NVC installation guide

The Natural Ventilation Control monitors the temperature in a room and maintains it by positioning an air inlet, baffle or curtain.

Electrical ratings

INPUT VOLTAGE	115/230V AC, 50/60Hz
OPEN / CLOSE OUTPUT	6 Full Load Amps @115/230V AC 10 Amps @ 30V DC
ALERT OUTPUT	0.2 Amps @ 230V AC 0.4 Amps @ 24V AC 2 Amps @ 30V DC
FUSES	12 Amps 250V AC ceramic

NOTE: The actuator motor positioning the air inlets must have limit switches installed to prevent damage to the inlet device and actuator motor.

Installation

CAUTION: Turn off the power before installing or servicing the control.

Warning: The NVC should be installed by a qualified electrician.

- Mount the control with the electrical knockouts facing the bottom. Failure to do this will void the warranty.
- Use the knockouts at the bottom of the enclosure for mounting cable connectors.
- Use watertight connectors to prevent dust and moisture from entering the enclosure.
- Connect all ground wires to the ground studs.
- Wire the control as shown in **Figure 1**.

Temperature Probe
- Connect the probe to the fast-on tabs.
- Gently pull on the probe to extend it out of the enclosure.
- Tighten the compression nut on the strain relief.

Remote Temperature Sensing
- You can order longer probes or probe wire up to 500 feet.
- Do not run the probe cable in the same conduit as AC power cables.
- Do not run the sensor cable beside AC power cables or near electrical equipment.
- When crossing other cables or power lines, cross them at a 90 degree angle.

Alert Device
- Connect the alert device to the COM (common) and N/O (normally open) or N/C (normally closed) terminals, depending on the type of signal your alert device requires. See **Figure 1** for the wiring diagram.

Jumper Settings
- Position the LOCKED/UNLOCKED jumper on **L** to prevent the control's settings from being changed, or **U** to permit the control's settings to be changed
- Position the CELSIUS/FAHRENHEIT jumper on **C** to display °Celsius, or **F** to display °Fahrenheit.
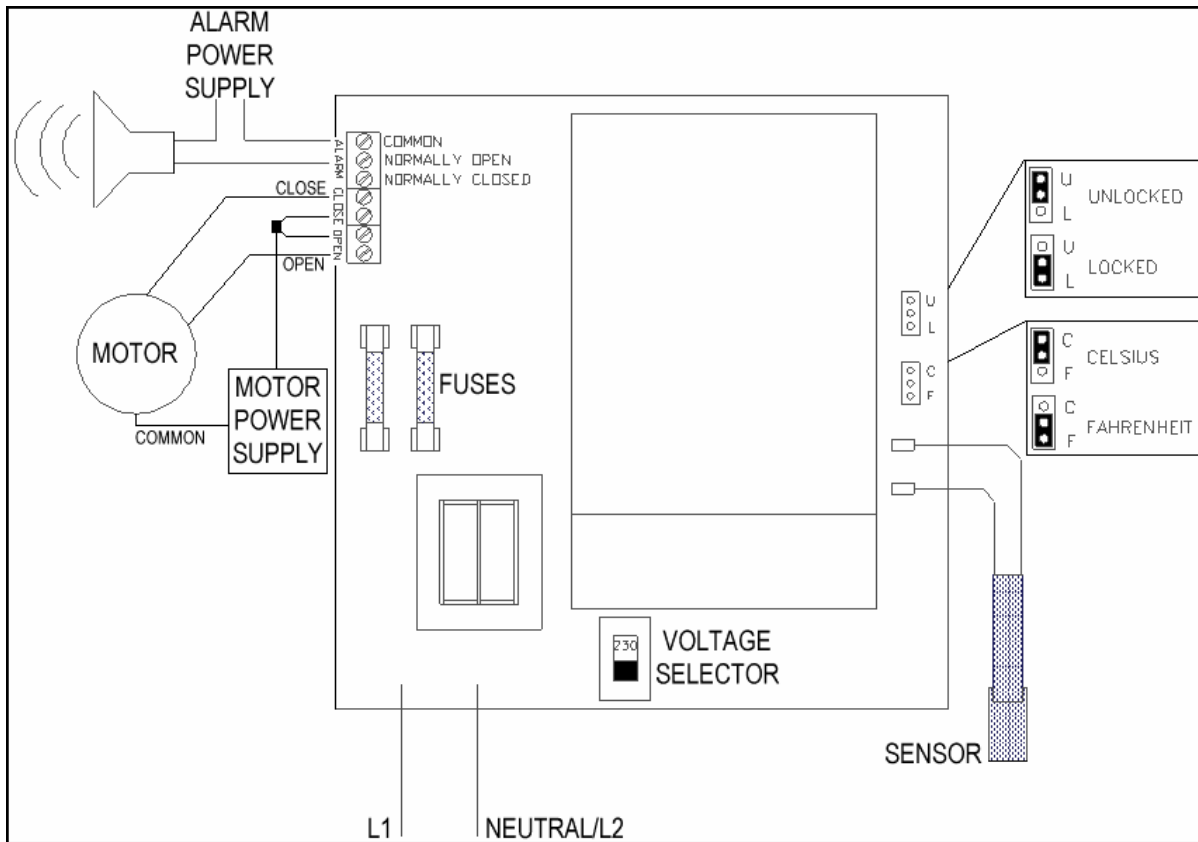
Figure 1: Wiring Diagram

Factory presets

Parameter	Preset
Temperature Set Point	71.0 °F / 21.7 °C
Differential Temperature	0.9 °F / 0.5 °C
Low Temperature Alert Point	50.0 °F / 10.0 °C
High Temperature Alert Point	86.0 °F / 30.0 °C
Open/Close "on" Time	10 sec
Open/Close "idle" Time	10 sec

Control messages

Display	Message	Description
RP.5	Probe Short	The temperature probe has short-circuited or is damaged.
RP.d	Probe Disconnect	The temperature probe is disconnected or damaged. Check the probe connection. The control will not function in this condition.
- - . - (followed by a number)	Temperature Below Zero	The temperature displayed is below 0 °C. For example, -10.5 °C would be shown as **- - . -** 10.5.
REE	EEPROM Error	A system error has occurred. Turn the power off to the control, then turn the power on while pressing the ▲ and ▼ buttons. Remember to re-program the functions to the desired set points. Press Normal Op before selecting the function to be changed.

Operation

Digital Display
The digital display shows the ambient room temperature and parameter settings.

Buttons

`Open` Button
The `Open` button manually opens the inlet. When pressed, the inlet will open and the `Manual Operation` and `Normal Operation` lights will blink. The `Manual Operation` light will blink until the `Normal Op` button is pressed. Pressing the button once causes the open operation to begin. Pressing the button again stops the open operation but keeps the control in the manual mode.

`Close` Button
The `Close` button manually closes the inlet. When pressed, the inlet will close and the `Manual Operation` and `Normal Operation` lights will blink. The lights will blink until the `Normal Op` button is pressed. Pressing the button once causes the close operation to begin. Pressing the button again stops the close operation but keeps the control in the manual mode.

`Normal Op` Button
The `Normal Op` button switches the control between manual and normal operation and saves program changes. The `Normal Operation` light will light up when the unit is in normal mode.

`Func` Button
The `Func` button changes the control's settings. Pressing the button once will turn the `Temperature Set Point` light on and display the setting. Pressing the button again will display the next parameter. After making the desired changes, press the `Normal Op` button to save all settings and return the control to normal mode.

▼ Button
The ▼ button decreases a parameter setting while programming the control.

▲ Button
The ▲ button increases a parameter setting while programming the control.

Indicator Lights

`OPEN` Light
The `OPEN` light turns on while the control is opening the inlet.

`CLOSE` Light
The `CLOSE` light turns on while the control is closing the inlet.

`IDLE` Light
The `IDLE` light turns on when the inlet is in idle mode.

`ALERT` Light
The `ALERT` light turns on when the control senses an alert condition such as a high temperature or low temperature.

### `SYSTEM FAULT` Light
The `SYSTEM FAULT` light turns on when the internal control voltage falls below an acceptable level. If this light is on, the `Normal Operation` light will be off and the unit should be serviced.
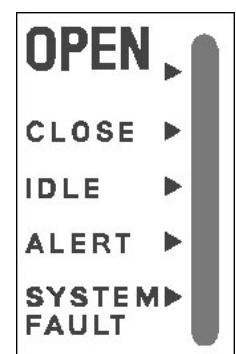
Manual Operation Light

The `Manual Operation` light turns on while the control is in manual mode. While in manual mode, the inlet can only be positioned by pressing the `Open` or `Close` buttons.
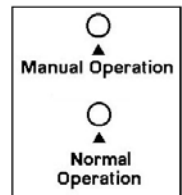
Normal Operation Light

The `Normal Operation` light turns on while the control is in normal mode. While in normal mode, the inlet is controlled automatically.

Temperature Set Point Light

The `Temperature Set Point` light turns on when the `Func` button is pressed to select the temperature set function. The temperature set point will be shown in the display and can be adjusted by pressing the ▲ or ▼ buttons. The temperature set point is adjustable from -17.8 to 37.7°C or 0.0 to 99.8 °F, but can never go below the Low Temperature Alert or higher than the High Temperature Alert.

◯◀ Temperature Set Point   ◯◀ Differential Temperature

◯◀ Open/Close "on" Time (Sec)   ◯◀ High Temperature Alert point

◯◀ Open/Close "idle" Time (Sec)   ◯◀ Low Temperature Alert point

Open/Close "on" Time Light

The `Open/Close "on" Time` light turns on when the `Func` button is pressed to select the Open/Close "on" Time function. The setting will be shown in the display and can be adjusted by pressing the ▲ or ▼ buttons. The "on" time is the duration the inlet takes to either open or close and can be set between 1 and 900 seconds.

Open/Close "idle" Time Light

The `Open/Close "idle" Time` light turns on when the `Func` button is pressed to select the Open/Close "idle" Time function. The setting will be shown in the display and can be adjusted by pressing the ▲ or ▼ buttons. The "idle" time is the duration the inlet will be stopped before opening or closing and can be set between 1 and 900 seconds.

Differential Temperature Light

The `Differential Temperature` light turns on when the `Func` button is pressed to select the differential temperature function. The setting will be shown in the display and can be adjusted by pressing the ▲ or ▼ buttons. The ambient temperature must be higher or lower than the temperature set point by this amount before the open/close cycle will start. The differential temperature can be set between 0.0 and 37.7 °C or 0.0 and 67.8 °F.

High Temperature Alert Point Light

The `High Temperature Alert Point` light turns on when the `Func` button is pressed to select the high temperature alert function. The setting will be shown in the display and can be adjusted by pressing the ▲ or ▼ buttons. The alert activates when the ambient temperature rises above this setting. The high temperature alert point can be set between -17.8 and 37.7 °C or 0.0 and 99.8 °F, but can never be lower than the temperature set point. To disable the alert, adjust this setting to the maximum (37.7° C or 99.8 °F).

Low Temperature Alert Point Light

The `Low Temperature Alert Point` light turns on when the `Func` button is pressed to select the low temperature alert function. The setting will be shown in the display and can be adjusted by pressing the ▲ or ▼ buttons. The alert activates when the ambient temperature falls below this setting. The low temperature alert point can be set between -17.8 and 37.7 °C or 0.0 and 99.8 °F, but can never be higher than the temperature set point. To disable the alert, adjust this setting to the minimum (-17.8 °C or 0.0 °F).

NOTE: If the control is left in programming mode and no key is pressed for two minutes, the control will reset without saving any changes.

If the ambient temperature reaches the high or low temperature alert limit, the firmware is designed to eliminate the idle range and move directly to the open or close "on" time.

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