LV-Z Series
Installation Manual

Includes:
LV-Z Series Fan Coils
Product Specifications
Wiring and WEG Settings
Specifications & Sizing

From the Manufacturers of
Hi-Velocity Systems™
www.hi-velocity.com
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By Energy Saving Products Ltd.

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Heating Options
- Hot Water Coil
- Electric Strip Coil

Cooling Options
- Water Coil Module

Other Options
- Return Air
- Hi-Velocity Air Purification System
When sizing an LV-Z fan coil for a residential system, it is necessary to have an accurate heat loss/gain done for the structure. This will ensure the proper equipment is used for cooling and heating. A heat loss/gain is done for each room, with all rooms added together to find the total BTUH load for the building. With the total load known, the appropriate fan coil can be chosen from Pg. 25.

**IMPORTANT:** The LV-Z Fan Coil is not to be used for temporary heating or cooling during the construction of the structure. If used in this capacity all warranties will be null and void.

Fan coil units specified in this section shall be designed as a closed loop hydronic fan coil system, with published BTUH ratings and entering water temperatures between 110°F and 190°F. The system shall allow for heating, DX or chilled water cooling, and heat pump applications with electric coil back-ups. Entering water temperature and BTUH outputs shall match performances listed on Pg. 25.

Quality Assurance

Fan coil units shall be a total indoor air quality system complete with heating, cooling and air filtration, with the possibility of humidity control and fresh air make up. The fan coil must be factory manufactured, assembled and tested.

All equipment furnished under this specification shall comply with the standards set out by the following standards organizations:

- CSA  
  Canadian Standards Association
- CE  
  European Conformity
- UL  
  Underwriters Laboratories

The fan coil units shall be designed, rated, and approved by CSA/UL.

The fan coil units shall have pre-wired controls consisting of a 24V transformer, printed circuit board and variable frequency drive. The circuit board shall be capable of providing heating, cooling and constant fan. Motors shall be 3 phase with published amp draws.

Sweat water connections are 3/4” for the LV-Z 1050 and 1” for the LV-Z 1750. All lines should be piped so as not to restrict use of the access panels, filter section, or electrical enclosure.

Refer to the back of this manual for all specifications, measurements, etc.

Fan coils are to be located indoors, however, attic, crawl space and garage conditions are fully acceptable. The fan coil unit can be positioned in a Horizontal, Hi-Boy, or Counterflow position and can be suspended from the ceiling or placed directly on the floor.

When potential for gravity flow of the hot water exists, spring check valves may be needed on both the supply and return lines.

**Please read the ENTIRE manual before beginning installation as this will help avoid mistakes that may cost time and money.**

Fan Coils

The LV-Z fan coil is manufactured with a direct drive, permanently lubricated motor that is mounted within the blower. All LV-Z fan coils are single side access. The blower assembly can be easily slid out by removing the electrical box and then removing the three mounting bolts that attach the blower to the center plate.

Disclaimer

Energy Saving Products Ltd. reserves the right to discontinue, make changes to, and add improvements upon its products at any time without public notice or obligation. The descriptions and specifications contained in this manual were in effect at printing. Some illustrations may not be applicable to your unit.
Placement

When installing the fan coil, keep these points in mind:

- Serviceability and access to the unit.
- Maximizing usable floor space.
- Location of heating/cooling source to the fan coil.

As previously stated, the fan coil can be positioned in many different orientations. When placed in the Hi-Boy position, supply air is fed from the top of the unit (Fig. 01). When placed in the Counterflow position, supply air is fed downwards from the unit (Fig. 02).

Hanging the Fan Coil Unit

Quite often, the best location for the fan coil unit is suspended from the ceiling of the mechanical room, in the horizontal position (Fig. 03). This will allow for more floor space in the room, and will minimize the duct work needed to connect to the fan coil unit.

The Hi-Velocity fan coil can be suspended in any position, using most industry standard hanging support systems. Redi-Rod, All Thread, C-Channel or Unistrut are some of the building code acceptable hanging systems. Use these in conjunction with spring or rubber isolators to ensure a sturdy hanging support system. These isolators will absorb most of the vibrations generated by the fan coil system, eliminating any sound transfer.

Securing the Fan Coil to the Hanging System

In most cases, fastening the hanging system near the corners of the outside cabinet of the fan coil will be acceptable. However, in some cases, brackets may be needed to secure the fan coil to the hanging system.

Clearances

Clearance is only needed on the access side of the units. However, ensure that there is a small space between the unit and any other surface to prevent vibration transfer. In order to maintain and service the fan coil unit, the minimum clearances required on the access side are (Table 01).

Table 01 – Fan Coil Clearances

<table>
<thead>
<tr>
<th>Unit</th>
<th>Inches</th>
</tr>
</thead>
<tbody>
<tr>
<td>LV-Z 1050*</td>
<td>22”</td>
</tr>
<tr>
<td>LV-Z 1750</td>
<td>32”</td>
</tr>
</tbody>
</table>

*Add an additional 4” for Electric Strip Coils (not available for the LV-Z 1750)

Refrigerant Cooling Module

Due to the size of the RCM/RPM-E Cooling Modules and the high volume of air produced by the LV-Z fan coil Unit, the use of the RCM/RPM-E coils with the LV-Z fan coil is not advised. For refrigerant cooling needs, a third party blow through coil such as an A-Frame or N-Frame coil is suitable.
Water Coil Module (WCM/WM)

The water coil comes as a module and must be installed in the vertical position on the return air side of the fan coil. The WCM/WM come supplied with two L mounting brackets for connection to the fan coil (Fig. 06). For WCM/WM dimensional information and sweat water connection sizes refer to the manual shipped with the coil, also available on our website.

Piping the WCM/WM

When the potential for gravity flow of the hot water exists, check valves may be needed on both the supply and return lines. Figs. 08 and 09 give an example of this. All lines should be piped so as not to restrict access to the front panels, filter section, or electrical enclosure. Size your supply and return lines according to Table 02.

Table 02 – WCM/WM pipe sizing

<table>
<thead>
<tr>
<th>Zone BTUH Heat loss</th>
<th>Pipe Size up to 40 feet</th>
<th>Pipe Size 40 – 100 feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 - 35,000</td>
<td>¾”</td>
<td>¼”</td>
</tr>
<tr>
<td>35,001 - 70,000</td>
<td>¼”</td>
<td>1”</td>
</tr>
<tr>
<td>70,001 - 140,000</td>
<td>1”</td>
<td>1 ¼”</td>
</tr>
</tbody>
</table>

Hot Water Coil Add-on

The Hot Water Coil Add-on is easily installed in the LV-Z fan coil. With heating, condensate is not a consideration and the coil can be mounted on the supply side of the blower (Fig. 07).

With the removal of the front panels, the coil can be slid in place on the supply side of the blower. For Hot Water Coil dimensional information refer to our website.

Piping the Hot Water Coil

Figs. 08 and 09 illustrate typical pipe runs from a dual purpose hot water tank to a fan coil. These drawings are only for reference as all piping has to be run according to local code.
The Electrical Strip Heater (ESH)
The Electrical Strip Heater slides into the fan coil, on the supply side of the blower (Fig. 07). Once the front access doors have been removed, the ESH can be slid into place.

The ESH is labeled with a directional airflow sticker; when placing the ESH the sticker shall be in the direction of the air flow. Currently, the ESH is only available for use with the LV-Z 1050.

Wiring the Electrical Strip Heater
Before wiring in the ESH, make sure all power sources are disconnected. The wiring diagram is on the inside of the ESH front panel, or refer to Pg. 10. Use only wires suitable for 167°F (75°C); wires shall be sized according to local electrical code.

Use only class 2 wiring for the Control Circuit connections between the heater terminal 1, terminal 2 and the zone valve terminals. Please note, the ESH must be wired to a dedicated breaker, separate from the fan coil.

For Electrical Strip Heater Specifications, please refer to the manual shipped with the coil, also available on our website: www.hi-velocity.com

Return Air
The return air duct is not supplied with the LV-Z Fan Coil System. It is to be supplied and installed by the contractor. The return air and fresh air make-up ducts are to be installed according to local building code.

Return Air Cutout
All LV-Z fan coils are shipped with the return air knockouts pre-measured for multiple configurations. Table 03 contains the pre-measured dimensions for the return air knockouts.

Table 03 – Return Air Cutout Dimensions

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>LV-Z 1050</td>
<td>14⅛” X 13⅛”</td>
</tr>
<tr>
<td>LV-Z 1750</td>
<td>21” X 17⅛”</td>
</tr>
</tbody>
</table>

Filter Rack (Optional)
Available from Energy Saving Products is a 3” (76mm) Filter Rack. Filters are 1”(25mm) thick Merv 3, and the filter medium is approximately 14% efficient. Any after market filter may be used with the Hi-Velocity Filter Rack. (See Dimensions Below)

Table 05– Filter Rack Dimensions

<table>
<thead>
<tr>
<th></th>
<th>Length</th>
<th>Width</th>
<th>Depth</th>
<th>Filter Opening</th>
</tr>
</thead>
<tbody>
<tr>
<td>LV-Z 1050</td>
<td>18⅛”</td>
<td>19⅛”</td>
<td>3”</td>
<td>1⅛”</td>
</tr>
<tr>
<td>LV-Z 1750</td>
<td>24⅛”</td>
<td>26⅛”</td>
<td>3”</td>
<td>1⅛”</td>
</tr>
</tbody>
</table>
Hi-Velocity Air Purification System

Easily installed on any Hi-Velocity or existing HVAC System, the HE PS gives consumers unsurpassed indoor air quality. The HE PS will work at the airflow rates of the LV-Z 1050 only. For 3 stage filtration on the LV-Z 1750, we recommend using the HE PS 1750.

Three powerful technologies in one Air Purification System:

- Electrostatic MERV-13 Filter Removes Allergens
- Photo-Catalytic Oxidation destroys toxic chemicals and eliminates household odors
- Ultraviolet Light Kills Disease Germs on Contact

LV-Z User Guide

Indoor Air Quality (IAQ)

Ensure that there is always a filter in place and check every month to ensure that the filter is clean. The amount of time between filter changes and cleaning will be dependant upon the living habits of the homeowner. With a clean air filter, you not only have cleaner air to breathe, but you will also help maintain unit efficiency, as well as increase the operating life of the unit.

Filter Maintenance

The 1" Merv 3 filtering medium supplied by Energy Saving Products Ltd. can be cleaned and re-used. If the filter needs cleaning, the system should first be shut down and the filter removed. Once out of the unit, the filter can be vacuumed on the pink side and washed on the white side. Once the filter has been vacuumed, cleaned, and completely dried, it can be replaced in the unit. Note that the pink side of the filter faces the blower and the white side towards the return air. A filter can generally be cleaned a few times, if re-used too often it will restrict airflow.

System Efficiency/Performance

A big misconception that people have is that by turning off the air conditioning when they leave home, they save on cooling costs. This is not necessarily true as the system will need to run longer and harder when pulling the house down to temperature after being shut off for a large amount of time. Keeping the temperature within a small range when there are no loads from human use will result in less overall energy consumption.

Installation Checklist

Ensure that all electrical connections are tight, and that any packing or shipping restraints are removed from both the fan coil, and the outdoor unit. With the power to the condensing unit off, check the thermostat for normal operation and proper airflow from all vents. Do not run the fan coil without a filter in place.

Observe the system pressures during the initial start-up and charging of the system. Refer to the outdoor or indoor coil manufacturer’s charging guidelines. Check the voltage and amp draw of both the fan coil, and the outdoor unit. The voltages must be within 10% of the rating plate data. If more than 10% is noted, contact your local electrical company. Check that the amp draws of both units are within the information printed on the unit rating plates.

In the event of difficulty during the start-up procedure, please refer to the trouble shooting flow charts (Pgs. 17-24) to assist you in determining the problem.
The LV-Z Series Fan Coil utilizes a dual function Circuit Board. This circuit board makes zoning simple and easy, eliminating the need for by-pass dampers and dump zones. It also makes adjustment to airflow quick with the use of trim pots for direct control.

**Features:**
- Wiring the circuit board is a quick and simple task.
- Clearly labeled connections.
- No additional relays typically required.
- When the PSB is set to “Auto”, it allows for automatic airflow adjustments, according to the static pressure of the supply air, making zoning a breeze.
- “Manual” mode allows for direct speed control of the fan anywhere from 0-100% capability. LV-Zs come standard in Manual Mode.
- Fan speeds in both functions are individually set for cooling, heating and constant fan using the three trim pots located on the PSB.
- Circuit board is capable of controlling boilers, dual purpose hot water heaters, heat pumps, and geothermal systems, as well as our manufactured slide-in electric strip heaters (ESH).
- The circuit board is also designed to send control signals to cooling sources such as condensing units, chillers, heat pumps and geothermal systems.
- Circuit board features an auxiliary relay with dry contacts connections, so that any applications requiring 24v, 120v, 230v or dry contacts (boilers, hot water heaters, heat pumps & humidifiers) can be automatically started when there’s a call for heat.
- Circulator timer chip is provided to prevent water stagnation in potable water systems and to provide pump rotor protection for water source heating and cooling.
- If you wish to have the timer cycle operate at a specific time of day, simple turn off power to the fan coil unit for ten seconds at that time and then turn the power back on.
- If you do not need to use the timer, move the jumper header from the On pins to the Off pins and it will be disabled.
- Circuit board is equipped with an emergency disconnect feature. If there’s an emergency this feature will de-energizing all fan speeds and connected equipment.
- For this emergency disconnect feature to be active a jumper header must be remove from the pins located close to the emergency disconnect terminal strip.
- A fan delay is programmed into the circuit board. This delay will prevent the fan from starting for 20 seconds on cooling, 30 seconds on heating, and purge for 30 seconds on shut-down. This delay is beneficial in certain applications to give the heating or cooling equipment a “head start” before the fan turns on.

**Function:**
- Manages input power and through the use of a transformer it supply 24Vac to additional equipment.
- Organizes all thermostat inputs and prioritizes them accordingly.
- Sends a 0-10vdc output to the VFD, dependent on how fast it wants the fan to run.
WEG Variable Frequency Drive

The LV-Z Series Fan Coil utilizes a WEG Variable Frequency Drive to run its 3-phase motor. The WEG VFD is a reliable and robust motor control that will provide many years of issue free operation.

Features:
- Purposely oversized to ensure increased reliability and higher efficiencies at peak load
- Features inherent with VFD allows for minimum power consumption at reduced loads ( <100w average for constant fan speed)
- Error code read out allows for easy drive analysis in the event of a VFD fault
- Programmable drive parameters allow for acceleration and deceleration speed to be adjusted if necessary
- Digital display makes motor speed references simple
- Large heat sink allows for excellent heat dissipation in high ambient environments

Function:
- Takes single phase input (110v or 200-240v) and converts it to 3 phase output for the fan motor
- Fan speed is determined by the PSB circuit board which provides a 0-10vdc output to control the VFD

Read-Only Parameters:

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Function</th>
<th>Range</th>
<th>Unit</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>P002</td>
<td>Motor Frequency Output</td>
<td>0 to 66</td>
<td>Hz</td>
<td>Indicates the VFD Output Frequency in Hertz</td>
</tr>
<tr>
<td>P003</td>
<td>Motor Current Output</td>
<td>0 to 1.5 x I_{nom}</td>
<td>A</td>
<td>Indicates the VFD Output Current in Amperes</td>
</tr>
<tr>
<td>P004</td>
<td>DC Link Voltage</td>
<td>0 to 524</td>
<td>V</td>
<td>Indicates the VFD DC Link Voltage in Volts</td>
</tr>
<tr>
<td>P007</td>
<td>Motor Voltage Output</td>
<td>0 to 240</td>
<td>V</td>
<td>Indicates the VFD Output Voltage in Volts</td>
</tr>
<tr>
<td>P008</td>
<td>Heatsink Temperature</td>
<td>25 to 110</td>
<td>ºC</td>
<td>Indicates the Heat Sink Temp in Celsius. The VFD Overtemp Protection (E04) acts when Heatsink Temperature reaches 103 ºC</td>
</tr>
<tr>
<td>P014</td>
<td>Last Fault</td>
<td>00 to 41</td>
<td>EXX</td>
<td>Indicates the Code of the last occurred Fault</td>
</tr>
<tr>
<td>P015</td>
<td>Second Fault Occurred</td>
<td>00 to 41</td>
<td>EXX</td>
<td>Indicates the Code of the 2nd last occurred Fault</td>
</tr>
<tr>
<td>P016</td>
<td>Third Fault Occurred</td>
<td>00 to 41</td>
<td>EXX</td>
<td>Indicates the Code of the 3rd last occurred Fault</td>
</tr>
</tbody>
</table>

Fault Messages:

<table>
<thead>
<tr>
<th>Display</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>E00</td>
<td>Output Overcurrent/Short-Circuit</td>
</tr>
<tr>
<td>E01</td>
<td>DC Link Overvoltage</td>
</tr>
<tr>
<td>E02</td>
<td>DC Link Undervoltage</td>
</tr>
<tr>
<td>E04</td>
<td>Inverter Overtemperature</td>
</tr>
<tr>
<td>E05</td>
<td>Output Overload (I x t function)</td>
</tr>
<tr>
<td>E06</td>
<td>External Fault</td>
</tr>
<tr>
<td>E08</td>
<td>CPU Error (watchdog)</td>
</tr>
<tr>
<td>E09</td>
<td>Program Memory Error (checksum)</td>
</tr>
<tr>
<td>E24</td>
<td>Programming Error</td>
</tr>
<tr>
<td>E31</td>
<td>Keypad (HMI) Communication Fault 97</td>
</tr>
<tr>
<td>E41</td>
<td>Self-Diagnosis Error 97</td>
</tr>
</tbody>
</table>

Other Messages:

<table>
<thead>
<tr>
<th>Display</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>rdy</td>
<td>Inverter is ready to be enabled</td>
</tr>
<tr>
<td>Sub</td>
<td>Power supply voltage is too low for the inverter operation (undervoltage)</td>
</tr>
<tr>
<td>dcb</td>
<td>Inverter in DC braking mode</td>
</tr>
<tr>
<td>EPP</td>
<td>Inverter is loading factory setting</td>
</tr>
</tbody>
</table>
LV-Z Fan Coil - PSB Circuit Board Wiring

24 VAC Input terminals (tstat connections):

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>W1:</td>
<td>1st stage Heating, Runs at the heating speed when 24v (R) is supplied, set by the heat trim pot.</td>
</tr>
<tr>
<td>W2:</td>
<td>2nd stage Heating, Runs at the heating speed when 24v (R) is supplied, set by the heat trim pot. The difference between a W1 call and a W2 call is the output terminal that will be energized with 24v. (W1 energized on t-stat terminal strip will provide 24v to W1 on output terminal strip, W2 energized on t-stat terminal strip will provide 24v to W2 on output terminal strip,)</td>
</tr>
<tr>
<td>C:</td>
<td>Common</td>
</tr>
<tr>
<td>G:</td>
<td>Constant Fan, Runs at the Constant Fan speed when 24v (R) is supplied, set by the Fan trim pot.</td>
</tr>
<tr>
<td>R:</td>
<td>24 volt supply (Note: As long as Transformer is connected &amp; the Fire Disconnect/Jumper Pin Header is Present)</td>
</tr>
<tr>
<td>Y2:</td>
<td>2nd stage Cooling, Runs at the Cooling speed when 24v (R) is supplied, set by the Cool trim pot.</td>
</tr>
<tr>
<td>Y1:</td>
<td>1st stage Cooling, Runs at the Cooling speed when 24v (R) is supplied, set by the Cool trim pot. The difference between a Y1 call and a Y2 call is the output terminal that will be energized with 24v. (Y1 energized on t-stat terminal strip will provide 24v to Y1 on output terminal strip, Y2 energized on t-stat terminal strip will provide 24v to Y2 on output terminal strip,)</td>
</tr>
<tr>
<td>D:</td>
<td>Runs at 70% Cooling speed when 24v (R) is supplied, set by the Cool trim pot.</td>
</tr>
<tr>
<td>O/B:</td>
<td>Heat Pump Reversing</td>
</tr>
</tbody>
</table>

Fan Speed Priority Sequence (from highest to lowest): D=1st  Y=2nd  W=3rd  G=4th

24 VAC Output terminals (24v output connections):

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>R:</td>
<td>24 volt Supply (Note: As long as Transformer is connected &amp; the Fire Disconnect/Jumper Pin Header is Present)</td>
</tr>
<tr>
<td>C:</td>
<td>Common</td>
</tr>
<tr>
<td>Y1:</td>
<td>1st Stage Cooling Equipment</td>
</tr>
<tr>
<td>Y2:</td>
<td>2nd Stage Cooling Equipment*</td>
</tr>
<tr>
<td>W2:</td>
<td>24v Output to 2nd Stage Heating Equipment.</td>
</tr>
<tr>
<td>W1:</td>
<td>24v Output to 1st Stage Heating Equipment.</td>
</tr>
<tr>
<td>FZ:</td>
<td>Freeze Stat Connection*</td>
</tr>
<tr>
<td>FZ:</td>
<td>Freeze Stat Connection*</td>
</tr>
</tbody>
</table>

*Note: FZ to FZ recommended to be wired to Freeze Stat (Anti-Ice Control). For chilled water applications, a jumper between FZ to FZ must be installed to complete the Y2 - 24V Signal to Y on Condenser.
Emergency Disconnect:

<table>
<thead>
<tr>
<th>C:</th>
<th>Common</th>
</tr>
</thead>
<tbody>
<tr>
<td>C:</td>
<td>Common</td>
</tr>
<tr>
<td>Ro:</td>
<td>Provides 24VAC to the entire PSB board. In order for “Ro” to receive power it must be connected to terminal “Ri”. This can be done via the three pin jumper header (H1) located above the terminal strip, a wire jumper or normally closed safety device installed between “Ro” and “Ri”. <strong>The jumper pin header (H1) will need to be removed to activate the emergency disconnect option.</strong></td>
</tr>
<tr>
<td>Ri:</td>
<td>Receives 24VAC direct from the transformer. Power must then be sent to the “Ro” terminal to be distributed throughout the rest of the PSB board.</td>
</tr>
</tbody>
</table>

3 Pin Jumper Terminals:

<table>
<thead>
<tr>
<th>H1:</th>
<th>Emergency Disconnect</th>
</tr>
</thead>
<tbody>
<tr>
<td>H2 Timer:</td>
<td>Pump timer cycles the pump on for 5 minutes every 24 hours to prevent stagnant water. (on/off) <strong>The jumper pin header (H2) will need to be in the ON position for the timer to be active.</strong></td>
</tr>
<tr>
<td>H3 Mode:</td>
<td>Switches the control method used by the PSB to control motor speed. &quot;Auto&quot; uses the pressure transducer in order to modulate fan speed to maintain a constant supply pressure. &quot;Man&quot; allows for direct speed control of the motor by-passing the pressure transducer. <strong>The jumper pin header (H3) determines the control method.</strong></td>
</tr>
<tr>
<td>H4 Delay:</td>
<td>Cooling/20 second, Heating/30 second fan delay, and 30 second post purge. <strong>The jumper pin header (H4) will need to be in the ON position for the delay to be active.</strong></td>
</tr>
</tbody>
</table>

Auxiliary Heating Relay:

<table>
<thead>
<tr>
<th>N:</th>
<th>Neutral</th>
</tr>
</thead>
<tbody>
<tr>
<td>L:</td>
<td>Line Voltage</td>
</tr>
<tr>
<td>A1:</td>
<td>Auxiliary Relay Normally Open</td>
</tr>
<tr>
<td>A2:</td>
<td>Auxiliary Relay Normally Closed</td>
</tr>
<tr>
<td>A3:</td>
<td>Auxiliary Relay Common</td>
</tr>
</tbody>
</table>

Control Signal:

| J8: | 0-10 Volt DC Output to VFD |
LV-Z Fan Coil - Extended Wiring Diagrams

Extended wiring diagrams for the various applications the LV-Z model can be used for. If you do not find the wiring configuration you require, please call the technical department at Energy Saving Products Ltd. for further assistance.
LV-Z Fan Coil - Extended Wiring Diagrams

Extended wiring diagrams for the various applications the LV-Z model can be used for. If you do not find the wiring configuration you require, please call the technical department at Energy Saving Products Ltd. for further assistance.
Extended wiring diagrams for the various applications the LV-Z model can be used for. If you do not find the wiring configuration you require, please call the technical department at Energy Saving Products Ltd. for further assistance.
Diagnostics and Troubleshooting

WEG Faults and Possible Causes

This section assists the user to identify and correct possible faults that can occur during the CFW-10 operation. When a fault is detected, the inverter is disabled and the fault code is displayed on the readout in EXX form, where XX is the actual fault code.

To restart the inverter after a fault has occurred, the inverter must be reset. The reset can be made as follows:
- disconnect and reapply the AC power (power-on reset);
- press key  (manual reset);

The table below defines each fault code, explains how to reset the fault and shows the possible causes for each fault code.

<table>
<thead>
<tr>
<th>FAULT</th>
<th>RESET(1)</th>
<th>POSSIBLE CAUSES</th>
</tr>
</thead>
<tbody>
<tr>
<td>E00</td>
<td>Power-on Manual (key  ) Auto-Reset DI</td>
<td>✓ Short-circuit between two motor phases. ✓ If this fault occurs during power-up, there may be a short. ✓ Overcurrent Auto-Reset circuit between ground and one or more output phases. ✓ Inertia of the load too high, or acceleration ramp too short. ✓ IGBT transistor module is short-circuited.</td>
</tr>
<tr>
<td>E01</td>
<td></td>
<td>✓ Power supply voltage too high, generating in the DC link a voltage higher than the allowed value: ✓ Load inertia too high and acceleration ramp is too short.</td>
</tr>
<tr>
<td>E02</td>
<td></td>
<td>✓ Power supply voltage too low, causing a DC link voltage lower than the allowed value (read the value at Parameter P004).</td>
</tr>
<tr>
<td>E04</td>
<td></td>
<td>✓ Ambient temperature too high (&gt; 50 ºC) and/or output current too high. ✓ Blocked or defective fan. Note: The heat sink overtemperature protection (E04) is activated when the heat sink temperature (P008) reaches 103 ºC or 133 ºC for the 15.2 A model.</td>
</tr>
<tr>
<td>E05</td>
<td></td>
<td>✓ Motor is under an actual overload condition.</td>
</tr>
<tr>
<td>E06</td>
<td></td>
<td>✓ Wiring at DI1 to DI4 inputs is open (not connected to GND).</td>
</tr>
<tr>
<td>E08</td>
<td>Contact WEG Servicing</td>
<td>✓ Electrical noise.</td>
</tr>
<tr>
<td>E09</td>
<td></td>
<td>✓ Memory with corrupted values.</td>
</tr>
<tr>
<td>E24</td>
<td>It is automatically reset when the incompatible parameters are changed</td>
<td>✓ Incompatible parameters were programmed.</td>
</tr>
<tr>
<td>E31</td>
<td>Contact WEG Servicing</td>
<td>✓ Inverter control circuit is defective. Electrical noise in the installation (electromagnetic interference).</td>
</tr>
<tr>
<td>E41</td>
<td>Contact WEG Servicing</td>
<td>✓ Inverter power circuit is defective.</td>
</tr>
</tbody>
</table>
Troubleshooting - Motor Running Too Fast

1. **Start**
   - Jumper desired T-stat setting with R on the PSB circuit board (Figs. 001-002)

2. **Power Fan Coil**

3. **Verify that Main Supply Voltage is present on the PSB circuit board between the L and N terminals (Fig. 003)**

4. **Supply Power present?**
   - Yes → **Inspect Supply Voltage**
   - No → **Return to Step 4**

5. **Verify that 24VAC is present between R & C on the PSB circuit board (Fig. 004)**
   - Yes → **Ensure Transformer is connected properly**
   - No → **Replace Transformer**

6. **Verify that 24VAC is present between C & desired T-Stat setting**
   - Yes → **Ensure that Jumper is installed correctly (Fig. 002)**
   - No → **Call Technical Support Toll Free 1-888-652-2219**

7. **Input Voltage and T'Stat function on PSB is functioning correctly**
   - Yes → **Install Jumper and return to Step 6**
   - No → **Return to Step 13**

8. **Verify that Pressure Sensing section of PSB is functioning within proper operating range**

9. **Blue Light present on PSB Circuit Board?**
   - Yes → **Volt Meter is set to read Volts DC. Test Voltage on opposite end of cable (Fig. 006)**
   - No → **Verify that Main Supply Voltage is present on the PSB circuit board between the L and N terminals (Fig. 003)**

10. **Voltage present? (0-10VDC)**
    - No → **Continue adjustments until VDC < 9VDC**
    - Yes → **Decrease PSB trimpot of jumpered stat setting 1/2 turn Counter-Clockwise - Wait 30 seconds for drive to adjust (Fig. 007)**

11. **VDC < 9VDC**
    - Yes → **Continue adjustments until VDC < 9VDC**
    - No → **Read and record Volts DC Value**

12. **Read and record Volts DC Value**
    - No → **Adjust trimpot 1/2 turn Counter-Clockwise**
    - Yes → **Return to Step 11**

13. **Adjust trimpot 1/2 turn Counter-Clockwise**
    - No → **Read and record Volts DC value to confirm adjustment**
    - Yes → **Continue adjustments until VDC < 9VDC**

14. **Read and record Volts DC value to confirm adjustment**
    - Yes → **Adjust trimpot 1/2 turn Counter-Clockwise, wait 30 seconds - VDC changed?**
    - No → **Change PSB Circuit Board**

15. **VDC changed?**
    - No → **Adjust trimpot 1/2 turn Counter-Clockwise, wait 30 seconds - VDC changed?**
    - Yes → **(Again) Adjust 1/2 turn Counter-Clockwise, wait 30 seconds - VDC changed?**

16. **PSB Circuit Board is functioning correctly**
    - No → **Return to Step 15**
    - Yes → **Return to Step 13**

17. **Adjust trimpots on PSB Circuit Board until airflow is running at desired speed**
    - **See System Commissioning Report and Set-Up**

18. **Return to Step 15**

*To adjust the remaining T-Stat settings:
- Jumper between R & the desired T-Stat setting
- Adjust the corresponding trimpot to the desired airflow using the method described in the System Commissioning and Set-Up.*
Troubleshooting - Motor Running Too Slow

1. Jumper desired Tstat setting with R on the PSB Circuit Board (Fig. 001)
2. Unplug Motor Leads and test resistance (ohms) between Windings (Figs. 002 & 003)
3. Power Fan Coil
   - Verify that Main Supply Voltage is present on the PSB circuit board between the L and N terminals (Fig. 004)
4. Supply Power Present?
   - N
   - Y
   - Inspect Supply Voltage - Return to Step 5
5. Supply Power Present?
   - N
   - Y
   - Ensure Transformer is connected properly
6. Verify that 24VAC is present between R & C on the PSB circuit board (Fig. 005)
   - Y
   - N
   - Ensure that Jumper is installed correctly (Fig. 001)
   - Y
   - N
   - Install Jumper and return to Step 7
8. Input Voltage and T'Stat section on PSB is functioning correctly
   - Y
   - N
   - Ensure that Volt Meter is set to read Volts DC - Test Voltage on opposite end of Cable (Fig. 006)
9. Voltage Present? (0-10VDC)
   - N
   - Y
10. VDC > 9VDC
    - N
    - Y
    - Increase appropriate PSB trimpot 1/2 turn Clockwise - Wait 30 seconds for motor to adjust
11. PSB Circuit Board is Functioning Correctly
12. Use Clamp on Amp Meter to test Amperage of input power supply to the fan coil. (Fig. 008)
13. Amperage > 2A (1 amp @ 220-240 volt AC)
14. PSB Circuit Board & WEG Drive functioning correctly
15. Motor running?
16. Motor working correctly

If Resistance is outside of the acceptable range (6.5 - 10.5 ohms) or uneven across any winding legs, call Technical Support Toll Free @ 1-888-652-2219
If Resistance is acceptable, re-connect Motor Leads and continue to Step 3
Continue adjustments until VDC > 9VDC - Return to Step 12.
*See System Commissioning and Set-Up.
Troubleshooting - Motor Not Running

1. Jumper desired Tstat setting with R on the PSB Circuit Board (Fig. 001)
2. Unplug Motor Leads and test resistance (ohms) between windings (Figs. 002 & 003)
3. Power fan coil
4. Verify that Main Supply Voltage is present on the PSB Circuit Board between the L and N Terminals (Fig. 004)
5. Supply Power Present?
   - N: Verify that 24VAC is present between R & C on the PSB Circuit Board (Fig. 005)
   - Y: Ensure Transformer is properly connected
6. Verify that 24VAC is present between C & desired Tstat setting
7. Input Voltage and T'Stat section on PSB is functioning correctly
8. Verify that Pressure Sensing Section of PSB is functioning properly by measuring voltage output (Volts DC) @ the WEG controller, terminals 7 & 8 (Fig. 006)
9. Voltage Present? (0-10VDC)
   - N: Increase appropriate PSB trimpot 1/2 turn Clockwise - Wait 30 seconds for motor to adjust
   - Y: Continue adjustments until VDC > 9VDC - Return to Step 12
10. Voltage Present? (0-10VDC)
11. VDC > 9VDC
   - Y: PSB Circuit Board is Functioning Correctly
   - N: Fan running?
     - N: Ensure Red Plug on PSB Circuit Board is properly connected (Fig. 008)
     - Y: Adjust Trim pots on PSB circuit board until airflow is running at desired speed *See System Commissioning and Set-Up.
12. Fan running?
   - Y: Call Technical Support Toll Free 1-888-652-2219
   - N: Call Technical Support Toll Free 1-888-652-2219

If Resistance is outside of the acceptable range (6.5 - 10.5 ohms) or uneven across any winding legs, call Technical Support Toll Free @ 1-888-652-2219 - If Resistance is acceptable, re-connect Motor Leads and continue to Step 3

Ensure that Transformer is properly connected

Call Technical Support Toll Free 1-888-652-2219

Continue to Step 11

 Verify that Pressure Sensing Section of PSB is functioning properly by measuring voltage output (Volts DC) @ the WEG controller, terminals 7 & 8 (Fig. 006)

Ensure that Transformer is properly connected

Call Technical Support Toll Free 1-888-652-2219

Continue adjustments until VDC > 9VDC - Return to Step 12.

Ensure that Transformer is properly connected

Call Technical Support Toll Free 1-888-652-2219

Continue adjustments until VDC > 9VDC - Return to Step 12.

Ensure that Transformer is properly connected

Call Technical Support Toll Free 1-888-652-2219

Continue adjustments until VDC > 9VDC - Return to Step 12.
Troubleshooting - 24Volt Thermostat to PSB Circuit Board

Start

Verify Line Voltage power between L and N

- Y
  - Check Transformer Plugs Connected?
    - Y
      - Connect Transformer Plugs and return to start
    - N
      - Connect Line Voltage plug and return to start
  - N
    - Check that Line Voltage wiring from breaker is proper
      - Y
        - Return to Start
      - N
        - Connect Line Voltage plug and return to start

Verify 24v power between R & C

- Y
  - Disconnect 24v Transformer plug with two Red Wires from middle of Circuit Board and check for 24v from Transformer
  - N
    - Replace 24v Transformer

Signal from Thermostat? (Check across Y1/Y2 & C or W1/W2 & C)

- Y
  - Fan running?
    - Y
      - Finished
    - N
      - Fan running? (Check across Y1/Y2 & C or W1/W2 & C)
        - Y
          - Check for broken or incorrect wiring between Thermostat and Board
            - Y
              - Check Resettable Fuse (F1) for heat - Caution: Extremely hot if tripped
                - Y
                  - Replace Thermostat
                - N
                  - Fix or replace Wiring
          - N
            - Fix or replace Wiring
    - N
      - Refer to Trouble Shooting - Motor Not Running

- N
  - Is T'Stat set for Constant Fan, Cooling or Heating?
    - Y
      - Set Thermostat Temperature and Switch for Constant Fan, Heating or Cooling
    - N
      - Fan running?
        - Y
          - Finished
        - N
          - Check for Continuity through Thermostat
            - Y
              - Check 24v Wiring for a dead short and for possible second 24v source being input into the Circuit Board i.e. Y1 or Y2 & C on 24v Output Terminals.
            - N
              - Replace Thermostat

Refer to Trouble Shooting - Motor Not Running

Module LVZ
LV-Z Series Fan Coil Installation (21/28)
Troubleshooting - Cooling 24 Volt Circuit Board

Start Thermostat Cooling Call

- Verify 24v Power between G & C
  - Y: Check Thermostat
  - N: Verify 24v Power between Y1/Y2 & C
    - Y: Fan Running?
      - Y: Y1 & C
      - N: Y2 & C
        - N: Verify 24v Power between X1 & C
          - Y: Call Technical Support Toll Free 1-888-652-2219
          - N: Freeze Stat tripped or not connected
        - Y: Verify 24v Power between Y2 & C on 24v Output Terminals
          - N: Call Technical Support Toll Free 1-888-652-2219
            - Y: Check Thermostat time delay for Y1/Y2

- Y1 for Multi Staging units only, Y1 controls Blower Only, if Single Stage Cooling, use Y2

Trouble Shooting: Heating 24 Volt Circuit Board

Start Thermostat Heating Call

- Verify 24v Power between W1/W2 & C
  - Y: Check Thermostat
  - N: Fan Running?
    - Y: W1 & C
    - N: W2 & C
      - N: Verify 24v Power between W2 & C on 24v Output Terminals
        - N: Call Technical Support Toll Free 1-888-652-2219
          - Y: Auxiliary Relay Activated

- W1 for Multi Staging units only, W1 controls blower and Auxiliary relay - If Single Stage Heating use W2
Troubleshooting - Outdoor Unit - Electrical

Start

Is Contactor pulled in?

Y

Check for 24v across Contactor Coil

Y

Replace Contactor

N

230v into Contactor?

Y

230v out of Contactor?

Y

Check for open Safety Controls on Outdoor Unit

N

24v across X1 & C at the Fan Coil?

N

Refer to Troubleshooting - 24v

Y

24v across X1 & X2 at the Fan Coil?

N

Y

Check for Improper Wiring or Damage between Indoor and Outdoor Units

Y

Replace Wiring

N

Ensure System is Properly Charged and Airflow is correct

Y

Check Compressor

N

Allow System to settle and Freeze Stat to open

Y

Freeze Stat opened?

Y

Ensure System is Properly Charged and Airflow is correct

N

Replace Freeze Stat

N

Supply 230v Power to Condensor
Troubleshooting - Short Cycling

Start

- Fan running? Y
  - Refer to Troubleshooting - Motor Not Running to ensure fan is working properly N
  - Refer to Troubleshooting - 24v

- Verify that 24v power is present between C and Y2 terminals N
  - Refer to Troubleshooting - 24v Y

- Check that TX Valve setting and Charge is proper

- TX and Charge good? N
  - Refer to Charging on page 33 Y

- Confirm the Line Sizes are correct

- Confirm that the Unit is Properly Sized

- Check that the TX Valve Bulb is installed correctly

- Confirm that all Piping is done properly

- Is Freeze Stat working properly? Y
  - Replace Freeze Stat N

- Refer to Troubleshooting - 24v
### LV-Z Series Specifications

#### LV-Z-1050

<table>
<thead>
<tr>
<th>Hot Water Heating(1)</th>
<th>WBWM-70/1050</th>
<th>WBWM-100/1050</th>
<th>WM-1750</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Coil</strong></td>
<td>HWC-70/1050</td>
<td>HWC-70/1050</td>
<td>HWC-1750</td>
</tr>
<tr>
<td><strong>Coil Type</strong></td>
<td>6 Row/10 FPI</td>
<td>6 Row/10 FPI</td>
<td>6 Row/10 FPI</td>
</tr>
<tr>
<td>Max. BTUH @ 190°F E.W.T. (kW @ 88°C)</td>
<td>50,100 (14.67 kW)</td>
<td>63,200 (18.51 kW)</td>
<td>75,200 (22.02 kW)</td>
</tr>
<tr>
<td>Max. BTUH @ 180°F E.W.T. (kW @ 82°C)</td>
<td>45,900 (13.44 kW)</td>
<td>58,000 (16.98 kW)</td>
<td>69,000 (20.20 kW)</td>
</tr>
<tr>
<td>Max. BTUH @ 170°F E.W.T. (kW @ 77°C)</td>
<td>41,800 (12.24 kW)</td>
<td>52,800 (15.46 kW)</td>
<td>62,700 (18.36 kW)</td>
</tr>
<tr>
<td>Max. BTUH @ 160°F E.W.T. (kW @ 71°C)</td>
<td>37,700 (11.04 kW)</td>
<td>47,500 (13.91 kW)</td>
<td>56,500 (16.54 kW)</td>
</tr>
<tr>
<td>Max. BTUH @ 150°F E.W.T. (kW @ 66°C)</td>
<td>33,600 (9.84 kW)</td>
<td>42,300 (12.39 kW)</td>
<td>50,300 (14.73 kW)</td>
</tr>
<tr>
<td>Max. BTUH @ 140°F E.W.T. (kW @ 60°C)</td>
<td>29,400 (8.61 kW)</td>
<td>37,000 (10.83 kW)</td>
<td>43,900 (12.85 kW)</td>
</tr>
<tr>
<td>Max. BTUH @ 130°F E.W.T. (kW @ 54°C)</td>
<td>25,200 (7.38 kW)</td>
<td>31,700 (9.28 kW)</td>
<td>37,500 (10.98 kW)</td>
</tr>
<tr>
<td>Max. BTUH @ 120°F E.W.T. (kW @ 49°C)</td>
<td>21,100 (6.18 kW)</td>
<td>26,500 (7.76 kW)</td>
<td>31,500 (9.22 kW)</td>
</tr>
<tr>
<td>Max. BTUH @ 110°F E.W.T. (kW @ 43°C)</td>
<td>17,100 (5.01 kW)</td>
<td>21,400 (6.27 kW)</td>
<td>25,500 (7.47 kW)</td>
</tr>
<tr>
<td>GPM Flow ratings (l/s Flow Ratings)</td>
<td>5 (0.32 l/s)</td>
<td>5 (0.32 l/s)</td>
<td>5 (0.32 l/s)</td>
</tr>
<tr>
<td>Pressure Drop in ft. H₂O (Drop in KPa)</td>
<td>3.9 (11.66 KPa)</td>
<td>3.9 (11.66 KPa)</td>
<td>3.9 (11.66 KPa)</td>
</tr>
</tbody>
</table>

#### LV-Z-1750

<table>
<thead>
<tr>
<th>Chilled Water Cooling(1)</th>
<th>WBWM-70/1050</th>
<th>WBWM-100/1050</th>
<th>WM-1750</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Coil Type</strong></td>
<td>70/1050</td>
<td>100/1050(2)</td>
<td>100/1050(2)</td>
</tr>
<tr>
<td>E.W.T.</td>
<td>70/1050</td>
<td>100/1050</td>
<td>1750</td>
</tr>
<tr>
<td>Max. BTUH @ 48°F E.W.T. (kW @ 8.9°C)</td>
<td>20,200 (5.91 kW)</td>
<td>23,800 (6.97 kW)</td>
<td>31,500 (9.22 kW)</td>
</tr>
<tr>
<td>Max. BTUH @ 46°F E.W.T. (kW @ 7.8°C)</td>
<td>22,000 (6.44 kW)</td>
<td>25,800 (7.55 kW)</td>
<td>34,200 (10.01 kW)</td>
</tr>
<tr>
<td>Max. BTUH @ 44°F E.W.T. (kW @ 6.7°C)</td>
<td>23,700 (6.94 kW)</td>
<td>28,700 (8.14 kW)</td>
<td>37,000 (10.83 kW)</td>
</tr>
<tr>
<td>Max. BTUH @ 42°F E.W.T. (kW @ 5.6°C)</td>
<td>25,400 (7.44 kW)</td>
<td>29,900 (8.76 kW)</td>
<td>39,600 (11.60 kW)</td>
</tr>
<tr>
<td>Max. BTUH @ 40°F E.W.T. (kW @ 4.4°C)</td>
<td>27,000 (7.91 kW)</td>
<td>31,800 (9.31 kW)</td>
<td>42,200 (12.36 kW)</td>
</tr>
<tr>
<td>GPM Flow ratings (l/s Flow Ratings)</td>
<td>5 (0.32 l/s)</td>
<td>5 (0.32 l/s)</td>
<td>7 (0.44 l/s)</td>
</tr>
<tr>
<td>Pressure Drop in ft. H₂O (Drop in KPa)</td>
<td>4.5 (13.45 KPa)</td>
<td>4.5 (13.45 KPa)</td>
<td>4.5 (13.45 KPa)</td>
</tr>
</tbody>
</table>

### Refrigerant Cooling(1)

<table>
<thead>
<tr>
<th>RMB/RPM-E/RCM Modules</th>
<th>N/A (3rd Party Only)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BTUH Refrigerant TX Cooling</td>
<td>1.5 - 3.0 Tons (5.3-10.6 kW)</td>
</tr>
<tr>
<td>Max Rated CFM @ 1&quot; E.S.P. (l/s @ 249 Pa)</td>
<td>1200 (566 L/s)</td>
</tr>
<tr>
<td>Voltage</td>
<td>115/230/1/50/60 F.L.A. 8 amp</td>
</tr>
<tr>
<td>Nominal Operating Amperage</td>
<td>6 Amps</td>
</tr>
<tr>
<td>Integral Surge and Freeze System</td>
<td>Yes</td>
</tr>
<tr>
<td>Horse Power/Watts</td>
<td>1/3hp - 515W</td>
</tr>
<tr>
<td>Motor RPM</td>
<td>Variable</td>
</tr>
<tr>
<td>Supply Air Size</td>
<td>18&quot; X 17 1/4&quot; (457mm X 438mm)</td>
</tr>
<tr>
<td>Return Size Needed</td>
<td>182 m² (0.12m³)</td>
</tr>
<tr>
<td>Shipping Weight (no coil)</td>
<td>125 lbs (43 kg)</td>
</tr>
</tbody>
</table>

### Fan Coil Specifications

<table>
<thead>
<tr>
<th>Fan Coil Specifications</th>
<th>LV-Z-1050</th>
<th>LV-Z-1750</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max Rated CFM @ 1&quot; E.S.P. (l/s @ 249 Pa)</td>
<td>1200 (566 L/s)</td>
<td></td>
</tr>
<tr>
<td>Voltage</td>
<td>115/230/1/50/60 F.L.A. 8 amp</td>
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</tr>
<tr>
<td>Nominal Operating Amperage</td>
<td>6 Amps</td>
<td></td>
</tr>
<tr>
<td>Integral Surge and Freeze System</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Horse Power/Watts</td>
<td>1/3hp - 515W</td>
<td></td>
</tr>
<tr>
<td>Motor RPM</td>
<td>Variable</td>
<td></td>
</tr>
<tr>
<td>Supply Air Size</td>
<td>18&quot; X 17 1/4&quot; (457mm X 438mm)</td>
<td></td>
</tr>
<tr>
<td>Return Size Needed</td>
<td>182 m² (0.12m³)</td>
<td></td>
</tr>
<tr>
<td>Shipping Weight (no coil)</td>
<td>125 lbs (43 kg)</td>
<td></td>
</tr>
</tbody>
</table>

---

1. Heating specs are rated at 68°F E.A.T. Cooling specs are rated at 80/67°F dB/kW.
2. WCM-100 will provide approximately the same heating capacities.
3. Use a full transition when using the WCM-100 to ensure even airflow across the coil. The WCM-100 is not to be used at these airflow rates.

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Quick Sizing Guide

ALL UNITS

### Hi-Velocity Fan Coils

<table>
<thead>
<tr>
<th>Item</th>
<th>Length</th>
<th>Width</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>HE-Z/HE-B/HE/HV-50/51</td>
<td>32 5⁄16” (82mm)</td>
<td>14 1⁄2” (358mm)</td>
<td>18 3⁄4” (464mm)</td>
</tr>
<tr>
<td>HE-Z/HE-B/HE-HV-70/71</td>
<td>32 5⁄16” (82mm)</td>
<td>19 1⁄2” (495mm)</td>
<td>18 3⁄4” (464mm)</td>
</tr>
<tr>
<td>HE-Z/HE-B/HE/HV-100/101</td>
<td>32 5⁄16” (82mm)</td>
<td>25 1⁄2” (648mm)</td>
<td>18 3⁄4” (464mm)</td>
</tr>
</tbody>
</table>

### Lo-Velocity Fan Coils

<table>
<thead>
<tr>
<th>Item</th>
<th>Length</th>
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<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>JH-15/30</td>
<td>22” (559mm)</td>
<td>14” (356mm)</td>
<td>12” (304mm)</td>
</tr>
<tr>
<td>LV-50</td>
<td>32 5⁄16” (82mm)</td>
<td>14 1⁄2” (358mm)</td>
<td>18 3⁄4” (464mm)</td>
</tr>
<tr>
<td>LV-Z-1050, LV-70</td>
<td>32 5⁄16” (82mm)</td>
<td>19 1⁄2” (495mm)</td>
<td>18 3⁄4” (464mm)</td>
</tr>
<tr>
<td>LV-120/140</td>
<td>32 5⁄16” (82mm)</td>
<td>25 1⁄2” (648mm)</td>
<td>18 3⁄4” (464mm)</td>
</tr>
<tr>
<td>LV-Z-1750</td>
<td>38 3⁄4” (984mm)</td>
<td>26 3⁄4” (679mm)</td>
<td>24 3⁄4” (616mm)</td>
</tr>
</tbody>
</table>

### RPM-E Refrigerant Modules - Pre-Piped

<table>
<thead>
<tr>
<th>Item</th>
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</thead>
<tbody>
<tr>
<td>RPM-E-50</td>
<td>19 3⁄4” (498mm)</td>
<td>14 5⁄6” (357mm)</td>
<td>18 1⁄2” (470mm)</td>
</tr>
<tr>
<td>RPM-E-70</td>
<td>24 3⁄4” (616mm)</td>
<td>14 5⁄6” (357mm)</td>
<td>18 1⁄2” (470mm)</td>
</tr>
<tr>
<td>RPM-E-100</td>
<td>32” (813mm)</td>
<td>14 5⁄6” (357mm)</td>
<td>18 1⁄2” (470mm)</td>
</tr>
</tbody>
</table>

### RCM Refrigerant Modules

<table>
<thead>
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<th>Item</th>
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<th>Height</th>
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</thead>
<tbody>
<tr>
<td>RPM-E-50</td>
<td>19 3⁄8” (492mm)</td>
<td>10 1⁄6” (257mm)</td>
<td>18 1⁄2” (470mm)</td>
</tr>
<tr>
<td>RPM-E-70</td>
<td>25 5⁄8” (645mm)</td>
<td>10 1⁄6” (257mm)</td>
<td>18 1⁄2” (470mm)</td>
</tr>
<tr>
<td>RPM-E-100</td>
<td>26 1⁄4” (667mm)</td>
<td>8 1⁄4” (209mm)</td>
<td>22 5⁄8” (575mm)</td>
</tr>
</tbody>
</table>

### Water Cooling Modules

<table>
<thead>
<tr>
<th>Item</th>
<th>Length</th>
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<tbody>
<tr>
<td>WCM-50</td>
<td>14 3⁄8” (365mm)</td>
<td>10 1⁄6” (257mm)</td>
<td>18 1⁄2” (470mm)</td>
</tr>
<tr>
<td>WCM-70</td>
<td>25 5⁄8” (645mm)</td>
<td>10 1⁄6” (257mm)</td>
<td>18 1⁄2” (470mm)</td>
</tr>
<tr>
<td>WM-1750</td>
<td>26 1⁄4” (667mm)</td>
<td>8 1⁄4” (209mm)</td>
<td>22 5⁄8” (575mm)</td>
</tr>
</tbody>
</table>

### Hot Water Coils (6 Row)

<table>
<thead>
<tr>
<th>Item</th>
<th>Length</th>
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<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>JH 15/30</td>
<td>13 1⁄2” (342mm)</td>
<td>3 3⁄8” (85mm)</td>
<td>12 1⁄2” (321mm)</td>
</tr>
<tr>
<td>HWC-50</td>
<td>13 1⁄2” (342mm)</td>
<td>5 1⁄2” (140mm)</td>
<td>16 1⁄2” (410mm)</td>
</tr>
<tr>
<td>HWC-70</td>
<td>19 1⁄2” (495mm)</td>
<td>5 1⁄2” (140mm)</td>
<td>16 1⁄2” (410mm)</td>
</tr>
<tr>
<td>HWC-100</td>
<td>25 5⁄8” (645mm)</td>
<td>5 1⁄2” (140mm)</td>
<td>16 1⁄2” (410mm)</td>
</tr>
<tr>
<td>HWC-1750</td>
<td>26” (660mm)</td>
<td>6” (152mm)</td>
<td>22” (559mm)</td>
</tr>
</tbody>
</table>

### Electrical Strip Heater

<table>
<thead>
<tr>
<th>Item</th>
<th>Length</th>
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</tr>
</thead>
<tbody>
<tr>
<td>HV-650</td>
<td>13 3⁄4” (349mm)</td>
<td>5 5⁄8” (143mm)</td>
<td>15 3⁄4” (394mm)</td>
</tr>
<tr>
<td>HV-750</td>
<td>18 3⁄4” (476mm)</td>
<td>5 5⁄8” (143mm)</td>
<td>15 3⁄4” (394mm)</td>
</tr>
<tr>
<td>HV-1100</td>
<td>24 3⁄4” (632mm)</td>
<td>5 5⁄8” (143mm)</td>
<td>15 3⁄4” (394mm)</td>
</tr>
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</table>

### Hi-Velocity Air Purification System

<table>
<thead>
<tr>
<th>Item</th>
<th>Length</th>
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<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>HE PS w/ Merv 13 Filt.</td>
<td>25” (635mm)</td>
<td>10” (254mm)</td>
<td>17” (457mm)</td>
</tr>
<tr>
<td>HE PS-1750 w/ Merv 13</td>
<td>25” (635mm)</td>
<td>10” (254mm)</td>
<td>21” (533mm)</td>
</tr>
</tbody>
</table>

### Standard Filter Rack

<table>
<thead>
<tr>
<th>Item</th>
<th>Length</th>
<th>Width</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>FR-50 Filter Rack</td>
<td>14 1⁄2” (364mm)</td>
<td>3” (74mm)</td>
<td>18 1⁄2” (470mm)</td>
</tr>
<tr>
<td>FR-70 Filter Rack</td>
<td>19 1⁄2” (495mm)</td>
<td>3” (74mm)</td>
<td>18 1⁄2” (470mm)</td>
</tr>
<tr>
<td>FR-100 Filter Rack</td>
<td>26” (660mm)</td>
<td>3” (75mm)</td>
<td>18 1⁄2” (470mm)</td>
</tr>
<tr>
<td>FR-1750 Filter Rack</td>
<td>26 1⁄2” (672mm)</td>
<td>3” (75mm)</td>
<td>24 1⁄2” (622mm)</td>
</tr>
</tbody>
</table>

### Standard 1” Filter Replacements

<table>
<thead>
<tr>
<th>Item</th>
<th>Length</th>
<th>Width</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>FR/RA-50 Filter</td>
<td>14” (356mm)</td>
<td>1” (25mm)</td>
<td>18” (457mm)</td>
</tr>
<tr>
<td>FR/RA-70 Filter</td>
<td>18” (457mm)</td>
<td>1” (25mm)</td>
<td>18” (457mm)</td>
</tr>
<tr>
<td>FR/RA-100 Filter</td>
<td>24” (610mm)</td>
<td>1” (25mm)</td>
<td>18” (457mm)</td>
</tr>
<tr>
<td>FR/RA-140 Filter</td>
<td>26” (660mm)</td>
<td>1” (25mm)</td>
<td>24” (610mm)</td>
</tr>
<tr>
<td>JH-15/30 Filter</td>
<td>10 1⁄2” (267mm)</td>
<td>1” (25mm)</td>
<td>11” (280mm)</td>
</tr>
</tbody>
</table>

### Return Air Base

<table>
<thead>
<tr>
<th>Item</th>
<th>Length</th>
<th>Width</th>
<th>Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>RA-50</td>
<td>14 1⁄2” (364mm)</td>
<td>22 1⁄2” (572mm)</td>
<td>18 1⁄2” (470mm)</td>
</tr>
<tr>
<td>RA-70</td>
<td>19 1⁄2” (495mm)</td>
<td>22 1⁄2” (572mm)</td>
<td>18 1⁄2” (470mm)</td>
</tr>
<tr>
<td>RA-100</td>
<td>25 1⁄8” (640mm)</td>
<td>22 1⁄2” (572mm)</td>
<td>18 1⁄2” (470mm)</td>
</tr>
<tr>
<td>RA-1750</td>
<td>26 1⁄2” (672mm)</td>
<td>24” (610mm)</td>
<td>24 1⁄2” (622mm)</td>
</tr>
</tbody>
</table>
WARRANTY

Energy Saving Products Ltd. is proud to offer a limited warranty. This warranty applies strictly to the first purchaser at wholesale level and only to the fan coil unit and module. It does not include connections, attachments and other products or materials furnished by the installer.

This warranty excludes any damages caused by changes, relocation to, or installation in a new site. This warranty does not cover any defects caused by failure to follow the installation and operating instructions furnished with the fan coil. This warranty does not cover defects caused by failing to adhere to local building codes and following good industry standards. Failure to correctly install the fan coil, or material related to the unit, may result in improper system performance and/or damages and will void this warranty. This warranty does not cover material installed in or exposed to a corrosive environment. This warranty does not cover products subjected to abnormal use, misuse, improper maintenance, or alteration of the product. Using the fan coil and/or module as a source of temporary heating/cooling during construction will void this warranty.

A **Five (5) Year Limited Warranty** is extended on all components in products manufactured exclusively by Energy Saving Products. These components include Motors, WEG Controller, Circuit Boards, Dampers, Zoning Controls, Blowers, Motor & Blower Assemblies, Heating Coils, Chilled Water Coils, and Air Conditioning Coils. Note: If any product is installed in or exposed to a corrosive environment, warranty will be void.

A **Three (3) Year Limited Warranty** is extended on Electric Strip Heaters.

Products sold by Energy Saving Products but manufactured by others, will carry the original manufacturer’s warranty.

TERMS & CONDITIONS

- Any repair performed under warranty must be approved by Energy Saving Products Ltd. for this warranty to be valid.
- The liability of Energy Saving Products Ltd. is limited to and shall not exceed the cost of pre-approved replacement parts.
- This warranty does not cover shipping costs to and from the factory, labor costs or any other cost associated with the installation of the replacement part.
- Inoperative parts must be returned to Energy Saving Products Ltd. with an ESP RMA Form that includes model, serial number, and a detailed description of the entire problem. Inoperative parts must be returned in testable condition.
- Should there be multiple consecutive failures of a single part, warranty will not be considered unless a contractor has contacted Energy Saving Products Ltd. Technical Department for assistance, and received a tech code.
- Energy Saving Products Ltd. is not liable for any other damages, personal injury, or any other losses of any nature.

**Follow these steps for Service or Repair:**

1. Contact the installer of the product or a licensed service company
2. Contact the distributor
3. Contact Energy Saving Products Ltd. Mon-Fri 8 am – 4:30 pm MT 1-888-652-2219

This warranty replaces all other warranties expressed or implied.

www.hi-velocity.com
Energy Saving Products Ltd, established in 1983, manufactures the Hi-Velocity Systems™ product line for residential, commercial and multi-family markets. Our facilities house Administration, Sales, Design, Manufacturing, as well as Research & Development complete with an in-house test lab. Energy Saving Products prides itself on Customer Service and provides design services and contractor support.

For all of your Heating, Cooling and Indoor Air Quality needs, the Hi-Velocity System is the right choice for you!

Hi-Velocity Systems™
Small Duct Heating, Cooling and IAQ Systems

Build Smart, Breathe Easy
Hi-Velocity HE-Z Fan Coils, Green Technology

Phone:  780-453-2093
Fax:    780-453-1932
Toll Free: 1-888-652-2219

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