
iSERIES

The Unico System[®]

Specifications
Installation
Operation
Service

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IMPORTANT

**For proper installation and future reference,
follow these instructions and mark each Check Box.**

☐ *Special Tools Required (Bulletin 30-121, p. 6)*

☐ **Check that you have all of the following items:**

- | | |
|---|---|
| <input type="checkbox"/> Bulletin 30-103 Commissioning Report Form | <input type="checkbox"/> Turbometer™ air velocity meter |
| <input type="checkbox"/> Bulletin 30-121 Installation manual* | <input type="checkbox"/> Torque Wrench (Yellow Jacket 60650 or equal) |
| <input type="checkbox"/> Bulletin 30-127 Diagnostics manual* | <input type="checkbox"/> Laptop or tablet with Windows® XP or higher |
| <input type="checkbox"/> Diagnostic tool kit* (laptop adapter, cable, CD) | <input type="checkbox"/> 5/16" Female x 1/4" Male SAE Hose Adapter |

* included with outdoor unit

☐ *Equipment (Bulletin 30-121, pg. 1)*

☐ **Confirm indoor unit(s) match outdoor unit**

☐ *Electrical – High Voltage (Bulletin 30-121, pp. 6, 22-25)*

- ☐ **208 or 230VAC; if 208VAC, AHU internal wiring must be set to 208V.**
- ☐ **ENSURE AHU IS POWERED SEPARATELY FROM OUTDOOR UNIT**
- ☐ **High wall units powered from outdoor unit**

☐ *Electrical – Low Voltage Communication Wiring (Bulletin 30-121, pp. 22-25)*

- ☐ **Shielded cable, grounded on both ends. Must be 2-wire 18 AWG minimum**
- ☐ **C1 connected to C1, and C2 connected to C2**

☐ *Electrical – Low Voltage Control Wiring (Bulletin 30-121, pg. 26)*

- ☐ **Heat pump thermostat is wired per schematic**
- ☐ **Use the thermostat B terminal. Connect to AHU terminal B**

☐ *Switches (Bulletin 30-121, pp. 32-34)*

- ☐ **Indoor blower switches set for correct refrigerant circuit**
- ☐ **Indoor blower switches set for correct model type**
- ☐ **Indoor blower switches set for correct communication channel**

☐ *Piping and Refrigerant (Bulletin 30-121)*

- ☐ **Confirm line set size (pg. 2)**
- ☐ **Confirm line set length below maximum limit (pp. 2-3)**
- ☐ **Indoor unit(s) connected per schematic (pp. 14-21)**
- ☐ **Torque wrench used to tighten flare nut (pg. 9)**
- ☐ **Evacuate line set and indoor unit (pg. 10)**
- ☐ **Open service valves (pg. 11)**
- ☐ **Add additional charge for long line set as required (pg. 3)**

Startup (follow sequence)

- ☐ 1. Connect laptop. Check firmware version. Update to latest version. (Bulletin 30-127)
- ☐ 2. Start data logger. Let it run until LAST STEP. (Bulletin 30-127)
- ☐ 3. Turn on power to system and check LEDs for any error codes. (Bulletin 30-121, pp. 57-58)
- ☐ 4. Record airflow from each outlet with Turbometer. Use Bulletin 30-103.
- ☐ 5. Let unit run for at least 30 minutes to stabilize.
- ☐ 6. LAST STEP: Save data file for future reference and disconnect laptop.

For assistance call Unico Technical Service at +1 **(800)-527-0896**
or go to <http://tech.unicosystem.com> for the latest Technical Bulletins and Firmware

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IMPORTANT!**Please read before installation**

This air conditioning system meets strict safety and operating standards.

For the installer or service person, it is important to install or service the system so that it operates safely and efficiently.

For safe installation and trouble-free operation, you must:

- Carefully read this instruction booklet before beginning.
- Follow each installation or repair step exactly as shown.
- Observe all local, state and national electrical codes.
- Pay close attention to all warning and caution notices given in this manual.
- The unit must be supplied with a dedicated electrical line.

**WARNING**

This symbol refers to a hazard or unsafe practice which can result in severe personal injury or death.

**CAUTION**

This symbol refers to a hazard or unsafe practice which can result in personal injury or product or property damage.

If necessary, get help

These instructions are all you need for most installation sites and maintenance conditions.

If you require additional help for a special problem, contact our customer service department for additional instructions.

In case of improper installation

The manufacturer shall in no way be responsible for improper installation or maintenance service, including failure to follow the instructions in this document.

SPECIAL PRECAUTIONS

- During installation, connect the refrigerant system and then the wiring; proceed in the reverse order when removing the units.

WARNING**When wiring**

ELECTRICAL SHOCK CAN CAUSE SEVERE PERSONAL INJURY OR DEATH. ONLY A QUALIFIED, EXPERIENCED ELECTRICIAN SHOULD ATTEMPT TO WIRE THIS SYSTEM

- Do not supply power to the unit until all wiring and tubing are completed or reconnected and checked, to ensure the grounding.
 - Highly dangerous electrical voltages are used in this system. Carefully refer to the wiring diagram and these instructions when wiring.
- Improper connections and inadequate grounding can

cause **accidental injury and death.**

- **Ground the unit** following local electrical codes.
- The Yellow/Green wire cannot be used for any connection different from the ground connection.
- Connect all wiring tightly. Loose wiring may cause overheating at connection points and a possible fire hazard.
- Do not allow wiring to touch the refrigerant tubing, compressor, or any moving parts of the fan.
- Do not use multi-core cable when wiring the power supply and control lines. Use separate cables for each type of line.

When transporting

Be careful when picking up and moving the indoor and outdoor units. Get a partner to help, and bend your knees when lifting to reduce strain on your back. Sharp edges or thin aluminum fins on the air conditioner can cut your fingers.

When installing...**... In a ceiling or wall**

Make sure the ceiling/wall is strong enough to hold the unit-weight. It may be necessary to build a strong wooden or metal frame to provide added support.

... In a room

Properly insulate any tubing run inside a room to prevent "sweating", which can cause dripping and water damage to walls and floors.

... In moist or uneven locations

Use a raised concrete base to provide a solid level foundation for the outdoor unit.

This prevents damage and abnormal vibrations.

... In area with strong winds

Securely anchor the outdoor unit with bolts and a metal frame.

... In a snowy area (for heat pump-type systems)

Install the outdoor unit on a raised platform that is higher than drifting snow. Leave space around the unit for snow removal.

When connecting refrigerant tubing

- Keep all tubing runs as short as possible.
- Use the flare method for connecting tubing.
- Apply refrigerant lubricant to the mating surfaces of the flare before connecting them; screw by hand and then tighten the nut with a torque wrench for a leak-free connection.
- Check carefully for leaks before starting the test run.

NOTE:

Depending on the system type, liquid and gas lines may be either narrow or wide. Therefore, to avoid confusion, the refrigerant tubing for your particular model is specified as narrow tube for liquid, wide tube for gas.

When servicing

- Turn the power OFF at the main power board before opening the unit to check or repair electrical parts and wiring.
- Keep your fingers and clothing away from any moving parts.
- Clean up the site after the work, remembering to check that no metal scraps or bits of wiring have been left inside the unit being serviced.
- Ventilate the room during the installation or testing the refrigeration system; make sure that, after the installation,

no gas leaks are present, because this could produce toxic gas and dangerous if in contact with flames or heat-sources.

Installation site selection - Outdoor unit

AVOID

- Heat sources, exhaust fans.
- Direct sunlight.
- Damp, humid or uneven locations.
- Making holes in areas where electrical wiring or conduits are located.

DO

- Choose places as cool as possible and well ventilated.
- Use lag bolts or equal to bolt down the unit, reducing vibration and noise.

Installation site selection – High Wall Indoor Unit

AVOID

- Direct sunlight.
- Nearby heat sources that may affect unit performance.
- Areas where leakage of flammable gas may be

expected.

- Locations where large amounts of oil mist may occur (such as in kitchen or near factory equipment) because oil contamination can cause operation problems and may deform plastic surfaces and parts of the unit.
- Unsteady locations that will cause noise or possible water leakage.
- Locations where the remote control unit will be splashed with water or affected by dampness or humidity.
- Making holes in areas where electrical wiring or conduits are located.

DO

- Select an appropriate position from which every corner of the room can be uniformly cooled.
- Select a sufficiently strong location to support the weight of the unit.
- Select a location where tubing and drain hose have the shortest run to the outside.
- Allow access for operation and maintenance as well as unrestricted air flow around the unit.

DESIGN & SPECIFICATIONS

OPERATING LIMITS

	Room Temperature		Outdoor Temperature	
	Minimum	Maximum	Minimum	Maximum
Cooling Operation	50°F (10°C) D.B. 17°F (6°C) W.B.	90°F (32°C) D.B. 73°F (23°C) W.B.	-25°F (-32°C) D.B.	122°F (50°C) D.B.
Heating Operation	41°F (5°C) D.B.	91°F (27°C) D.B.	-25°F (-32°C) D.B.	75°F (24°C) D.B. 65°F (18°C) W.B.

Full operation is guaranteed within the limits of operation. The system will ramp down outside of these limits.

ALLOWED MATCHUPS

Allowed Outdoor - Indoor Unit Combination Table					
System Type	Outdoor Unit	Allowable Indoor Unit Size Matches			
		Circuit 1	Circuit 2	Circuit 3	Circuit 4
Single Split	IS18G050	A, B	-	-	-
	IS24G065	B, C	-	-	-
	IS30G080	B, C	-	-	-
	IS36G110	B, C, D	-	-	-
Dual Split	IS18G050	A	A	-	-
		B	A	-	-
	IS24G065	-	A	A	-
		B	A	-	-
	IS30G080	B	B	-	-
		B	B	-	-
		C	A	-	-
	IS36G110	-	A	A	-
		B	A	-	-
		B	B	-	-
		C	A	-	-
		C	B	-	-
Tri Split	IS24G065	A	A	A	-
		B	A	A	-
	IS30G080	-	A	A	A
		B	A	A	-
	IS36G110	B	B	A	-
		B	B	B	-
Quad Split	IS30G080	A	A	A	A
		B	A	A	A
	IS36G110	A	A	A	A
		B	B	A	A

Use the table at left to determine if your system is an allowed combination. To use the table:

1. Move vertically along the first column to select your System Type. Single, dual split, etc.
2. Move vertically within your System Type to select your Outdoor Unit.
3. Use the table below to identify the size of your Indoor Unit(s) (A, B, C, D).

Size	Indoor Unit Model Number
A	IS12MPA
B	IS24MPB U1218L-1EA2AX
C	M2430BL1-EA2 + M2430CL1-A
D	M3036BL1-EA2 + M3036CL1-A

4. Read horizontally through each row within your System Type/Outdoor Unit(ODU) pair. If the units you want to use are contained in a single row, then your selected system is an allowed combination.

IMPORTANT!

Only allowed combinations may be installed.

If a disallowed combination is installed, the system will not operate properly!

LINESET SIZES

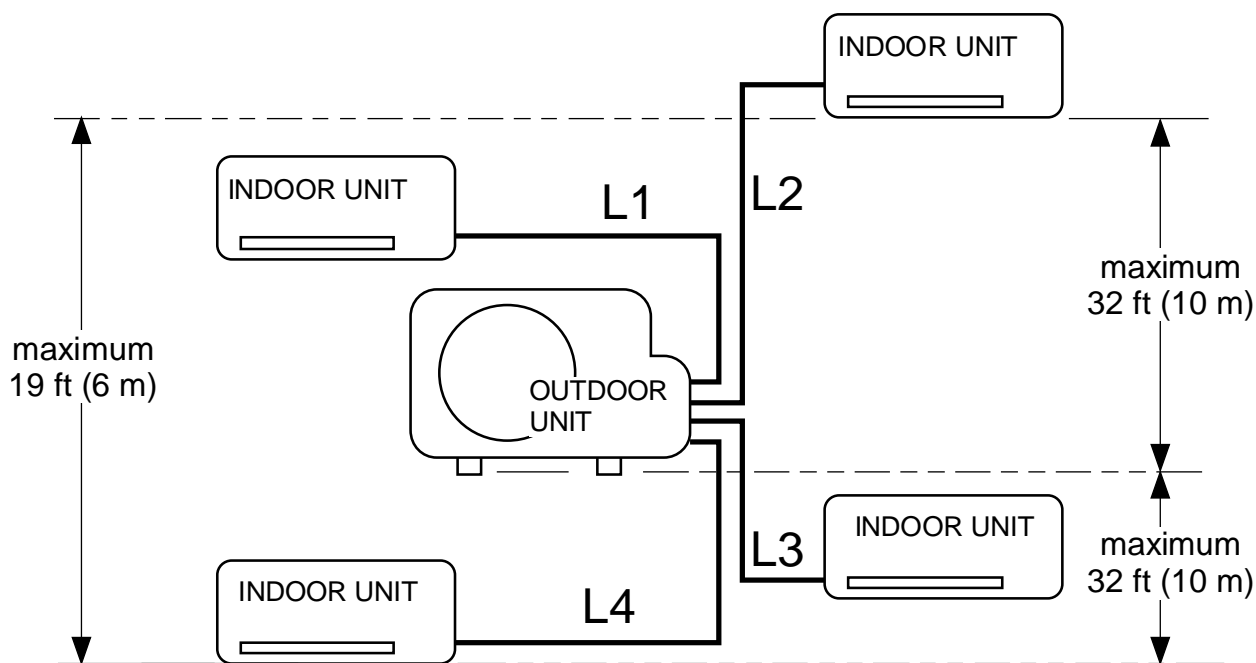
Table 1. Lineset Sizes, Outside Diameter

Indoor Unit Size	Model	Small Tube (Liquid Line)	Large Tube (Vapor Line)
A	IS12MPA	1/4" (6,35 mm)	3/8" (9,52 mm)
B	IS24MPB U1218L-1EA2AX	1/4" (6,35 mm)	1/2" (12,70 mm)
C	M2430BL1-EA2 + M2430CL-A		
D	M3036BL1-EA2 + M3036CL-A	3/8" (9,52 mm)	5/8" (15,88 mm)

INDOOR UNIT LOCATION DESIGN LIMITS

There are five rules for the refrigerant tubing that govern the length and height between components.

- #1: (Height) The highest indoor unit must be less than 32 ft (10 m) above the outdoor unit.
- #2: (Height) The lowest indoor unit must be less than 32 ft. (10 m) below the outdoor unit.
- #3: (Height) The highest indoor unit must be less than 19 ft. (6 m) above the lowest indoor unit.
- #4: (Length) The longest distance from any indoor unit to the outdoor unit must be less than **L1, L2, L3, L4**.
- #5: (Length) The sum total length of all installed linesets must be less than L_{TOT} . $L_{TOT}=L1+L2+L3+L4$



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MAXIMUM ALLOWABLE LINESET LENGTHS

The lengths below are the maximum lineset lengths for the given system configurations. If your installation requires a lineset length that exceeds the pre-charged length, additional refrigerant is required. See the section *Adding Refrigerant*, below, to determine how much to add. The minimum lineset length for all systems is 10ft.

Outdoor Unit Model	Number of Indoor Units	Pre-Charged (As Shipped)				With Additional Refrigerant			
		Maximum combined lineset length (L _{TOT} [†])		Maximum individual lineset length (L1, L2, L3, L4)		Maximum combined lineset length (L _{TOT} [†])		Maximum individual lineset length (L1, L2, L3, L4)	
IS18G050	Single Split	40ft	12m	40ft	12m	80ft	25m	80ft	25m
	Dual-Split	50ft	15m	40ft	12m	100ft	30m	80ft	25m
IS24G065	Single-Split	80ft	25m	80ft	25m	115ft	35m	115ft	35m
	Dual-Split	100ft	30m	80ft	25m	150ft	45m	115ft	35m
	Tri-Split	100ft	30m	65ft	20m	150ft	45m	100ft	30m
IS30G080	Single-Split	100ft	30m	100ft	30m	164ft	50m	164ft	50m
	Dual-Split	130ft	40m	100ft	30m	210ft	65m	164ft	50m
IS36G110	Tri-Split	130ft	40m	100ft	30m	210ft	65m	100ft	30m
	Quad-Split	130ft	40m	100ft	30m	210ft	65m	100ft	30m

[†] L_{TOT} = Sum of the length of all installed line sets = L1 + L2 + L3 + L4

FACTORY REFRIGERANT CHARGE

The factory charge for each outdoor unit is listed in the table below.

Outdoor Unit	Factory Charge	
	lb	kg
IS18G050	2.87	1.30
IS24G065	5.95	2.70
IS30G080	6.59	2.99
IS36G110	7.45	3.38

ADDING REFRIGERANT

If additional refrigerant is required, add the following amount of R410-A:

Lineset Size	Additional Refrigerant Required (R410-A)
1/4" x 3/8"	0.16 oz/ft (15g/m)
1/4" x 1/2"	0.22 oz/ft (20g/m)
3/8" x 3/8" [†]	0.16 oz/ft (15g/m)
3/8" x 5/8"	0.49 oz/ft (45g/m)

[†] For eMix only.

Example: An IS18G050 is installed as a single-split with a 1/4" x 3/8" line set 60 ft in length.

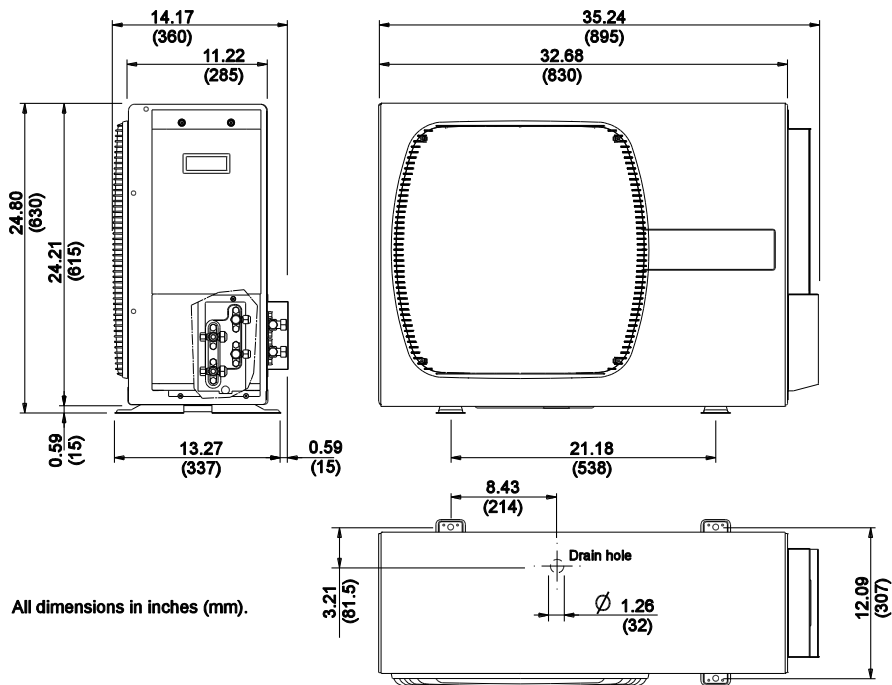
Solution: The outdoor unit is pre-charged for a line set length of up to 40ft. The line length that must be compensated for is 20ft (60ft - 40ft = 20ft). Select the line set size from the table at left to find the additional amount of refrigerant to add. You must add 0.16oz/ft. The total amount of refrigerant that must be added is:

$$0.16\text{oz/ft} \times 20\text{ft} = 3.2\text{oz}$$

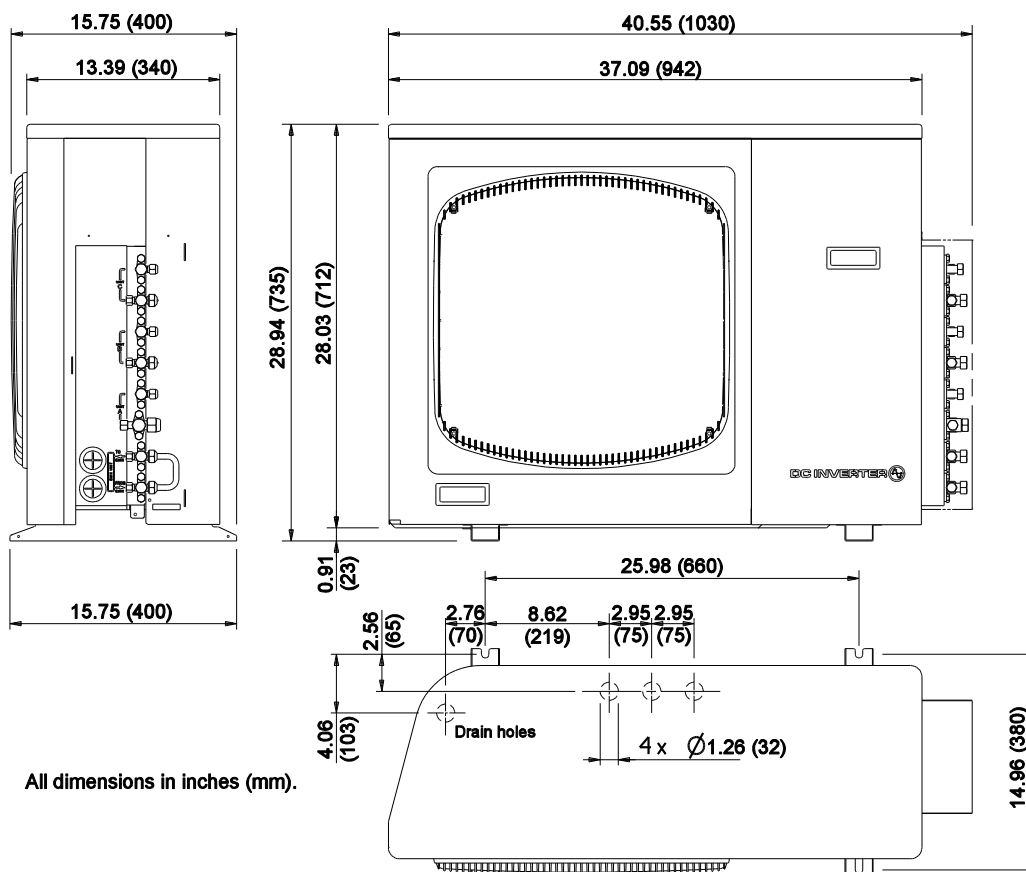
No additional charge of compressor oil is necessary.

OUTDOOR UNIT DIMENSIONS

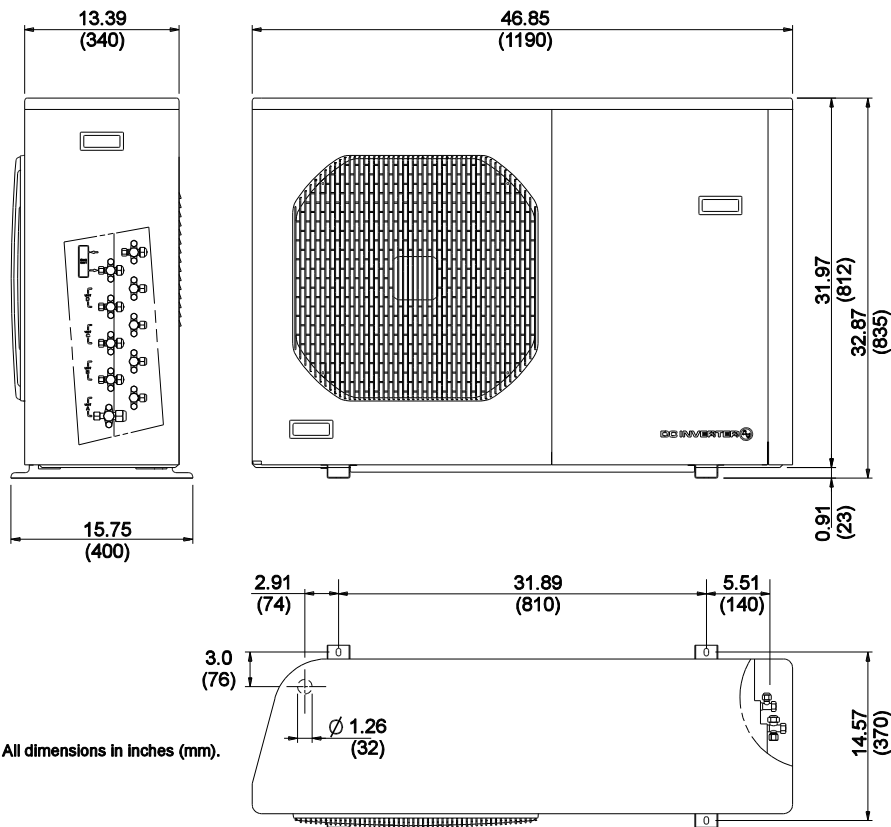
IS18G050



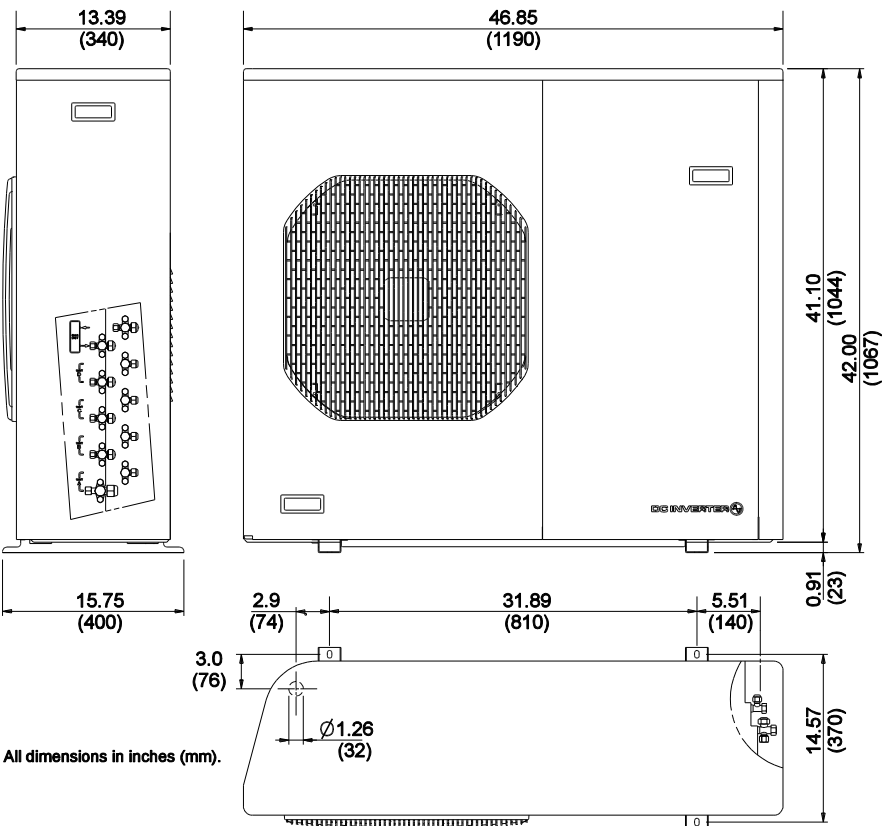
IS24G065



IS30G080



IS36G110



INSTALLATION

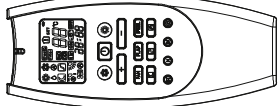
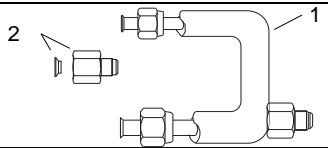
TOOLS & MATERIALS REQUIRED FOR INSTALLATION

Tools & Equipment

The tools below are required for installation and must be field-supplied.

- | | | |
|---------------------------------|--|---|
| 1. Standard screwdriver | 9. Hammer | 16. Hex key, 5mm |
| 2. Phillips head screwdriver | 10. Drill | 17. Unico P/N: A02131-K01.
Communication Tool Kit for
Troubleshooting and upgrading
firmware (requires Windows PC) |
| 3. Knife or wire stripper | 11. Tube cutter | 18. Refrigerant Scale |
| 4. Tape measure | 12. Tube flaring tool | 19. 5/16" Female x 1/4" Male SAE
Hose Adapter |
| 5. Level | 13. Torque wrench (Yellow Jacket
#60650 or equal) | |
| 6. Sabre saw or hole saw | 14. Adjustable Wrench | |
| 7. Hacksaw | 15. Reamer (for de-burring) | |
| 8. Drill bits 5/16" (8 mm) dia. | | |

Accessories Supplied with the Indoor Unit

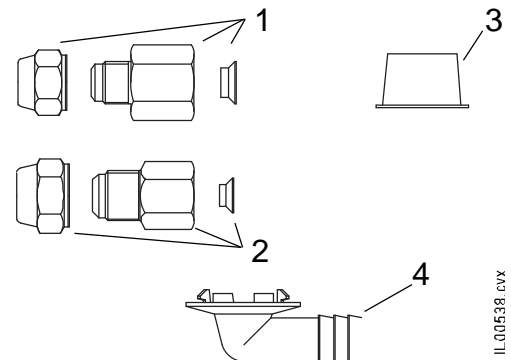
Indoor Unit Model	Item	Qty	Description	
IS12MPA	1	1	Remote Control	
	2	2	Battery, AAA	
	3	1	Remote Cradle (for mounting)	
	4	2	Screws	
M3036CL1-A	1	1	Adapter, splitter, 1/2F x 3/8F x 5/8M	
	2	1	Adapter, reducer, 1/4F x 3/8M with washer	

Accessories Supplied with the Outdoor Unit

Item	Qty	Description
1	1	Adapter, reducer, 3/8M x 1/2F with washer and flare cap
2	1*	Adapter, reducer, 1/2M x 3/8F with washer and flare cap
3	1	Cap, pipe, plastic
4	1	Connector, drain, 32mm dia w/ 18mm hose barb

* The IS36G110 provides quantity of 2.

The outdoor unit has two drain holes. If a drain tube is needed, snap connector into desired hole and slip plastic drain tube over the barb. Plug the other hole with the plastic cap.



Additional Materials Required for Installation

The following items are required for installation and must be field-supplied.

1. **Lineset (Dual Insulated).** Deoxidized annealed copper tube for refrigerant applications having a minimum wall thickness of 0.031 inch (0.8mm). Both suction and vapor lines must be insulated and the insulation must have a minimum wall thickness of 5/16 inch (8 mm).
2. **Refrigerant.** R410A (If lineset length exceeds standard pre-charged amount.)
3. **Drain line** (if needed). Plastic tubing (I.D. 3/4 inch (18 mm)).
4. **Vacuum pump lubrication oil.** For flare connections (about 1 oz. (30g)).
5. **Communication cable.** 2-wire shielded cable, 18 awg (minimum).
6. **Electrical hookup wire.** Use insulated copper wires per local codes.

POWER SUPPLY

Indoor Units

Model	Power Supply	Full Load Current, amps	Minimum Circuit Ampacity (MCA)	Maximum Overcurrent Protection (MOP)
IS12MPA	1 phase 60 Hz 208-230 V	0.5	*	*
IS24MPB		0.5	*	*
U1218L-1EA2AX		3.2	4.0	15
M2430BL1-EA2 + MB2430CL1-A		3.2	4.0	15
M3036BL1-EA2 + MB3036CL1-A		6.1	7.7	15

* High Wall units may be connected directly to the outdoor unit. Fusing separately is not required

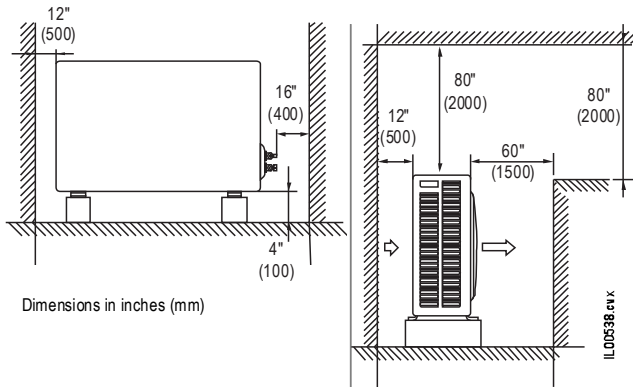
** SDHV air handlers MUST be fused separately. DO NOT POWER the SDHV air handlers from the outdoor unit.

Outdoor Units

Model	Power Supply	Full Load Current, amps	Minimum Circuit Ampacity (MCA)	Maximum Overcurrent Protection (MOP)
IS18G050	1 phase 60 Hz 208-230 V	10.0	13	20
IS24G065		12.5	16	25
IS30G080		16.0	20	35
IS36G110		22.0	28	50

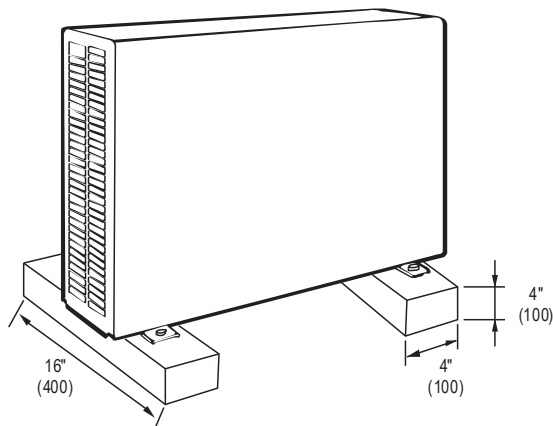
OUTDOOR UNIT INSTALLATION

- 1. INSTALLATION CLEARANCES.** Minimum operation and maintenance area. Allow generous clearance for servicing and to avoid air recirculation. Air flow should be away from building.

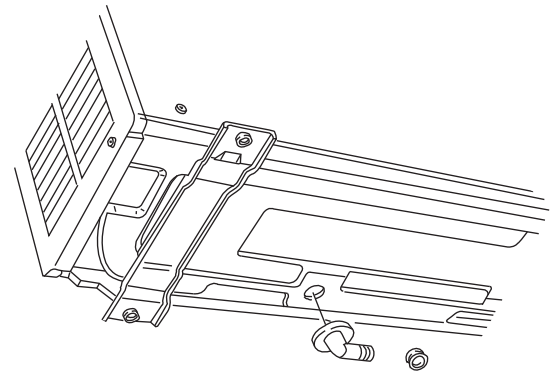


Increase height from ground to 18 inches (457mm) for snow in cold climates.

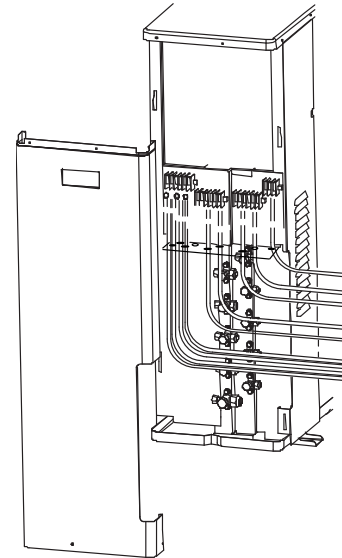
- 2. MOUNTING BASE.** Provide a solid base for outdoor unit raised from the ground level. Fix unit to base using 4 anchor bolts.



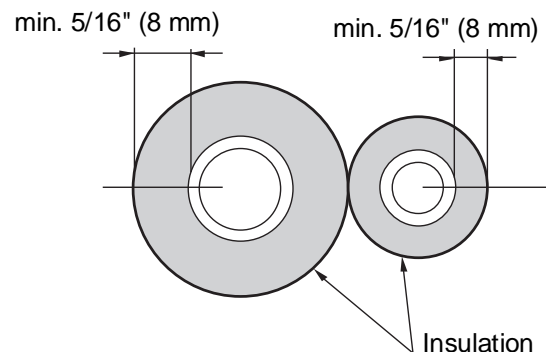
- 3. DRAIN CONNECTION.** For condensate removal during defrost cycles. If necessary, use the hose barb and plug supplied. Remove plug and insert drain connection. Then attach plastic tube to the drain connection by slipping over the barbed end. Use 3/4 inch (18 mm) plastic tubing. Plug the other hole with the plastic cap.



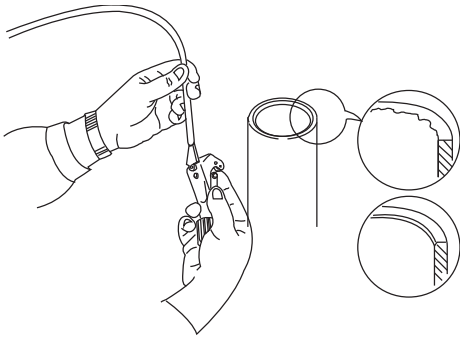
- 4. MAKE CONNECTIONS.** Remove the side cover, to connect the refrigerant lines and wiring. Connect the refrigerant lines first. Then connect the power line and interconnecting wires to outdoor unit on the terminal strip and secure them with clamps.



- 5. LINESETS.** Use insulated copper tube. Cut lines approximately 12-20 inches (30-50 cm.) longer than actual distance between units.

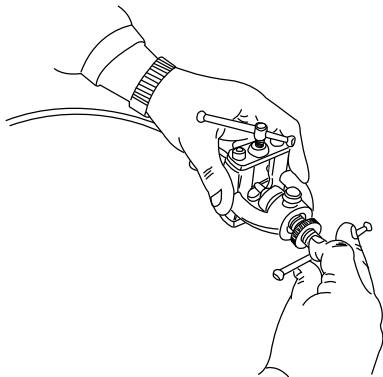


- 6. DEBURR.** Remove burrs at the ends of the copper tubes. Hold the tube end downward and be sure that no dirt falls into the tube.



- 7. FLARE.** First, verify that the service valves are fully closed (factory default - refer to the service valve section of this manual for explanation of the service valve). Remove the caps from the service valves (not the flare nuts) and use a hex wrench to verify that the service valves are fully closed.

Remove the flare nut and bonnet. The bonnet is not needed and can be saved for future use. Insert the tube ends into the flare nuts (see illustration in step 8), then make a flare at the end of copper tubes.

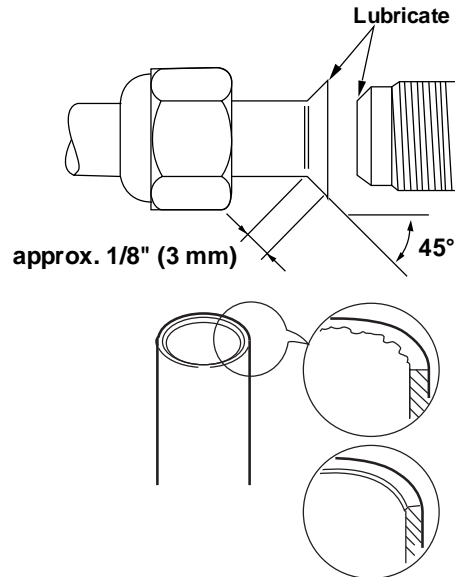


- 8. FLARE DETAILS.** A good flare has the following characteristics:

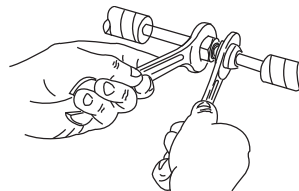
- inside surface is glossy and smooth
- edge is smooth
- tapered sides are of uniform length

Follow the instructions of the flaring tool to make the proper flare.

Apply refrigerant lubricant to the mating surface of the flare and union before connecting them together. Avoid putting oil on the threads as much as possible as this could lead to over-tightening.

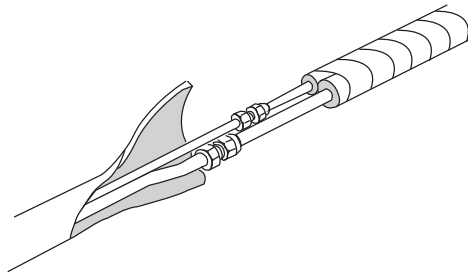


- 9. CONNECT REFRIGERANT LINES.** Connect the wide and narrow tubes at the indoor unit, and only the wide tube at the outdoor unit. Connect the wide tube at the outdoor less than finger tight. Connect nitrogen to the service valves for the unit being installed and purge with nitrogen for 1 minute. After 1 minute, tighten down the narrow tube connections at the outdoor unit. Tighten connections using a wrench and a torque wrench (Yellow Jacket #60650 or equal); apply specified torque (See table below).



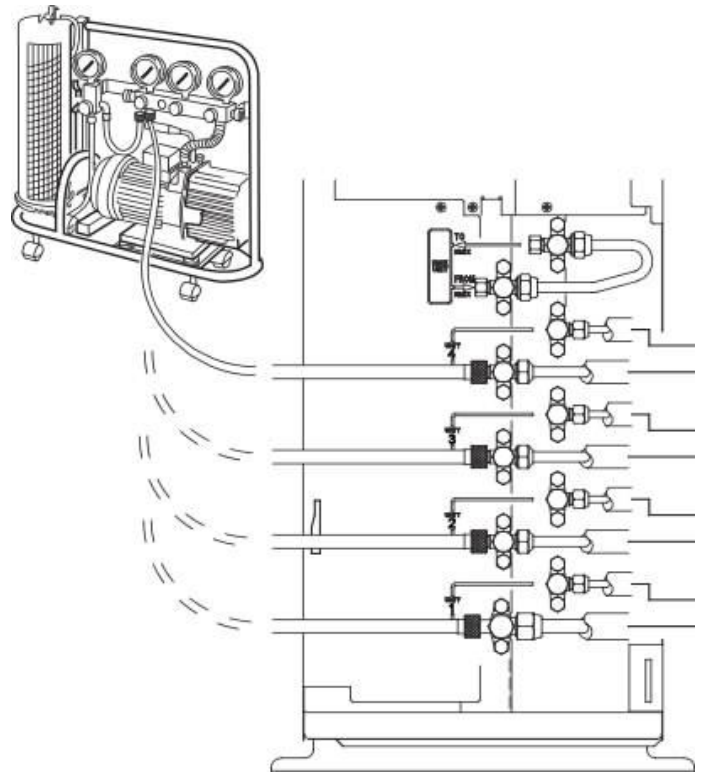
TUBE DIA.	TIGHTENING TORQUE (Approx.)
1/4" (6.4 mm)	10 - 15 lb•ft (150 - 200 kg-cm or 14 - 20 N-m)
3/8" (9.5 mm)	25 - 30 lb•ft (350 - 400 kg-cm or 34 - 40 N-m)
1/2" (12.7 mm)	35 - 40 lb•ft (500 - 550 kg-cm or 47 - 55 N-m)
5/8" (15.9 mm)	45 - 60 lb•ft (600 - 800 kg-cm or 60 - 80 N-m)

10. Insulate tubes leaving connections uncovered for leak test. Insulate the connection after leak testing.



CAUTION

To prevent refrigerant leaks, be sure to properly form the flare and to leak test the connection prior to wrapping the joint with insulation. To prevent the formation of condensation on the exterior of the connections, fully insulate the connections.



11. **LEAK TEST.** Every unit is factory charged with refrigerant and shipped with the service valves in the closed position. Therefore, it is only necessary to check the connections for leaks and to evacuate the line set and indoor coil.

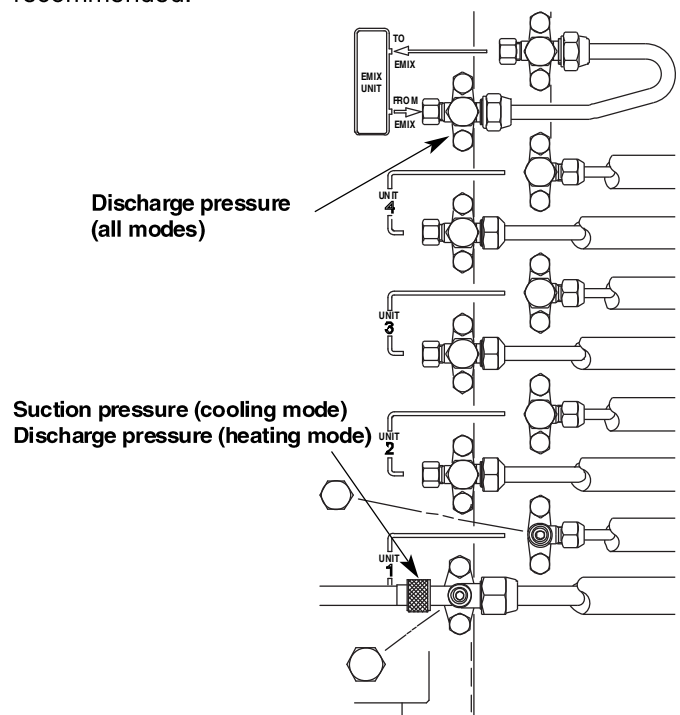
EACH INDOOR CIRCUIT MUST BE LEAK TESTED AND EVACUATED SEPARATELY.

Begin by connecting a gauge manifold to the access port on the wide-tube service valve as shown in the figure below. Use an adapter if necessary (see service valve section). Test for leaks using pressurized dry inert gas, such as dry nitrogen.

First purge the line set and indoor coil by flowing inert gas (e.g. nitrogen) through the service valve and out the disconnected narrow tube. While the gas is flowing, connect the narrow tube and torque to the specification given earlier.

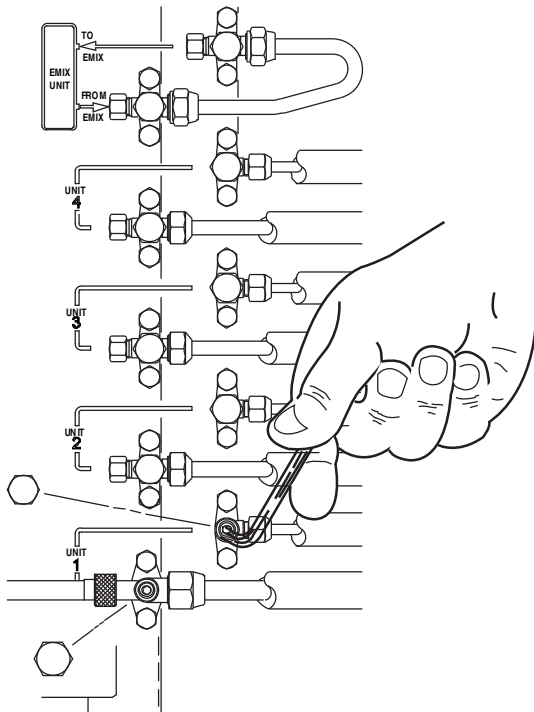
Pressurize the line set and indoor coil to at least 250 psig and no more than 450 psig. Close the manifold valves and keep the system pressurized for at least 15 minutes. Check all connections for leaks using liquid soap, looking for signs of bubbles. If leaks are found, release the nitrogen and tighten or remake the connection, then retest. If no leaks are found and the pressure does not decrease, then the system is ready to be evacuated.

12. **EVACUATE THE SYSTEM.** Evacuate the line set and indoor coil to 500 microns Hg. The best practice is to perform a triple-evacuation procedure. A vacuum pump with a minimum of 5CFM free air displacement is recommended, along with a purge with dry nitrogen, to minimize the time required to draw an adequate vacuum. The time required will vary with vacuum pump capacity and the ultimate time depends on how long it takes to achieve a vacuum of 500 microns Hg. A minimum evacuation time of 1hr is recommended.



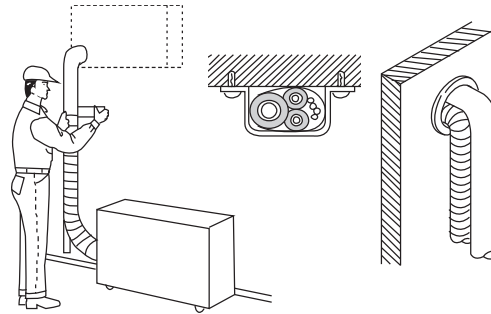
13. TEST VACUUM. With vacuum pump still running, close the valve manifold then stop the vacuum pump. Best practice is to let the system remain in a vacuum for 10 minutes to verify that the vacuum holds. If the pressure rises, repeat the evacuation. This might need to be done several times to remove all traces of moisture. If it still does not hold a vacuum, verify that all valves are closed and repeat leak test in step 11.

14. OPEN VALVES. Close your manifold gauges then turn the service valve stem in counterclockwise to fully open the service valves in the 'back seated' position. Disconnect the gauge manifold from the unit and replace the service valve caps. Tighten them to 15 lb-ft (200 kg-cm) with a torque wrench.



15. REPEAT STEPS 8 through 13 for the second, third and fourth circuits. The indoor units should be labeled as indoor unit circuit **1**, **2**, **3** and **4** for ease of future service work. Be sure that the refrigerant connection to the indoor unit circuit **1**, **2**, **3** or **4** corresponds to the electrical connection.

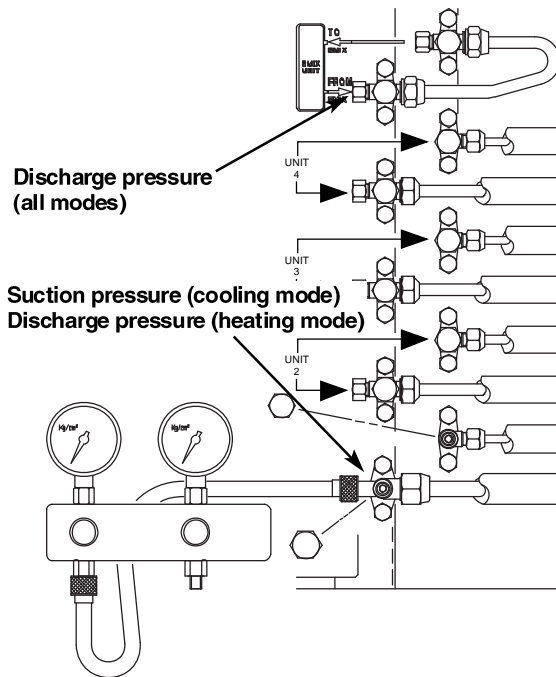
16. FINISH INSULATION. Complete insulation of refrigerant lines; wrap with insulation tape as necessary. Secure and support tubes with brackets. Seal holes in the wall as necessary.



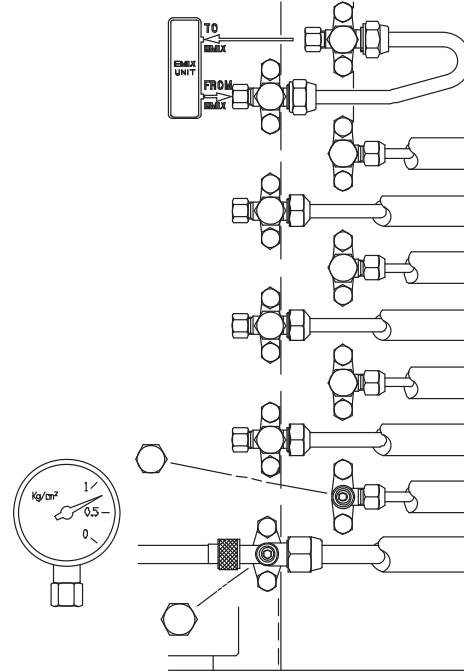
PUMP DOWN PROCEDURE

Pump down means collecting all refrigerant gas in the system back into the outdoor unit without losing gas. Pump down is used when the unit is to be moved or before servicing the refrigerant circuit.

- A** Connect a valve manifold to the charge port on a wide tube service valve, partially open it (1/4 turn). Let the air purge from the manifold. Fully close the narrow tube service valve all the way.

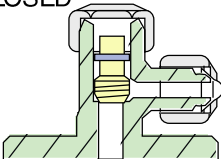
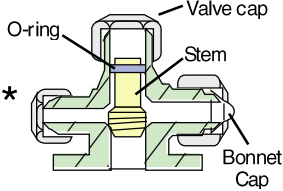
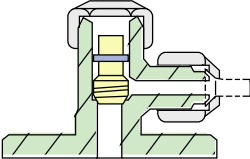
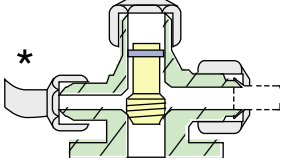
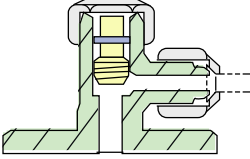
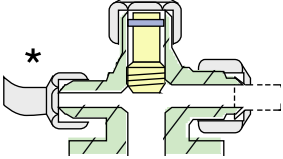
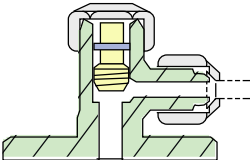
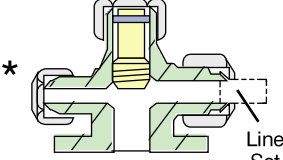


- B** Turn on the unit's operating switch and start cooling operation. When the low-pressure gauge reading reaches 10 to 20 psi (517 to 1034 torr) close the wide tube valve and then quickly turn off the unit. Remove the valve manifold. Repeat the operations for each circuit. At that time, PUMP DOWN has been completed and all refrigerant gas will have been collected in the outdoor unit.

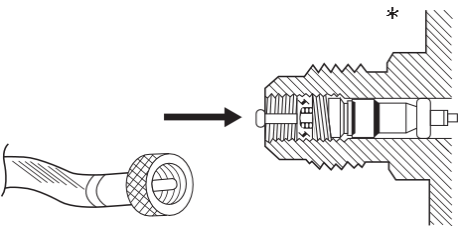


DO NOT VENT! Do not vent R410A into the atmosphere. R410A is a fluorinated greenhouse gas, covered by Kyoto Protocol with Global Warming Potential (GWP) = 1975.

SERVICE VALVE INSTRUCTIONS

Action	Narrow Tube Service Valve (2-way)	Wide Tube Service Valve (3-way)
As shipped from factory Valve is front-seated (closed).	CLOSED 	
Evacuation with a vacuum pump Valves are front-seated (closed). Connect line set and charging hose. Pressure check system. Evacuate.	CLOSED 	
To Measure Pressure or when Charging Valve is back-seated (open). Connect hose. Charge only in cooling mode. Measures low pressure in cooling. Measures high pressure in heating.	OPEN 	
Normal Operation Valves are fully back-seated (open).	OPEN 	

* Gauge port has a schraeder valve



* The service port on the wide tube service valve uses a Schrader core valve to access the refrigerant system. Therefore, be sure to use a hose connector which has a push-pin inside.

NOTE: THE SERVICE VALVE REQUIRES A 5/16" Female SAE x 1/4" Male SAE HOSE ADAPTER.

EXAMPLE: GRAINGER P/N: 3DXH5
(J/B MODEL QC-S5S)
OR EQUAL

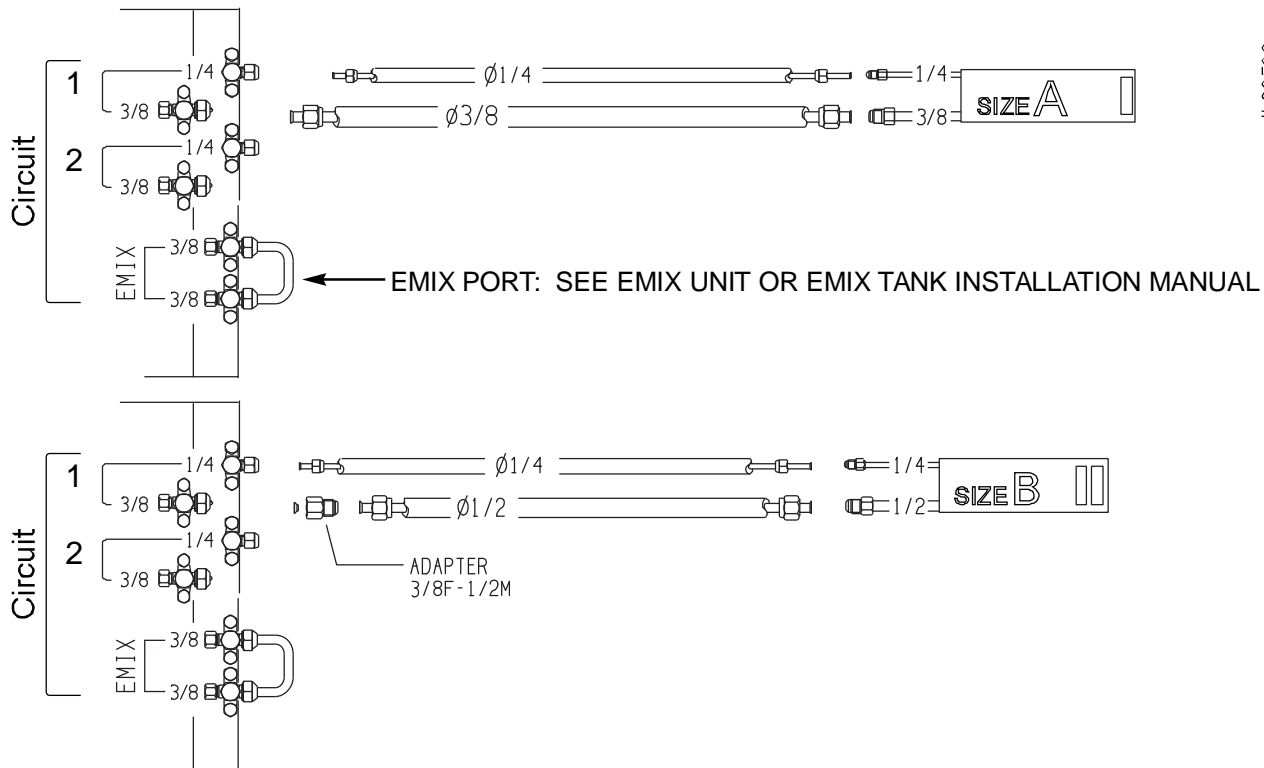


REFRIGERANT LINESET CONNECTIONS

Single-Split (1 Indoor Unit)

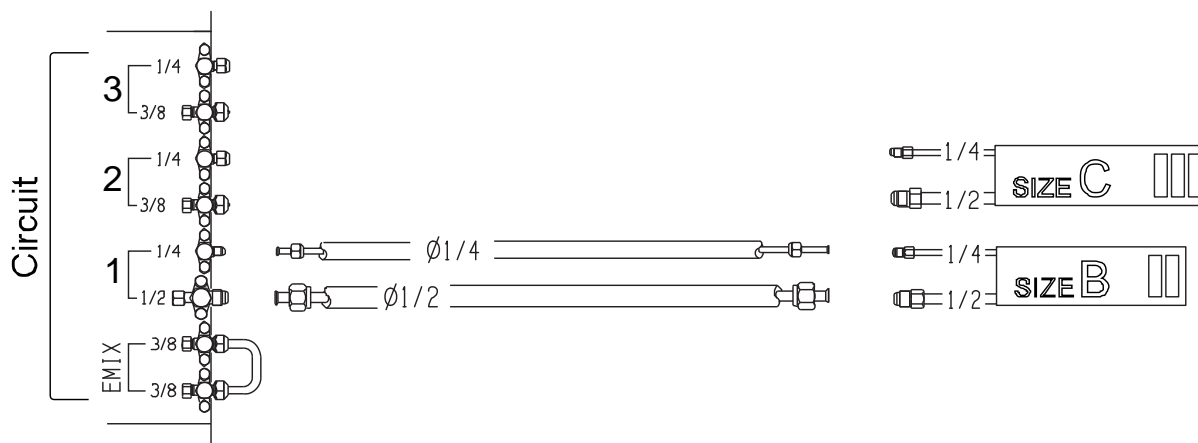
For single-split applications, always connect the indoor unit to Circuit “1” of the outdoor unit.

IS18G050



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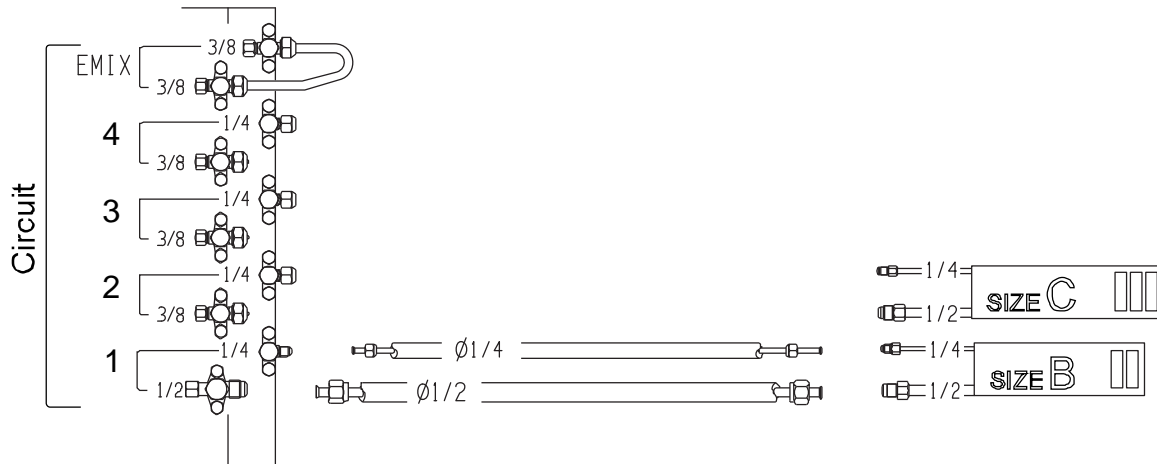
IS24G065



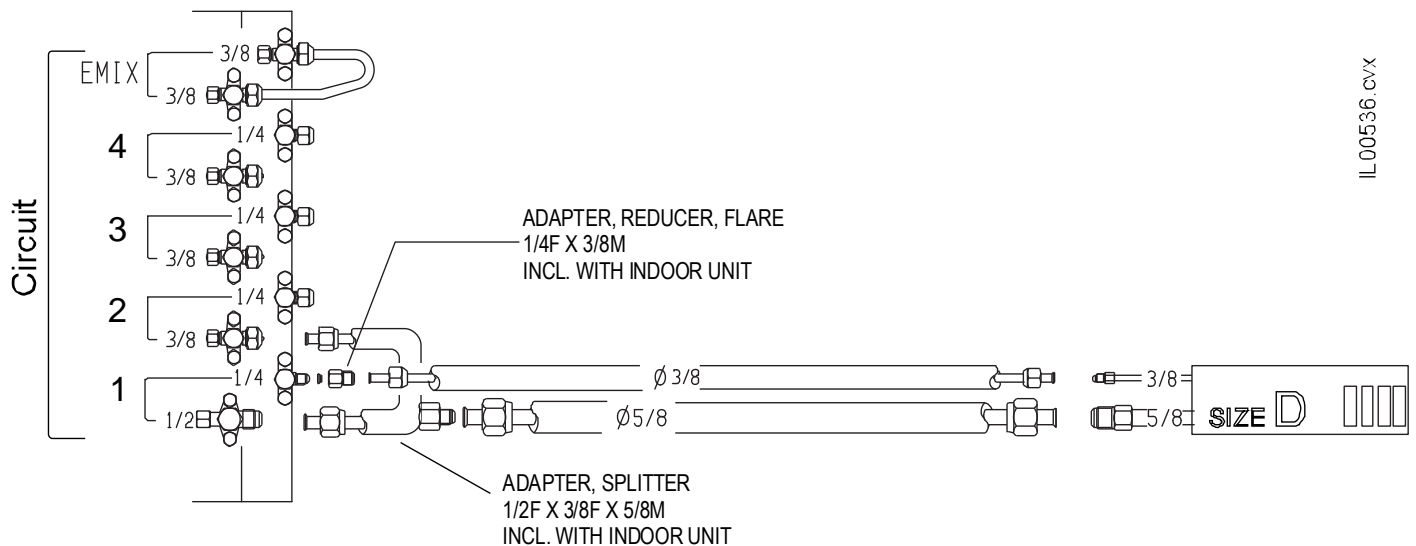
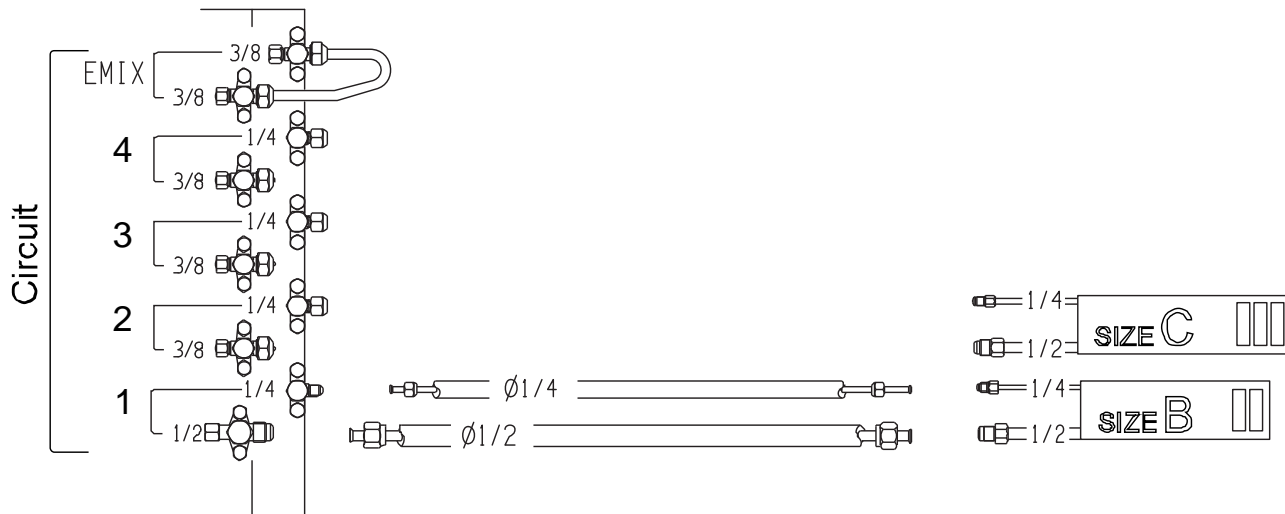
REFRIGERANT LINESET CONNECTIONS

Single-Split (1 Indoor Unit) – Continued

IS30G080



IS36G110

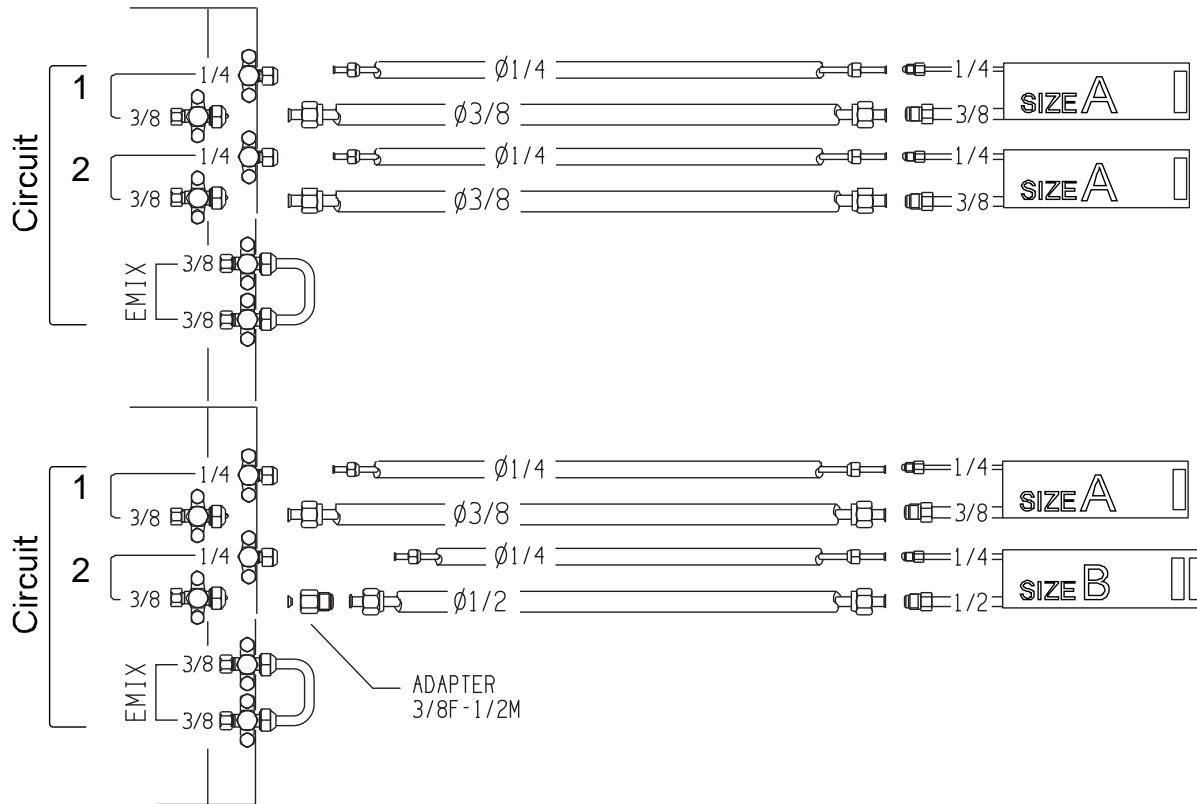


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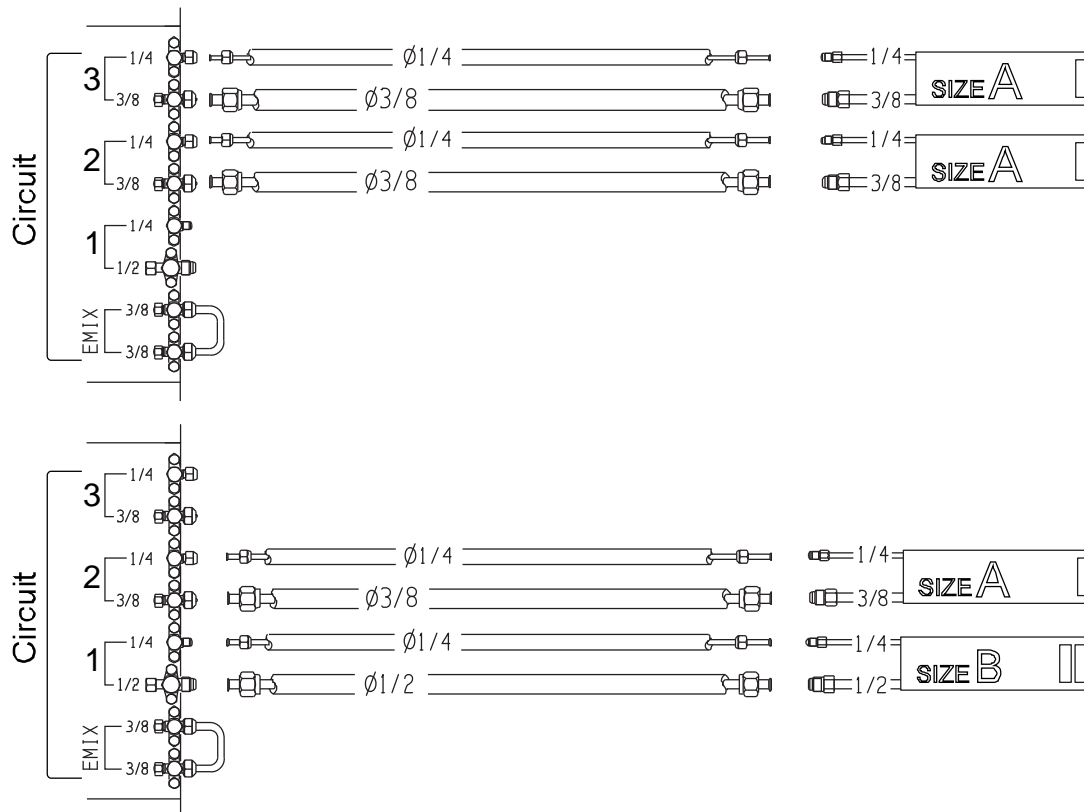
REFRIGERANT LINESET CONNECTIONS

Dual-Split (2 Indoor Units)

IS18G050



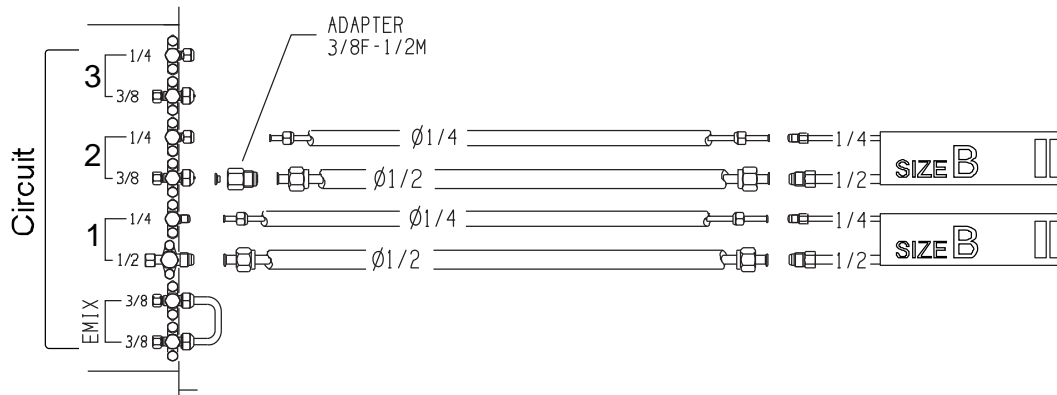
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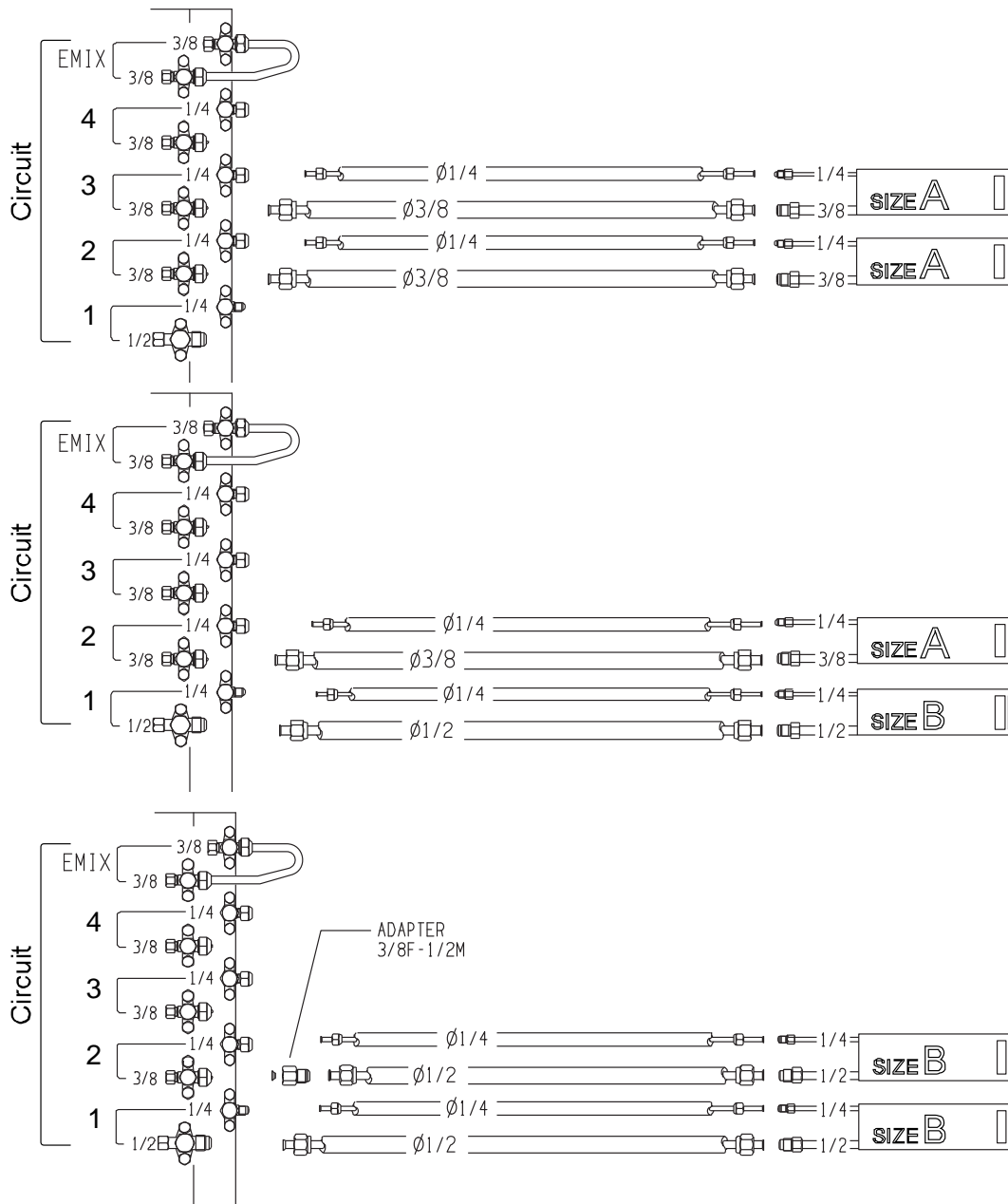
REFRIGERANT LINESET CONNECTIONS

Dual-Split (2 Indoor Units) – Continued

IS24G065



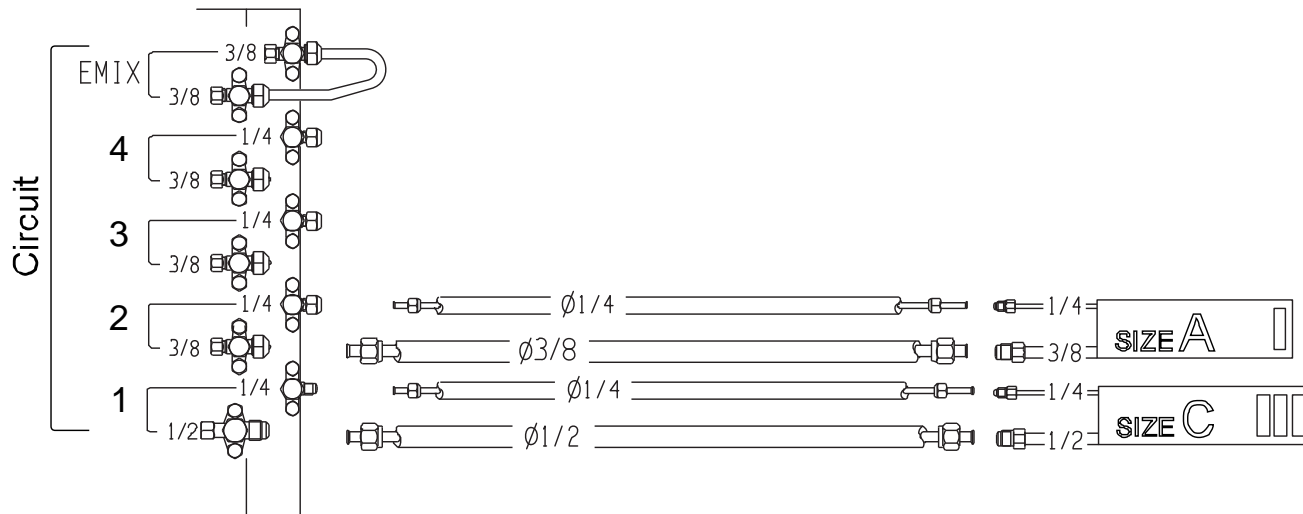
IS30G080 and IS36G110



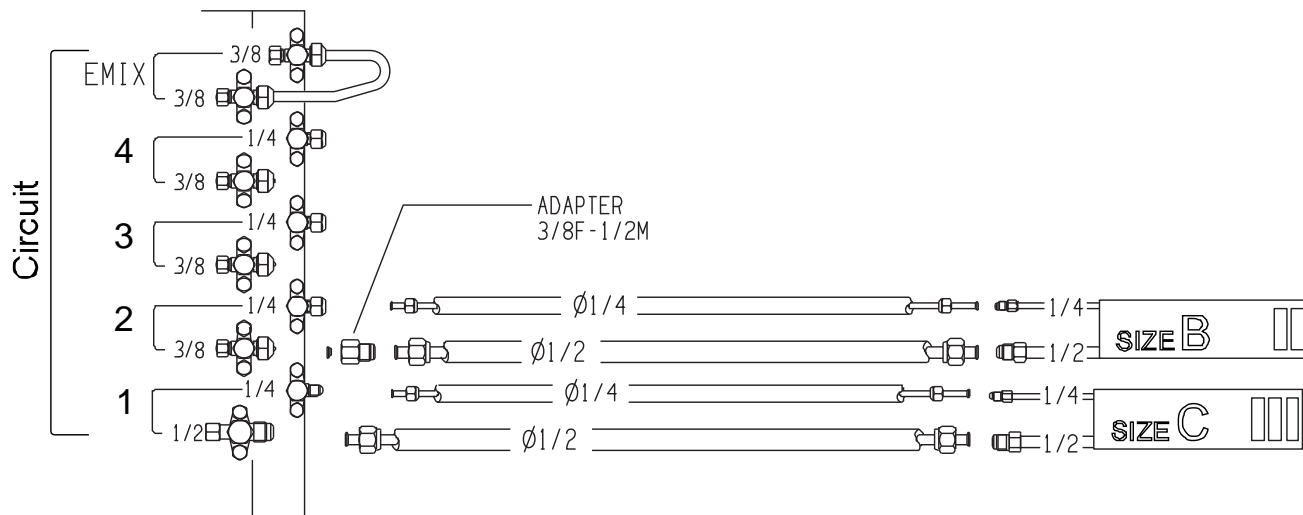
REFRIGERANT LINESET CONNECTIONS

Dual-Split (2 Indoor Units) – Continued

IS30G080, IS36G110



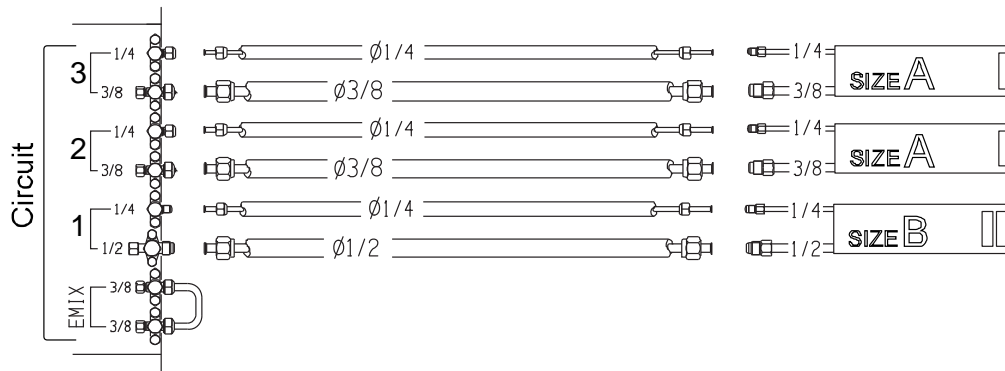
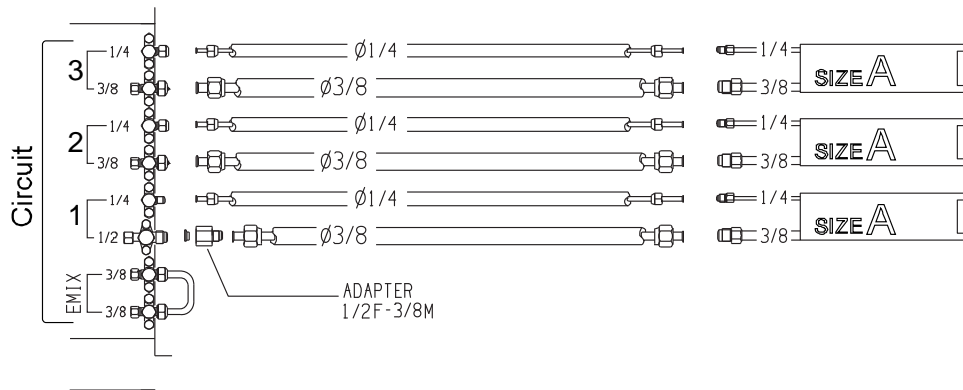
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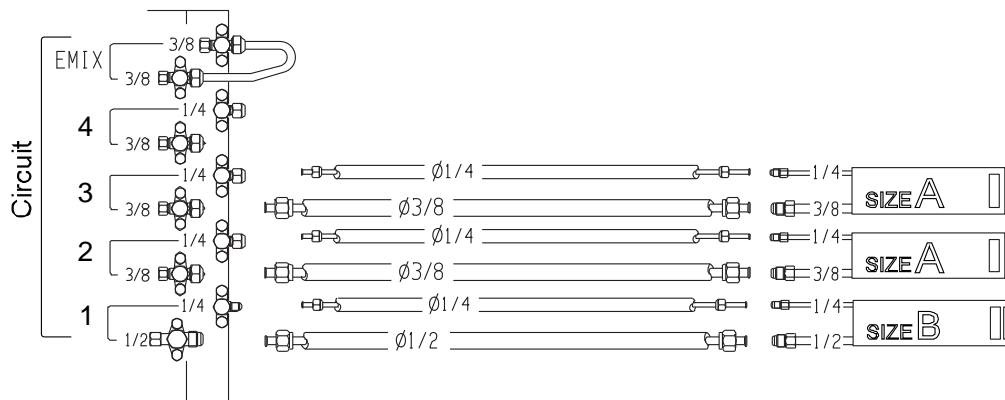
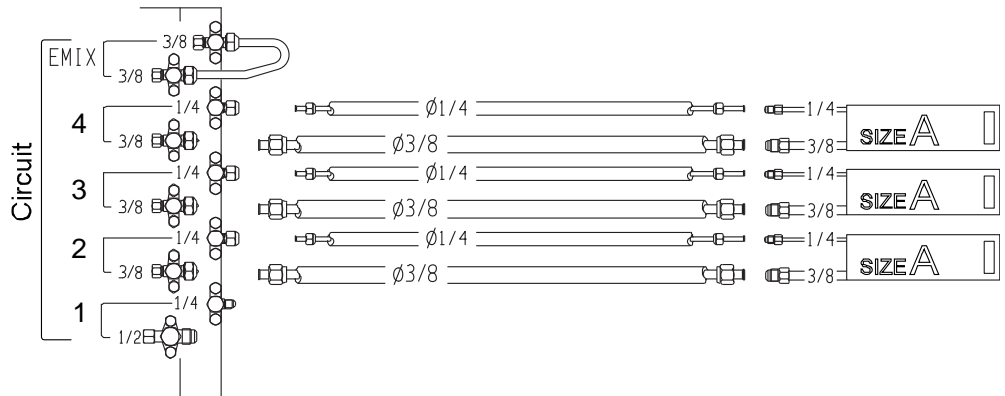
REFRIGERANT LINESET CONNECTIONS

Tri-Split (3 Indoor Units)

IS24G065



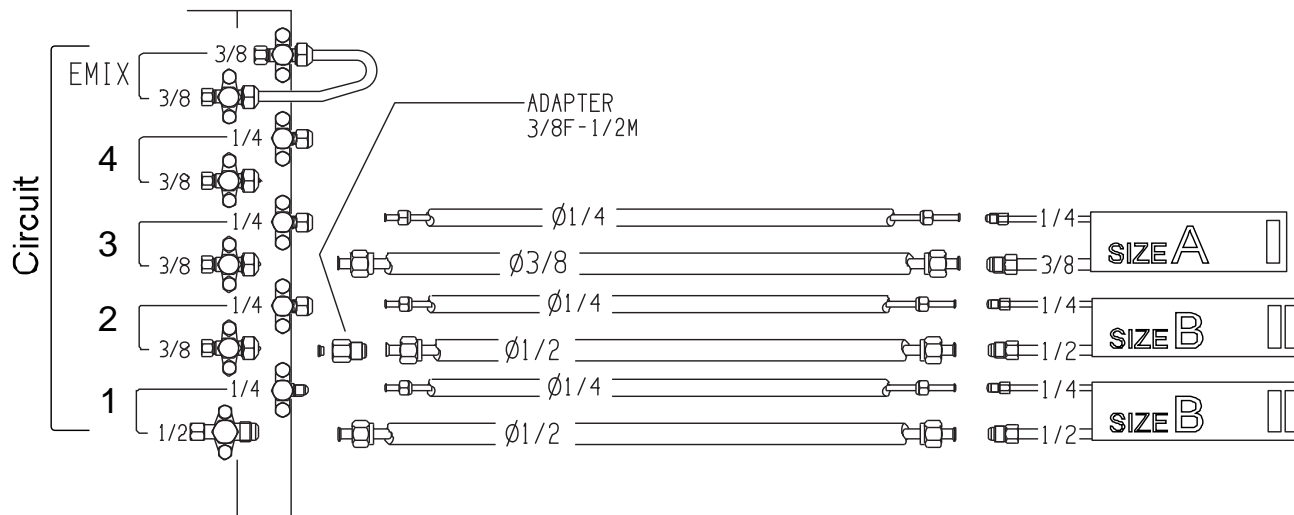
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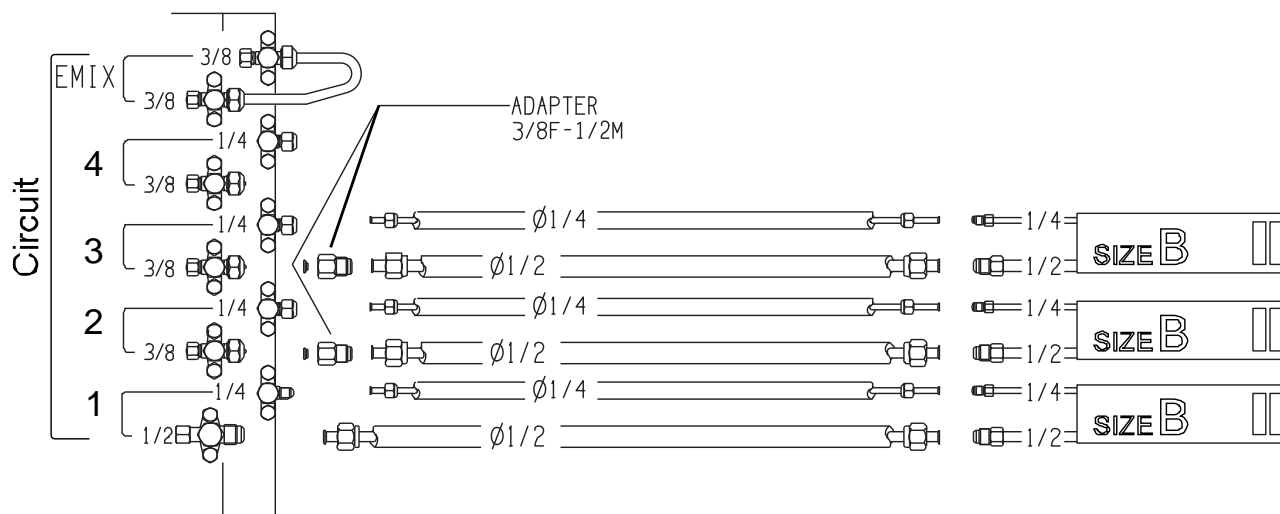
REFRIGERANT LINESET CONNECTIONS

Tri-Split (3 Indoor Units) – Continued

IS30G080, IS36G110



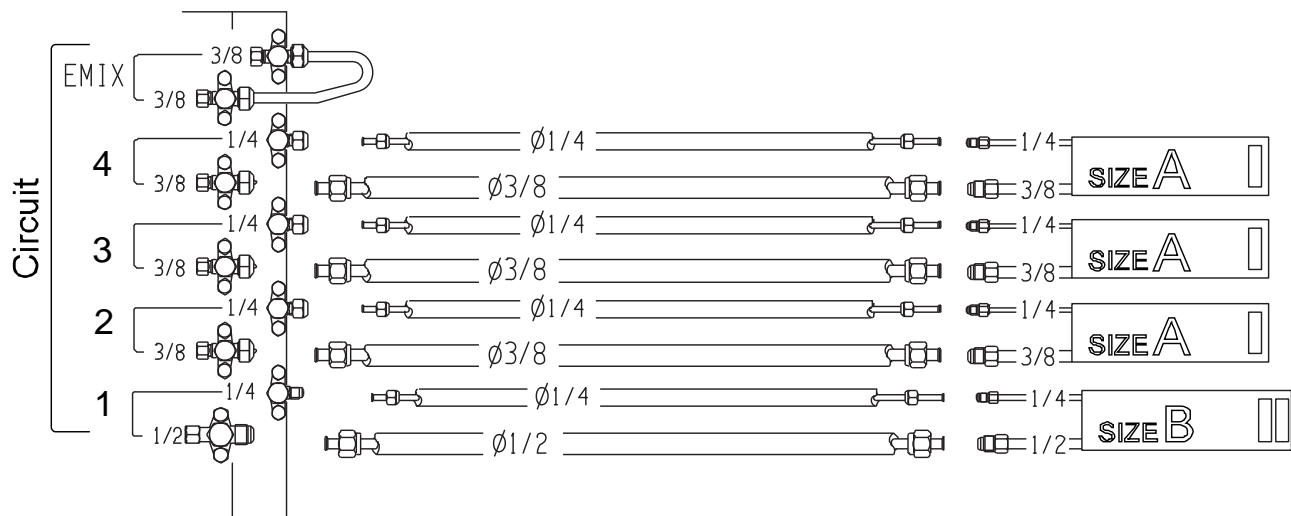
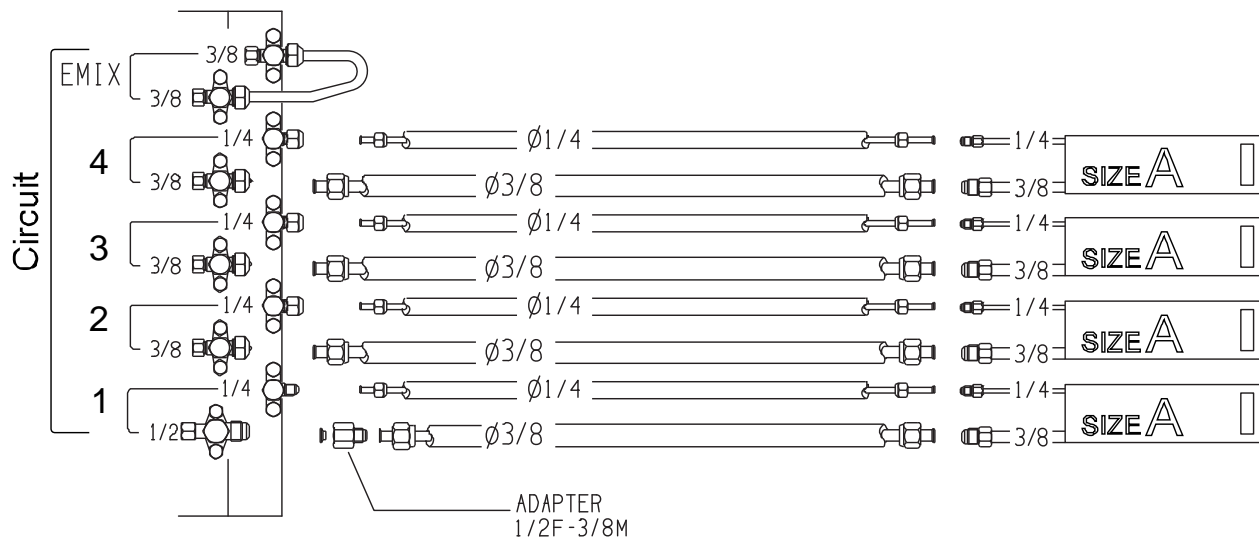
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REFRIGERANT LINESET CONNECTIONS

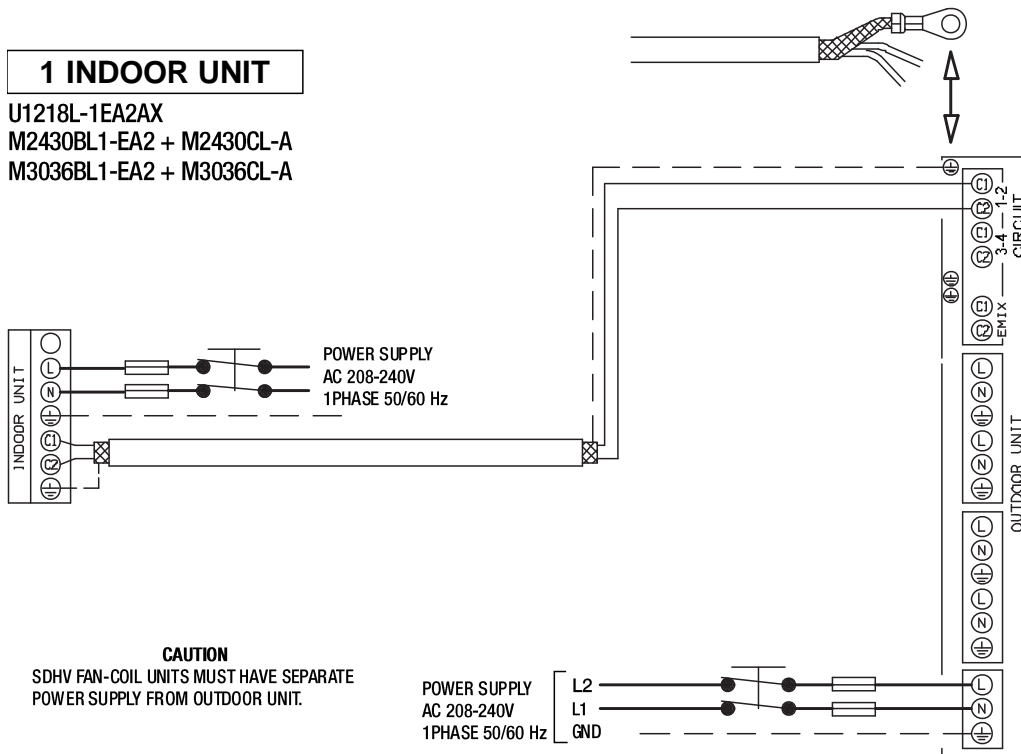
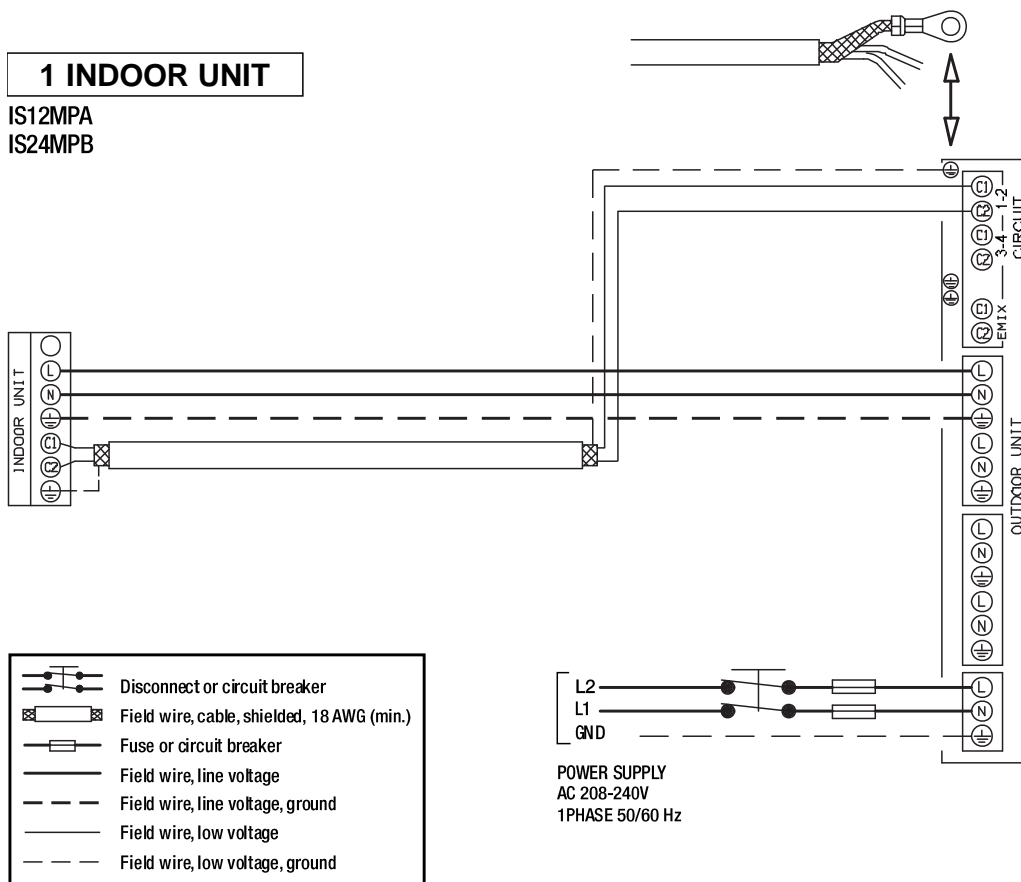
Quad-Split (4 Indoor Units)

IS30G080, IS36G110



SYSTEM WIRING DIAGRAMS

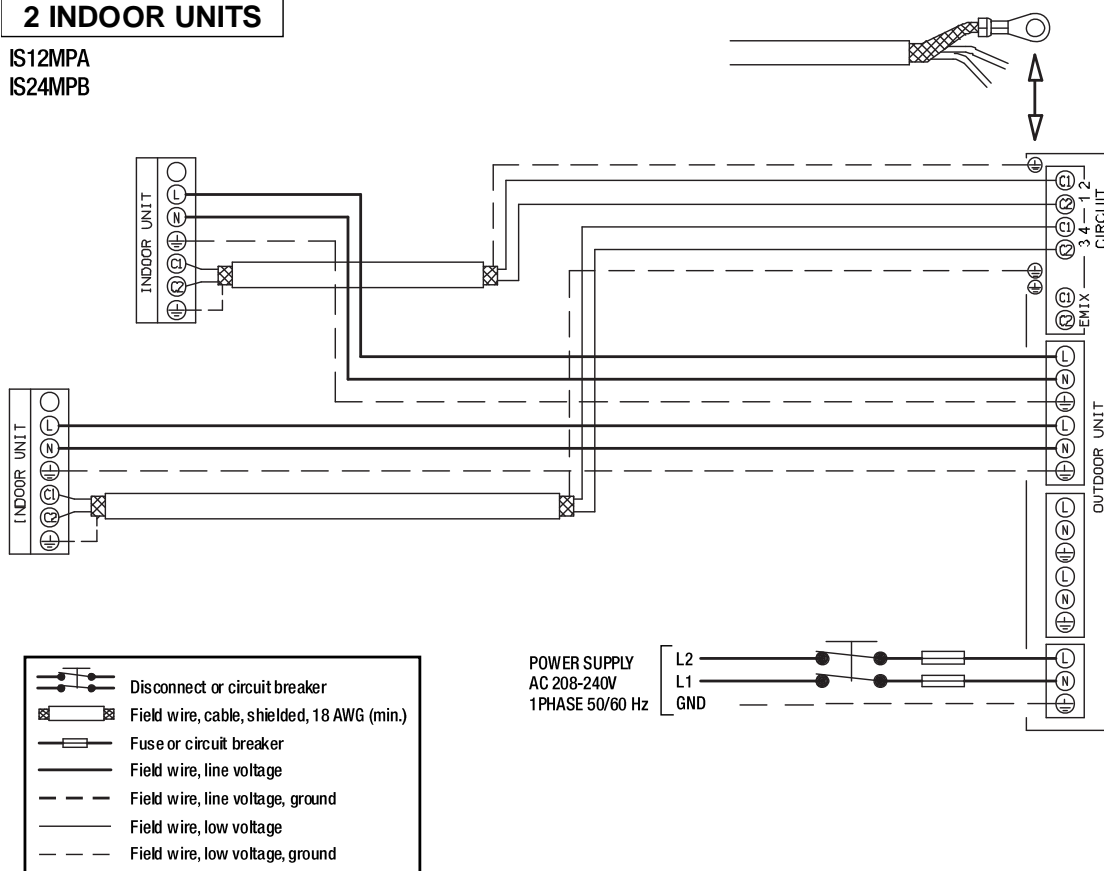
The diagrams below show how to connect the power and communications wiring for single and multi-split system types.



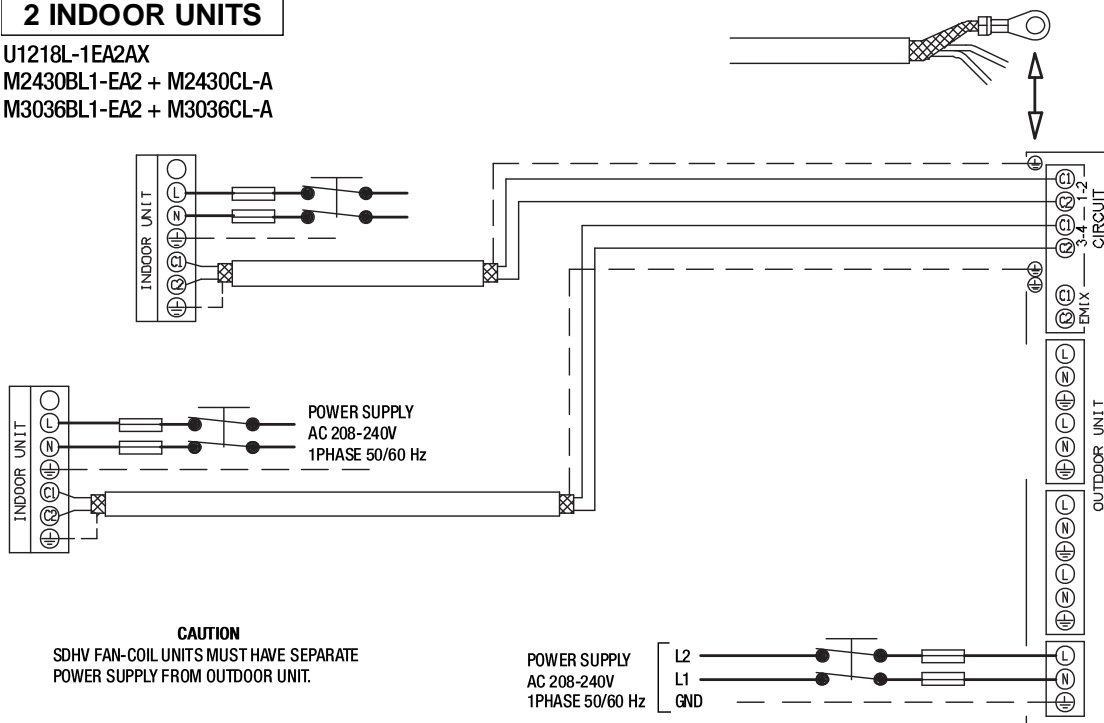
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SYSTEM WIRING DIAGRAMS

2 INDOOR UNITS

IS12MPA
IS24MPB

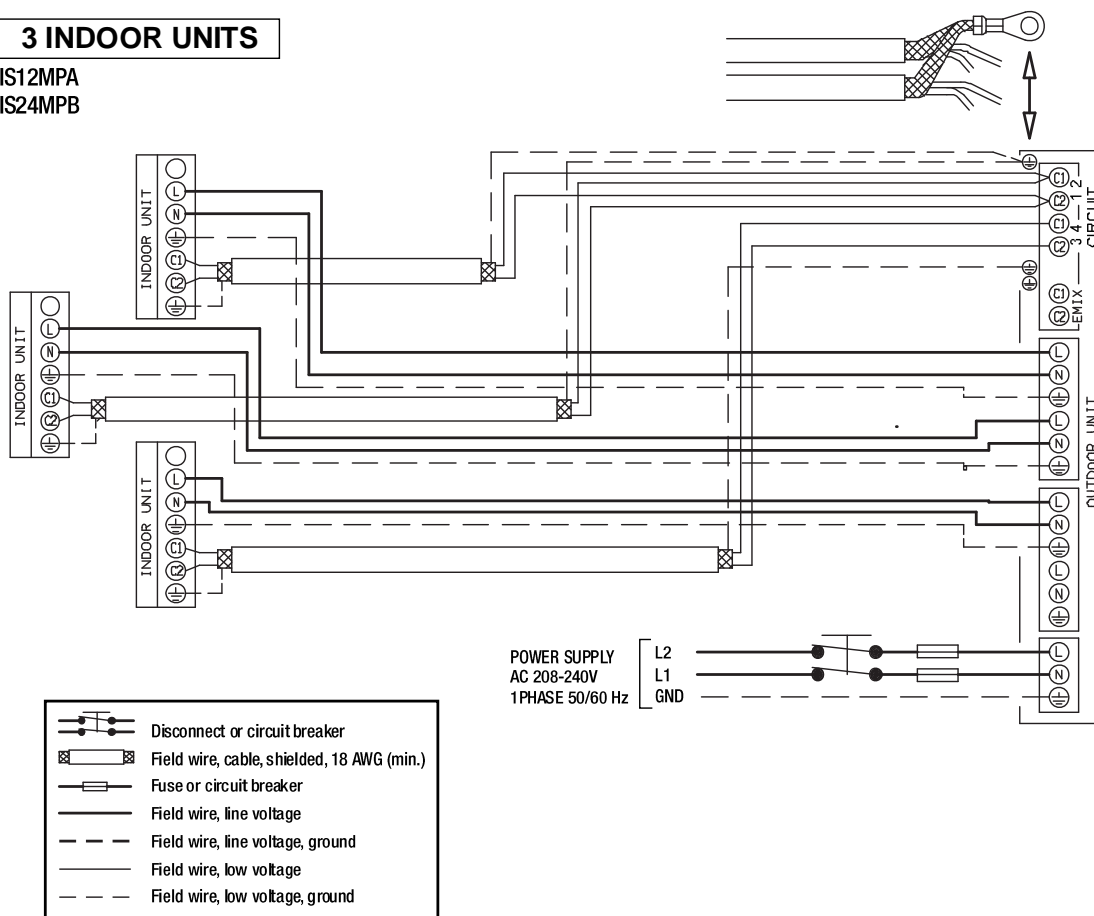
2 INDOOR UNITS

U1218L-1EA2AX
M2430BL1-EA2 + M2430CL-A
M3036BL1-EA2 + M3036CL-A

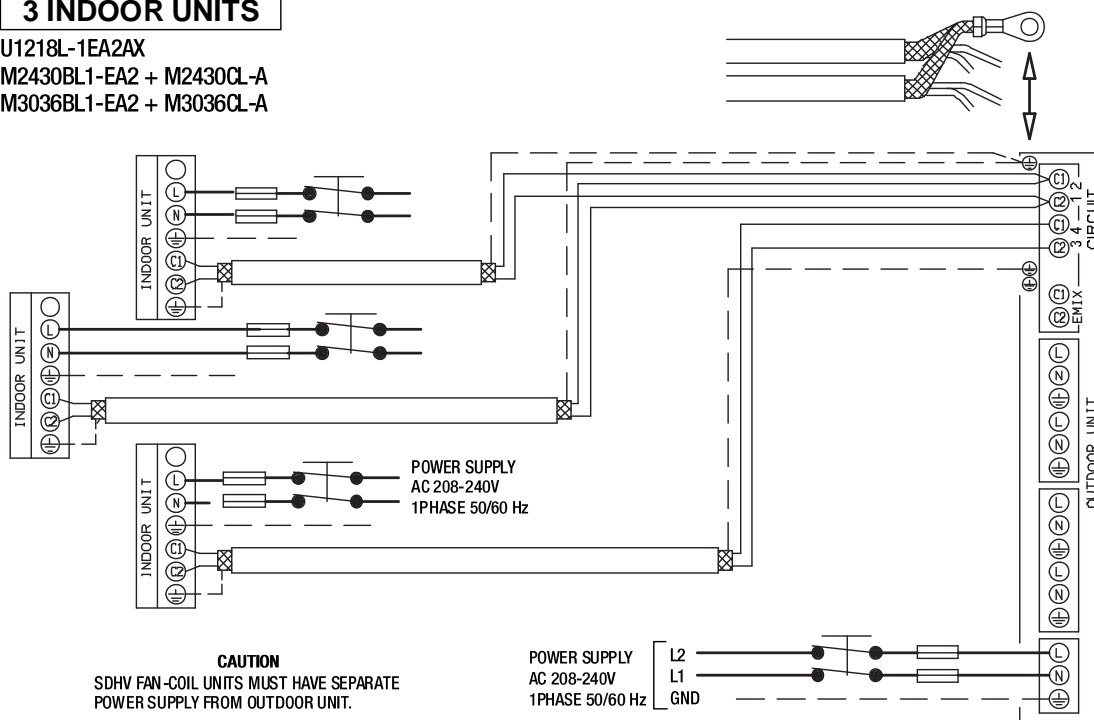
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SYSTEM WIRING DIAGRAMS

3 INDOOR UNITS

IS12MPA
IS24MPB

3 INDOOR UNITS

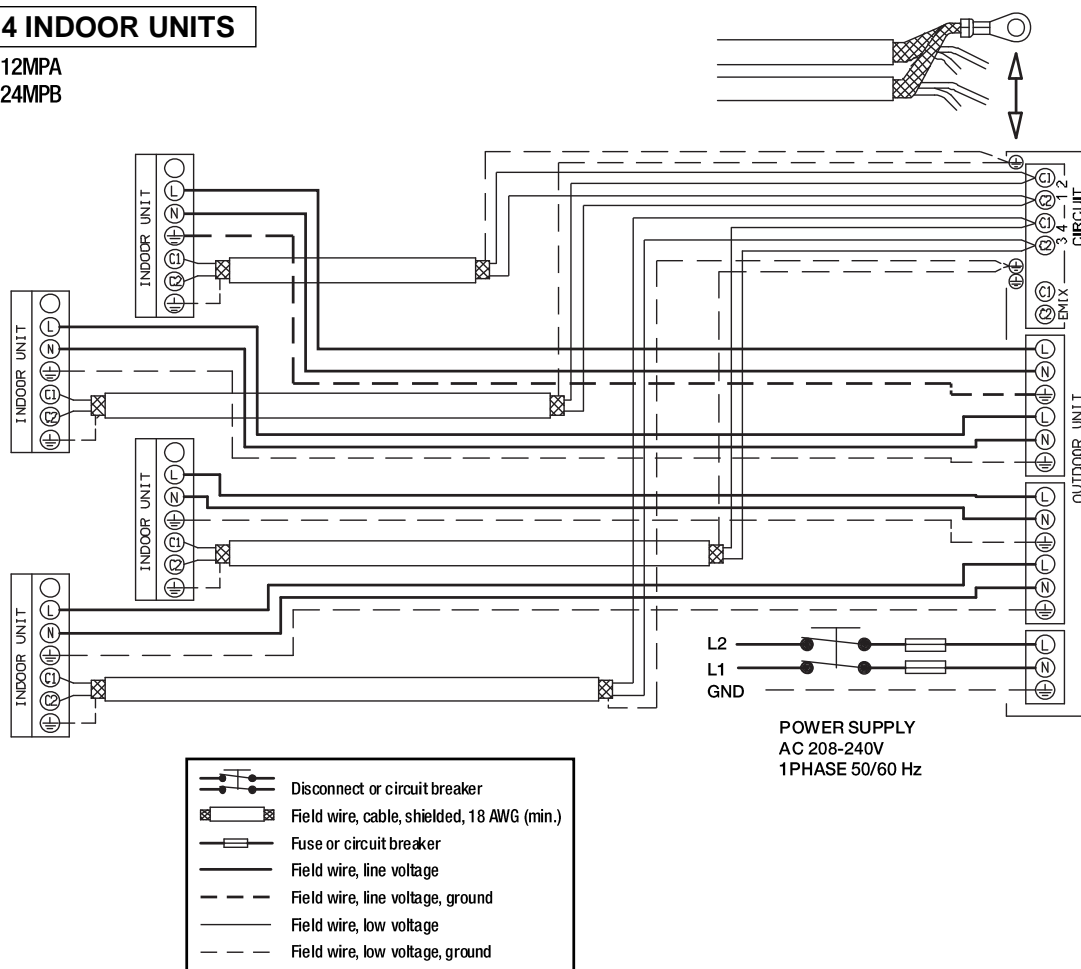
U1218L-1EA2AX
M2430BL1-EA2 + M2430CL-A
M3036BL1-EA2 + M3036CL-A

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SYSTEM WIRING DIAGRAMS

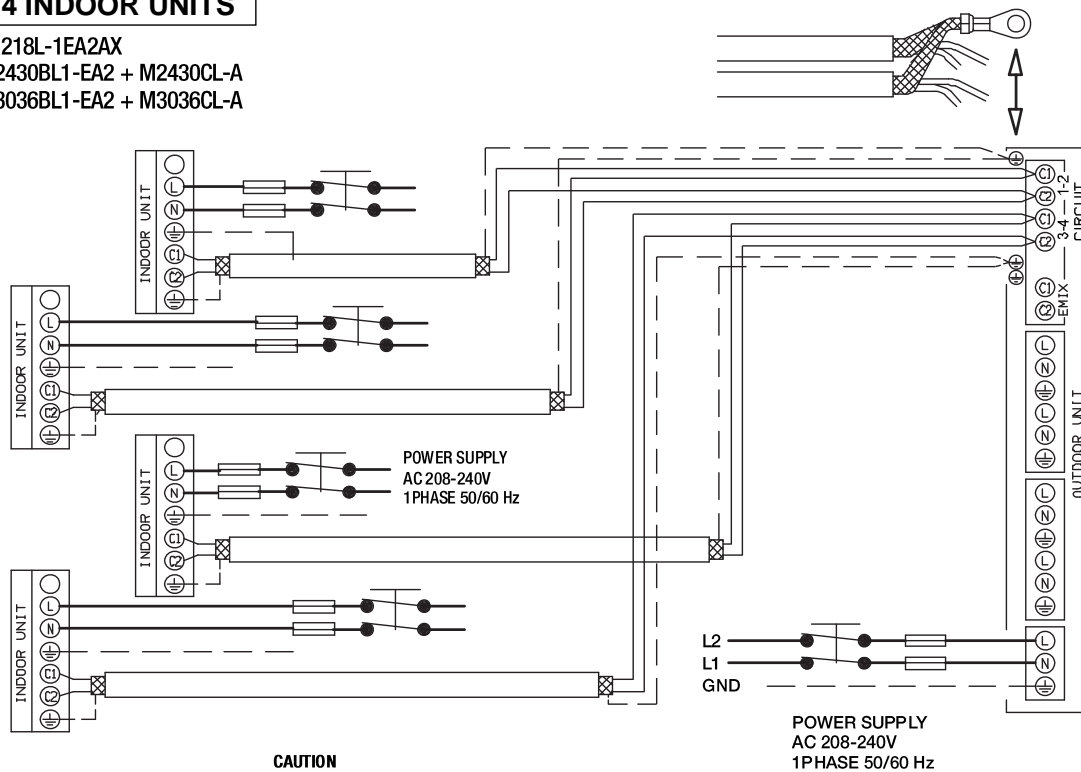
4 INDOOR UNITS

IS12MPA
IS24MPB



4 INDOOR UNITS

U1218L-1EA2AX
M2430BL1-EA2 + M2430CL-A
M3036BL1-EA2 + M3036CL-A



CAUTION
SDHV FAN-COIL UNITS MUST HAVE SEPARATE
POWER SUPPLY FROM OUTDOOR UNIT.

E00183.cvx

AIR HANDLER(SDHV) INSTALLATION & CONTROL BOX WIRING

Refer to the *iSeries Installation Checklist* at the beginning of this manual for a short guide to setting up your iSeries system. Disconnect power from the indoor unit before modifying any switch settings.

- 1. Connect liquid line.** SDHV units matched to iSeries outdoor units do not require a TXV at the indoor unit. Be sure to connect the liquid line to the distributor inside the cabinet of the cooling module.
- 2. Connect Sensors.** Connect the Indoor Coil Temperature (ICT) and Return Air Temperature (RAT) sensors. The sensors are mounted to the coil at the factory and their wires must be routed into the control box. The plugs on the control board are labelled J15 (ICT 1) and J14 (RAT). Refer to the wiring schematic and board layout for location of connections.
If a hot water coil is installed on the return side of the refrigerant coil, move the RAT sensor to the return side of the hot water coil. This is necessary to ensure an accurate return air temperature reading. Disconnect the RAT sensor from the indoor refrigerant coil and splice in extension wires as necessary to extend the factory wiring. Use 18 awg wire minimum.
- 3. Connect the thermostat.** The SDHV fan coil unit is compatible with either an infrared (IR) remote thermostat (Available from Unico) or with a standard 24VAC thermostat (field supplied). Instructions for installation depend on which thermostat is being used.

If using an iSERIES Wireless Remote Thermostat	If using Standard Heat Pump Thermostat
<div>1. Remove the factory-installed jumper from the STD T-STAT terminals.</div> <div>2. Connect the Infrared (IR) receiving base to the LEDS/DISPLAY plug on the IndoorB control board (J4).</div> <div>3. Install a jumper wire between R and G on the relay board. This can be used for remote on/off.</div>	<div>1. Install a jumper on the terminals labelled STD T-STAT (see wiring diagram below).</div> <div>2. Connect the MMI board to the LEDS/DISPLAY plug on the IndoorB control board (J4).</div> <div>3. Remove the jumper wire on the relay board between R and G (if present).</div> <div>4. Connect your thermostat to the relay board (2 Stage heat pump recommended)</div>

To use iSERIES Thermostat

1 Set the remote communication address by installing jumpers on the relay board thermostat inputs.

R

B

G

Y1

Y2

C

1

2

3

4

5

6

7

8

JP5

JP1

JP2

ADDRESS	JP1(R-Y1)	JP2(R-Y2)
1	none	none
2	YES	none
3	none	YES
4	YES	YES

* Factory default

JP5 must be installed unless using remote ON/OFF.

2 Remove JP7 jumper.

1

2

3

4

5

6

7

8

OUTDOOR UNIT

FLOP SWITCH

STD T-STAT

DRAIN PUMP

ALARM

JP6

JP7

3 Connect Remote IR receiver to J4.

Remote IR Receiver

indoorB board

To use Standard (RGYB) Heat Pump Thermostat

1 Connect thermostat to relay board terminals per manufacturer's instructions.

R

B

G

Y1

Y2

C

1

2

3

4

5

6

7

8

Thermostat

Use a 2 stage HP Thermostat

2 JP7 jumper must remain installed.

1

2

3

4

5

6

7

8

OUTDOOR UNIT

FLOP SWITCH

STD T-STAT

DRAIN PUMP

ALARM

JP6

JP7

3 Connect MMI (button) board to J4.

MMI ACUBS-G01

indoorB board

SDHV Blower RBGY Thermostat Input Logic

Thermostat Signal					Mode	System Response
R	B	G	Y1	Y2		
●		●			Cooling	Fan runs on G speed (50% of Y2)
●		●	●			Fan runs on Y1 speed (75% of Y2)
●		●	○	●		Fan runs on Y2 speed (Full speed)
●	●	●			Heating	Fan runs on G speed (50% of Y2)
●	●	●	●			Fan runs on Y1 speed (75% of Y2)
●	●	●	○	●		Fan runs on Y2 speed (Full speed)
● = Required (24VAC), ○ = optional						

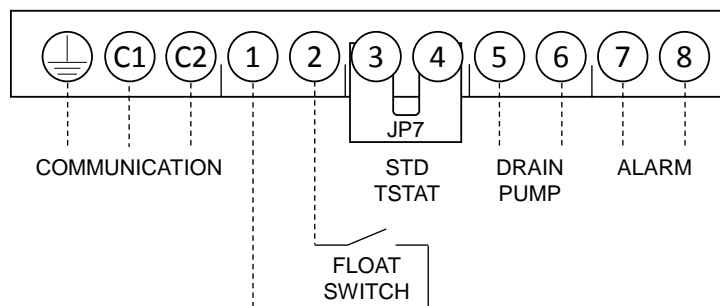
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 (SAC 37.4255.109.04)

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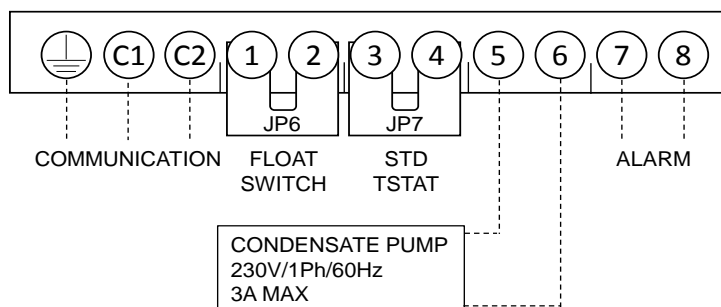
- 4. Verify Airflow.** Verify that the number of supply outlets installed matches the maximum air flow from the following table. A maximum of 40CFM per outlet is recommended for 2" supply outlets, or 50CFM for 2.5" round outlets. Less airflow per outlet will deliver a quieter system. See Bulletin 20-054 for more information on airflow design.

Factory Default Airflow							Minimum No. of Outlets Required	
Model	Thermostat Type	Airflow, CFM (m³/h)						
	RBGY	G	Y1	Y2	Auto Range		2.0"	2.5"
	iSeries Remote	Low	Med	High				
1218		200 (340)	300 (510)	400 (680)	200 – 400	(340 – 510)	10	8
2430		300 (510)	450 (765)	625 (1060)	300 – 625	(510 – 1060)	16	13
3036		400 (680)	550 (935)	750 (1275)	400 – 750	(680 – 1275)	19	15

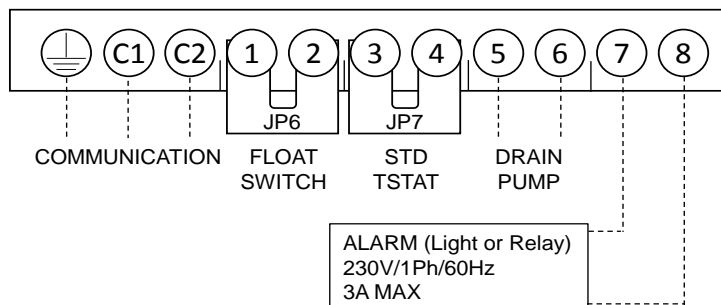
- 8. Float Switch Wiring.** If installing the unit where an overflow of condensate will cause damage, install a float or “wet” switch to stop the operation of the unit.



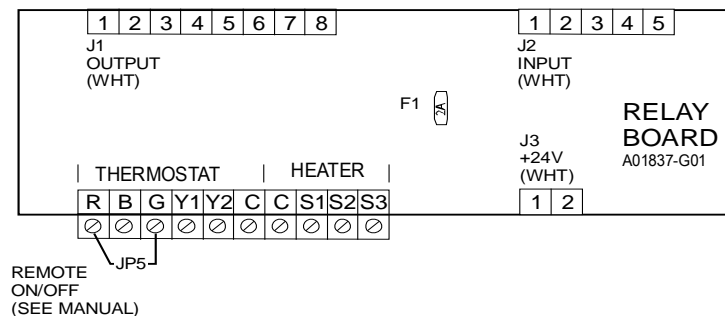
- 9. Condensate Pump Wiring.** One set of 230VAC/1Ph/60Hz screw terminals are provided for connecting a condensate pump. The maximum current output is 3A. These contacts are only powered when there is a cooling call from the thermostat, or if the float switch is open.



- 10. Alarm Output Wiring.** The system allows the user to send an alarm signal if there is any error condition. The output is 230VAC, 1 phase, 60 Hz with a maximum current output of 3 amps. For example, the alarm can switch on a remote light.



- 11. Remote ON/OFF (with iSeries Thermostat ONLY).** An external switch may be installed in place of JP5 to shut down the system. This is a cleaner way of stopping system operation than simply breaking the R signal. For example, a hotel application might link the operation of the system to a key lock so that the unit turns off when the room is not occupied. Install the switch in place of jumper JP5, shown below.



- 12. Zone Damper Systems** (Requires the use of a heat pump thermostat) Set up the system as if using a standard 24V thermostat with a zone damper system. The zone damper controller appears to the iSeries control like a standard 24V thermostat. It is necessary to set the maximum motor speed to prevent over-speeding of the motor as dampers are closed. This ensures that the remaining open outlets are not noisy. To set the maximum motor speed, follow these steps: Open all dampers.

- 12.1. Open all dampers
- 12.2. Press the button on the MMI board once. Either the RED or GREEN LED will illuminate to indicate the RPM limit programming status. If the RED LED is ON, then the maximum RPM is not set. If the GREEN LED is ON, then the maximum RPM has already been set.
- 12.3. Press the button a second time to enter into the “learning mode” (programming mode). The RED LED will blink and the blower will ramp up and down for approximately 1 minute. At the end of this process, the maximum RPM will be set, the RED LED will turn off and the GREEN LED will turn ON. The limit has been set, and any previously set limits have been erased. The system will then resume normal operation. This step can be repeated by pressing the button again.
- 12.4. To erase the RPM Limit setting and return to the default (factory) setting(1800RPM), press and hold the MMI button for 3 seconds. The GREEN LED will turn off and the RED LED will turn ON. After 20 seconds the system will return to normal operation.

MMI BOARD LED STATUS CODES		
LED	Status	Description
LED 1 (Red)	SOLID	Maximum RPM is not set
	OFF	Maximum RPM is already set
	BLINKING	System is “learning” the maximum RPM
LED 2 (Blue)	SOLID	In programming mode
	OFF	Normal operation
LED 3 (Green)	SOLID	Maximum RPM is set
	OFF	Maximum RPM is not set

iSERIES HEATING OPTIONS

The iSeries system provides several flexible options for heating. It can be used as a heat-pump only system, as a system where either hydronic or electric heat works in tandem with the heat pump, or as a dual-fuel type system where hydronic or electric heat takes over at a certain outdoor temperature. These options fall into two main categories: *Supplemental* and *Auto Changeover*. Each of these modes have advantages and optimal applications. When installing the system, one method or the other must be chosen; they cannot be used simultaneously.

Supplemental Heat allows the heat pump to run simultaneously with a backup heat source.

Auto Changeover Heat shuts down the heat pump at a user-adjustable outdoor temperature and allows the backup heat source to take over. This is similar to dual-fuel systems.

Both methods above can use either an electric duct heater or hydronic coil as the backup heat source. See the table below to compare the advantages of each method.

iSeries Heating Comparison		
Feature	Supplemental	Auto Changeover
Compatible with Electric Duct Heaters	●	●
Compatible with Hydronic Systems ^a	●	●
Compatible with High-Wall Units ^b	●	--
Outdoor Temperature-based activation ^c	--	●
Time-delay activation ^c	●	--
Heat pump and backup heat source run simultaneously	●	--
Heat pump and backup heat source run separately	--	●
a. Except 1218. b. High wall units will produce no heat below the changeover setpoint. c. Setpoint is user-adjustable		

Supplemental Heat

(SDHV Only) (This function is available only when using a heat pump thermostat.) Supplemental heat using an electric furnace or hot water coil can be controlled by either the iSeries control (S1, S2, S3) outputs, or by the thermostat. To control supplemental heating with the iSeries SDHV control box, connect the supplemental heating to the three 24VAC output terminals labelled S1, S2, and S3 on the Relay Board. S1 will activate after a B+G+Y2 heating call has been present for the duration of the *Supplemental Heat Startup Delay*. The default time for this delay is 20 minutes. S2 and S3 will each activate after an additional delay – the *Supplemental Heat Interval Delay* – also 20 minutes by default. See the *Special Functions Menu* section later in this manual for instructions on modifying these delays.

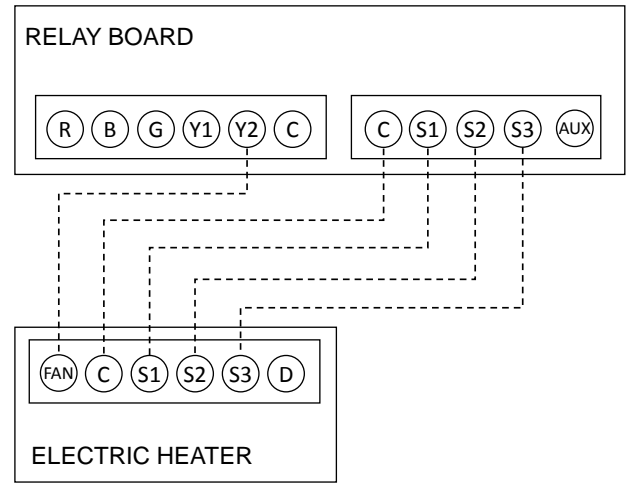
A B+G+Y2 (Y1 optional) thermostat call is required to activate the supplemental heat outputs. The blower must achieve the programmed Y2 airflow before the supplemental heat outputs (S1, S2, S3) will activate. If there is a restriction or RPM limit in place that prevents the blower from achieving the programmed airflow, the outputs will not turn on.

Supplemental Heat (Electric). Connect a supplemental electric heater, if applicable.

The maximum allowed electric furnace size depends on the airflow through the indoor unit. The maximum electric furnace size when using the default airflows are shown in the table below. See Bulletin 20-025 to select the correct size heater if the default airflow has been changed.

Indoor Unit Model	Default High Airflow (Y2)	Maximum Electric Furnace Size
U1218L-1EA2**	400 CFM	7.5 kW
M2430BL1-EA2 + M2430CL1-A	625 CFM	15.0 kW
M3036BL1-EA2 + M3036CL1-A	750 CFM	15.0 kW
Based on 100°F heat pump supply temperature and 160°F maximum heater supply temperature		

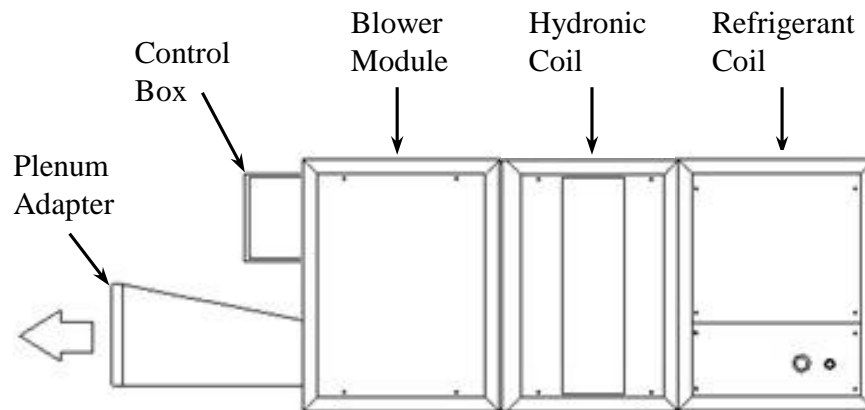
Wiring Diagram for Supplemental Electric Heat with iSeries control box



Supplemental Heat (Hydronic) (SDHV Only, excludes 1218)

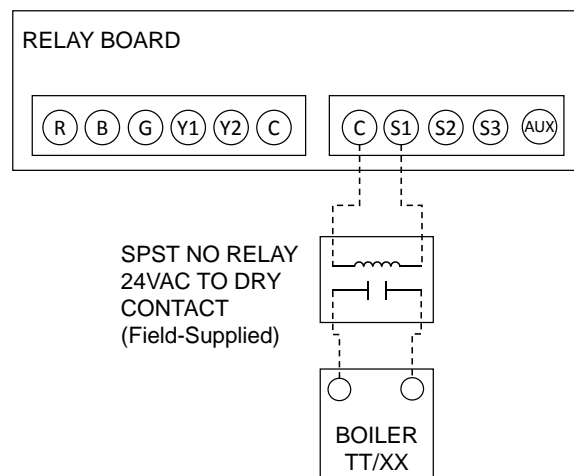
The supplemental heat outputs can be used to turn on a boiler. This configuration is required for systems that use both high-wall and SDHV units connected to one iSeries outdoor unit if hydronic heat is also installed. The boiler and heat pump may run simultaneously in this configuration.

To configure a hydronic system for use with the Supplemental Heat outputs, the position of the hydronic and refrigerant coils must be as follows:



The horizontal installation is shown above, but the system can be installed in the vertical upflow or vertical downflow configurations as well. There is no risk of freezing the hydronic coil, as the temperature of the refrigerant coil is kept above freezing by internal controls.

It is very important to limit the water temperature to the hydronic coil to no more than 150°F. This is to prevent damage to the EC blower motor.

Wiring diagram for Supplemental Hydronic Heat with iSeries control box.

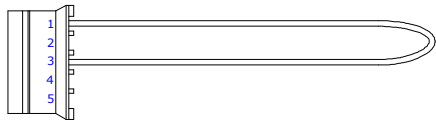
Wire the boiler TT terminals to the Relay Board terminal block as shown above for a 20-minute delay in bringing on the boiler. For a 40 or 60-minute delay, wire to S2 or S3, respectively. If a shorter or longer delay is desired, refer to the *Special Functions Menu* section later in this manual for instructions on modifying these setpoints.

Automatic Changeover

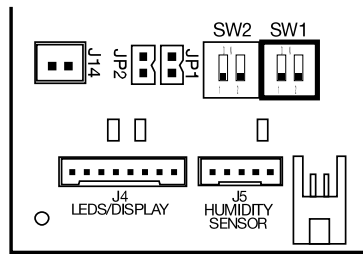
SDHV Only. For single- or multi-split systems with heat pump thermostat. **Mixed SDHV and high-wall systems are not allowed with this option.**

Automatic Changeover allows the compressor to be stopped from running below a certain outdoor air temperature – typically the balance point of the building. At this point an auxiliary source of heat (such as a boiler or electric heater) can be engaged. This function brings on the AUX relay (24VAC output), which can be used to power a pump, valve, boiler or other auxiliary heat method. The *Supplemental Heat* relays (S1, S2, S3) are disabled when this function is used. The default changeover temperature is 32°F. (See SFM Code 22 – *Auxiliary Heat Changeover Temperature* for instructions on modifying the changeover temperature.) This function will operate with single- or multi-split SDHV systems, as long as both systems have the Auxiliary Heat Jumper installed, and are set to the same changeover temperature. Mixed-multisplit systems (systems that combine both SDHV and wall-mount units) and systems where only some of the SDHV units installed have the changeover jumper installed are not allowed. When *Auxiliary Heat Changeover* is active, ductless units will provide no heating to the space.

This function requires that a jumper be installed at position J5 (Humidity Sensor) on the IndoorB board in order for the changeover to occur. This jumper must be installed on all SDHV units in multisplit systems. The IndoorB board is located inside the SDHV control box and the jumper plug (Unico part no. A02009-G01) ships with the control box (See illustration below.) The jumper is not required to adjust the SFM Value.



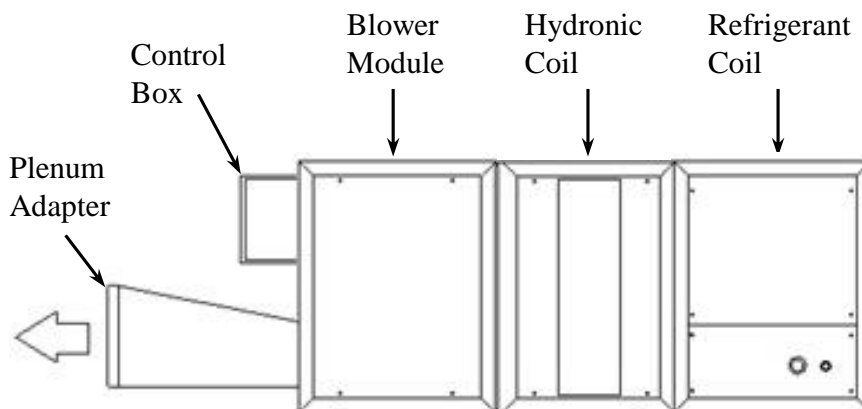
Auto Changeover jumper plug

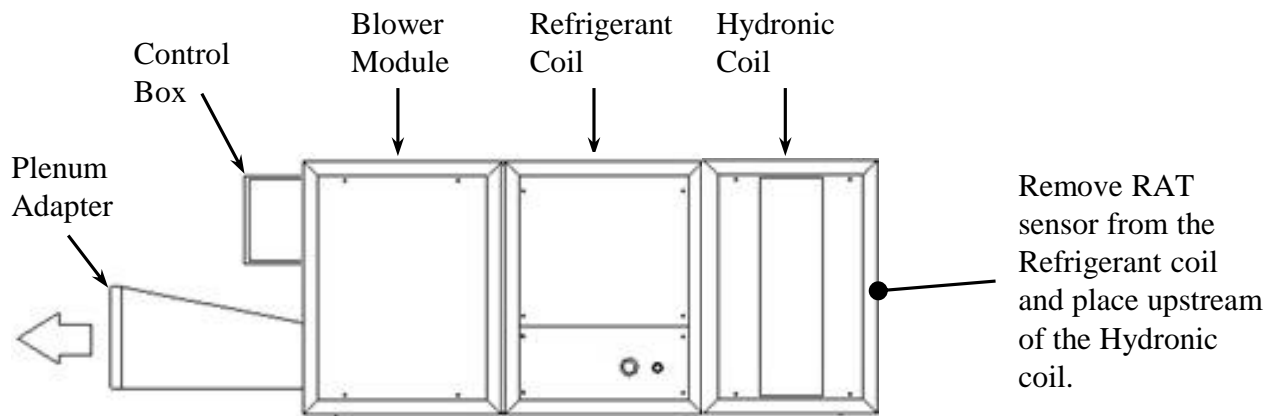


Connect the Auxiliary Heat Changeover jumper plug to J5 Humidity Sensor connector

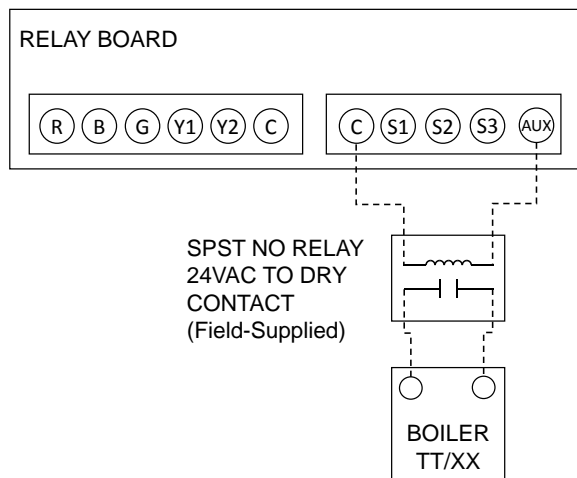
Automatic Changeover (Hydronic)

The recommended installation is shown below, with the refrigerant coil on the return side of the hydronic coil. If a system is being retrofitted for hydronic changeover, and the hydronic coil is on the return side, then use the diagram on the next page and be sure to move the return air temperature (RAT) sensor to the return side of the hydronic coil. A field-fabricated mount will be needed to hold the sensor in the center of the airstream.





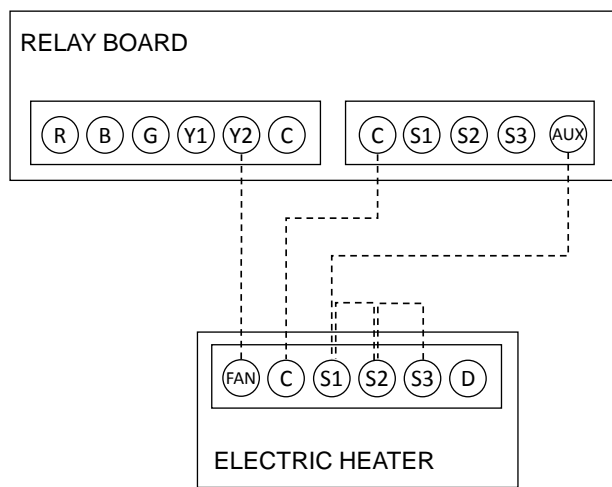
Wiring Diagram for Automatic Changeover with hydronic backup



Automatic Changeover (Electric)

Electric systems can also be used in the changeover configuration. Wire as shown below.

Wiring Diagram for Automatic Changeover with electric backup



INDOOR UNIT & REMOTE CONTROL SWITCH SETTINGS

Model Selection

Select the SDHV model size by using the SW1 switches on the IndoorB circuit board.

INDOOR UNIT MODEL TYPE	STANDARD OR iSERIES THERMOSTAT
1218 FACTORY DEFAULT	<p>SW1 1=OFF 2=OFF</p>
2430	<p>SW1 1=ON 2=OFF</p>
3036	<p>SW1 1=OFF 2=ON</p>
3642	<p>SW1 1=ON 2=ON</p>

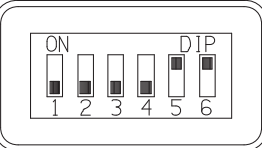
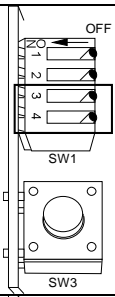
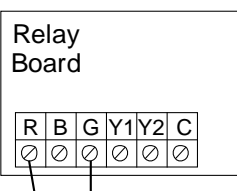
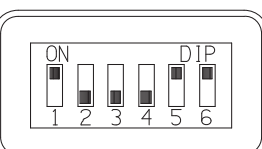
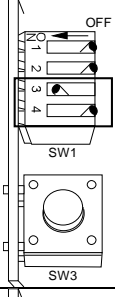
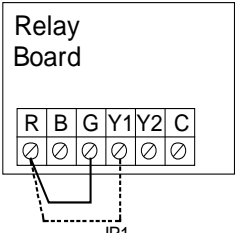
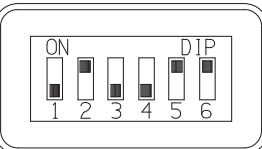
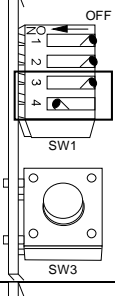
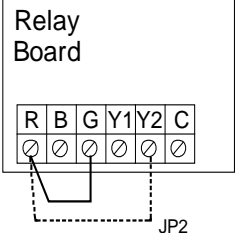

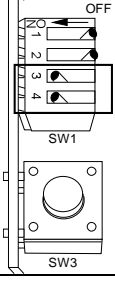
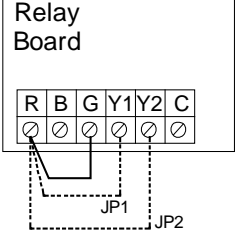
Communications Channel

When using either a high-wall unit or an iSeries IR thermostat, the remote communicates with the indoor unit on one of four different channels. Both need to be set to the same channel to talk. The default is Channel 1. If you have two indoor units in the same room and want to control them separately, they must each use a different channel. Set the remote controller as shown in the table below. SDHV units, which use the MMI board to receive signals, will respond to any communication channel.



WARNING
Disconnect the power

1. Disconnect the power to indoor unit.
2. Remove the batteries from the remote control unit and press any button for a minimum of 5 seconds.
3. Set the micro switches (see table). The switches are located in the battery compartment.
4. Insert the batteries in the remote control unit.
5. Set the channel of the indoor unit to match the remote control channel (see table below).

CHANNEL	REMOTE CONTROLLER SETTINGS	INDOOR UNIT SETTINGS	
		WALL MOUNT UNIT	SDHV FAN COIL UNIT *
CHANNEL 1 FACTORY DEFAULT	 1=OFF 2=OFF 3= OFF 4=OFF 5=ON 6=ON	 SW1: 3=OFF 4=OFF	 JP1: NO JP2: NO
CHANNEL 2	 1=ON 2=OFF	 SW1: 3=ON 4=OFF	 JP1: YES JP2: NO
CHANNEL 3	 1=OFF 2=ON	 SW1: 3=OFF 4=ON	 JP1: NO JP2: YES
CHANNEL 4	 1=ON 2=ON	 SW1: 3=ON 4=ON	 JP1: YES JP2: YES

* NOTE: When using an iSERIES remote, for SDHV units R-G must always be jumpered for all SDHV models.

JP1: Jumper between R and Y1

JP2: Jumper between R and Y2

Refrigerant Circuit Number

(Method A – Using DIP switches)

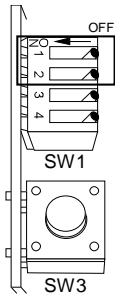
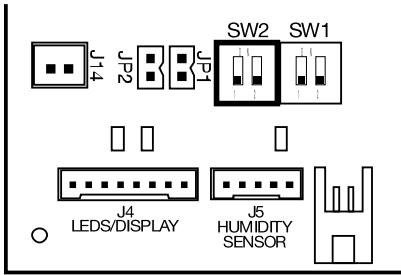
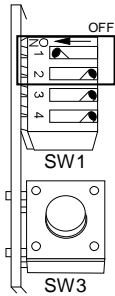
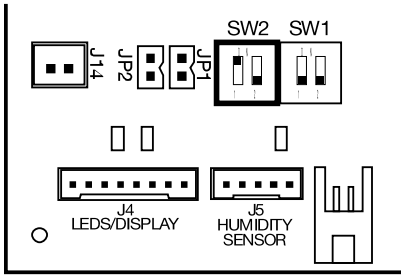
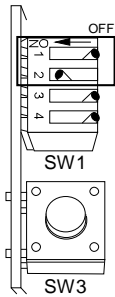
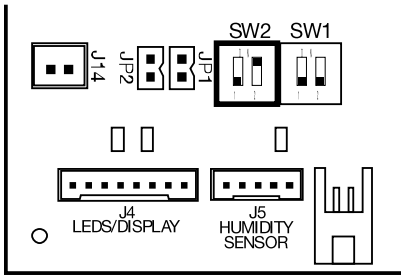
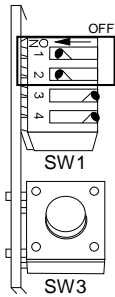
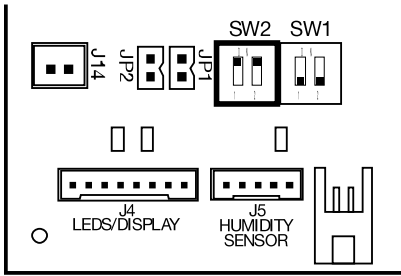
Refer to the table below to select the correct switch settings. The switches are located either on the wall-mount unit control board (for wall-mount units), or on the IndoorB board for SDHV units. Set the refrigerant circuit switches on the indoor unit to match the circuit on the outdoor unit to which the indoor unit is connected.


CAUTION

ALWAYS POWER OFF THE UNIT BEFORE CHANGING THE DIP SWITCHES!

- Disconnect power from the indoor and outdoor units.
- Set the indoor unit switches.
- Re-apply power to the system.

When the system powers up, it will operate with the new address.

OUTDOOR UNIT CIRCUIT (PORT)	INDOOR UNIT	
	WALL-MOUNT UNIT CONTROL BOARD	SDHV FAN-COIL UNIT INDOORB CONTROL BOARD
1 FACTORY DEFAULT	 <p>SW1: 1=OFF 2=OFF</p>	 <p>SW2: 1=OFF 2=OFF</p>
2	 <p>SW1: 1=ON 2=OFF</p>	 <p>SW2: 1=ON 2=OFF</p>
3	 <p>SW1: 1=OFF 2=ON</p>	 <p>SW2: 1=OFF 2=ON</p>
4	 <p>SW1: 1=ON 2=ON</p>	 <p>SW2: 1=ON 2=ON</p>

OPERATION


SPECIAL FUNCTIONS MENU

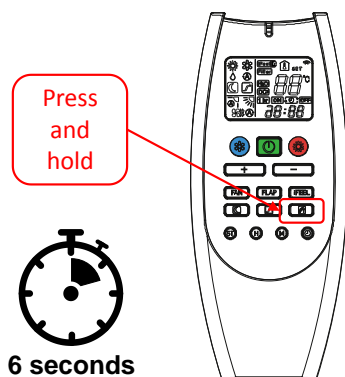
iSeries indoor units have several settings that are only accessible through the *Special Functions Menu (SFM)*. This menu, and the associated settings, can be accessed by using the iSeries remote control. The following table lists the available functions.

Table of Special Functions					
Code	Function	Indoor Unit Compatibility			
		High Wall	SDHV		
			iSeries (IR) Thermostat	RGYB Thermostat (MMI) [†]	
	0 Reset SFM Menu Factory Defaults (All special functions)	●	●	●	
(+)	1 Automatic Refrigerant Circuit Addressing	●	●	●	
(+)	3 Manual Heat	--	●	●	
(+)	4 Fan Airflow Setpoint (G)	--	●	●	
(+)	5 Low Airflow Setpoint (Y1)	--	●	●	
(+)	6 High Airflow Setpoint (Y2)	--	●	●	
(+)	7 Manual RPM Limit Setpoint	--	●	●	
(+)	11 Automatic RPM limit (For Zoning)	--	●	●	
(+)	20 IFCO Behavior - Single or Multisplit	--	--	●	
(+)	21 Minimum Auxiliary Heat Enable Time	--	--	●	
(+)	22 Auxiliary Heat Changeover Temperature	--	--	●	
(+)	23 Electric Heat Startup Delay	--	●	●	
(+)	24 Electric Heat Interval Delay	--	●	●	
(+)	77 Remote Control Temperature display (Units of Measure)	N/A	N/A	N/A	

General Instructions – How to Edit an SFM

Follow the procedure below to edit the setpoints within the Special Functions Menu. If no key is pressed for 10 seconds after entering the SFM, the remote will exit the SFM and return to showing the temperature. To ensure that Codes and Values are received by the system, proceed quickly between each step.

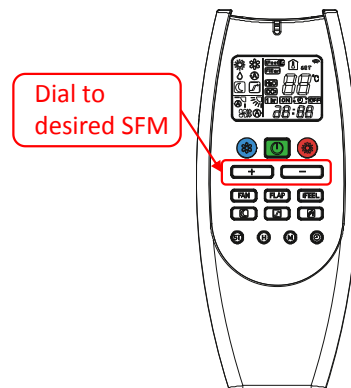
- 1. Enter the SFM.** To enter the SFM, press and hold the Filter/Shift button  on the iSeries remote control for at least 6 seconds, then release the button. Count the blinks of the clock on the remote display to ensure that you have waited 6 seconds.



The remote does not need to be pointed at a receiver

during this step. Once inside the SFM, the temperature symbol will disappear from the display, and the remote will show the last value that was transmitted.

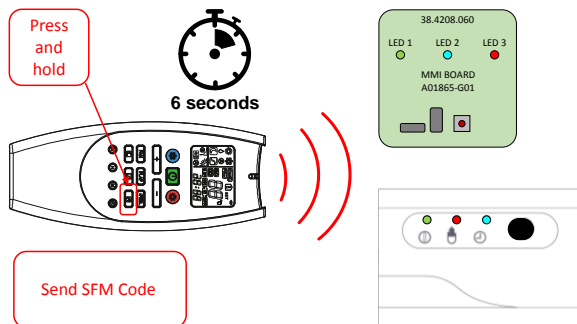
- 2. Select the SFM Code** to be modified. Each Code controls the behavior of a user-adjustable function for the iSeries. Use the “+” and “-” buttons on the remote to select the SFM Code you want to edit.



SPECIAL FUNCTIONS MENU

- 3. Transmit the SFM Code.** Once the desired SFM Code has been selected, transmit it to the system by pointing the remote at the receiver (either a wall-mount unit, wall-mount receiver, or MMI board), and pressing and holding the Filter/Shift button for 6 seconds.

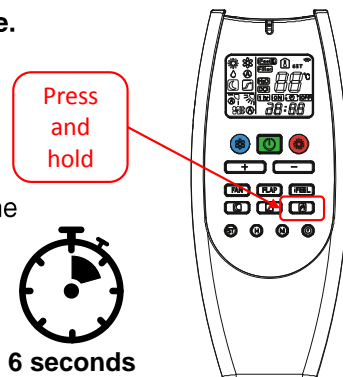
If the Code is recognized, the receiver will beep. If you do not hear any beeps, the Code was not received and you must repeat the process.



Note: Some SFM Codes do not have additional Values; simply transmitting the SFM Code activates the function, such as with Reset Defaults (SFM 0). Others, like the Fan Airflow Setpoints, require that a Value be transmitted. If the SFM Code you are changing does not have Values that must be edited, the Code selected should now be activated. Proceed to the next step if you must edit Values. The system will accept Values for the Code you have sent for a period of 5 minutes.

- 4. Re-enter the SFM Mode.**

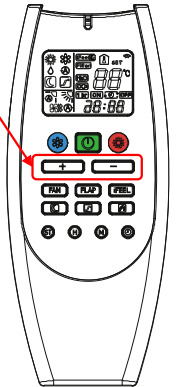
If a Value must be transmitted, re-enter the SFM immediately after transmitting the SFM Code by pressing and holding the Filter/Shift button (marked with a square icon) on the iSeries remote control for at least 6 seconds.



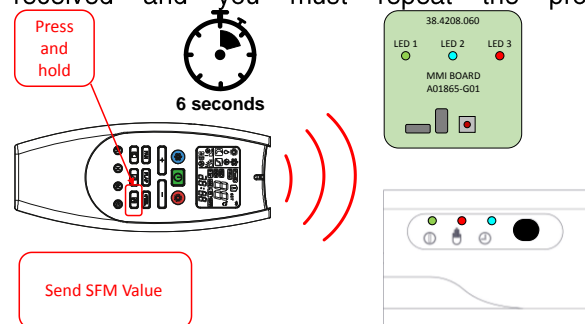
- 5. Select the Value to be transmitted.**

After re-entering the SFM, the system is primed to receive a new setpoint for the Code you have chosen to adjust. Sending a Value will change the setpoint. If you send no Value, the setpoint will remain as is. Use the “+” and “-” buttons to select the Value to be transmitted. Some Values use a multiplier to determine the setpoint.

Dial to desired Value



- 6. Transmit the Value.** Press and hold the Filter/Shift button for 6 seconds while pointing the remote at the receiver. If the Value is recognized, the receiver will beep. If you do not hear any beeps, the Value was not received and you must repeat the process.



- 7. Cycle Power.** Setpoints are only updated after a power cycle. After updating any setpoint, turn off the power to the entire system, wait for all LEDs to go out, then turn the power back on.

Note: The SFM for each of the functions listed above are on the positive side of the number line. The number displayed on the remote can be either positive (+) or negative (-) but the sign is not shown. To determine whether you are on the positive or negative side of the number line, observe whether or not the number blinks. If it does, you are on the negative side of the number line. If you find that you are on the negative side, press the “+” button until you pass through zero, then navigate to the function you want to adjust.

SPECIAL FUNCTIONS MENU

The table below gives a handy reference for those functions whose setpoints rely on a Value multiplier. The table above does not show all possible setpoints. Refer to each function for allowed Values and setpoint ranges.

Value Setpoint Table		
Value	Setpoint	
	x5 multiplier*	x20 multiplier†
Send this value...	...to get this setpoint.	
10	50	200
15	75	300
20	100	400
25	125	500
30	150	600
35	175	700
40	200	800
45	225	900
50	250	1000
55	275	1100
60	300	1200
65	325	1300
70	350	1400
75	375	1500
80	400	1600
85	425	1700
90	450	1800
*Applies to SFM 23, 24		
†Applies to SFM 4, 5, 6, 7		

SFM Code 0 – Reset Factory Defaults

- **Function:** Resets all Special Functions Menu Codes and Values to their factory defaults.
- **Requires a Value to be sent?** No.
- **Allowed SFM Values:** N/A. Sending the SFM Code activates the function.
- **To Enable:** N/A. Sending the SFM Code activates the function.
- **To Disable:** N/A.

SFM Code 1 – Automatic Refrigerant Circuit Addressing

- **Function:** If this procedure is activated, the system will automatically identify which indoor unit is connected to which refrigerant circuit. All indoor unit refrigerant circuit switches must be set to OFF-OFF (factory default) for this procedure to work. The procedure takes approximately 5 minutes per set of refrigerant ports on the outdoor unit.
- **Requires a Value to be sent?** No.

- **Allowed SFM Values:** N/A. Sending the SFM Code activates the function.
- **To Enable:** N/A. Sending the SFM Code activates the function.
- **To Disable:** Cycle power to IDU and ODU to interrupt the procedure. Otherwise procedure will run to conclusion.

SFM Code 3 – Manual Heat

- **Function:** Allows heating mode operation even if there are errors on the indoor and outdoor units. Ignores all errors from the indoor and outdoor units except the Indoor Unit Blower COM Error. Responds to High Heat call by activating the AUX relay and running the blower at Y2 airflow.
- **Requires a Value to be sent?** No.
- **Allowed SFM Values:** N/A. Sending the SFM Code activates the function.
- **To Enable:** N/A. Sending the SFM Code activates the function.
- **To Disable:** Cycle the power to the indoor control box. Normal operation will resume once power is re-applied.

SFM Code 4 – Fan Airflow Setpoint (G)

- **Function:** Sets the airflow delivered when a G signal is received from the thermostat.
- **Requires a Value to be sent?** Yes.
- **Default:** Depends on model type. See *Factory Default Airflow* for more information.
- **Allowed SFM Values:** 5 to 90 (100 to 1800CFM)
- **Setpoint Formula:** CFM = SFM Value*20
- **Example:** 200 CFM = SFM Value 10 = 10*20 = 200
- **Reset Default:** Send SFM Value -99

SFM Code 5 – Low Airflow Setpoint (Y1)

- **Function:** Sets the airflow delivered when a Y1 signal is received from the thermostat.
- **Requires a Value to be sent?** Yes.
- **Default:** Depends on model type. See *Factory Default Airflow* for more information.
- **Allowed SFM Values:** 5 to 90 (100 to 1800CFM)
- **Setpoint Formula:** CFM = SFM Value*20
- **Example:** 400 CFM = SFM Value 20 = 20*20 = 400
- **Reset Default:** Send SFM Value -99

SFM Code 6 – High Airflow Setpoint (Y2)

- **Function:** Sets the airflow delivered when a Y2 signal is received from the thermostat.
- **Requires a Value to be sent?:** Yes.
- **Default:** Depends on model type. See *Factory Default Airflow* for more information.
- **Allowed SFM Values:** 5 to 90 (100 to 1800CFM)
- **Setpoint Formula:** CFM = SFM Value*20
- **Example:** 600 CFM = SFM Value 30 = 30*20 = 600
- **Reset Default:** Send SFM Value -99

SFM Code 7 – Manual RPM Limit

- **Function:** Sets a maximum RPM that the indoor blower cannot exceed for Y2 airflow. This is often used in zoned systems to reduce noise when one or more zones are closed. For Y1 airflow, RPM is limited to 90% of setpoint.
- **Requires a Value to be sent?:** Yes.
- **Default:** 1800 RPM
- **Allowed SFM Values:** 0 to 90 (0 to 1800RPM)
- **Setpoint Formula:** RPM = SFM Value*20
- **Example:** 1200 RPM = SFM Value 60 = 60*20 = 1200
- **Reset Default:** Send SFM Value -99

SFM Code 11 – Automatic RPM Limit

- **Function:** Automatically sets a maximum RPM that the indoor blower cannot exceed for Y2 airflow. This is often used in zoned systems to reduce noise when one or more zones are closed. All zone dampers must be fully open when activating this function in order to set the RPM limit correctly. When the function is activated, the system will ramp the airflow up and down to learn the correct RPM limit setpoint. For Y1 airflow, RPM is limited to 90% of setpoint.
- **Requires a Value to be sent?:** Yes.
- **Default:** 1800 RPM
- **Allowed SFM Values:** 0 or 1
- **Setpoint Formula:** Value 0 resets the default. Value 1 starts the RPM Limit learning procedure.
- **Reset Default:** Send Value -99
- **Note:** This same function can be executed by simply pressing the MMI button twice. See *Zone Damper Systems* in the SDHV Unit Setup section for more information.

SFM Code 20 – IFCO Behavior – Single or Multi-Split

- **Function:** Allows (Single-Split, SFM Value 0), or disallows (Multi-Split, SFM Value 1) fan-only operation when there is a communication error between an indoor unit and the outdoor unit. For systems that have more than one unit connected, where one unit is communicating and calling for heat, and another indoor unit has lost

communication, allowing fan-only operation on the unit which has lost communication can cause runaway heating in the space served by that unit. By default, indoor units configured on refrigerant circuit 1 operate as single-split, and units configured as circuits 2, 3, or 4 operate as multisplit, unless modified with SFM Code 20.

- **Requires a Value to be sent?:** Yes.
- **Default:** Depends on refrigerant circuit selection. Circuit 1 behaves as single-split, and Circuit 2, 3, and 4 behave as multi-split.
- **Allowed SFM Values:** 0 or 1
- **Setpoint Formula:** SFM Value 0 = single split; SFM Value 1 = multi-split
- **Reset Default:** Send SFM Value -99

SFM Code 21 – Minimum Auxilliary Heat Enable Time (MAHET)

- **Function:** An anti-short-cycling measure. If the outdoor air temperature is below the *Auxiliary Heat Changeover Temperature*, and Jumper J5 has been installed (Allowing temperature-based changeover from Heat Pump operation), *MAHET* prevents the system from returning to heat pump operation for the minimum time below, regardless of outdoor air temperature. This prevents rapid cycling between Heat Pump and Auxiliary operation.
- **Requires a Value to be sent?:** Yes.
- **Default:** 1 hour
- **Allowed SFM Values:** 1 to 48 (1 to 48 hours)
- **Setpoint Formula:** Time (in hours) = SFM Value
- **Example:** 4 hours = SFM Value 4
- **Reset Default:** Send SFM Value -99

SFM Code 22 – Auxiliary Heat Changeover Temperature

- **Function:** Sets the outdoor air temperature below which the compressor is shut off and the AUX relay is engaged. The AUX relay (24VAC output) can be used to engage a pump, valve, boiler or other source of backup heat. An isolation relay may be needed depending on the application. This function requires that jumper J5 is installed at the indoor control box in order to work. (The jumper is not required to adjust the SFM Value.) Auxiliary heat changeover works for single or multi-split systems. All changeover setpoints must be set to the same value. If the changeover points are set to different temperatures, the system will operate, but the compressor will shut down at the highest changeover setpoint. If wall-mount units are installed in the system, they will not be able to provide heating until the compressor is able to restart.

When *Auxiliary Heat Changeover* is active, the compressor is prevented from starting until the *Minimum Auxiliary Heat Enable Time* has elapsed, and the outdoor air temperature is at least 5°F

above the changeover setpoint. Once above the AHCS+5°F, the outdoor air temperature must decline below the changeover point to re-engage Auxiliary Heat.

- **Requires a Value to be sent?** Yes.
- **Default:** 32°F
- **Allowed SFM Values:** -25°F to 99°F.
- **Setpoint Formula:** Changeover temperature in °F = SFM Value.
- **Example:** 24°F = menu code 24
- **Reset Default:** Send SFM Value -99
- **Note:** Jumper plug must be installed at position J5 on the IndoorB board for this function to work. See *Auxiliary Heat Changeover* in the SDHV unit setup section of this manual for more information.

SFM Code 23 – Supplemental Heat Startup Delay

- **Function:** Sets the delay in engaging S1. Timer starts when a B+G+Y2 call is received from the thermostat.
- **Requires a Value to be sent?** Yes.
- **Default:** 20 minutes
- **Allowed SFM Values:** 0 to 99 (0 to 495 minutes)
- **Setpoint Formula:** Time in minutes =
SFM Value * 5
- **Example:** 60 minutes = SFM Value 12 = 12*5 = 60 minutes
- **Reset Default:** Send SFM Value -99

SFM Code 24 – Supplemental Heat Interval Delay

- **Function:** Sets the delay between engaging S1, S2, and S3.
- **Requires a Value to be sent?** Yes.
- **Default:** 20 minutes
- **Allowed SFM Values:** 0 to 99 (0 to 495 minutes)
- **Setpoint Formula:** Time in minutes =
SFM Value * 5
- **Example:** 5 minutes = SFM Value 1 = 1*5 = 5 minutes
- **Reset Default:** Send SFM Value -99

SFM Code 77 – Remote Control Temperature Display (Units of Measure)

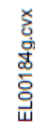
- **Function:** Changes the temperature displayed on the remote control from Celsius (°C) to Fahrenheit (°F) or vice versa.
- **Requires a Value to be sent?** No.
- **Default:** °C
- **Allowed SFM Values:** N/A. Display is changed when SFM Code 77 is transmitted.
- **Setpoint Formula:** Sending SFM Code 77 switches between °C and °F
- **Reset Default:** Remove batteries from remote and wait for display to turn off, then replace the batteries. The unit will revert to displaying the temperature in °C

INDEPENDENT FAN-COIL OPERATION

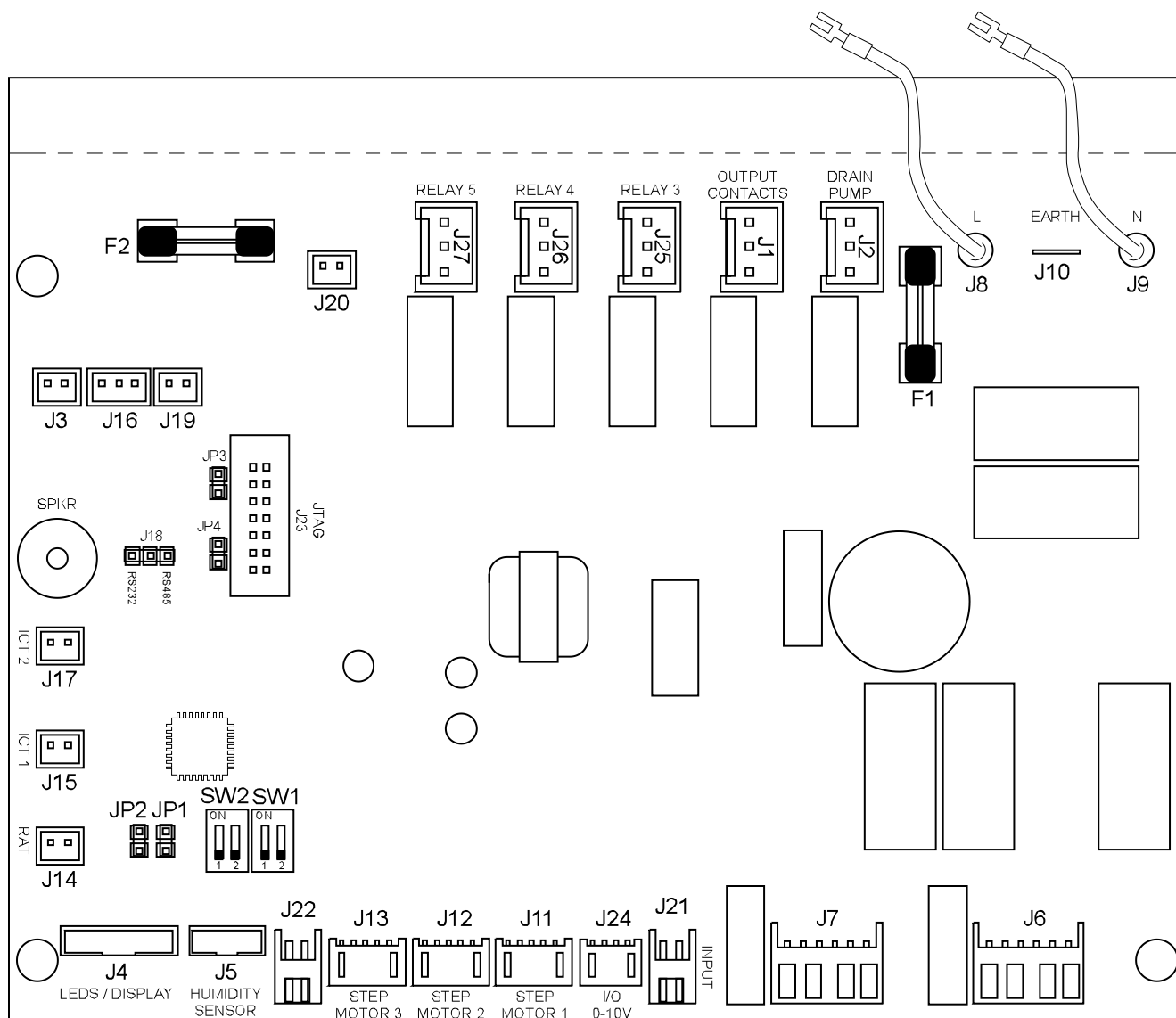
If the outdoor unit is not yet installed, or is malfunctioning (either a sensor error on the outdoor unit, or a communication error between the indoor and outdoor units), the indoor unit will operate independently.

Key features of this mode of operation are:

- **Error Codes.** All indoor and outdoor error codes will be ignored (except a blower motor communication error, or a float switch error).
- **Manual Heat.** AUX operation can be allowed by activating SFM3. System will run AUX and high airflow on a call for High Heat (B+G+Y2). This function ignores many system errors in order to allow heat operation.
- **Auto Changeover Heat.** If the Auxiliary Heat jumper has been installed at J5, and the system is in IFCO mode, the indoor unit will activate AUX every time there is a call for heat.
- **Supplemental Heat.** Supplemental heat continues to operate normally in IFCO mode and will activate on a call for high heat(B+G+Y2) after the programmed delays elapse.
- **Multisplit Systems.** In multisplit systems, units configured as refrigerant circuit A are allowed to run G-only or B+G, but units configured as refrigerant circuit B, C or D cannot. This prevents overheating in multi-split systems when there is an error on units B, C, or D, but when Unit A is operating normally. See also *SFM Code 20 – IFCO Behavior*.
- **Commissioning.** If the outdoor unit is not yet installed, airflow may be checked by applying a G, Y1 or Y2 thermostat call.



IndoorB



Legend

Fuses

- F1: Fuse, 5x20mm, fast acting, 3.15A, 250V
 F2: Fuse, 5x20mm, fast acting, 100mA, 250V

Connections

- J1: Alarm output, 230V
 J2: Drain pump (condensate) output, 230V
 J3: Power, 12V to motor adapter "voltage lift board (VLB)"
 J4: Communication cable to MMI (button) board or Remote IR receiver
 J5: Boiler Changeover jumper position
 J6: Not used
 J7: Not used
 J8: Power input, 230V (L)
 J9: Power input, 230V (N)
 J10: Not used
 J11: Signal output to Relay Board
 J12: Not used (output)
 J13: Not used (output)
 J14: Return air temperature (RAT) sensor mounted in coil section

Connections(cont)

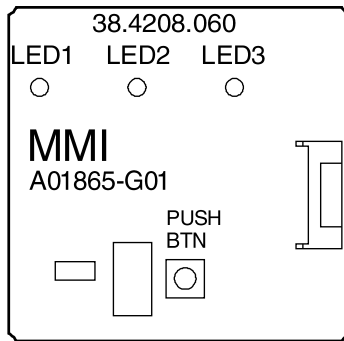
- J15: Indoor coil temperature (ICT) sensor mounted on coil
 J16: Communication cable to motor connected to VLB motor adapter board
 J17: Communication cable to relay board (input) for thermostat B input
 J18: Communication mode, must be set to RS232
 J19: Not used
 J20: Communication to outdoor unit (C1 and C2)
 J21: Input to enable system (turns on fan)
 J22: Input for float switch (condensate overflow)
 J23: Factory use only (programming)
 J24: Input to select the thermostat type (either iSeries thermostat or standard heat pump thermostat)
 J25: (Future) damper output
 J26: Not used (output)
 J27: Not used (output)

Jumpers

- JP1: input (either for remote channel or for low heat/cool)
 JP2: input (either for remote channel or for high heat/cool)
 JP3: factory use only (must have a jumper)
 JP4: factory use only (no jumper)

MMI (Man-to-Machine Interface) “Button” Board

Only used with standard thermostat.

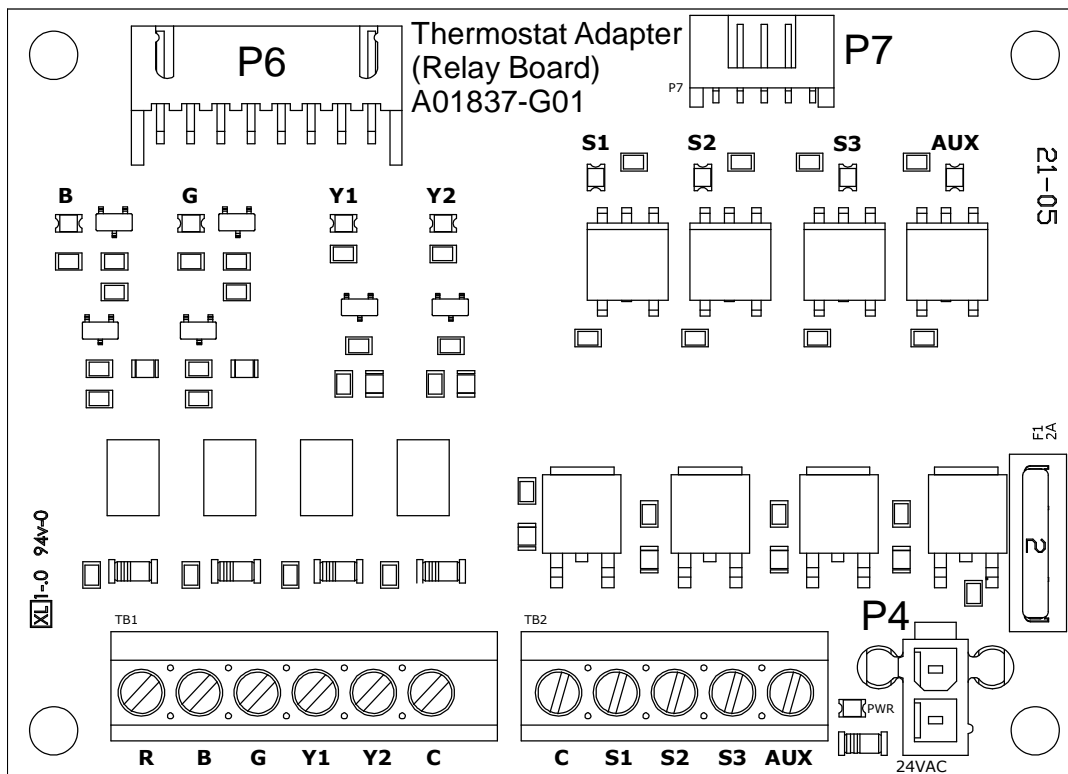


LEGEND

LED1: RED
LED2: BLU
LED3: GRN

PUSH BTN: Push button to display RPM limit status and to program the maximum motor speed for zone damper systems. Includes an IR receiver for remote control settings when using a heat pump thermostat.

Thermostat Adapter Board (Relay Board)



LEGEND

LED LIGHTS
INPUTS (FROM THERMOSTAT)
B: HEATING MODE
G: FAN ONLY
Y1: LOW STAGE HEAT/COOL
Y2: HIGH STAGE HEAT/COOL
S1: STAGE 1 AUXILIARY HEAT
S2: STAGE 2 AUXILIARY HEAT
S3: STAGE 3 AUXILIARY HEAT
AUX: 24VAC OUT BELOW AHCS

PLUGS

P4: POWER, 24VAC
P6: THERMOSTAT OUTPUT TO INDOORB
P7: AUXILIARY INPUT FROM INDOORB

TERMINAL BLOCK:

THERMOSTAT CONNECTIONS

R: POWER (24V)
B: REV. VALVE (ENERGIZE ON HEAT)
G: FAN ONLY
Y1: STAGE 1 HEAT/COOL
Y2: STAGE 2 HEAT/COOL
C: POWER (COMMON)

OUTPUTS (24V, 2A MAX)

C: COMMON
S1: STAGE 1 SUPPLEMENTAL HEAT
S2: STAGE 2 SUPPLEMENTAL HEAT
S3: STAGE 3 SUPPLEMENTAL HEAT
AUX: AUXILIARY HEAT (BELOW AHCS)

FUSE

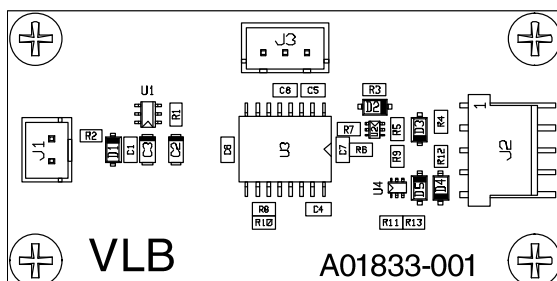
F1: 32V, 2A

IL00541.cvx

F1: Fuse, mini-blade, 2A, 32V (Unico part number A01412-001)

Motor Adapter “Voltage Lift” Board (VLB)

Converts the IndoorB communication signal from 12V to 24V for the proper motor control.



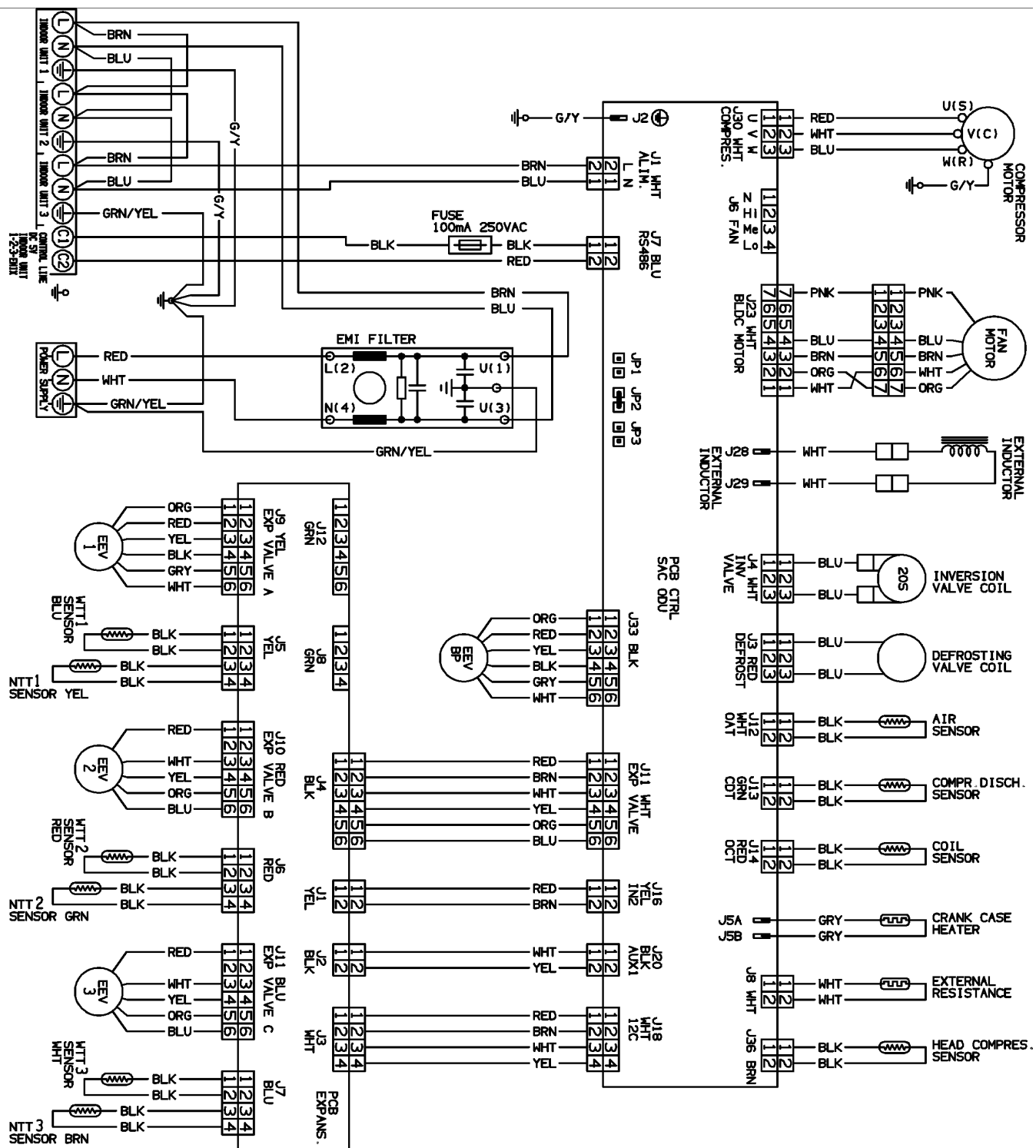
Legend

Connections:

J1: Power, 12VDC
J2: Communication to motor (12VDC)
J3: Communication from IndoorB (3.3VDC)

IS18G050

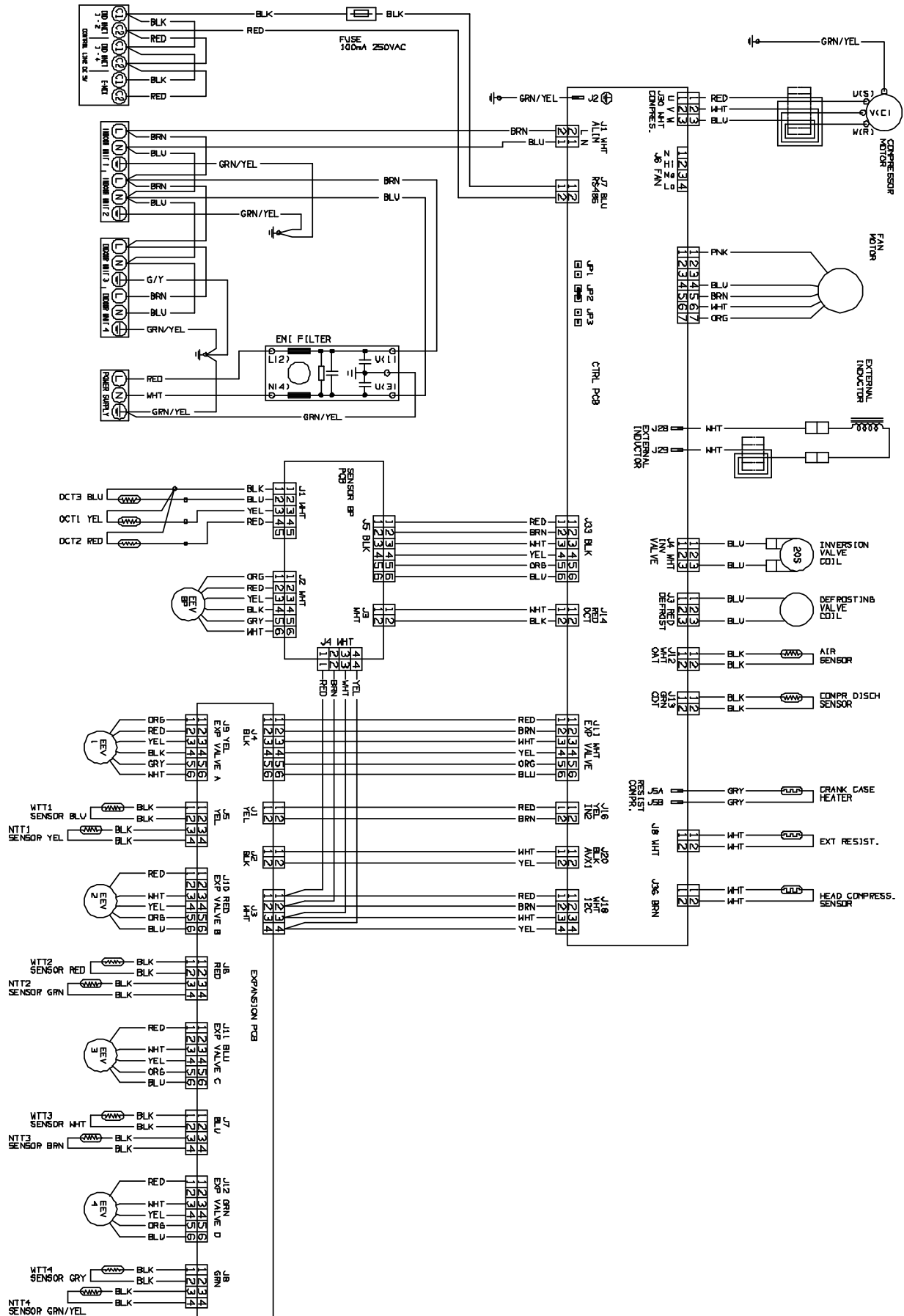
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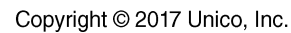
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Model IS30G080

IS30G080 - 37 3159 375.00

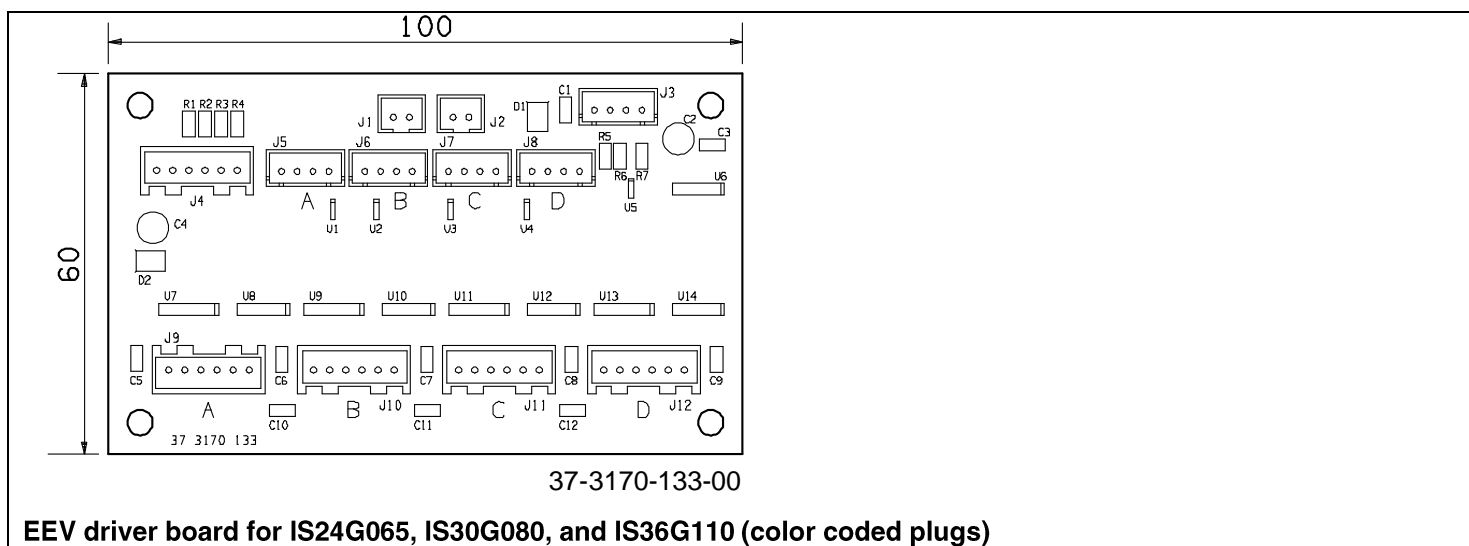
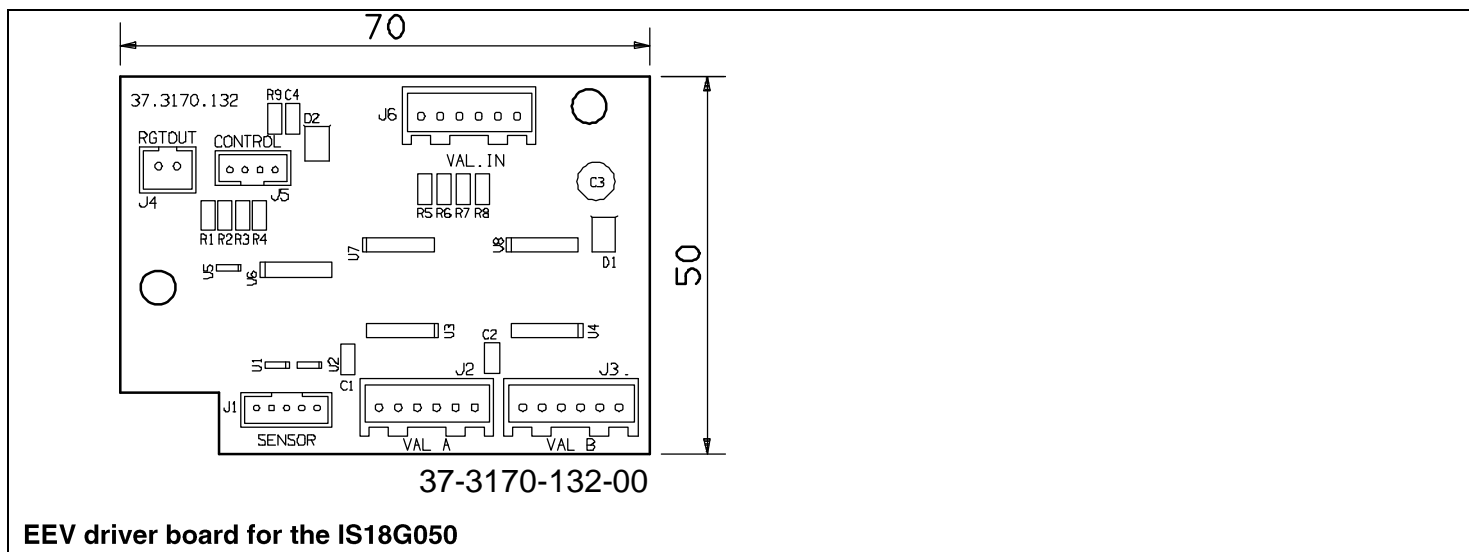


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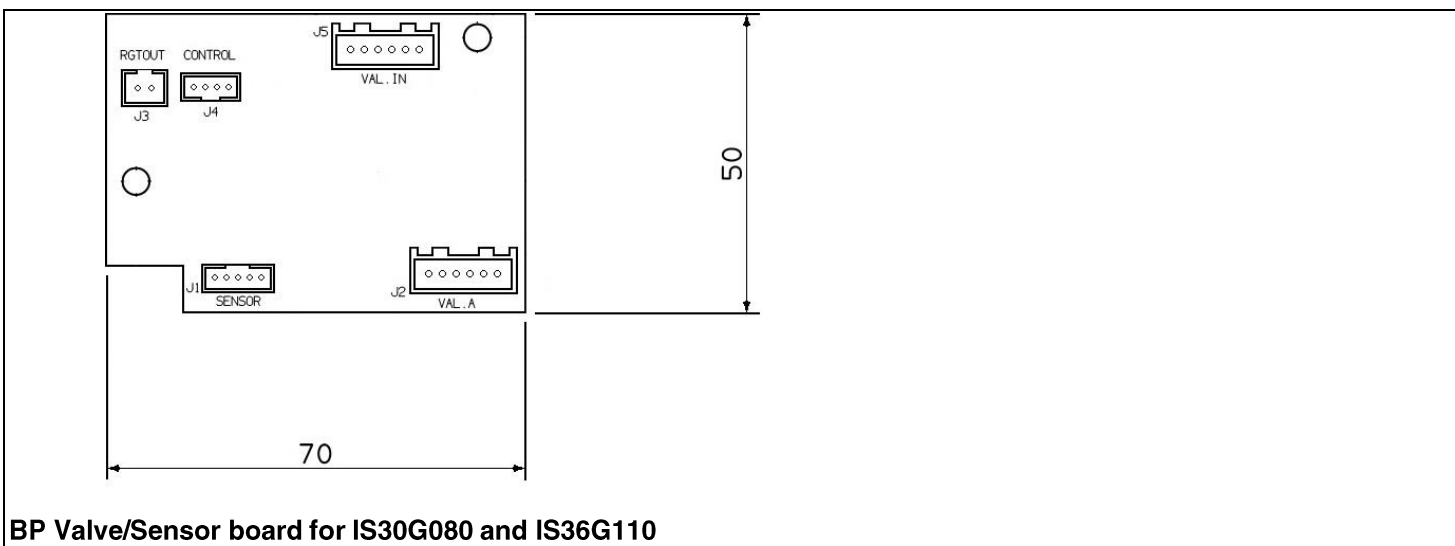


Electronic Expansion Valve (EEV) Driver Board

The outdoor unit includes two circuit boards: the main board and the electronic expansion valve driver board. The EEV driver board controls the expansion valves.

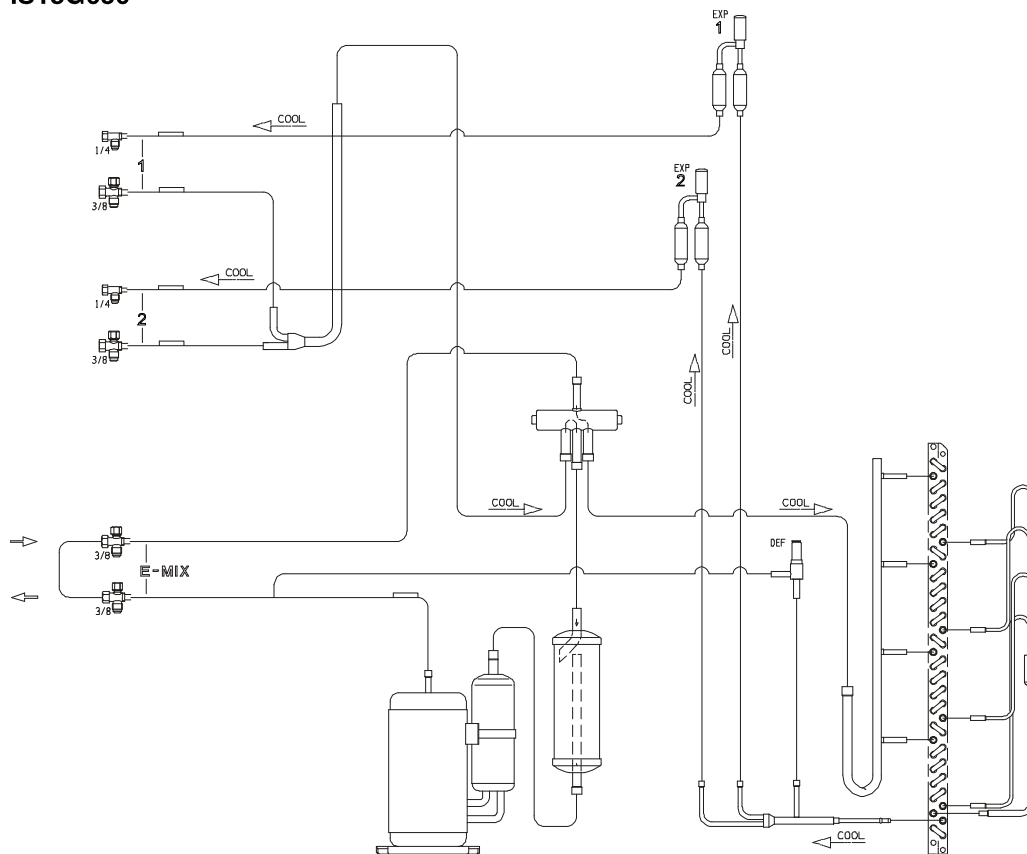


Electronic Expansion Valve (EEV) Driver Board, Heating Mode (aka BP Valve)

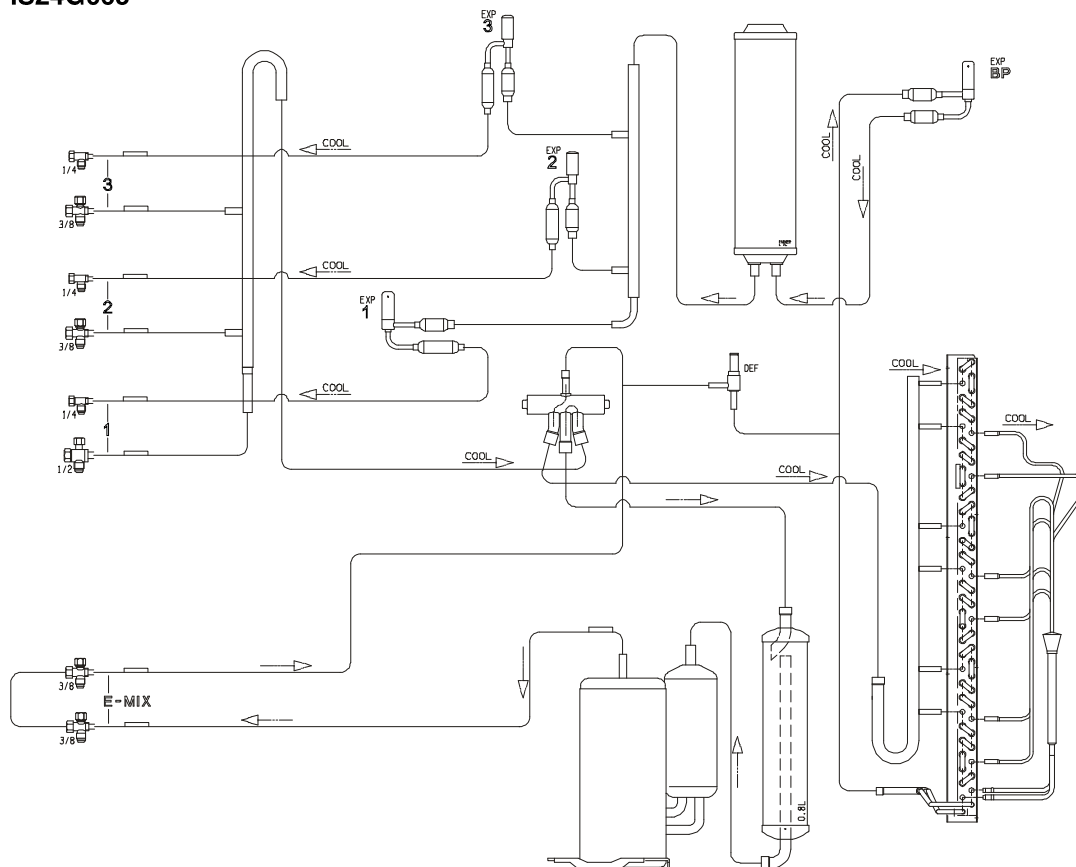


REFRIGERANT CIRCUITING

IS18G050

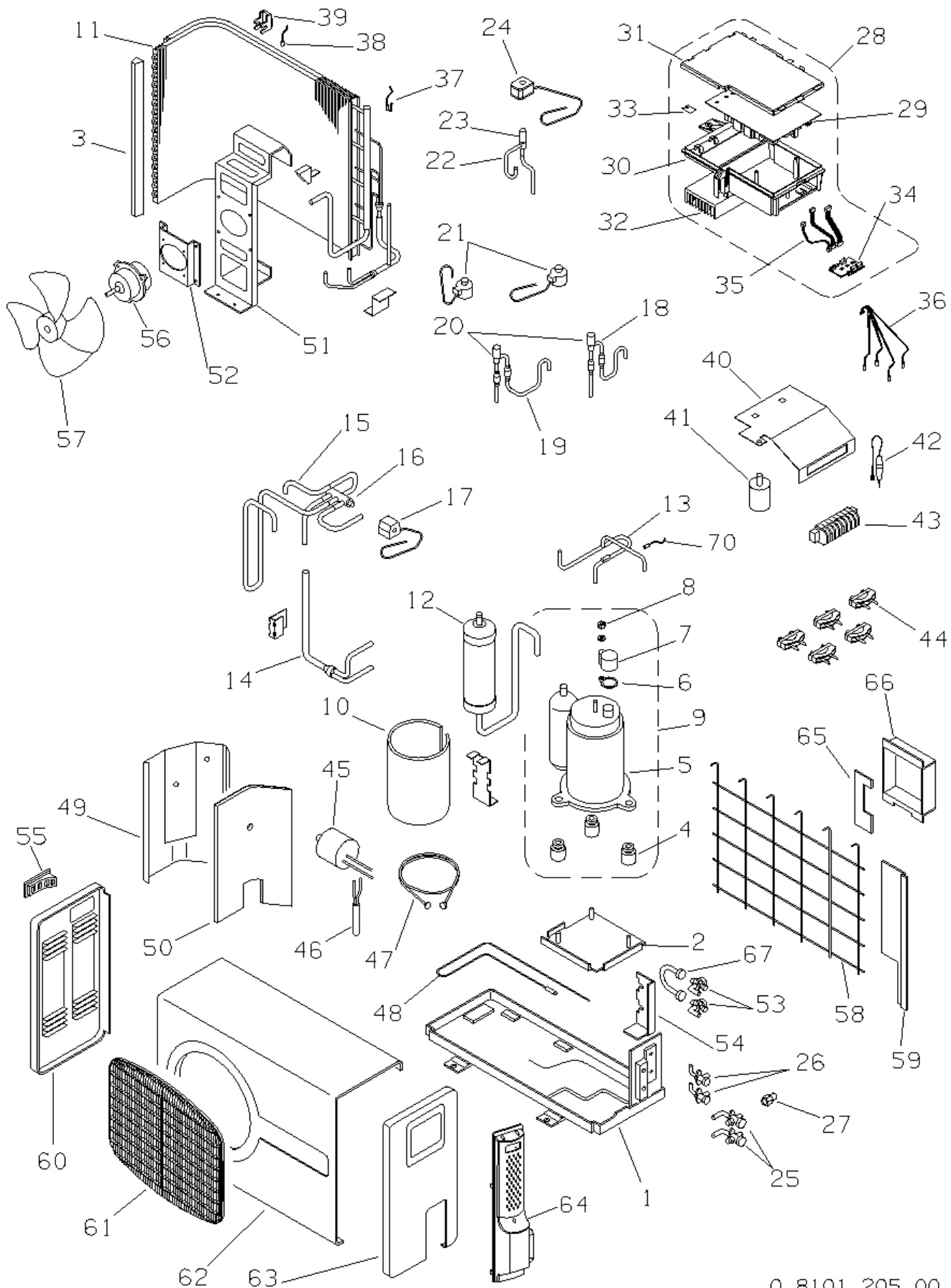


IS24G065



SPARE PARTS

IS18G050

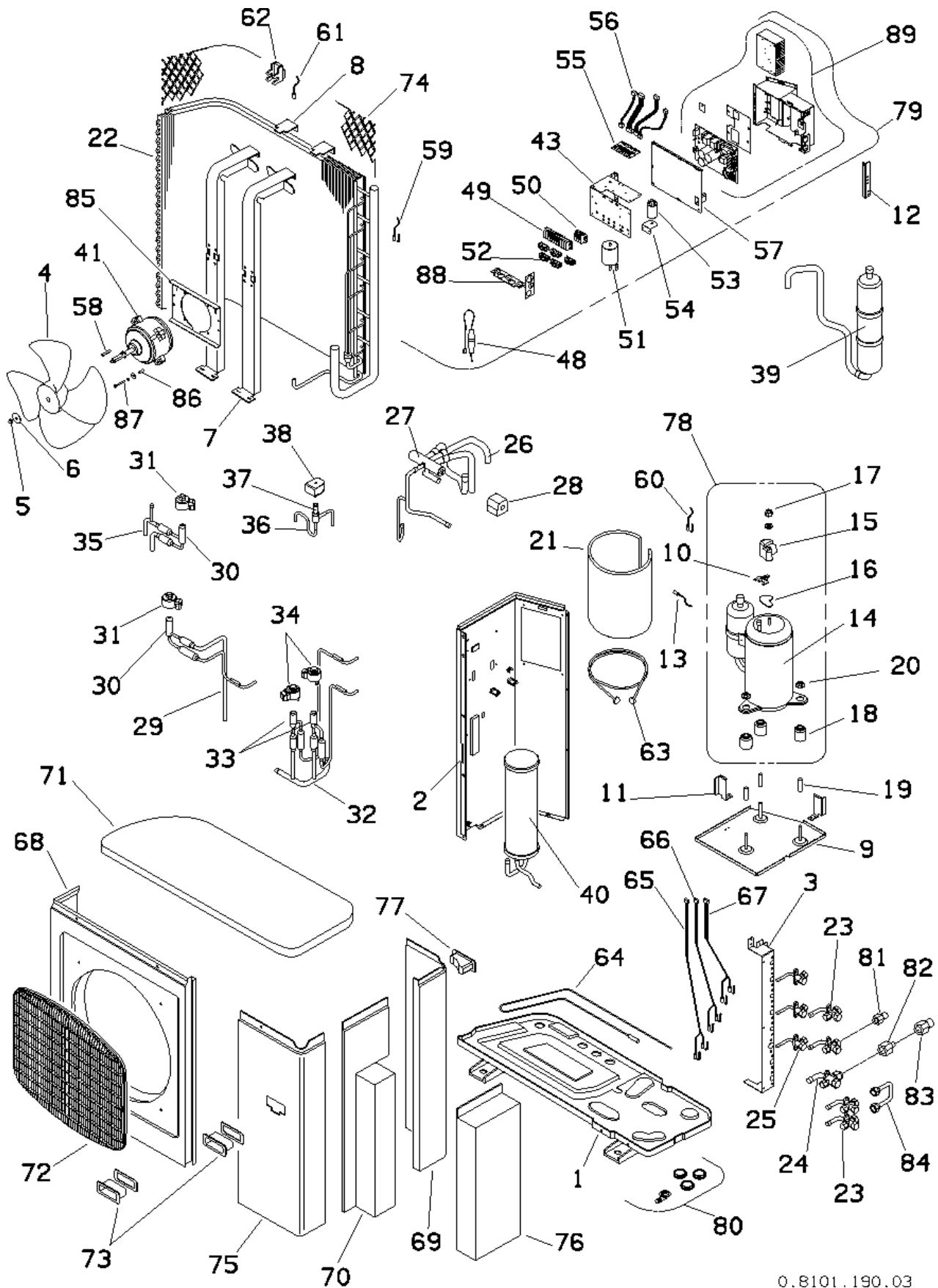


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IS18G050 Spare Parts List			
Item	P/N	Description	Qty
1	-	BOTTOM PANEL ASSY	1
2	-	COMPRESSOR MOUNTING PLATE	1
3	-	INSULATION, COIL RETURN BEND	1
4	-	COMPR. VIBRATION ISOLATOR, RUBBER	3
5	A02105-001	COMPR., IS18G050	1
6	-	COMPRESSOR TERMINAL GASKET	1
7	-	COMPRESSOR TERMINAL COVER	1
8	-	COMPR. TERMINAL CVR NUT AND WSHR	1
9	A02071-G01	COMPRESSOR ASSY (ITEMS 4-8)	1
10	-	COMPR. INSULATION	1
11	-	OUTDOOR COIL ASSY	1
12	-	LIQUID SEPARATOR	1
13	-	TUBE ASSY, COMPR. DISCHARGE	1
14	-	SERVICE VALVE TUBE ASSY	1
15	-	REV VALVE TUBE ASSY	1
16	A02086-002	REVERSING VALVE	1
17	A02314-001	REV. VALVE SOLENOID	1
18	-	EXP. VALVE TUBE ASSY (CIRCUIT 1)	1
19	-	EEV TUBE ASSY, CIRC 2	1
20	A02089-001	EEV, CIRCUIT 1(A), 2(B)	2
21	A02323-002	EEV Coil, CIRC 1(A), 2(B)	2
22	-	DEFROST VALVE TUBE ASSY	1
23	A02091-001	DEFROST VALVE	1
24	A02092-001	DEFROST. VALVE COIL	1
25	-	SERVICE VALVE, 3/8"	2
26	-	SERVICE VALVE, 1/4"	2
27	-	REDUCER, 1/2M-3/8F	1
28	A02165-G01	MAIN PCB ASSY, W/ HEATSINK	1

IS18G050 Spare Parts List			
Item	P/N	Description	Qty
34	A02008-G02	EEV CONTROL BOARD, 2V	1
35	-	EEV PCB CABLES	1
36	A02077-001	REFRIGERANT TEMP. PROBE ASSY	1
37	A02078-001	OCT SENSOR	1
38	A02079-001	OAT SENSOR	1
39	-	OAT SENSOR MOUNT	1
40	-	PANEL, ELECTRICAL	1
41	-	EMI FILTER, MAIN	1
42	-	COMM FUSE HOLDER ASSY	1
43	A02099-001	11P TERMINAL BLOCK	1
44	-	CABLE CLAMP,	5
45	A02080-001	INDUCTOR, 10A	1
46	-	EMI FILTER, SECONDARY	1
47	-	CRANKCASE HEATER, 20W	1
48	-	PAN HEATER, 75W	1
49	A02197-001	PARTITION PANEL	1
50	-	PARTITION PANEL INSULATION	1
51	-	FAN MOTOR BRACKET	1
52	-	FAN MOTOR MOUNTING PLATE	1
53	-	SERVICE VALVE, EMIX	1
54	-	EMIX VALVE SUPPORT BRACKET	1
55	-	HANDLE	1
56	A02081-001	FAN MOTOR	1
57	A02083-003	FAN BLADE	1
58	-	PROTECTIVE GRILLE	1
59	A02189-001	REAR PANEL	1
60	A02198-001	LEFT SIDE PANEL	1
61	-	FAN GUARD	1
62	A02191-003	TOP / FRONT PANEL	1
63	A02198-002	RIGHT SIDE PANEL	1
64	A02193-001	VALVE COVER PANEL	1
65	-	BACK LWR CVR PNL	1
66	-	EMIX PORT COVER	1
67	-	EMIX BRIDGE TUBE ASSY	1
70	A02082-001	CDT SENSOR	1

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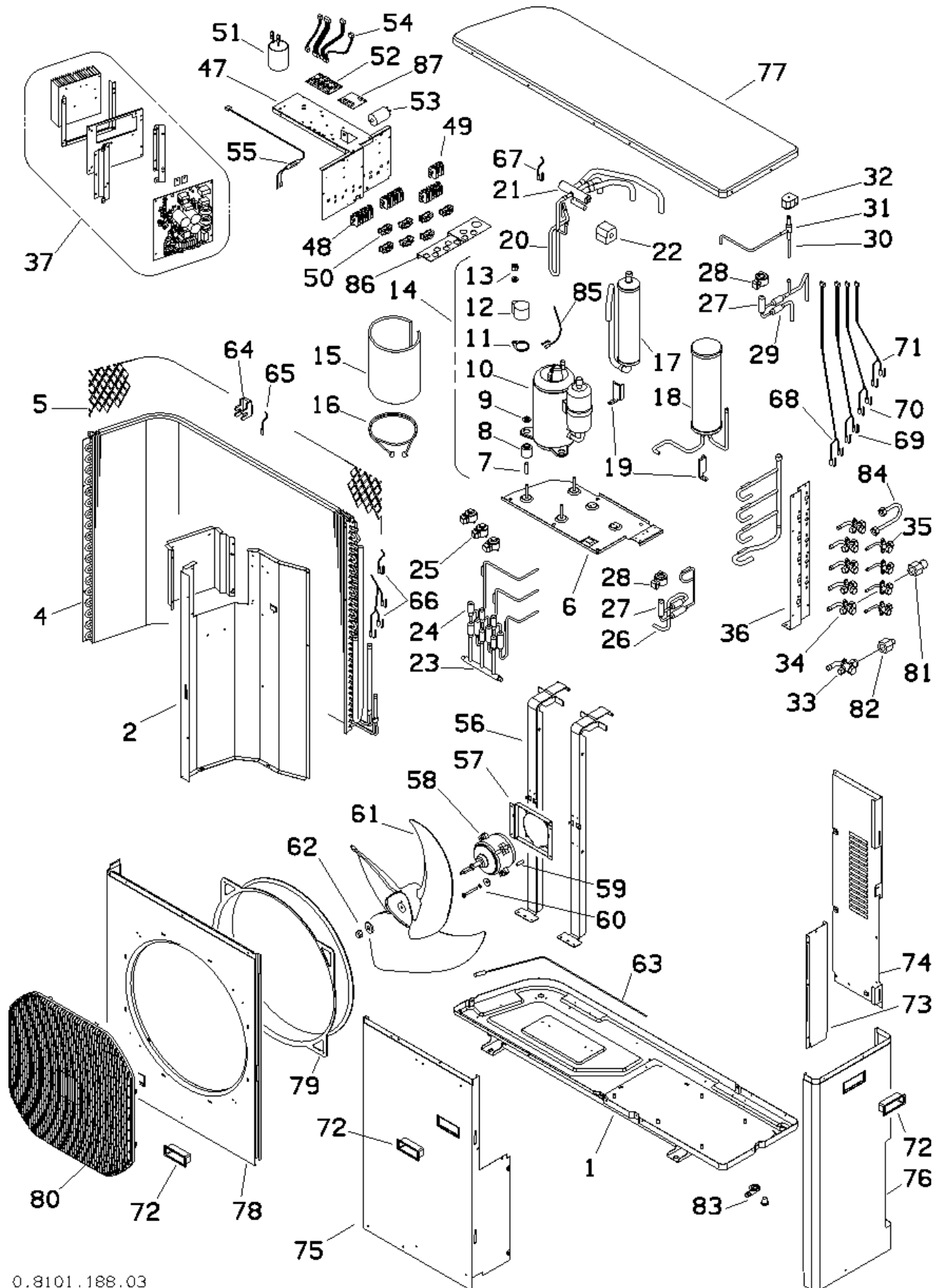


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IS24G065 Spare Parts List			
Item	P/N	Description	Qty
1	-	BOTTOM PANEL ASSY	1
2	A02187-001	PARTITION PANEL ASSY	1
3	-	VALVE SUPPORT PLATE	1
4	A02083-001	FAN BLADE	1
5	-	FAN BLADE RETAINING NUT	1
6	-	FAN BLADE RETAINING WASHER	1
7	-	FAN MOTOR SUPPORT RAILS	2
8	-	HEAT EXCH.MTG PROTECTION BRACKET	2
9	-	COMPRESSOR MOUNTING PLATE	1
10	-	CST SENSOR CLIP	1
11	-	LIQ. SEPARATOR SUPPORT	1
12	-	ELEC. J-BOX SUPPORT	1
13	A02084-001	CDT SENSOR, G065/G080/G110	1
14	A02105-002	COMPRESSOR, G065/G080	1
15	-	COMPR. TERMINAL COVER	1
16	-	COMPR. TERMINAL GASKET	1
17	-	COMPR. TERMINAL COVER NUT / WASHER	1
18	-	VIBRATION ISOLATOR	3
19	-	COMPRESSOR SPACER	3
20	-	COMPR. MOUNTING NUTS	3
21	-	COMPR. INSUL. BLANKET	1
22	-	OUTDOOR COIL ASSY	1
23	-	SERVICE VALVE, 3/8"	2
24	-	SERVICE VALVE, 1/2"	1
25	-	SERVICE VALVE, 1/4"	3
26	-	REV. VALVE TUBE ASSY	1
27	A02086-001	REVERSING VALVE G065/G080/G110	1
28	A02314-002	REVERSING VALVE COIL	1
29	-	EEV TUBE ASSY, CIRC 1(A)	1
30	A02088-001	EEV, CIRCUIT 1(A), BP	2
31	A02323-001	EEV COIL, CIRCUIT 1(A), BP	2
32	-	EEV TUBE ASSY CIRCUIT 2(B), 3(C)	1
33	A02089-001	EEV, CIRCUIT 2(B), 3(C)	2
34	A02323-002	EEV COIL, CIRC 2(B), 3(C)	2
35	-	EEV TUBE ASSY, BP	1
36	-	DEFROST VALVE TUBE ASSY	1
37	A02091-001	DEFROST VALVE	1
38	A02092-001	DEFROST VALVE COIL	1
39	-	LIQUID SEPARATOR	1
40	-	ACCUMULATOR 1.7L 3/8-3/8	1
41	A02093-001	FAN MOTOR G065/G080/G110	1

IS24G065 Spare Parts List			
Item	P/N	Description	Qty
43	-	ELECTRICAL J. BOX	1
48	A02098-G01	COMM FUSE CABLE ASSY	1
49	A02099-001	11P TERMINAL BLOCK	1
50	A02100-001	3P TERMINAL BLOCK	1
51	A02101-001	INDUCTOR, 30KHZ/1.5MH/T90/12A	1
52	-	CABLE CLAMPS	5
53	A02102-001	EMI FILTER 250V/16A	1
54	-	EMI FILTER SUPPORT	1
55	A02008-G01	EEV CONTROL BOARD, 4V	1
56	A02103-001	EEV PCB CABLES, G065/G080/G110	1
57	-	ELECT.J.BOX COVER	1
59	A02078-001	OCT SENSOR	1
60	A02082-001	CDT SENSOR	1
61	A02079-001	OAT SENSOR	1
62	-	OAT SENSOR MOUNT	1
63	-	CRANKCASE HTR, 240V/20W	1
64	A02107-001	PAN HEATER, 75W	1
65	A02108-001	WTT/NTT SENSORS, CIRC 1(A)	1
66	A02109-001	WTT/NTT SENSORS, CIRC 2(B)	1
67	A02110-001	WTT/NTT SENSORS, CIRC 3(C)	1
68	A02196-003	FRONT PANEL WITH NOZZLE	1
69	A02189-002	REAR PANEL	1
70	A02195-003	LATERAL PANEL	1
71	A02191-001	TOP PANEL	1
72	-	FAN GRILLE	1
73	-	FRONT HANDLE	2
74	-	PROTECTIVE NET	1
75	A02192-001	FRONT PANEL	1
76	A02193-002	VALVE COVER PANEL	1
77	-	REAR HANDLE	1
78	A02071-G02	COMPRESSOR ASSY	1
79	A02111-G01	ELECTRICAL J-BOX ASSY	1
80	-	DEFROST DRAIN FITTINGS	1
81	-	VALVE ADAPTER 1/2M-3/8F	1
82	-	VALVE ADAPTER 3/8M-1/2F	1
83	-	VALVE ADAPTER 5/8M-1/2F	1
84	-	EMIX BRIDGE TUBE ASSY	1
85	-	FAN MOTOR MTG. PLATE	1
86	-	FAN MOTOR MOUNT SPACER	4
87	-	FAN MOTOR MOUNT SCREW AND WASHER	4
88	-	CONDUIT ENTRY SUPPORT PLATE	1
89	A02165-G02	MAIN PCB ASSY, W/ HEATSINK	1

IS30G080

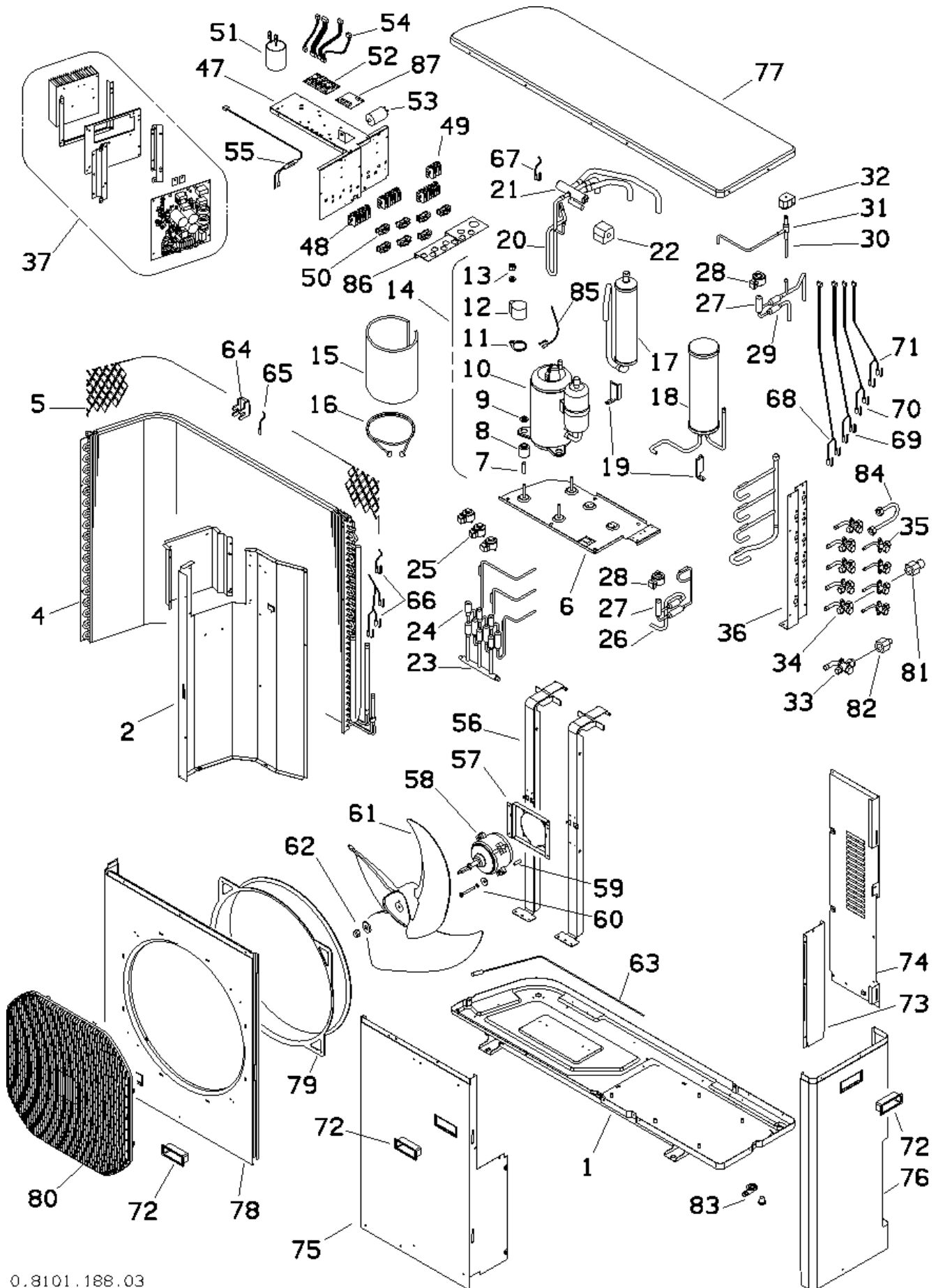


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IS30G080 Spare Parts List			
Item	P/N	Description	Qty
1	-	BOTTOM PANEL ASSY	1
2	A02187-002	PARTITION PANEL ASSY	1
4	-	OUTDOOR COIL ASSY	1
5	-	PROTECTIVE MESH	1
6	-	COMPRESSOR MOUNTING PLATE	1
7	-	COMPR. MTG SPACER	3
8	-	COMPR. VIBRATION ISOLATOR	3
9	-	COMPR. MTG NUT ASSY	3
10	A02105-002	COMPRESSOR, G065/G080	1
11	-	COMPR. TERMINAL GASKET	1
12	-	COMPR. TERMINAL COVER	1
13	-	COMPR. TERMINAL COVER NUT / WASHER	1
14	A02071-G02	COMPRESSOR ASSY	1
15	-	COMPR. INSUL. BLANKET	1
16	-	CRANKCASE HTR 240V/20W	1
17	-	LIQUID SEPARATOR	1
18	-	LIQUID ACCUMULATOR	1
19	-	LIQ. SEPARATOR SUPPORT	1
20	-	REV. VALVE PIPING ASSY	1
21	A02086-001	REVERSING VALVE G065/G080/G110	1
22	A02314-002	REVERSING VALVE COIL	1
23	-	EEV TUBE ASSY, CIRCUITS 2(B), 3(C), 4(D)	1
24	A02089-001	EEV, CIRCUIT 2(B), 3(C), 4(D)	3
25	A02323-002	EEV COIL, CIRCUIT 2(B), 3(C), 4(D)	3
26	-	EEV TUBE ASSY, CIRC 1(A)	1
27	A02088-001	EEV, CIRCUIT 1(A), BP	2
28	A02323-001	EEV COIL, CIRCUIT 1(A), BP	2
29	-	EEV TUBE ASSY, BP	1
30	-	DEFROST VALVE TUBE ASSY	1
31	A02091-001	DEFROST VALVE	1
32	A02092-001	DEFROST VALVE COIL	1
33	-	SERVICE VALVE, 1/2"	1
34	-	SERVICE VALVE, 3/8"	5
35	-	SERVICE VALVE, 1/4"	4
36	-	SERVICE VALVE SUPPORT PLATE	1
37	A02165-G03	MAIN PCB ASSY, W/ HEATSINK	1
47	A02122-001	ELECTRICAL MTG. PANEL	1
48	A02119-001	6P TERMINAL BLOCK	3
49	A02100-001	3P TERMINAL BLOCK	1

IS30G080 Spare Parts List			
Item	P/N	Description	Qty
50	-	CABLE CLAMPS	7
51	A02101-001	INDUCTOR 30KHZ/1.5MH/T90/12A	1
52	A02008-G01	EEV CONTROL BOARD, 4V	1
53	A02102-001	EMI FILTER 250V/16A	1
54	A02103-001	EEV PCB CABLES G065/G080/G110	1
55	A02098-G02	COMM FUSE CABLE ASSY	1
56	-	FAN MOTOR SUPPORT RAILS	2
57	-	FAN MOTOR MTG. PLATE	1
58	A02093-001	FAN MOTOR G065/G080/G110	1
59	-	FAN MOTOR MOUNT SPACER	4
60	-	FAN MOTOR MOUNT SCREW AND WASHER	4
61	A02083-002	FAN BLADE G080/G110	1
62	-	FAN BLADE RETAINING NUT AND WASHER	1
63	A02107-001	PAN HEATER, 75W	1
64	-	OAT SENSOR MOUNT	1
65	A02079-001	OAT SENSOR	1
66	A02078-002	OCT SENSORS	1
67	A02082-001	CDT SENSOR	1
68	A02069-001	WTT/NTT SENSORS, CIRC 1(A)	1
69	A02118-001	WTT/NTT SENSORS, CIRC 2(B)	1
70	A02090-001	WTT/NTT SENSORS, CIRC 3(C)	1
71	A02104-001	WTT/NTT SENSORS, CIRC 4(D)	1
72	-	FRONT HANDLE	2
73	A02194-001	LOWER LATERAL PANEL	1
74	A02189-003	REAR PANEL	1
75	A02192-002	FRONT PANEL	1
76	A02195-001	LATERAL COVER PANEL	1
77	A02191-002	TOP PANEL	1
78	A02196-001	FRONT PANEL WITH NOZZLE	1
79	-	FAN INLET SHROUD	1
80	-	FAN GRILLE	1
81	-	VALVE ADAPTER 1/2M-3/8F	1
82	-	VALVE ADAPTER 3/8M-1/2F	1
83	-	DEFROST DRAIN FITTING	1
84	-	EMIX BRIDGE TUBE	1
85	A02084-001	CST SENSOR	1
86	-	CONDUIT ENTRY SUPPORT PLATE	1

IS36G110



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IS36G110 Spare Parts List			
Item	P/N	Description	Qty
1	-	BOTTOM PANEL ASSY	1
2	A02187-003	INTERIOR PARTITION PANEL	1
4	-	OUTDOOR COIL ASSY	1
5	-	PROTECTIVE MESH	1
6		COMPRESSOR MOUNTING PLATE	1
7	-	COMPR. MTG SPACER	3
8	-	COMPR. VIBRATION ISOLATOR	3
9	-	COMPR. MTG NUT ASSY	3
10	A02105-003	COMPRESSOR	1
11	-	COMPR. TERMINAL GASKET	1
12	-	COMPR. TERMINAL COVER	1
13	-	COMPR. TERMINAL COVER NUT / WASHER	1
14	A02071-G03	COMPRESSOR ASSY	1
15	-	COMPR. INSUL. BLANKET	1
16	-	CRANKCASE HTR 240V/20W	1
17	-	LIQUID SEPARATOR	1
18	-	LIQUID ACCUMULATOR	1
19	-	LIQ. SEPARATOR SUPPORT	1
20	-	REV. VALVE PIPING ASSY	1
21	A02086-001	REVERSING VALVE G065/G080/G110	1
22	A02314-002	REVERSING VALVE COIL	1
23	-	EEV TUBE ASSY, CIRCUITS 2(B), 3(C), 4(D)	1
24	A02089-001	EEV, CIRCUIT 2(B), 3(C), 4(D)	1
25	A02323-002	EEV COIL, CIRCUIT 2(B), 3(C), 4(D)	1
26	-	EEV TUBE ASSY, CIRC 1(A)	1
27	A02088-001	EEV, CIRCUIT 1(A), BP	2
28	A02323-001	EEV COIL, CIRCUIT 1(A), BP	2
29	-	EEV TUBE ASSY, BP	1
30	-	DEFROST VALVE TUBE ASSY	1
31	A02091-001	DEFROST VALVE	1
32	A02092-001	DEFROST VALVE COIL	1
33	-	SERVICE VALVE, 1/2"	1
34	-	SERVICE VALVE, 3/8"	5
35	-	SERVICE VALVE, 1/4"	4
36	-	SERVICE VALVE SUPPORT PLATE	1
37	A02165-G03	MAIN PCB ASSY, W/ HEATSINK	1
47	A02122-001	ELECTRICAL MTG. PANEL	1
48	A02119-001	6P TERMINAL BLOCK	3
49	A02100-001	3P TERMINAL BLOCK	1
50	-	CABLE CLAMPS	7

IS36G110 Spare Parts List			
Item	P/N	Description	Qty
51	A02115-001	INDUCTOR 30KHZ/1.5MH/22A	1
52	A02008-G01	EEV CONTROL BOARD, 4V	1
53	A02102-002	EMI FILTER	1
54	A02103-001	EEV PCB CABLES G065/G080/G110	1
55	A02098-G02	COMM FUSE CABLE ASSY	1
56	-	FAN MOTOR SUPPORT RAILS	2
57	-	FAN MOTOR MTG. PLATE	1
58	A02093-001	FAN MOTOR G065/G080/G110	1
59	-	FAN MOTOR MOUNT SPACER	4
60	-	FAN MOTOR MOUNT SCREW AND WASHER	4
61	A02083-002	FAN BLADE G080/G110	1
62	-	FAN BLADE RETAINING NUT AND WASHER	1
63	A02107-001	PAN HEATER, 75W	1
64	-	OAT SENSOR MOUNT	1
65	A02079-001	OAT SENSOR	1
66	A02078-002	OCT SENSORS	1
67	A02117-001	CDT SENSOR	1
68	A02069-001	WTT/NTT SENSORS, CIRC 1(A)	1
69	A02118-001	WTT/NTT SENSORS, CIRC 2(B)	1
70	A02090-001	WTT/NTT SENSORS, CIRC 3(C)	1
71	A02104-001	WTT/NTT SENSORS, CIRC 4(D)	1
72	-	FRONT HANDLE	2
73	A02194-001	LOWER LATERAL PANEL	1
74	A02189-004	REAR PANEL	1
75	A02192-003	FRONT PANEL	1
76	A02195-002	LATERAL COVER PANEL	1
77	A02191-002	TOP PANEL	1
78	A02196-002	FRONT PANEL WITH NOZZLE	1
79	-	FAN INLET SHROUD	1
80	-	FAN GRILLE	1
81	-	VALVE ADAPTER 1/2M-3/8F	1
82	-	VALVE ADAPTER 3/8M-1/2F	1
83	-	DEFROST DRAIN FITTING	1
84	-	EMIX BRIDGE TUBE	1
85	A02084-001	CST SENSOR	1
86	-	CONDUIT ENTRY SUPPORT PLATE	1

Replacement Fuses

Fuse Location	Fuse Type	Fuse Rating	Fuse Dimensions	Unico Part Number
IS24G050 Main PCB	Fast Blow	500VAC, 10A	1/4" x 1.25" (6.3mm x 32mm)	A02221-001
IS24G065 Main PCB	Fast Blow	500VAC, 12.5A	1/4" x 1.25" (6.3mm x 32mm)	A02221-002
IS30G080 Main PCB	Fast Blow	500VAC, 16A	1/4" x 1.25" (6.3mm x 32mm)	A02221-003
IS36G110 Main PCB	Fast Blow	500VAC, 25A	1/4" x 1.25" (6.3mm x 32mm)	A02221-004
Main Power Fuse, Indoor B	Fast Blow	250VAC, 3.15A	0.201" x 0.787" (5mm x 20mm)	A01971-001
Communication Fuse, ODU	Fast Blow	250VAC, 100mA	0.201" x 0.787 5mm x 20mm	A01971-002
Communication Fuse, IndoorB				
Thermostat Board/Relay Board	Fast Blow	32VDC, 2A	0.429" L x 0.150" W x 0.346" H	A01412-001

TROUBLESHOOTING

iSeries Service Logger

If a fault cannot be identified from the LED codes, the next step is to connect the iSeries Service Logger to the system. This requires a serial-to-RS485 adapter and length of shielded cable. The Unico part number for this kit is A02131-K01, and it is shipped with every iSeries outdoor unit. All required firmware and software can be downloaded from tech.unicosystem.com. Also required is a PC or tablet with Windows XP or higher.

The iSeries Service Logger provides information on system temperatures, airflow, and setpoints, among other variables, and is best suited for more complex issues, or as a useful checkout tool during startup. If an solution cannot be identified by using the LED codes, or by viewing the information visible onscreen when using the logger, it will be necessary to send the complete log to our customer service department for review. See *Bulletin 30-127 – iSeries Serial Programming & Diagnostics* for more information on operating the diagnostic logger.

Check for Upgrades

The iSeries control system is essentially a computer with software. There may be updated software available for your system. The updates will include new features or fixes. Before replacing components, check with our customer service department to determine if your equipment requires a software upgrade. The version of the firmware will either be shown on the control board or will be indicated by the manufactured date code. To upgrade the firmware, use the iSeries Communication Tool Kit, Unico part number A02131-K01. It requires a PC with Microsoft Windows operating system.

Check refrigerant pressures.

It is always possible to check the high side pressure using the access port on the eMix connection. Use this service port for either cooling or heating. It is always the compressor discharge.

The service ports on the other circuits are vapor lines to the indoor unit. In heating, it is the same as the compressor discharge. In cooling it is the suction pressure.

Defrost

In very cold climates, it may be necessary to disable the maximum efficiency defrost algorithm. This algorithm uses hot gas bypass to heat the outdoor coil and remove ice. It increases efficiency because it allows the indoor unit to continue to provide heat; however, it is may not be aggressive enough in some climates. To disable this feature and force the system to always use reverse-cycle defrost, remove Jumper J2 on the main control board as shown below.

In some climates the protective netting on the entrance to the coil can plug up with ice and snow. This netting can be removed without harm to the system. See TechNote 133.



LED CODES

LED codes are the first place to start when troubleshooting an iSeries system. These codes indicate both normal and abnormal behavior. Both the indoor and outdoor unit display error codes when the unit is experiencing a fault. The tables below show the LED codes that will appear on the indoor unit (either on the wall-mount unit, IR receiver, or on the MMI board) and the outdoor unit.

MMI Board or IR Receiver LED Codes				
Error Code Priority*	Meaning	LEDs		
		RED (D1 or LD2)	BLUE (DL2 or LD3)	GREEN (DL1 or LD1)
-	(Normal Operation) Unit is stopped.	●	○	○
-	(Normal Operation) Unit is stopped, indoor units are ready to run.	●	○	●
-	(Normal Operation) Unit is running.	○	○	●
-	Airflow Indicator Short Flash = 50CFM. Medium Flash = 100CFM. Long flash = RPM Limit reached.	○	⊙	●
0*	Mode of Operation Conflict	⊙	⊙	●
1	Unit is being programmed, or firmware is faulty	●	●	●
2	Fault on outdoor unit (check outdoor unit LEDs to identify error code)	⊙	○	○
3	Float switch alarm	○	○	⊙
4	Communication error with outdoor unit	⊙	⊙	⊙
5	ICT sensor damaged or disconnected	○	⊙	⊙
6	RAT sensor damaged or disconnected	⊙	○	⊙
7	Communication error with the blower or blower damaged	⊙	⊙	○
8	Invalid Indoor-Outdoor Unit Combination	○	⊙	○
9	Manual Heat is Active	⊙	●	●
10	Refrigerant Port Auto-Addressing in Progress	⊙/○	○	○/⊙

* Error #0 = Lowest priority. If more than one error is present, only the highest priority error is shown.

● = Solid
⊙ = Blinking
○ = Off

Outdoor Unit LED Codes						
Error Code Priority*	Meaning	LEDs				
		DL1	DL2	DL3	DL4	DL5
-	(Normal Operation) Outdoor Unit (ODU) has power	●	○	○	○	○
-	(Normal Operation) Outdoor Unit (ODU) has power. Indoor units ready to run.	●	●	○	○	○
-	(Factory Test Mode) (DL1 blinks) Remove jumper JP1 on ODU Main PCB to resume normal operation	⦿	●	○	○	○
0	Unit is being programmed, or Firmware is faulty	●	●	●	●	●
1	Communication fault with indoor unit(s)	○	○	⦿	⦿	⦿
2	Indoor Unit(s) fault	○	⦿	⦿	⦿	○
3	PFC (Power factor controller) fault	⦿	⦿	⦿	○	○
4	Outdoor fan power module temperature too high	○	○	○	⦿	⦿
5	Outdoor fan overcurrent	○	○	⦿	⦿	○
6	Compressor power module temperature too high	○	⦿	⦿	○	○
7	Compressor current too high	⦿	⦿	○	○	○
8	OCT (Outdoor Coil Temperature) probe sensor fault	○	○	○	○	⦿
9	OAT (Outdoor Air Temperature) probe sensor fault	○	○	○	⦿	○
10	CDT (Compressor Discharge Temperature) probe sensor fault	○	○	⦿	○	○
11	WTT A probe sensor fault	○	⦿	○	○	○
12	NTT A probe sensor fault	⦿	○	⦿	○	○
13	WTT B probe sensor fault	○	⦿	○	⦿	○
14	NTT B probe sensor fault	○	○	⦿	○	⦿
15	WTT C probe sensor fault	⦿	⦿	○	⦿	○
16	NTT C probe sensor fault	⦿	⦿	○	○	⦿
17	WTT D probe sensor fault	⦿	○	⦿	⦿	○
18	NTT D probe sensor fault	⦿	○	○	⦿	⦿
19	CTS (Compressor Top Shell) probe sensor fault	⦿	⦿	⦿	○	⦿
100	Invalid Indoor-Outdoor Unit Combination	⦿	○	⦿	○	⦿

* Error #0 = Lowest priority. If more than one error is present, only the highest priority error is shown.

WTT = Wide Tube Temperature = Suction line in cooling mode.

NTT = Narrow Tube Temperature = Liquid line in cooling mode.

● = Solid
⦿ = Blinking
○ = Off

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