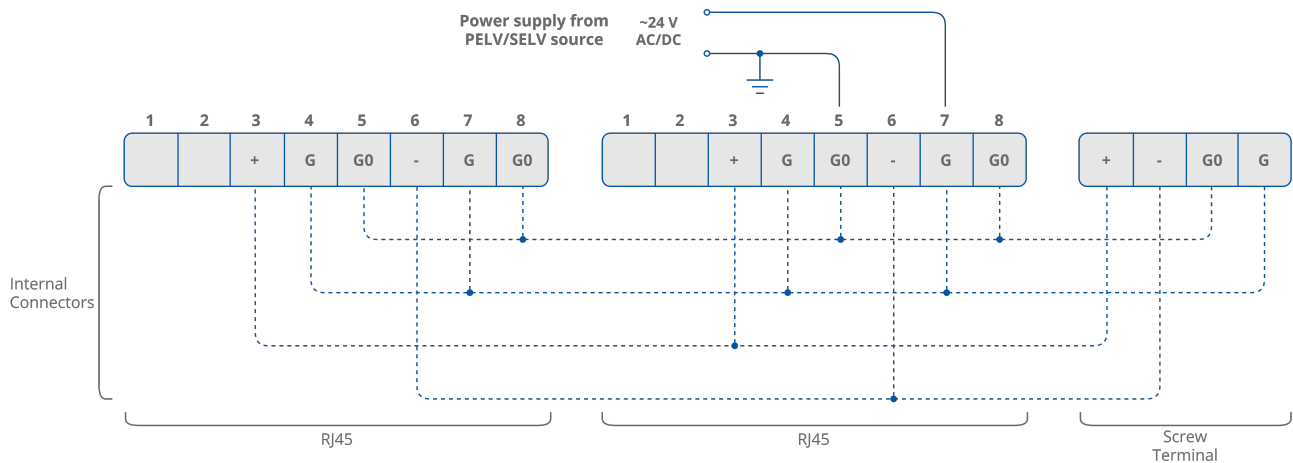


Figure 8. RJ45 power supply connection

4.6 Communication

The Control Point panel supports Modbus RTU/ASCII and BACnet MS/TP communication protocols, using 2 RJ45 sockets and a screw terminal. The panel has one USB type C (USB 2.0) port for communication with the iSMA Configurator and FCU Updater software.

Note: A communication protocol is selected by setting a second switch on the DIP switch on the back of the panel:

- Off: Modbus RTU/ASCII (default);
- On: BACnet MS/TP.

4.6.1 RS485 Connection



Figure 9. RJ45 connectors and RS485 screw terminal

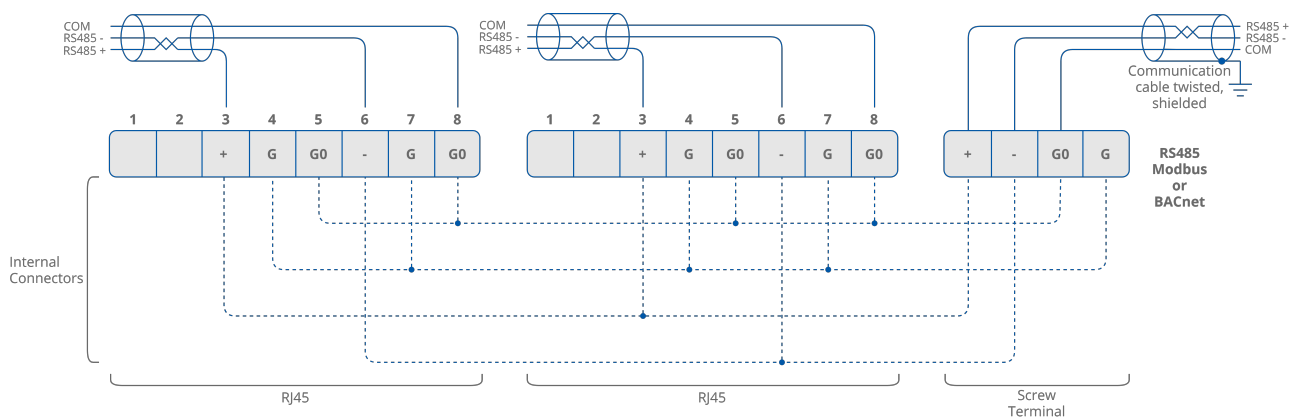


Figure 10. RS485 connection

4.6.2 RS485 Network Termination

Transmission line effects often present a problem for data communication networks. These problems include reflections and signal attenuation. To eliminate the presence of reflections of signal from the end of the cable, the cable must be terminated at both ends with a resistor across the line adequate to its characteristic impedance. Both ends must be terminated since the propagation is bidirectional. In case of an RS485 twisted pair cable this termination is typically 120 Ω .

Note: A termination resistor can be added with a third switch on the DIP switch on the back of the panel:

- **Off:** termination resistor disconnected (default);
- **On:** termination resistor added.

4.6.3 USB Connection



Figure 11. USB port

The USB port is used to communicate with product software, such as the iSMA Configurator or FCU Updater, for configuration and firmware updates. The USB port provides 5 V DC power supply.

4.7 DIP Switch

The Control Point panel is equipped with a 3-position DIP switch. Each of three sections has a separate function:

- the first switch allows for restoring default settings;
- the second switch allows for selecting a communication protocol;

- and the third switch allows for the RS485 network termination.



Figure 12. The DIP switch location under the back cover

4.7.1 Restoring Default Settings

The first switch provides a possibility to restore default settings in the panel. In order to do so, follow the steps below:



Figure 13. Restoring default settings

- Turn off the power supply;
- set the first switch to on;
- turn on the power supply;
- wait until LCD backlight starts blinking;
- set the first switch to off.

Default Settings

Variable	Default Value
Baud rate	115200
Stop bits	1
Data bits	8
Parity bits	None
Protocol	Modbus RTU
Modbus address	1
Replay delay	None

Table 5. Default values

4.7.2 Selecting Communication Protocol

The second switch selects between the available communication protocols, Modbus RTU/ASCII or BACnet MS/TP:



Figure 14. Selecting communication protocol

- **Off:** Modbus RTU/ASCII (default);
- **On:** BACnet MS/TP.

4.7.3 RS485 Network Termination

The third switch adds or disconnects a termination resistor to the RS485 network:



Figure 15. Adding a termination resistor

- **Off:** termination resistor disconnected (default);
- **On:** termination resistor added (120 Ω).

Note: The first and last device in the network require activated termination.

5 Mounting and Installation

The Control Point panel has been designed to fit all types of junction boxes, including the US type. The panel is mounted with a wall back box.

5.1 Mounting With a Back Box

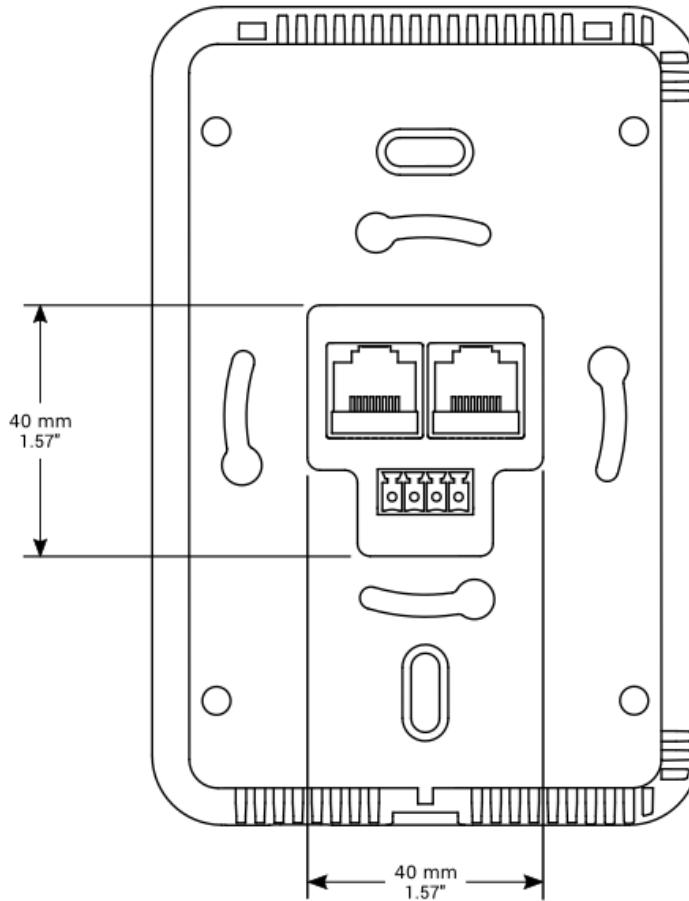


Figure 16. The back box of the panel – junction box fittings

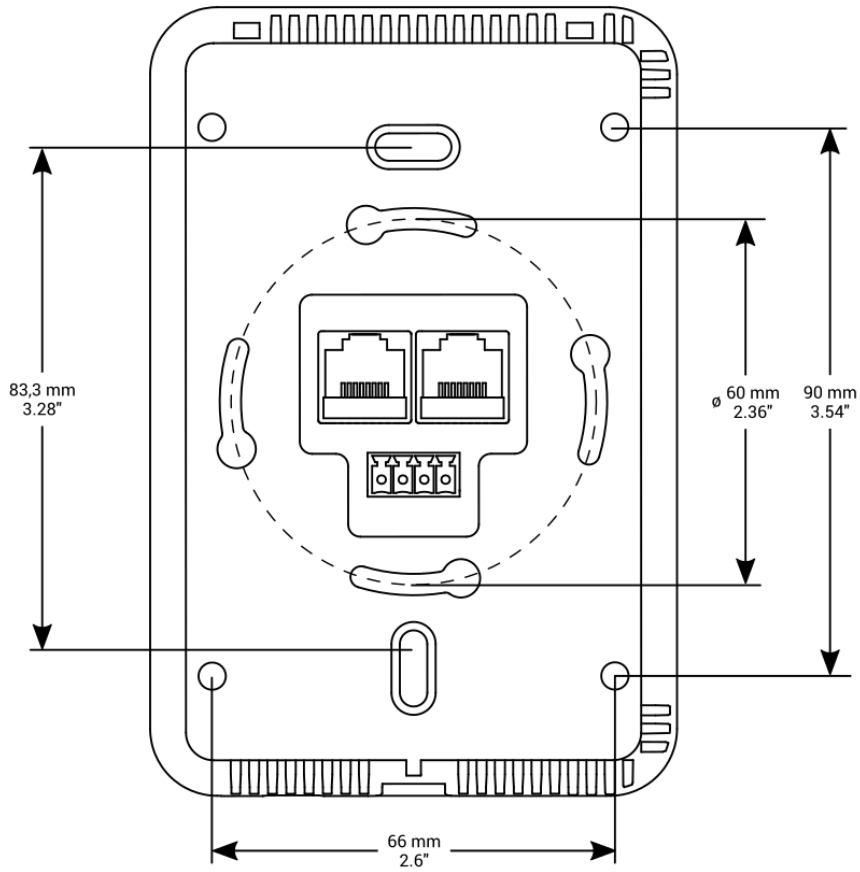


Figure 17. The back box of the panel – junction box fittings

Step 1: Fit the back box to the junction box.

Step 2: Fit the panel to the back box, starting from up corners. Make sure the USB port is headed downwards. Make sure that the screws are flush with a mounting frame.

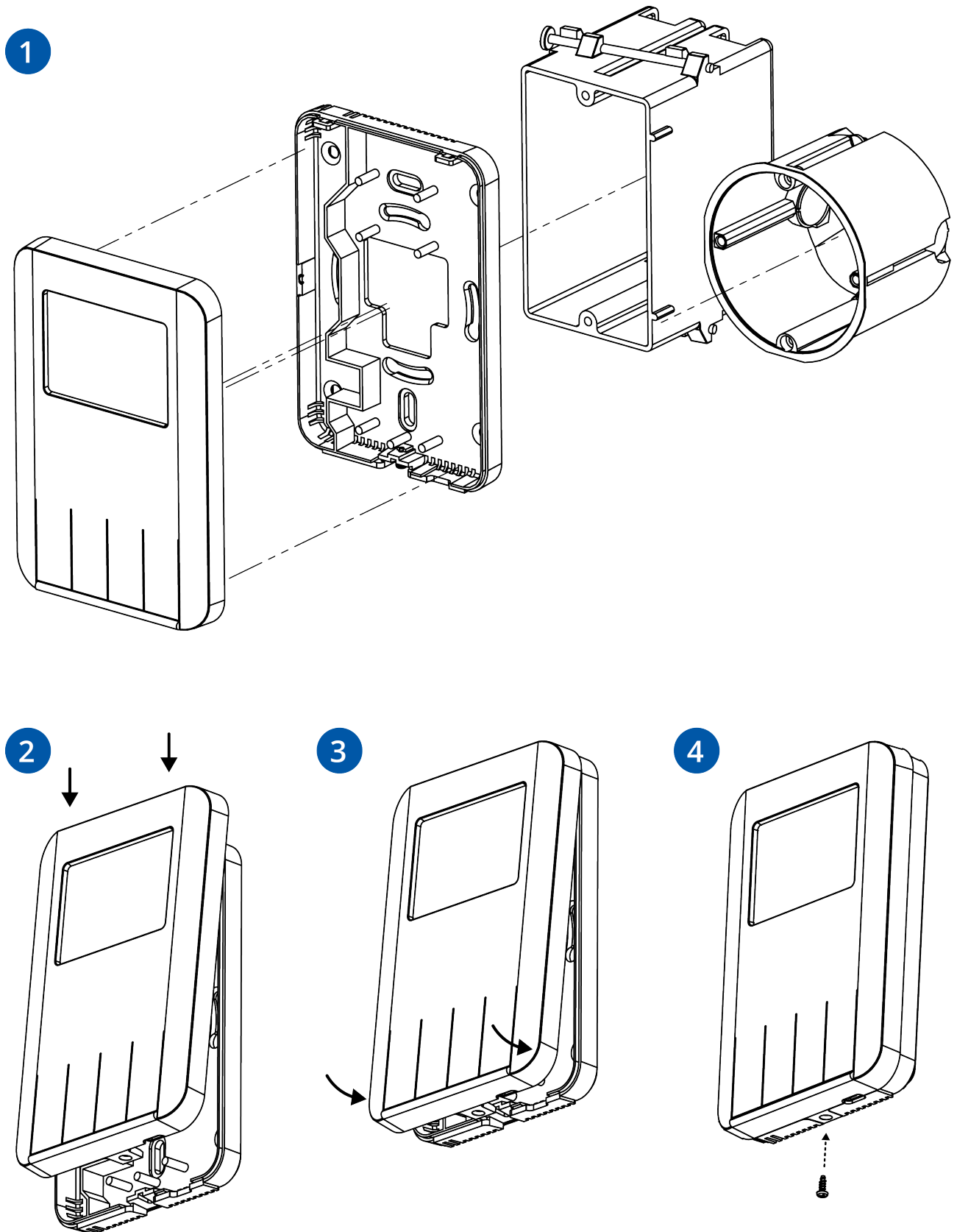


Figure 18. Fitting the junction box, back box, and the panel

Step 3: Slide the front cover from the top and push it slightly at the bottom to click.

Step 4: Screw the panel from the bottom to hold the enclosure together.