

# Touch Point

User Manual

## Hardware



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## 1 Introduction

The Touch Point is a modern comfort management wall panel with two most popular open communication protocols: Modbus RTU/ASCII and BACnet MS/TP. The Touch Point is available in two lines: Touch Point series (basic) and Touch Point VAV series (no fan control). Panels are available in different configurations of sensors (temperature, CO<sub>2</sub>, and humidity), colors, and versions with or without a display (only the Touch Point series). The panel is equipped with a TFT display and touch buttons.

The panel can be configured using the iSMA Configurator software or Modbus registers/BACnet objects. It fits most of standard junction boxes in Europe and can easily be installed using a wall back box.

### 1.1 Revision History

Rev.	Date	Description
1.3	18 Jul 2024	Auto-calibration information added
1.2	4 May 2023	<ul style="list-style-type: none"> <li>• New panel versions added: Touch Point VAV series</li> <li>• Power consumption data added</li> <li>• Temperature sensor range added</li> <li>• Editorial corrections</li> </ul>
1.1	25 May 2022	Editorial corrections
1.0	20 Apr 2022	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

<b>Power Supply</b>	DC	20-34 V
	AC	24 V $\pm$ 20%
	Power consumption	0.5 W at 24 V DC, 0.75 VA at 24 V AC - up to 1 W peaks in max. configuration
<b>Built-in Sensors</b>	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 10-90% RH, resolution: $\pm$ 0.1% RH
	CO <sub>2</sub> sensor (applies to versions with CO <sub>2</sub> sensor)	Range: 400-4000 ppm, accuracy: $\pm$ 30 ppm
<b>COM1</b>	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
<b>Front Panel</b>	Surface	White/black glass
	Display (applies to version with display)	TFT 0.96"
	Backlight	3 intensity modes
	Buttons	5 (Touch Point series) / 3 (Touch Point VAV series)
	LED	3 blue and 3 red for temperature
		3 white for fan (only the Touch Point series)
		1 white for occupancy
1 configurable RGB		
<b>Ingress Protection</b>	IP rating	IP20 for indoor installation
<b>Temperature</b>	Operating	From 0°C to +40°C
	Storage	From -40°C to +70°C

<b>Humidity</b>	Relative	From 5% to 95% RH (without condensation)
<b>Screw Connector</b>	Type	Removable screw terminals
	Maximum cable size	1.5 mm <sup>2</sup> (24...16 AWG)
<b>Housing</b>	Material	Plastic, self-extinguishing ABS
	Mounting	Standard 60 mm wall back box
<b>Dimensions</b>	Metric	86.00x86.00x14.50 mm
	Inches	3.39x3.39x0.57 in

Table 2. Technical specification

## 4 Hardware Specification

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

### 4.1 Panel Versions

#### 4.1.1 Touch Point Series

Touch Point series - basic line of the Touch Point panels:

- available with or without a display,
- in different configurations of temperature, humidity, and CO2 sensors,
- and 2 colors - black and white.

#### 4.1.2 Touch Point VAV Series

Touch Point VAV series - line of the Touch Point panels **with no fan control**:

- available with a display,
- in different configurations of temperature, humidity, and CO2 sensors,
- and 2 colors - black and white.

Model	Panel Code	Sensors			Display		Color	
		Temperature	Humidity	CO2	Yes	No	Black	White
Touch Point	TP-B	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	TP-W	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
	TP-H-B	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	TP-H-W	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
	TP-C-B	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	TP-C-W	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
	TP-HC-B	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	TP-HC-W	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
	TP-DISP-B	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
	TP-DISP-W	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>
	TP-H-DISP-B	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
	TP-H-DISP-W	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>
	TP-C-DISP-B	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
	TP-C-DISP-W	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>

	TP-HC-DISP-B	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
	TP-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. Touch Point panel models

Model	Panel Code	Sensors			Display		Color	
		Temperature	Humidity	CO2	Yes	No	Black	White
Touch Point VAV	TP-VAV-DISP-B	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
	TP-VAV-DISP-W	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>
	TP-VAV-H-DISP-B	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
	TP-VAV-H-DISP-W	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>
	TP-VAV-C-DISP-B	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
	TP-VAV-C-DISP-W	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>
	TP-VAV-HC-DISP-B	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
	TP-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 4. Touch Point VAV 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]

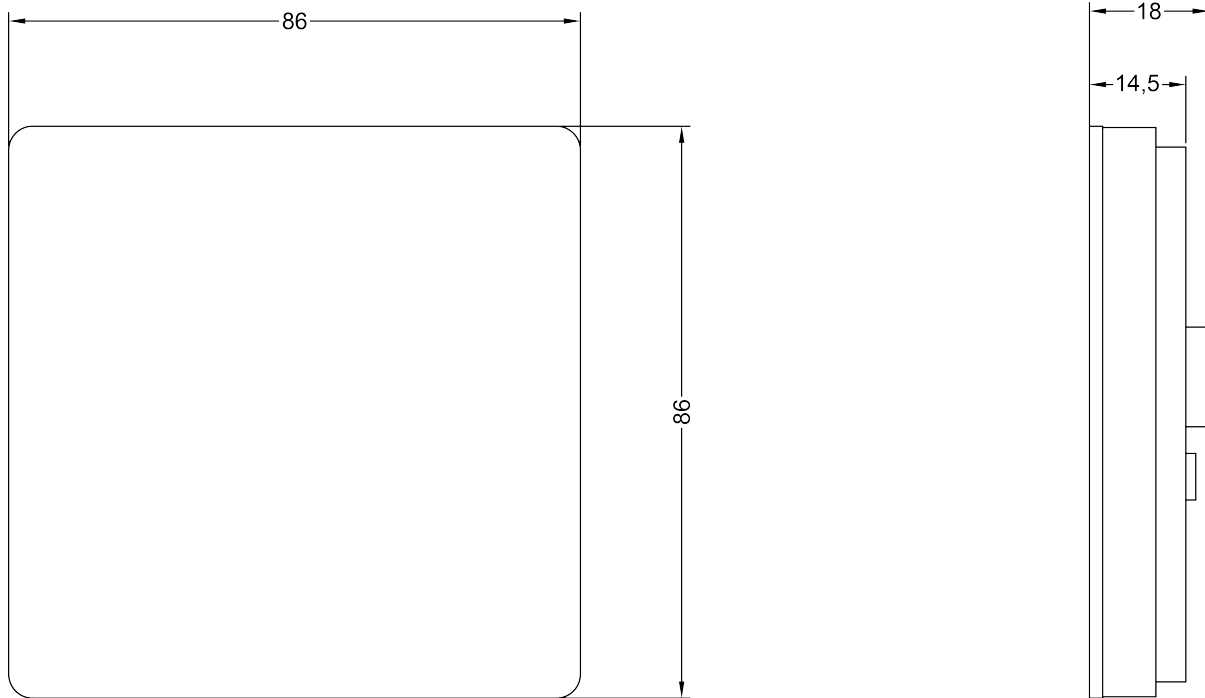


Figure 1. Dimensions

## 4.3 Touch Panel



Figure 2. Touch Point series



Figure 3. Touch Point VAV series

- 5 buttons for occupancy, temperature (-/+), and fan (small fan/big fan icons - only the Touch Point series) control;
- 3 blue and 3 red LEDs for temperature signalization;
- 3 white LEDs for fan signalization (only the Touch Point series);
- 1 white LED for fan auto mode signalization (only the Touch Point series).

### Auto-calibration

Touch buttons are cyclically auto-calibrated. During the process, buttons are not responsive; in such case, wait a few seconds and press the button again.

The LCD display shows following information:

- temperature setpoint or offset (after pushing a + or - button, according to configuration);
- temperature current value with unit;
- humidity current value with unit (optionally);
- CO<sub>2</sub> current value with unit (optionally).

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

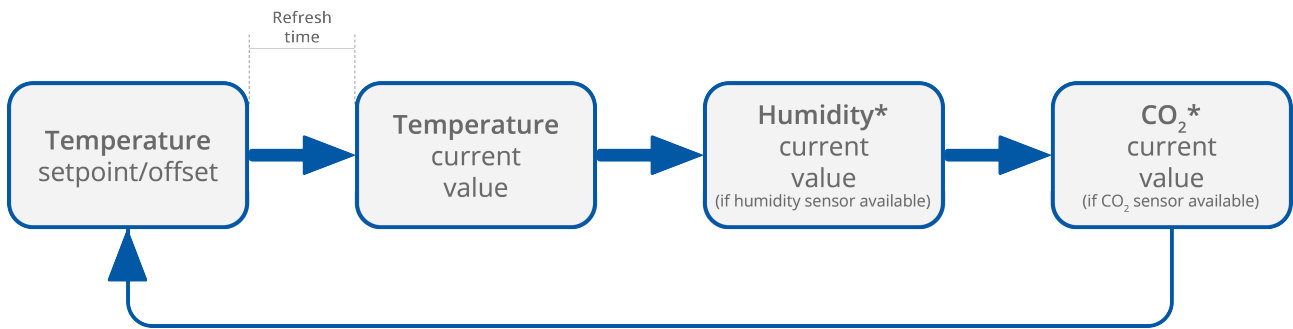


Figure 4. Display sequence

### 4.3.1 LEDs

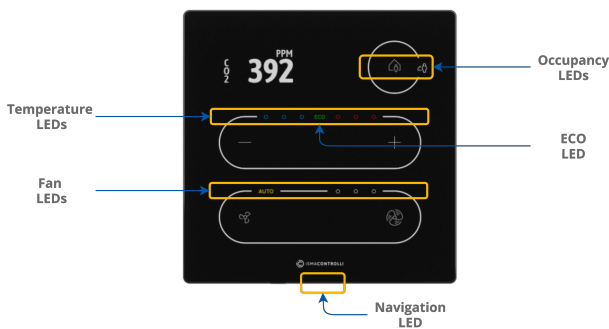


Figure 5. Touch Point series

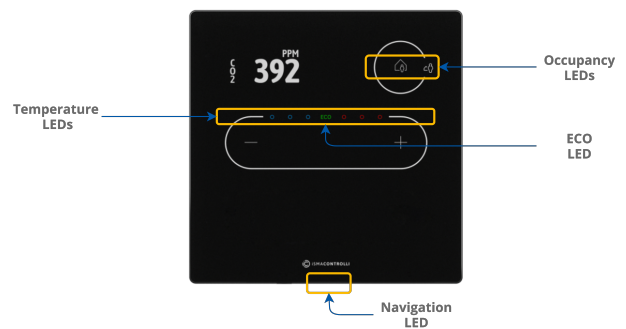


Figure 6. Toi

The panel is equipped with:

- 2 white LEDs for signaling occupancy status;
- 3 blue and 3 red LEDs for temperature signalization (cooling or heating);
- 4 white LEDs for fan modes indication (only the Touch Point series);
- 1 ECO LED;
- 1 navigation LED to localize the panel in the dark.

### 4.3.2 LED Modes

The Touch Point panel works in 3 modes of LED lighting intensity:

- **active:** the LED lighting mode after any button on the screen has been touched;
- **idle:** the LED lighting mode after a time set from a last button has been touched;
- **standby:** the LED lighting mode after a time set from going into the idle mode.

All lighting intensity values in these three different modes can be set in the 40207-40216 Modbus registers.

### 4.4 Buzzer

The Touch Point panel is equipped with a buzzer, which informs about a detected touch with a short sound.

The buzzer also provides a CO<sub>2</sub> alarm function, which emits sounds once the CO<sub>2</sub> 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).

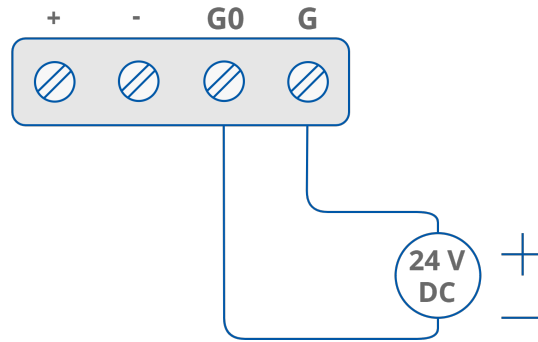
Register Value	Description
0	Buzzer deactivated
1	Buzzer activated

Table 5. The BUZZER values

By default, the buzzer is active.

## 4.5 Power Supply

### 4.5.1 DC Power Supply Connection



Power supply from PELV/SELV source

Figure 7. DC power supply connection

### 4.5.2 AC Power Supply Connection

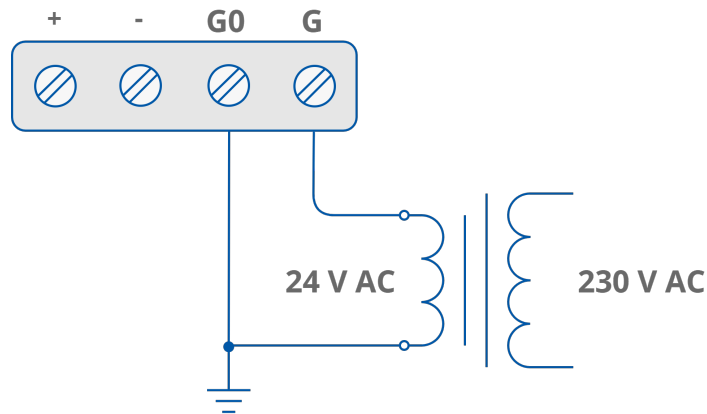


Figure 8. AC power supply connection

### 4.5.3 RJ45 Power Supply Connection

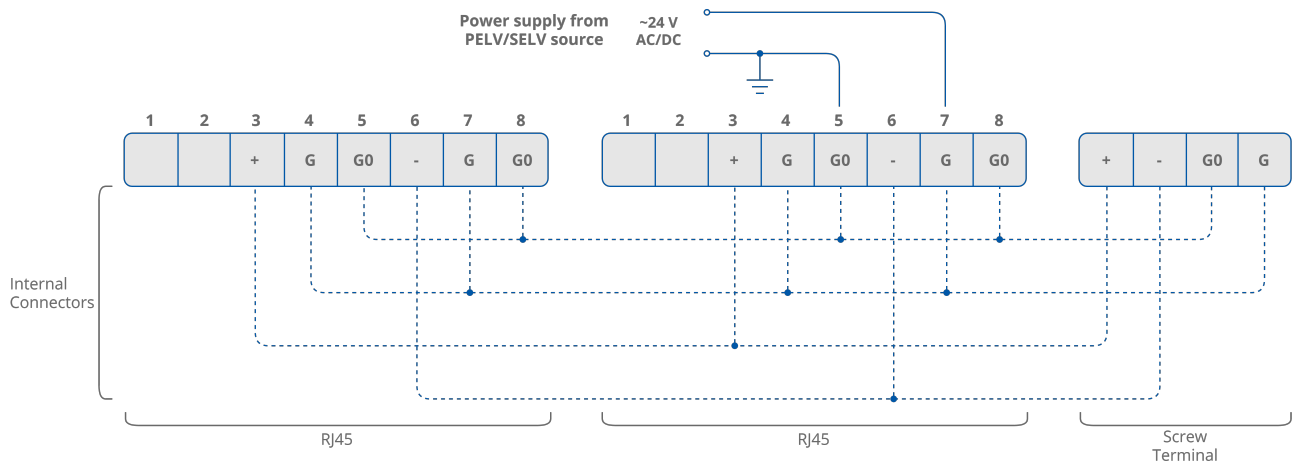


Figure 9. RJ45 power supply connection

## 4.6 Communication

The Touch 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

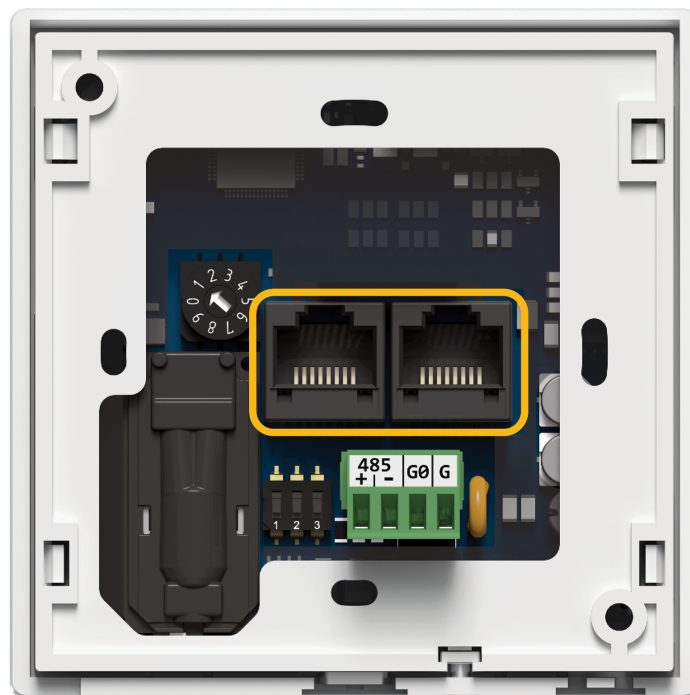


Figure 10. RJ45 connectors



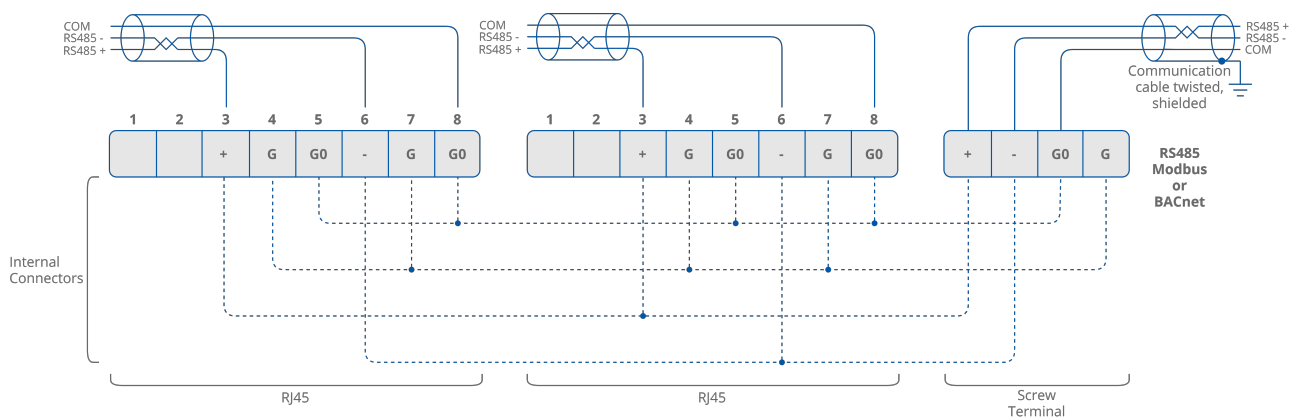


Figure 11. RS485 connection

### 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

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 Touch 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.

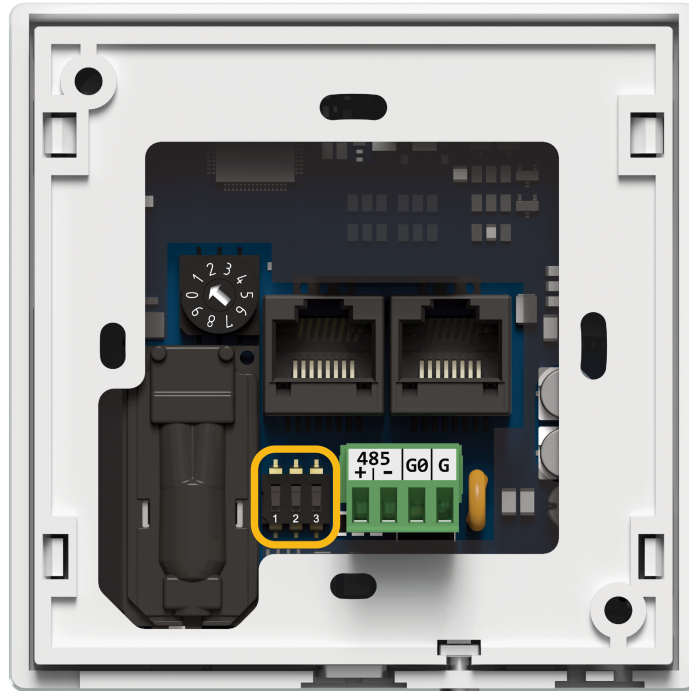


Figure 12. DIP switch location

### 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:

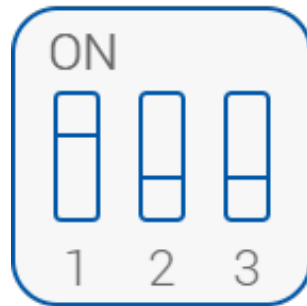


Figure 13. Restoring default settings

- Turn off the power supply;
- set the first switch to on;
- turn on the power supply;
- wait until 5 seconds pass;
- set the first switch to off.

### Default Settings

Variable	Default Value
Baud rate	115200

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

Table 6. Default values

### 4.7.2 Selecting Communication Protocol

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

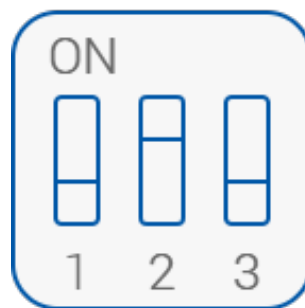


Figure 14. Selecting communication protocol

- 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).

## 4.8 Rotary Switch

### 4.8.1 Setting Device Address

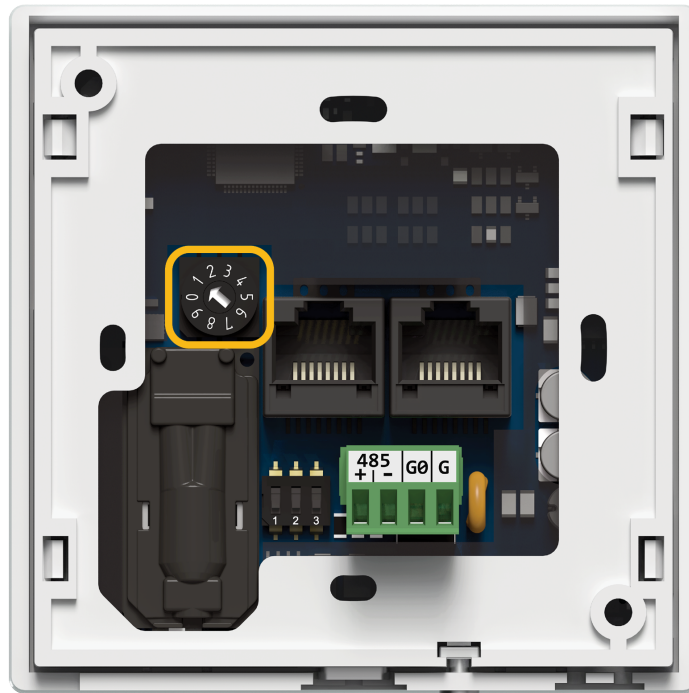


Figure 16. Rotary switch location

The Touch Point panel is equipped with a rotary switch, which allows for setting a Modbus address in a range from 0 to 9. If the switch is set to 0, the address is read from the ADDRESS register/object (decimal address: 22).

## 5 Mounting and Installation

### 5.1 Mounting Without a Back Box

It is possible to mount the Touch Point panel without a back box in walls where a square hole of at least 51 x 51 mm can be cut directly in the wall. Then, it is required to securely install the installation screws in the wall in the position of the installation holes on the frame.

### 5.2 Mounting With a Back Box

For other cases, it is recommended to follow the below steps of installation with a wall back box.

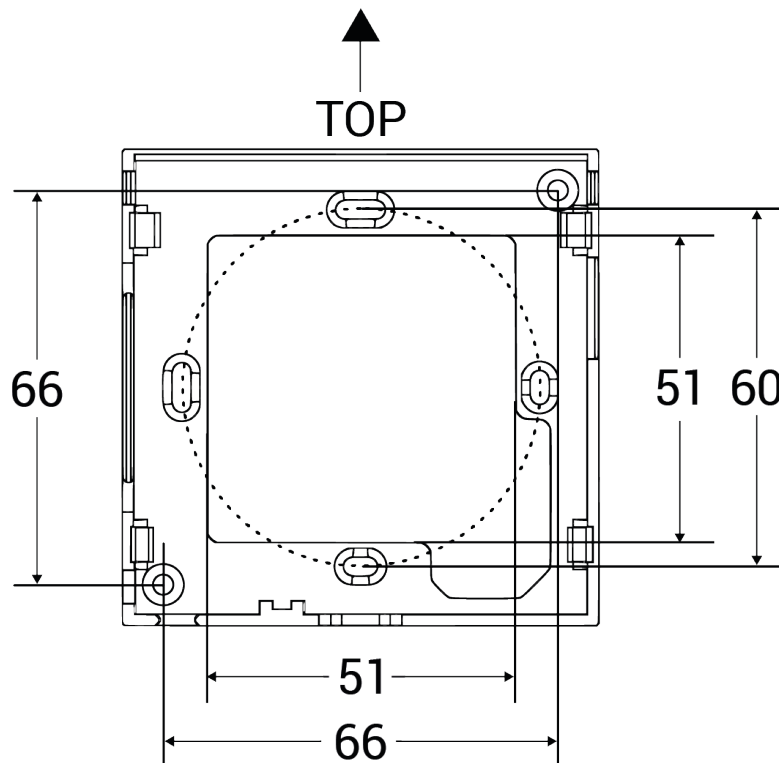


Figure 17. The back box of the panel – junction box fittings

**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 screw is flush with a mounting frame.

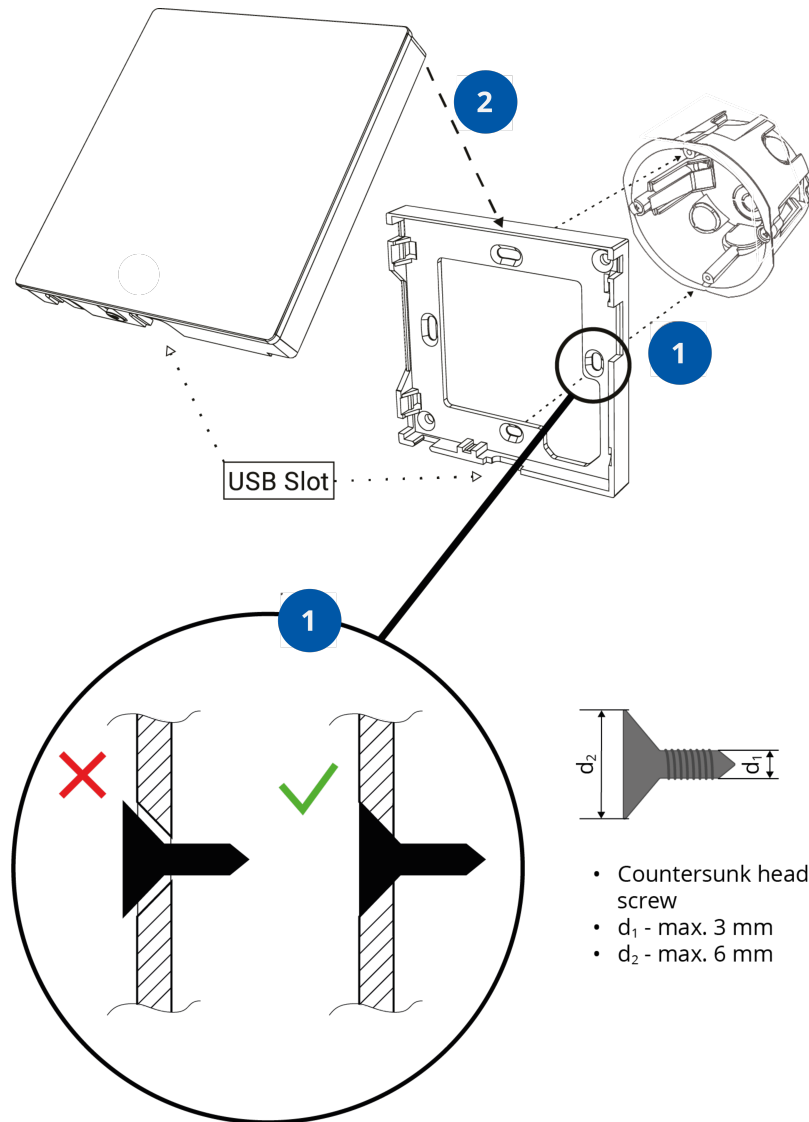


Figure 18. Fitting the junction box, back box, and the panel

Step 3: Gently push in the bottom corners of the panel to the back box.

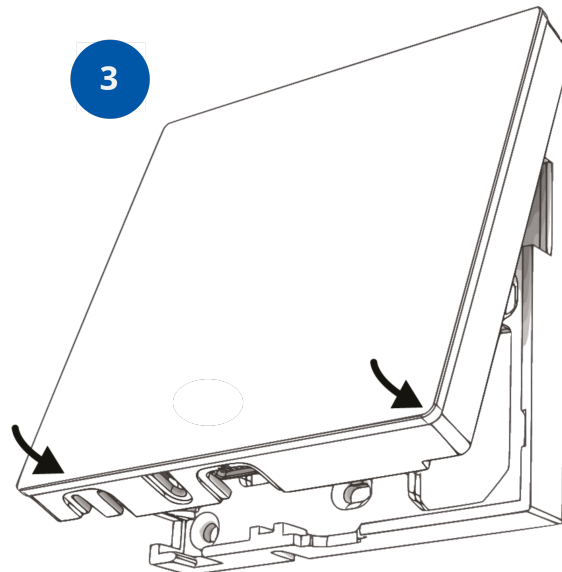


Figure 19. Fitting down corners in the back box

Step 4: Screw the panel to the back box. Turn the screw clockwise.

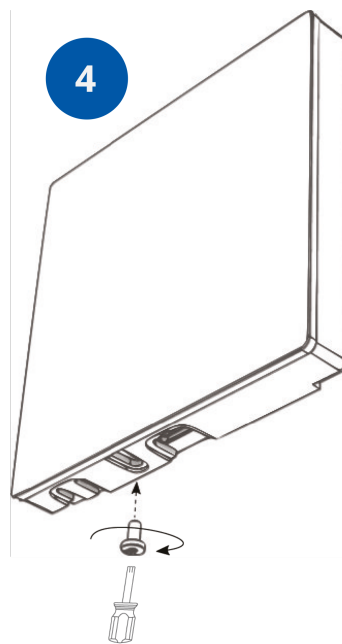


Figure 20. Screw the panel to the back box