SIEMENS

KNX

KNX room units and sensors, wall-mount

QMX6.P37/QMX6.P37-1BK

The QMX6 product family consists of room units/sensors with KNX communication that operate in the following ecosystems:

- Desigo™ (PL-Link): when commissioned using the Siemens ABT tool
- KNX (S-Mode): when commissioned using the KNX Association's ETS tool

Functions in all ecosystems:

- Sensors for temperature, relative humidity and CO2 (depending on the variant)
- Air quality indicator (P70 and P74)
- LCD touch display for HVAC and Green Leaf (P34, P44 and P74)
- Room operating modes: Auto, comfort, pre-comfort (standby), economy and protection

Additional functions in KNX ecosystem (S-mode):

- Relative humidity controller
- CO2 controller
- Setpoint operation from display: for room temperature, relative humidity and CO2
- Manager/subordinate operation for room units
- 3 calculators

Type overview

	QMX6.P37	QMX6.P37-1BK
Order number (MLFB)	S55720-S722-A	S55720-S723-A
E-Paper display (display and operation of HVAC, lights, blinds and scenes)	• Default: White background, black symbols	• Default: Black background, white symbols
Green Leaf (display and operation)	•	•
Temperature sensor	•	•

Accessories

	QMX6.MPW	QMX6.MPB
Order number (MLFB)	S55720-S659	S55720-S660
Description	Replacement mounting plate, white	Replacement mounting plate, black

Functions in Desigo ecosystem (PL-Link)

- QMX6 room unit is connected to an automation station and acts a peripheral room device
- QMX6 does not perform control functions
- Applications are defined by the automation station
- QMX6 room unit is normally combined with automation stations to control the following applications:

- **DXR2/PXC3 room automation station:**
  - Variable Air Volume (VAV)
  - Fan Coil Unit (FCU)
  - Radiant (Heated/chilled) ceiling
  - Radiator
  - Heat pump
  - Dual duct
  - Lights
  - Blinds
  - Scenes

Functions in KNX ecosystem (S-mode)

In the KNX ecosystem (S-Mode), the QMX6 room unit/sensor:

- performs control functions. The QMX6 must be linked to another KNX actuator, to release the outputs and control the HVAC equipment
- is designed to control water-based HVAC equipment and applications:

HVAC equipment	Mode	
	Heating	Cooling
Radiator	Yes	No
Radiant ceiling	Yes (Heated ceiling)	Yes (Chilled ceiling)
Floor heating/cooling	Yes (floor heating)	Yes (floor cooling)

HVAC application	Mode	Control application
2-pipe water system	Heating or cooling	2-point (on/off) control PWM Continuous (0...100%)
2-pipe/2-stage water system	Heating or cooling	
	Stage 1	PWM Continuous (0...100%)
	Stage 2	PWM Continuous (0...100%)
2-pipe water system with changeover (changeover is done via a KNX object)	Heating or cooling (on same pipes)	2-point (on/off) control PWM Continuous (0...100%)
2-pipe/2-stage water system with changeover (changeover is done via a KNX object)	Heating or cooling (on same pipes)	
	Stage 1	PWM Continuous (0...100%)
	Stage 2	PWM Continuous (0...100%)
4-pipe water system	Heating	2-point (on/off) control PWM Continuous (0...100%)
	Cooling	2-point (on/off) control PWM Continuous (0...100%)

HVAC application	Mode	Control application
4-pipe/2-stage water system	Heating	
	Stage 1	PWM Continuous (0...100%)
	Stage 2	PWM Continuous (0...100%)
	Cooling	
	Stage 1	PWM Continuous (0...100%)
	Stage 2	PWM Continuous (0...100%)

Temperature sensor and controller (valid for all variants)

This device measures the temperature and provides room-based temperature control for heating and/or cooling. The room temperature controller sends a control value to the KNX valve actuator. This value is calculated using a control algorithm (2-point control, steady PI control, or steady PI control with sequence control) based on the actual room temperature that is measured and the setpoint. This valve actuator controls the flow rate of hot and cold water and thus also the change in room temperature.

Humidity sensors (valid for P40, P44, P70 and P74) and Humidity controller (valid for all variants)

The device variants P40, P44, P70 and P74 can measure relative humidity. All device variants have a humidity controller that can be used as a staged controller or steady PI controller. As the devices P30 and P34 do not have an integrated humidity sensor, they can only use an external humidity sensor value for the controller. The other device variants (P40, P44, P70 and P74) can use internal as well as external humidity sensor values.

Up to 5 control signal stages can be selected for staged control. For PI control, the value output can be either switching (1-bit) or steady (8-bit).

CO2 sensor (valid for P70 and P74) and CO2 controller (valid for all variants)

The device variants P70,and P74 can measure the CO2 content in the air. All device variants have an air quality controller that can be used as a staged controller or steady PI controller. As the devices P30 and P34 do not have an integrated air quality sensor, they can only use an external air quality sensor value for the controller. The other device variants (P70 and P74) can use internal as well as external air quality sensor values.

Up to 5 control signal stages can be selected for staged control. For PI control, the value output can be either switching (1-bit) or steady (8-bit).

Air quality indicator (valid for P70, P74)

The air quality indicator shows the CO2 content by changing the LED color as follows:

- Red = bad air quality
- Orange = fair air quality
- Green = good air quality

The limit values for the LED can be configured in the ETS.

Green Leaf (valid for P34, P44 and P74)

The Green Leaf function is used to set a temperature setpoint range in the ETS in order to improve energy efficiency. The LED of the Green Leaf push-button in the top right corner of the device is used to display the status:

- If the setpoint is within the preset limit range in the ETS, the LED lights up green.
- If the setpoint is outside the limit value range preset in the ETS, the LED lights up red.

If the LED lights up red, you can return to the preset value in energy-efficient range by pressing the Green Leaf push-button.

Calculator (valid for all variants)

Up to 3 independent calculators with up to 6 inputs each are available. Percentage values, temperature values, illuminance, humidity values and CO2 concentration can be selected as inputs. These values can be evaluated in terms of maximum value, minimum value or weighted value.

Comparator (valid for all variants)

The value comparator can be used to compare two similar analog values (e.g., temperature) with each other.

Manager/subordinate operation (valid for P34, P44 and P74)

In the ETS, the device can be set to act as a manager or subordinate. The manager serves as the primary control and regulation device as well as a display and control device. The subordinate operates as a pure display and operation device.

Manager/subordinate operation is especially useful in large rooms in which more than one room unit is installed. The function allows the user to change the temperature setpoint, room operating mode, fan speed etc. from any room device. The changed settings are then mirrored to all room units. Each room can contain only one manager and one or more subordinates. It is possible to use the manager to read out the current room temperature from the subordinate room units in order to ensure a consistent temperature in larger rooms or spaces. However, this setting is not implemented in manager/subordinate operation; instead, it has to be set using the “source of temperature value” parameter in the “temperature control” parameter card.

User Interface

Overview

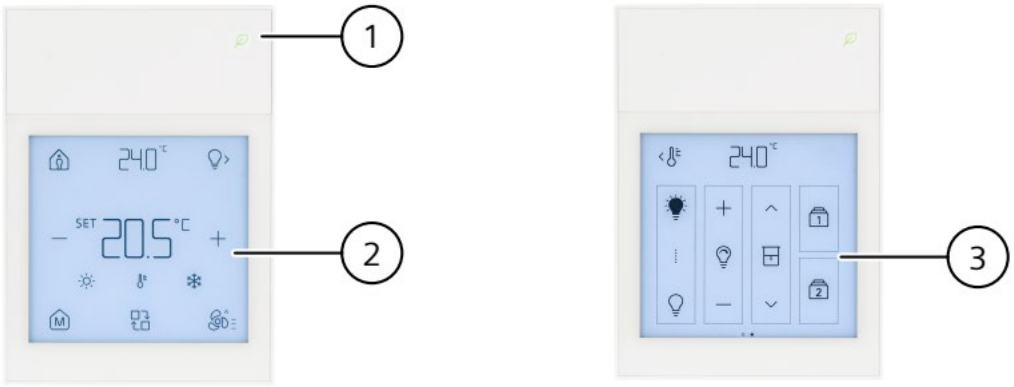
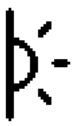
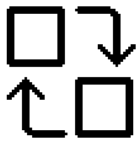


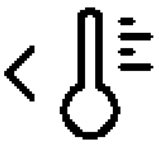
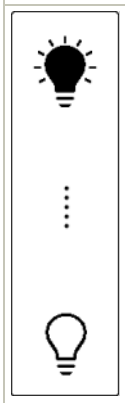
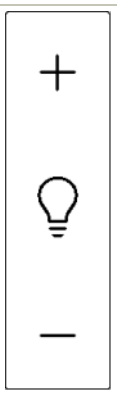
Fig. 1: General Overview from the front

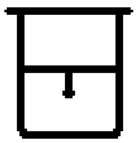
1	Green Leaf
2	User Interface (HVAC page)
3	User Interface (multifunction page)

Symbols/buttons

Symbol	Description	Function	Symbol	Description	Function
	Room operating modes	Operation		Automatic operation	Display
	Comfort mode	Display		Pre-comfort (standby) mode	Display
	Economy mode	Display		Protection mode	Display

Symbol	Description	Function	Symbol	Description	Function
	Sensor switch	Operation		Temperature	Display
	Relative humidity	Display		CO2	Display
	Outside measurement CO2	Display		Outside measurement humidity	Display
	Outside measurement temperature	Display			
	Heating	Display		Cooling	Display
	Increase setpoint	Operation		Decrease setpoint	Operation
SET	Setpoint	Display	°C	Degrees Celsius	Display
°F	Degrees Fahrenheit	Display	%rH	% relative humidity	Display
ppm	Particles per million (CO2)	Display		Fan	Operation and display
	Presence	Operation and display		Absence	Operation and display

Symbol	Description	Function	Symbol	Description	Function
	Operation lock (for the complete user interface)	Display		Window contact open	Display
	Operational lock (for individual buttons)	Display			
	Switch to multifunction page	Operation		Switch to HVAC page	Operation
	Navigation left	Operation		Navigation right	Operation
	One button switching: Light off, press to switch light on	Operation and Display		One button switching: Light on, press to switch light off	Operation and Display
	Two button switching: Switch light on Two button switching: Switch light off	Operation and Display Operation		Dim light up/ switch light on Light bulb: Light feedback Dim light down/ switch light off	Operation Display Operation
	One button dimming: Dim light up/down and Switch light on/off	Operation and Display		One button dimming: Dim light down / Switch light off	Operation and Display

Symbol	Description	Function	Symbol	Description	Function
	One button dimming: Dim light up / Switch light on	Operation and Display			
	Roller shutter	Display		Scene 1-64	
	Green Leaf display inactive	Inactive		Green Leaf display active - non-energy-efficient range	Operation and display
	Green Leaf display active - energy-efficient range	Operation and display			

KNX PL-Link configuration

Automatic (plug & play) commissioning

If only one QMX6 is connected to an automation station that uses a tool that was configured with the correct QMX6 model. In this case the QMX6 device is automatically assigned to the automation station, and the pair is fully functional.

Alternatively, automatic commissioning is also possible for more than one QMX6 device if their serial numbers are manually entered in the tool.

Manual commissioning - Using display

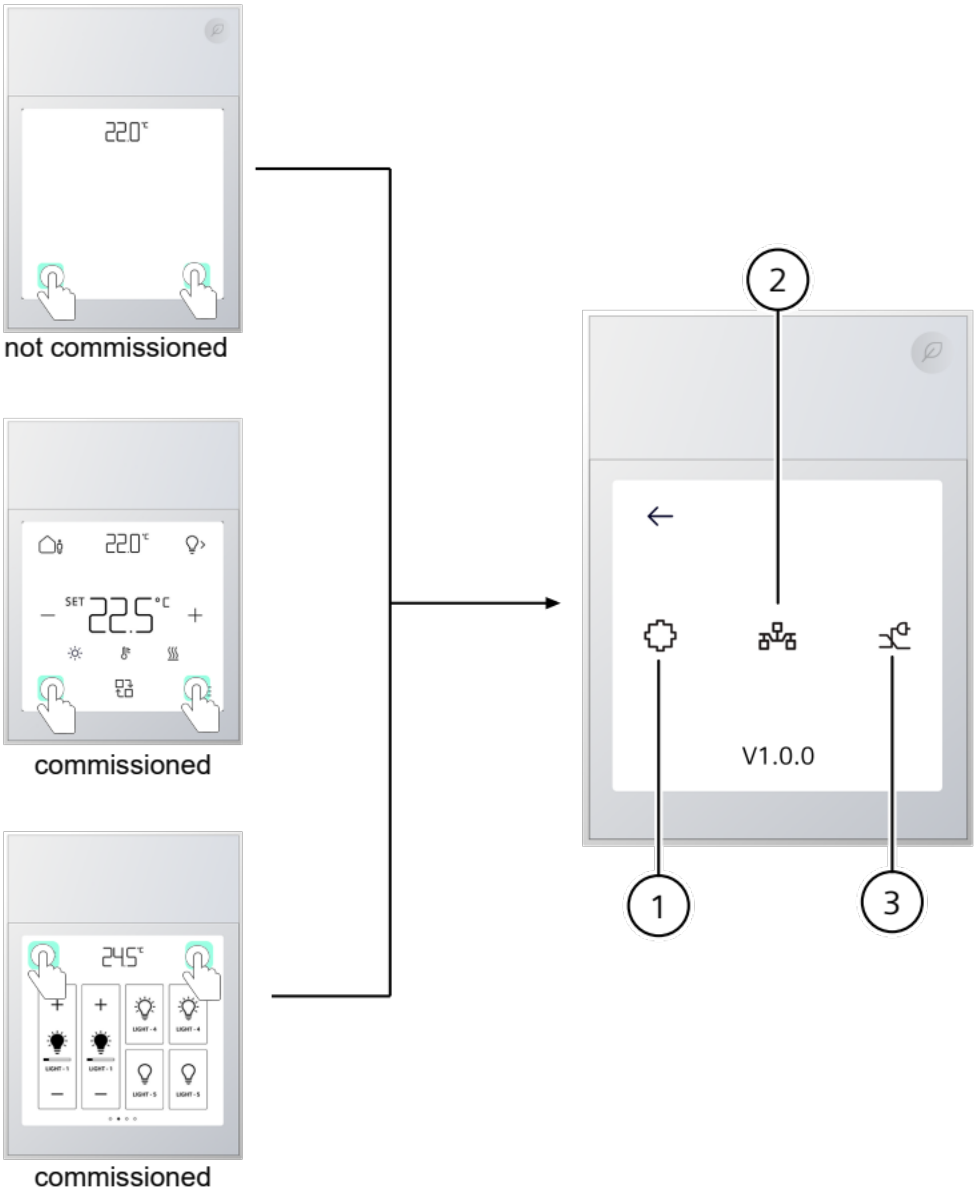
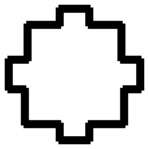
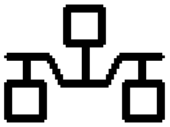


Fig. 2: Device is not commissioned and commissioned

Position	Symbol	Description	Function
1		Factory reset	Operation
2		Programming mode	Operation
3		Connection test	Operation

Addressing and connection test

1. To enter engineering mode, press any touch point to wake up the screen, then simultaneously press the areas shown in „Fig.2“ for at least 5 seconds.

2. The display should now show the firmware version number and the PL-Link commissioning buttons.

3. Press the Programming Mode button [2] to assign the QMX6 to the automation station. The display shows “PROG MODE - ENABLED”.

4. During configuration the display shows “CONFIG - IN PROGRESS”.

5. Press the Connection Test button [3] to check if the assigning was successful. The display shows “CONNECT TEST - PASS” or “CONNECT TEST - FAIL”, depending on the result. If it shows “CONNECT TEST - FAIL”, repeat Step 3 again.

Factory reset

1. Press the Factory Reset button [1] for at least 5 seconds to restore the QMX6 device state to the factory default. The display shows “FACTORY RESET - IN PROGRESS”.

2. Disconnect the KNX bus between the QMX6 and automation station, if you want to keep the device in factory default state.

3. Keep the KNX cable connected if you want to automatically re-assign your devices.

NOTICE	
!	This operation resets all user preference data and configuration settings to factory default. This operation is irreversible.

Manual commissioning - Not using display

Addressing and connection test

1. Short press (<2 s) the programming pin on the back of the device to assign the QMX6 to the automation station. The LED remains on.

2. After commissioning is completed, the device will restart and the LED will automatically turn off.

3. Medium press (>5 s and <20 s) the programming pin to perform a connection test to check if the assigning was successful. The LED flashes.

4. The result takes around 10 seconds. If the test is successful, the LED stops flashing and keep on for max. 60 seconds. If not, the LED continues to flash and keep flash for max. 60 seconds. To stop the LED from flashing, short press (<2 s) the programming pin.

Factory reset

1, Press the programming pin for at least 20 seconds then release. The device is locked, factory reset will be performed on device and and restarts within 10 seconds.

2. Disconnect the KNX bus between the QMX6 and automation station, if you want to keep the device in factory default state.

3. Keep the KNX cable connected if you want to automatically re-assign your devices.

NOTICE	
!	This operation resets all user preference data and configuration settings to factory default. This operation is irreversible.

Notes

Security

⚠ CAUTION	
	National safety regulations Failure to comply with national safety regulations may result in personal injury and property damage. ● Observe national regulations and comply with the appropriate safety regulations.

Disposal

	The device is considered an electronic device for disposal in accordance with European Directive and may not be disposed of as domestic waste. ● Use only designated channels for disposing the devices. ● Comply with all local and currently applicable laws and regulations.

If a device is defective, contact the local sales office.

Mounting

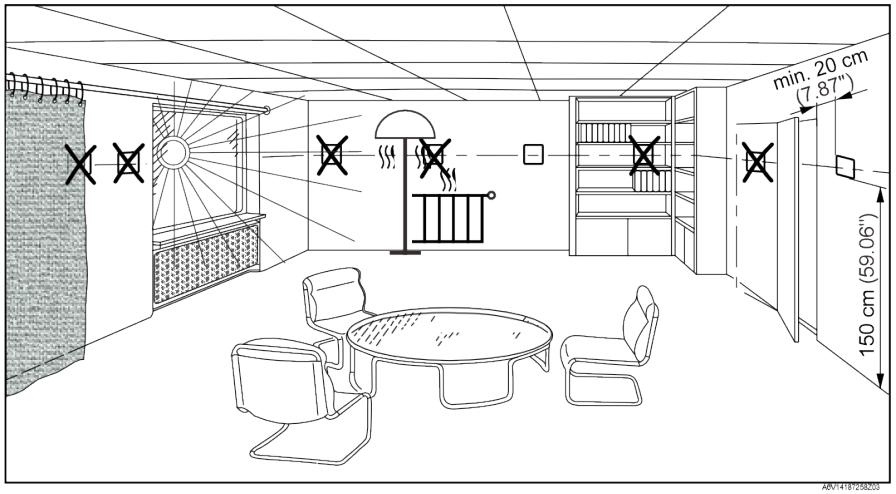


Fig. 3: mounting location

Location

- The devices are suitable for wall mounting.
- Recommended height: 1.5 m above the floor.
- Do not mount the devices in recesses, shelves, behind curtains or doors, or above or near heat sources.
- Do not mount where the device is exposed to direct sunlight.

Technical data

Power data	
KNX bus voltage	DC 24 V (DC 21...30 V)
KNX bus current (max.)	15 mA at DC 24 V
KNX power consumption (max.)	0.36 W

Operating data

Temperature sensor	
Measuring element	NTC resistance sensor
Measuring range	0 °C ... 50 °C (32 °F... 122 °F)
Measuring accuracy	20 °C ... 25 °C: ± 0.2 K (typical) (68 °F ... 77 °F) 15 °C ... 35 °C: ± 0.4 K (typical) (59 °F ... 95 °F) 5 °C ... 50 °C: ± 0.7 K (typical) (41 °F ... 122 °F)

Mechanical data	QMX6.P37	QMX6.P37-1BSC
Housing material	Plastic	Plastic
Dimensions	see Dimension drawing	see Dimension drawing
Product weight	148 g	148 g
Color	white (RAL9016)	black (RAL9005)

Environmental conditions	Operation	Storage/Transport
Ambient temperature	0 °C...+50 °C (32 °F...122 °F)	-25 °C...+70 °C (-13 °F...158 °F)
Relative humidity (non-condensing)	≤ 85% r.h.	≤ 95% r.h.
Mechanical conditions	3M11	2M4

Protection classifications, standards and certifications	
Degree of pollution (according to IEC 60664-1)	2
Over-voltage category (according to IEC 60664-1)	I
Housing protection class (according to EN 60529)	IP30
Electrical safety, bus (SELV)	Yes
EMC requirements, device complies with	EN 60730-1 EN IEC 63044-5-1 EN IEC 63044-5-2 EN IEC 63044-5-3
Certification logos	CE, UKCA, WEEE, UL916 logo and category (93189,CA/US), CSA, ICES, RCM, EAC, KNX
Class according to FCC and ICES-03 (Canada)	Class B

Connection

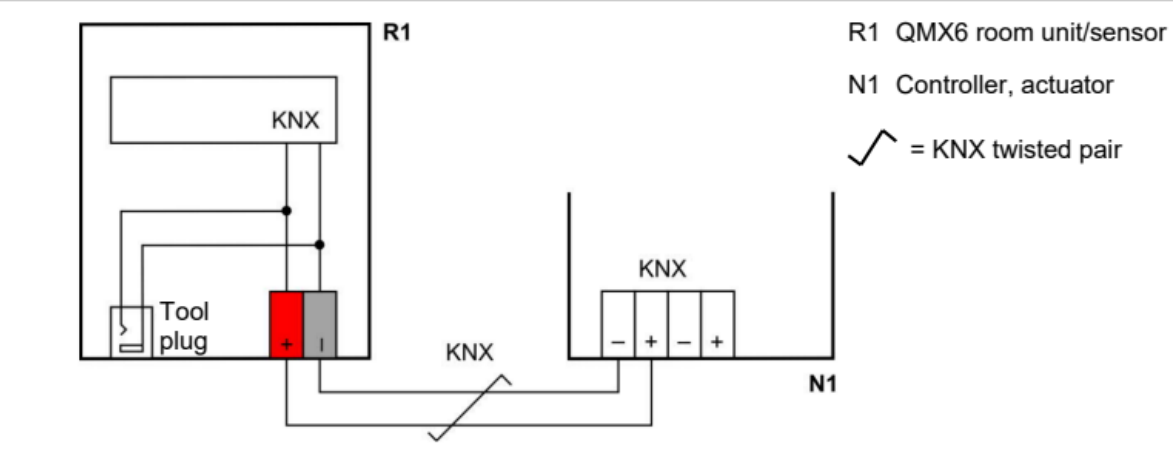


Fig. 4: Connection KNX terminal

KNX terminal: Used for permanent bus communication and power

+ Red	KNX PL-Link (positive)
- Gray	KNX PL-Link (negative)

Tool plug (2.5 mm Jack): Used as a temporary service interface for engineering and diagnostics

Connect the tool

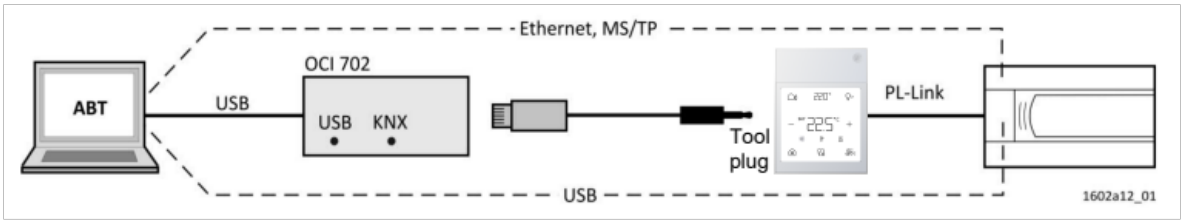


Fig. 5: Connect the tool

Connect the ABT to load the application in the room automation station, or for service purposes:

- Directly to the room automation station
- To the room unit using the tool cable and the OCI702 service interface (see datasheet A6V10438951)

Dimension drawing (mm)

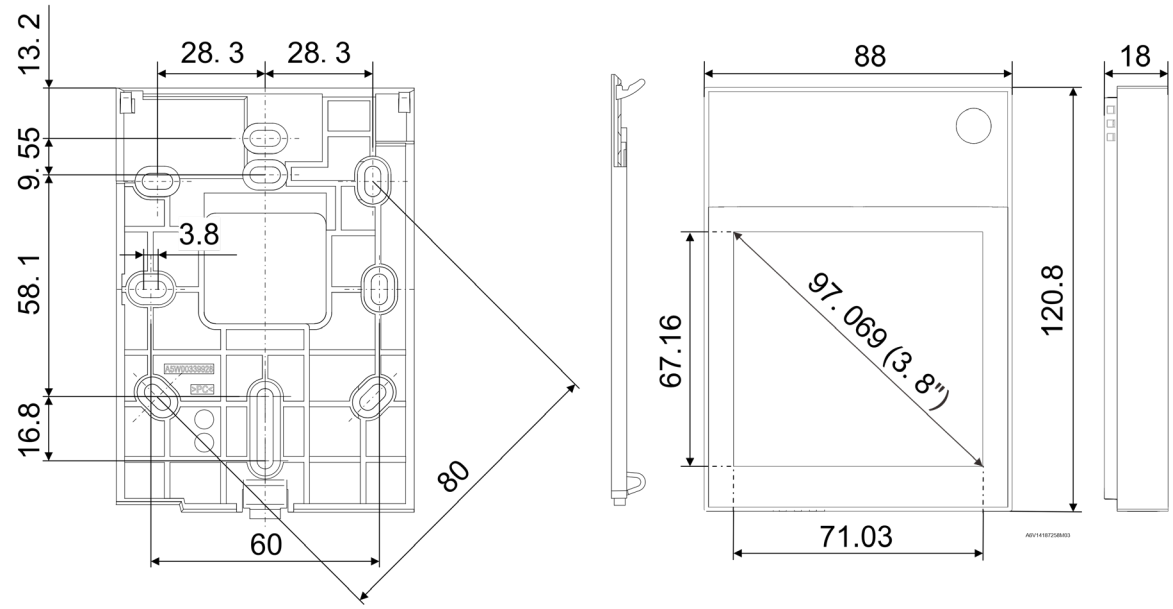


Fig. 6: Dimension drawing (mm)

Issued by
Siemens Industry, Inc.
Smart Infrastructure
1000 Deerfield Pkwy
Buffalo Grove IL 60089
+1 847-215-1000

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