UNILUX
HVAC INDUSTRIES

Horizontal Heat Pumps:

Installation, Operation, and Maintenance Manual

Refrigerant
Safety Group
A2L

L Series REV-01
Published April 2026

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7930 Huntington Road Unit A, Woodbridge, ON L4H 4M8

1-800-397-3680 info@uniluxhvac.com

Part 1:
Horizontal Heat Pump Catalog

Product Portfolio

Horizontal Heat Pumps Overview

Our line of horizontal heat pumps includes two versatile units that are energy-efficient and whisper-quiet, ensuring resident comfort: the water source unit and the hydronic heating hybrid unit. Horizontal heat pumps are designed for concealed installation in small spaces with sound insulation for quiet operation and minimal disruption to residents.

High-Rise Residential Application

Unilux HVAC is known for providing residents whisper-quiet comfort with our state-of-the-art heat pump units. We use energy-efficient motors in all our horizontal heat pumps, providing cost savings and energy conservation for residents.

Simple Installation & Easy Maintenance

Our heat pumps are factory assembled in accordance with the approved shop drawings, and are ceiling mounted with four rods. Filters are easily changed through the return air panel.

Quality and Safety

Every heat pump is factory tested before shipping, is ETL listed, and conforms to AHRI STANDARD 13256-1.

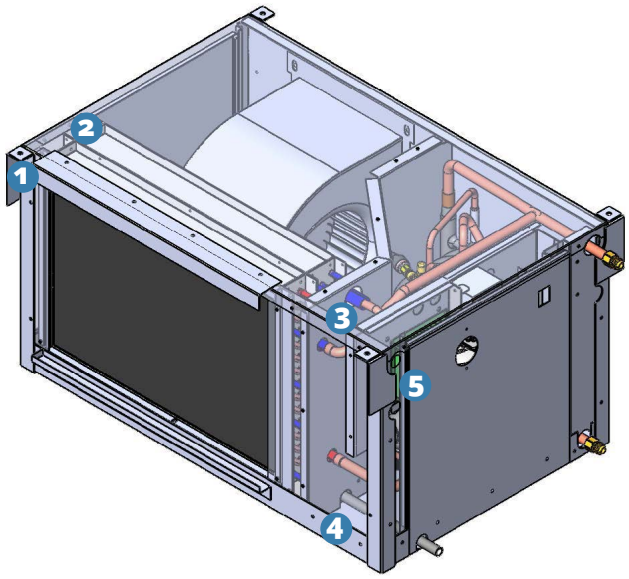

Figure-1

Standard Features—All Models

1. **Cabinet**
   16-gauge steel base, 18-gauge component support, and 20-gauge for rest of casing with 0.5" thick (2 PCF) glass fiber coated acoustic-liner insulation.

2. **Coil Section with Motor/Blower Assembly**
   DX (and HW for hybrid) coil with aluminum fins and copper tube. Multi-speed, constant torque or constant volume ECM mounted to a centrifugal fan in separate housing. 1" filter track on return air opening.

3. **Compressor, Coax, and Electronics Section**
   R454B rotary or scroll compressor on double vibration isolators, reversing valve, TXV, and coax heat exchanger.

4. **Drain Pan and Overflow Sensor**
   Easy to access stainless steel drain pan with overflow sensor to detect rising water levels and turn off unit to prevent leaks.

5. **Control Board**
   Standard and optional controls include; overflow sensor, freeze protection sensor, and advanced diagnostics. Compatible with most thermostats.

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Product Line Up

1. Water Source Heat Pump

Unilux HVAC's standard horizontal heat pump is designed for residential applications, combining peak energy efficiency and low upfront costs. Water source heat pumps operate on a closed water loop that either extracts heat from the loop and disperses it throughout the suite to provide heating, or absorbs heat from the suite and expels it back to the loop to provide cooling. This provides on-demand heating and cooling year-round, with each heat pump operating independently of each other.

2. Hybrid Heat Pump

Our hybrid horizontal heat pump unites the cooling power of a heat pump with the heating efficiency of a fan coil. Cooling is achieved through the combination of DX coil and compressor circuit. Heating is provided by an efficient hot water coil that is connected to building wide hot water riser and boiler system. The air flows through the coils and gets distributed throughout suite space by an ECM fan. Hydronic heating is more energy efficient than using a compressor and provides reliability with less mechanical maintenance.

Cabinet Options

The horizontal cabinet is a factory assembled cabinet divided into two sections: an air coil/fan section and a compressor section. There are access panels on each of the four sides for easy service. Horizontal heat pump cabinets come in two sizes: a low profile unit (petite) and a high capacity unit.

Low Profile

Low-profile (petite) horizontal heat pumps are available in sizes 02-05.

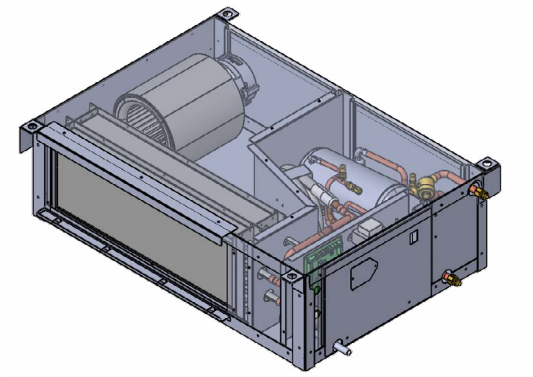

Figure-2

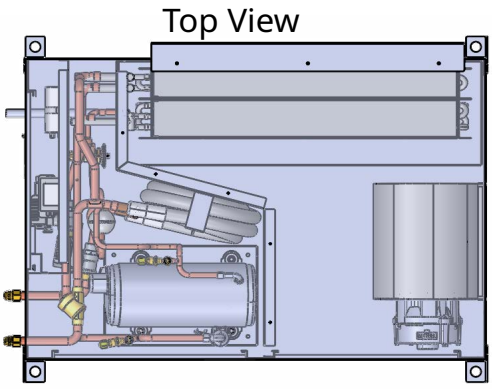

Figure-3

High Capacity

High capacity horizontal heat pumps are available in sizes 06-12.

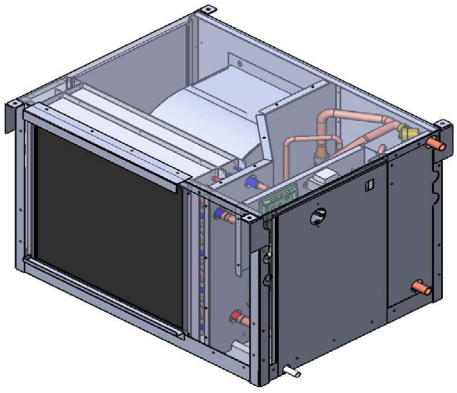

Figure-4

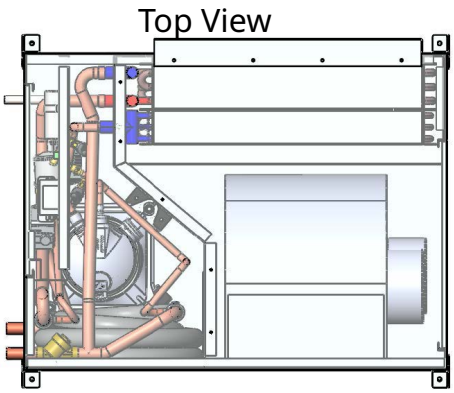

Figure-5

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Nomenclature Key

Model Number

UZXX	XX(X)	X	XXX	XX	X	X	XXX	ABS

Model Type	
UZHP	Horizontal Water Source Heat Pump
UZHH	Horizontal Hybrid Heat Pump

Model Sizes
02-12

Refrigeration Type	
L	R454B

For Special Units	
X	Standard
G	Geothermal
P	Petite
S	Special

ERV HRV
If there is no ERV or HRV, then XXX will be used

CA OR CH	
CA	Cabinet
CH	Chassis

Voltage Information	
2	208 V
3	230 V
4	208 V 3PH
5	460 V 3PH

Special Features	
0	None
1	w/ Strainer (UZHP/UZHH Only)
2	Flow control on Bypass (UZHP/ UZHH Only)

Bypass Options (UZHP/UVHH Only)	
0	None
1	Bypass on HP w/ BTU Meter
2	Bypass on HH w/o BTU Meter
3	Bypass on HH w/ BTU Meter

Actuator Type	
0	None
1	On/Off, Fail to Open
2	On/Off, Fail to Close
3	On/Off, Fail Last position

Motor Type	
E	ECM Constant Volume
P	ECM Constant Torque

Electric Heater	
X	No Electric Heater

Table-1

For Example:

1. UZHP08L-X-XXX-CA-2-X-XXX-000
2. UZHH04L-P-XXX-CA-2-X-XXX-000

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Serial Number

XX	X	XXXX

Year	Month		Production Number
20, 21, 22, etc.	A	January	0001–9999
	B	February	**Note:** Number starts from 0001 every month
	C	March	
	D	April	
	E	May	
	F	June	
	G	July	
	H	August	
	J	September	
	K	October	
	L	November	
	M	December	

Table-2

For Example:

1. 22F0001—The serial number for the 1st unit of the month on June 1, 2022
2. 20B0382—The serial number for the 382nd unit of the month during February, 2020

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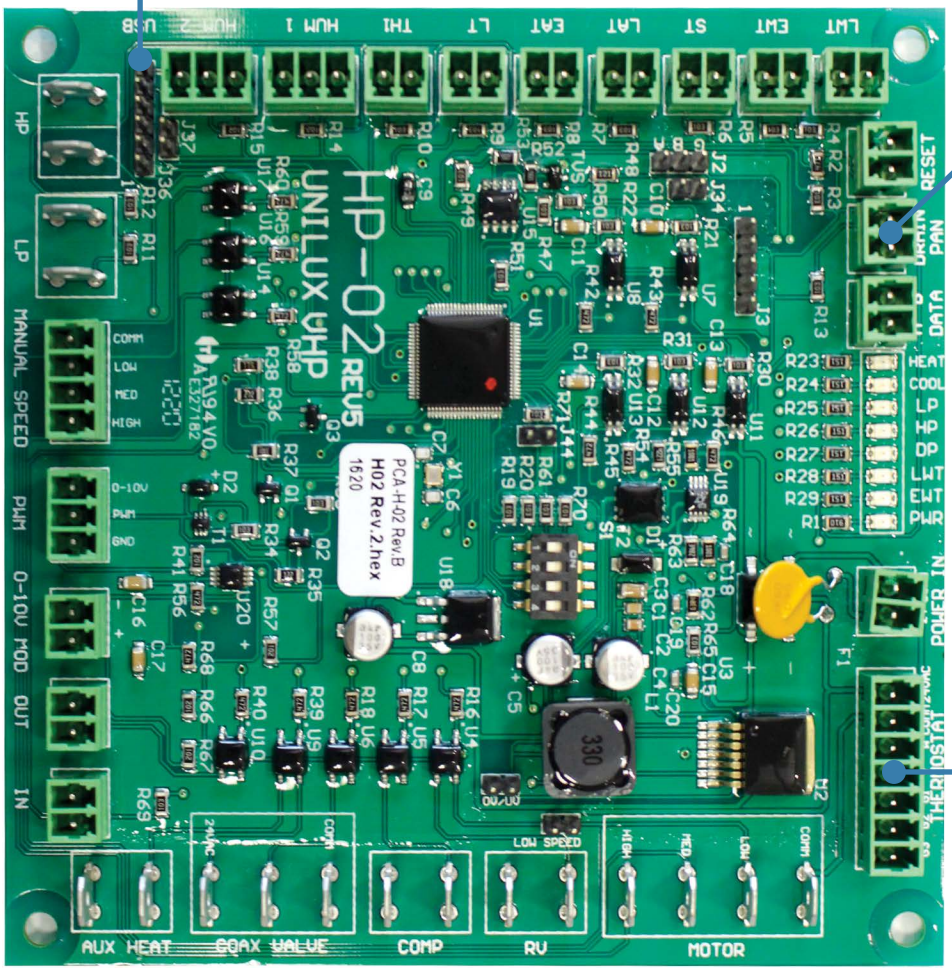
Features, Options, Accessories

Controls

Heat Pump Logger
Easily diagnose heat pump issues on-site with our advanced diagnostics data logger. Technicians can view real-time information about the heat pump including current alerts, compressor and valve status, fault history, and more. Diagnostic tests are performed through the logger to resolve heat pump issues.

Drain Pan Overflow Sensor
All heat pump units are equipped with a float switch to detect rising water levels in the drain pan and turn off the unit if in danger of flooding.



Thermostat
Our standard heat pump control boards are compatible with most thermostats. Unilux offers 7 day programmable thermostats on all heat pumps, or easily install your favorite thermostat.

Figure-6

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Filters

One standard disposable filter and one MERV 8 air filter are provided with every heat pump.

Highlights:

- 100% synthetic pleated media
- Low resistance to air flow means minimal energy costs
- Moisture resistant and will not promote microbial growth
- Effectively remove airborne irritants
- Protects heat pump chassis
- Will not warp, crack, or distort under normal operating conditions

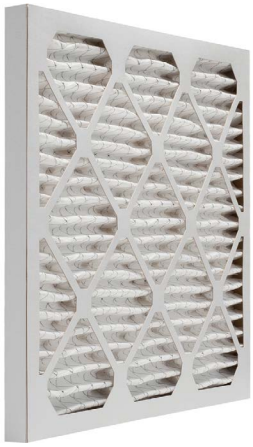

Figure-7

UZHPL/ UZHHL - Air Filter Sizes		
Model	**Nominal Filter Size**	**Quantity per Unit**
UZHP02L-P	10 X 25 X 1	1
UZHP03L-P		
UZHP04L-P		
UZHP05L-P		
UZHH02L-P		
UZHH03L-P		
UZHH04L-P		
UZHP08L-X	16 X 16 X 1	2
UZHP10L-X		
UZHP08L-X		
UZHP10L-X		
UZHP05L-X	16 X 25 X 1	1
UZHP06L-X		
UZHH05L-X		
UZHH06L-X		
UZHP12L-X	18 X 30 X 1	1
UZHH12L-X		
UZHP14L-X	18 X 30 X 1	1
UZHH14L-X		

Table-3

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Ratings and Listings

UZHPL Performance Data & Electrical Ratings

UZHPL - General Performance Schedule											
Model	Nominal Tons	Air Flow CFM	Fluid Flow GPM	WLHP Cooling		WLHP Heating		GLHP Cooling		GLHP Heating	
				Capacity (BTUH)	EER	Capacity (BTUH)	COP	Capacity (BTUH)	EER	Capacity (BTUH)	COP
UZHP02L	0.50	250	1.75	5,600	12.26	7,400	5.04	6,200	14.54	4,200	3.10
UZHP03L	0.75	340	2.50	9,500	13.97	11,400	4.37	10,300	17.00	7,400	3.14
UZHP04L	1.00	450	3.00	11,700	12.35	14,500	4.30	12,400	14.10	9,500	3.10
UZHP05L	1.25	540	3.76	13,800	14.63	17,300	5.32	14,600	17.10	10,800	3.71
UZHP06L	1.50	650	5.00	17,100	13.97	22,200	4.94	18,200	16.44	14,300	4.37
UZHP08L	2.00	810	5.52	24,800	14.44	29,400	4.85	26,200	16.91	18,800	3.52
UZHP10L	2.50	1,060	7.52	29,200	15.20	33,800	4.94	30,400	17.77	22,400	3.61
UZHP12L	3.00	1,200	9.00	36,200	16.63	39,000	5.04	37,400	18.72	25,400	3.61

Note: EAT DB 80.6 °F/27 °C, WB 66.2 °F/19 °C for cooling and DB 68 °F/20 °C, WB 59 °F/15 °C for heating. WLHP EWT is 86 °F/30 °C for cooling and 68 °F/20 °C for heating. GLHP EWT is 77 °F/25 °C for cooling and 32 °F/ 0 °C for heating. EAT = Entering Air Temperature. DB = Dry Bulb. WB = Wet Bulb. EWT = entering Water Temperature. WLHP = Water Loop Heat Pump. GLHP = Ground Loop Heat Pump.

Table-4

UZHPL - Electrical Ratings					
Model	Nominal Tons	Voltage	Ph	Hz	MOP (Circuit Breaker Rating, A)
UZHP02L(-G)	0.50	208, 230	1	60	15
UZHP03L(-G)	0.75	208, 230	1	60	15
UZHP04L(-G)	1.00	208, 230	1	60	15
UZHP05L(-G)	1.25	208, 230	1	60	15
UZHP06L(-G)	1.50	208, 230	1	60	15
UZHP08L(-G)	2.00	208, 230	1	60	20
UZHP10L(-G)	2.50	208, 230	1	60	30
UZHP12L(-G)	3.00	208, 230	1	60	35
UZHP12L(-G)	3.00	208, 230	3	60	35
UZHP12L(-G)	3.00	460	3	60	15
UZHP14L(-G)	3.50	208	3	60	25
UZHP14L(-G)	3.50	460	3	60	15

Table-5

UZHPL (-G)	R454B Charge (Oz)
UZHP02L(-P)	21.00
UZHP03L(-P)	23.00
UZHP04L(-P)	23.75
UZHP05L(-X)	31.00
UZHP06L(-X)	34.00
UZHP08L(-X)	44.50
UZHP10L(-X)	40.00
UZHP12L(-X)	44.25
UZHP14L(-X)	51.00

Table-6

AHRI CERTIFIED™ www.ahridirectory.org
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UZHHL Performance Data & Electrical Ratings

UVHHL - General Performance Schedule						
Model	Nominal Tons	Air Flow CFM	Fluid Flow GPM	Cooling °F / 30°C		Heating 68°F / 20°C
				Full Load Capacity (BTUH)	EER	Full Load Capacity (BTUH)
UZHH02L	0.50	250	1.75	7,496	15.00	9,520
UZHH03L	0.75	340	2.50	9,398	15.10	12,490
UZHH04L	1.00	450	3.25	12,292	15.10	15,640
UZHH05L	1.25	540	4.00	15,463	15.60	18,140
UZHH06L	1.50	650	5.00	18,139	15.40	21,030
UZHH08L	2.00	810	6.00	25,832	15.30	27,450
UZHH10L	2.50	1,060	7.50	30,769	15.10	32,610
UZHH12L	3.00	1,200	8.30	34,229	13.70	37,340
UZHH14L	3.50	1,400	10.50	39,200	13.40	47,200

Note: Cooling capacity is based on 80.6°F (27°C) EAT-db, 66.2°F (19°C) EAT-wb and 86°F (30°C) EWT; Heating capacity is based on 68°F (20°C) EAT-db, 59.0°F (15°C) EAT-wb and 68°F (20°C) EWT. Fan performance design data is based on site conditions and may vary with actual performance. CFM may vary based on fan laws. WPD without filter, access panel, and grille. Water cooling and heating performance are without hoses, flow control, and shut-off valve. Contact us for job-specific performance data sets.

Table-7

UZHHL - General Performance Schedule					
Model	Nominal Tons	Voltage	Ph	Hz	MOP (Circuit Breaker Rating, A))
UZHH02L	0.50	208, 230	1	60	15
UZHH03L	0.75	208, 230	1	60	15
UZHH04L	1.00	208, 230	1	60	15
UZHH05L	1.25	208, 230	1	60	15
UZHH06L	1.50	208, 230	1	60	15
UZHH08L	2.00	208, 230	1	60	20
UZHH10L	2.50	208, 230	1	60	30
UZHH12L	3.00	208, 230	1	60	35
UZHH12L	3.00	208, 230	3	60	35
UZHH12L	3.00	460	3	60	15
UZHH14L	3.50	208	3	60	25
UZHH14L	3.50	460	3	60	15

Table-8

UZHHL	R454B Charge (Oz)
UZHH02L-P	17.50
UZHH03L-P	18.25
UZHH04L-P	18.75
UZHH05L-X	25.00
UZHH06L-X	31.75
UZHH08L-X	34.50
UZHH10L-X	38.50
UZHH12L-X	37.50
UZHH14L-X	45.00

Table-9

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Submittal Data

Cabinet Configurations: (full configurations can be found on pg. 14

LR-RS (as shown): Left Side Return and Right Side Supply
LR-BS (as shown): Left Side Return and Back Side Supply

Cabinet Drawings & Dimensions

Low Profile Cabinet Sizes - UZHP02-05L-P / UZHH02-05L-P

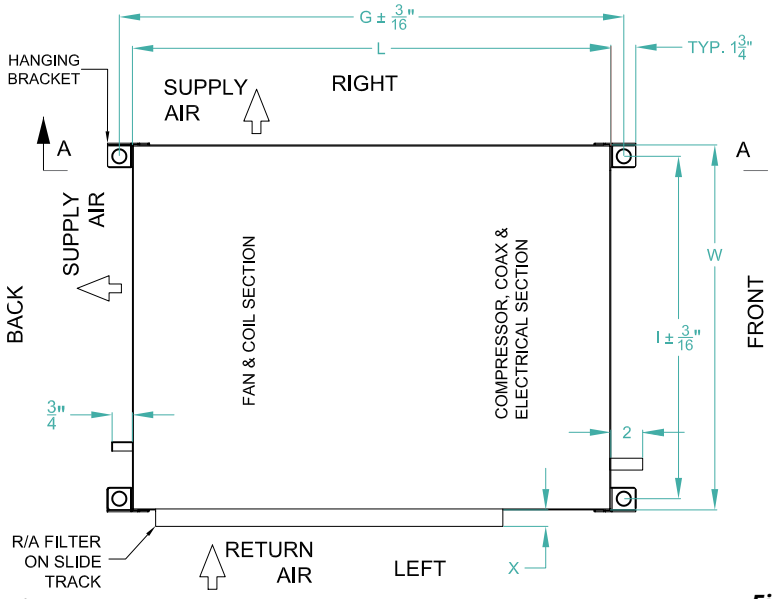

Figure-8 TOP PLAN VIEW (COMMON VIEW)

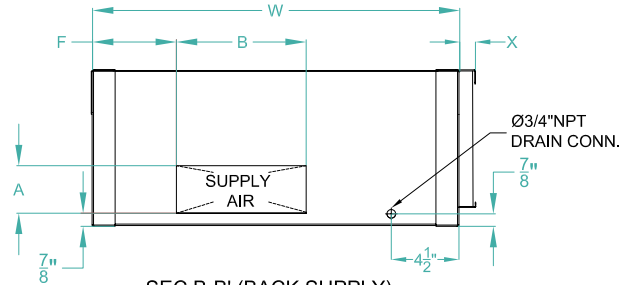

Figure-10 SEC B-B' (BACK SUPPLY)

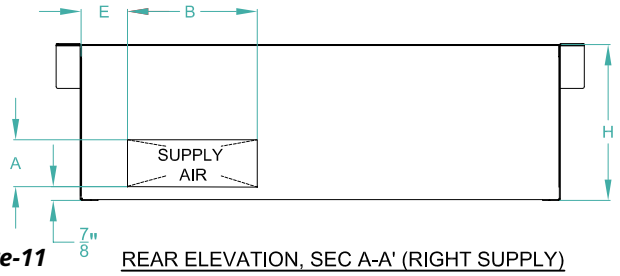

Figure-11 REAR ELEVATION, SEC A-A' (RIGHT SUPPLY)

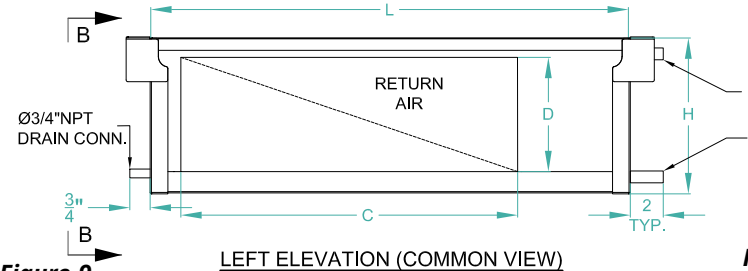

Figure-9 LEFT ELEVATION (COMMON VIEW)

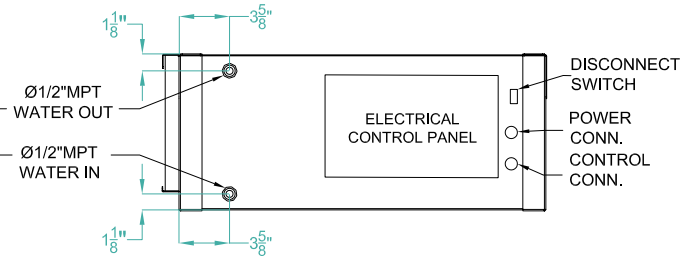

Figure-12 FRONT ELEVATION (COMMON VIEW)

	UZHP02L/UZHH02L	UZHP03L/UZHH03L	UZHP04L/UZHH04L	UZHP05L/UZHH05L
TONNAGE	0.50 T	0.75T	1.00 T	1.25 T
A	3.25			
B	9.15"			
C	24			
D	8			
E	3			
F	6.25			
G	35.6			
I	24.13			
L	34"			
W	26"			
H	11"			

Table-10

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High Capacity Cabinet Sizes - UZHP06-14L / UZHH06-14L

Cabinet Configurations: (full configurations can be found on pg. 14

LR-RS (as shown): Left Side Return and Right Side Supply
LR-BS (as shown): Left Side Return and Back Side Supply

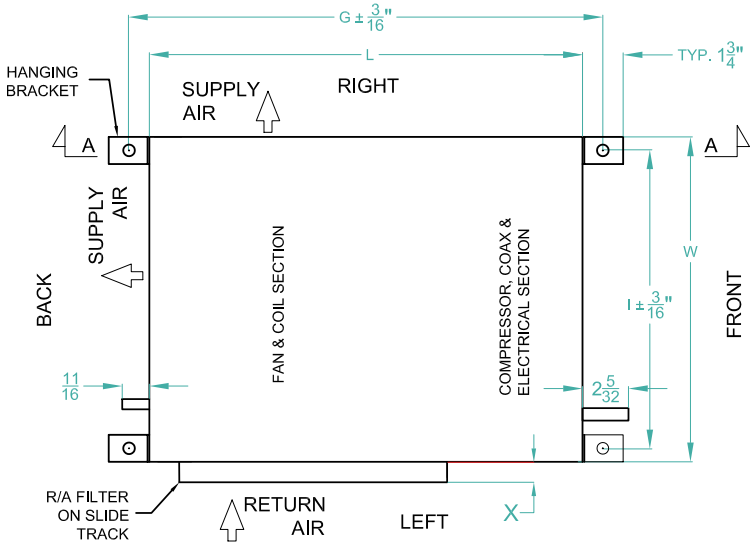

Figure-13 TOP PLAN VIEW (COMMON VIEW)

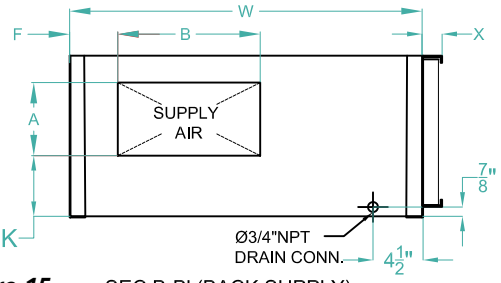

Figure-15 SEC B-B' (BACK SUPPLY)

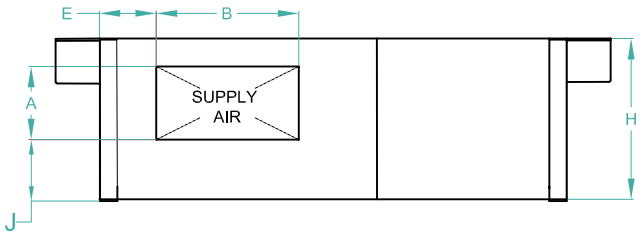

Figure-16 REAR ELEVATION, SEC A-A' (RIGHT SUPPLY)

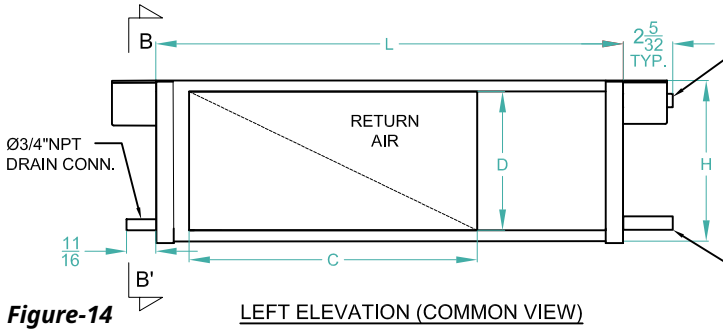

Figure-14 LEFT ELEVATION (COMMON VIEW)

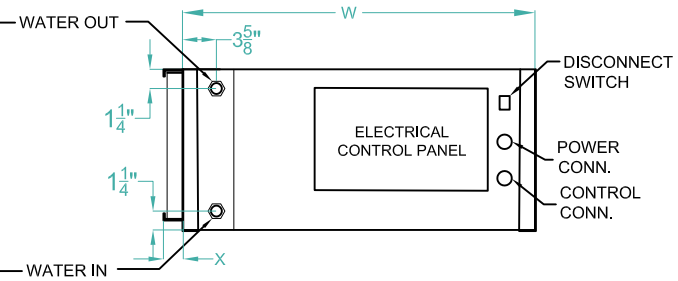

Figure-17 FRONT ELEVATION (COMMON VIEW)

	UZHP05L/UZHH05L	UZHP06L/UZHH06L	UZHP08L/UZHH08L	UZHP10L/UZHH10L	UZHP12L/UZHH12L	UZHP14L/UZHH14L
TONNAGE	0.50 T	0.75T	1.00 T	1.25 T	3.0 T	3.5 T
A	10.25					
B	9.13		11.75			
C	20.5		26			
D	14			15		
E	6.75		4.88			
F	5.25		3			
G	51.6					
I	23.13					
J	4.25		4.63		7.88	
K	3		4.63		7.88	
L	50					
W	25					
H	17.5				21	

Table-11

7930 Huntington Road Unit A, Woodbridge, ON L4H 4M8
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Airflow Configurations

Low Profile and High Capacity Cabinet Configurations - All Models (UZHPL/ UZHHL)

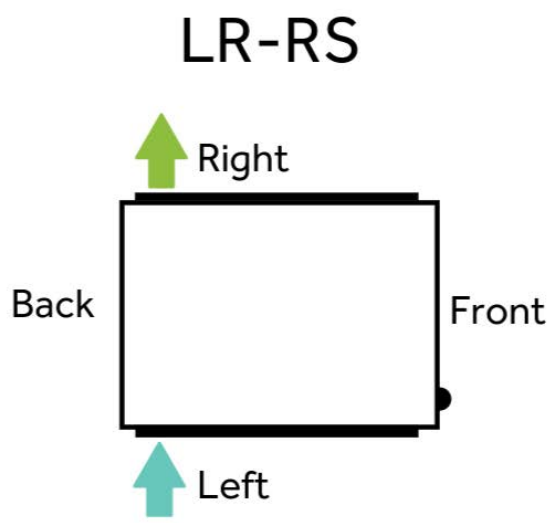

***Figure-18** Left Side Return & Right Side Supply*

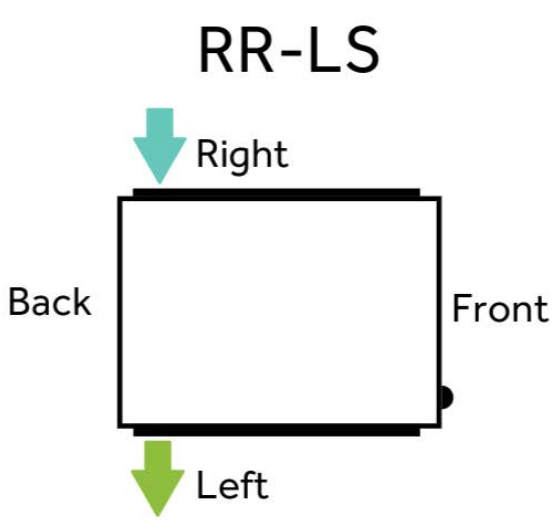

***Figure-19** Right Side Return & Left Side Supply*

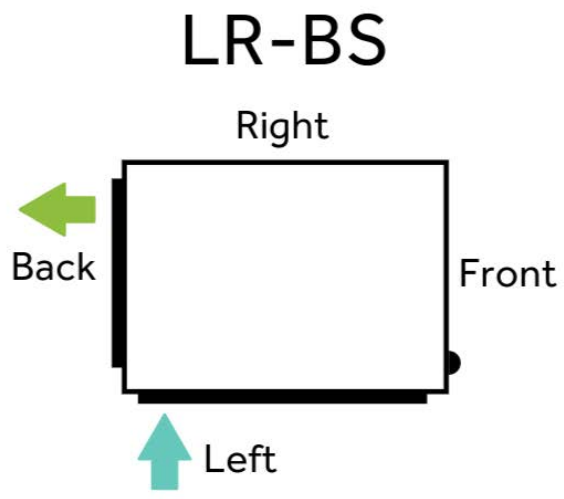

***Figure-20** Left Side Return & Back Side Supply*

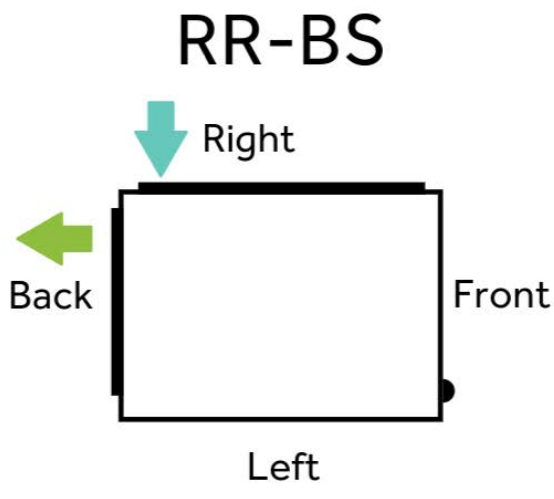

***Figure-21** Right Side Return & Back Side Supply*

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Part 2:
Installation, Operation, and Maintenance

General Safety Guidelines

Important—Read Before Proceeding

During installation, operation, maintenance, or service, individuals may be exposed to certain components or conditions including, but not limited to refrigerants, oils, materials under pressure, rotating components, and both high and low voltage. Each of these items has the potential if misused, or handled improperly, to cause bodily harm, injury, or death. It is the obligation and responsibility of operating/service personnel to identify and recognize these inherent hazards, protect themselves, and proceed safely in completing their tasks. Failure to comply with any of these requirements could result in serious damage to the equipment and the property in which it is situated, as well as severe personal injury or death.

This document is intended for use by the owner and authorized operating/service personnel. It is expected that this individual possesses independent training that will enable them to perform their assigned tasks properly and safely. It is essential that, before performing any task on this equipment, this individual shall have read and understood this document and any referenced materials.

All wiring must be in accordance with the national wiring regulations or local wiring regulations, whichever takes jurisdiction in the region, and must be performed **ONLY** by qualified service personnel. Unilux HVAC will not be responsible for damages/problems resulting from improper connections to controls or application of improper control signals. Failure to follow this will void the manufacturer's warranty and may cause serious damage to property or injury to persons.

This appliance is not intended for use by persons (including children) with reduced physical, sensory, or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure they do not play with the appliance.

Symbols, Warnings, and Notices

Warning: Indicates flammable refrigerant.

Warning: Indicates a potentially dangerous situation that could result in death or serious injury.

Caution: Indicates a possibly hazardous situation which could result in possible injuries or damage to the unit and/or environmental pollution, or to alert against unsafe practices.

Note: Identifies important information to the technician to complete the task correctly.

Responsible Refrigerant Practices

All technicians who handle flammable A2L refrigerants must be certified in accordance with local codes for reclaiming, recovering, recycling, and handling of refrigerants. Technicians must follow all applicable local and federal laws.

Correct field wiring and grounding are required, failure to adhere and follow code could result in the death or serious injury. **All field wiring must be performed only by a qualified electrician.** All wiring must be in accordance with the manufacturer's specifications.

Wiring that is improperly installed and/or grounded could result in **fire, electrocution,** and other serious hazards. The manufacturer is not responsible for damaged equipment or site issues resulting from the improper connections of the unit or the use of improper controls.

Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer. The appliance shall be stored in a room without continuously operating ignition sources (i.e. open flames, an operating gas appliance or an operating electric heater). Do not pierce or burn. Be aware that refrigerants may not contain an odour. Ensure to keep any required ventilation openings clear of obstruction. The ducts connected to the unit shall not contain Potential Ignition Surface.

Personal Protective Equipment (PPE) is mandatory. Technicians installing or servicing this unit must use all PPE including but not limited to hard hats, safety glasses, cut resistant sleeves and gloves, electrical PPE, and fall protection.

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Transportation, Marking, and Storage for Units that Employ Flammable Refrigerants

The following information is provided for units that employ flammable refrigerants.

Transport of Equipment Containing Flammable Refrigerants

Attention is drawn to the fact that additional transportation regulations may exist with respect to equipment containing flammable gas. The maximum number of pieces of equipment or the configuration of the equipment permitted to be transported together will be determined by the applicable transportation regulations.

Marking of Equipment Using Signs

Signs for similar appliances used in a work area are generally addressed by local regulations and give the minimum requirements for the provision of safety and/or health signs for a work location.

All required signs are to be maintained and employers should ensure that employees receive suitable and sufficient instruction and training on the meaning of appropriate safety signs and the actions that need to be taken in connection with these signs.

The effectiveness of signs should not be diminished by too many signs being placed together.

Any pictograms should be as simple as possible and contain only essential details.

Disposal of Equipment Using Flammable Refrigerants

See national regulations.

Storage of Equipment/Appliances

The storage of the appliance should be in accordance with the applicable regulations or instructions, whichever is more stringent.

Storage of Packed (Unsold) Equipment

Storage package protection should be constructed in such a way that mechanical damage to the equipment inside the package will not cause a leak of the refrigerant charge.

The maximum number of pieces of equipment permitted to be stored together will be determined by local regulations.

General Heat Pump Information

Horizontal Heat Pump Units

All horizontal heat pumps are factory assembled with a removable fan assembly. They feature configurable openings for supply and return air, riser stub outs, and condensate drain connections. To prevent vibration and noise transmission into occupant spaces, use a flexible duct connector when connecting the cabinet to supply ducts. There is no minimum height requirement for cabinet installation (hinst=0.00 ft)

Blower & Motor Assembly

Each heat pump includes a blower and motor assembly mounted on the blower deck. The default Electronically Commutated Motor (ECM) is internally powered.

Nameplate

A nameplate is located on the cabinet surface and chassis box. It contains the unit model and serial numbers, electrical data, refrigerant R454B charge, and other information. This nameplate information is useful for warranty customer service or ordering service parts. Refer to pages 6-7 for nomenclature standards.

Junction Box

A wiring diagram is located on the cabinet surface for field wiring. An optional non-fused disconnect is installed on the side of the cabinet.

Electrical Box

The Electrical Box includes a factory-installed switch, transformer, compressor relay & capacitor, and Unilux HVAC proprietary microprocessor controller. The microprocessor board features an integral terminal strip for wiring the thermostat cable.

Disclaimer

All piping work must be done by a certified plumber. Unilux HVAC is not responsible for any water damage.

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Receipt, Storage, and Inspection

Arrival

When units are received at the site, carefully check for any damage incurred during shipment. If damaged, note it on the Carrier's Bill of Lading as "Damaged during Shipment" or "Received Damaged." Cross-check the packing slip against all items received. Note any missing items on the Carrier's Bill of Lading with "Shipment Received Less Item #____."

Storage

Store equipment in its original packaging as shipped on their pallets for protection in a clean, dry area. Do not stack the units. **Always keep heat pump in an upright position to maintain POE oil inside the compressor**. Use a waterproof tarp or equivalent covering if necessary to protect units from humid or high UV areas.

Caution: Avoid storing or installing units in corrosive environments or areas exposed to extreme temperatures or humidity (such as rooftops, garages, etc.). These conditions can greatly diminish performance, reliability, and the lifespan of the units. Always transport and store units in an upright position; laying them on their sides can result in equipment damage.

Caution: Physical damage or contamination can hinder unit start-up and cause equipment damage. Protect units at the job site by covering them with the original packaging or an equivalent protective covering and cap the open ends of pipes. Ensure all unit openings are covered throughout all stages of construction.

Pre-Installation Preparation

Read all provided Installation, Operation, and Maintenance (IOM) instructions and attached drawings before installation and unit start-up. Perform the following steps before proceeding to installation:

Note: Each installation is unique and may necessitate additional steps or adjustments to this Installation, Operation, and Maintenance (IOM) manual. Always follow the specific IOM instructions and drawings provided for each installation.

Caution: Keep all openings covered until the unit installation is complete and all surrounding work (including drywalling, painting, etc.) is finished.

☐ Verify that the unit nameplate matches the floor plan and ensure the power supply and breaker meet the requirements on the nameplate. Ensure the electrical data on the unit nameplate matches the ordering and shipping information.

☐ Perform a visual inspection of the heat pump and accessories to ensure they are not damaged and there is no debris inside the heat pump or hoses.

☐ Verify the cabinet's supply air openings match the size and location specified in the building plans.

☐ Inspect the refrigerant tubing to ensure it is free from kinks or dents and does not come into contact with other tubes sheet metal parts as it routes over or through them. Adjust if necessary and use closed-cell insulation for separation.

☐ Check all electrical connections on the heat pump. Ensure that each connection is clean and firmly secured at the terminals.

Warning: Sheet metal components often have sharp edges or burrs. Exercise caution and wear suitable protective gear, including safety glasses and gloves, during installation and while handling all heat pump components including the cabinet.

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Installation

Warning: To prevent electrical shorts and drain pan leaks, do not insert screws into the unit cabinet—especially near the control box or drain pan.

Note: All Unilux HVAC heat pumps have a maximum installation altitude of 3048 meters (10,000 feet).

Determining a Mounting Location

Unilux HVAC horizontal heat pumps are designed for installation in ceiling plenums or suspended ceilings. Choose a location that provides sufficient clearance for servicing without needing to remove the unit. A minimum of 18 inches of access on all sides is recommended. **See Figures 22-25.**

Do not install units in areas subject to freezing or excessive humidity, such as unconditioned spaces with 100% outdoor air, as this can lead to cabinet condensation. Ensure the filters and access panels are easily accessible, and leave adequate space for plumbing, duct, and electrical connections.

If the unit is placed in a confined area (e.g., a closet), ensure return air can flow freely via a louvered door or equivalent opening. **Before setting the unit, verify that access panel screws will remain accessible after installation.**

Follow these guidelines when selecting the installation location:

1. Use hinged doors for concealed-spline or plaster ceilings, or removable tiles in lay-in or T-bar ceilings. Reference submittal data for dimensions. Access openings must accommodate service personnel for compressor, control, and blower assembly removal.

2. Allow access to hanger brackets, valves, and fittings. Provide tool clearance to access panels, duct collars, and electrical connections.

3. Avoid placing piping, cables, or other obstructions beneath the unit that would prevent component removal.

4. Use a portable jack or lift to safely support the unit during installation or servicing.

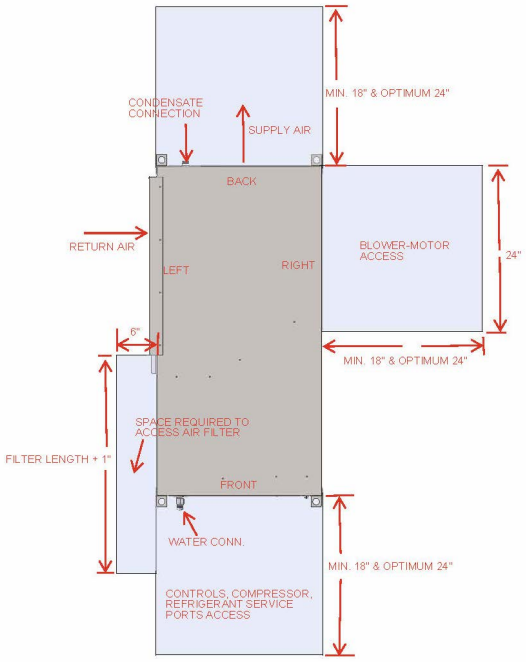

Figure-22 Clearance for LR-BS Airflow Configuration

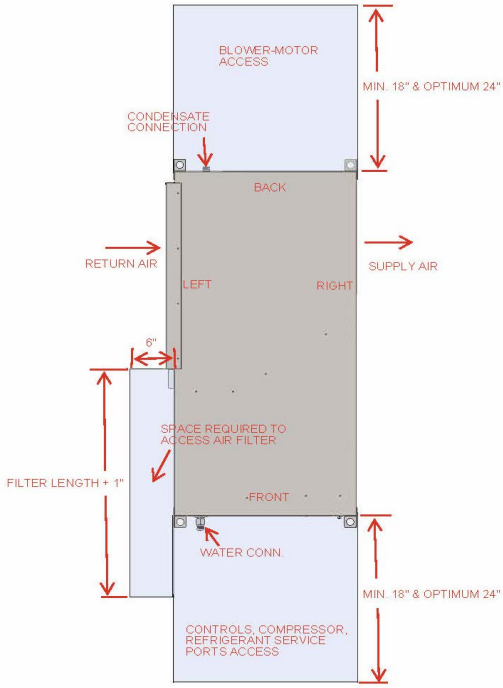

Figure-23 Clearance for LR-RS Airflow Configuration

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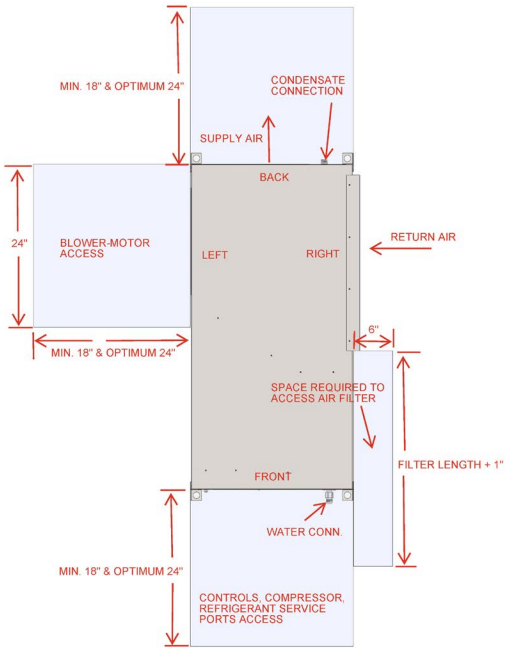

Figure-24 Clearance for RR-BS Airflow Configuration

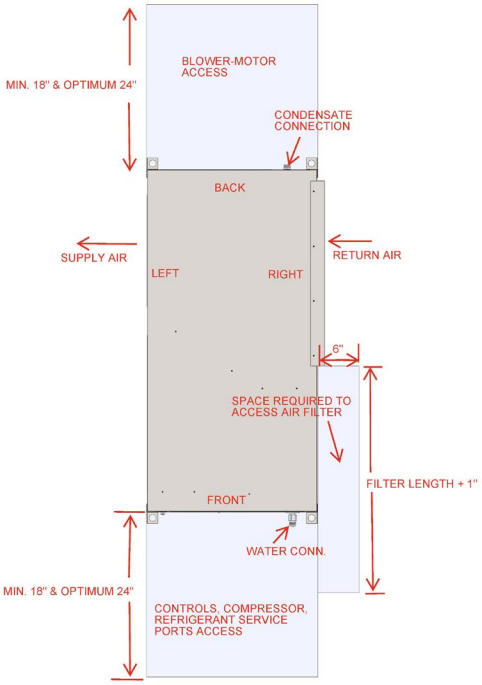

Figure-25 Clearance for RR-LS Airflow Configuration

Mounting Horizontal Heat Pump Units

Units must be suspended by four 3/8" threaded rods—one per corner—attached through vibration-isolating grommets and hanger brackets.

1. Carefully lift the unit while supporting its underside. Do not allow the top of the unit to contact other surfaces or objects.

2. Insert each threaded rod through the mounting bracket and grommet, then secure with a washer and double nuts at the end of each rod. A double nut is recommended for each rod as vibration may loosen a single nut. **See Figures 26 and 27.** The installer is responsible for providing hardware for installing the hanger rods.

3. Confirm the unit is level, with rods extending beyond the final nut. For better condensate drainage, a slight pitch of 1/4" toward the drain pan is acceptable.

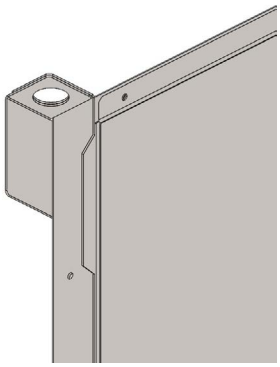

Figure-26

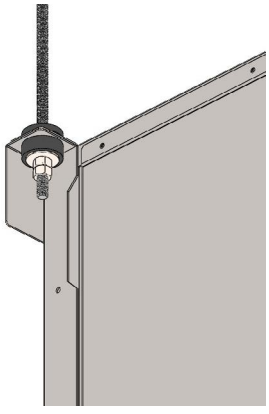

Figure-27

Note: For optimal performance, clean both sides of the coil before startup using a 10% solution of dish detergent and water. **Avoid UV antimicrobial systems, which may damage e-coated coils.**

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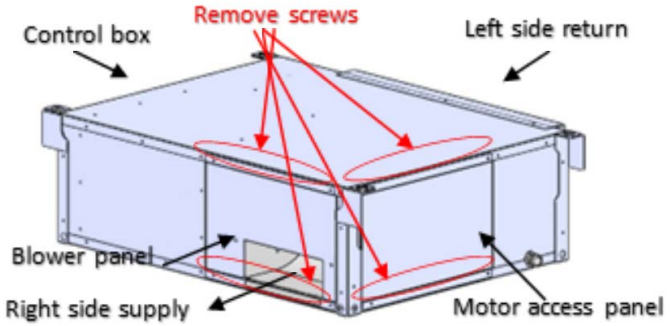
Field Conversion of Air Discharge

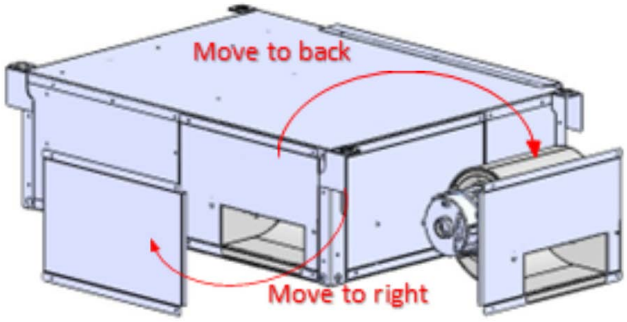
Model 02- 05: LR-RS to LR-BS configuration

Step 1: Ensure the unit is on the ground, not hanging from the ceiling.

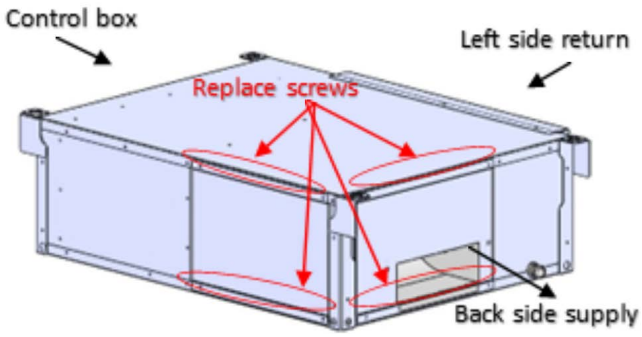
Step 2: Unscrew the motor access panel to unplug the motor wire harness. Then, unscrew the blower panel to change the air supply from the right side to the back side on the left-side return unit.



Step 3: Move the blower panel on the right side to the back side along with the blower-motor assembly, and the motor access panel on the back side to the right side.



Step 4: Screw the blower panel, plug the motor wire harness. Then, replace the screws to secure the motor access panel as shown to have a back-side air supply and left-side return.

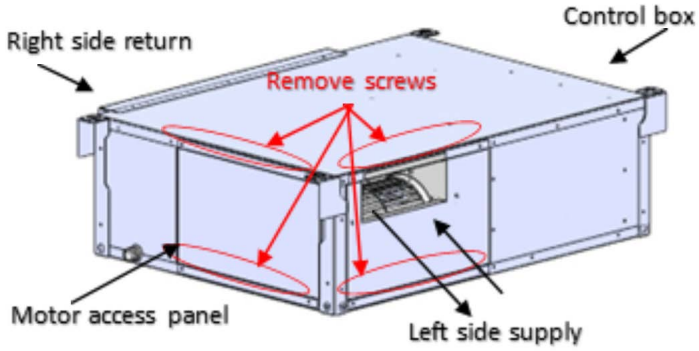


Note: To have **LR-BS to LR-RS configuration**, follow the above-mentioned steps, but note that the illustrations will be reversed.

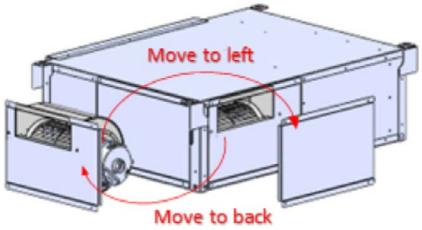
Model 02-05: RR-LS to RR-BS configuration

Step 1: Ensure the unit is on the ground, not hanging from the ceiling.

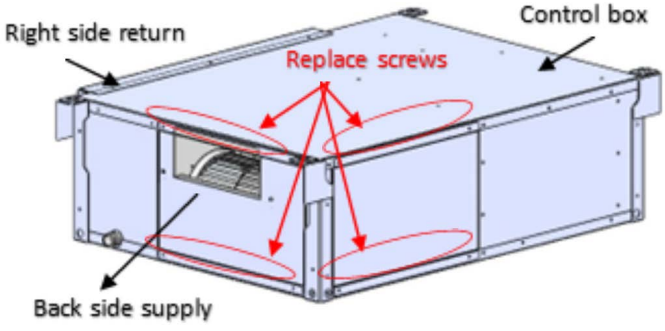
Step 2: Unscrew the motor access panel to unplug the motor wire harness. Then, unscrew the blower panel to change the air supply from the left side to the back side on the right-side return unit



Step 3: Move the blower panel on the left side to the back side along with the blower-motor assembly, and the motor access panel on the back side to the left side.



Step 4: Screw the blower panel, plug the motor wire harness. Then, replace the screws to secure the motor access panel as shown to have a back-side air supply and right-side return.



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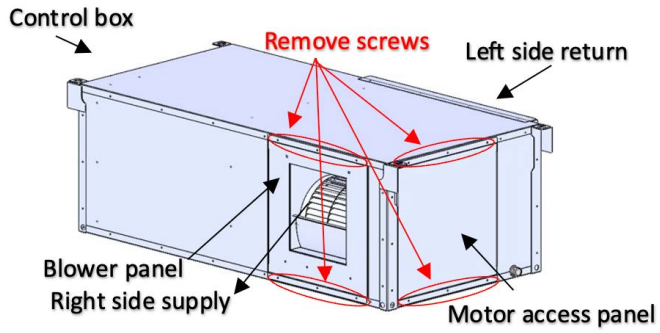
Note: To have **RR-BS to RR-LS configuration**, follow the above-mentioned steps, but note that the illustrations will be reversed.

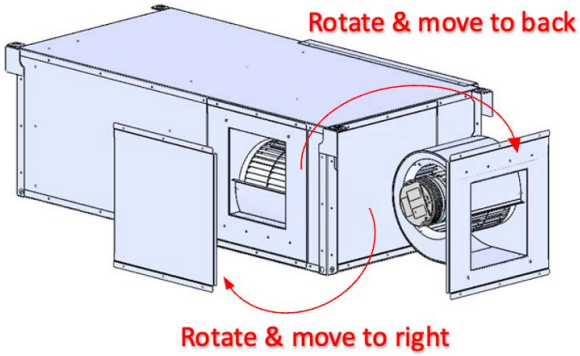
Model 06: LR-RS to LR-BS configuration

Step 1: Ensure the unit is on the ground, not hanging from the ceiling.

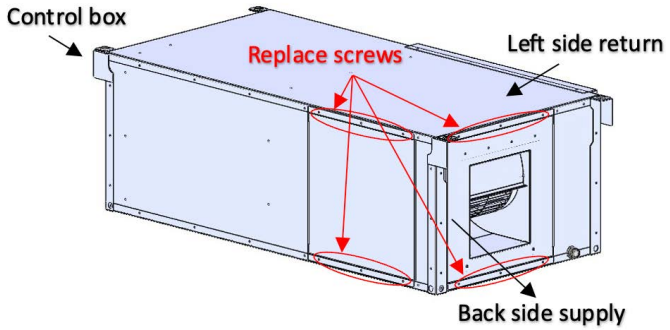
Step 2: Unscrew the motor access panel to unplug the motor wire harness. Then, unscrew the blower panel to change the air supply from the right side to the back side on the left-side return unit.



Step 3: Rotate & move the blower panel on the right side to the back side along with the blower-motor assembly, and the motor access panel on the back side to the right side.



Step 4: Screw the blower panel, plug the motor wire harness. Then, replace the screws to secure the motor access panel as shown to have a back-side air supply and left-side return.

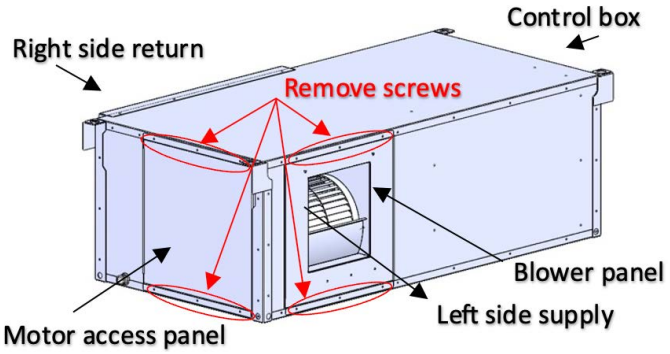


Note: To have **LR-BS to LR-RS configuration**, follow the above-mentioned steps, but note that the illustrations will be reversed.

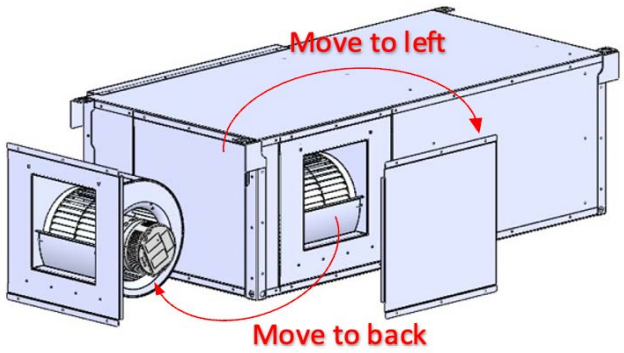
Model 06: RR-LS to RR-BS configuration

Step 1: Ensure the unit is on the ground, not hanging from the ceiling.

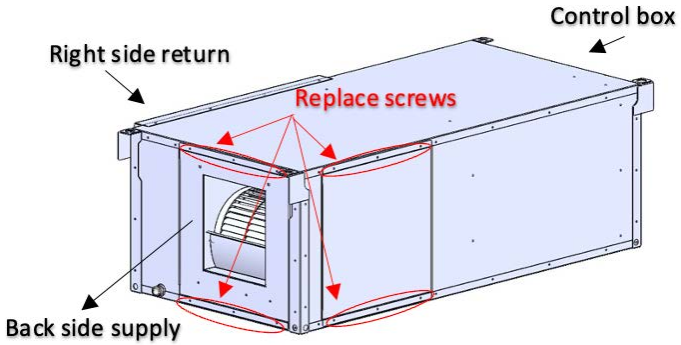
Step 2: Unscrew the motor access panel to unplug the motor wire harness. Then, unscrew the blower panel to change the air supply from the left side to the back side on the right-side return unit.



Step 3: Move the blower panel on the left side to the back side along with the blower-motor assembly, and the motor access panel on the back side to the left side.



Step 4: Screw the blower panel, plug the motor wire harness. Then, replace the screws to secure the motor access panel as shown to have a back-side air supply and right-side return.



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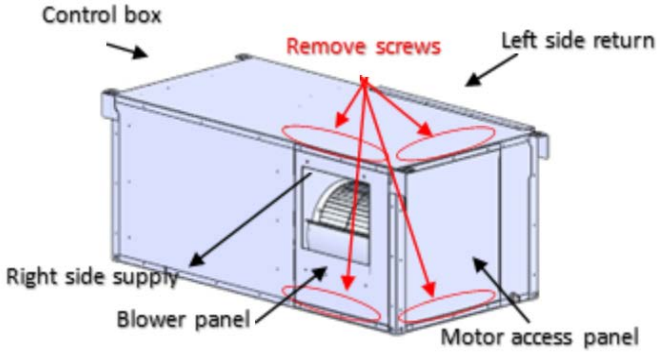
Note: To have **RR-BS to RR-LS configuration**, follow the above-mentioned steps, but note that the illustrations will be reversed.

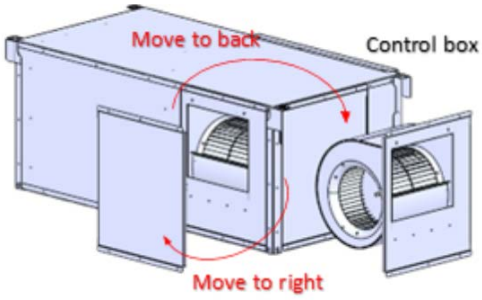
Model 08-12: LR-RS to LR-BS configuration

Step 1: Ensure the unit is on the ground, not hanging from the ceiling.

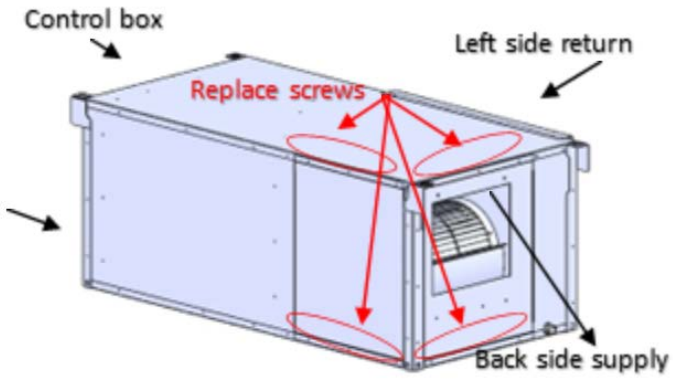
Step 2: Unscrew the motor access panel to unplug the motor wire harness. Then, unscrew the blower panel to change the air supply from the right side to the back side on the left-side return unit.



Step 3: Move the blower panel on the right side to the back side along with the blower-motor assembly, and the motor access panel on the back side to the right side.



Step 4: Screw the blower panel, plug the motor wire harness. Then, replace the screws to secure the motor access panel as shown to have a back-side air supply and left-side return.

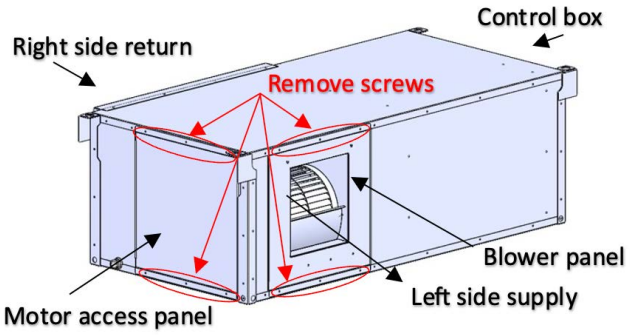


Note: To have **LR-BS to LR-RS configuration**, follow the above-mentioned steps, but note that the illustrations will be reversed.

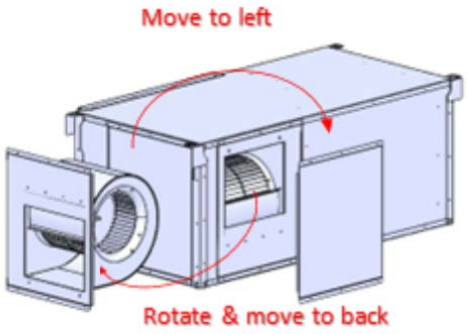
Model 08-12: RR-LS to RR-BS configuration

Step 1: Ensure the unit is on the ground, not hanging from the ceiling.

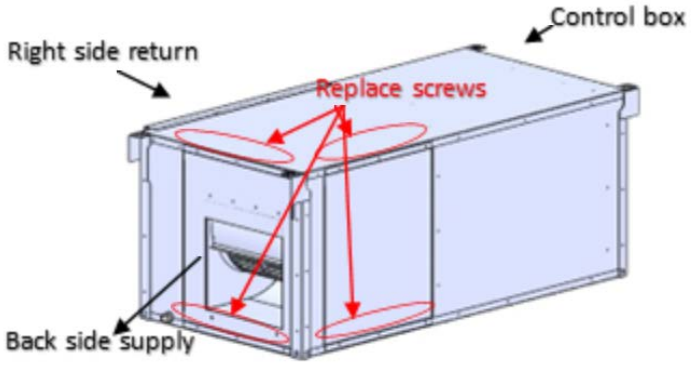
Step 2: Unscrew the motor access panel to unplug the motor wire harness. Then, unscrew the blower panel to change the air supply from the left side to the back side on the right-side return unit.



Step 3: Rotate & move the blower panel on the left side to the back side along with the blower-motor assembly, and move the motor access panel on the back side to the left side.



Step 4: Screw the blower panel, plug the motor wire harness. Then, replace the screws to secure the motor access panel as shown to have a back-side air supply and right-side return.



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Note: To have **RR-BS to RR-LS configuration**, follow the above-mentioned steps, but note that the illustrations will be reversed.

Installing Condensate Piping

Install a condensate drain line pitched away from the unit to ensure proper drainage. Follow all local plumbing and building codes. A pitch of 1/8" per foot (11 mm/m) is required.

Pitch the unit toward the drain as shown in ***Figure-28*** to improve the condensate drainage. Units smaller than 1.5 tons must be pitched carefully to prevent condensate leaks inside the cabinet.

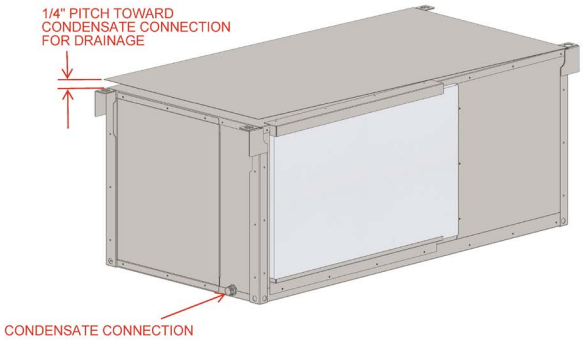

Figure-28

Install a trap at the drain outlet with the top of the trap below the drain connection, as shown in ***Figure-29***. Trap depth (water-seal) should match blower external static pressure (ESP)—e.g., 2 inches (51 mm) ESP requires 2 inches (51 mm) trap depth. **A minimum of 1.5 inches (38 mm) is required.**

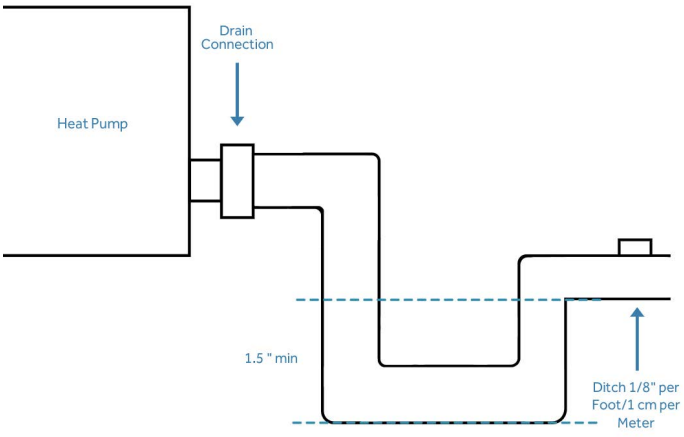

Figure-29

Each unit requires an individual trap and drain connection—**common traps or vents are not permitted.** Include a means for flushing or cleaning the line.

Vent the drain line if:

- It collects debris or air
- It runs horizontally for a long distance
- Pressure differences between units could impact drainage

Vents must be installed downstream of the trap, in the direction of condensate flow.

Caution: Ensure condensate line is pitched toward drain 1/8 inch per foot/11 mm per meter of run.

Ductwork Installation

Duct systems must be properly sized and balanced to meet the unit's airflow requirement and allow adequate and even airflow to the unit. Undersized or improperly sealed ducts can reduce performance or cause equipment damage. **Airflow must meet or exceed the unit's specified minimum to prevent equipment damage.**

Duct systems should be designed for whisper-quiet operation. To minimize vibration transmission, use flexible connectors at both the supply and return air duct connections when connecting to metal ductwork. To further reduce blower noise, line the first few feet of the supply and return plenums with internal fiberglass duct liner or construct them from ductboard. Avoid installing the unit with uninsulated ductwork in unconditioned spaces, as this may negatively impact performance. Include at least one 90-degree elbow in the supply duct to help attenuate airflow noise.

If connecting to existing ductwork, verify it supports the required airflow. Systems originally sized for heating-only may need larger ducts. Seal and repair any leaks.

Installation of Supply and Return Piping

Follow these guidelines for proper piping installation:

1. Install a drain valve at the bottom of all supply and return risers to facilitate system flushing.
2. Install shut-off valves to turn off the water flow for every unit to allow for full unit removal when servicing.
3. Install strainers at the inlet of every system circulating pump to prevent debris from entering and damaging the pump.
4. Choose hose lengths that provide adequate slack between connection points. Note that hoses can expand or contract under pressure, typically ranging from +2% to -4%.
5. Refer to ***Table 12*** for the appropriate minimum bend radius for each hose size. Avoid bending hoses beyond this limit, as it may cause collapse and restrict water flow. If space constraints require a tighter bend, use an angled adapter to maintain proper hose shape and flow.
6. Insulate piping when loop temperatures fall below the dew point or in ground loop applications.

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Hose Diameter	Minimum Bend Radii
½" (12.7mm)	2-1/2" (6.4cm)
¾" (19.1 mm)	4" (10.2cm)
1" (25.4mm)	5-1/2" (14cm)
1-1/4" (31.8mm)	6-3/4" (17.1cm)

Table-12

Supply and return piping is joined to the heat pump with short lengths of high pressure flexible hose. Unilux hose kits include two braided steel covered flex hoses and two isolation ball valves for water in and water out. Hose sizes are based on the unit model. Supply and return hoses include swivel fittings on one end to prevent kinking. Use proper adapters for secure connection to unit and risers. Inspect regularly to prevent leaks or damage.

Flex Hose Kit— Models UZHP02-06L/UZHH02-06L

½" hose available in 24" length. Connects to shut-off valve installed on riser with ball valve.

Dry seal only. Do not use teflon tape or pipe dope.
Working Pressure: 400 PSI
Burst Pressure: 1600 PSI

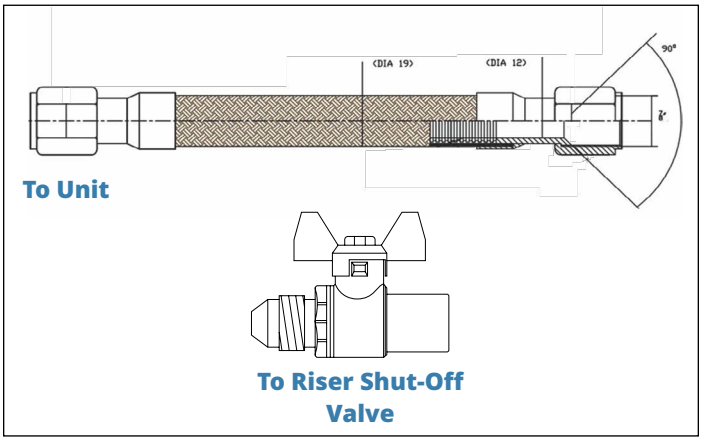

Figure-30

Flex Hose Kit— Models UZHP08-14L /UZHH08-14L

¾" hose available in 24" length. Connects to shut-off valve on riser with ball valve.

Dry seal only. Do not use teflon tape or pipe dope.
Working Pressure: 400 PSI
Burst Pressure: 1600 PSI

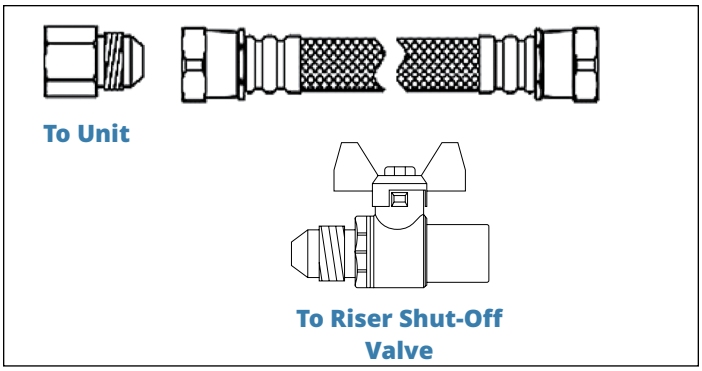

Figure-31

Connect the hoses by hand, then carefully tighten fittings to avoid damaging the water lines (max torque for ½" hose is 40 ft lbs; max torque for ¾" hose is 55 ft lbs + 10%-0). Use a wrench to hold the valve steady and a torque wrench to tighten the nut.

Warning: Do not connect the unit to supply and return piping until the water system has been fully flushed out. A high point of the piping system must be vented.

Warning: POE (polyolester) oil used with R410A/R-454B refrigerants can degrade PVC/CPVC piping. Never use PVC/CPVC for water piping in these systems.

Caution: Use corrosion-resistant components for systems with corrosive water.

Caution: Do not bend or kink hoses or piping

Caution: Piping must comply with all applicable building and plumbing codes.

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System Design and Application Notes – Water Source Heat Pumps

In high-rise residential systems, multiple units are typically connected to a shared piping system. Because maintenance on any individual unit can introduce air into the loop, air elimination devices are a critical component of the mechanical room plumbing. Pipe insulation should be used to prevent condensation, especially when water temperatures drop below 60°F (15.6°C), as recommended by Unilux HVAC.

Avoid metal-to-plastic threaded connections, as they are prone to leakage over time.

Before system startup, flush the piping network thoroughly to remove debris such as dirt, metal shavings, and other contaminants. Flow rates should generally fall between 2.25 and 3.5 gallons per minute per ton of cooling capacity (2.9 to 4.5 L/min per kW). For most water loop heat pump installations, Unilux HVAC recommends a flow rate of 3 gpm per ton (3.91 L/min per kW).

Pressure/temperature (P/T) ports must be included to allow for routine flow measurement, temperature checks, and general system diagnostics.

Water source systems that use cooling towers and boilers typically maintain loop temperatures between 60°F and 90°F (16°C to 32°C). For optimal performance and reliability, a closed-circuit evaporative cooling tower with a secondary heat exchanger between the tower and the loop is recommended. If an open tower is used continuously, ensure that appropriate filtration and chemical treatment are in place.

Figure-32 Typical Installation

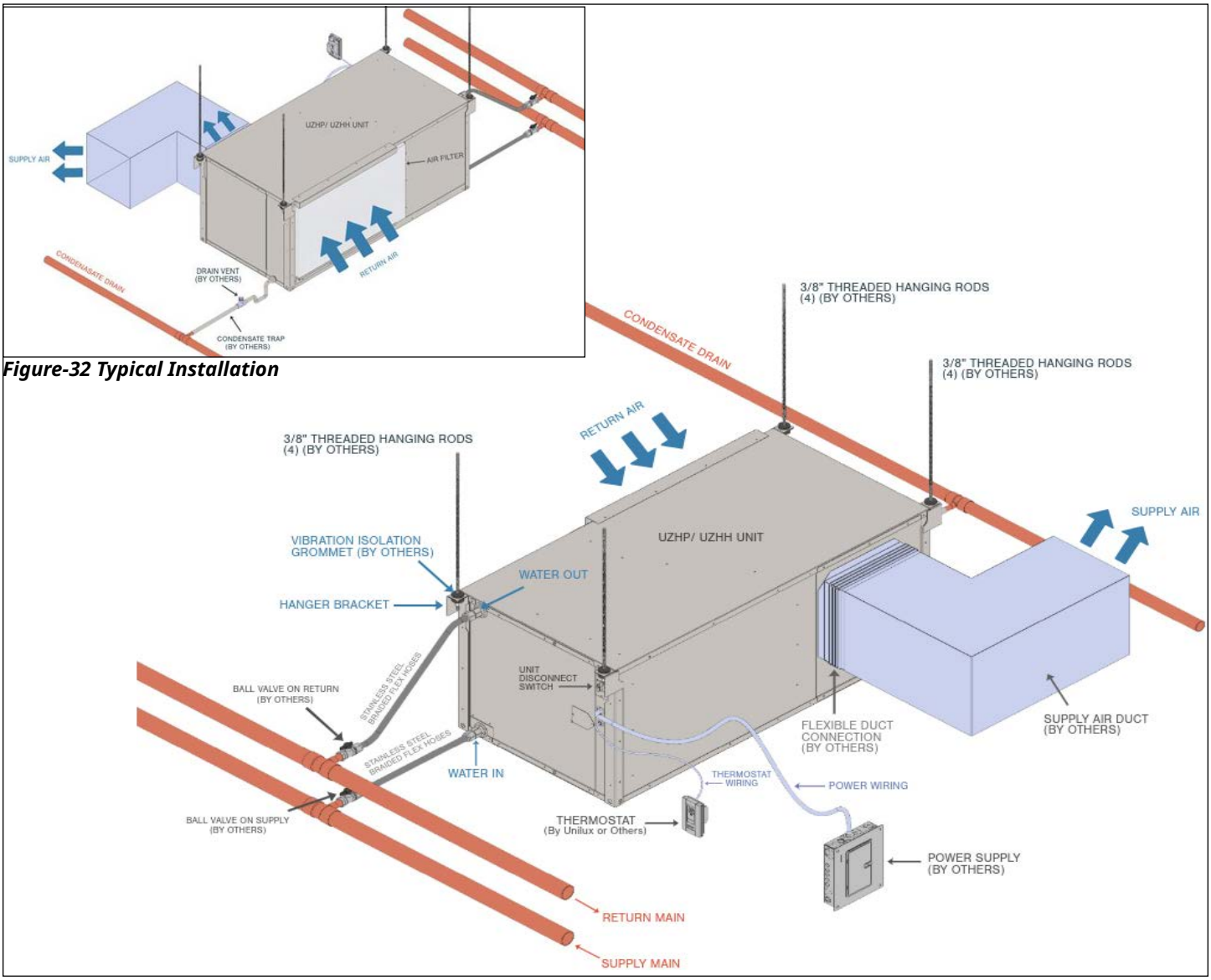

Figure-33 Typical Installation

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Wiring Diagrams

UZHPL Wiring Diagram

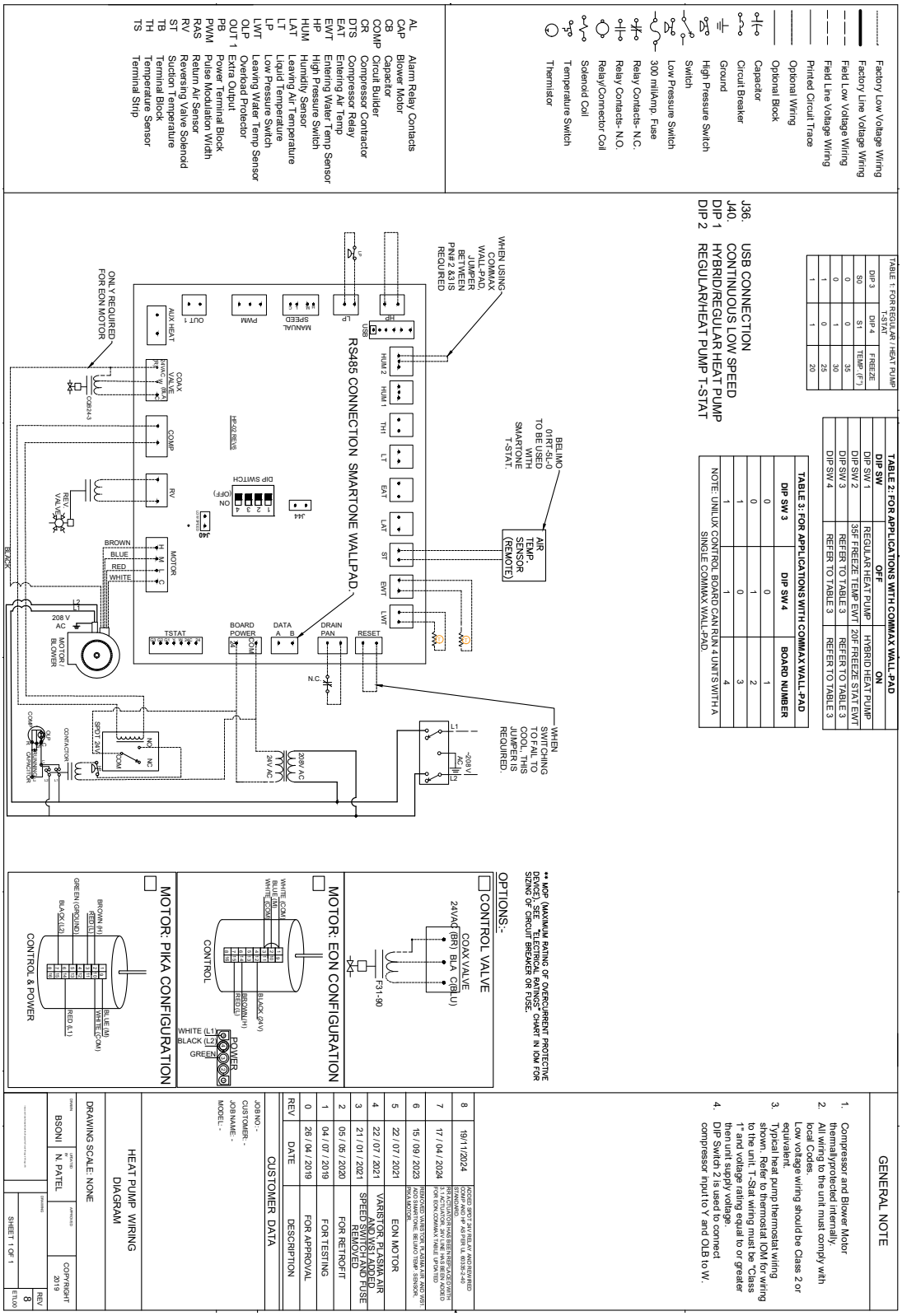

Figure-34

UZHPL 3PH Wiring Diagram

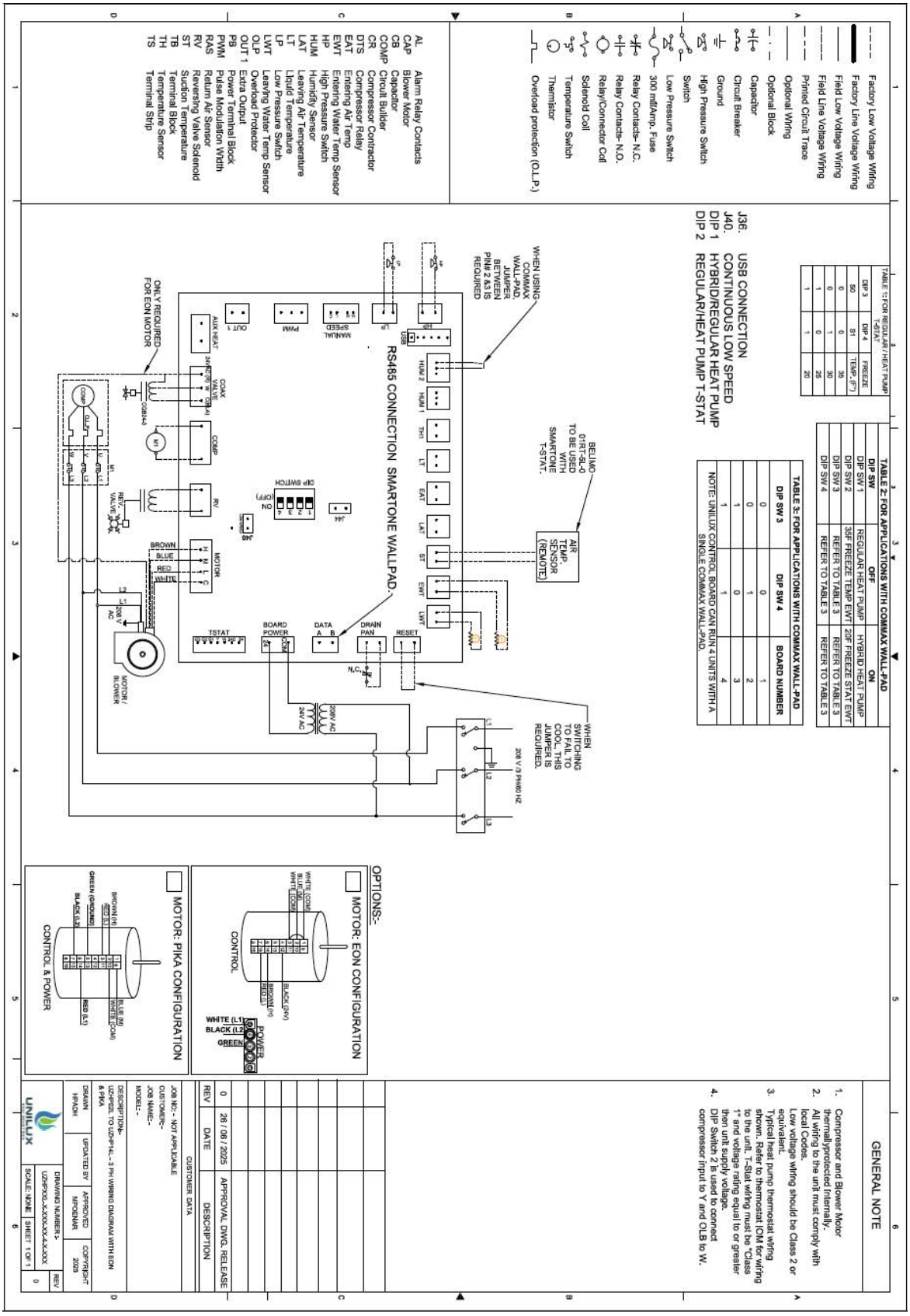

Figure-35

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UZHHL Wiring Diagram

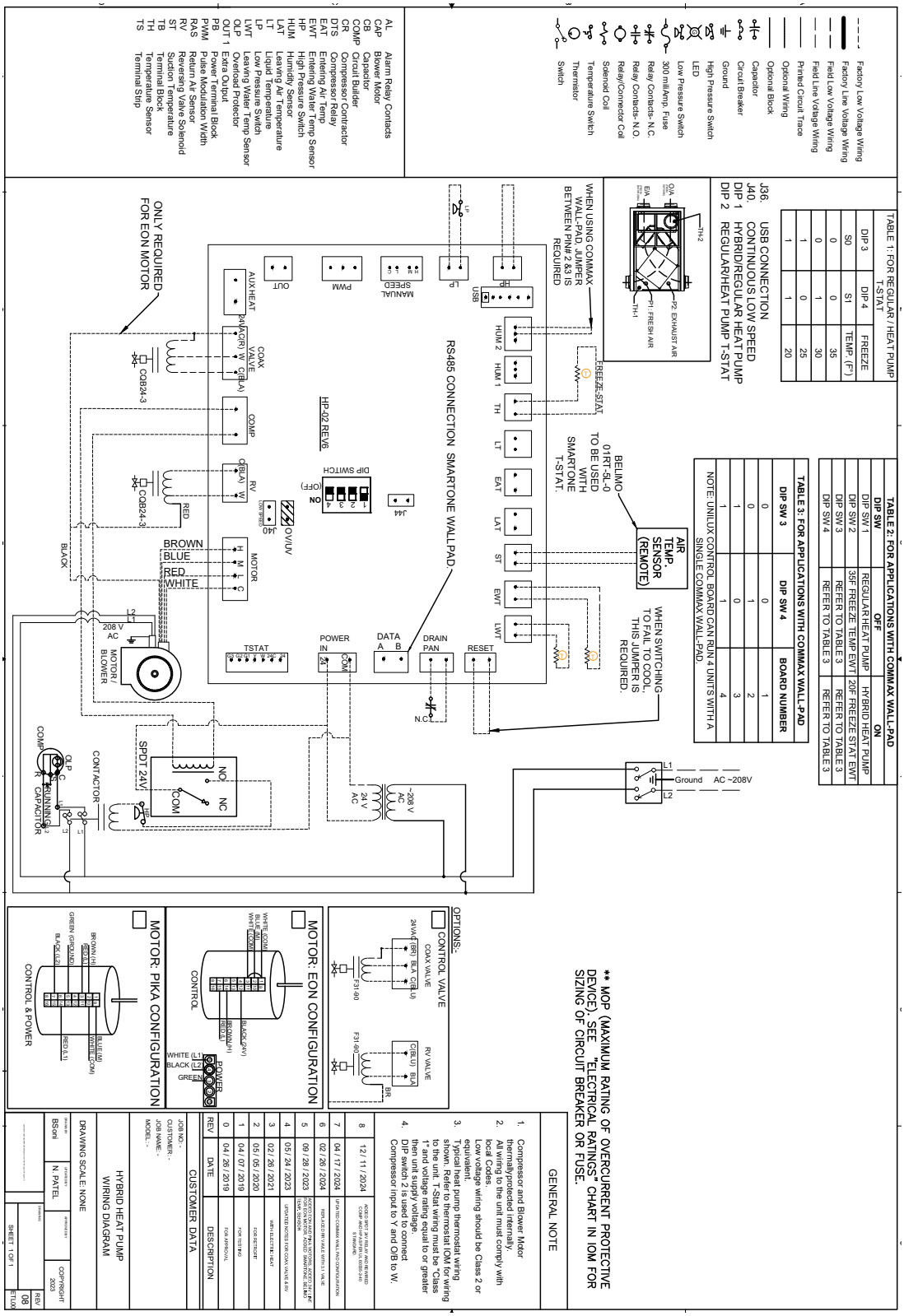

Figure-36

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UZHHL 3PH Wiring Diagram

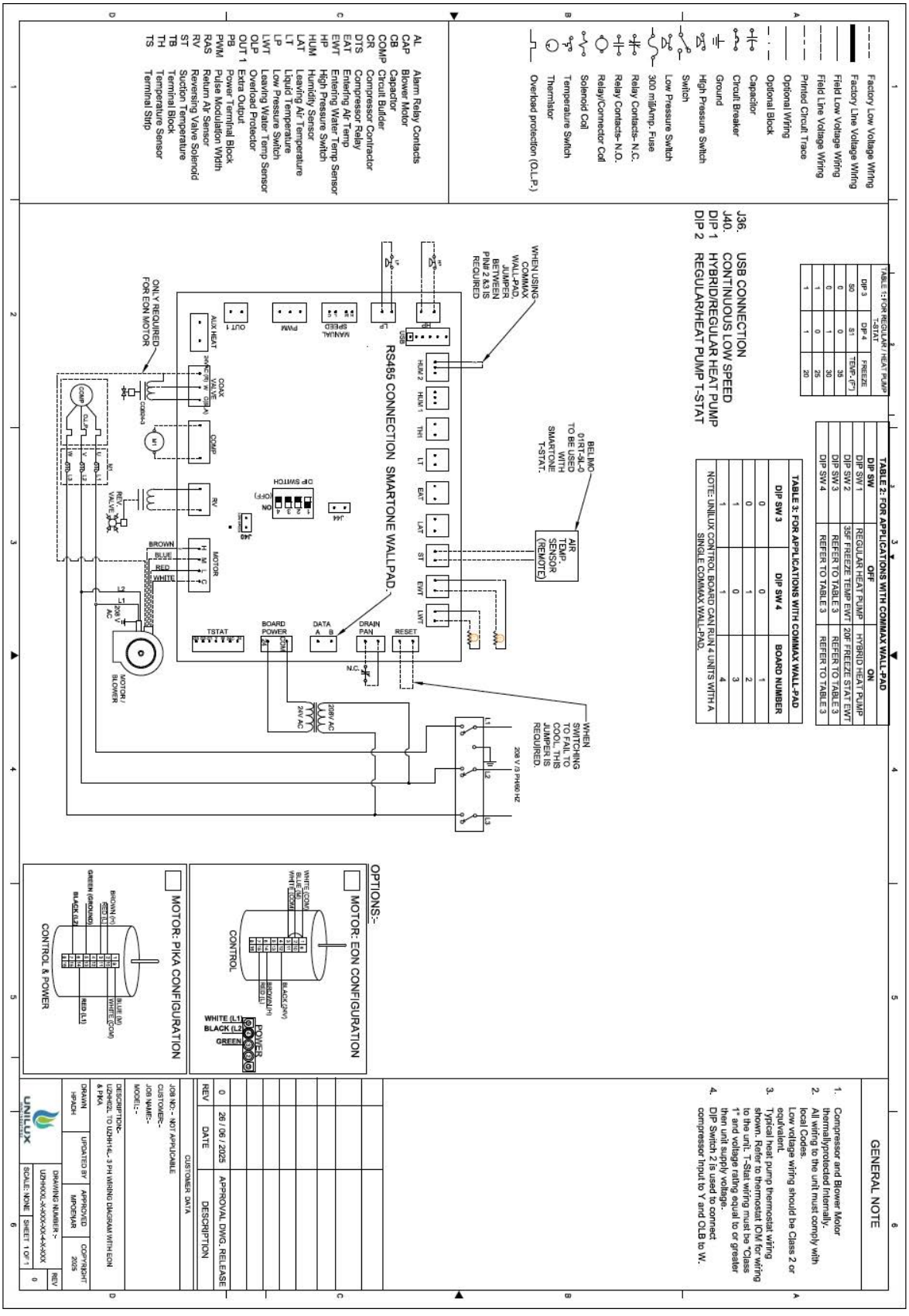

Figure-37

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Heat Pump Pre-Commissioning Checklist

System Checklist

Verify and submit documentation confirming that the following has been completed:

All Jobs

☐ Water Treatment

As Required

☐ Boiler Commissioning
☐ Cooling Tower Commissioning
OR
☐ Geothermal Loop Commissioning

Safety Checks

- Verify the building water loop system has been cleaned, flushed, and chemically treated as per the industry standard and the loop is complete with strainer or filtration system. In order to maintain your warranty, the closed loop system must be kept clean and monitored on a regular basis ensuring PH (8.5-10.5) and ammonia (< 5.0 PPM) remain within acceptable levels. Ensure building riser system is purged of all remaining air.
- Heat pump unit should be at room temperature (68°F/20°C) for 48 hours before start-up. Failure to do so will damage unit.

Note: All following steps must be completed to avoid equipment damage.

Pre-Startup Checklist

☐ The power supply voltage matches what is specified on the nameplate
☐ Electrically grounded & circuit protection is correct
☐ Control wiring is correct as per electrical schematic
☐ The disconnect switch is in **OFF** position
☐ The thermostat is in off mode and wires are connected correctly
☐ Thermostat wiring block is plugged in to the correct location.
☐ Ensure that all shipping materials and debris have been removed from cabinet and the surrounding area is clean with no obstructions.
☐ A clean filter is installed in the right direction
☐ Riser shut-off valves are in the **OPEN** position
☐ Ensure a proper seal between unit and ducts
☐ The unit drain connection is securely attached to the condensate hose
☐ Condensate drain hose is securely attached with the Condensate riser
☐ Condensate risers are insulated
☐ The unit must be in indoor conditioned area (moister free)
☐ Fan blower spins freely
☐ No air short cycling from any duct connections

Important: All units must be turned on and commissioned by an authorized Unilux HVAC technician. Failure to comply will void the unit's warranty agreement.

Job Name		Mechanical Contractor Name	
Date		Contractor Contact Name	
Requested Commission Date		Signature	

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General Operation

Commax Wall Pad

1. Works with Commax wall-pad with Protocol updated on 2023-01-10.
2. Jumper on HUM2 connector on PIN2&3 is required.

DIP SW settings

DIP SW	OFF	ON
DIP SW 1	Regular Heat pump	Hybrid Heat pump
DIP SW 2	35F freeze temp EWT	20F freeze temp EWT
DIP SW 3	Refer Table 14	Refer Table 14
DIP SW 4	Refer Table 14	Refer Table 14

Table-13

DIP SW3	DIP SW 4	Board number
0	0	1
0	1	2
1	0	3
1	1	4

Table-14

Note: Unilux control board can run 4 heats pumps with single Commax walpad. DIP SW need to adjust as shown above.

Commax wall-pad System Mode ON/OFF

Commax wall-pad has OFF feature to turn OFF complete system operation. OFF feature will turn OFF heating/cooling, including FAN. However, all safety sensors and protective feature will stay active.

Commax wall-pad Error display

Moderate Error: If room sensor is not connected, or damaged during installation or over time it will show moderate errror on wall-pad display.

Severe Error: HP, LP, DP, FZ or FZ water temp error activation will trigger severe error on wall-pad display.

API responses: 7F API communication

Byte 0	D7	Command
Byte 1	N/U	BCD in C
Byte 2	Entering Water Temperature	BCD in C
Byte 3	Leaving Water Temperature	00
Byte 4	N/U	00
Byte 5	N/U	0/1
Byte 6.7	DP Error	0/1
Byte 6.6	HP Error	0/1
Byte 6.5	LP Error	0/1
Byte 6.4	FP Error	0/1
Byte 6.3	Water Temp Error	0/1

Table-15

Num	Byte 6.0	Byte 6.1	Byte 6.2	Comment
0	0	0	0	RV: OFF, Compressor: OFF, Coax: OFF
1	0	0	1	RV: OFF, Compressor: OFF, Coax: ON
2	0	1	0	RV: OFF, Compressor: ON, Coax: OFF
3	0	1	1	RV: OFF, Compressor: ON, Coax: ON
4	1	0	0	RV: ON, Compressor: OFF, Coax: OFF
5	1	0	1	RV: ON, Compressor: OFF, Coax: ON
6	1	1	0	RV: ON, Compressor: ON, Coax: OFF
7	1	1	1	RV: ON, Compressor: ON, Coax: ON

Table-16

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System Default setting and EEPROM memory configuration

1. Initial system startup when system turns ON for first time it will set on as follow:
   - System Mode: ON
   - Operation Mode: General
   - HVAC Mode: Heat
   - General Temperature: 23C, Away Temperature: 20C
   - Fan Mode: Auto
2. EEPROM setting: System Mode, Operation Mode, HVAC mode, General Temp, Away Temp and Fan Mode is saved in internal EEPROM memory every 10 sec. Any changed setting will save after 10 sec in EEPROM.

Commax Communication Protocol

***Table-17* -Command**

Byte 00	Command	52
Byte 01	Board Address	1-40
Byte 02		
Byte 03		
Byte 04		
Byte 05		
Byte 06		
Byte 07	Check Sum	Byte 0 +..+Byte 6

CMD 0x52: Response will be only sent after 52 commands. Firmware will read data from 0x53 command, and responds back when 0x52 command is received. Delay programmed 30mS between command and response.

***Table-18* -Response**

Byte 00	Command	D2
Byte 01	Control Status	
Byte 02	Temp Gen	
Byte 03	Temp Away	
Byte 04	Current Temp	
Byte 05	HVAC Mode	
Byte 06	FAN Mode	
Byte 07	Check Sum	Byte 0 +..+Byte 6

CMD 0xD2: Note: Control Status – Bit 07: ON/OFF, Bit 4,5: Error, Bit 0: Away/Gen

***Table-19* -Command**

Byte 00	Command	53
Byte 01	Board Address	1-40
Byte 02	Type of Control	
Byte 03	Parameter 1	
Byte 04	Parameter 2	
Byte 05		
Byte 06		
Byte 07	Check Sum	Byte 0 +..+Byte 6

CMD 0x53:
Case 0: Power ON & OFF (Byte 02 = 01)
Byte 03: Power Status
0x00 = Power OFF
0x80 = Power ON
Case 1: Control of Setting Temperature (Byte 02 = 02)
Byte 03: Temperature of Operation Mode (ref. Byte 04)
(Format: (BCD)
Byte 04: Operation Mode
0x01 = General Mode
0x02 = Away Mode
Case 2: Change in Operation Mode (Byte 02 = 03)
Byte 03: 0x01 = Cooling
0x02 = Heating
0x03 = Ventilation
Case 3: Control of Fan Speed (Byte 02 = 04)
Byte 03: Type of Fan Speed
0x01 = Low
0x02 = Mid
0x03 = High
0x04 = Auto
0x05 = ON
Case 4: Control of Away Mode (Byte 02 = 05)
Byte 03: Status of Away Mode
0x01 = Set
0x02 = Unset

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Commax Wall Pad Wiring Diagram - Model UZHPL

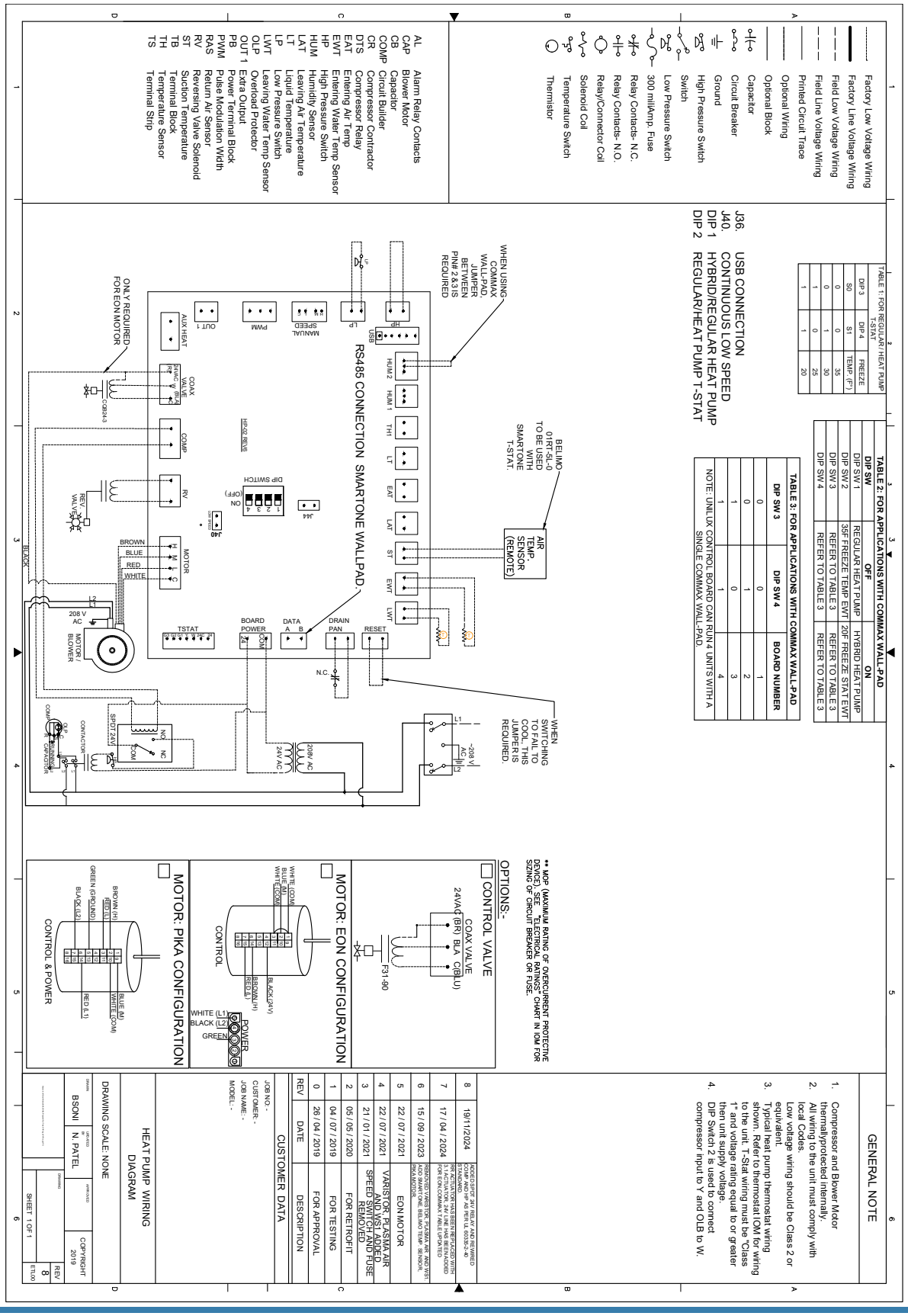

Figure-38

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Commax Wall Pad Wiring Diagram - Model UZHHL

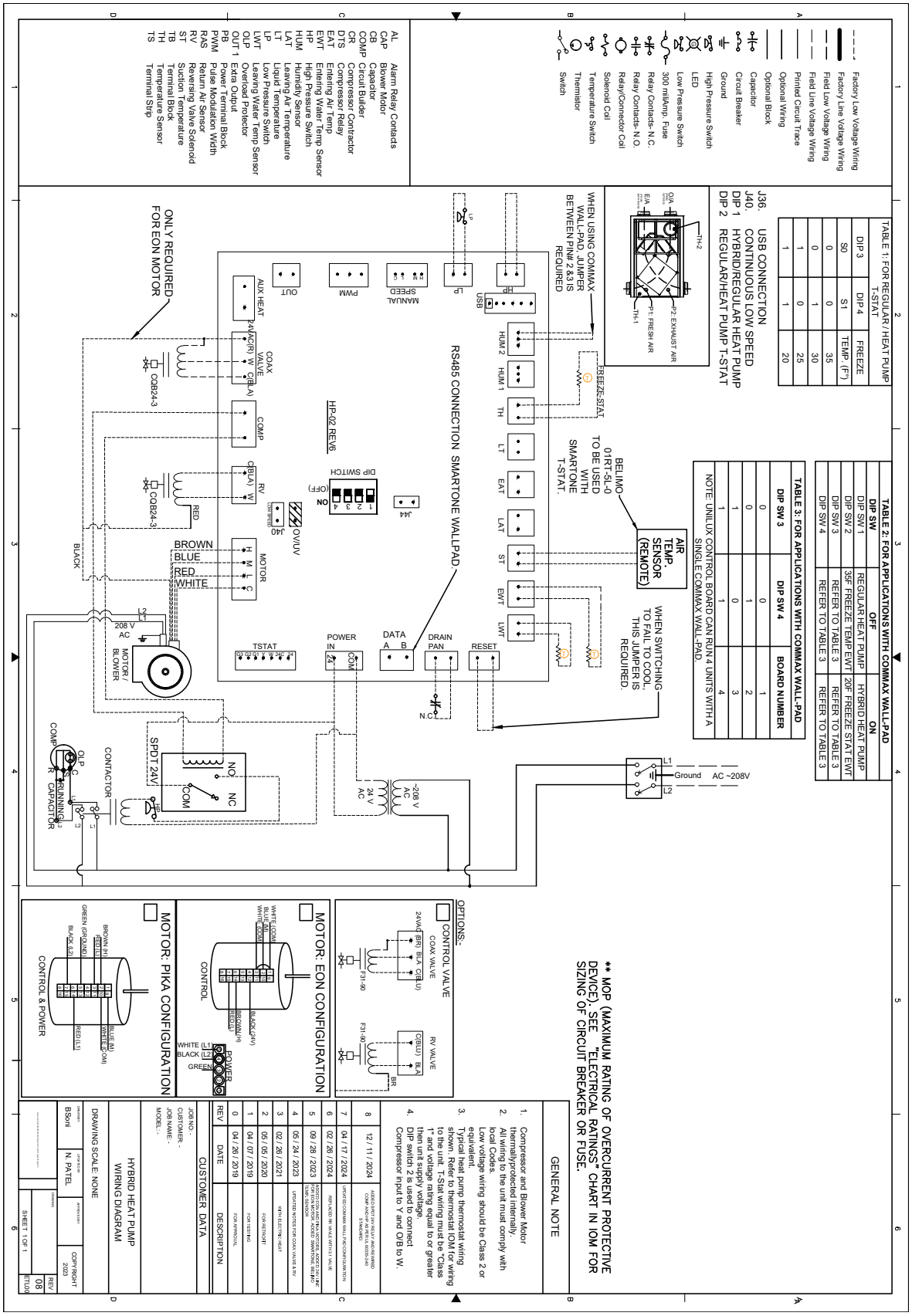

Figure-39

UNILUX HVAC INDUSTRIES
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Sequence of Operations—UZHPL

Call for Heat

On a call for heat from the thermostat (Ts > Tr+1°F)
- Reversing valve will be de-energized
- Fan turns on to high speed
- Compressor contactor will be energized if the following conditions are met:
  - Water shut-off valve is open
  - Water flow through coax exists for minimum of two minutes
  - No high pressure alarm
  - No low pressure alarm
  - No condensate overflow (drain pan) alarm
  - Compressor restart delay of seven minutes has expired
  - Water loop temp supply side (EWT) is <110°F/ 43°C
  - Water loop temp discharge side (LWT) is <122°F/ 50°C

After call has been satisfied (Tr=Ts)
- Reversing valve will continue to be de-energized
- Compressor contactor will be de-energized
- Water shut-off valve remains open
- Water shut-off valve will be flushed for three minutes
- Fan will remain on for one minute and then will turn off or return to thermostat setting
- Once above conditions are satisfied, coax flow valve is closed

Call for Cooling

On a call for cool from the thermostat (Ts < Tr-1°F)
- Reversing valve will be energized
- Fan turns on to high speed
- Compressor contactor will be energized if the following conditions are met:
  - Water shut-off valve is open
  - Water flow through coax exists for minimum of two minutes
  - No high pressure alarm
  - No low pressure alarm
  - No condensate overflow (Drain Pan) alarm
  - Compressor restart delay of seven minutes has expired
  - Water loop temp supply side (EWT) is <110°F/ 43°C
  - Water loop temp discharge side (LWT) is <122°F/ 50°C

After call has been satisfied (Tr=Ts)
- Reversing valve/3-way valve will continue to be energized
- Water shut-off valve remains open and will be flushed for three minutes
- Fan will remain on for one minute and then will turn off or return to thermostat setting
- Once above is satisfied, water shut-off valve is closed

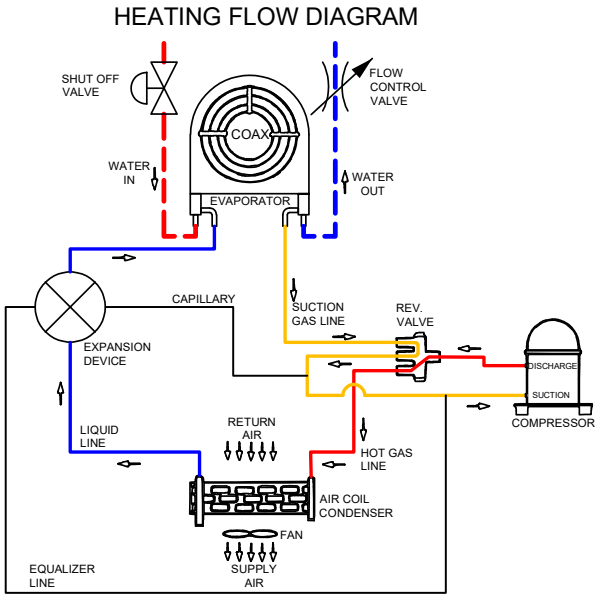

Figure-40

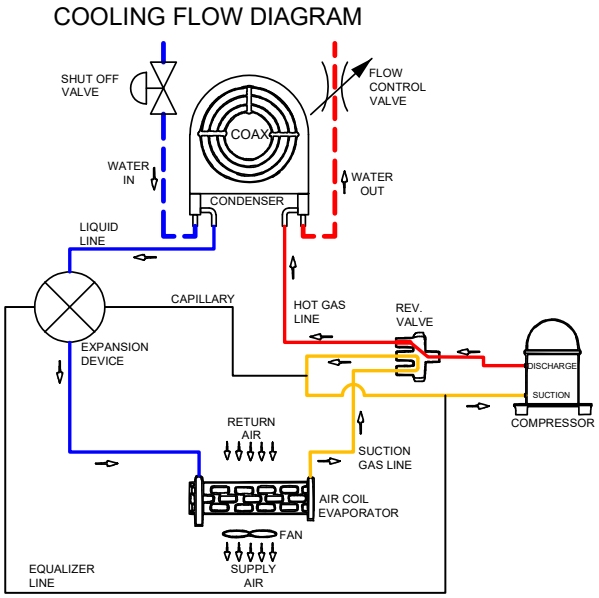

Figure-41

When there is no call for heat or cooling the fan is off after the Fan Off Timer interval is satisfied.

Note:
1. Reversing valve should be energized in cooling and de-energized in heating.
2. Default compressor delay time from control board is 7 minutes. Additional delay may occur from the thermostat as well.
3. Fan will never run on low or off speed when compressor is ON - fan will override thermostat setting and run medium speed.

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Sequence of Operations—UZHHL

Call for Heat

On a call for heat from the thermostat

- 2-way valve to hot water coil will be energized and fan will turn on to high speed if the following conditions are met:
  - No condensate overflow (drain pan) alarm
  - No Freeze-stat alarm
  - Water loop temp supply side is >80°F/27°C

NOTE: RV (2 way valve for CONDENSER) turns ON and initiates a purge cycle (AUX also turns ON). There is no timing for purge, RV stays ON until water temp reach >80 and closes and the (2 way valve for HW Coil) COAX turns ON.

After call has been satisfied)

- 2-way valve will be de-energized
- Water shut-off valve will close
- Fan will remain on for one minute and then will turn off or return to thermostat setting

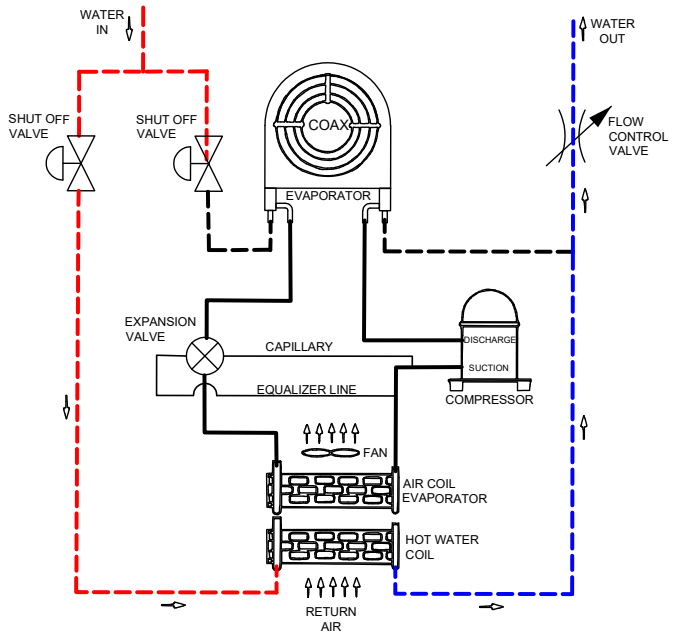

Figure-42

Call for Cooling

On a call for cool from the thermostat

- RV output will be energized
- Fan turns on to high speed
- Compressor contactor will be energized if the following conditions are met:
  - Water shut-off valve is open
  - Water flow through coax exists for minimum of two minutes
  - No high pressure alarm
  - No low pressure alarm
  - No condensate overflow (Drain Pan) alarm
  - Compressor restart delay of seven minutes has expired
  - Water loop temp supply side (EWT) is <110°F/ 43°C
  - Water loop temp discharge side (LWT) is <122°F/ 50°C

After call has been satisfied)

- Water shut-off valve remains open and will be flushed for three minutes
- Fan will remain on for one minute and then will turn off or return to thermostat setting
- Once above is satisfied, water shut-off valve is closed

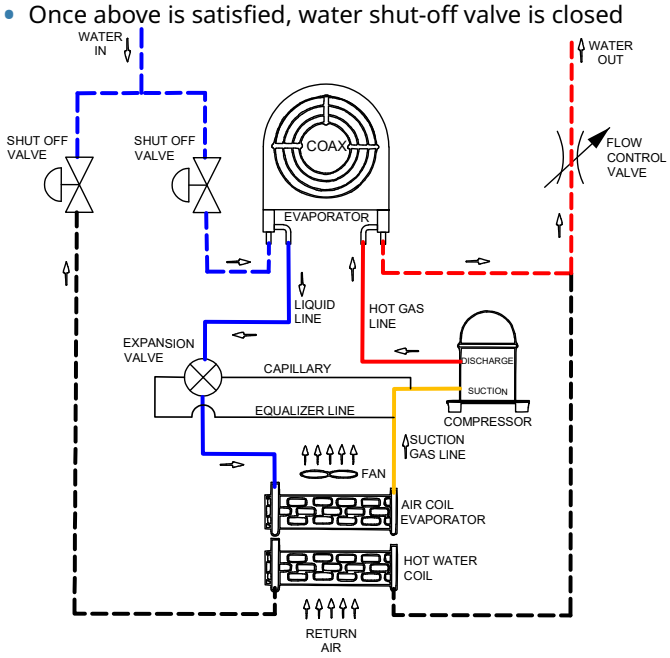

Figure-43

Note:

1. RV output should be energized in cooling and de-energized in heating.
2. Default compressor delay time from control board is 5-7 minutes. Additional delay may occur from the thermostat.
3. High pressure & low-pressure alarms will be disabled when the unit is on heating mode in the hybrid heat pump.
4. 2-way valve will be in an open position in the hybrid heat pump—water will flow from the water coil.
5. Fan will never run on low or off speed when compressor is ON - control board will override thermostat setting and run medium speed.

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Maintenance Support

Alarms - All Models

High-Pressure (HP) Alarm—Bypass to Latch

- A high-pressure alarm will occur when the HP switch opens.
- Red HP LED is flashing when a HP alarm occurs.
- Alarm will bypass 3 times. System will soft reset each time after HP alarm is set. It will latch on 5th time which requires a hard reset for normal operation. Delays for compressor short cycle and coax protection will be enable on each soft reset.

Low-Pressure (LP) By-Pass (Warning)

- If LP switch opens and compressor is running, a LP by-pass warning will be activated. If LP switch closes or compressor is disabled before 3 minutes expires the bypass will be reset.
- Red LP LED will be solid when in LP bypass mode.

Low-Pressure (LP) Alarm Mode—Bypass to Latch

- A LP alarm will occur when the LP switch is open for 3 continuous minutes and the compressor is running.
- The Red LP LED will be flashing when a LP alarm occurs
- Alarm will bypass for 3 times. System will soft reset each time after LP alarm is set. It will latch on 5th time which requires hard reset for normal operation. Delays for compressor short cycle and coax protection will be enabled on each soft reset.
- **Note:** If the LP switch is open on unit power up a LP alarm is triggered immediately.

When unit is found in low-pressure latched condition, cycle power and operate in cooling mode for one (1) cycle. If unit goes into low-pressure, then there may be a charge or fan issue. If unit goes into high-pressure, there is a water flow issue. Unit should not be operated until the water issue has been identified and resolved. Water flow troubleshooting should only be done in cooling mode. Do not operate in heating mode without proper water flow, as serious damage can occur.

Condensate Overflow (Drain pan) Alarm (Latching Alarm)

- A condensate overflow alarm will occur after 30 seconds if the water sensor input triggers an overflow condition. This is to avoid false tripping.

Water Loop Supply Temperature (EWT) Alarm (Non-Latching Alarm) - UZHPL/UZHPL-G heating and cooling and UZHHL cooling only

- A water loop supply temperature of greater than 110°F/43° C will trigger an EWT alarm.
- A water loop supply temperature of less than 100°F/38°C will reset the EWT alarm.
- The water loop supply temperature is only sensed when the water supply valve is open.
- The EWT LED will be illuminated solid on a EWT alarm.
- If the EWT sensor is open or shorted a EWT alarm is triggered and the Red EWT LED will be blinking.

Water Loop Discharge Temperature (LWT) Alarm (Non-Latching Alarm)

- A water loop discharge temperature of greater than 122°F/50°C will trigger an LWT alarm.
- A water loop discharge temperature of less than 115°F/46°C will reset the LWT alarm.
- The water loop discharge temperature is only sensed when the water supply valve is open.
- The LWT LED will be illuminated solid on a LWT alarm.
- If the LWT sensor is open or shorted a LWT alarm is triggered and the Red LWT LED will be blinking.

Freeze Protection Alarm - UZHPL Only

- A water loop supply temperature (EWT) of less than selected freezing threshold will trigger an EWT alarm (see table below).
- A water loop supply temperature of greater than selected freezing threshold will reset the EWT alarm.
- The water loop supply temperature is only sensed when the water supply valve is open.
- The EWT and LWT LED will be illuminated flashing on a Freeze Protection Alarm.
- Select Freezing Threshold: (Glycol required below 35°F/2°C)

DIP SW 3	DIP SW 4	Temperature
OFF	OFF	35°F / 2°C
OFF	ON	30°F / -2°C
ON	OFF	25°F / -4°C
ON	ON	20°F / -7°C

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Freeze-Stat Protection Alarm - UZHHL Only

- When the Freeze-Stat sensor detects a return air temperature below 41°F/5°C the Freeze-Stat alarm will be triggered.
- The EWT and LWT LED will be illuminated flashing in the event of a Freeze-Stat alarm.
- Alarm will bypass for 2 times. System will soft reset each time after alarm is set. It will latch on the 3rd time which requires hard reset for normal operation. Delays for compressor short cycle and coax protection will be enabled on each soft reset.

Condenser Freeze Protection – UZHPL (G) Only

- When equipped with this feature, the unit will turn off in heating mode only if the refrigerant temperature going to the condenser falls below above based on DIP switch settings.
- The EWT and LWT LED will be illuminated flashing on a Freeze Protection Alarm, and this will stay active until the refrigerant temperature rises above 60°F.
- Alarm will bypass for 3 times. System will soft reset each time after alarm is set. It will latch on the 4th time which requires hard reset for normal operation. Delays for compressor short cycle and coax protection will be enabled on each soft reset.

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Timers and Interlocks - All Models

Anti-Recycle Timer
Default 7 minutes. Ensures compressor does not restart for 7 minutes.

Fan On Timer
Default 2 minutes.

Water Supply Valve Open Timer (UZHPL Only)
Default 2 minutes. Ensures flow in the Coax before compressor starts.

Fan Off Timer
Default 3 minutes. Ensures fan runs for 3 minutes after the compressor is turned off.

Water Supply Valve Closed Timer
Default is 3 minutes. Ensures Coax is flushed for 3 minutes after the compressor is turned off.

Changeover Timer
Changeover timer is activated when the system will change from heating to cooling or cooling to heating. In changeover, 3-minute timer will be activated. LP and HP alarm will be bypassed when this timer is activated.

Drain Pan Timer
Drain pan timer is 30 seconds to avoid false shut off. In case of Condensate Overflow Alarm system will bypass alarm for 30 seconds, if that alarm continues after 30 seconds, then the system will shut off.

LED Panel

Heat: Amber LED will be blinking when there is call for heat from thermostat. It will be solid **ON** after satisfying Anti-Recycle, Fan **ON** and Valve Open Timer.

Cool: Blue LED will be blinking when there is call for cool from thermostat. It will be solid **ON** after satisfying Anti-Recycle, Fan **ON** and Valve Open Timer.

LP: 2 stage low pressure LED
1. Solid Red LED: Low pressure detected. System is in bypass mode 3 minutes Low pressure timer activated.
2. Flashing Red LED: Latched low-pressure alarm, alerts after 3rd occurance.

HP: 2 stage high pressure LED
1. Solid Red LED: High pressure detected. System is in bypass mode 3 minutes High pressure timer activated.
2. Flashing Red LED: Latched high-pressure alarm, alerts after 3rd occurance.

DP: Solid Red LED—Latched condenser drain pan alarm.

LWT: Solid Red LED—Leaving water temperature not satisfied.

EWT: Solid Red LED—Entering water temperature not satisfied.

PWR: Solid Red LED—system has power.

Freeze/Freeze-Stat Panels
When entering water temp is less than selected, freezing threshold EWT and LWT LED will be blinking.

Condenser Freeze Protection
EWT + LWT flashing LED - Refrigerant temperature falls below 36°F or lower based on DIP switch settings.

Optional Thermostat

Standard heat and cool call thermostat (DIP SW 2 OFF): In this type of thermostat connect heat call wire to W and cool call wire to Y. (Factory default).

DIP Switch Settings

DIP SW	OFF	ON
DIP SW 1	UZHP	UZHH
DIP SW 2	Heat and Cool Call Thermostat	Reversing Valve and Compressor Call Thermostat
DIP SW 3	Refer to Freeze Protection Alarm Table	Refer to Freeze Protection Alarm Table
DIP SW 4	Refer to Freeze Protection Alarm Table	Refer to Freeze Protection Alarm Table

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Information on Servicing

Prior to beginning to work on systems containing flammable refrigerants, safety checks are necessary to ensure the risk of ignition is minimized.

Work shall be undertaken under a controlled procedure so as to minimise the risk of of a flammable gas or vapour being present while the work is being perfomed.

All the maintaince staff and others working in local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.

The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially toxic and flammable atmospheres.

Presence of Fire Extinguisher

While unit is being serviced, it is important to have an appropriate fire extinguishing equipment available to hand. Have a dry powder or co2 fire extinguisher adjacent to the charing area.

No Ignition Sources

No person carrying out work in relation to a refrigerating system which involves exposing any pipe work shall use any sources of ingnition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources , including cigaratte smoking should be kept sufficiently far away from the site of the installation , repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding spaces. Prior to work taking place, the area of equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. "No smoking" signs shall be displayed.

Checks to the Refrigerant Equipment

Where electrical components are being changed, they shall be fit for thr purpose and to the correct specification. At all times this maintainance guidelines must be followed. If in doubt, consult the manufacturer's technical department for assistance.

The follwing checks shall be applied to all installations using flammable refrigerants:

- ☐ Confirm actual refrigerant charge matched that is on the rating label.
- ☐ The ventilation machinery and outlets are operating adequately and are not obstructed.
- ☐ Marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected.
- ☐ Refrigerant pipe or component shall be installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components ,unless the components are are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

Checks to Electrical Devices

Repair and maintainance of electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satifactory dealt with. Initial checks shall include:

- ☐ That capacitors are discharged:this shall be done in a safe manner to avoid possibility of sparking.
- ☐ That no continuity of earth bonding.

Repairs to the Sealed Components

During repair of sealed components, all electrical supplies shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc. Sealed electrical components shall be replaced in case if necessary. Ensure that the apparatus is mounted securely.

Intrinsically Safe Components

Do not apply any permanent inductive or capacitance loads to the circuit without ensuring that this will not exceed the permissible voltage and current permitted for the equipment in use. Instrinsically safe components must be replaced. Replace components only with parts specified by the manufacturer. Other parts may result in the ignition of refrigerant in the atmosphere from a leak.

Cabling

Check that cabling will not be subjected wear , corrosion, excessive pressure, vibration , sharp edges or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

Labelling

Equipment shall be lebelled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed. Ensure that there are labels on the equipment stating the equipments contains R-454B (a2l) refrigerant.

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Heat Pump Maintenance

Important Information - Read Before Performing Any Maintenance

Qualification of Workers

Every working procedure that affects safety means shall only be carried out by competent persons according to the *Competence of Service Personnel* note below.

Checks to the Area

Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimized.

Work Procedure

Work shall be undertaken under a controlled procedure as to minimize the risk of a flammable gas or vapour being present while the work is being performed.

General Work Area

All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.

Checking for Presence of Refrigerant

The area shall be checked with an appropriate refrigerant detector prior and during work, to ensure the technician is aware of potentially toxic or flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants i.e. non-sparking, adequately sealed, or intrinsically safe.

Presence of Fire Extinguisher

If any work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO_2 fire extinguisher adjacent to the charging area.

No Ignition Sources

No person carrying out work in relation to a refrigerating system which involves exposing any pipe work shall use any sources of ingnition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources , including cigaratte smoking should be kept sufficiently far away from the site of the installation , repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding spaces. Prior to work taking place, the area of equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. "No smoking" signs shall be displayed.

Note: Information of procedures additional to usual information for refrigerating appliance installation, repair, maintenance, and decommission procedures is required when an appliance with flammable refrigerants is affected. The training of these procedures is carried out by national training organizations that are accredited to teach the relevant national competency standards that may be set in legislation.

All maintenance should be done by a certified HVAC technician adhering to the following requirements.

Competence of Service Personnel

Information and Training: the training should include the substance of the following:

- Information about the explosion potential of flammable refrigerants to show that flammables may be dangerous when handled without care.
- Information about potential ignition sources, especially those that are not obvious, such as lighters, light switches, vacuum cleaners, electric heaters.
- Information about the different safety concepts:

  Unventilated - Safety of the appliance does not depend on ventilation of the housing. Switching off the appliance or opening the housing has no significant effect on the safety. Nevertheless, it is possible that leaking refrigerant may accumulate inside the enclosure and flammable atmosphere will be released when the enclosure is opened.

  Ventilated Enclosure - Safety of the appliance depends on ventilation of the housing. Switching off the appliance or opening the enclosure has a significant effect on the safety. Care should be taken to ensure sufficient ventilation before.

  Ventilated Room - Safety of the appliance depends on the ventilation of the room. Switching off the appliance or opening the housing has no significant effect on the safety. The ventilation of the room shall not be switched off during repair procedures.

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Heat Pump Maintenance Instructions

Proper periodical heat pump maintenance will bring out the best unit performance. Before starting any maintenance work, ensure the disconnect switch on the unit is off and the circuit breaker on the fuse panel is in the OFF position. Don't run the unit without filters or during any temporary construction that could clog the air filter or air coil. Don't use any acid-based cleaning solutions on the air coil or any refrigerant components. **Check safety equipment before putting into service.**

General Maintenance and Repair

Heat pump unit shall be repaired outside or in a workshop specially equipped for servicing units with flammable refrigerants. Ensure sufficient ventilation at the repair place. Be aware that malfunction of the equipment may be caused by refrigerant loss and a refrigerant leak is possible. Discharge capacitators in a way that won't cause a spark. The standard procedure to short circuit the capacitator terminals usually creates sparks. Reassemble sealed enclosures accurately. If seals are worn, replace them.

When brazing is required, the following procedures shall be carried out in the following order:

1. Safely remove the refrigerant following local and national regulations. If the recovery is not required by national regulations, drain the refrigerant to the outside. Take care that drained refrigerant will not cause any danger. In doubt, one person should guard the outlet. Take special care that drained refrigerant will not float back into the building.
2. Purge the refrigerant circuit with oxygen free nitrogen.
3. Evacuate the refrigerant ciruit.
4. Remove parts to be replaced by cutting or brazing.
5. Purge the braze point with nitrogen during the brazing procedure required for repair.
6. Carry out a leak test before charging with refrigerant.

Monthly Maintenance

- Vacuum dust from unit air grilles and surrounding coil area with a soft bristle brush attachment as required.
- Every month visibly inspect the unit for any signs of water leaks, or water damage around the floor or surrounding drywall.

Quarterly Maintenance

- Visibly inspect the air filter monthly for dirt and clogging. Replace as required with a quality filter. Pleated filters rated between MERV 8 to MERV 10 are preferable as they will provide optimal filtration. Filters with a rating higher than MERV 10 may reduce airflow and increase fan power consumption and unit performance.
- Inspect condensate drain pan every three months for signs of stagnant water, mineral buildup, and microbial growth. Clean the drain pan with mild soapy water as required to prevent condensate hose blockages and microbial growth.
- Check valves and hoses for signs of fluid leaks, deterioration, or cracking.

Half-yearly Maintenance

- Check condensate fluid flow to ensure adequate drainage and test for signs of looming blockages. A technician must check that the condensate switch alarm is operating correctly. Alarm trips whenever water level rises above sensor threshold and locks unit operation.
- Visibly inspect the air coil for signs of dirt accumulation between aluminum fins. First vacuum and then use a coil-cleaning agent if required. Don't use any cleaning solutions that contain acid, including acetic acid (vinegar). Damage to the air coil may occur resulting in possible refrigerant leaks.

Annual Maintenance

- Perform an annual maintenance inspection of the fan and blower motor assembly. All units come with permanently lubricated fan motors and don't require any lubrication of fan motors. Clean up any dirt or debris that may have accumulated.
- Visibly inspect the electrical box for signs of component damage due to overheating or poor electrical contact.

Filter Sizes		
Model	**Filter Size**	**Qty./ Unit**
UZHP02-05L-P/ UZHH02-04L-P	10 X 25 X 1	1
UZHP08-10L-X/ UZHH08-10L-X	16 X 16 X 1	2
UZHP05-06L-X/ UZHH05-06L-X	16 X 25 X 1	1
UZHP12L-X/ UZHH12L-X	18 X 30 X 1	1
UZHP14L-X/ UZHH14L-X	18 X 30 X 1	1

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Warranty Information

Unilux HVAC warrants that its products are free from defects in parts and factory workmanship for a period of 24 months from start-up date. Start-up must be performed by a Unilux authorized technician. Products or consumable components such as air filters are not covered. Components manufactured by third parties bear the warranty of their manufacturer. Refrigerant gas is not covered.

The details of the warranty are as following:

(A) In the event that a part is deemed defective, the user must immediately inform Unilux HVAC in writing who will at its option furnish new or factory re-manufactured part at no cost to the user ex-factory. The user must return the defective part to Unilux HVAC within 30 days upon receipt of the replacement for evaluation.

(B) The warranty does not cover any costs of troubleshooting, shipment, installation or maintenance. The warranty also does not apply to the following situations: any damage or defect due to mishandling; improper storage; misuse; installation, commissioning, operation and maintenance contrary to Unilux HVAC's drawing, descriptive manual or recommendation; wrong supply of electricity, water or drain; improper repair; tamper or alteration; negligence; accident; normal wear; or any cause beyond the control of Unilux HVAC.

(C) The original warranty period does not change in the event of part replacement from Unilux HVAC.

(D) The warranty is issued exclusively to the original end-user of record at the time of manufacture and is not transferable.

(E) The provisions of the foregoing warranty are in lieu of any other warranty, whether express or implied, written or oral (including any warranty of merchantability or fitness for a particular purpose or of title or non-infringement). Unilux HVAC's liability arising out of the manufacturer, sale, or supplying of the products or their use or disposition, whether based upon warranty, contract, tort, or otherwise, shall not exceed the actual purchase price paid by the distributor for the product(s). In no event shall Unilux HVAC be liable to the distributor or any other person or entity for special, incidental, consequential or punitive damages (including, but not limited to loss of profits, loss of data, or loss of use damages) arising out of the manufacture, sale, or supplying of the products, even if Unilux HVAC has been advised of the possibility of such damages or losses.

Product Line: _____

Model Number: _____

Serial Number: _____

Shipping Date: _____

Warranty Expiry Date: _____

User Name: _____

User Address: _____

_____

Fax Number: _____

Please complete the above information, along with copy of site-completed Commissioning Checklist and return to:

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