

## Room Unit for GYY-LMV-BAC Series VAV Controller

### Overview

GY-22RT series Room Unit is an indoor terminal for the GYY-LMV-BAC series VAV controllers such as GYY-LMV-BAC-001/002.

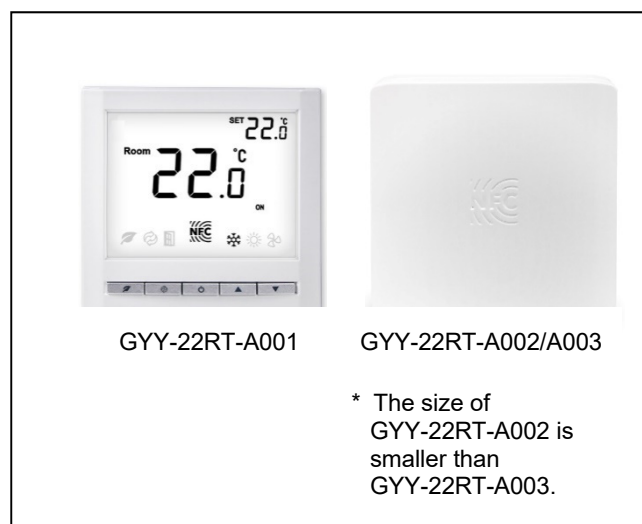
The Room Unit GYY-22RT-A001/A002/A003 built-in a temperature sensor to measure the indoor air temperature, and an NFC interface to provide prompt access of data at an accessible level. And allows access of indoor air temperature reading / temperature setpoint and various status such as modes.

The Room Unit GYY-22RT-A001 has a high visibility LCD and user operation key to provide on/off operation, change of modes, temperature setpoint, and to displays indoor air temperature reading / temperature setpoint and various status such as modes. And user operation key can be locked by the central operator.

The Room Unit GYY-22RT-A001/A003 has a digital input contact for an external occupancy sensor.

### Features

- NFC interface for Smartphone Commissioning.
- ON/OFF operation, temperature setting and CAV airflow setting, mode change. (GY-22RT-A001 only)
- High visibility LCD (GY-22RT-A001 only).
- With a no-voltage contact option for an external occupancy sensor (GY-22RT-A001/A003).



- CE Marking certified product: GYY-LMV-BAC series VAV controller and the Room Unit conform to all the applicable standards of CE Marking.



## Safety Precautions


Please read instructions carefully and use the product as specified in this manual. Be sure to keep this manual nearby for quick reference.


### Recommended Design Life


It is recommended that this product be used within the recommended design life.  
 The recommended design life is the period during which you can use the product safely and reliably based on the design specifications.  
 If the product is used beyond this period, its failure ratio may increase due to time-related deterioration of parts, etc. The recommended design life during which the product can operate reliably with the lowest failure ratio and least deterioration over time is estimated scientifically based on acceleration tests, endurance tests, etc., taking into consideration the operating environment, conditions, and frequency of use as basic parameters.  
 The recommended design life of this product is 5 years.  
 The recommended design life assumes that maintenance, such as replacement of the limited life parts, is carried out properly.  
 Refer to the section on maintenance in this manual.











### Warnings and Cautions

 <b>WARNING</b>	Alerts users that improper handling may cause death or serious injury.
 <b>CAUTION</b>	Alerts users that improper handling may cause minor injury or material loss.

 **WARNING**

-  Do not disassemble the product. Disassembly may result in electrical shock or equipment damage.

 **CAUTION**

-  Installation and wiring must be performed by qualified personnel in accordance with all applicable safety standards.
-  This product must be operated under the operating conditions (power, temperature, humidity, vibration, installation position, atmospheric condition, etc.) specified in this manual to prevent equipment damage.
-  This product must be operated within its rated operating ranges specified in this manual. Failure to comply will cause equipment damage.
-  This product has been designed for use in stationary heating, ventilation and air conditioning systems and must not be used outside the specified field of application.
-  The product must not be used in relation with any equipment that in case of a failure may threaten human, animals or assets.
-  Unauthorised modifications are prohibited.
-  All wiring must comply with local codes of indoor wiring and electric installation rules.
-  If more than the rated power supply voltage is applied, product replacement is required for safety.
-  Dispose of this product as an industrial waste in accordance with your local regulations. Do not reuse all or part of this product.
-  Please comply with
  - Local laws, health & safety regulations, technical standards and regulations
  - Condition of the device at the time of installation, to ensure safe installation
  - This data sheet and installation manual

## System Configuration

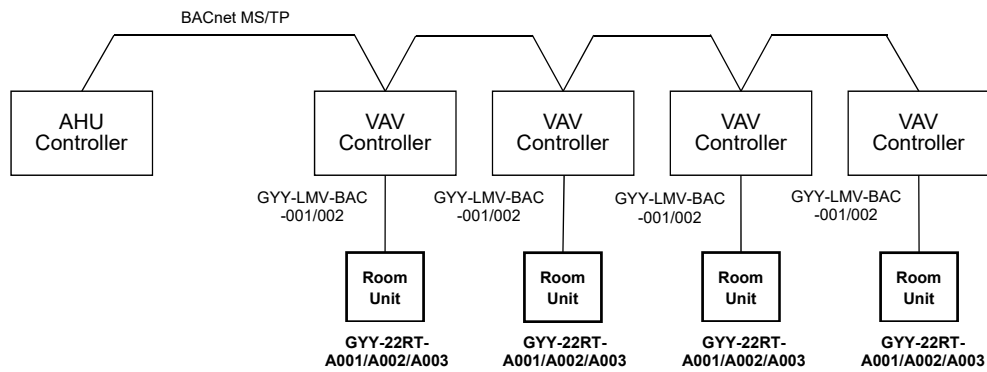


Figure 1. System configuration example

## Model Numbers

Model number	Description
GY-22RT-	Base model number
A001	LCD Room Unit with an occupancy sensor contact
A002	Blank Room Unit
A003	Blank Room Unit with an occupancy sensor contact

## Specifications

Item	Specification		
	GY-22RT-A001	GY-22RT-A002	GY-22RT-A003
Power supply	AC 24 V (AC 19.2~28.8 V), 50/60 Hz		
Power consumption	1 W max for Room Unit and 10 W max to power occupancy device	1 W max for Room Unit	1 W max for Room Unit and 10 W max to power occupancy device
Digital Input	1 (No-voltage Contact)	0	1 (No-voltage Contact)
DI Wiring	6 x 0.5-1.5 mm <sup>2</sup> diameter solid cable or stranded wires with cable shoes	3 x 0.5-1.5 mm <sup>2</sup> diameter solid cable or stranded wires with cable shoes	6 x 0.5-1.5 mm <sup>2</sup> diameter solid cable or stranded wires with cable shoes
DI Wiring length	Max. 100 m for 0.5 mm <sup>2</sup> diameter solid cable or stranded wires with the 1W of power		
MP-bus Wring	3-core solid cable or stranded wires with cable shoes, ≥ 0.5 mm <sup>2</sup> , Max length 100 m		
Installation	Wall / Ceiling mount with 1 outlet box		
Operating environment conditions	Temperature	0 °C to 50 °C	
	Humidity	5 %RH to 95 %RH (non-condensing)	
Transport / storage conditions	Temperature	0 °C to 60 °C	-20 °C to 80 °C
	Humidity	5 %RH to 95 %RH (non-condensing)	
Setting resolution	0.5 °C	-	-
Setting range	0 °C to 50 °C (Display Reading/Setpoint)	-	-
Temperature sensing element	NTC Thermistor 100K		
Sensing accuracy	± 0.3 °C*1 (at 15~30 °C)		
Color	White		
Weight	86g	36g	63g
Dimension (W x H x D)	85.4 x 84.4 x 15	65 x 65 x 13	85.4 x 84.4 x 15
Junction Box	1 gang (BS 4662:2006)	-	1 gang (BS 4662:2006)
Operation functions <sup>*2</sup>	<ul style="list-style-type: none"> <li>• ON/OFF: Turn ON/OFF VAV unit.</li> <li>• Heating/Cooling mode Changing Heating/Cooling running mode.</li> <li>• Temperature setting: Setting air-conditioning temperature setpoint.</li> <li>• CAV mode: Running VAV unit as a CAV unit.</li> </ul>	<ul style="list-style-type: none"> <li>• Eco (economy) mode Turn on/off Eco mode.</li> <li>• Boost mode Turn on/off Boost mode.</li> <li>• Occupancy Enable or disable the external occupancy sensor.</li> </ul>	
Indication functions (A001 only)	<ul style="list-style-type: none"> <li>• VAV unit operating status (ON/OFF)</li> <li>• Temperature setpoint value</li> <li>• Measured indoor air temperature value</li> <li>• Cooling/heating status</li> <li>• Eco mode status</li> <li>• Boost mode status</li> <li>• Occupancy status</li> </ul>		
Protection class	III Safety extra-low voltage SELV		
Degree of protection	IP30		
EMC	CE according to 2014/30/EU, EN60730-2-9:2010, EN60730-1:11, EN61000-6-2:05, EN61000-6-2:05, EN61000-6-3:07+A1:11, ETSI EN 301 489-1: 2011 (V1.9.2), ETSI EN 301 489-3: 2017 (V2.1.1), ETSI EN 300 330: (V2.1.1)		
Mode of operation	Type 1 (in accordance with EN 60730-1)		
Rated impulse voltage	0.8 kV (in accordance with EN 60730-1)		
Control pollution degree	2 (in accordance with EN 60730-1)		
Fire classification	UL94 V-0		
Appendant	Pan head machine screw (M4 × 25) × 2	Pan head wood screw (M3.5 × 25) × 2	Pan head machine screw (M4 × 25) × 2
		Dowel (φ5 × 25) × 2	Spacer Bolts × 2
		Push-in tool × 1	

## Notes:

\*1 Sensing accuracy is the accuracy of Room Unit itself. Its ambient conditions are not counted.

\*2 Each operation function also can be commanded by the BMS center unit. Combined with Central Command of BMS (Building Management System), the latest operation (commanded from Room Unit or BMS center unit) takes priority.

## Cable size conversion

AWG	12	14	16	18	20	22	24	26
Area (mm <sup>2</sup> )	3.3088	2.0809	1.3087	0.8230	0.5176	0.3255	0.2047	0.1288

Dimensions

GY-22RT-A001

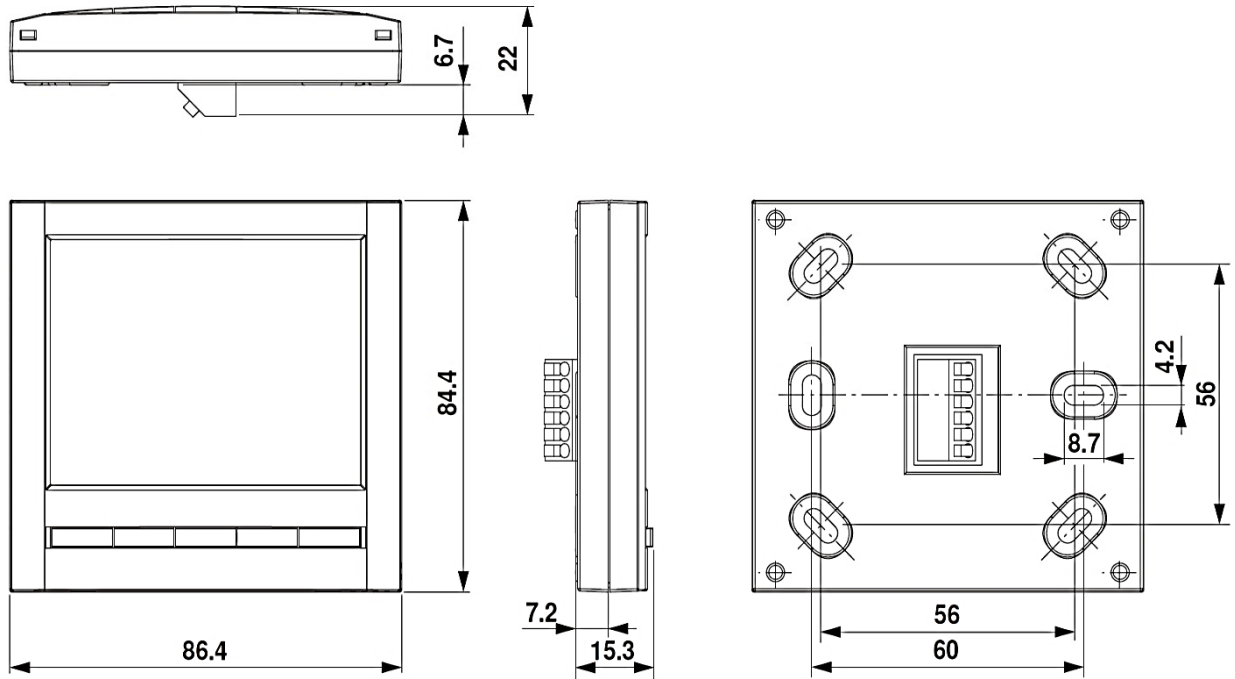


Figure 2. Dimensions: GYY-22RT-A001 (mm)

GY-22RT-A002

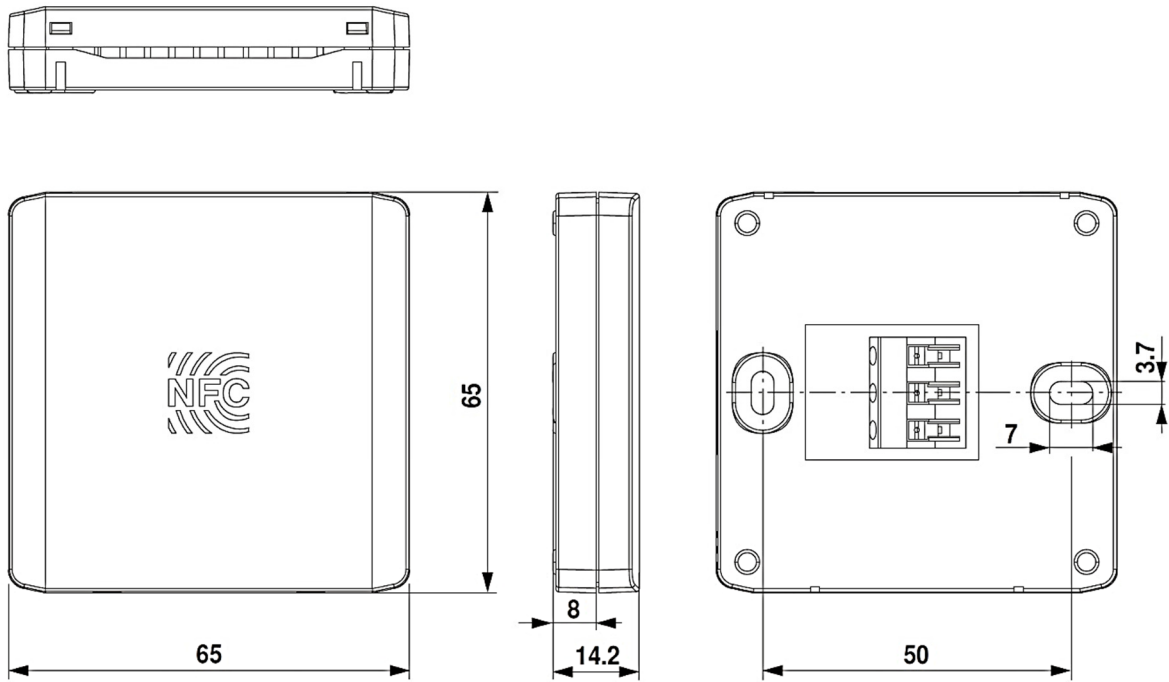


Figure 3. Dimensions: GYY-22RT-A002 (mm)

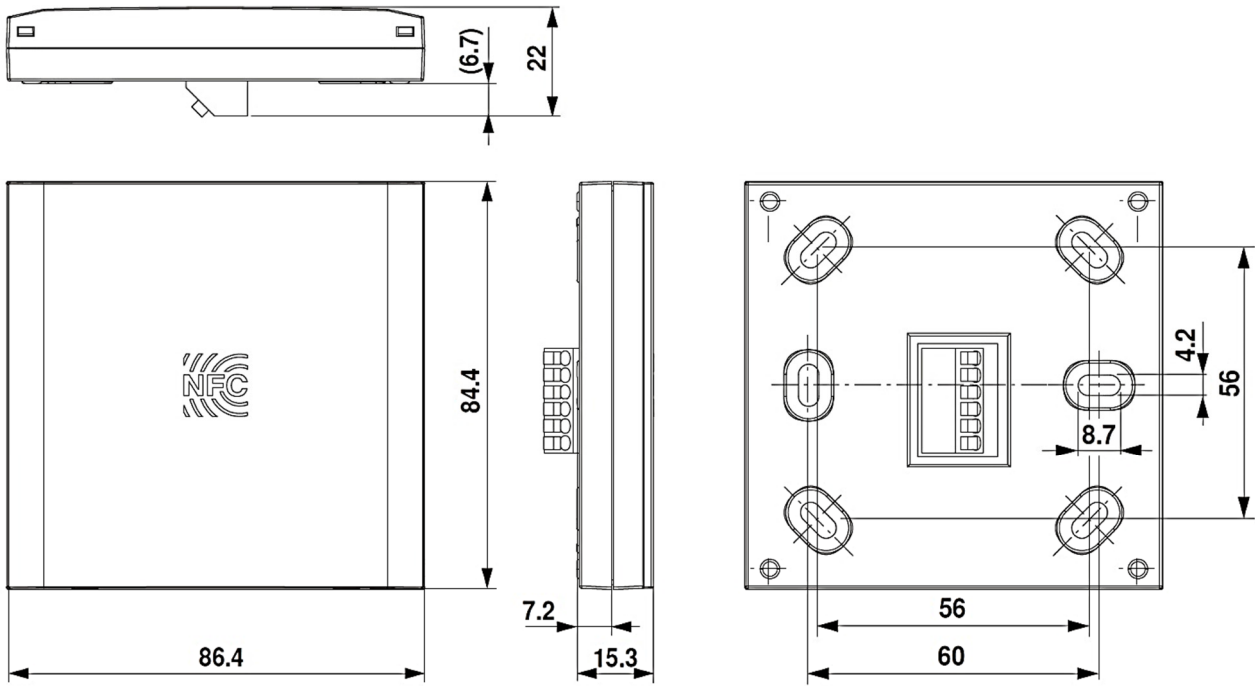







Figure 4. Dimensions: GYY-22RT-A003 (mm)

### Functional Allocation to Each Key



Figure 5. Keys arrangement

**Functional Key identification**

Function key mark	Function key name	Function
	ON/OFF key	Turn on/off VAV unit
	Turn-up key	Turn-up indoor air temperature setpoint value
	Turn-down key	Turn-down indoor air temperature setpoint value
	Eco mode key	Turn on/off Eco mode
	Boost mode key	Turn on/off Boost mode

## Installation

### IMPORTANT:

- Installation location of Room Unit largely affects temperature control. Thoroughly select the location.
- When applying Room Unit to a location where sensing accuracy is particularly required, such as follows, do not use internal temperature sensor. Provide an additional temperature sensor and connect it to the controller.
  - Industrial plant, operation room, clean room, animal holding facility, etc.
  - Rooms where follow-up control is required for rapid change of room temperature.

### Influence of wall surface temperature

Room Unit is a well-designed, thin and flat digital user terminal. Its built-in sensor does not protrude from the product front surface and is close to the wall where the Room Unit is mounted.

- Indoor air adjacent to the wall does not circulate, and the air distribution is poor.
- Heat capacity of the wall is large due to the thick wall (50 mm or thicker) or its material such as concrete, plaster board, etc.
- Temperature difference between the wall surface on the rear side and the room is large. (e.g. Elevator shaft, corridor, etc. where the air temperature adjacent to the rear side of the wall is as high/low as the outdoor air temperature.)
- Rear side of the wall is open to the outdoor air.
- When the air conditioner does not operate 24-hour continuously, the indoor air temperature significantly drops in winter and rises in summer after its shutdown, and there's a large temperature change at its startup.

For use of the sensor built in Room Unit, ask our sales personnel.

### Requirements for installation location

Install Room Unit on an indoor wall where:

- Representative temperature/humidity (of the room/zone to control) can be measured (approx. 1.5 m high above the floor)).
- Ambient wind velocity is 0.1 to 0.15 m/s.
- There is enough maintenance space left in front.

Do not install Room Unit on a wall where:

- Heat (generated by office device or equipment, for example) stays on.
- Air circulation is interfered (by furniture or door, for example).
- Draft, downdraft, and hot/cold air from water pipes/ducts affects.
- Weather conditions (including sunlight and outdoor air) affects.
- There is vibration.
- Dew condensation occurs.
- Water drops on.
- Atmosphere contains corrosive gas, organic solvent, or other chemicals.

Do not install Room Unit outdoors or in a duct.

Do not install Room Unit directly or horizontally on a ceiling.

### Precautions for installation

- Do not allow any foreign object get inside Room Unit.
- Do not get cables caught between the mounting surface of Room Unit and the wall.
- Do not damage the element of Room Unit when removing the cover.
- Wind velocity may not be sufficient for horizontally installed Room Unit.
- Protect Room Unit from air infiltrating to the rear side of Room Unit from an outlet box (inside a wall) by sealing the wall.

### Notes

- Chemical (organic solvent) atmosphere may shift the output values.
- Corrosive gas, organic solvent, and other chemicals contained in the atmosphere can cause measuring error of Room Unit, shorten the service life of Room Unit, or damage Room Unit.
- Ask our sales personnel for a special application.

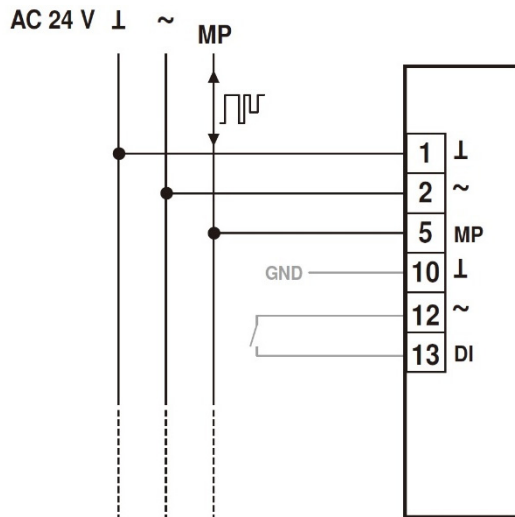


**Installation illustration**

To reference the packing installation guide AX-372E for model GYY-22RT-A001/003.

To reference the packing installation guide AX-371E for model GYY-22RT-A002.

**Wiring Diagram**



Note:  
 Model GYY-22RT-A002 does not have no-voltage contact. Terminal 10, 12, 13 are not available.












Figure 6. Wiring diagram of model GYY-22RT-A001/A002/A003

**Precautions for Use**

Room Unit is coated with the protective sheet before shipment. Remove sheet before activating Room Unit.

## Operations

Operation functions may not be applicable depending on a system configuration connected to Room Unit.

Function	Description	Operation/Display	Remark
ON/OFF operation	Performs ON/OFF operation of VAV unit.	Press  key. Character ON is shown while VAV unit is ON, and character OFF is shown while VAV unit is OFF.	1), 2), 4)
Heating/Cooling mode setting	Changing Heating / Cooling running mode.	The  or  mark will be shown while VAV unit is on cooling mode or heating mode, which is set by the special adjustment device.	1), 2), 3)
Temperature setting	Setting air-conditioning temperature setpoint.	Each time to press $\Delta$ or $\nabla$ key, the indoor air temperature setpoint will be adjusted up or down by 0.5 °C.	1), 2)
CAV airflow rate setting	Setting CAV airflow rate.	The  mark will be shown while the VAV unit is set as CAV, which is set by the special adjustment device.	1), 2), 3)
Eco mode setting	Turn on/off Eco mode.	Press  key. The  mark is shown while Eco mode is on, and  mark disappear while Eco mode is off.	1), 2)
Boost mode setting	Turn on/off Boost mode.	Press  key. The  mark is shown while Boost mode is on, and  mark disappear while Boost mode is off.	1), 2), 5)
Occupancy mode setting	Enable or disable the external occupancy sensor.	The  mark will be shown while the occupancy sensor is enabled, which is set by the special adjustment device.	1), 2), 3)

Notes:

- 1) Each operation of Room Unit can be operated by the BMS (Building Management System) center unit.
- 2) Combined with BMS, the latest operation (commanded from Room Unit or BMS center unit) takes priority.
- 3) Only BMS administrator can do it by the special adjustment device.
- 4) In Off mode, the VAV unit is providing only a minimum air volume flow into zone, Vmin and all the controls, temperature and CO2 control, and the corresponding aggregates are turned off. The damper can be configured to the closed position. This is used in case of energy saving or in case the room is not occupied e.g. holidays. (To reference AB-7620 Specifications/instructions of VAV controller.)
- 5) The ECO mode is an energy saving mode. In case the room is not occupied, e.g. night times or weekend, room setpoint [SP] will be overwritten with the cooling Eco temperature setpoint [ESP] in Economy mode.

## Maintenance

- Maintenance is not required unless necessary.
- A whole product needs to be replaced for any replacement.
- Wipe display and area of the keys with dried soft cloth. Never use detergent or organic solvent. Otherwise, Room Unit gets damaged, discolored, or deformed.

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CE according to 89/336/EEC, EN60730-1:2000 + A2:2008, EN60730-2-14:1997 + A2:2008, EN61000-6-2:05 and EN61000-6-3:07 + A1:11, EN60730-2-9:2010

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