Touch Screen Room Thermostat

with Modbus Communication

EL-Piast Sp. z o.o.   Subject to change   Version 3.0 – 15.04.2015
ul. Piłsudskiego 74
50-020 Wrocław   www.el-piast.com   **1** / **8**

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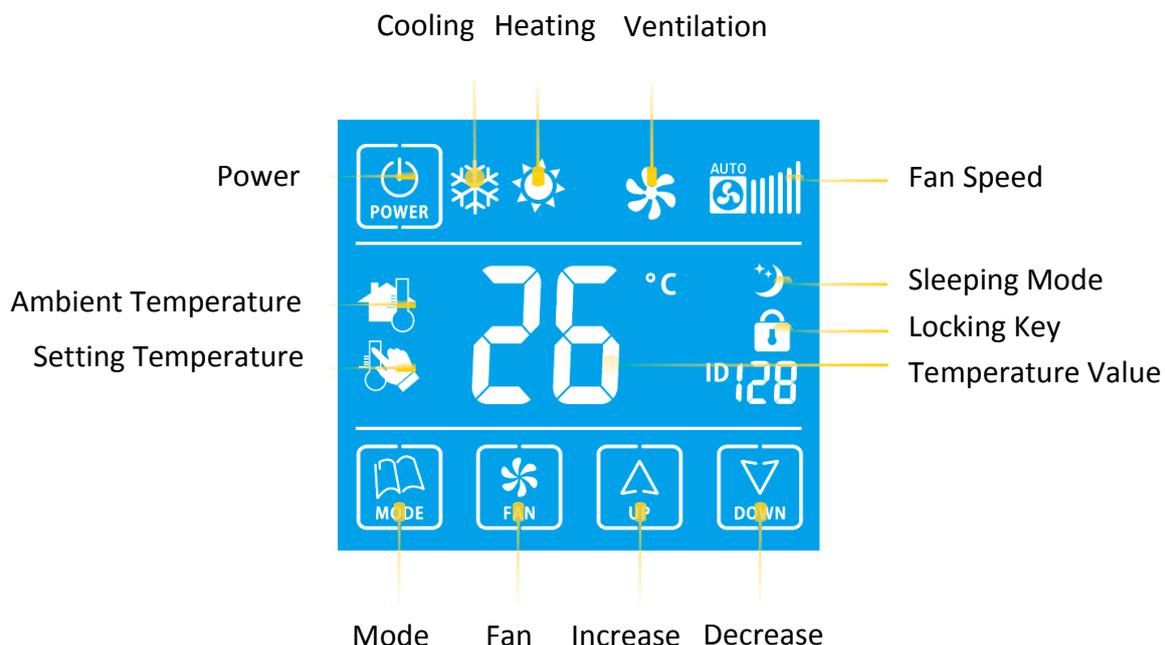
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1. Product Introduction

This cooling & heating thermostat with touch screen is suitable for the 4-pipe fan coil system. This product includes three functions: ON/OFF state memory function, de-frost protection function and sleeping function.

2. Technical Data

1. Power Supply: 95 - 240 VAC ± 10% 50/60Hz
2. Control Performance: ON/OFF Control Output switch
3. Function: Cooling / Heating / Ventilation
4. Max Output: 3A/250VAC
5. Wiring port: ≤1.5 mm²
6. Working temp. and humidity: 0 - 50°C, less than 90% (without condensation)
7. Transport & Storage temp. : - 20°C - 60°C
8. Setpoint range / Setting unit: 10 - 30°C / 1°C per step
9. Accuracy: ± 1°C
10. ON/OFF differential Temp. : 1°C
11. Suitable System: 4-pipe
12. Suitable Valve: 2-line valve
13. Communication: Modbus

3. LCD Display

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4. Operation Instruction

Lock function setting: In the ON or OFF state, press ⎡MODE⎤ key first, then press ⎡FAN⎤ key together for 5 seconds, it will the lock state when the LCD displays 🔒 .

⎡POWER⎤ key is available to operate in this mode. The same operation will unlock the thermostat.

Power: In the OFF state, press ⎡POWER⎤ key to change the ON/OFF states.

Increase / Decrease: In the ON state, press ⎡UP⎤ or ⎡DOWN⎤ key to adjust the setting temperature.

Mode: In the ON state, press ⎡MODE⎤ key to switch the cooling, heating or ventilation mode. ❄ means cooling mode, ☀ means heating mode, �֍ means ventilation mode.

Fan Speed: In the ON state, press ⎡FAN⎤ key to choose the fan speed (High, Med, Low or Auto) in the cooling or heating mode; (High, Med. or Low) in the ventilation mode.

1. **Temperature setting:** In the ON state, press ⎡UP⎤ or ⎡DOWN⎤ key to adjust setting temperature, press any other key to save or setting will be automatically saved after 3 seconds.

2. **Value control:**
   In the cooling mode, when the ambient temperature is higher than the setting temperature, the cooling valve will be opened; when the ambient temperature is equal to or lower than the setting temperature, the cooling valve will be closed.

   In the heating mode, when the ambient temperature is lower than the setting temperature, the heating valve will be open; when the ambient temperature is equal to or higher than the setting temperature, the heating valve will be closed.

3. **Auto Fan speed Function:**
   In the Cooling mode,
   When the ambient temperature is 3°C higher than the setting temperature, the fan speed will set automatically in High state.
   When the ambient temperature is 2°C higher than the setting temperature, the fan speed will set automatically in Med state.
   When the ambient temperature is 1°C higher than the setting temperature, the fan speed will set automatically in Low state.

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In the Heating mode,
When the ambient temperature is 3°C lower than the setting temperature, the fan speed will set automatically in High state.
When the ambient temperature is 2°C lower than the setting temperature, the fan speed will set automatically in Med state.
When the ambient temperature is 1°C lower than the setting temperature, the fan speed will set automatically in Low state.

4. **Temperature compensation (range -9°C - 9°C):** In the OFF state press ❄FAN for 3 seconds to enter this mode, press △UP or ▽DOWN key to adjust the temperature, press any other key to save or setting will be automatically saved after 3 seconds.

5. **Sleeping function:** In the ON state, press MODE for 3 seconds to enter the sleeping function, the LCD will display ☽ ; press △UP or ▽DOWN key to adjust the sleeping temperature, press MODE key to save or setting will be automatically saved after 3 seconds. In the sleeping function state, the fan speed is Auto, press ❄FAN or POWER to cancel this function.

   In the cooling mode, when the current setting temperature is lower than the sleeping temperature, the setting temperature will increase 1°C every half an hour until will be equal to the sleeping temperature. The setting temperature will be changed only in the sleeping mode.

   In the heating mode, when the current setting temperature is higher than the sleeping temperature, the setting temperature will decrease 1°C every half an hour until will be equal to the sleeping temperature. The setting temperature will be changed only in the sleeping mode.

6. **De-frost protection:** In the OFF state, when the room temperature is below 5°C, LCD displays ❄ ☀, the heating valve will be open automatically.

7. **ON/OFF memory function:** To memorise the ON/OFF state before power failure, in the OFF state, press △UP for 3 seconds.

8. **LCD contrast adjust**: In the OFF state, press ▽DOWN for 3 seconds to enter the setting, press △UP or ▽DOWN to adjust the contrast. Press MODE to confirm and exit the setting.

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9. **ON/OFF backlight:** In the OFF state, keep pressing ⬆ (UP), then press 📖 (MODE) to enter the setting, if the LCD display is on, then LCD will keep lighting, if the LCD display is off, then LCD will be off after 15 seconds.

10. **Fan stop/open setting:** In the OFF state, keep pressing 📖 (MODE), then press ⬇ (DOWN) around 5 seconds to enter the setting temperature, if the LCD display is on, then fan will not stop when temperature reach the setpoint, if the LCD display is off, then fan will stop only if the temperature reach the setpoint.

11. **ID setting:** In the OFF state, press ❄ (FAN), then keep pressing ⬆ (UP) for 3 seconds to enter ID setting, press ⬆ (UP) to increase the ID, press ⬇ (DOWN) to decrease the ID, setting value from 1 to 128.

Network protocol instruction:
1. **Communication protocol:** Modbus
2. **ID:** 1 – 128
3. **Baud rate:** 9600, n, 8, 1
4. **Readable: field:** on/off status, setting temperature, mode, fan speed, room temperature, cooling valve, heating valve, lock station
5. **Writable: field:** on/off status, setting temperature, mode, fan speed, lock station

Field meaning:

In Modbus 40001 means Holding Register with address 0, 40002 means Holding Register with address 1 etc.

40001 - **on/off status:** on: <00001>; off: <00000>
40002 - **room temperature:** 0 - 50°C, <00031> means 31°C
40003 - **setting temperature:** 10 - 30°C, <00010> means 10°C
40004 - **mode:** cooling: <00001>; heating: <00002>; ventilation:<00000>;
40005 - **fan speed:** Low: <00001>; Med: <00002>; High: <00003>; fan stop: <00000>;
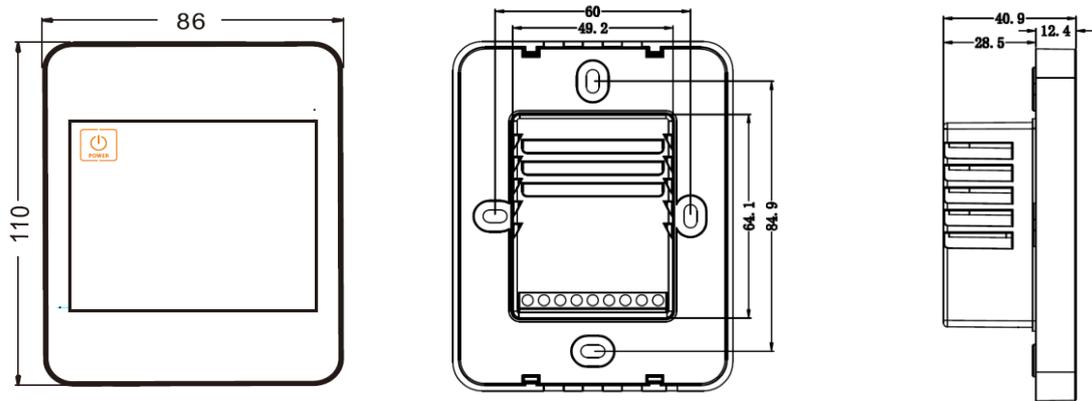Auto Low: <00005>; Auto Med: <00006>, Auto High: <00007>
40006 - **cooling valve status:** open: <00001>; close: <00000>;
40007 - **heating valve status:** open: <00001>; close: <00000>;
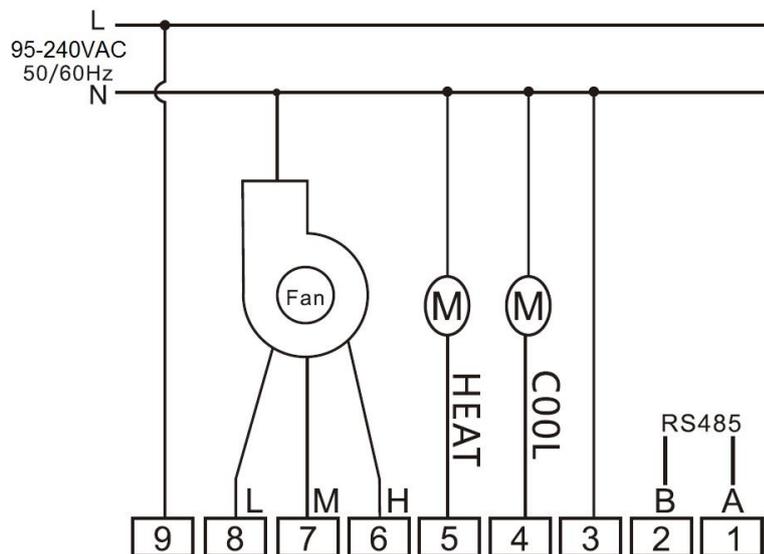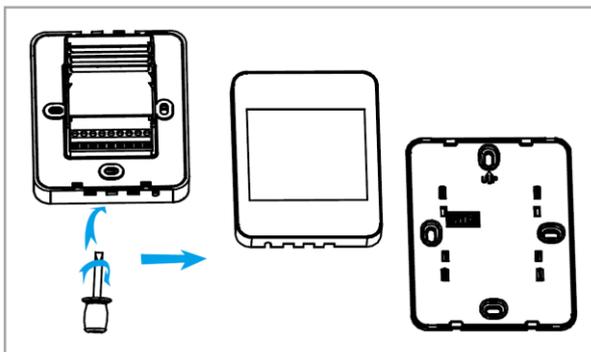40008 - **locking key status:** lock: <00001>; un-lock: <00000>;

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5. Dimensions

Front view

Back view

Side view

6. Wiring diagrams

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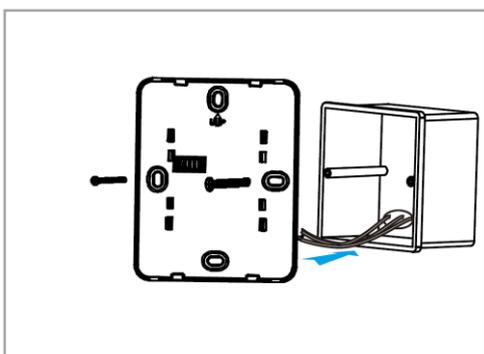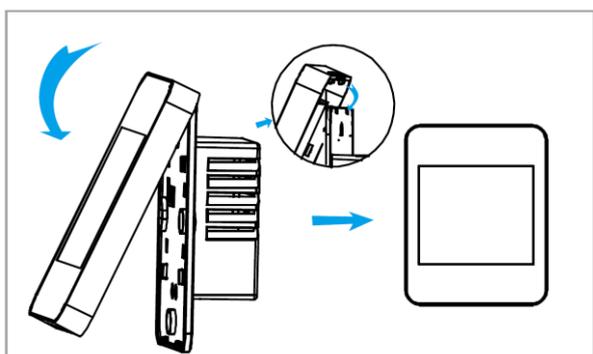## 7. Installation diagrams

1. Take the front panel and back plate apart by screwdriver

2. Connect the wires to the terminal on the back plate according to the diagram, than fix the back plate to the junction box or wall

3. Connect the front panel and back plate by contact pin, than press the front panel to finish connection.

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