ENERGY RECOVERY VENTILATION (ERV) ENGINEERING MANUAL

ERV Indoor Units
470 to 1,180 CFM
About LG Electronics, Inc.

LG Electronics, Inc. is a global leader and technology innovator in consumer electronics, mobile communications, and home appliances. LG Electronics comprises four business units—Home Entertainment, Mobile Communications, Home Appliance, and Air Conditioning and Energy Solutions. LG is one of the world’s leading producers of flat panel televisions, audio and video products, mobile handsets, compressors, air conditioners, and washing machines. LG’s commercial air conditioning business unit was established in 1968 and has built its lineup of residential and commercial products to include VRF, Multi-Zone systems, Duct Free Split Systems, Packaged Terminal Air Conditioners (PTACs), and room air conditioners. In 2011, the air conditioning and energy solutions business unit grew to include LED lighting and solar products. For more information visit www.lg.com.

Variable Refrigerant Flow (VRF) Technology

In the early 1980s, VRF technology was introduced to the world as an alternative method of cooling and heating in commercial structures designed to minimize energy consumption. VRF systems have become the system of choice for designers internationally because these systems offer better comfort at substantially lower operating costs when compared to traditional HVAC systems. Older systems are being replaced with newer more efficient systems making VRF a viable option. Today, VRF is gaining popularity in the United States. LG air-source systems offer the opportunity to eliminate ductwork in the same configuration. The systems offer zoning without the need for zone damper systems. The advanced controls provide exceptional building dehumidification and temperature control and can rapidly adapt system operating parameters to the ever changing building load.

Quality Commitment

LG is committed to the success of every Multi V project by providing the best industry technical support during project engineering, installation, and commissioning. LG offers a variety of classes designed for engineers, architects, installers, and servicers to ensure that every Multi V installation is completed successfully. Classes are conducted at LG’s training centers and in field locations at various times throughout the year and upon special request.
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TABLE OF SYMBOLS

<table>
<thead>
<tr>
<th>WARNING</th>
<th>This symbol indicates a potentially hazardous situation which, if not avoided, may result in death or serious injury.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Note</td>
<td>This symbol indicates additional helpful information such as an explanation, a comment, or a clarification about the subject.</td>
</tr>
<tr>
<td>Note</td>
<td>This symbol indicates a recommendation or tip. Recommendations instruct the user to apply the suggested practice to ensure the best operating results in order to achieve the maximum benefit of the product. Tips contain practical information that may help the user solve a problem or describe actions that may save time.</td>
</tr>
</tbody>
</table>
ERV BENEFITS
ZE, ZF Chassis

Ventilation
Ventilation is a process that allows users to exchange indoor air with outdoor air in order to improve the air quality and to maintain environmental temperature conditions. The Energy Recovery Ventilation (ERV) system reduces the temperature and humidity of incoming fresh air. A balance is achieved between indoor and outdoor ambient which enables the cooling or heating load placed on the air conditioning system to be reduced. It can be controlled individually or as an integral part of the air conditioning system.

Benefits
The ERV system provides efficiency, cost savings, superior performance, compact and light design, linear E.S.P control and easy maintenance. The ERV system is ideal for hotels, dormitories, restaurants, hospitals, retail establishments, theaters, schools, and office buildings.

Energy Savings
The indoor air is passed through the heat exchanger to pre-warm or pre-cool the incoming outside air which saves energy and money.

Design
Acoustically engineered and tested for quiet operation.

Easy Maintenance
Offers easy filter replacement and heat exchanger cleaning.
## Energy Recovery Ventilation (ERV) Unit General Data

<table>
<thead>
<tr>
<th>Type</th>
<th>ARVU053ZEA2</th>
<th>ARVU063ZEA2</th>
<th>ARVU093ZFA2</th>
<th>ARVU123ZFA2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Performance</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capacity (CFM)</td>
<td>470</td>
<td>590</td>
<td>880</td>
<td>1,180</td>
</tr>
<tr>
<td>Power Input (SH(^1)) Watts</td>
<td>360</td>
<td>470</td>
<td>720</td>
<td>930</td>
</tr>
<tr>
<td><strong>Operating Range</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Range (°F DB)</td>
<td>14-113</td>
<td>14-113</td>
<td>14-113</td>
<td>14-113</td>
</tr>
<tr>
<td><strong>Heat Exchanger Data</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air-to-Air Heat Exchanger</td>
<td>Cross flow fixed core</td>
<td>Cross flow fixed core</td>
<td>Cross flow fixed core</td>
<td>Cross flow fixed core</td>
</tr>
<tr>
<td>Quantity</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Temperature Exchanger Efficiency (%) (fan speed SH(^1))</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooling (fan speed SH(^1))</td>
<td>62</td>
<td>59</td>
<td>62</td>
<td>59</td>
</tr>
<tr>
<td>Heating (fan speed SH(^1))</td>
<td>61</td>
<td>58</td>
<td>61</td>
<td>58</td>
</tr>
<tr>
<td>Enthalpy Exchange Efficiency (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cooling (fan speed SH(^1))</td>
<td>37</td>
<td>34</td>
<td>37</td>
<td>34</td>
</tr>
<tr>
<td>Heating (fan speed SH(^1))</td>
<td>52</td>
<td>49</td>
<td>52</td>
<td>49</td>
</tr>
<tr>
<td><strong>Unit Data</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sound Pressure dB(A)</td>
<td>40/37/31</td>
<td>41/39/33</td>
<td>44/41/35</td>
<td>45/41/35</td>
</tr>
<tr>
<td>Net Unit Weight (lbs)</td>
<td>148</td>
<td>148</td>
<td>331</td>
<td>331</td>
</tr>
<tr>
<td>Shipping Weight (lbs)</td>
<td>177</td>
<td>177</td>
<td>397</td>
<td>397</td>
</tr>
<tr>
<td><strong>Fan</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>Cross Flow</td>
<td>Cross Flow</td>
<td>Cross Flow</td>
<td>Cross Flow</td>
</tr>
<tr>
<td>Quantity</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Motor/Drive</td>
<td>Brushless Digitally Controlled/Direct</td>
<td>Brushless Digitally Controlled/Direct</td>
<td>Brushless Digitally Controlled/Direct</td>
<td>Brushless Digitally Controlled/Direct</td>
</tr>
<tr>
<td>External Static Pressure SH/H/L (in wg)</td>
<td>0.80/0.44/0.24</td>
<td>0.64/0.36/0.20</td>
<td>0.80/0.44/0.24</td>
<td>0.64/0.36/0.20</td>
</tr>
<tr>
<td><strong>Filters</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quantity</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Size</td>
<td>41-9/16&quot; x 8-3/8&quot; x 13/32&quot;</td>
<td>41-9/16&quot; x 8-3/8&quot; x 13/32&quot;</td>
<td>41-9/16&quot; x 8-3/8&quot; x 13/32&quot;</td>
<td>41-9/16&quot; x 8-3/8&quot; x 13/32&quot;</td>
</tr>
</tbody>
</table>

\(^1\)SH - Super High
Condensate drain not required.
ERV temperature and enthalpy exchange efficiencies are in accordance with AHRI 1060 test condition, 100% airflow, 0" external static pressure.
Cooling: Outdoor 95°F DB, 78°F WB; Exhaust 75°F DB, 63°F WB
Heating: Outdoor 35°F DB, 33°F WB; Exhaust 70°F DB, 58°F WB

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DIMENSIONS

ZE Chassis
The graphs above show the available E.S.P range.
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Figure 3: ARVU093ZFA2

The graphs above show the available E.S.P range.
Energy Recovery Ventilation (ERV) Units

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Figure 4: ARVU123ZFA2

Ventilation

Efficiency

The graphs above show the available E.S.P range.
### Electrical Data

Table 2: ERV Unit Electrical Data

<table>
<thead>
<tr>
<th>Model</th>
<th>Voltage Range</th>
<th>Rated Amps (A)</th>
<th>Power Supply</th>
<th>Power Input (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARVU053ZEA2</td>
<td>187-253</td>
<td>2.8</td>
<td>60</td>
<td>208-230V</td>
</tr>
<tr>
<td>ARVU063ZEA2</td>
<td></td>
<td>3.44</td>
<td></td>
<td>360/270/165</td>
</tr>
<tr>
<td>ARVU093ZFA2</td>
<td></td>
<td>5.62</td>
<td></td>
<td>470/385/210</td>
</tr>
<tr>
<td>ARVU123ZFA2</td>
<td></td>
<td>6.82</td>
<td></td>
<td>720/540/340</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>930/770/420</td>
</tr>
</tbody>
</table>

Units are suitable for use on an electrical system where voltage supplied to unit terminals is within the listed range limits.

### Sound Pressure Data

Table 3: ERV Sound Levels

<table>
<thead>
<tr>
<th>Model</th>
<th>Super High Fan Speed</th>
<th>High Fan Speed</th>
<th>Low Fan Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARVU053ZEA2</td>
<td>40</td>
<td>37</td>
<td>31</td>
</tr>
<tr>
<td>ARVU063ZEA2</td>
<td>41</td>
<td>39</td>
<td>33</td>
</tr>
<tr>
<td>ARVU093ZFA2</td>
<td>44</td>
<td>41</td>
<td>35</td>
</tr>
<tr>
<td>ARVU123ZFA2</td>
<td>45</td>
<td>41</td>
<td>35</td>
</tr>
</tbody>
</table>

Sound pressure levels are tested in an anechoic chamber under ISO Standard 3745.
There is risk of electric shock due to failure or electric leakage.

Installation work must be performed by authorized personnel and in accordance with the national wiring standards.
Figure 10: ZF Chassis Wiring Diagram

*Central controller requires PI485 (PSNFP14A0)

\[
\text{INFORMATION}
\]

- Part\text{}s/\text{}dedicated/\text{}circuit/\text{}separately
- Field/\text{}Wiring
- Accessory

\[
\text{Note}
\]

- RD : RED
- BR : BROWN
- BL : BLUE
- BK : BLACK
- OR : ORANGE
- YL : YELLOW
- WH : WHITE
- GN/YL : GREEN / YELLOW

\text{WARNING}\n
- There is risk of electric shock due to failure or electric leakage.
- Installation work must be performed by authorized personnel and in accordance with the national wiring standards.

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**INSTALLATION & BEST LAYOUT PRACTICES**

**ZE CHASSIS**

Figure 11: ZE Chassis Installation Drawing

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**Table 4: ZE Chassis Installation Dimensions**

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimensions (inch)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A</td>
</tr>
<tr>
<td>ARVU052EA2</td>
<td>38-27/32</td>
</tr>
<tr>
<td>ARVU062EA2</td>
<td></td>
</tr>
</tbody>
</table>
Main Body Installation

- Attach the hanger bracket to the suspension bolt. Use nuts and washers (field supplied) to secure the upper and lower sides of the hanger bracket.
- Install the unit after checking the indoor (SA/RA) and outdoor (EA/OA) in accordance with the figure duct direction label.
- Install flexible duct between the unit and duct.
- Minimum thickness of the insulation for the connecting duct must be 3/8 inch.
- Tighten the upper nut.
- Use a level instrument to make sure that the unit is level.

Figure 13: Main Body Installation
Installing Fixing Bolts

- Select and mark the position for the fixing bolts.
- Drill a hole on the face of the ceiling for the anchor.

Figure 14: Installing Fixing Bolts

- Insert the anchor and washer on the suspension bolts to lock them in the ceiling.
- Firmly mount the suspension bolts to the anchor.
- Use nuts, washers and spring washers to secure the installation plates onto the suspension bolt.

Figure 15: Securing Suspension Rods

Selecting the Best Location

Do's
- Place the unit where it will be level and can support the weight of the unit.
- Install the unit where it can withstand vibration.
- Install the unit where service can be performed easily.

Don'ts
- Avoid installing the unit where inflammable gas is generated, flows, stored or vented.
- Avoid installing the unit where sulfurous acid gas or corrosive gas is generated.
- Avoid installing the unit near places near high frequency generators.

Assembling Washer Nut

- Tighten the commercial washer nut (more than 13/16) for the outside diameter of 3/8" to the commercial ceiling fixing bolt 3/8".

Figure 16: Selecting the Best Location

Figure 17: Assembling the Washer Nut
Connecting Power Wiring
1. Remove two screws and open the cover of the control box.
2. Connect the main power wires to the terminal block.
3. After inserting the power wires into the bushing, fully insert it into the terminal block for connection.
4. Fix the power wires with the clamp.
5. Pull the power wired to ensure they cannot be removed.

Wiring Precautions
Use round pressure terminals for connections to the power terminal black.

![Figure 18: Opening Control Box](image)

![Figure 19: Inserting the Power Wiring](image)

![Figure 20: Wiring Precautions](image)
• Do not connect wiring of different thickness to the power terminal block (slack in the power wiring could cause abnormal heat).
• When connecting wiring which is the same thickness, connect the wiring according to the first image shown below.

**Figure 21: Connecting Wiring**

**Conduit Connection**
1. Set the connecting cable into the terminal block of the indoor unit and tighten the screw to lock the conduit bracket to the indoor unit.
2. Join the conduit and the conduit bracket together.
3. Use the elbow type (L-Type) conduit.

**Figure 22: Conduit Connection**

**Figure 23: L-Type Conduit**

**Figure 24: Using L-Type Conduit**
Connecting the Duct

- After securely connecting the duct with the duct connection flange, wrap it with commercial aluminum tape so that air cannot leak out.
- Adjust the duct from the ceiling so that no force is applied to the main body of the ventilation system.
- Ensure that there are no foreign materials in the duct before connecting the duct.
- Ductwork connected to ERV should be insulated to prevent condensation.

**Note:**
To avoid causing a reduction in air volume or abnormal noise, do not connect the duct as shown in the image below.

![Diagram of bad duct connection example](image)

**WARNING**
- If an electric duct heater is connected, it must include a built-in safety device to prevent heater operation when airflow is not present, to prevent the possibility of fire, property damage, and/or personal injury.
- When the outdoor air temperature falls below the ERV operating limit (14°F), the electric duct heater temperature control shall energize the electric duct heater to pre-heat the outdoor air above 14°F.
<table>
<thead>
<tr>
<th>No.</th>
<th>Function</th>
<th>Code</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Setting Address of Central Control</td>
<td>01</td>
<td>00-FF : Address of central control</td>
</tr>
<tr>
<td>2</td>
<td>Supply ESP</td>
<td>02</td>
<td>Value1 - Step(01:low, 02:high, 03:super high)</td>
</tr>
<tr>
<td>3</td>
<td>Exhaust ESP</td>
<td>03</td>
<td>Value 2 - ESP value (0 ~ 255)</td>
</tr>
<tr>
<td>4</td>
<td>Product direction</td>
<td>04</td>
<td>01: Normal, 02: Reverse</td>
</tr>
<tr>
<td>5</td>
<td>Quick Refresh Priority</td>
<td>05</td>
<td>01: Supply air first, 02: Exhaust air first</td>
</tr>
<tr>
<td>6</td>
<td>Master setting</td>
<td>06</td>
<td>00: Slave, 01: Master</td>
</tr>
<tr>
<td>7</td>
<td>Dry Contact Auto</td>
<td>07</td>
<td>00:OFF, 01:ON</td>
</tr>
<tr>
<td>8</td>
<td>Release of 3 Min Delay</td>
<td>08</td>
<td>01:Set</td>
</tr>
</tbody>
</table>

### Setting Address of Central Control

1. When connecting central control, it sets the central control address of the indoor unit.
2. Function control and setting
   - Select the address code with inputting the up-down button (0~ F).
   - Change the items with inputting the right-left button. (Group address <-> indoor unit address)
   - Set the address with inputting Setting/Cancel button (indoor data send)

### Supply/Exhaust ESP Setting

1. Set the E.S.P (RPM) value of the air conditioner unit.
2. Function control and setting
   - Select the wind strength with inputting up-down button.
     - 01:low, 02:high, 03:very high (Seg flickering)
   - Move the setting items with inputting the right-left button.
   - Airflow selection <-> RPM value selection (Seg of selected item is flickering)
   - Select the RPM value of airflow with inputting up-down button.
     - 0~ 255 (Seg selecting)
   - Complete the RPM setting with inputting Setting/Cancel button (send RPM setting data of indoor unit).
   - Set the exhaust air ESP with conducting the steps above and inputting the function setting button and changing installer code to 04.

### Product Direction

1. Set the installation direction of the ventilation for the indoor unit.
2. Function control and setting
   - Select the direction value with inputting the up-down button.
     - 01:normal direction, 02:opposite direction
   - Complete the setting with inputting Setting/Cancel button (stop flickering and send the date to the indoor unit).
V-Net Wiring

- This unit can be used as part of the combined operation system used together with Multi V indoor units or as an independent system for processing outside air.

Figure 27: V-Net Wiring - Combined Operation System
When interlocking ERV to indoor unit thermostat, ERV fan will **not** be interlocked to IDU fan. ERV mode and ON/OFF status can be controlled using “Vent” button.
Maintenance and Service

To prevent the ventilator from deteriorating, clean dust off the air filter and total heat exchanger regularly.

Removing the Filter and Heat Exchanger

1. Remove the maintenance cover.
   • Place your hands inside of the ceiling from the maintenance cover and pull the maintenance cover up.
   • Loosen the hinge and detach the maintenance cover.

2. Remove the air filter.

3. Remove the total heat exchanger.
Air Filter Cleaning
• Clean the filter once every 6 months.
• Clean the dirt from the air filter using a vacuum cleaner or wash it with warm water.
• Dry the filter. Do not expose the air filter to direct sunlight or heat from fire.

Figure 30: Cleaning the Air Filter

Total Heat Exchanger Cleaning
• Use a soft brush and cleanser to remove dirt from the total heat exchanger.
• Never use water to clean the total heat exchanger.
• For service, contact the dealer or an authorized service center.

Figure 31: Cleaning the Total Heat Exchanger
Reassembling the Total Heat Exchanger

1. Securely put the corners of the total heat exchanger into the holder for assembly and slide them into the main body.

2. Assemble the air filter into the holding structure inside the total heat exchanger. Be careful not to damage the surface of the total heat exchanger. Dust on the total heat exchanger may cause deterioration of air volume.

3. Fix the maintenance cover to the right hinge and fix it to the left side (a nameplate is attached toward the reading direction).

**WARNING**

*Turn the breaker off prior to cleaning this product.*

### Table 7: Recommended Maintenance Cycle

<table>
<thead>
<tr>
<th>Part Name</th>
<th>Inspection Cycle (cleaning cycle)</th>
<th>Replacement Cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Filter</td>
<td>6 Months</td>
<td>3 Years</td>
</tr>
<tr>
<td>Total Heat Exchanger</td>
<td>1 Year</td>
<td>10 Years</td>
</tr>
</tbody>
</table>
MECHANICAL SPECIFICATIONS

General
ERV indoor units are factory assembled and provided with an internally mounted control circuit board, exhaust fan, supply fan, cross-flow air to air heat exchanger, washable outdoor air and return air filters, and bypass damper. Each unit is designed to operate using 208-230/60/1 power with voltage variances of ±10%. ERV operation range is 14°F - 113°F outdoor temperature.

Casing
The metal casing is designed to mount concealed above a finished ceiling. Supply fan discharge and exhaust fan inlet (return air) are front horizontal. Supply fan inlet (outdoor air) and exhaust fan discharge are rear horizontal. Cold metal surfaces are externally insulated. The case is provided with hanger brackets designed to support the unit weight on for corners. Hanger brackets have pre-punched holes designed to accept field supplied, all-thread rod hangers.

Fan Assemblies
ERV units have two fans; one fan for supply air and one fan for exhaust air. Both fans are direct driven. Fan motors are brushless, digitally-controlled (BLDC) design with permanently sealed bearings. The fan/motor assemblies are mounted in vibration attenuated rubber grommets. The fan speeds are controlled using a microprocessor-based direct digital control algorithm that provides three fan speeds. Fan speeds are super high, high, and low. Each fan speed can be adjusted from the factory setting using external static pressure (ESP) control settings to change fan speeds to compensate for airflow resistance caused by field installed ductwork.

Cross flow Air-to-air Heat Exchanger
Cross flow air-to-air heat exchanger is constructed of non-flammable, specially processed paper that allows transfer of heat and humidity. The air-to-air heat exchanger recovers energy from indoor air as it is exhausted outdoors. The recovered energy is transferred to the in-coming outdoor air without mixing airstreams. A hinged access panel allows removal of air-to-air heat exchanger for vacuum or brush cleaning. Since both heat and humidity are transferred, condensate drain is not required.

Air Filter
Two washable mesh filters are provided at the outdoor air and return air inlets of the air-to-air heat exchanger.

Microprocessor Controls
The ERV is provided with an integrated microprocessor-based controller. All unit operation parameters, excluding the unit operating schedule, are stored in non-volatile memory, resident on the ERV microprocessor. Operating schedules are stored in the wall controller or central controller. ERV units can be operated independently with a wall controller or interlocked to a Multi V system. When interlocking to a Multi V system, the field supplied communication cable between the ERV and outdoor unit is to be a minimum of 18 AWG, 2-conductor, stranded, and shielded cable (RS485), terminated via screw terminals on the control board. The microprocessor control provides the following functions:

- Auto restart following power restoration
- External static pressure (ESP) control of fans
- ERV mode allowing air to pass thru air-to-air heat exchanger
- Bypass mode allowing exhaust air to bypass air-to-air heat exchanger

The control board is also provided with terminals for connection of a field supplied CO2 sensor. DIP switch settings on the control board allow the ERV to operate independently or as a slave to a Multi V indoor unit.
## CONTROLLER GENERAL DATA

### Zone Controllers and Speciality Application Devices

#### Specifications

<table>
<thead>
<tr>
<th>Zone Controller</th>
<th>Name</th>
<th>Model No.</th>
<th>Color</th>
<th>Max Wire Length (ft)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LG Programmable Thermostat</td>
<td>PREMTB010U</td>
<td>White</td>
<td>164</td>
<td></td>
<td>Allows control of indoor unit on/off, operation mode, occupied and unoccupied temperature setpoints, fan speed, and airflow direction for up to 16 indoor units. Programmable schedule with 5 events per day with control of occupied/unoccupied, on/off mode, setpoints and fan speed. Advanced functions include two setpoint autochangeover, minimum difference between setpoints, setback and timed override.</td>
</tr>
</tbody>
</table>

Before specifying or placing an order, refer to the V-Net Network Solution Engineering Product Data Book and review the detailed technical data provided to fully understand the capabilities and limitations of these devices.

#### Table 9: Summary Data—Speciality Application Devices

<table>
<thead>
<tr>
<th>Speciality Application Device</th>
<th>Name</th>
<th>Model No.</th>
<th>Connect to</th>
<th>Application</th>
<th>Binary Signals Input/Output</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry Contact Unit 24 VAC</td>
<td>PQDSB1</td>
<td></td>
<td>Indoor Unit</td>
<td>On/Off, Run Status, Error Status</td>
<td>1/2</td>
<td>Enables the indoor unit to be controlled and monitored by third party controls using binary inputs and outputs.</td>
</tr>
<tr>
<td>Dry Contact Unit for Communication</td>
<td>PQDSCGCD0</td>
<td></td>
<td></td>
<td>On/Off, Mode, Controller Lock, Power Save, Run Status, Error Status</td>
<td>2/2</td>
<td>Enables the indoor unit to be controlled and monitored by a third party thermostat or controller.</td>
</tr>
<tr>
<td>Dry Contact Unit for Thermostat</td>
<td>PQDSCBNGCM1</td>
<td></td>
<td></td>
<td>On/Off, Thermo On/Off, Mode, Fan Speed, Run Status, Error Status</td>
<td>---</td>
<td>Enables the indoor unit to be controlled and monitored by a third party thermostat or controller.</td>
</tr>
<tr>
<td>Digital Output (DO) Kit</td>
<td>PQNFP00T0</td>
<td></td>
<td>Comm Bus</td>
<td>On/Off</td>
<td>0/1</td>
<td>One 25 amp DPST normally open relay. Used with central controller to control third party device manually or by schedule.</td>
</tr>
</tbody>
</table>

Before specifying or placing an order, refer to the V-Net Network Solution Engineering Product Data Book and review the detailed technical data provided to fully understand the capabilities and limitations of these devices.
### Table 10: Summary Data—Central Controllers (connect to the outdoor unit terminals Internet A, Internet B)

<table>
<thead>
<tr>
<th>Central Controller</th>
<th>Name</th>
<th>Model No.</th>
<th>Devices per Controller</th>
<th>Systems per Comm Bus</th>
<th>Devices per Comm Bus</th>
<th>No. of Comm Bus Ports</th>
<th>Binary Signals Input/Output</th>
<th>Power, Conn</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AC Smart Premium</td>
<td>PQCSW421E0A</td>
<td>128</td>
<td>16</td>
<td>128</td>
<td>1</td>
<td>2/2</td>
<td>24 VAC</td>
<td></td>
<td>Provides scheduling, autochangeover, setback, remote controller lock, setpoint, range limit, run time limit, web access, email alarm notification, visual floorplan navigation, peak/demand control, software device interlocking, PDI integration, and AC Manager Plus integration advanced functionality in addition to basic unit control and monitoring.</td>
</tr>
<tr>
<td>AC Ez</td>
<td>PQCSZ250S0</td>
<td>32</td>
<td>16</td>
<td>256</td>
<td>1</td>
<td>12 VDC, ODU</td>
<td>2/2</td>
<td>24 VAC</td>
<td>Provides for scheduling in addition to basic indoor unit control and monitoring.</td>
</tr>
<tr>
<td>Advanced Control Platform (ACP) Standard</td>
<td>PQCPA11A0E</td>
<td>256</td>
<td>16</td>
<td>64 (128 with PDI Premium)</td>
<td>4</td>
<td>2/2</td>
<td>24 VAC</td>
<td></td>
<td>Provides for scheduling, remote controller lock, setpoint range limit, web access, peak/demand control, PDI integration, and AC Manager Plus integration advanced functionality in addition to basic unit control and monitoring.</td>
</tr>
<tr>
<td>Advanced Control Platform (ACP) Premium</td>
<td>PQCPB11A0E</td>
<td>256</td>
<td>16</td>
<td>64 (128 with PDI Premium)</td>
<td>10/4</td>
<td>24 VAC</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Before specifying or placing an order, refer to the V-Net Network Solution Engineering Product Data Book and review the detailed technical data provided to fully understand the capabilities and limitations of these devices.

### Table 11: Summary Data—Integration Solutions (connect to outdoor unit terminals Internet A, Internet B)

<table>
<thead>
<tr>
<th>Integration Solution</th>
<th>Name</th>
<th>Model No.</th>
<th>Devices per Controller</th>
<th>Systems per Comm Bus</th>
<th>Devices per Comm Bus</th>
<th>No. of Comm Bus Ports</th>
<th>Binary Signals Input/Output</th>
<th>Power, Conn</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BACnet® Gateway</td>
<td>PQNFB17C1</td>
<td>256</td>
<td>16</td>
<td>64 (128 with PDI Premium)</td>
<td>4</td>
<td>24 VAC</td>
<td>10/4</td>
<td></td>
<td>Allow integration of LG equipment for control and monitoring by open protocol BACnet® and LonWorks® building automation and controls systems.</td>
</tr>
<tr>
<td>LoniWorks® Gateway</td>
<td>PLNWKB100</td>
<td>64</td>
<td>16</td>
<td>64</td>
<td>1</td>
<td>24 VAC</td>
<td>2/2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Before specifying or placing an order, refer to the V-Net Network Solution Engineering Product Data Book and review the detailed technical data provided to fully understand the capabilities and limitations of these devices.