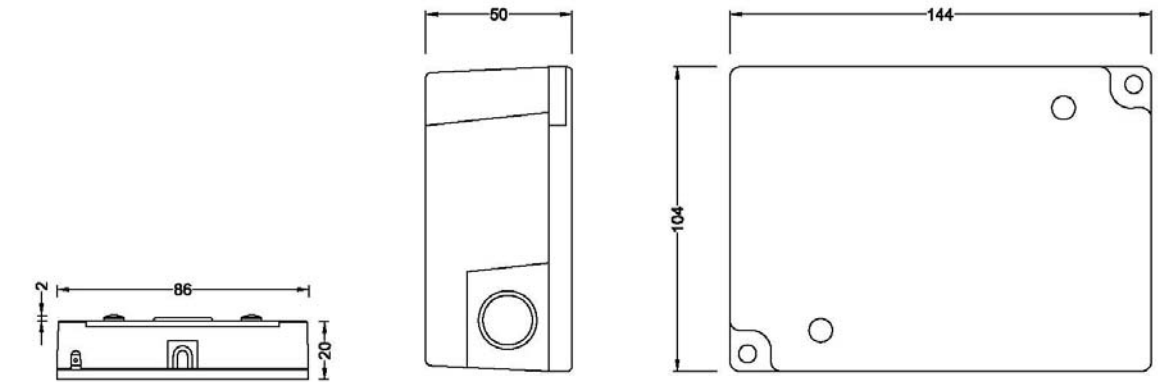
Issue Date February 22, 2016

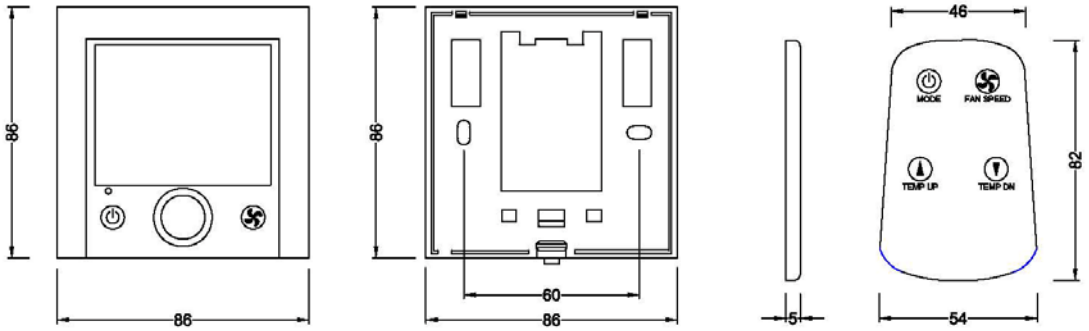
RS-485 Networking Room Thermostats with LCD for Fan Coil Units

Installation and Operation Instructions

Dimensions in mm

Power Control Unit

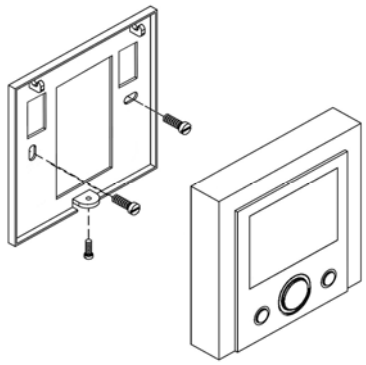




Display Control Unit

Remote Control Unit

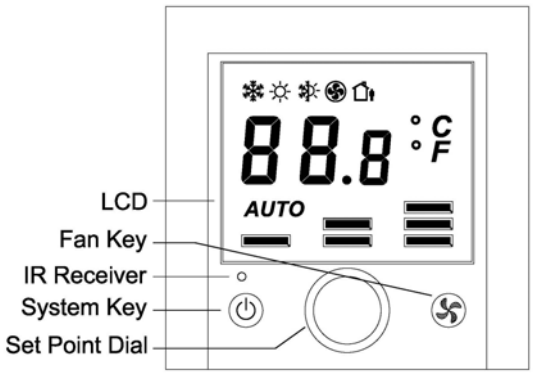
NCU Mounting Details

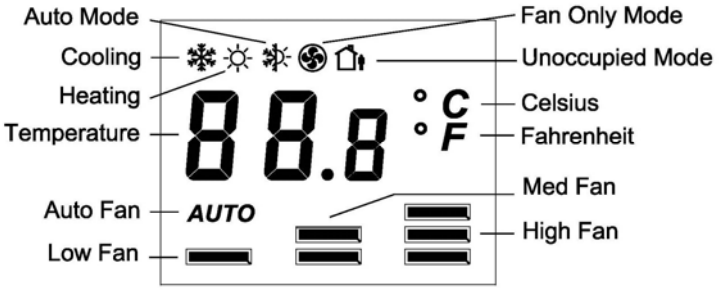


Mounting of Network Control Unit

The NT10 network control unit can be surface mounted or secured to a standard European 75 x 75 x 35 mm electrical box. See Fig. 2: Mounting Details. Two M3.5 mounting screws for Network Control Units only are included.

Network Control Unit and LCD Layout





Thermostat Errors Reporting

When the following errors are reported on the LCD display unit, these errors will prevent the thermostat from normal operation and all thermostat functions will be locked out:

E-1 EEPROM read/write error
E-2* Temperature sensor open-circuited
E-3 Temperature sensor short-circuited
E-4 User configuration checksum error

* If jumper JP1 is cut open and external sensor is used, E-2 means the external sensor may have been disconnected from Terminals SR1 and GND. Check the external sensor's connectivity and resistive value. If E-2 error is still reported, return the thermostat to the manufacturer for repair.

When the error E-1, E-3 or E-4 is reported or when the error E-2 is reported without jumper JP1 being cut and external sensor being installed, return the thermostat to the manufacturer for repair.

Trouble-Shooting

Before trouble-shooting starts, ensure that the voltage output from Terminals 1 (GND) and 2 (+5 VDC) on the power supply unit is between 5 VDC and 5.25 VDC and not higher. Higher voltage may damage the internal circuitry and components of the network control unit.

When abnormal power voltages are found, return the thermostat to the manufacturer for repair.

When there is no 5 VDC power output, check the line voltage power and its 5 A fuse.

Operation Notes

OPERATION

- LCD shows ambient temperature constantly except when set point adjustment is being made.
- Press the switch key **Φ** to enter into the desired operating mode: Cool-Heat-Auto-Fan Only-Off, etc.
- Press the fan key **✱** to change the fan speed mode: High-Med-Low-Auto.
- Increase or decrease temperature set point in 0.5 K increments by rotating the adjustment dial clockwise or counter-clockwise. When the dial is rotated, the LCD shows the existing set point setting.

ENERGY SAVING MODE

- When the contact closes, it will override the operating mode and operate the thermostat in energy saving mode despite the thermostat being in operating or standby mode.
- In energy saving mode, the factory-set temperature cut-in points are 26°C for cooling and 16°C for heating. Meanwhile, the operation of all operating keys is locked out until the energy saving contact opens.
- During energy saving mode, the default fan speed is set at "low" when pre-set cut-in temperature is reached, or otherwise the fan output is always "off".
- Energy saving mode can be activated in the following manner when the energy saving contact closes:
  For 2-pipe models with auto seasonal changeover, the energy saving cooling or heating mode is determined by the status of the SR2 seasonal changeover sensor and the valve output is activated according to the measured temperature.
  For 2-pipe models with manual seasonal changeover, while in energy saving mode, the valve output is never activated and the fan always runs at low speed.
  For 4-pipe models, the energy saving cooling or heating mode is always determined by the measured temperature and valve output is also activated according to the measured temperature.
  Energy saving mode activation in operating mode only or in both standby and operating mode will be determined by activation setting in setup menu. Low fan will run according to fan action setting in setup menu.
  When energy saving mode is activated, all keys are locked out and no settings can be entered.

WINDOW MODE

- When Window contact closes, it will override the operating mode and operate the thermostat in off mode despite the thermostat being in operating or standby mode. Meanwhile, all operating keys are locked out until the window contact opens.

PARAMETER SETUP MODE

- The thermostat allows authorized service agent to change a number of operating parameters in the field. For details, refer to the parameters setup manual.

ERROR REPORTING

- All valve and fan outputs will be shut down when error is reported.

Wiring Diagrams and Application Notes

The networking thermostats consist of two basic units: the Network Control Unit and the Power Supply Unit. While all line-voltage wiring is terminated at the Power Supply Unit, all connections between Network Control Unit and Power Supply Unit are of low-voltage signaling wires.

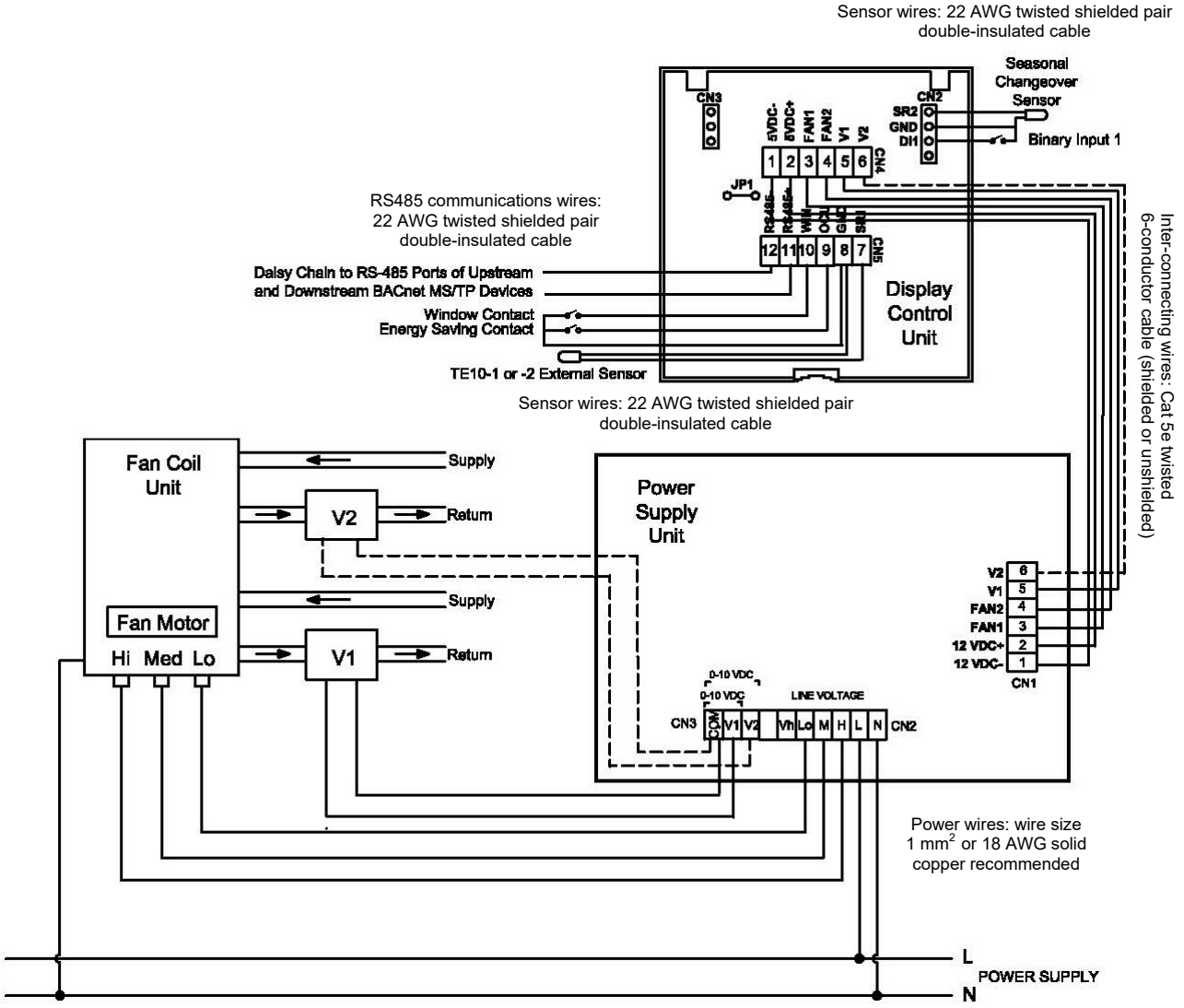
Wiring and Application Notes

- Cut jumper JP1 if external sensor is wired to SR1 and GND. Run the wiring away from any electrical motors or power wiring. Failure to do so may result in poor thermostat performance due to electrical noise.
- 22 AWG twisted shielded pair double-insulated cable is recommended as remote sensor wiring and its length must not exceed 25 m.
- Do not bundle and run power wiring and remote sensor wiring in the same conduit.
- Connecting wires between Network Control Unit and Power Supply Unit must not exceed 15 m.
- Seasonal changeover sensor or switch is only applicable to heat only or cool only 2-pipe model only.
- The seasonal changeover sensor should be wrapped around the supply water pipe when associated with a water system. When the changeover sensor temperature exceeds 30 ºC, the thermostat enters into heating mode.
- Unoccupied contact closure activates energy saving mode.
- The thermostat outputs are designed for controlling zone valves. If used for controlling electric heaters, external contactors must be used.
- Window contact closure will lock out all thermostat functions

Wiring Diagram for Line-Voltage Fan and Line-Voltage 2-Wire On-Off Valve Outputs

WARNING
Incorrect wiring connection may cause permanent equipment damages to the thermostat.

Piping Notes:
1. On a single-output unit, V1 can be a 2-wire cooling or heating valve.
2. On a dual-output unit, V1 must be a 2-wire cooling valve and V2 a 2-wire heating valve.
3. Hidden-line wiring for Terminals V2 and 6 are applicable to dual-output models only.



Wiring Diagram for Line-Voltage Fan and 0-10 VDC Cooling Valve and Line-Voltage 2-Wire On-Off Heating Device Outputs

WARNING
Incorrect wiring connection may cause permanent equipment damages to the thermostat.

Piping Notes:
1. V1 must be a 0-10 VDC cooling valve.
2. H must be a line-voltage on-off heating device.