



INSTALLATION MANUAL FOR LG AIR HANDLER UNIT (AHU) COMMUNICATIONS KIT



AHU Model Number: PRCKAM

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Content familiarity required for proper installation.**

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SAFETY PRECAUTIONS

The instructions below must be followed to prevent product malfunction, property damage, injury or death to the user or other people. Incorrect operation due to ignoring any instructions will cause harm or damage. The level of seriousness is classified by the symbols described below.

TABLE OF SYMBOLS


 DANGER	This symbol indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
 WARNING	This symbol indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
 CAUTION	This symbol indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
Note	This symbol indicates situations that may result in equipment or property damage accidents only.
	This symbol indicates an action should not be completed.


Installation

WARNING

All electrical work must be performed by a licensed electrician and conform to local building codes or, in the absence of local codes, with the National Electrical Code, and the instructions given in this manual.

If the power source capacity is inadequate or the electric work is not performed properly, it may result in fire, electric shock, physical injury or death.

 Do not touch the communications and EEV kits' wiring, terminals, or other electrical components with tools or exposed skin when the power is connected. Only qualified technicians should install, remove, or re-install the kits. Improper installation or use may result in fire, electric shock, physical injury or death.

 Do not install, remove, or re-install the communications and EEV kits by yourself (end user). Ask the dealer or a qualified technician familiar with safety procedures and equipped with the proper tools and test instruments to install the kits. Improper installation by the user may result in fire, electric shock, physical injury or death.


For replacement of an installed communications and EEV kits, always contact a qualified LG service provider familiar with safety procedures and equipped with the proper tools and test instruments.

There is risk of fire, electric shock, and physical injury or death.

Note

Only qualified technicians familiar with safety procedures and equipped with the proper tools and test instruments should install, remove, or re-install the communications and EEV kits.

Improper installation or use may result in product malfunction.

 Do not install the communications and EEV kits in a location where the kits can be exposed to rain, snow, etc. There is risk of product malfunction.

 Do not install the communications and EEV kits in a location where the kits can be exposed to rain, snow, etc. There is risk of physical injury or death due to electric shock.

Safely dispose of the packing materials.
Tear apart and throw away plastic packaging bags so that children may not play with them and risk suffocation and death.

Wear protective gloves when unpacking, installing, and handling the kits. Sharp edges may cause personal injury.

 Do not install the communications and EEV kits in locations where either kit could fall down. There is risk of physical injury.

Use the appropriate parts and connectors.
There is risk of physical injury or death due to fire and / or electric shock.

Replace all control box and panel covers on the communications and EEV kits.
If cover panels are not installed securely, dust, water, and animals may enter the kits, causing fire, electric shock, and physical injury or death.

Failure to carefully read and follow all instructions in this manual can result in physical injury or death.

 Do not drop the communications and EEV kits. It may damage the products.

Failure to carefully read and follow all instructions in this manual can result in property damage and equipment malfunction.

WIRING

DANGER

High voltage electricity is required to operate the communications and EEV kits. Adhere to the NEC code and these instructions when wiring.

Improper connections and inadequate grounding can cause accidental injury or death.

Always ground the communications and EEV kits following local, state, and NEC codes.


There is risk of fire, electric shock, and physical injury or death.

Turn the power off at the nearest disconnect before servicing the equipment.

Electrical shock can cause physical injury or death.

Properly size all circuit breakers or fuses.

There is risk of fire, electric shock, explosion, physical injury or death.

Communication kit requires its own power source (EEV kit is powered off of Communication kit).  Do not share the power source with other equipment.

There is risk of heat generation which may cause fire, electric shock, explosion, physical injury or death.

WARNING

The information contained in this manual is intended for use by an industry-qualified, experienced, certified electrician familiar with the U.S. National Electric Code (NEC) who is equipped with the proper tools and test instruments.

Failure to carefully read and follow all instructions in this manual can result in personal injury or death.

All electric work must be performed by a licensed electrician and conform to local building codes or, in the absence of local codes, with the National Electrical Code, and the instructions given in this manual.

If the power source capacity is inadequate or the electric work is not performed properly, it may result in fire, electric shock, physical injury or death.

Refer to local, state, and federal codes, and use power wires of sufficient current capacity and rating.

Wires that are too small may generate heat and cause a fire and physical injury or death.


Secure all field wiring connections with appropriate wire strain relief.

Improperly securing wires will create undue stress on equipment power lugs. Inadequate connections may generate heat, cause a fire and physical injury or death.

Verify that all power wiring, plugs, and sockets are not loose or damaged.

Loose wiring may overheat at connection points, causing a fire, electrical shock, physical injury or death.

Note

 **Do not supply power to the communication and EEV kits until all electrical wiring, controls wiring, piping, installation, and refrigerant evacuation are completed for the whole air conditioning system.**

The information contained in this manual is intended for use by an industry-qualified, experienced, certified electrician familiar with the U.S. National Electric Code (NEC) who is equipped with the proper tools and test instruments.

Failure to carefully read and follow all instructions in this manual can result in equipment malfunction and property damage.

SAFETY PRECAUTIONS

OPERATION

DANGER

- ⊘ Do not provide power to or operate communication and EEV kits if the kits are flooded or submerged. Always have the dealer or an authorized technician to service the kits.
There is risk of fire, electric shock, physical injury or death.
- ⊘ Do not store or use flammable gas or combustibles near the communications and EEV kits.
There is risk of fire, explosion, and physical injury or death.

Unplug the communication and EEV kits if either kit emits strange sounds, smells, or smoke.
There is risk of fire, electric shock, physical injury or death.

WARNING

- ⊘ Do not install the communications and EEV kits in locations exposed to open flame or extreme heat. Do not touch the kits with wet hands.
There is risk of fire, electric shock, physical injury or death.
- ⊘ Do not modify or extend the power supply cords.
There is risk of fire, electric shock, physical injury or death.

- ⊘ Do not step or place anything on the communications and EEV kits.
If the product falls, there is risk of physical injury.
- ⊘ Do not place heavy objects on the communications and EEV kits' power cables.
There is risk of fire, electric shock, physical injury or death.

CAUTION

Only authorized persons should operate the communications and EEV kits.
If the kits are not operated properly, there is a risk of physical injury.

Note

- ⊘ Do not let the communication and EEV kits get wet.
There is risk of product failure or malfunction.
- Only authorized persons should operate the communication and EEV kits.
There is risk of product failure or malfunction.

- ⊘ Do not drop the communications and EEV kits.
There is risk of product failure or malfunction.
- ⊘ Do not step or place anything on the communications and EEV kits.
If the product falls, there is risk of product damage.

AHU KIT INTRODUCTION

Introduction

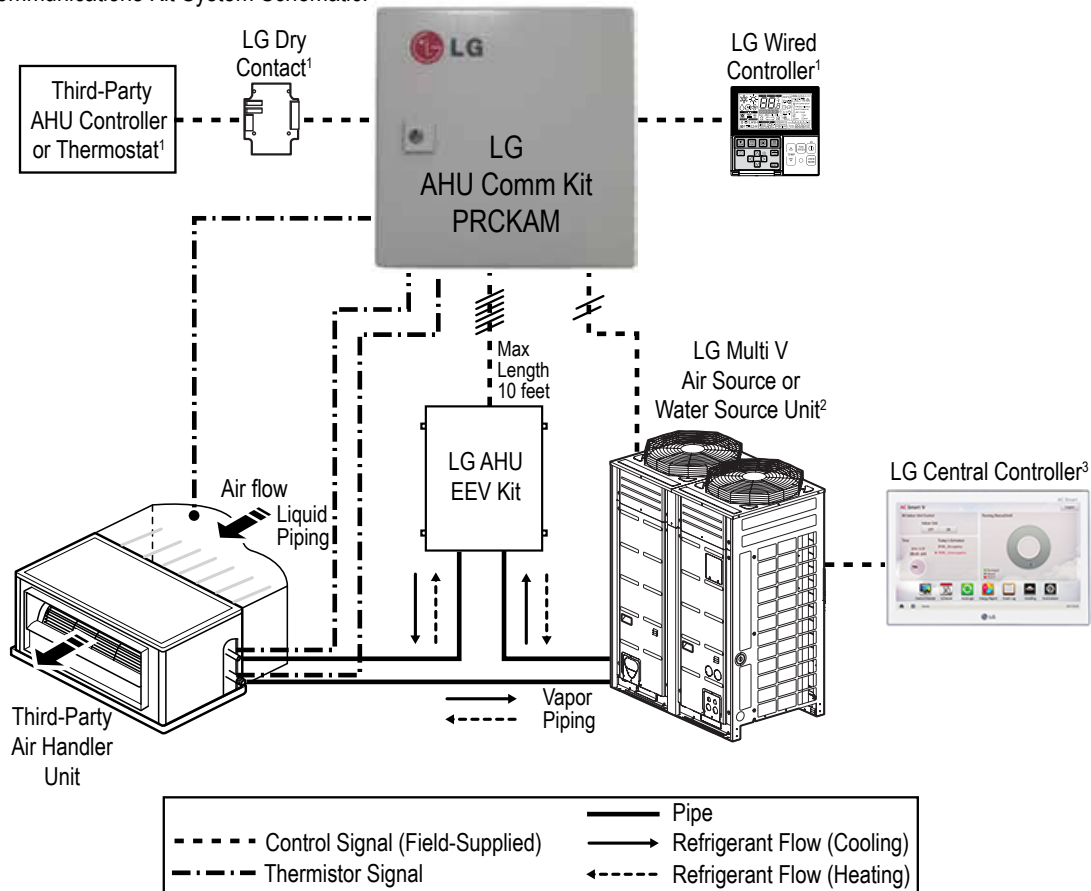
Air Handler Unit (AHU) Communications Kits (PRCKAM) allow communication between third-party air handler units and LG air-source and water-source units (Multi V Air III, IV (heat pump or heat recovery), and Mini; Multi V Water II, IV (heat pump or heat recovery), and Mini) and for on / off control.

- Supports AHU coil capacities from 28 kBtu/h to 192 kBtu/h.
- Includes three thermistors (Pipe in, pipe out, and return air); each thermistor is 16 feet long.
- Controls AHU fan speeds (high, medium, low).
- Designed for indoor installation (field-supplied waterproof enclosure required for outdoor installation).
- Connects to Indoor Unit A / B terminals on the Outdoor Unit PCB (Master unit in multi-frame systems) with two-conductor wire.
- Can be controlled by LG manufactured (PREMT****) remote controllers or Dry Contact for Thermostat (PDRYCB300) and a third-party thermostat / AHU controller (required; all sold separately).
- Can be controlled through a V-Net central controller as an indoor unit (sold separately).
- Requires field-supplied relays for connecting to AHU motor, single or three speed motors.
- Requires an LG manufactured Electronic Expansion Valve (EEV; sold separately).

Figure 1: PRCKAM AHU Communications Kit.



Figure 2: AHU Communications Kit System Schematic.



¹Either LG wired controller OR dry contact with third-party AHU controller / thermostat is required.

²Compatible units are Multi V III, IV (heat pump or heat recovery), or Mini air source and Multi V II, IV (heat pump or heat recovery), or Mini water source.

³Compatible central controllers are AC Smart Premium, AC Smart IV, ACP, ACP IV, BacNet™ Gateway, and LonWorks™ Gateway.*

* BACnet™ is a trademark of ASHRAE; LonWorks™ is a trademark of Echelon Corporation.

AHU COMMUNICATIONS KIT SPECIFICATIONS, COMPONENTS LIST


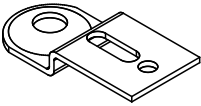
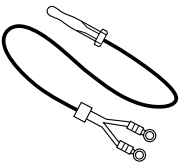

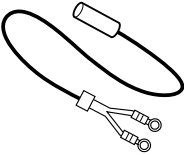
Specifications

Table 1: PRCKAM AHU Communications Kit Specifications Table.

Kit Model Number	PRCKAM
For Use With	Multi V III, IV, and Mini Air-Source Outdoor Units; Multi V II, IV, and Mini Water-Source Units
Power Supply Requirements	208-230VAC, 60Hz, 1Ph
Rated Current	1.3A
Ambient Operating Temperature Range	-4 to +149°F
Ambient Operating Humidity Range	0 to 98% (Non-condensing)
Dimensions (in., W x H x D)	11-13/16 x 11-13/16 x 6-1/8
Net Weight (lbs.)	13.5
Shipping Weight (lbs.)	16.5
Communications	RS-485 (Connects to Indoor Unit A / B Terminals on Air-Source / Water-Source Unit PCB; Master unit in multi-frame systems)
Communications Cable	AWG 18 x 2 Stranded, Shielded Copper Wire

AHU Communications Kit Components

Table 2: PRCKAM AHU Communications Kit Components Table (factory supplied).

Part	Quantity	Image	Part	Quantity	Image
AHU Communications Kit	One (1)		Bracket	Four (4)	
Return Air (Room) Thermistor	One (1)		Capacity Option PCBs	Eleven (11)	
Pipe Thermistor	Two (2) (One [1] Pipe In, One [1] Pipe Out)				

AHU COMMUNICATIONS KIT INSTALLATION

Selecting the Best Location

AHU Communications Kit Design Parameters

- Minimum coil entering air temperature is 41°F when system is operating in heating mode.
- AHU coil sizing parameters:
 - Suction (evaporating) temperature for coil sizing is 41°F, Condensing (liquid) temperature for coil sizing is 110°F.
 - Recommended coil tube sizes: 3/8 or 1/2 inches.
 - Coil volume is needed to calculate additional refrigerant charge amount.
 - Coils larger than 16 tons should be divided into multiple circuits to allow EEV Kit connection kit (EEV Kit sold separately).
- Pipe sizing rules are same rules as the connected air-source or water-source unit (see respective Engineering and Installation Manuals for more information).
- Maximum recommended combination ratio is 100%.
- AHU Communications Kits and EEV Kits (sold separately) are not weatherproof and must be protected from rain, snow, etc.

Selecting the Best Location

Do's

- Install the AHU Communications and EEV Kits with the access panels facing outward.
- Install in a location that can support the weight of the kits.
- Install the EEV kit on the AHU as close as possible to the heat exchanger.

Don'ts

- Don't install or operate the unit in an area where mineral oils, sulphuric gases, acidic or alkaline vapors or spray are present.
- Don't install in an area where the air contains high levels of salt (oceanside locations).
- Don't install in vehicles or vessels.
- Don't install in an area where voltage fluctuates significantly (factories), or near machines that generate electromagnetic waves.

AHU Operation Range

Range of the heat exchanger inlet air temperature is 64 to 104°F for cooling, and 41 to 86°F for heating. If the temperature is <64°F for cooling and >86°F for heating, the system might cycle on and off because of the system's protection logic.

Note

To measure room temperature accurately, install the room thermistor in the heat exchanger inlet. If the room thermistor is not installed properly, the AHU may not operate properly.

Table 3: AHU Applications and Conditions.

Application	Conditions
100% fresh air intake: The AHU(s) is (are) the only indoor unit(s) connected to the air-source / water-source unit(s).	The total capacity of 100% Fresh Air Intake AHU(s) should be 50~100% of the air-source / water-source unit(s).
Combination of indoor unit(s) and 100% Fresh Air Intake AHU(s) is (are) connected to the air-source / water-source unit(s).	- The total capacity of the system (indoor unit(s) + 100% fresh air intake AHU) should be 50~100% air-source / water-source unit(s) - The total capacity of the 100% fresh air intake AHU should be less than 30% of the air-source / water-source unit(s) capacity.

AHU COMMUNICATIONS KIT INSTALLATION

Capacity Option PCB

Matching the Capacity Option PCB to the AHU

For the AHU Communications Kit to function properly, the Capacity Option PCB that corresponds to the capacity of the AHU must be installed. The AHU Communications Kit includes eleven (11) different Capacity Option PCBs to choose from (see table below).

After choosing the appropriate PCB, remove the factory-installed 182 kBTu/h Capacity Option PCB, and replace it with the new Capacity Option PCB.

Figure 3: Capacity Option PCB Installation.

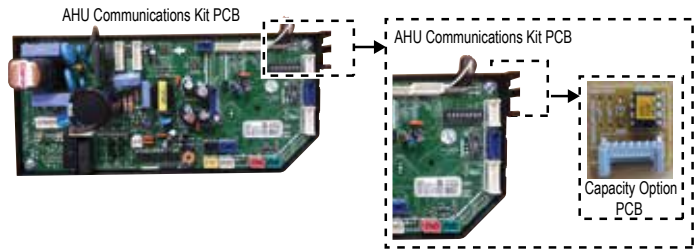


Table 4: AHU Capacity Option PCBs.

Capacity Option PCB Part No.	Capacity (kBTu/h)
EBR52358907	28
EBR52358908	36
EBR52358909	42
EBR52358910	48
EBR52358911	76
EBR52358912	96
EBR52358914	115
EBR52358915	134
EBR52358916	153
EBR52358917	172
EBR52358913	192

- Evaporator Saturated Suction Temperature (SST) = 43°F
- Superheat (SH) = 5 C

- Air Temperature = 81°F dry bulb (DB) temperature / 66°F wet bulb (WB) temperature

AHU COMMUNICATIONS KIT INSTALLATION

AHU Communications Kit Parts / Mounting

AHU Communications Kit Parts

Figure 4: AHU Communications Kit Parts Diagram.

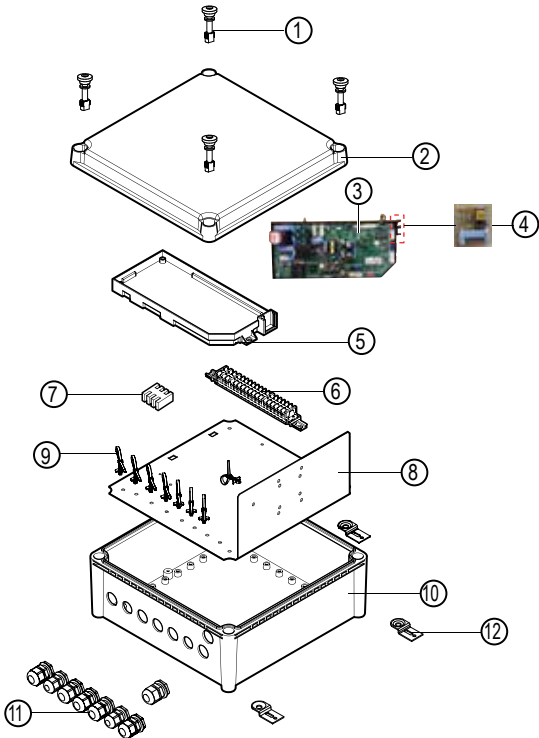


Table 5: AHU Communications Kit Parts Table.

Diagram Label	Part Name	Quantity
1	Plastic Bolt	Four (4)
2	Control Box Cover	One (1)
3	Main PCB	One (1)
4	Capacity Option PCB (36kBtu/h)	One (1)
5	Main PCB Case	One (1)
6	Communications Terminal Block	One (1)
7	Power Supply Terminal Block	One (1)
8	Panel	One (1)
9	Support Tie	Eight (8)
10	AHU Case	One (1)
11	Cable Connectors (Two [2] Types)	Eight (8)
12	Bracket	Four (4)

Mounting the AHU Communications Kit

1. Remove the Control Box Cover by unscrewing the plastic bolts at each of the four (4) corners.
2. Using the Control Box Cover as a template, mark the location on the air handler where the holes for the screws should be placed. Drill the four (4) holes.
3. Attach the AHU Case securely using four (4) field-supplied 3/16 inch long screws.

Figure 5: Unscrew the plastic bolts.

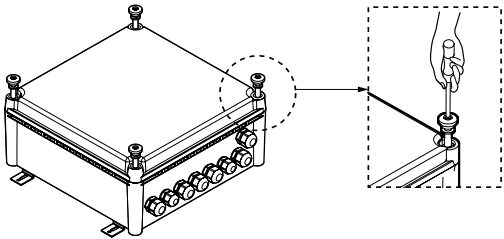
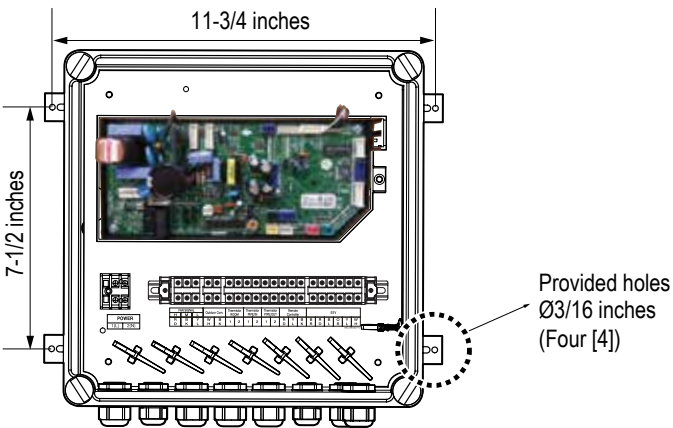


Figure 6: AHU Communications Kit Case Hole Dimensions.



AHU COMMUNICATIONS KIT INSTALLATION

Power Wiring and Communication Cable Installation

General Power Wiring Guidelines

⚠ WARNING

All electrical work must be performed by a licensed electrician and conform to local building codes or, in the absence of local codes, with the National Electrical Code, and the instructions given in this manual.

If the power source capacity is inadequate or the electric work is not performed properly, it may result in fire, electric shock, physical injury or death.

All field-supplied parts, materials, and electric work must be conform to local codes.

Improper components and installation may result in fire, electric shock, physical injury or death.

A main switch or disconnect, in accordance with relevant local and national codes, and having a contact separation in all poles, must be incorporated in the wiring.

Improper installation by the user may result in fire, electric shock, physical injury or death.

Refer to the air-source / water-source heat pump unit installation manual for power wiring sizes, circuit breaker and switch capacities, and wiring instructions.

If the power source capacity for the air-source unit / water-source unit is inadequate or the electric work is not performed properly, it may result in fire, electric shock, physical injury or death.

Use only specified wires, and tightly connect wires to the terminals. Install wiring so that other equipment is not obstructed.

Improper or incomplete connections could result in overheating, fire, electric shock, physical injury or death.

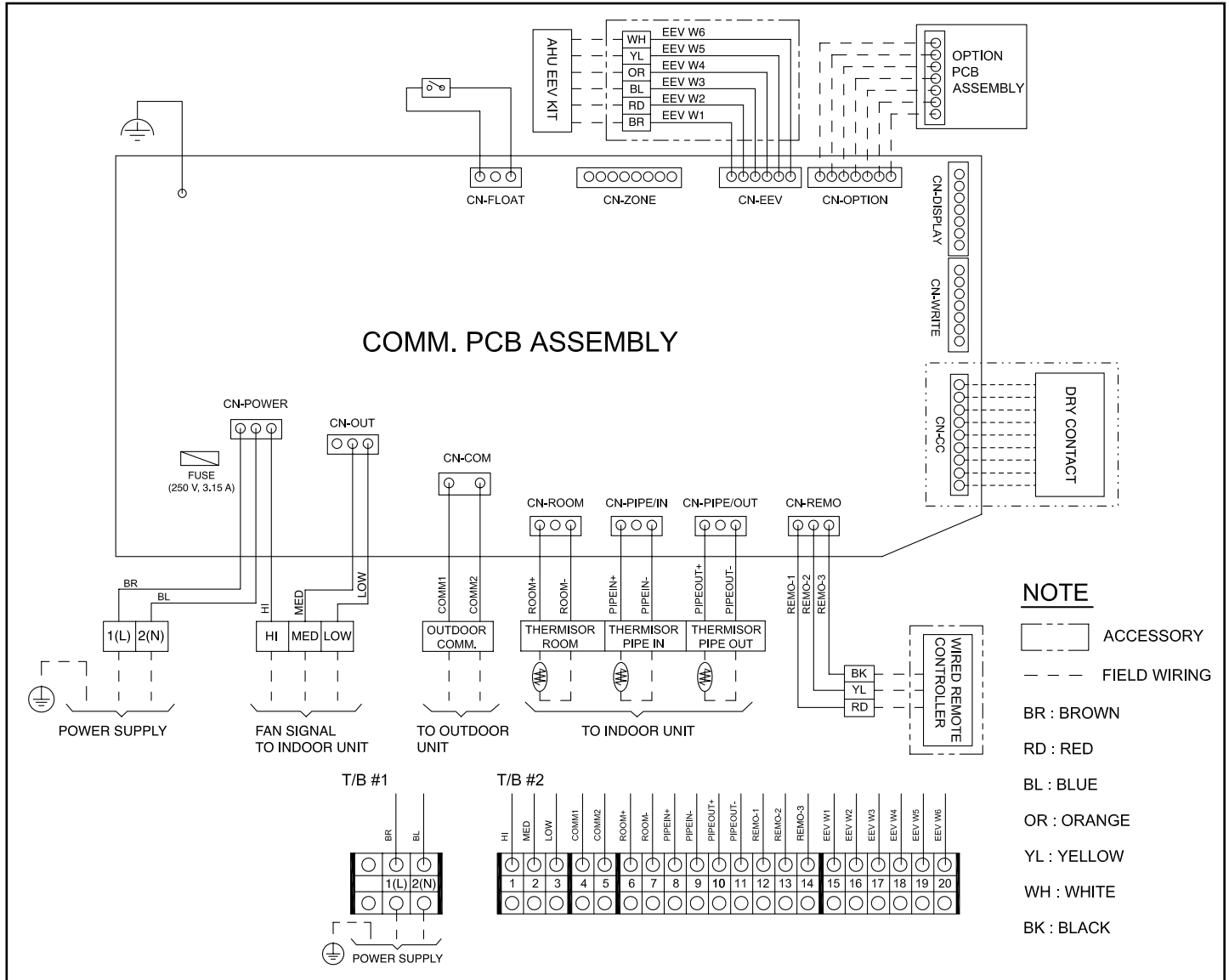
Note

- Communications wiring should be 18 gauge, shielded, and stranded.
- The thermistor cable, remote controller wires, and communications wires should be positioned at least two (2) inches away from power supply wires. If these wires are installed too closed together, it may result in product malfunction due to electrical interference.

AHU COMMUNICATIONS KIT INSTALLATION

Wiring Diagram

Figure 7: AHU Communications Kit Wiring Diagram.



Installation

AHU COMMUNICATIONS KIT INSTALLATION

Wiring Diagram

Table 6: PCB Legend.

Terminal	Purpose	Function
CN-POWER	AC Power supply	AC Power line input for indoor controller
CN-OUT	Fan speed	Medium and low fan speed control
CN-COM	Communication	Communication line input between indoor unit and outdoor unit
CN-ROOM	Room sensor	Room air thermistor
CN-PIPE/IN	Suction pipe sensor	Pipe in thermistor
CN-PIPE/OUT	Discharge pipe sensor	Pipe out thermistor
CN-REMO	Remote controller	Remote control line
CN-CC	Dry Contact	Connection to Dry Contact (Optional)
CN-WRITE (factory use only)	Programming	Used for programming the board (for factory use only)
CN-DISPLAY	Display	Does not apply
CN-OPTION	Option PCB	Contains AHU programming
CN-EEV	EEV output	EEV control output
CN-ZONE	Zoning	Does not apply
CN-FLOAT	Float switch input	Float switch sensing

Table 7: Terminal Block Legend.

Terminal	Purpose	Function
1(L), 2(N)	Power Supply	Power Supply Connection
1-3	Air Handler Unit Connection	Fan Signal (High / Medium / Low) Control
4-5	Air-Source / Water-Source Unit Connection	Communication (Internet A, B)
6-7	Air Handler Unit Connection	Return Air (Room) Thermistor Connection
8-9		Pipe In Thermistor Connection
10-11		Pipe Out Thermistor Connection
12-14		Remote Controller Connection
15-20	EEV Kit Connection	EEV Kit Connection

AHU COMMUNICATIONS KIT INSTALLATION

Connections

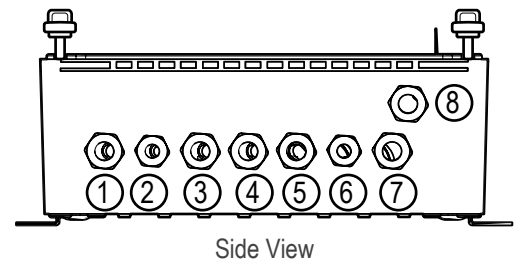
AHU Communications Kit Connections

There are up to eight (8) connections on the AHU Communications Kit (see table below and figure at right). Each connection has its own cable connector (with nut) through the side of the AHU Communications Kit.

Table 8: AHU Communications Kit Wiring / Cable Connector Legend.

Connector No.	Wiring / Cable Connection
1	Power Supply
2	Fan Signal to the AHU
3	Air-Source Unit / Water-Source Unit Communication Connection (Connects to IDU A / B terminals on the air-source / water-source unit with two-conductor cable)
4	Return Air (Room) Thermistor
5	Pipe Thermistor (In / Out)
6	Remote Wired Controller
7	EEV Kit
8	Dry Contact

Figure 8: AHU Communications Kit Wiring / Cable Connector.



AHU Communications Kit Wiring / Cable Procedure

1. To connect the AHU Communications Kit to the power supply, the air-source / water-source unit, and the wired remote controller, pull the field-supplied power wires and each communication cable (one to / from the air-source / water-source unit, and one from the wired remote controller) through the respective cable connectors.
2. Tighten cable connectors with the nuts (included) firmly to secure the wiring and cables, and to provide some water protection.
3. Secure the wiring / cable with the support tie.
4. To connect the communications cables from the wired remote controller wire and air-source / water-source unit, strip the insulation on the end of the cable, and replace the end with a ring-type (Ø3) terminal. Connect the ring-type terminal to the appropriate terminal on the AHU PCB.

Figure 9: AHU Communications Kit Connection Path.

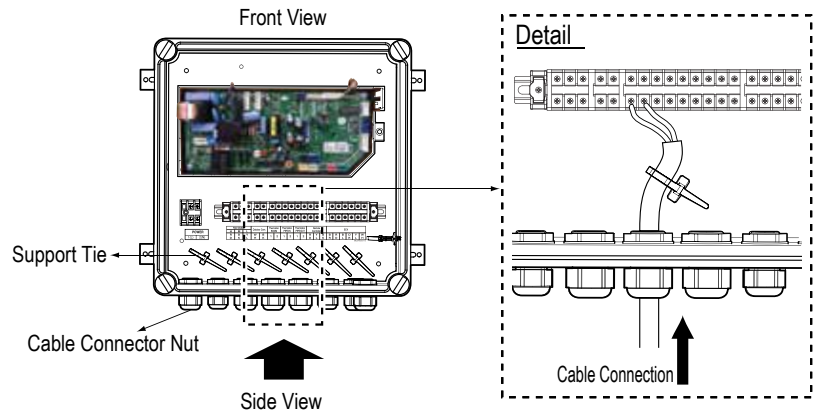
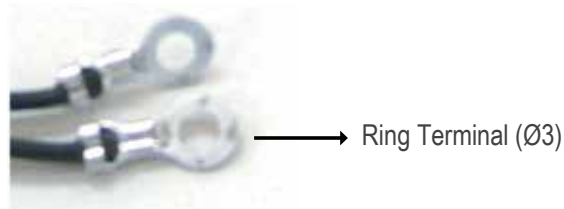


Figure 10: Ring Terminal Connector.



AHU COMMUNICATIONS KIT INSTALLATION

AHU Communications Kit Connection for Fan Signal

AHU Communications Kit to Air Handler Unit Connection (Fan Motor Control)

⚠ WARNING

AHU Communications Kit Hi/Med/Low wires should not be connected directly to the AHU fan motor. Improper connections could result in fire, electric shock, physical injury or death.

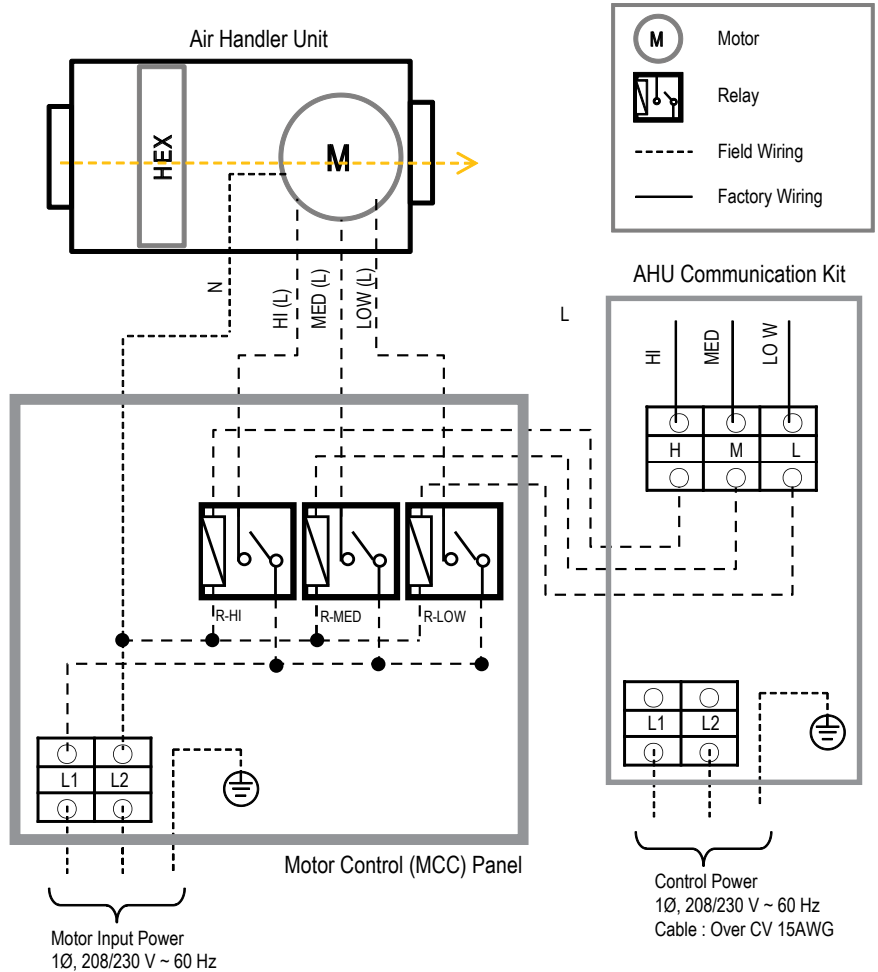
- AHU manufacturer-supplied relays must be used to connect the LG AHU Communications Kit to the AHU fan motor.

- MCC panel means motor control panel.

Note

- AHU Communications Kit Hi/Med/Low wires should not be connected directly to the AHU fan motor. Improper connections could result in product damage.
- If the third-party AHU fan motor is the On/Off type, the HI/MED/LOW wires from the motor control panel to the AHU have to connect as one common wire. Example: If just the Hi wire is connected, the fan motor will not operate using the LG AHU Communications Kit control logic.

Figure 11: AHU Communications Kit to AHU Connection (For Fan Signal).



AHU COMMUNICATIONS KIT INSTALLATION

Thermistor Installation

Thermistor Locations

All thermistors (one [1] return air [room] thermistor and two [2] pipe thermistor) must be correctly installed to ensure proper AHU Communications Kit operation.

1. Return Air (Room) Thermistor: Install it at the AHU heat exchanger inlet in the return air stream.
2. Pipe In Thermistor: Install it behind the distributor on the coldest area in the heat exchanger (contact the heat exchanger manufacturer for the precise location).
3. Pipe Out Thermistor: Install it at the outlet of the heat exchanger as close as possible to the heat exchanger.

Note

System operation must be evaluated to determine if the AHU evaporator is protected against freezing up. Run a system test, and see if the AHU evaporator is freezing up.

Figure 12: Location of the Return Air (Room) Thermistor.

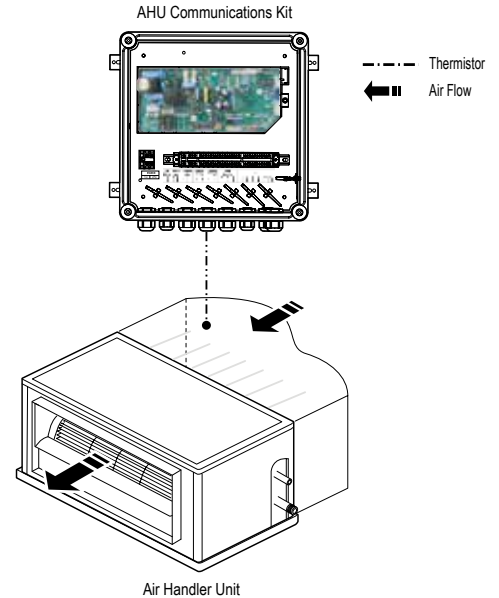
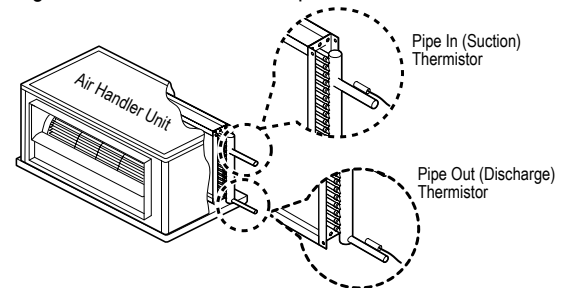


Figure 13: Locations of the Pipe Thermistors.



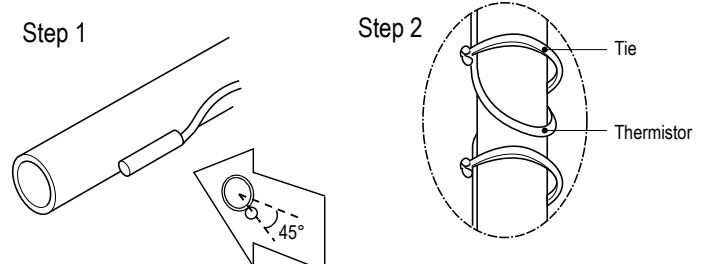
Thermistor Cable Installation

1. Place the thermistor cables in a conduit.
2. To avoid imparting strain on the thermistor cable, or to protect the thermistor from loosening, secure it with cable ties.

Note

Strain on the thermistor cable or loosening of the thermistor may result in a bad contact and incorrect temperature measurements.

Figure 14: Securing the Thermistor Cable.



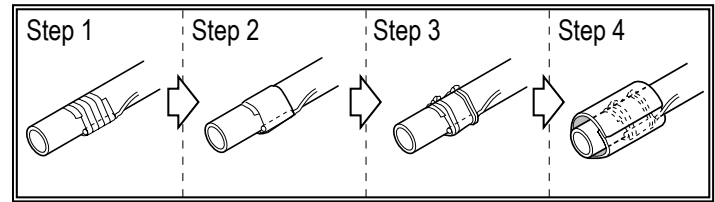
AHU COMMUNICATIONS KIT INSTALLATION

Thermistor Installation

Attaching the Pipe Thermistors

1. To attach the thermistor tip to the pipe, wrap with field-supplied aluminum insulation tape (aluminum insulation tape ensures a good heat transfer).
2. Wrap a piece of rubber (factory supplied) around the thermistor tip (to avoid the thermistor loosening in the future).
3. Secure the thermistor tip to the pipe with two (2) field-supplied cable ties.
4. Insulate the thermistor with a field-supplied insulation sheet that is >5t.

Figure 15: Steps to Attaching the Pipe Thermistors.



Tips for Attaching the Pipe In / Pipe Out Thermistors

- To accurately sense the temperature of the evaporator, place the uppermost tip of the thermistors on the evaporator. The thermistor tip is the most sensitive area on the thermistor.
 - To avoid water accumulating on the thermistor tip, position the thermistor cable slightly below the thermistor tip, or install the thermistor tip parallel with the cable.
- ⊘ Do not include a 90° angle or a kink in the thermistor cable, nor install the thermistor tip upside down.

Figure 16: Thermistor Tip Contact Area.

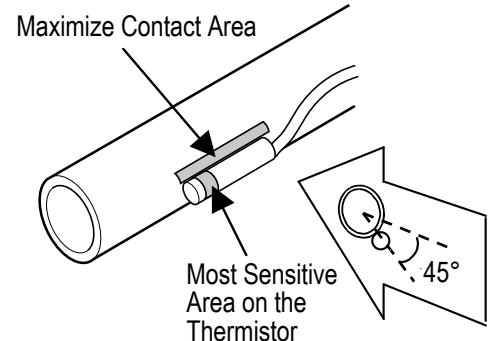
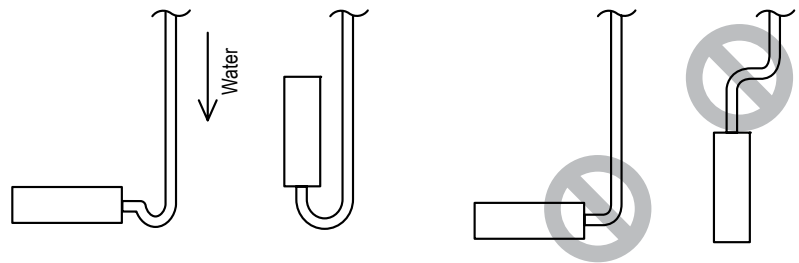


Figure 17: Positioning the Thermistor Cable and Tip.



EEV KIT INSTALLATION

Introduction, Specifications, Parts, Design Parameters

Introduction

When used with the LG AHU Communications Kit (sold separately), the LG EEV Kit controls refrigerant flow between LG Multi V air-source or water-source units and a third-party air handler unit (AHU).

The EEV Kits are offered in two sizes: PRLK048A0 supports 28 MBH through 96 MBH coils (8 tons maximum); PRLK096A0 supports 115 MBH through 192 MBH coils (16 tons maximum). EEV Kits are designed to be mounted on the outside of the third-party AHU and can be oriented in any direction. AHU Communications Kits provide the power to the EEV Kit.

Specifications

Table 9: EEV Kit Specifications Table.

Model Number	PRLK048A0	PRLK096A0
For Use With	PRCKAM Air Handler Unit Communications Kit	
Power Supply Requirements	Powered by Air Handler Unit Communications Kit (12 VDC)	
Ambient Operating Temperature Range	-4 to +149F	
Ambient Operating Humidity Range	0 to 98% (Non-condensing)	
Dimensions (in., W x H x D)	8-5/8 x 15-15/16 x 3-5/16	
Net Weight (lbs.)	6.8	
Shipping Weight (lbs.)	7.9	
Maximum Air Handler Unit Capacity (Btu/h)	96,000	192,000
Communications Cable	AWG 18 x 6 Stranded, Shielded Copper Wire	
Refrigerant Type	R410A	

Figure 18: EEV Kit.



Parts

Figure 19: EEV Parts Diagram.

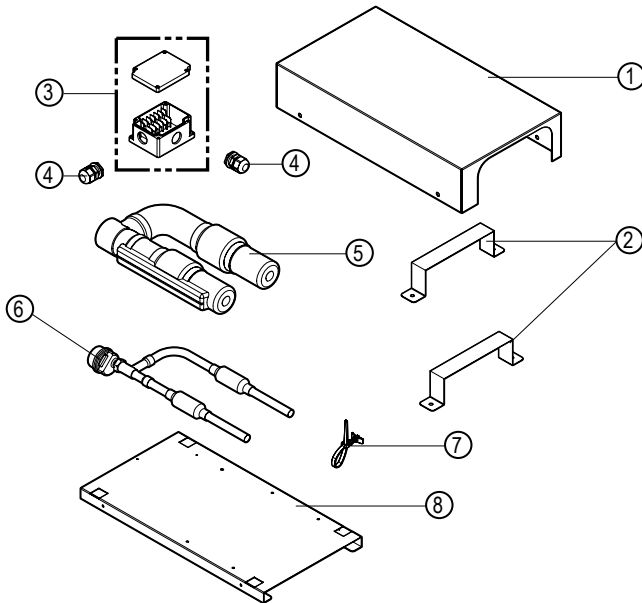


Table 10: EEV Parts Table.

Diagram Label	Part Name	Quantity
1	Top Panel	One (1)
2	Bracket	Two (2)
3	Terminal Box	One (1)
4	Cable Connectors	Two (2)
5	Pipe Insulation	One (1)
6	Electronic Expansion Valve Assembly (EEV, Strainer, Tube)	One (1)
7	Support Tie	One (1)
8	Bottom Panel	One (1)

EEV Kit Design Parameters

- Maximum of one (1) EEV Kit can be connected to one (1) AHU Communications Kit.
- Minimum coil entering air temperature for heating mode is 41°F.
- Requires field-supplied six-conductor communication cable to connect to AHU Communications Kit.

- Maximum distance between EEV Kit and AHU Communications Kit is ten (10) feet.
- Designed for indoor installations (field-supplied waterproof enclosure must be used when installing outdoors).



EEV KIT INSTALLATION

Mounting the EEV Kit / Preparing the Pipes

Mounting the EEV Kit

1. Remove the Top Panel by unscrewing the screws at the four (4) corners.
2. Using the Bottom Panel as a template, mark the location on the wall or ceiling where the holes for the screws should be placed. Drill the four (4) holes.
3. Attach the EEV Bottom Panel securely using four (4) field-supplied 1/4 inch long screws.

Figure 20: Removing the Screws.

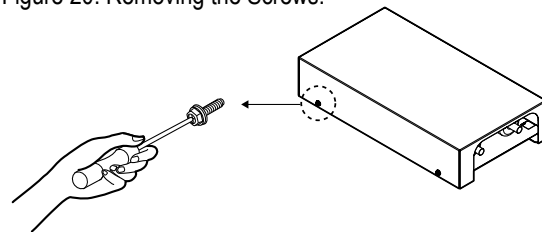
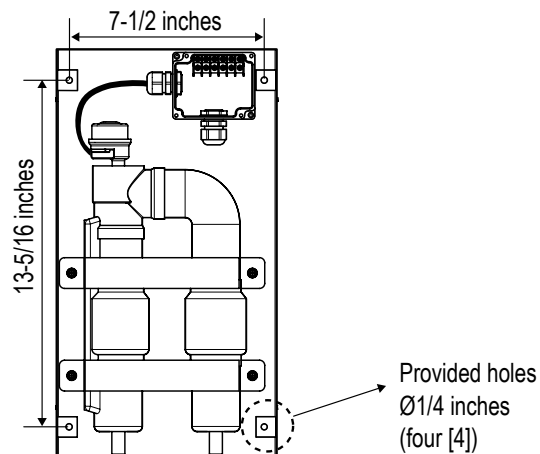


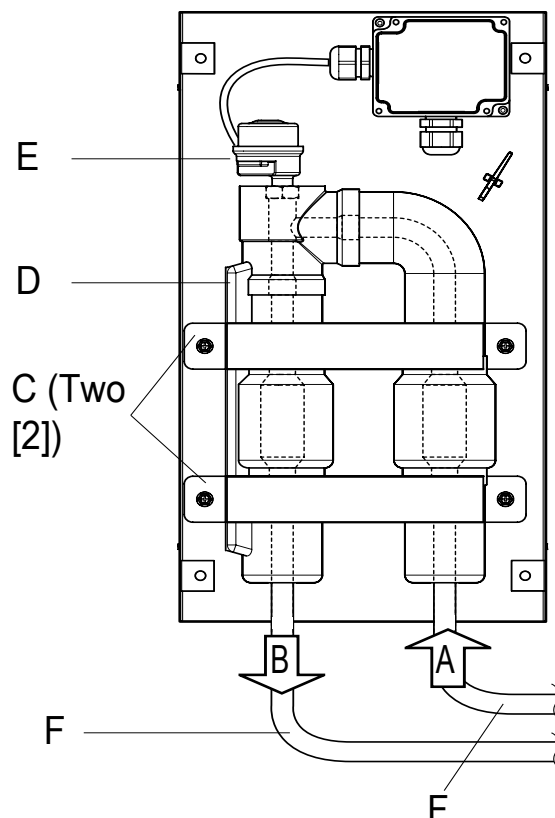
Figure 21: EEV Bottom Panel Hole Dimensions.



Preparing the Pipes

1. Unscrew the four (4) M4 screws and detach the two (2) EEV Assembly pipe support brackets.
2. Remove the EEV Assembly; remove the pipe insulation from the EEV Assembly.
3. Braze the field-supplied inlet / outlet piping to the EEV Assembly. See next page for brazing instructions.

Figure 22: Interior View of EEV Kit.



Legend of EEV Kit Interior View Diagram

- | | |
|---|---|
| A. Inlet Pipes from the Air-Source / Water-Source Unit. | D. Pipe Insulation. |
| B. Outlet pipes to AHU Evaporator Coil. | E. EEV Assembly. |
| C. Pipe Support Bracket (Two [2]). | F. 1/2 Inch O.D. Field Piping (Inlet / Outlet). |

EEV KIT INSTALLATION

Brazing and Insulating the Piping

Brazing

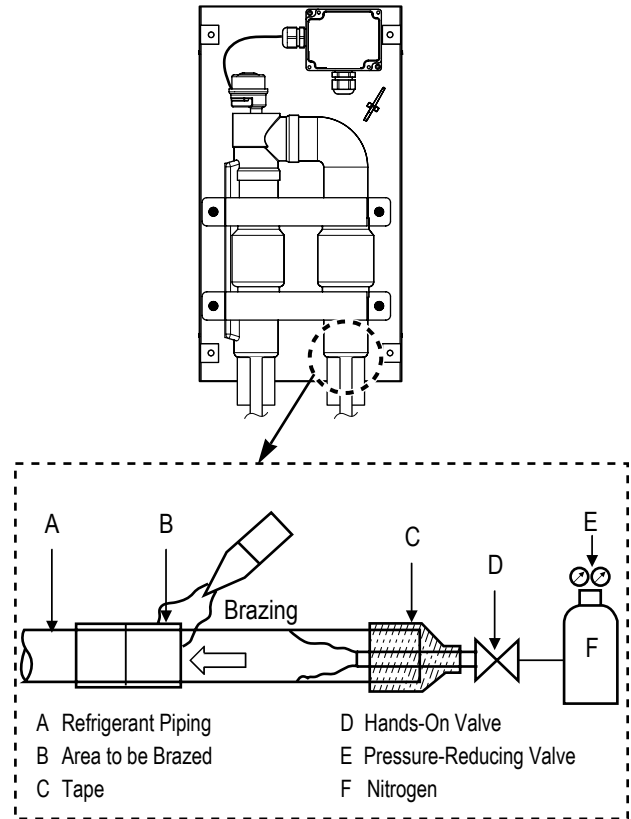
- Use a nitrogen purge set to 0.02 MPa while brazing.

Note

Brazing without a nitrogen purge will create a large amount of oxidization on the inside of the pipes, adversely affecting valves and compressors in the refrigerating system and preventing normal system operation.

- When brazing the field piping to the EEV Kit Assembly, use a wet cloth to protect and ensure that the main EEV body temperature does not exceed 248°F.
- Make sure that the other parts such as electrical box, support ties, and wiring are also protected from direct flames during brazing.
- After brazing is complete, use medical grade dry nitrogen and pressure test the refrigerant piping system to a minimum of 550 psi for a period of 24 hours. Pressurize the liquid, low pressure vapor, and high pressure vapor pipes (heat recovery systems only) of the air-source / water-source units concurrently. The test must be done with the air-source / water-source unit service valves closed. (For more details, refer to the manual of the respective air-source / water-source installation manuals.)

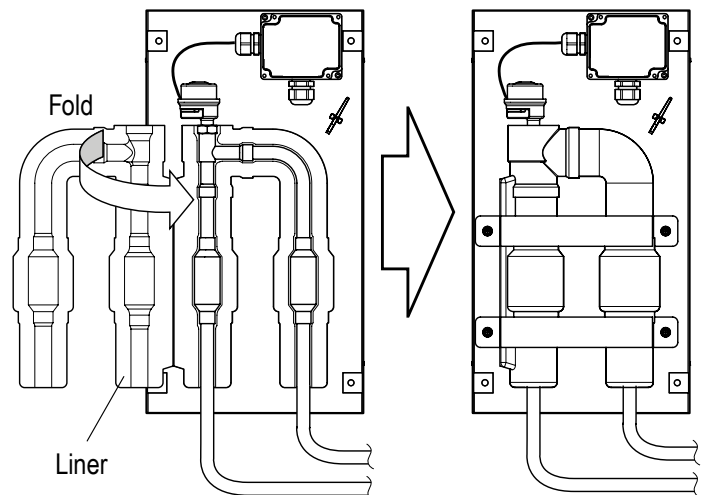
Figure 23: Brazing Field Piping to EEV Assembly.



Insulating the Piping

1. After brazing is complete, place the Pipe Insulation back on the EEV Assembly. Peel off the liner, fold the insulation as shown in the figure at right, and press down to seal.
2. Fully insulate the field piping up to the EEV Assembly. To avoid condensation, make sure there are no gaps between the field piping insulation and the EEV Assembly insulation. Finish the connection with tape.
3. To secure the EEV Assembly, re-install the two (2) pipe support brackets using the four (4) M4 screws.

Figure 24: Installing the Insulation.



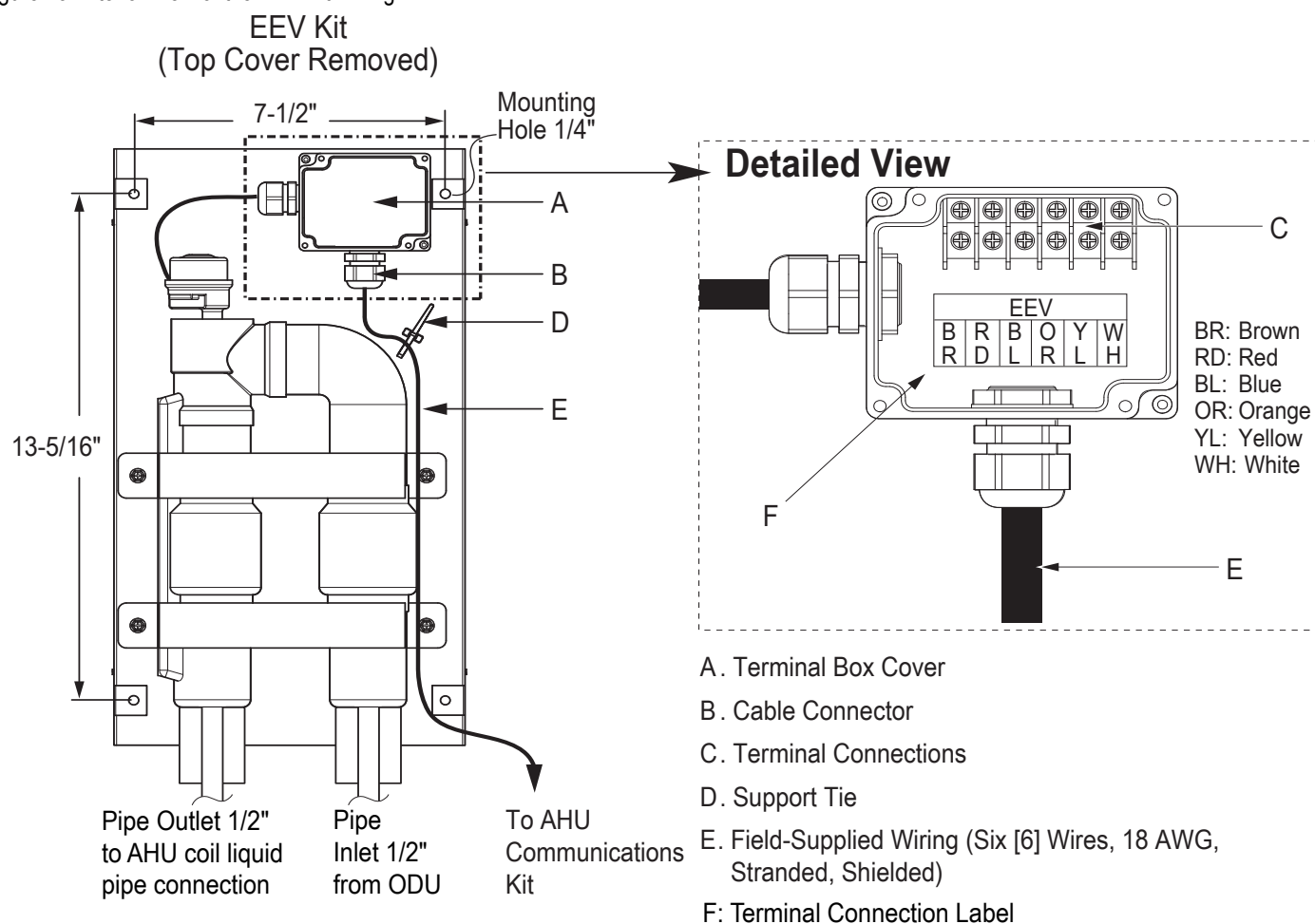
EEV KIT INSTALLATION

Wiring Installation

Wiring Installation

1. Open the Terminal Box Cover (A) by unscrewing the four (4) M4 screws.
2. Run the field-supplied wiring (six [6] wired, 18AWG, stranded, shielded copper) to / from the AHU Communications Kit through the cable connector on the EEV Kit.
3. Connect wiring to the terminal connections as shown (C), following the label and color codes pasted onto the bottom of the terminal box and listed on the AHU Communications Kit PCB diagram. Tighten all connections using a Phillips screwdriver.
4. Route the wiring through and out the EEV Kit as shown, and secure with the support tie (D).
5. Re-install the Terminal Box Cover (A); secure the cover with the four (4) M4 screws.
6. Taking care not to damage the field-supplied wiring or insulation, reattach the EEV Kit Top Panel by securing it with the screws at the four (4) corners.

Figure 25: Interior View of the EEV Kit Wiring.



Note

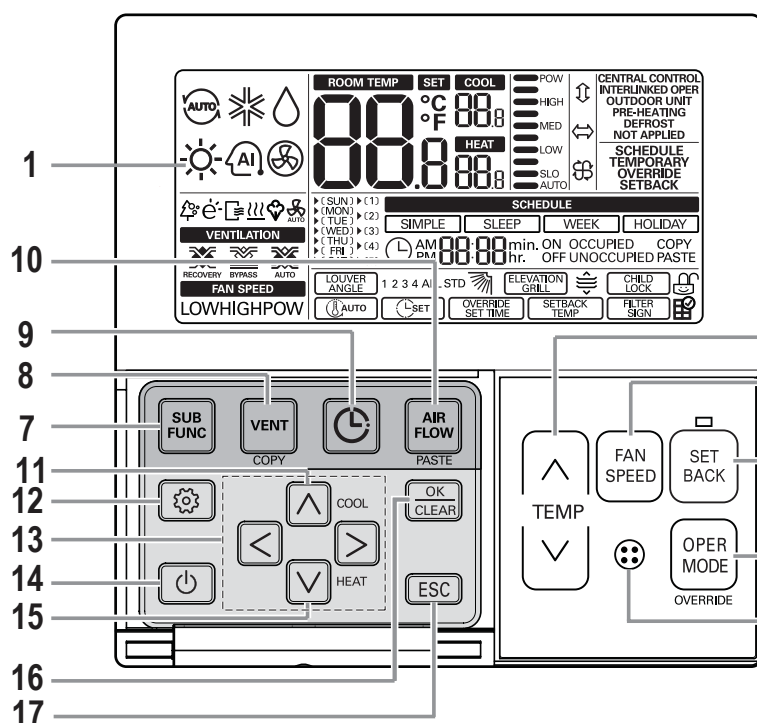
Before connecting the field-supplied wiring, compare with the connection labels between EEV Kit and AHU Communications Kit. Connect the wiring according to the PCB diagram for the AHU Communications Kit. If the wiring is incorrect, the products will malfunction.

Testing

Before testing, make sure all information is understood completely, and follow the guidelines listed in this manual.

- Check the air-source / water-source unit refrigerant piping, additional refrigerant charge, maximum allowable piping length, and opening the shut-off valve. (For more detailed information, see the respective air-source / water-source unit installation manual).
- Operate the testing procedure.
 1. Connect the power, and turn the system on.
 2. Check remote controller for error codes.

Figure 26: Wired Remote Controller Buttons.



1. Operation indication screen
2. Set temperature button
3. Fan Speed button
4. Set back button
5. Operation mode selection button
6. Wireless receiver - some equipment are not equipped to receive the wireless signals
7. Sub-function button
8. Ventilation button
9. Reservation button
10. Air flow button
11. Cooling desired temperature
12. Function setting button
13. Up, Down, Left, Right button
14. On/Off button
15. Heating desired temperature
16. Setting / Cancel button
17. Exit button

Note

- For more detailed function of the wired remote controller, refer to its Owner's / Installation Manual.
- Buttons 3, 4, 11, 12 on the wired remote controller do not operate.

DRY CONTACT INSTALLATION

Dry Contact Installation

If a third-party thermostat / AHU controller is used instead of an LG PREMT**** remote controller, LG's Dry Contact for Thermostat (PDRY-CB300) is required for installation (all sold separately).

1. Screw the Dry Contact to the side panel of the AHU Communications Kit using the four (4) places indicated below.
2. Connect wiring from the Dry Contact CN_INDOOR terminal to the AHU Communications Kit CN_CC terminal.

For more information, see the Dry Contact installation manual.

Figure 27: Location of the Dry Contact in the AHU Communications Kit.

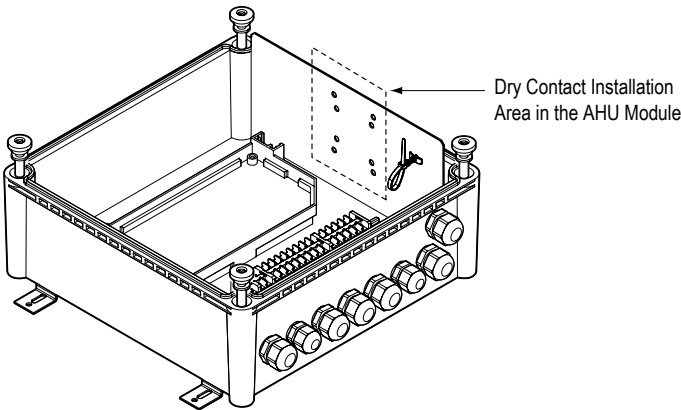


Figure 28: CN_INDOOR Terminal on the Dry Contact PCB.

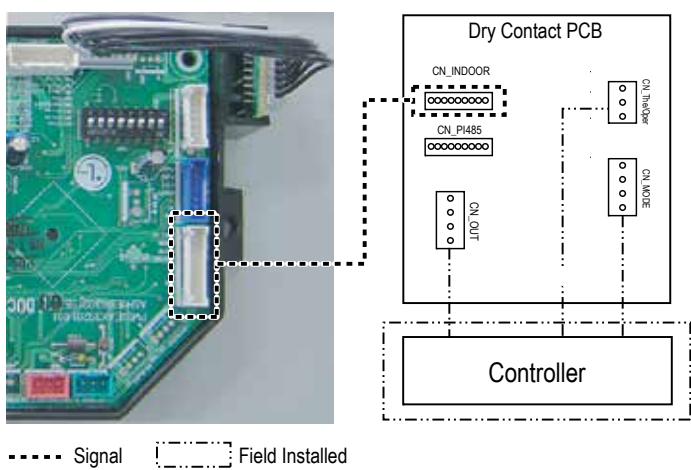


Table 11: Troubleshooting.

Problem	Cause	Solution
AHU Communications Kit Does Not Work	No Power	Check the power supply electrical connections and voltage.
	Wiring is Incorrect	Check the AHU Communications Kit electrical connections (see wiring diagram).
	AHU Communications Kit is Damaged	Check AHU Communications Kit electrical and mechanical components.
EEV Kit Does Not Work	Wiring is Incorrect	Check the EEV Kit electrical connections.
	Piping is Incorrect	Check the piping connections between the EEV Kit and the outdoor unit.

Error Codes

- The error code function indicates when an operation failure occurs in the system, and provides self-diagnosis about the type of error.
- The error code is displayed on the wired remote controller and the control board LED on the air-source / water-source unit.
- If two or more errors occur simultaneously, the smallest of the error code numbers is displayed first.
- When the problem causing the error code to appear is fixed, then the error code will immediately stop displaying on the LED.

Table 12: Error Code Table.

Error Code	Description	Details
CH01	Return Air (Room) Thermistor Error	Return air (room) thermistor has disconnected from AHU, or has short circuited.
CH02	Pipe In Thermistor Error	Pipe in thermistor has disconnected from AHU, or has short circuited.
CH03	Communication Error Between Wired Remote Controller and AHU Communications Kit	No communication signal for more than three (3) minutes from the controller to the AHU Communications Kit.
CH05	Communication Error Between AHU Communications Kit and Air-Source / Water-Source Unit	No communication signal for more than five (5) consecutive minutes from AHU Communications Kit to the Air-Source / Water-Source Unit.
CH06	Pipe Out Thermistor Error	Pipe out thermistor has disconnected from AHU, or has short circuited.
CH09	Capacity Option PCB EPROM Error	No communication signal for more than five (5) consecutive minutes from EPROM to AHU Communications Kit.

Contact your local sales representative if you have any questions about the AHU Communications Kit or its installation.



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