CERV SMART VENTILATION

Wireless Control Options

BUILD EQUINOX
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CERV-IR-T Thermostat Controller

Overview

CERV-IR-T Thermostat Controller seamlessly integrates comfort conditioning control with indoor air quality control for the world's most advanced, effective and efficient IEQ (Indoor Environmental Quality) management system for homes. This results in:

- Exceptional air quality
- Efficient comfort conditioning
- Whole house air filtration
- Integrated online control, diagnostics, and OTA (Over-the-Air) upgrading of both CERV2 and minisplit heat pump operation
- Convenient dashboard administration for multi-family residences

The CERV-IR-T may be used to control any system with a standard thermostat interface. Typical applications include:

- Ducted Heat Pump & CERV Integration (i.e. Magic Box Mechanicals)
- Ductless Heat Pumps
- Standard Furnace/AC Split System
- Geothermal Heat Pump
- Radiant Heating/Cooling

Specifications

Power Supply	24 VAC
Power Consumption	6 W maximum
Outputs Number Channels	8, SPST-NO
Outputs Maximum Voltage	0-30 VAC / 0-30 VDC
Outputs Maximum Current	2A per channel

Radio Frequency	902MHz
Transmission Range	15m (50ft) indoor typical, 45m (150ft) line of sight

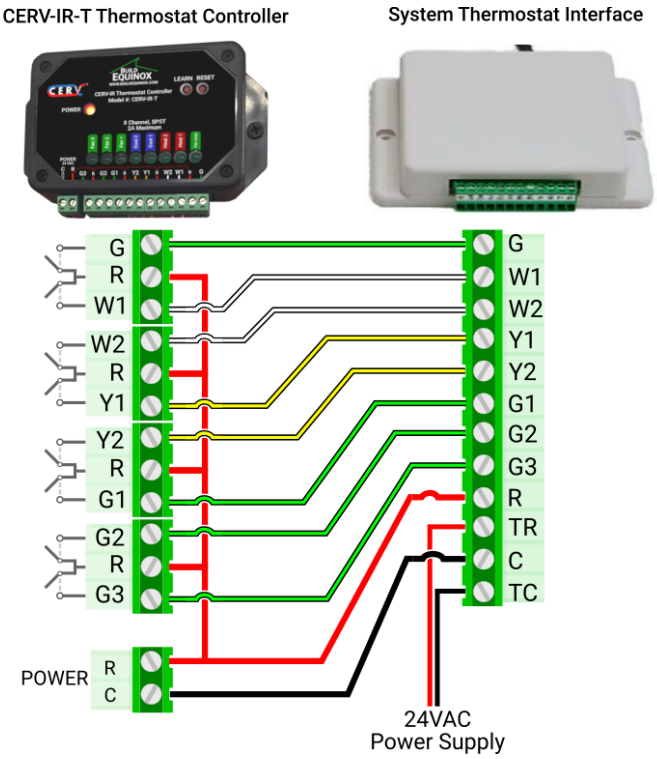
Dimensions	107 x 72 x 29 mm (5.1 x 3.2 x 1.1 in)

Agency Listing and Compliance
FCC Part 15.231 - Remote Control Transmitter
IC 5713A-TCM2XXC

Electrical Wiring

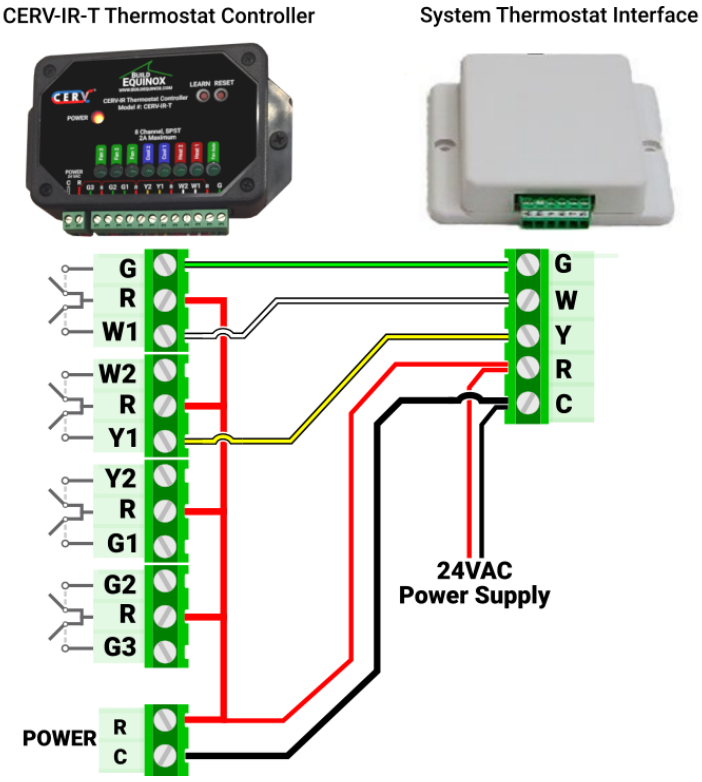
Two Stage Heat/Cool with 3 G, G1, G2, G3 Fan Speeds

G	Fan Auto
R	24VAC R (Connect all Rs)
W1	Heat Stage 1
W2	Heat Stage 2
R	24VAC R (Connect all Rs)
Y1	Cool Stage 1
Y2	Cool Stage 2
R	24VAC R (Connect all Rs)
G1	Fan Speed Low
G2	Fan Speed Medium
R	24VAC R (Connect all Rs)
G3	Fan Speed High
Power R	Power In 24VAC R
Power C	Power In 24VAC Common



Single Stage Heat/Cool with Single G Fan Speed

G	**Fan**
R	**24VAC R (Connect all Rs)**
W1	**Heat**
W2	**N/C**
R	**24VAC R (Connect all Rs)**
Y1	**Cool**
Y2	**N/C**
R	**24VAC R (Connect all Rs)**
G1	**N/C**
G2	**N/C**
R	**24VAC R (Connect all Rs)**
G3	**N/C**
Power R	**Power In 24VAC R**
Power C	**Power In 24VAC Common**

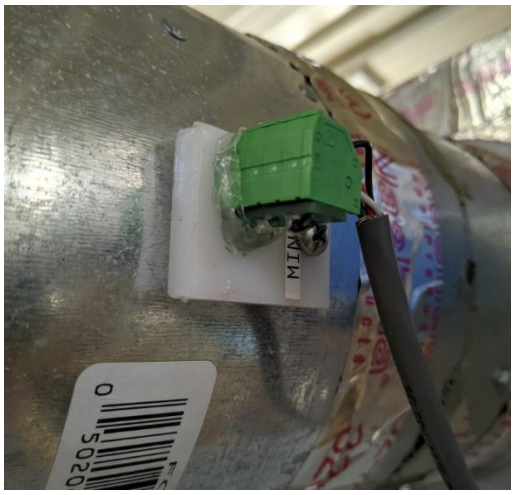


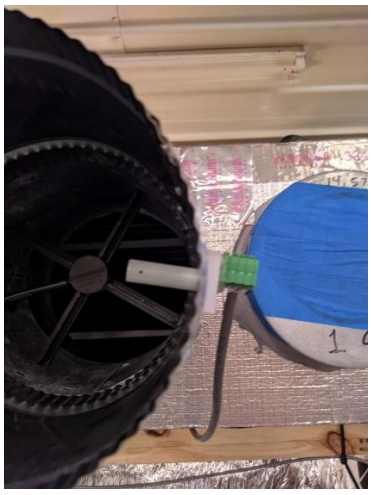
(Optional) Magic Box Mechanical – Ducted Heat Pump Inlet Connected to CERV Outlet

If the system to be controlled by the CERV-IR-T is a ducted heat pump, and the inlet of the heat pump is directly connected to the outlet of the CERV, an Outlet Temperature Probe is required to ensure synchronized defrosting between the two units. This section may be ignored if this scenario is not applicable.

Outlet Temperature Probe Installation

The outlet temperature probe (included with CERV-IR-T kit) should be mounted directly after the outlet of the ducted heat pump. Drill a 3/8” hole in the outlet duct, insert the temperature probe, and use a sheet metal screw to secure the probe in place.

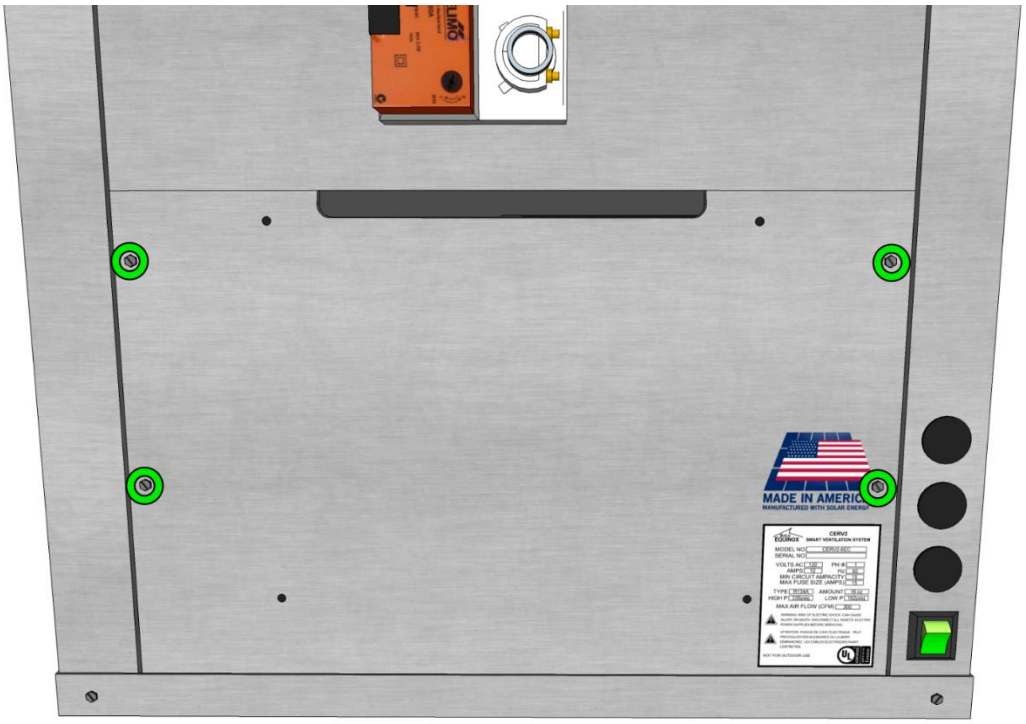




Outlet Temperature Probe Wiring

Before removing any access covers, power to the CERV2 should be turned off and the unit either unplugged or the electric breaker switched off. Remove the lower front plastic cover by removing the 13 phillips head screws shown below.

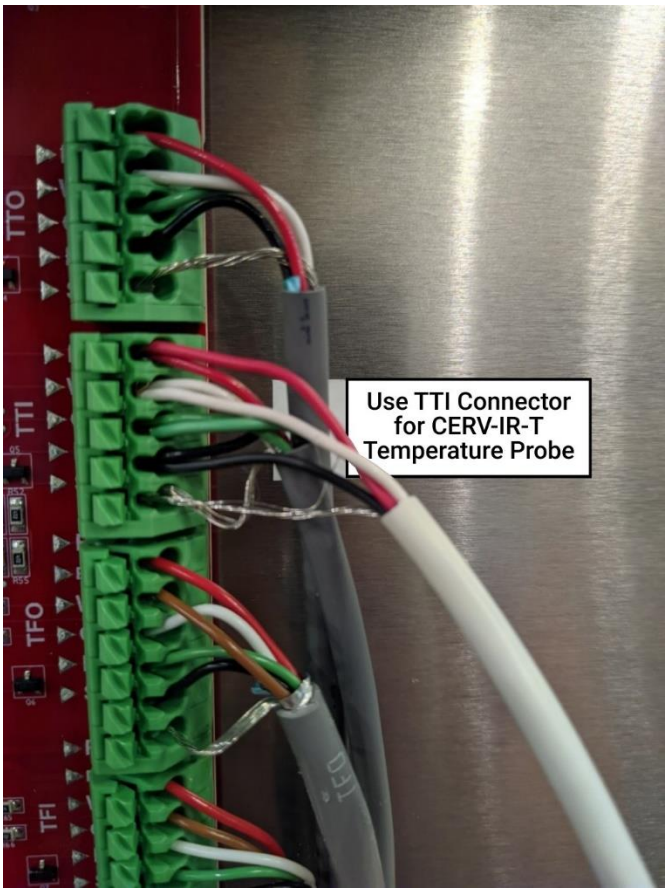
Once the lower front cover is off, the four screws for the lower access panel can be removed. Screw locations are shown below. With the screws removed, the panel will be free to come out.



Fifteen feet of wire is included with the temperature probe, but the wire may be cut shorter if the full fifteen feet is not needed. Feed the end of the wire through one of the wire entry ports above the power switch, as shown below. Strain relief should be used to protect the wire.

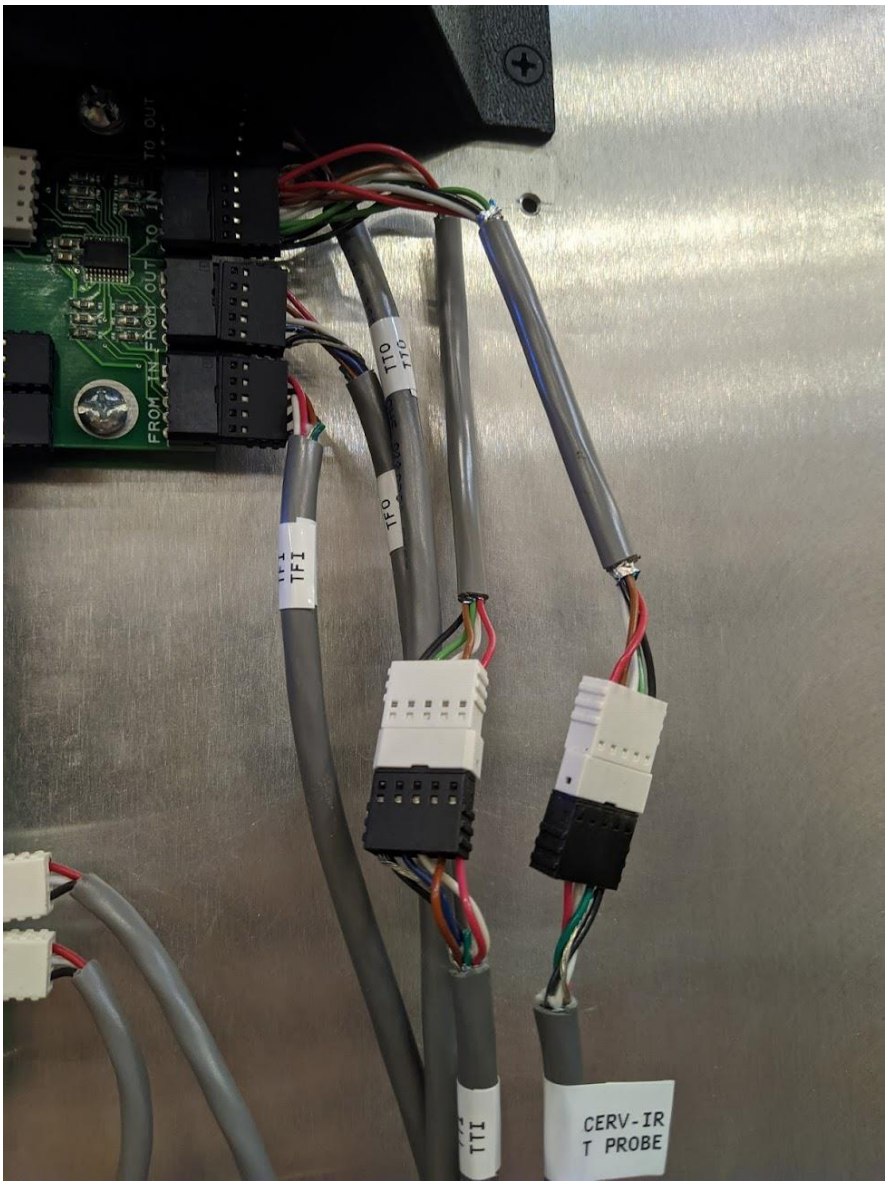
Option A: Control Board with Spring Loaded Terminals (CERV2 Manufactured After 09/2018)

On the CERV2's main control board, the CERV-IR-T outlet temperature probe wires will add into the connector labeled "TTI" along with the existing wires. Strip 1-2" of outer jacket of the temperature probe cord, remove the visible foil shield (but **do not cut the bare shield wire**), and strip approximately ¼" from the end of the red, white, green, and black wires. Use a small flathead screwdriver to depress the square plastic tab to the left of the wire port, insert the new wire, and then release the plastic tab. Lightly pull on the wire to ensure it is secure. Do this for each wire (R = Red, W = White, G = Green, B = Black, S = Shield Wire).



Option B: Control Board Wire Plugs (CERV2 Manufactured Before 09/2018)

On Earlier CERV2 units, plugs were used instead of the spring-loaded terminals. Build Equinox will have included a Y harness so that both the existing TTI cable and the new CERV-IR-T temperature probe may plug into the same TTI port on the control board. If this Y harness was not included in the CERV-IR-T kit, please contact Build Equinox (773-492-1893, or info@buildequinox.com).

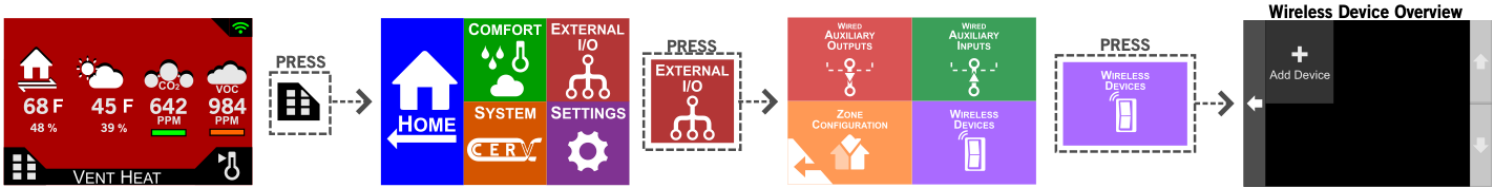


This concludes the electrical portion of the installation

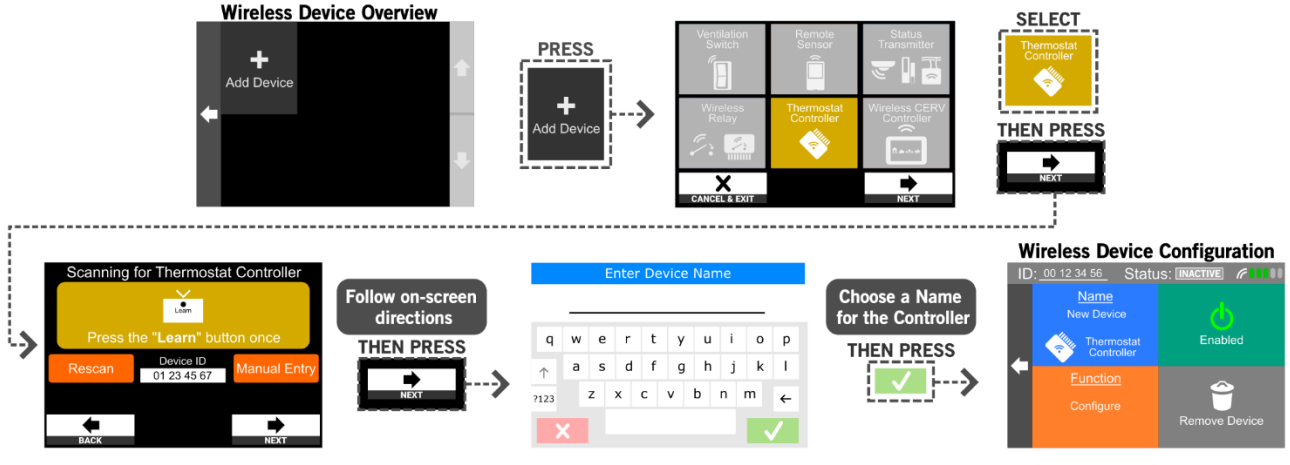
Any front panels on the CERV should be replaced now. Turn on power for the CERV2, CERV-IR-T, and the device to be controlled by the CERV-IR-T.

CERV2 Setup

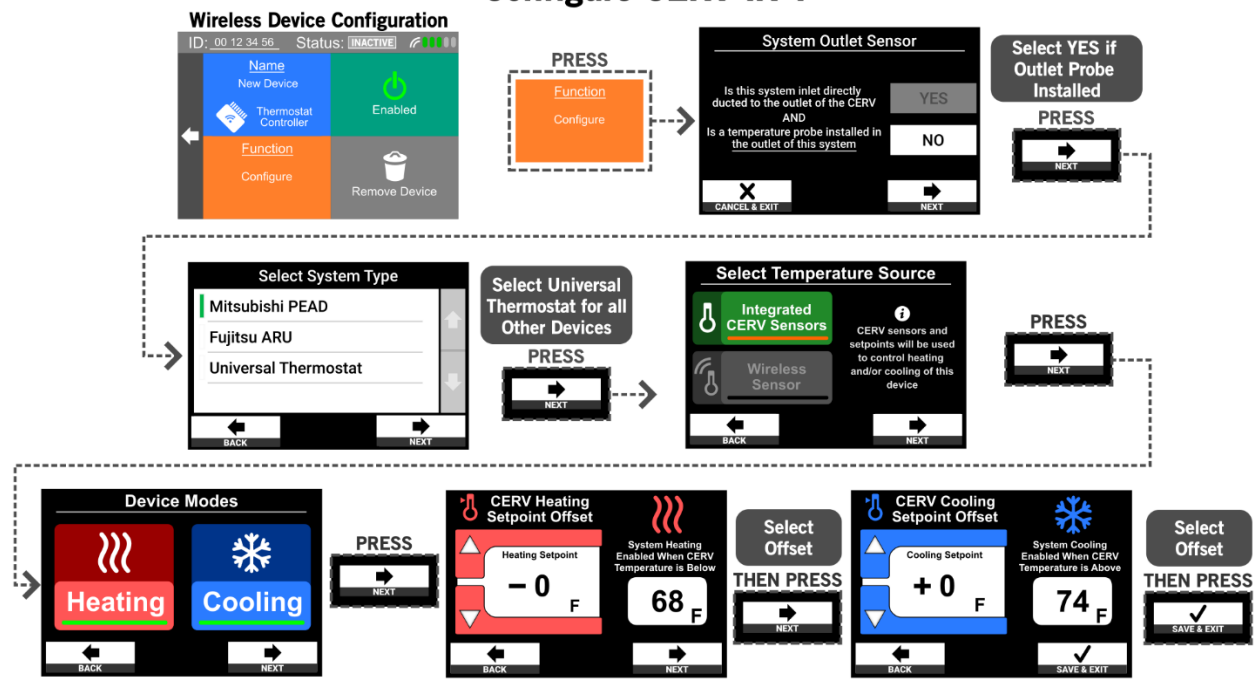
Wireless Device Setup



Pairing a New CERV-IR-T



Configure CERV-IR-T



Configuration Options

System Outlet Sensor

Is this system inlet directly ducted to the outlet of the CERV AND is a temperature probe installed in the outlet of this system (i.e. Magic Box Mechanicals). If so, select YES. For any other type of installation, select NO.

Select System Type

Some specific systems have custom control algorithms that allow the CERV to maximize efficiency and capacity. If your particular system is included in the list, select that. If your system is not specifically listed, select Universal Thermostat.

Select Temperature Source

Integrated CERV Sensors: CERV sensors and setpoints will be used to control heating and/or cooling of this device. This is the default selection and is typically used.

Wireless Sensor: The CERV-IR-T can be controlled by a remote temperature sensor elsewhere in the home. If a remote sensor is already paired with the CERV, it will display as an option for controlling the CERV-IR-T.

Device Modes

Heating: This device may be used in heating mode. Heating is enabled by default.

Cooling: This device may be used in cooling mode. Cooling is enabled by default.

Heating Setpoint

When the "Integrated CERV Sensors" option is selected in the "Select Temperature Source" screen, you may set an offset for the heating setpoint. An offset of 0 means that when the CERV is heating, this device is heating also. Adjusting the setpoint offset allows for a deadband of temperatures where only the CERV would operate. For example, the CERV's heating setpoint is 68 and a heating offset of -3 is selected.

- Indoor temperature above 68: both the CERV and the CERV-IR-T are off
- Indoor temperature between 68 and 65: CERV is heating, CERV-IR-T is off
- Indoor temperature below 65: both the CERV and CERV-IR-T are heating

When the "Wireless Sensor" option is selected in the "Select Temperature Source" screen, you may set a heating setpoint completely independent from the CERV's setpoint. The CERV-IR-T may therefore operate when the CERV is not.

Cooling Setpoint

See Heating Setpoint section.