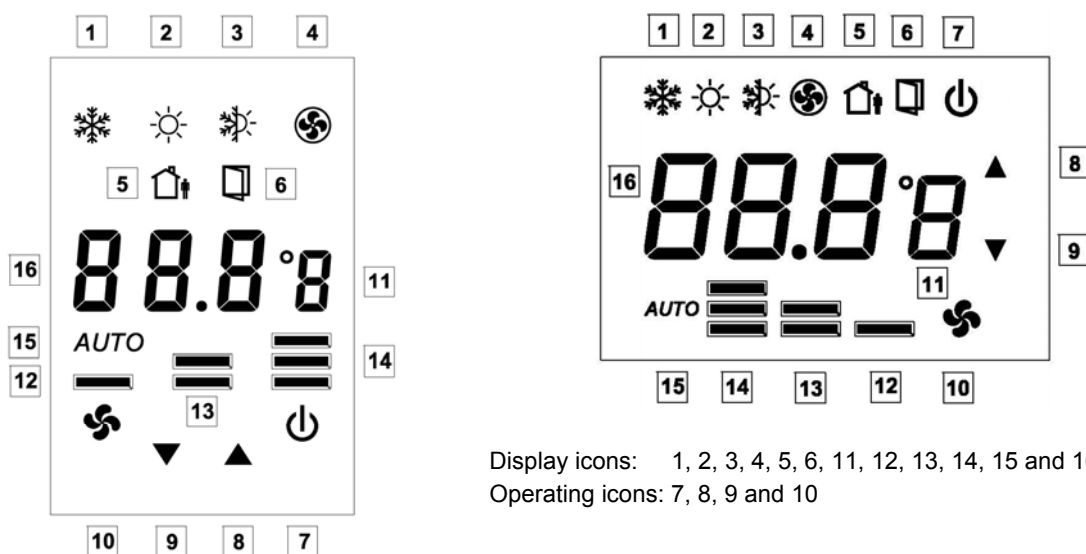


Digital Room Thermostats with Touch Screen LCD Installation and operation Instructions

Touch Screen and LCD Layout



Display icons: 1, 2, 3, 4, 5, 6, 11, 12, 13, 14, 15 and 16
Operating icons: 7, 8, 9 and 10

- | | |
|---|---|
| 1 Cooling mode | 9 Temperature set point value decrease touch icon (-) |
| 2 Heating mode | 10 Fan speed control touch icon |
| 3 Auto cooling/heating mode | 11 °C or °F indication |
| 4 Fan only mode | 12 Low fan speed indication |
| 5 Unoccupied mode | 13 Medium fan speed indication |
| 6 Window function enabled mode | 14 High fan speed indication |
| 7 System operation mode touch icon | 15 Auto fan speed mode |
| 8 Temperature set point value increase touch icon (+) | 16 Temperature indication |

Fan Operation

A fan-speed touch screen allows control of a 3-speed fan. The speed touch screen has 4 positions: "Hi-Med-Low-Auto". In the "Hi", "Med" or "low" position, the fan runs continuously at the selected speed. In the "Auto" mode, the fan speed is temperature dependent and controlled automatically in 2 K differential increments from low to high speed.

Thermostat Errors Reporting

When the following errors are reported on the LED display unit, these errors will prevent the thermostat from normal operation:

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

* 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 or E-3 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.

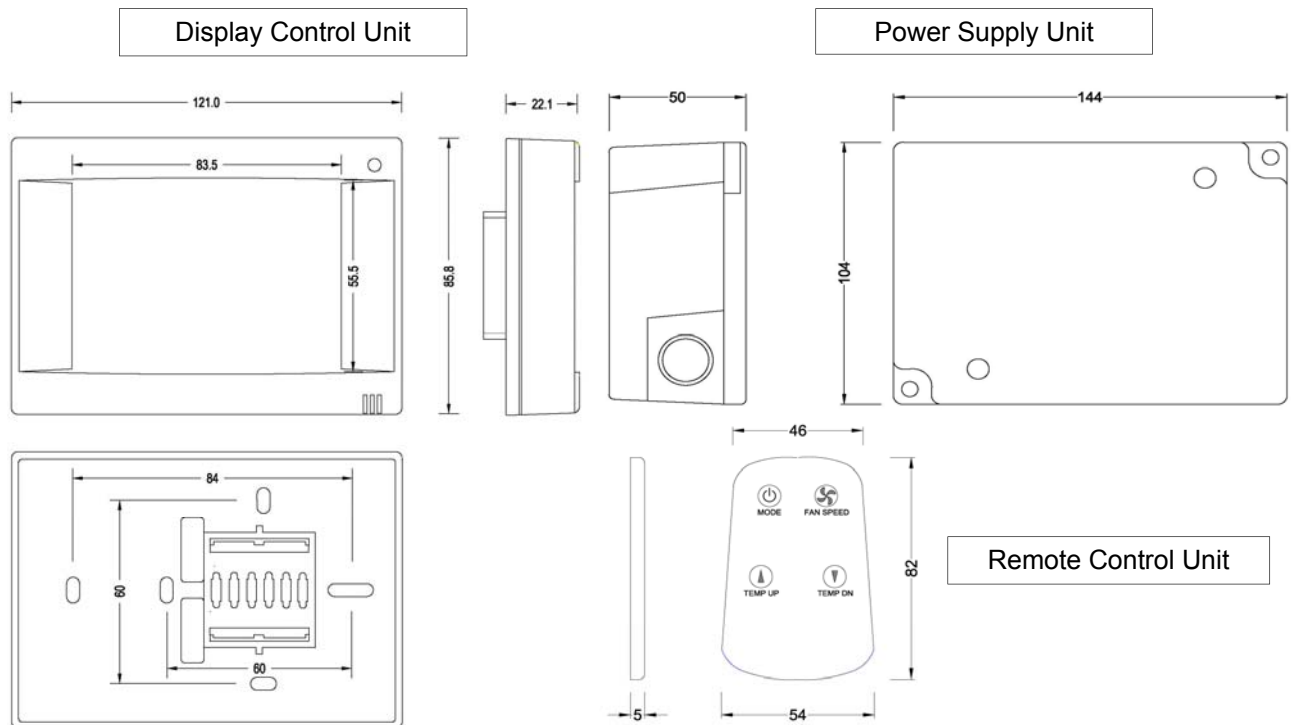
Trouble-Shooting

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 display 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.

Dimensions in mm



Other Operation Notes

- LCD shows ambient temperature constantly except when set point adjustment is being made.
- Tap the on-off icon ϕ to enter into the desired operating mode: Cool-Heat-Fan Only-Auto-Off, etc.
- Tap the fan icon fan to change the fan speed: High-Med-Low-Auto.
- Increase or decrease temperature set point by tapping adjustment operating icons \blacktriangle and \blacktriangledown respectively. When the adjustment icon is tapped, the LCD shows the existing set point value.
- In unoccupied mode, the factory temperature set points are 26°C for cooling and 16°C for heating and the factory fan speed is always set at “low”.
- Unoccupied mode can be activated in the following manner when the unoccupied contact closes and displays the unoccupied icon on the LCD:
 - For Models “1”, “1A” and “1F”, the unoccupied 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 Models “1M”, “1AM” and “1FM”, while in unoccupied mode, the valve output is never activated.
 - For Models “2”, “2A”, “2F” and “2AH”, the unoccupied cooling or heating mode is always determined by the measured temperature and valve output is also activated according to the measured temperature.
- Unoccupied mode activation in operating mode only or in both standby and operating mode will be determined by activation setting in the setup menu. Low fan will run according to fan action setting in the setup menu.
- When unoccupied mode is activated, an unoccupied icon is displayed on the LCD, all keys are locked out and no new settings can be entered.
- When the window contact is closed, the window function enabled mode is activated and locks out all thermostat functions and displays the window icon on the LCD. This function has a higher priority than the unoccupied mode.
- The thermostat allows authorized service agent to change the following operating parameters in the field:

Cover Removal Procedure



1. Poke a thin-blade screw driver into the rift of the latch position between the cover and the base.
2. Slightly lever the screw driver upwards to crack open the cover from the base.
3. Hold the base firmly with one hand and remove the cover with another hand by pulling away from the base forcibly.

Wiring Diagrams

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

Wiring and Application Notes

- Cut jumper JP1 open 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 or 24 AWG twisted shielded pair double-insulated cable is recommended as remote sensor wiring and its length must not exceed 25 m.
- Connecting wires between Display Control Unit and Power Supply Unit must not exceed 15 m.
- Do not bundle and run power wiring and remote sensor

wiring in the same conduit.

- When an individual TE10-1 sensor is employed in each thermostat, 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°C, the thermostat enters into heating mode.
- Seasonal changeover sensor or switch is applicable to cool only or heat only 2-pipe models only.
- Unoccupied contact closure activates unoccupied mode.
- Window contact closure activates thermostat lockout mode.
- Hidden-line wiring for Terminals V2 and 6 are applicable to dual-output models only.
- The thermostat outputs are designed for controlling zone valves. If used for controlling electric heaters, external contactors must be used.

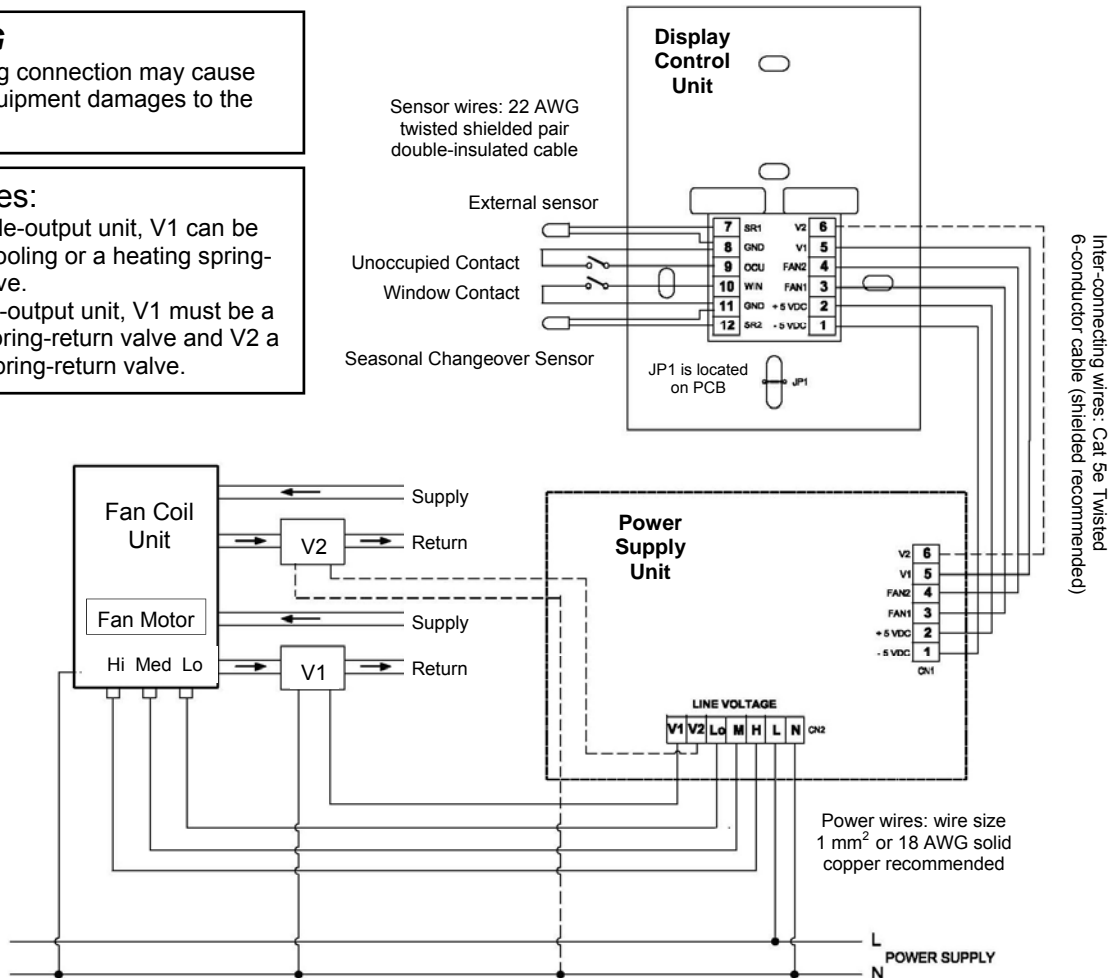
Wiring Diagram for Line-Voltage Fan and Line-Voltage On-Off Valve outputs

WARNING

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

Piping Notes:

1. On a single-output unit, V1 can be either a cooling or a heating spring-return valve.
2. On a dual-output unit, V1 must be a cooling spring-return valve and V2 a heating spring-return valve.



Cover Removal Procedure



1. Poke a thin-blade screw driver into the rift of the latch position between the cover and the base.
2. Slightly lever the screw driver upwards to crack open the cover from the base.
3. Hold the base firmly with one hand and remove the cover with another hand by pulling away from the base forcibly.

Wiring Diagrams

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

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- Seasonal changeover sensor or switch is applicable to cool only or heat only 2-pipe models only.
- Unoccupied contact closure activates unoccupied mode.
- Window contact closure activates thermostat lockout mode.
- Hidden-line wiring for Terminals V2 and 6 are applicable to dual-output models only.
- The thermostat outputs are designed for controlling zone valves. If used for controlling electric heaters, external contactors must be used.

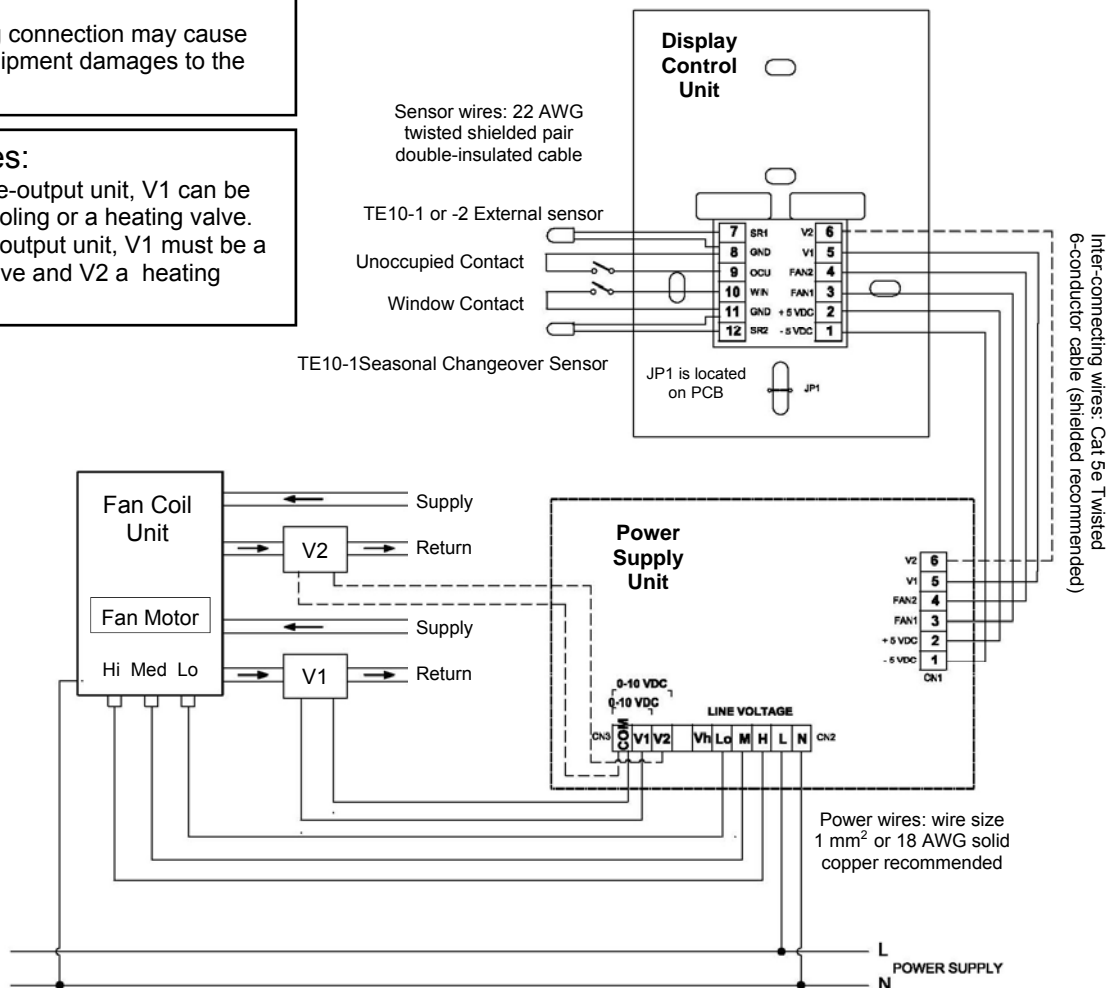
Wiring Diagram for Line-Voltage Fan and 0-10 VDC Valve Outputs

WARNING

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

Piping Notes:

1. On a single-output unit, V1 can be either a cooling or a heating valve.
2. On a dual-output unit, V1 must be a cooling valve and V2 a heating valve.



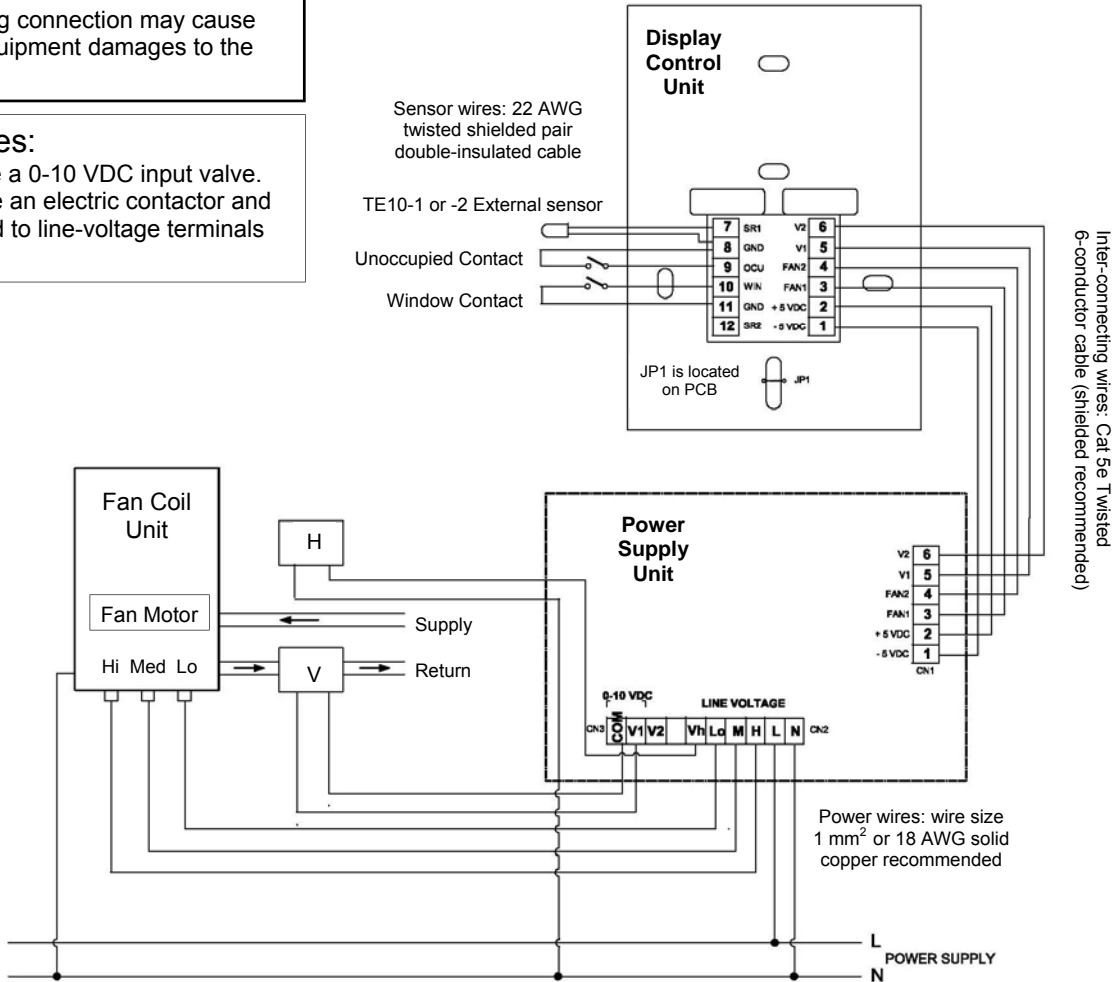
Wiring Diagram for Line-Voltage Fan, 0-10 VDC Cooling Valve Output and Line-Voltage On-Off Heating Output

WARNING

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

Piping Notes:

1. V must be a 0-10 VDC input valve.
2. H must be an electric contactor and connected to line-voltage terminals Vh and N.



Cover Removal Procedure



1. Poke a thin-blade screw driver into the rift of the latch position between the cover and the base.
2. Slightly lever the screw driver upwards to crack open the cover from the base.
3. Hold the base firmly with one hand and remove the cover with another hand by pulling away from the base forcibly.

Wiring Diagrams

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

Wiring and Application Notes

- Cut jumper JP1 open 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 or 24 AWG twisted shielded pair double-insulated cable is recommended as remote sensor wiring and its length must not exceed 25 m.
- Connecting wires between Display Control Unit and Power Supply Unit must not exceed 15 m.

- Do not bundle and run power wiring and remote sensor wiring in the same conduit.
- When an individual TE10-1 sensor is employed in each thermostat, 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°C, the thermostat enters into heating mode.
- Seasonal changeover sensor or switch is applicable to cool only or heat only 2-pipe models only.
- Unoccupied contact closure activates unoccupied mode.
- Window contact closure activates thermostat lockout mode.
- Terminal V1 is wired to open valve on temperature rise and V2 to close valve on temperature drop. The action in heating mode is reversed. Use terminal N as the common for line voltage valve output and terminal COM as the common for 24 VAC

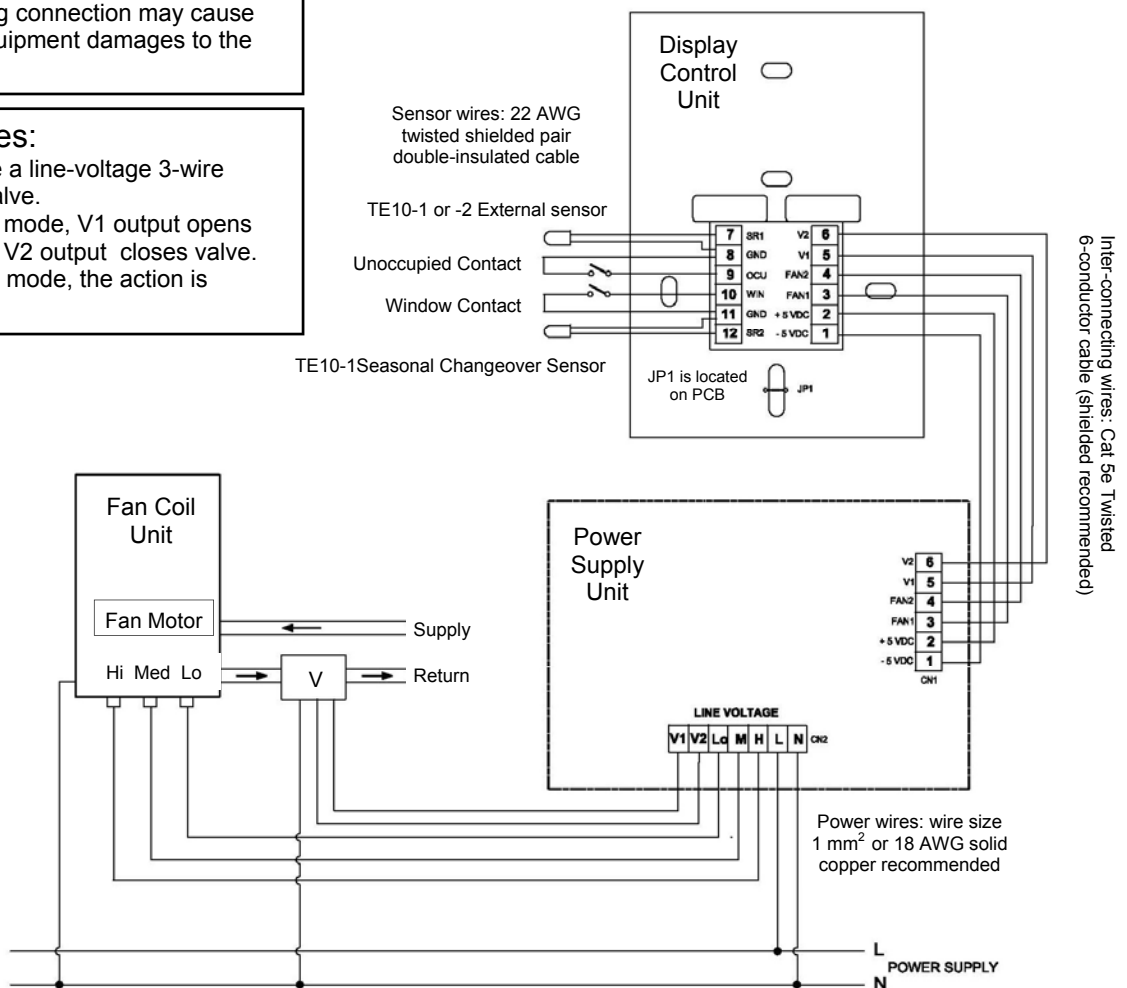
Wiring Diagram for Line-Voltage Fan and Single Line-Voltage 3-Wire Floating Valve Output

WARNING

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

Piping Notes:

1. V must be a line-voltage 3-wire floating valve.
2. In cooling mode, V1 output opens valve and V2 output closes valve.
3. In heating mode, the action is reversed.



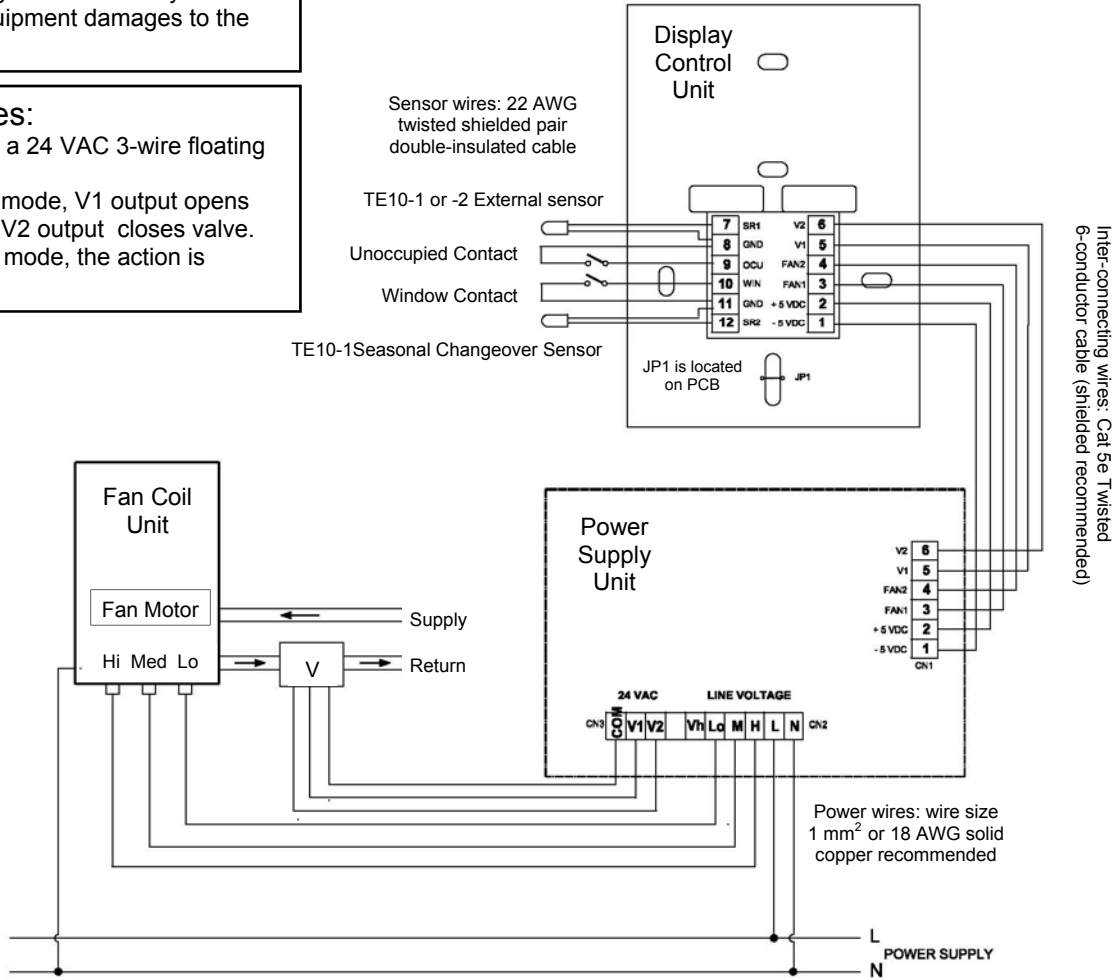
Wiring Diagram for Line-Voltage Fan and Single 24 VAC 3-Wire Floating Valve Output

WARNING

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

Piping Notes:

1. V must be a 24 VAC 3-wire floating valve.
2. In cooling mode, V1 output opens valve and V2 output closes valve.
3. In heating mode, the action is reversed.



Cover Removal Procedure



1. Poke a thin-blade screw driver into the rift of the latch position between the cover and the base.
2. Slightly lever the screw driver upwards to crack open the cover from the base.
3. Hold the base firmly with one hand and remove the cover with another hand by pulling away from the base forcibly.

Wiring Diagrams

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

Wiring and Application Notes

- Cut jumper JP1 open 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 or 24 AWG twisted shielded pair double-insulated cable is recommended as remote sensor wiring and its

length must not exceed 25 m.

- Connecting wires between Display Control Unit and Power Supply Unit must not exceed 15 m.
- Do not bundle and run power wiring and remote sensor wiring in the same conduit.
- Unoccupied contact closure activates unoccupied mode.
- Window contact closure activates thermostat lockout mode.
- The thermostat outputs are designed for controlling zone valves. If used for controlling electric heaters, external contactors must be used.
- Use terminal N as the common for line voltage valve output and terminal COM as the common for 24 VAC valve output.

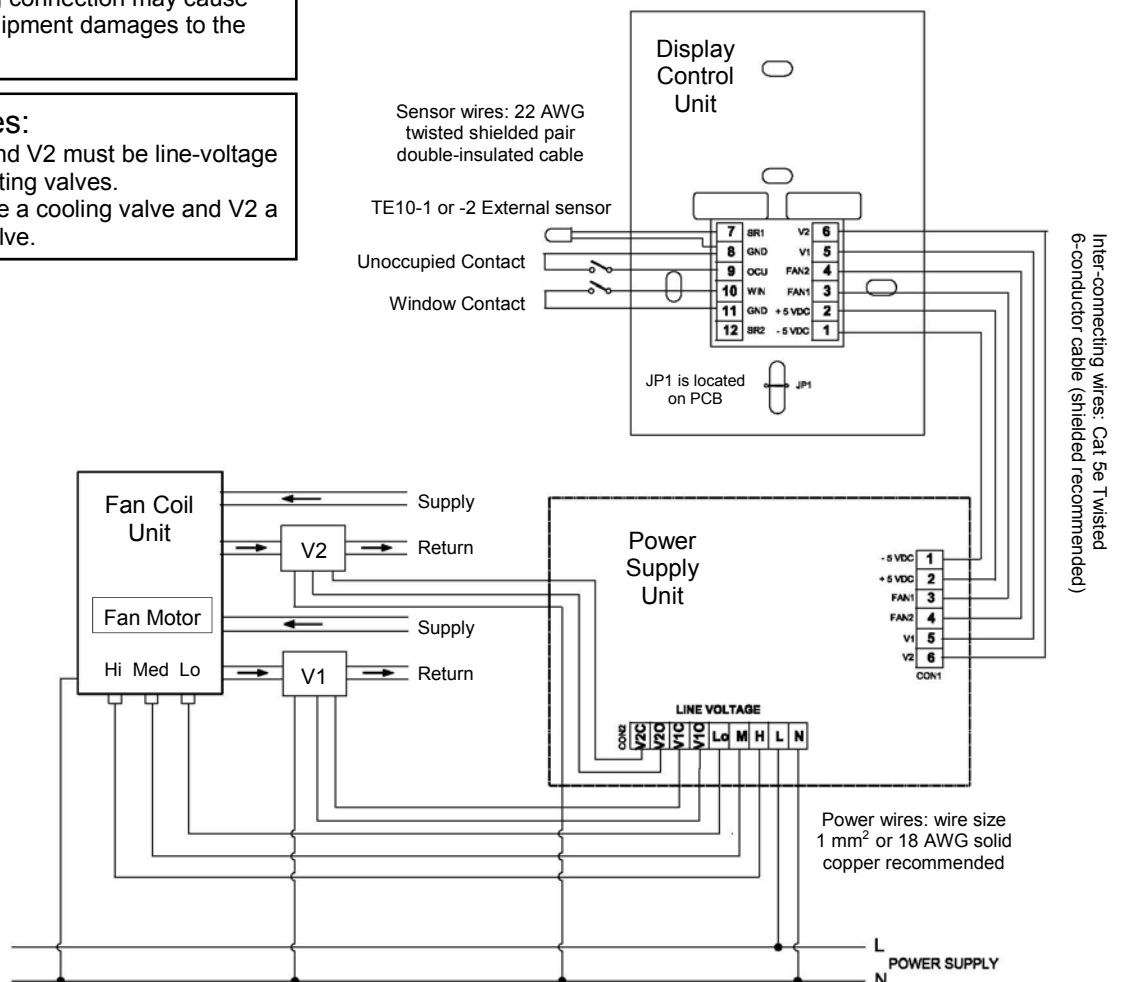
Wiring Diagram for Line-Voltage Fan and Dual Line-Voltage 3-Wire Floating Valve Outputs

WARNING

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

Piping Notes:

1. Both V1 and V2 must be line-voltage 3-wire floating valves.
2. V1 must be a cooling valve and V2 a heating valve.



Wiring Diagram for Line-Voltage Fan and Dual 24 VAC 3-Wire Floating Valve Outputs

WARNING

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

Piping Notes:

1. Both V1 and V2 must be 24 VAC 3-wire floating valves.
2. V1 must be a cooling valve and V2 a heating valve.

