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## **⚠ WARNING**

Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life.

Installation and service must be performed by a licensed professional HVAC installer (or equivalent) or service agency.

# INSTALLATION/ OPERATION INSTRUCTIONS

## V0STAT51 Indoor Unit Programmable Controller

### CONTROLS

507458-03

02/2016

**This manual must be left with the owner for future reference.**

## **IMPORTANT!**

Frequent changes to operating mode may cause system malfunction. Allow at least one minute between mode changes to allow the system to stabilize.

## Shipping and Packing List

### Package 1 of 1 contains;

- 1 – Wired Controller
- 1 – Lithium battery
- 2 – Phillips screws

- 2 – Plastic spacers
- 1 – Installation and operation manual
- 1 – Cable with connector (33 ft. 10 m)

## General

The V0STAT51 is a wired programmable local controller for VRF Heat Recovery and Heat Pump indoor units with convenient timed schedules for daily operation. These instructions are intended as a general guide and do not supersede local codes in any way. Consult authorities having jurisdiction before installation.

## Requirements

Be sure that power supply has been turned off before beginning installation. This controller should be used only as described in this manual. Do not install the controller on outside walls (where there is unconditioned space on opposite side of wall) or in locations where direct sunlight may be present.

## Installation

### **⚠WARNING**

Be sure that power supply has been turned off before beginning installation.

### **⚠CAUTION**

Clean controller using a clean, damp cloth. Do not spray cleanser on or around controller.

### **⚠WARNING**

Do not operate controller with wet hands.

### **⚠CAUTION**

Do not install controller in areas where heavy oil, vapor, or gases containing sulfur may exist or the controller may be damaged.

## IMPORTANT!

Read all of the information in this manual before using this controller. All wiring must conform to local and national building and electrical codes and ordinances. This is a 12 VDC controller. Do not install on voltages higher than 12 VDC.

- This manual provides the installation instructions for this controller. Refer to the included wiring diagram to connect the controller to the indoor unit.
- The controller uses low voltage. Keep a minimum distance of 12" (305 mm) between low voltage control wire and high voltage power wires.

## IMPORTANT!

The provided cables must be used. Do not use excessive force while pulling the cable or when making the connections.

- Ground the shielded control wiring.
  - Do not use a megger to test insulation.
  - The controller cable length should not exceed 66 ft (20 m).
1. Connect controller to indoor unit main control board by inserting the plug of the 4-conductor cable into the socket provided at the indoor unit.

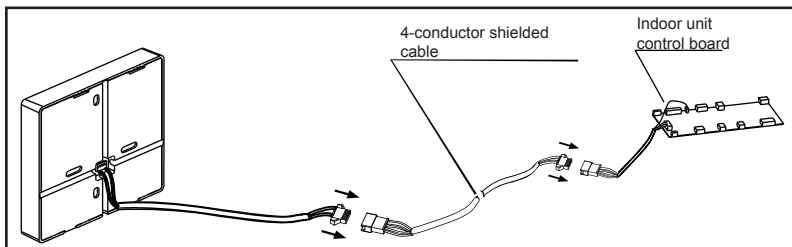
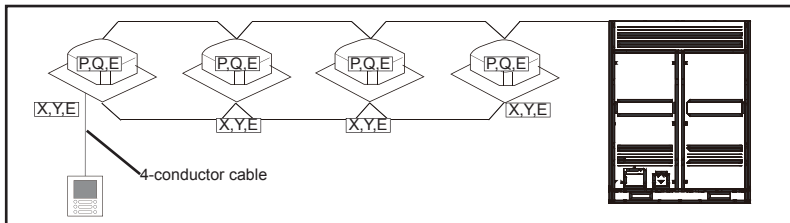


Figure 1. Wiring Connections

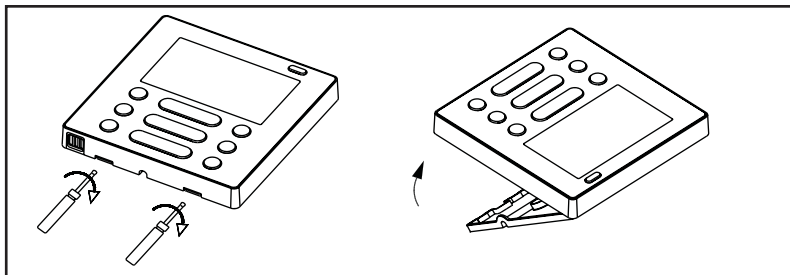
2. The controller can be connected to up to 16 indoor units. For connections to multiple indoor units, connect to the first indoor unit with 4-conductor cable, then daisy chain control wiring to each indoor unit using the X,Y and E terminals in the electrical control box of the indoor unit.

**NOTE** – All of the indoor units connected to the controller must be on the same refrigerant circuit, connected to the same outdoor unit.



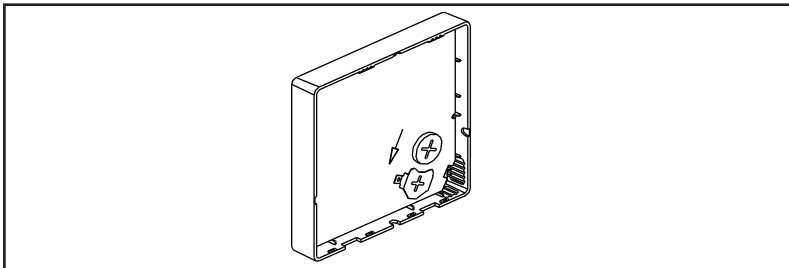
**Figure 2. Connect Multiple Indoor Units to Single Controller**

3. Remove the cover from the wallplate using a flat-head screwdriver as shown.



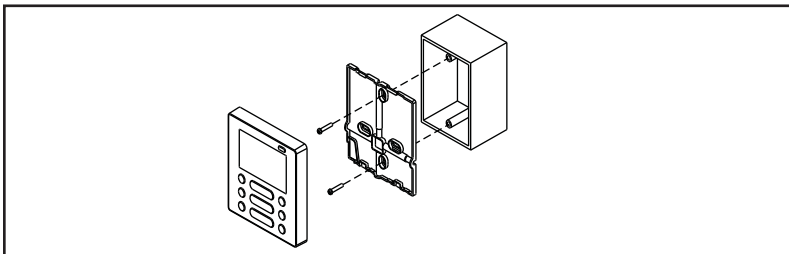
**Figure 3. Remove the Cover from the Wallplate**

4. Install the provided lithium battery as shown.



**Figure 4. Install Lithium Battery**

5. Adjust the length of the two plastic spacers as needed to allow the controller to be mounted flush with the wall. **NOTE** – Provide for future maintenance by allowing enough slack in the wiring to allow the controller to be removed from the wall if needed.
6. Attach the wallplate using the provided screws.
7. Reattach the cover to the wallplate.



**Figure 5. Mount Wallplate**

## Field Wiring Diagram

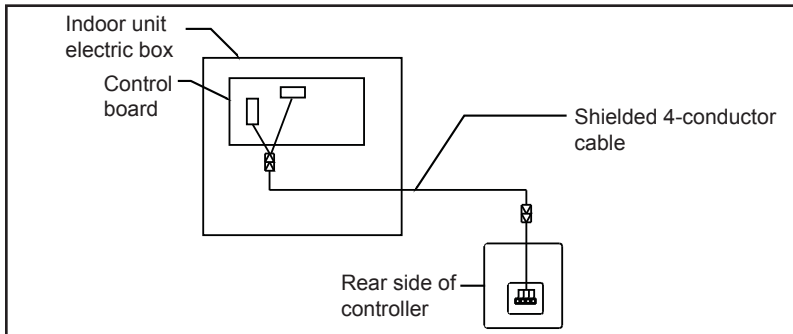
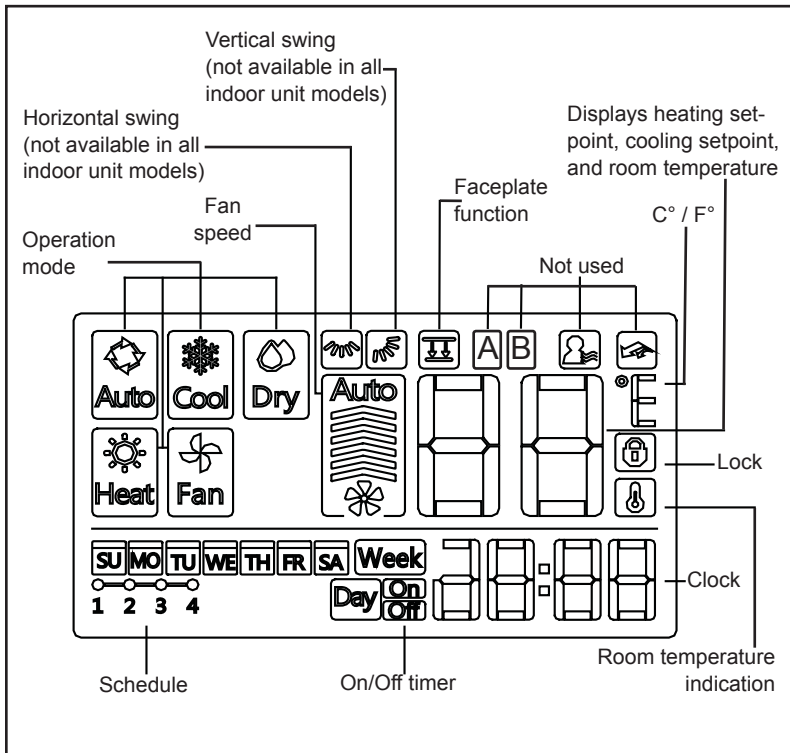


Figure 5. Typical Wiring Diagram between Wired Controller and Indoor Unit

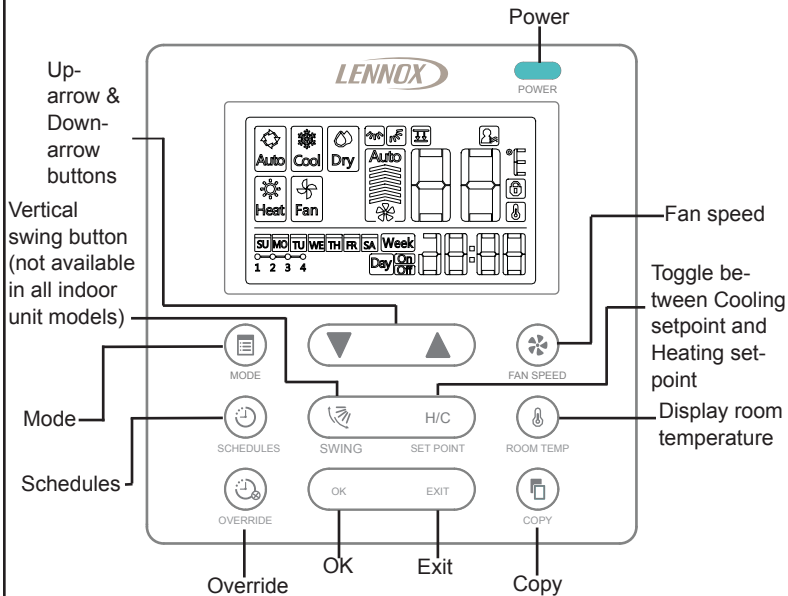
## Specifications

Input voltage	12 VDC
Ambient temperature	23~110°F (-5~43°C)
Ambient humidity	RH40%~RH90%

## Display



## Description of Buttons





## Setup

### Set the current day and time

1. Press and hold the Schedules button for 3 seconds.
2. Use the up-arrow & down-arrow buttons to set the day. The selected day will blink.
3. Press the Schedules button to complete the date setting.
4. Use the up-arrow & down-arrow buttons to set the current time. **NOTE** – *the controller uses a 24-hour clock.*
5. Press the Schedules button to complete the time setting.

### Select Fahrenheit or Celsius for display

1. Press and hold Exit button and Copy button simultaneously for 3 seconds.
2. Use the up-arrow & down-arrow buttons to toggle between °F and °C.
3. Press the OK button to accept and move to the next setting.

### Identify system as either Heat Pump or Heat Recovery

1. Press and hold Exit button and Copy button simultaneously for 3 seconds.
2. Press the OK button.

3. Use the up-arrow & down-arrow buttons to toggle between 33 (HR) and 32 (HP).
4. Press the OK button to accept and move to the next setting.

### Set Setpoint Differential between Cooling and Heating Setpoints

1. Press and hold Exit button and Copy button simultaneously for 3 seconds.
2. Press the OK button 2 times.
3. Use the up-arrow & down-arrow buttons to scroll between 2°F, 3°F, 4°F, and 5°F if the system is in Fahrenheit or 2°C, 3°C, 4°C, and 5°C if the system is in Celsius.
4. Press the OK button to accept and move to the next setting.

### Key Pad Tone (beep)

1. Press and hold Exit button and Copy button simultaneously for 3 seconds.
2. Press the OK button 3 times.
3. Use the up-arrow & down-arrow buttons to toggle between 50 (no beep) and 5b (beep).
4. Press the OK button.

## Schedule

**NOTE** – If schedules are used and a centralized controller is installed on the system, controller functions should not be locked from the centralized controller.

### Create Schedules (up to 4 events per day)

1. Press the Schedules button.
2. Press the OK button.
3. Use the up-arrow & down-arrow buttons to select the day you want to set up the schedule (defaults to the current day)
4. Press the OK button.
5. Set begin time for the first event using up-arrow & down-arrow buttons. (10 minute increments)
6. Press the OK button.
7. Set the end time for the first event using up-arrow & down-arrow buttons. (10 minute increments)
8. Press the OK button.
9. Set cooling setpoint for the first event using up-arrow & down-arrow buttons.
10. Press the OK button.
11. Set heating setpoint for the first event using up-arrow & down-arrow buttons.
12. Press the OK button.
13. Set begin time for the 2nd event using up-arrow & down-arrow buttons. Continue with steps 7-12 to setup the second event.
14. Press the OK button to move to the next day.

### Copy Schedule

1. Use the up-arrow & down-arrow buttons to select day you want to copy.
2. Press the Copy button.
3. Use the up arrow & down arrow buttons to select day you want to copy to.
4. Press the Copy button again to confirm.

### Override Schedule

If a scheduled event causes the indoor unit to turn OFF, the Override button can be used to keep the indoor unit ON for a period of 1 or 2 hours. At the end of the override period, the indoor unit will return to the schedule (ON or OFF).

5. Press the Override button once. 0h displays.

6. Press the Override button two times, 1h displays, to override the schedule for 1 hour.
7. Press the Override button three times, 2h displays, to override the schedule for 2 hours.

## Operation

**NOTE** - Indoor units connected to a local controller may also be controlled by a centralized controller. Indoor units respond to the last command sent. It is recommended that indoor units be controlled from a single source of control, either local controller or centralized controller but not both, to avoid conflicts in commands.

### Start/stop operation

Press the LED power button.

- Controller ON: LED power button lit brightly.
- Controller OFF: LED power button not lit.

### To set the operation mode

Press the Mode button to scroll through the mode selections.

- Auto – System will automatically switch between heating and cooling depending on the tem-

perature sensed at the controller. For VRA heat recovery systems, see Temperature Sensing sections for more details. Do not use with VPA heat pump systems.

- Cool – System operates in cooling mode.
- Dry – System removes humidity according to preset conditions (fan speed and setpoint temperature, not a humdstat sensor). Cannot adjust fan speed.
- Heat – System operates in heating mode.
- Fan – Fan only, no heating or cooling.

### To set (or change) the room temperature setting (setpoint)

Press the up-arrow & down-arrow buttons to set the setpoint.

### To set the fan mode

Press the Fan button to scroll through the fan speeds. Low → Med → High

**NOTE** - Auto fan speed not available for all systems.

## Temperature Sensing

### Indoor Unit

Default sensor for control and operation. All indoor units have a temperature sensor that senses the zone temperature and controls operation of the indoor unit within the limits of the system\*.

### Remote Sensor

Field installed accessory. Used to relocate temperature sensor from indoor unit to remote location.

### Controller

Display sensor. The temperature sensed at the controller is displayed on the V0STAT51.

\* In certain circumstances, the controller temperature sensor is used for indoor unit control and operation. When the controller is placed into Auto mode on a VRA Heat Recovery system, the controller temperature sensor is used for control and operation of the indoor unit. Therefore, location of the controller must be carefully selected in this scenario.

## Troubleshooting

Digital Tube Display	Content
F0	Wired remote controller and indoor unit communication failure
E1	Communication error between indoor and outdoor units
E2	Indoor ambient temperature sensor (T1) error
E3	Middle evaporator temperature sensor (T2) error
E4	Evaporator outlet temperature sensor (T2B) error
EE	Water level alarm error
E7	Indoor Unit EEPROM error
E0	Mode conflict error
Ed	Outdoor units error
FE	IDU doesn't have address when it is first turned on