



ZoneTouch V2
Zone Control System
Installation Manual



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Liability

Please read the instructions before installing this Zonemaster Zoning Control System.

Polyaire Pty Ltd does not accept any responsibility for loss or damage that may occur as a result of the incorrect installation of this Zonemaster Control System.

1) Application

The Zonemaster ZONETOUCH V2 control system is a fully featured and engineered system that is designed to manage the air flow from the AC unit providing a balanced and managed airflow to all outlets. It is well suited to all ducted reverse cycle, ducted heating and cooling systems in light commercial, residential and apartment applications.

2) Features

For Installers

- 24 volts for easy and safe installation and maintenance.
- User friendly 5" touch screen interface to simplify setup process.
- Supports up to 16 individual zones (Zone 1, 2...9, A, B...G), 16 groups (Group 1, 2...9, A, B...G) with maximum of 4 zones in a group. Nine zones/groups and above will require an extension module.
- Remote zone balancing --- each zone's opening position can be programmed for balancing via touch screen between 10-100%.
- Auto spill/bypass (dedicated bypass zone port) --- the designated zone dampers are forced open when all zones are turned off.
- Safety system --- Opens all dampers if the supply air temperature reaches low or high limit.
- Dampers are connected directly to the main control module or its extension module for easy diagnosis.

For End Users

- User friendly large touch screen control interface.
- Intuitive user interface.
- Control airflow to individual groups.
- Colour LCD for clearer display.
- Personalized system settings and group labelling
- Wall mounted with up to two touch screens available in a system.
- 5-1-1 Programmable On/Off time programs.
- One selectable turbo group to cool/heat a particular area quicker.
- Half year, One year and Two year service alerts remind customers to call technician for cleaning and servicing AC system.
- All zones automatically resume their original on/off state once power is restored after power outage.

3) Components

Note: Each component is sold separately or in kits.

3.1 Wall Controller (Touch Screen)

Users can input control commands from the wall controller to turn a group/zone on and off. It is used to input all program parameters. The colour LCD displays clock, zone status, temperature and other statuses.



3.2 Main Control Module and Extension Module (optional)

Main control module (8 zones with bypass port) and its optional extension module (extra 8 zones) control the position of motorized damper of each zone.



3.3 Motorized Damper (Bright Green)

Motorized damper drives the blade of the damper to adjust the air flow.



3.4 Cables

Cables with left latch (for data) or central latch (for control) plugs connect the main control module, extension module (if applicable), touch screen, and motorized damper together.



3.5 Supply Air Sensor (optional)

Supply air sensor measures the temperature of the supply air for safety purposes.



3.6 Power Supply

24VAC transformers provide power to the main control module and extension module.



3.7 Rechargeable Battery

The backup battery is used to store the time and settings when there is a power surge.



4) Configuration

The Zonemaster ZONETOUCH V2 system is a star architecture system that allows communications between the ZONETOUCH V2 main control module, extension module, up to 16 zone dampers, and up to two touch screens. Figure 1 shows the connection of devices such as ZONETOUCH V2 extension module, two touch screens, and eight dampers to the main module. Figure 2 shows the connection of eight dampers to the extension module. Figure 3 shows the linking of the main module to the extension module and touch screens.

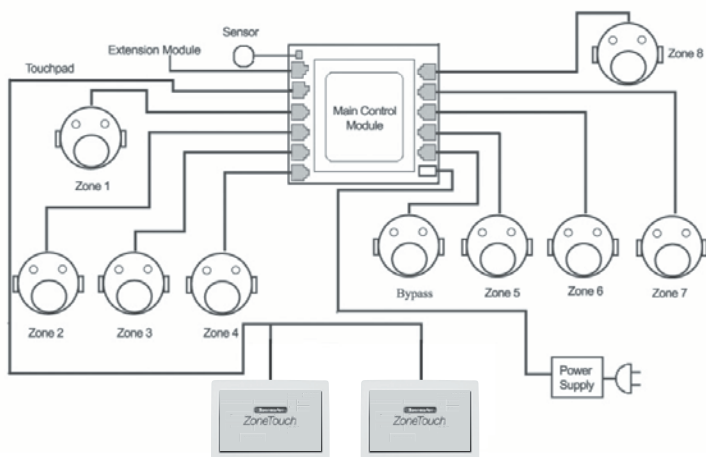


Figure 1: ZoneTouch Main Module connected to 2 Touchpads and 8 Dampers

Eight motorized dampers can be connected to the main control module. Nine dampers and above (up to 16) will need the extension module.

In addition, there is a dedicated bypass port where a damper is used to return the supply air directly to the return air duct. (See Spill/Bypass Mode on page 13)

Extension Module

An extension module can be plugged into the main control module to expand the number of zones to 16 as shown in Figure 2. A separate 24VAC power supply is required to supply power to the eight extra zones.

The wiring of the ZONETOUCH V2 system is straightforward. A cable with central latched plugs connects a motorized damper to the relevant output port clearly marked on the main control or extension module.

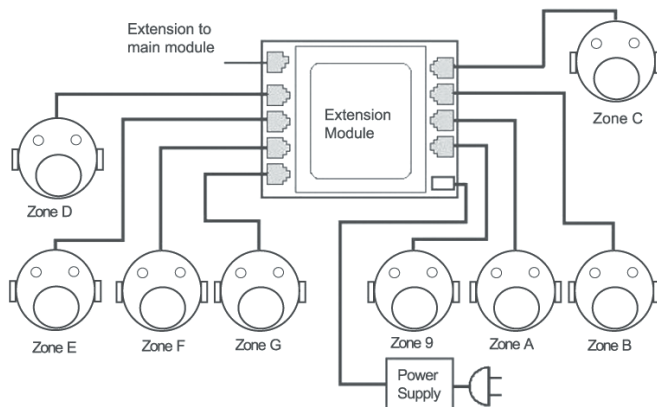


Figure 2: Zone Touch with Extension Module and 8 Zone Dampers

The main module and extension module can be in different locations and connected via a cable with left latched plugs on both ends as shown in Figure 3. Touch screen is connected to the 'T' port on main module using a cable with left latched plugs.

Up to two touch screens can be joined in a system. The two touch screens are connected to each other with a double left latched adaptor in serial.

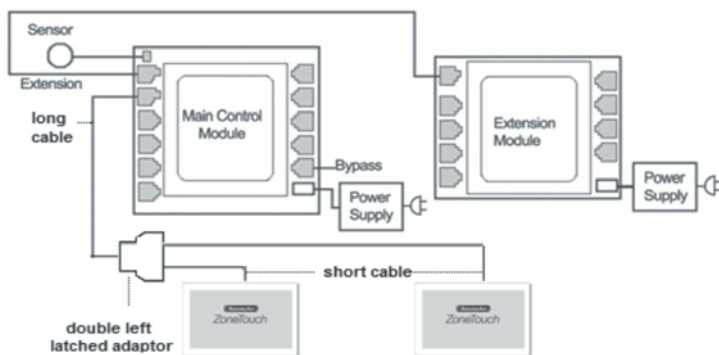


Figure 3: ZoneTouch Main Module with Extension Module and 2 Touchpads

Note: When installing two touch screens, use a long cable (as long as practical) between the main module and the double left latched adaptor, two short cables between the adaptor and two touch screens and try to maintain the two short cables at the same length.

5) Pre-Installation

Good planning leads to a successful zone system installation. Before physically installing and commissioning a zoning system, please complete the following listed tasks:

- 5.1 Decide how many zones (dampers) are to be controlled in the system.
- 5.2 Assign lower order zones (1, 2, 3...) to dampers closest to the return air grille. These zones will automatically open when spilling is required. However avoid using lower order zones for bedrooms as this may cause discomfort if auto spilling occurs during sleep time.
- 5.3 Group zones according to customer's requirements. Each group initially has one zone but can have up to a maximum of four zones (Example: There could be one or more zones going into a common area such as Kitchen/Dining or Family/Dining room). Work out the total group number (Maximum total group number in a system is 16).
- 5.4 Record the above mentioned information to table 1 and 2 on page 11 in the User manual and to the table on the sticker of the Main Control Module.



Cable Tester
(Item Number: 657089)

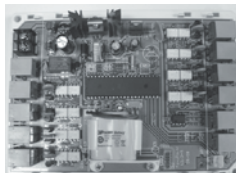
NOTE: It is important to test all cables before installation. Testing all cables to be used before the start of the installation will save considerable diagnostic time if the fully installed system is subsequently found to have a problem. Cable testing is quick and easy with a Zonemaster Cable tester available from Polyaire

6) Component Installation

- 6.1 Mount the main control module and/or extension module (if using more than 8 zones) by screwing the box (es) to a roof frame or Polyaire Diffusion Fitting (PDF).
- 6.2 Remove the two-side covers on the main control module so that all LEDs and sockets for zone dampers are exposed.
- 6.3 If extension module is used, connect main module to extension module at 'E' port on both modules with a one metre left latched cable (provided).
- 6.4 Use pre-tested cable to connect 'Z1' port on the main module to the motorized damper of the 1st zone.
- 6.5 Repeat step 6.4 to connect other zone dampers, including bypass damper ('B' port) if installed, to their relevant zone ports on the main control module and extension module.
- 6.6 Mount the supply air sensor in the supply air duct between the fan coil and the first damper and push the plug of supply air temperature sensor into the socket on the main control module (Optional).
- 6.7 Connect the touch screen to the 'T' port on the main module. If two touch screens are used, use the provided left latched cables and a 1-to-2 female-female splitter coupler to join all touch screens. (See instructions below on fitment of touch screen to wall).
- 6.8 Connect the 24VAC transformer to screw terminals on the main control module. If extension module is used, connect another 24 VAC transformer to the screw terminals of the extension module.



- 6.9 If both transformers (main module and extension module) share the same power switch, switch the power on. **(IMPORTANT NOTE) If NOT, switch on the power to extension module first. Then turn on the power to main module.** Otherwise, the extension module will NOT be initialized properly. Circular Red LED on the main module (and extension module) should be on and the system will start initializing & finish in about 30 seconds after power on.
- 6.10 Install the battery as shown in the picture on the main control module. It is recommended to install the battery after power is on. Otherwise the system may not be initialized properly due to the low voltage of the new battery.
- 6.11 Replace the side covers back on the main control and extension module once finished setting and commissioning.
- 6.12 Record the grouped zones and balancing details on the sticker off the Main Control Module after commissioning the system.



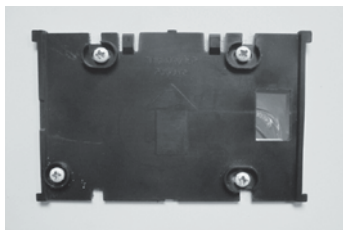
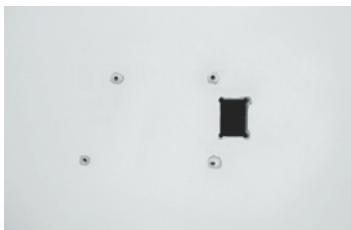
6.13 Fit the Touch Screen to wall

The plastic casing of the touch screen consists of two halves. The front cover contains the PCB board along with the LCD/touch screen. The back cover attaches to the wall as a mounting base. During the installation process the case will have to be opened to mount the touch screen on the wall. Follow the steps below to carefully install the touch screen to the wall:

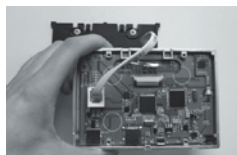
- Slide the back base to bottom side to clear the stops on the front cover
- Remove the base from the front cover
- Position the back base on the wall where the cable is (about 1.5m high from the floor). Ensure it is away from any heat or cool source and mark the cable hole and screw holes.

NOTE: The correct back cover direction is marked on its surface; follow that mark when fixing the back cover.

- d) Cut the rectangular hole for the cable and fix the back base to the wall by using four screws on the marked positions.




- e) Retrieve the touch screen cable (from main control module) out of the cable hole and plug it into the touch screen.
- f) Align the bottom edge of the back base with the bottom inside of the front cover and the two side edges of the back base with the front cover.
- g) Gently push the front cover against the wall and make sure the back of front cover is flush against the wall. And then push the front cover downwards with two figures holding the top side of the front cover where there are two slots till the two snap-ons click in.



7) Recommended Commissioning Procedure

7.1 Setting Parameters

System parameters can be set up from 'Installer Settings' screen.

Follow the steps below to set required values. Touching  button in the setting process will go back to the home screen from any setting pages.


- a) Touch  on the home screen (Figure 3) to enter 'Settings' screen (Figure 4).



Figure 3.



Figure 4.

- b) On 'Settings' screen, touch  button to show the keyboard for entering the password of installer settings (Figure 5).



Figure 5.

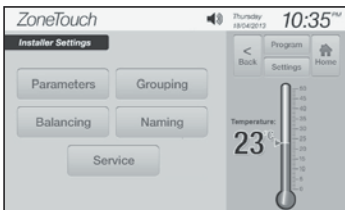


Figure 6.

- c) Enter the password of installer settings (Figure 6), the default password is 'Polyaire'.

NOTE: The password is case sensitive. Maximum length for the password is eight characters but it can also be blank.

7.1.1 Touch Screen Address

Up to two touch screens can be installed in one system. Each touch screen has a default address of '1'. During commissioning each touch screen should be assigned a unique address for communicating with the main control module properly. Follow the following steps to set the Touch screen Address:





- On 'Installer Settings' screen (Figure 6), touch 'Parameter' to get to 'Parameter' screen (Figure 7).



Figure 7.



Figure 8.

- Touch the edit field of 'Touchpad Address' to highlight it,  and  buttons will appear (Figure 8).
- Use  and  buttons to select a touchpad address from 1 to 2.

NOTE: Each controller (touch screen) must have a unique address. Two touch screens with the same address will cause communication problems between the main control module and the touch screens.

7.1.2 Number of Groups in the System

For the purpose of group status display and spill/bypass zone calculation, the system needs to know the total number of groups to be installed. The factory default number is 8.

IMPORTANT: This number must be equal to the total group number used in the system as planned in Pre-Installation process. If this is wrong, the system may not work properly.





- Touch the total group field,  and  buttons will appear (Figure 9).
- Press  or  button to change to the total number of groups in the system. The selectable number is from 1 to 16.





Figure 9.

7.1.3 Supply Air Safety High & Low Limits

For safety reasons, the system can monitor the supply air temperature. A supply air sensor must be inserted at the supply air end of the AC and the other end is to be connected to the Main module, as shown on Page 7 for this safety function to be activated. If the temperature moves outside the set limits, all dampers in the system will be forced open. The factory default setting for the safety control is “disabled”. It is optional for using this function.

- a) On the ‘Parameter’ screen (Figure 6), touch the radio button of high limit and low limit to enable or disable safety function.

If the supply air sensor has not been installed or the supply air sensor is faulty and the replacement sensor is not available immediately, the system can still run by disabling the safety function.

- b) Highlight the high limit or low limit by touching the edit fields accordingly, and then adjust them to the required value by touching  or  button (Figure 10).

The adjustable range of the high limit is from 45°C to 75°C and adjustable range of the low limit is from 0°C to 15°C. The factory default values are 60°C for high limit and 5°C for low limit.

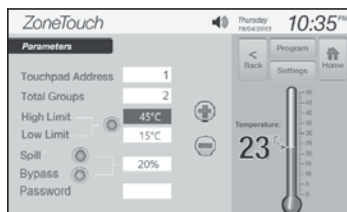


Figure 10.

NOTE: If the limits are reached, ‘Safety is Activated’ will be displayed on the home screen (Figure 11). The ON/OFF function of groups will be disabled till supply air temperature moves back within the limits or the High Limit and Low Limit protection is disabled (there is about one minute delay after disabling the protection). Check the air conditioning unit.



Figure 11.

7.1.4 Spill/Bypass Mode

Bypass and spill modes are another safety feature of the ZONETOUCH V2 system to prevent pressure from building up and causing duct damage. This usually occurs if someone has turned off all dampers while the A/C unit is running leading to a pressure buildup (and potential of duct puncture, blow-offs or joints splitting).

When opened zones in the system are less than the bypass/spill set-point which is a percentage of opened zones against total zones, the designated spill dampers or Bypass damper will be automatically opened to prevent pressure from building up.

Spill Mode

This is a program designed to automatically open several dampers if someone attempts to shut down all dampers thus preventing pressure build up. Spill mode uses the zones with lower addresses in the system. When allocating addresses to zones in spill mode, it is strongly recommended to give lower addresses to those zones that have higher spill privileges. These zones are normally located closer to the return air grilles. The lower the address, the higher the spill privilege the zone has.

Another point to remember is DO NOT use bedrooms as spill zones. During sleep time if the air conditioner is on and spill zones are automatically forced to open, the spill zones will be very cold or hot. This may cause discomfort if bedrooms are used as spill zones.

When the spill set-point is reached, the main control module instructs zone 1 to open as spill zone. If the first spill zone cannot satisfy the spill air control, zone 2 will automatically open to spill excess air. This process will continue until the spill air set-point is satisfied in the system. Example: In an eight zone system, if set point is set at 30% then it will have at least 3 (calculated value = 2.4) or more zones remaining open.

Bypass Mode

In Bypass Mode there is an extra damper and a length of duct that goes directly from the supply air duct back to the return air duct. The main control module instructs the bypass damper to open and dump excess air to the return air duct.

The bypass damper should be carefully sized to be able to handle excess air while all zones are closed. The bypass damper should be connected to the 'B' port on the main control module.

The factory default is set in spill mode and the set-point is 30%. When the setpoint is reached for spill, the home screen shows 'Spill is Activated ' and some of the lower order zones remain open and the status of the Groups will display 'Spill' in the home screen (Figure 12) if the lower order groups were closed.

Similarly if bypass set-point is reached, the screen displays 'Bypass is Activated' as shown in Figure 13.







Figure 12.



Figure 13.

Spill/Bypass Settings

- In the 'Parameter' screen (Figure 7), touch the option buttons of spill or bypass to select spill mode or bypass mode.
- Touch spill/bypass edit field to make it editable, and then  and  buttons will appear.
- Touch  or  button to change the spill/bypass set-point to required value. The adjustable range is from 0% to 50% with 10% increments.

IMPORTANT: DO NOT set spill/bypass set-point to 0% unless there is a permanent open zone used as spill zone. Otherwise, there will be no spill zone when all zones are closed and damage may be caused by high pressure build up inside ducts if air conditioner is running.

7.1.5 Installer Settings Password

The password which will be used in Figure 5 is to prevent unauthorized changing of the installer settings. To reset this password, touch the password edit field in the 'Parameter' screen (Figure 7), and then type in the new password and touch 'Enter' key to confirm the password change (Figure 14).



Figure 14.

7.2 Grouping Zones

For ease of control operation, multiple zones can be grouped together. The grouped zones are treated as one group with its own name and turned on or off together. Individual balanced damper position is not affected by grouping, which means zone balancing can be conducted before or after grouping.

Grouping can be carried out as follows:





- In 'Installer Settings' screen (Figure 6), touch **Grouping** to enter 'Grouping' screen (Figure 15).



Figure 15.



Figure 16.

- Touch the edit field of the group,  and  buttons will appear.
- Touch  or  button to add or minus zones to the group
- Repeat steps b) and c) to define all groups.

NOTE: The maximum number of zones in a group is four. The zones to be grouped will be consecutive zones. The factory default for grouping is that each group has one zone.

7.3 Balancing Zones

Remote balancing feature of ZONETOUCH V2 offers the flexibility of balancing the amount of airflow to each zone electronically. Once the opening position of the damper is set, the damper will only open to this position. The default setting for each damper is 100% opening position and the adjustable range is between 10% and 100%. The balancing settings can be conducted on the touch screen as below.

- In 'Installer Settings' screen (Figure 6), touch **Balancing**
- The system will show a prompt (Figure 17) and then enter the 'Balancing' screen (Figure 18).

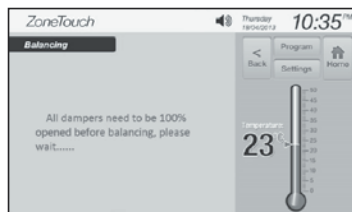


Figure 17.



Figure 18.

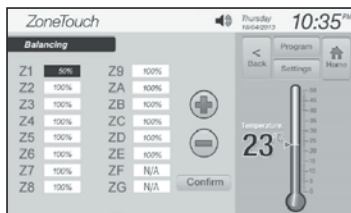


Figure 19.

- Click the edit field to select the zone to be balanced, the field will be highlighted then and buttons will appear (Figure 19).
- Touch or button to adjust the balance percentage.
- Touch button to accept the changes just made.

NOTE:

- The balancing menu will display all 16 zones irrespective of the number of zones actually present in the system.
- The balancing percentages of the inactive zones remain locked and show as N/A.
- The OPEN % value on the Zoning screen can be operated by the user for additional air flow adjustment to the groups. The overall opening % of the zone is calculated as $OPEN \% \times Balance \%$.

7.4 Naming Groups

The name of a group is set as 'Group_address' (e.g. Group_1) in default setting. The names can be customized as follows:

- In 'Installer Settings' screen (Figure 6), touch to enter 'Naming' screen (Figure 20).
- Touch the edit field of a group to rename it. A name list will appear for selection (Figure 21).
- Touch a name in the list to specify the name to the group, and also you can touch to enter or edit a name manually (Figure 22).

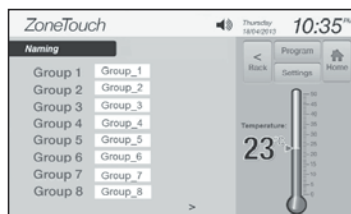


Figure 20.

- Touch to confirm or touch to cancel and back to Naming list page or touch to cancel and back to the home screen.



Figure 21.





Figure 22.

7.5 Enabling/Disabling Service Reminder

There is a built-in service reminder in the ZONETOUCH V2 system for half year, one year and two years to automatically display an alert notifying customers that the air conditioning system is due for service. Installers can also use this feature to leave their details such as their names and contact numbers.

The service reminder will display 'HALF YEAR SERVICE DUE', 'ONE YEAR SERVICE DUE' or 'TWO YEAR SERVICE DUE' and installer's name and contact number on touch screen for the set number of days if it has been enabled for half year (182 days), one year (365), two years (728 days) respectively since the air conditioning system had been commissioned or serviced as shown in figure 26. The days in the 'Service' screen will automatically reset to 1 after 728 days or can be manually changed. The Service Reminder is disabled by default but can be enabled as follows:

- In the 'Installer Settings' screen (Figure 6), touch **Service** to enter the 'Service' screen (Figure 23).
- Touch the service reminder option buttons to enable or disable the relevant reminders.
- Touch the edit field to change to the desired setting. The installer name and number can be entered by using a keyboard (Figure 24).  or  buttons can be used to adjust reminder and running days (Figure 25).

Maximum length of the name is 10 characters and the phone number is 12 digits.

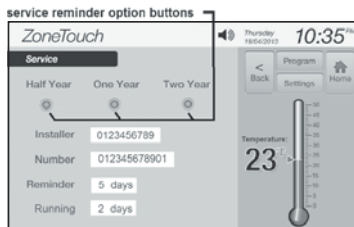


Figure 23.



Figure 24.

Reminder information will be displayed on the right side of the touch screen when the service is due (Figure 26) for the length of the reminder days (5 days in the example of figure 23). Touching the information area will clear the alert before the set reminder days has reached.

The running days show how many days having passed since the system has been commissioned or serviced. It will automatically start from 1 for every 728 days.

NOTE: Record the above parameters such as Grouped Zones & Balancing on the sticker of the Main Control Module and the System Configuration, Grouped Zones along with Named Groups, Balancing and Installer details to table 1, 2, 3 and 4 respectively on page 11 and 12 of the User manual for future reference.

7.6 Testing Damper On/Off

- Switch on the air conditioner.
- Enter the home screen of ZONETOUCH V2.
- Touch the group buttons to turn groups on or off to check if the dampers are correctly connected by feeling the air at the outlet.
- The Turbo group can be tested by selecting the relevant chosen group as Turbo mode in the 'User Settings' and then press the group button until active turbo mode is displayed on the screen for that particular group.

NOTE: Bypass zone damper cannot be tested via touch screen. It has to be checked by observing the indicator on the damper motor.

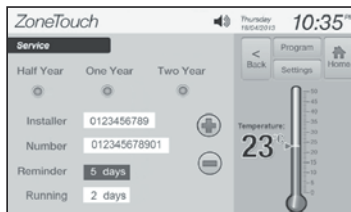


Figure 25.



Figure 26.

8) Troubleshooting Guide for Installers

PROBLEM	SOLUTION
Dampers have no response when turned on or off	<ul style="list-style-type: none"> • Check if the 'Safety is Activated' error is displayed. High limit (Heating) or Low limit (Cooling) may have reached. Check the air-conditioner to see if it is operating normally. ZoneTouch V2 system will resume to operational after the supply air temperature is within safety range. • Check if Supply air sensor is plugged in the mainboard and High & Low Limit is enabled. If the sensor is not plugged in, plug the sensor and the system will be operational after a minute. If the sensor is not required, disable High and Low limit from touchpad and system will return to operational in a minute. • Check if LEDs on the main module light up for relevant zones when the zone dampers are being turned On/Off. If Green/Red LEDs are not activated for the respective zone, the main module may be faulty, replace it. • Check if the cable from touchpad to the main control module is faulty. If it is a faulty cable, then the cable has to be replaced.
Some zones cannot be turned off	<ul style="list-style-type: none"> • Check if 'Spill is activated' is displayed on the LCD screen. • Check if 'Spill' status is displayed for the Group status in the home screen. Opening other zones will rectify the error • If all zones are turned on but the total opening percentage doesn't meet the required spill percentage, then the SPILL warning message will be displayed. Increasing the opening percentage of a few zones will resolve the issue. • Check spill set-point.
No display on the LCD	<ul style="list-style-type: none"> • Check if the cable is plugged in properly. Unplug the cable and reconnect it. • Check if there is power to the unit.
LCD Display Corrupted	<ul style="list-style-type: none"> • Reset LCD by holding RESET button at the bottom of the Touchpad for 2s. • If error is still not resolved, reset touchpad by unplugging the cable from behind and then reconnect it after a couple minutes. If the corrupted display remains, power off/on the mainboard. Otherwise, replace the touchpad.
Some zones are not operational	<ul style="list-style-type: none"> • Check Grouping and find out if the right zones have been assigned to the right groups and have been turned ON/OFF in Zoning section. • Check if the total group number and zone number are correct. • Check if the LEDs on the main module light up for the relevant zones when the zone dampers are turned On/Off. If there is no response, there might be a faulty cable and the cable would have to be replaced. If the zone is still non-functional then there might be a faulty damper motor.



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