Unit + Zone Control
Z-Plus

C-ZPLUS-MPM
C-ZPLUS-LCD

Z-Plus Indoor Unit modulates flow to precisely match the requirement for each room.

Z-Plus Zone Valves provide airflow adjustment in all rooms.

Z-Plus Touchscreen Controller provides an intuitive stylish interface.

No More Capacity Dumping

0~100% airflow adjustment in every zone

Touchscreen Controller
Works with Dual, Digital and Radical
This Technical Manual describes the installation and commissioning of the Livezi Z-Plus concealed ducted split air conditioner control systems.

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1 INSTALLATION GUIDELINES

The following guidelines are intended for the installation of Livezi Digital and Inverter air conditioning units used on domestic and commercial installations. Only suitably qualified trade personnel should carry out installations of Split or Package air conditioning systems. Full compliance with the local codes and regulations, which govern the installation of the equipment, is the responsibility of the installer.

Before installation, the electrical power should be checked to determine if adequate power is available with correct voltage to the site. The position of the equipment, after a survey of the building and the duct layout, should meet the following criteria.

1.1 Electrical

- All wiring by the installer must comply with local Energy Authority wiring rules. To make the correct connection a 240V 50Hz supply must be available in the case of single-phase units and a 415V 50Hz supply must be available in the case of three phase units.
- During transportation the unit’s electrical connections may become loose, therefore it is the installer’s / electrician’s responsibility to make sure that all electrical connections are secure or warranty will be void.
- Field or installation wiring must be connected as per the connection diagram to ensure the unit performs as it is designed (Refer to Appendix A).
- Installer / electrician is to ensure that when an external overload device is fitted, it be calibrated or set to the maximum amp draw on the rating plate of the motor it is controlling.

2 SYSTEM OVERVIEW

Livezi Z-Plus provides a central control point from which system capacity can be adjusted in up to eight individual zones (rooms). Like most residentially orientated concealed split ducted air conditioning control products, the Z-Plus provides four main system modes (Cooling, Heating, Vent, Automatic); where the Z-Plus differs is the unique way airflow is managed.

Traditional systems manage airflow by providing three fan speeds all within 20% of the system’s maximum flow. When an "auto" function is available it steps back through the narrow range of fan speeds as the return air temperature approaches the target temperature (Setpoint). Z-Plus dramatically expands the airflow range by scaling fan speed in equal proportions across the operating range. The auto function links fan speed to the flow requirement of individual rooms.

Individual room air valves (Dampers) provide a proportional flow demand to the main controller. The aggregated value is then passed through to the supply air fan controller, and total system flow is modulated to meet the total demand. The main advantage of this approach is to allow localised adjustment of system capacity based on comfort; avoiding the shortfall associated with traditional systems, where a flow is fixed based on the conditions that are apparent on the day of commissioning.
3 CONTROL SYSTEM

⚠️ The air conditioning plant and control system contain no user serviceable parts. Installation, service and maintenance of these components should be carried out by a suitably qualified technician.

⚠️ The control circuits for the indoor and outdoor units carry voltages ≥ 240 VAC which can cause serious injury or death.

3.1 Z-Plus System Overview
Livezi Z-Plus provides an unprecedented level of capacity adjustment at each zone. Livezi Radical Flow, Digital Inverter and Dual Inverter systems automatically adjust refrigerant mass flow rate to meet any shift in airflow.

3.1.1 Z-Plus Main Processing Module
The Z-Plus MPM provides unit support and the ability to control up to eight zones. Two touchpad ports are provided.

3.1.2 Z-Plus Touchscreen Controller
Livezi Z-Plus utilises a mixture of hard and soft buttons to provide control over the air-conditioning plant and individual zones.

3.1.3 Z-Plus Touchpad Expansion Module
Livezi Z-Plus can have limitless touchpads connected through the use of touchpad expansion modules. Each touchpad expansion module provides five touchpad outputs from one touchpad input. Touchpad sensors are disabled when expansion is used. Care should be taken not to create a conflict by selecting disabled sensors through the Z-Plus MPM DIP switches.
3.2 Livezi Z-Plus Component Positioning

The Livezi Z-Plus control system is a unit control and zone positioning system with a 24 volt AC supply.

The Livezi Z-Plus Main Processing Module (3) provides a central connection point for the air-conditioner, zone dampers and user touchpads. The Z-Plus is factory set to take corrective action based on the return air temperature. The sensor location can be altered to use the touchpad sensor or an average of any connected sensors. The touchscreen controller (5) provides the user interface. From the touchscreen controller all system parameters can be adjusted. The zone dampers (4) can be adjusted to meet the demands of the room. Unlike traditional controllers the airflow at each zone is not fixed and can be altered at any time from the touchpad (5). The air conditioning plant (1) & (2) is connected to the MPM (3).
3.2.1 MPM DIP Switch Functions
The MPM DIP switch defaults are suitable for the majority of installations. On occasion it may assist the operation of the system to activate some or all of the additional functionality built in to the DIP selection. The table below details the effect each combination of DIP positions will have on system performance.

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
<th>DIP switch position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factory Default</td>
<td>Eight zone with the return air as the sensor location.</td>
<td>OFF OFF OFF OFF</td>
</tr>
<tr>
<td>Touchpad 1 Sensor Point</td>
<td>System will cycle based on the temperature at the touchpad 1 location.</td>
<td>ON OFF OFF OFF</td>
</tr>
<tr>
<td>Touchpad 2 Sensor Point</td>
<td>System will cycle based on the temperature at the touchpad 2 location.</td>
<td>OFF ON OFF OFF</td>
</tr>
<tr>
<td>Sensor Averaging</td>
<td>System will cycle based on an average of both touchpad sensors.</td>
<td>ON ON OFF OFF</td>
</tr>
<tr>
<td>Sensor Averaging</td>
<td>System will cycle based on all available sensors.</td>
<td>ON ON ON OFF</td>
</tr>
<tr>
<td>Zone 1 link</td>
<td>When Zone 1 is on the system will cycle exclusively on the touchpad 1 sensor.</td>
<td>OFF OFF OFF ON</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Function</th>
<th>Description</th>
<th>DIP switch position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zone 1 Mimic</td>
<td>System will be capped at 7 zones with the eighth output set to mimic output 1.</td>
<td>OFF OFF OFF ON</td>
</tr>
</tbody>
</table>

3.2.2 Motorised Dampers
The motorised barrel dampers must all have the same motor type, and should be fitted in line in the flexible duct.

3.3 Control Wiring
- All control wiring to touchpads and motors is by RJ12 type connectors, with the exception of the 24 VAC supply to the Livezi Connect main modules.
- Data cables are to be kept the maximum practical distance from any LV power supply cables ≥ 240 volts (Minimum distance 300 mm).
- Maximum cable length is not to exceed 50 m.
  Suggested cabling: Livezi supplies and recommends the following cable: RM-CAB-6-100 - six core flat cable for touchpads, unit inter-conenct and damper motors.
4 Pre-Commissioning Check List

Electrical
☐ All electrical connections are secure.
☐ Correct phase is connected to the unit.
☐ Fuse or circuit breaker is of the correct rating.
☐ All wires are terminated.
☐ Correct power supply is connected to the unit.
☐ Unit is drawing correct amps.

Outdoor Unit
☐ Free air flow to and from the unit.
☐ Condenser fan is discharging air.
☐ All cabinet panels are securely fastened

Indoor Unit
☐ The unit is inclined to the drain outlet (12 mm fall is best).
☐ Condensate lines are fitted and sealed.
☐ Condensate lines do not rise above the floor level of the unit.
☐ Condensate lines are properly trapped.
☐ Ductwork is securely fixed to the unit.
☐ The unit is slung or mounted on suitable anti-vibration devices.
☐ The unit is delivering correct air quantity.

Refrigerant Lines
☐ No leaks.
☐ Both lines are insulated.
☐ Properly supported.
☐ Free of kinks or dents.

Ductwork
☐ Free from leaks.
☐ Securely fixed at all joints.
☐ Filters are cleaned and in place.
☐ Outlets are open.
5 COMMISSIONING

INSTALLER TIP: Make up a short cable and perform steps 5.1 to 5.5 with the LCD touchpad in the ceiling space next to the main modules.

5.1 Before Connecting System Power Supply

1. Ensure that all modules are correctly mounted and the power supply is connected properly.
2. Ensure that all touchpads and motors are connected as per the connection diagram supplied.
   \[\text{DO NOT CONNECT Z-PLUS TOUCHSCREEN TO MOTOR OUTPUTS.}\]
3. Ensure the unit interconnect cable is fitted as per the connection diagram.

5.2 DIP Switch Configuration

1. Additional features can be enabled by setting the 8 way DIP switch at the Z-Plus MPM. DIP selection table appears in section 3.2.3.

5.3 Initial Power Check

When power is applied to the system, the startup routine will drive all zone damper motors to the fully open position, then all dampers will drive to the appropriate position as dictated by the zone status and set parameters.

1. Connect the 24 VAC power supply to the MyZone system.
2. Check the main modules for fault LEDs (any red LED indicates an excess current fault on the output - generally a cable short).

5.4 System Configuration

The following system configuration steps must be completed to ensure the system will operate correctly with the motors supplied, and that the system safety mechanisms are operating as intended. System configuration settings are accessed by pressing and holding the bottom hard button for 10 seconds in the global screen.

Press and hold the bottom hard button to access System Config Screen
5.4.1 Set Present Zones
Z-Plus Touch can adjust its display so that only present zones appear. Press the + or - soft keys until the appropriate number of zones is displayed.

5.4.2 Set Motor Time
Z-Plus Touch utilises a time proportional damper positioning algorithm. For the system to function correctly all zone damper motors must be the same type.
Livezi offers 2 motors with different drive speeds for use with Z-Plus:
The Livezi motors require the motor drive time to be set to 16 seconds (default).
The Belimo motors require the motor drive time to be set to 45 seconds. Press the “Motor” button until the correct motor type is displayed.

5.4.3 Maximum Capacity
Z-Plus provides an ability to adjust the peak system capacity to match perfectly the peak load. Most residential systems are sized on the peak cooling daytime load. If the standard sizing calculation has been used, set the Maximum Capacity to equal the area used in the capacity calculation.

5.4.4 Configure Favourites
Z-Plus includes the ability to group zones together so they can be controlled simultaneously. The favourites will appear at the end of the zone names and include individual time clock programs. To group zones press the “Cfg Faves” button in the system configuration screen. At the top of the screen the Favourites name will be displayed (default is Fav a ~ Fav d). Group zones by pressing the button beside each zone name.

5.4.5 Calibrate Touch
Z-Plus Touch utilises a four wire touchscreen. After extended use it may be necessary to re-calibrate the display. Calibration is completed in the factory before shipping so this process does not form part of the system commissioning procedure. If calibration is necessary activate the mode by pressing the “Calib Touch” button and following the steps. Make certain that you use the stylus provided and take care to activate the centre of the “X” targets.

5.4.6 Service Timer
Z-Plus Touch incorporates a service timer that logs the run time of the indoor fan. Programmed maintenance is required to satisfy the warranty coverage conditions and the Service Timer is an excellent way of scheduling programmed maintenance. A custom contact number can be added so that when a service is required the contact details are available to the home owner.
5.4.7 Zone Configuration

1. Select the target zone from the global screen.
2. Press the zone name to access the zone positioning screen.
3. Press and hold the bottom hard button to access the Zone Config screen.
4. Use the + or - soft keys to adjust the Min, Max and Room Size settings for the zone.
5. Press Done to save and exit.

The Min and Max parameters define the range for the zone position setting when the zone is ON. If the zone is OFF the damper is fully closed.

The Zone SQM parameter defines the room size and effects the weighting of the zone for capacity required calculations.
5.5 Damper Motor Check

1. Select the appropriate zone and turn the zone off (Make sure that the zone drives to the off position).
2. Select the appropriate zone and set the damper to the 100% open position (check the damper drives to the on position).
3. Select the appropriate zone and set the damper to the 50% open position (check the damper drives to the half way position).
4. Repeat this for each zone.
5. Advanced settings are available by pressing and holding the bottom hard key when in the Zone Position adjust screen. Damper working range and zone size can be set to fine tune system performance (Advanced setting should only be completed by a trained professional).

5.6 Name the Zones

1. On the Zone Adjust Screen, press and hold the top hard button to change to the Zone Name Edit Screen.
2. Use the del soft key to remove current zone name and use the keyboard to rename the zone. The A<- and ->Z soft keys page between the screens to access the full range of alpha numeric characters.
3. Press done to save and exit.
4. Repeat for all zones.

5.7 Touchpad Configuration

A minimum of one Z-Plus Touch is required to be connected to the Z-Plus MPM. Care should be taken to select the appropriate port if the internal sensor is required. Sensor allocation via DIP selection (see table 3.2.1).
6  Z-PLUS TOUCH ZONE OPERATION

6.1  Selecting the operating mode

The Z-Plus Touch system has two operating modes.

- Damper Control - Zone dampers can be positioned in 5% increments.
- Unit Control - Unit target temperature, fan speed and heat/cool mode.

6.2  Turning zones On or Off

1. Press the hardware button adjacent the zone name to toggle the zone from ON to OFF.
2. Press the hardware button at the bottom of the controller to toggle between zones 1-4, 5-8 and Favourites.

6.3  Setting a zone position (airflow)

1. Select the target zone.
2. Press the zone name to access the Zone Adjust Screen.
3. Use the Up or Down soft keys to adjust the target position.
4. Press Done to save and exit.

Zone position range is limited by the Min and Max parameters (see 5.4.7).
A zone position of 0% is equal to the Min parameter.
A zone position of 100% is equal to the Max parameter.
7  **Z-PLUS TOUCH PLANT CONTROL OPERATION**

Press the A/C soft key on the bottom right of the global screen next to the clock, to access the plant control screen.

7.1  **Turning the unit On or Off**

1. Press the soft key in the top left hand corner of the display and the unit state will toggle between ON and OFF.

7.2  **Changing the unit operating mode**

1. Press the soft key in the top centre of the display and the unit operating mode will toggle between Vent, Cool, Heat and Auto.

7.3  **Changing the fan speed**

1. Press the soft key in the top right hand corner of the display and the fan speed will toggle between High, Medium, Low and Auto.

7.4  **Adjusting the target temperature**

1. Use the + and - soft keys to adjust the desired target temperature. The actual temperature is displayed below the target in brackets.
7.5 Adjusting the system timeclock program

1. Press the Pgm soft key to enter the system timer screen.
2. Press the soft keys at the top of the displays to activate the days of the week the timeclock should be active.
3. Use the +hh  and  +mm, and, −hh  and  −mm soft keys to adjust the Start and Finish times.

7.6 Setting the time

1. Press the Livezi soft key on the home screen to enter the Real Time Clock screen.
2. Press the soft keys positioned above and below the time and date to select the appropriate value for each field.

7.7 Holiday / Away setting

1. Press the RTC programs: Enabled soft key to disable all time based ON & OFF events.
8 Z-PLUS CONNECTION DIAGRAM

[Diagram showing the connections between Zone 1 to Zone 8 dampers and the CENTRAL Z+ unit.]
APPENDIX A.1: TROUBLESHOOTING

D1. Digital Inverter System Self Diagnostics / Fault Detection

Livezi systems are able to detect a number of problems and display a fault message to aid in troubleshooting.

Fault D1 - 3 Phase error Digital Outdoor

Line 1 = Fault D1;
Line 2 scrolls one of the following:
- 3 Phase, L2 & L3 lost
- 3 Phase, L2 lost
- 3 Phase, L3 lost
- 3 Phase, rotate L2 & L3

Fault D2 - Coil Sensor Error (sensor nominated)

Line 1 = Fault D2;
Line 2 scrolls one of the following:
- Outdoor coil sensor open circuit
- Outdoor coil sensor short circuit
- Indoor coil sensor open circuit
- Indoor coil sensor short circuit

Fault D3 - High Pressure or Low pressure Fault

Line 2 scrolls one of the following:
- HP compressor safety
- LP compressor safety
- HP/LP compressor safety

Fault D4 - Interconnect Indoor > Outdoor

Line 1 = Fault 4;
Line 2 scrolls one of the following:
- AHU and Condenser Interconnect

Fault D5 - Contact Manufacturer

Line 1 = Fault 5;
Line 2 scrolls = Contact Manufacturer

Fault D6 - Contact Manufacturer

Line 1 = Fault 6;
Line 2 scrolls = Contact Manufacturer

Fault D7 - Zoning to Indoor Board Communications Lost

Line 1 = Fault D7;
Line 2 scrolls = AHU and Zoning interconnect

Fault D8 - Contact Manufacturer

Line 1 = Contact Manufacturer
APPENDIX A.2: TROUBLESHOOTING

D2. Dual Inverter System Self Diagnostics / Fault Detection

Livezi systems are able to detect a number of problems and display a fault message to aid in troubleshooting.

Fault I1 - Indoor unit and outdoor unit not compatible
Line 1 = Fault I1:
Line 2 scrolls one of the following:
AHU and Condenser not compatible

Fault I2 - Coil Sensor Error (sensor nominated)
Line 1 = Fault I2:
Line 2 scrolls one of the following:
Outdoor coil sensor open circuit
Outdoor coil sensor short circuit
Indoor coil sensor open circuit
Indoor coil sensor short circuit

Fault I3 - Contact Manufacturer
Line 2 scrolls one of the following:
Contact Manufacturer

Fault I4 - Interconnect Indoor > Outdoor
Line 1 = Fault 4:
Line 2 scrolls one of the following:
AHU and Condenser Interconnect

Fault I5 - Contact Manufacturer
Line 1 = Fault 5:
Line 2 scrolls = Contact Manufacturer

Fault I6 - Contact Manufacturer
Line 1 = Fault 6:
Line 2 scrolls = Contact Manufacturer

Fault I7 - Zoning to Indoor Board Communications Lost
Line 1 = Fault I7:
Line 2 scrolls = AHU and Zoning interconnect

Fault I8 - Contact Manufacturer
Line 1 = Contact Manufacturer
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