

Haier

Multi-Zone

Ductless Multi-Split Heat Pumps

Model Lineup:

Outdoor Models

Appearances vary by model



2Q18FF2BEA
3Q24FF2BEA
4Q36FF2BEA

Indoor Models

Appearances vary by model



Wall Mount - Highwall

QS07WB2BEA **QS09WP2BEA**
QS09WB2BEA **QS12WP2BEA**
QS12WB2BEA **QS18WP2BEA**
QS15WB2BEA **QS24WP2BEA**
QS18WB2BEA
QS24WB2BEA



2Q20RT2BEA
3Q24RT2BEA
4Q36RT2BEA
5Q42RT2BEA



Cassette

US09CB2BEA
US12CB2BEA
US18CB2BEA
US24LB2BEA



Mid-Static Ducted

US07MB2BEA
US09MB2BEA
US12MB2BEA
US18MB2BEA
US24MB2BEA



Console

US09FB2BEA
US12FB2BEA
US18FB2BEA

- Please read this manual before using the heat pump.
- Keep this user manual for future reference.

Before troubleshooting or servicing equipment, review equipment installation guides and confirm ALL installation requirements & specifications have been met. Including, but not limited to: wiring, clearance, ducting (where applicable), power, and line set requirements. Correct any installation issues before continuing.



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AIR&WATER
SOLUTIONS

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Revision History

10-16-25: Edition release.

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FOLLOW ALL WARNINGS, CAUTIONS, AND PRECAUTIONS BELOW, AND INDUSTRY BEST SAFETY PRACTICES AND STANDARDS. FAILURE TO DO SO MAY RESULT IN EQUIPMENT DAMAGE OR FAILURE, AND SERIOUS PERSONAL INJURY OR DEATH.

WARNINGS

Service should be performed by the dealer or another professional.

Improper service may cause water leakage, electrical shock, or fire.

Use only the supplied or specified service parts.

Use of other parts may cause the unit to come loose, water leakage, electrical shock, or fire.

The heat pump must be installed on a solid base that can support the unit's weight.

An inadequate base or incomplete installation may cause injury in the event the unit falls off the base.

Electrical work should be carried out in accordance with the manual and national/local electrical wiring codes and rules of practice.

Insufficient capacity or incomplete electrical work may cause electrical shock or fire.

A dedicated power circuit must be used. The power supply should NEVER be shared by another appliance.

Wiring cable must be long enough to cover the entire distance with no splices.

Do not use an extension cord. Do not put other loads on the power supply, use a dedicated power circuit.

Failure to do so may cause abnormal heat, electric shock or fire.

Only the specified wire types may be used for electrical connections between the indoor and outdoor units.

Firmly clamp the interconnecting wires so they receive no external stresses. Incomplete connections or clamping may cause terminal overheating or fire.

Wiring must not put undue stress or tension on the electrical covers or panels.

Install covers over the wires. Incomplete cover installation may cause terminal overheating, electrical shock, or fire.

If any refrigerant has leaked out during service work, ventilate the room.

The refrigerant produces a toxic gas if exposed to flame.

After all service is complete, check for and repair any system refrigerant leaks.

The refrigerant produces a toxic gas if exposed to flames.

When servicing or relocating the system, keep the refrigerant circuit free from substances other than the specified refrigerant (R454B), such as air or moisture

The presence of air or other foreign substance in the refrigerant circuit causes an abnormal pressure rise or rupture, resulting in injury.

During pump-down, stop the compressor before removing the refrigerant piping.

If the compressor is still running, and the stop valve is open during pump-down, air will be sucked into the system while the compressor is running. This will cause abnormal pressure and noncondensables added to the system.

Unit must NOT be grounded to a utility pipe, arrester, or telephone line ground.

An complete ground may cause electrical shock, or fire. A high surge current from lightning or other sources may cause damage to the heat pump.

CAUTIONS

The heat pump must not be installed in a place where there is danger of exposure to flammable gas.

If the gas builds up around the unit, it may catch fire.

Drain piping must comply with installation guidelines.

Inadequate piping may cause flooding.

Tighten flare nuts according to the specified torque using a torque wrench.

If flare nuts are overtightened, they may eventually crack and cause refrigerant leakage.

Ensure proper clearances around unit per installation guidelines.

SPECIFICATIONS

ENGLISH

NOTE

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Visit GEAppliancesAirandWater.com to access current specification tables online.



2 Zones



3 Zones



4 Zones

		2Q18FF2BEA	3Q24FF2BEA	4Q36FF2BEA
Cooling Non-Ducted	Rated Capacity Btu/hr	18,000	24,000	35,000
	Capacity Range Btu/hr	4,000-19,000	4,000-25,000	6,500-36,000
	SEER2	22.5	24.0	20.0
	EER2	12.0	12.0	10.0
Cooling Ducted	Rated Capacity Btu/hr	17,000	24,000	33,400
	Capacity Range Btu/hr	4,000-18,000	4,000-25,000	6,500-34,000
	SEER2	18.8	17.2	16.5
	EER2	10.8	10.5	8.8
Heating Non-Ducted	Rated Heating Capacity 47°F Btu/hr	21,000	27,000	36,000
	Capacity Range Btu/hr	4,000-22,000	4,000-28,000	6,500-37,000
	HSPF2 (IV)	10.5	10.2	10.0
	Rated Heating Capacity 5°F Btu/hr	16,600	17,600	23,000
	Heating Capacity at 5°F / Capacity at 47°F	79.0%	65.2%	63.9%
	COP @ 5°F / COP @ 47°F	1.8 / 3.6	1.8 / 3.9	1.8 / 3.2
Heating Ducted	Rated Heating Capacity 47°F Btu/hr	19,000	25,000	35,600
	Capacity Range Btu/hr	4,000-20,000	4,000-26,000	6,500-36,000
	HSPF2 (IV)	9.5	9.5	9.3
	Rated Heating Capacity 5°F Btu/hr	15,000	17,000	21,000
	Heating Capacity at 5°F / Capacity at 47°F	77.0%	67.0%	60.0%
	COP @ 5°F / COP @ 47°F	1.8 / 3.7	1.8 / 3.6	1.8 / 3.3
Operating Range	Cooling °F (°C)	14~115°F (-10~46°C)	14~115°F (-10~46°C)	14~115°F (-10~46°C)
	Heating °F (°C)	-4~75°F (-20~24°C)	-4~75°F (-20~24°C)	-4~75°F (-20~24°C)
Power Supply	Voltage, Cycle, Phase V/Hz/-	208-230/60/1	208-230/60/1	208-230/60/1
	Wire Size Between IDU and ODU	14/4 AWG Stranded for L1, L2, C, G between ODU and each IDU; and 16/2 AWG Stranded Shielded for H1, H2 between ODU and nearest IDU	14/4 AWG Stranded for L1, L2, C, G between ODU and each IDU; and 16/2 AWG Stranded Shielded for H1, H2 between ODU and nearest IDU	14/4 AWG Stranded for L1, L2, C, G between ODU and each IDU; and 16/2 AWG Stranded Shielded for H1, H2 between ODU and nearest IDU
	Maximum Fuse Size A	25	25	30
	Minimum Circuit Amp A	16	18	22
Outdoor Unit	Compressor Type	DC Inverter Rotary	DC Inverter Rotary	DC Inverter Rotary
	Outdoor Fan Speed RPM	200~700	200~700	250~780
	Outdoor Noise Level dB	52	53	58
	Dimension: Height in (mm)	27 9/16 (700)	27 9/16 (700)	30 1/8 (765)
	Dimension: Width in (mm)	36 (915)	36 (915)	37 3/16 (945)
	Dimension: Depth in (mm)	14 1/2 (368)	14 1/2 (368)	15 13/16 (402)
	Weight (Net/Ship) - lbs (kg)	112/130 (51/59)	119/137 (54/62)	134/152 (61/69)
	Basepan Heater	No	No	No
Refrigerant Lines	Refrigerant	R454B	R454B	R454B
	Connections	Flare	Flare	Flare
	Liquid O.D. in	1/4 1/4	1/4 1/4 1/4	1/4 1/4 1/4 1/4
	Suction O.D. in	3/8 3/8	3/8 3/8 3/8	3/8 3/8 3/8 1/2
	Factory Charge Oz	53	60	81
	Maximum Line Length Ft / m	98/30	197/60	230/70
	Maximum Height Ft / m	50/15	50/15	50/15
	Minimum Line Length for Each Individual Indoor Unit Ft / m	10/3	10/3	10/3
	Maximum Line Length for Each Individual Indoor Unit Ft / m	65/20	82/25	82/25
	Maximum Line Length without Additional Charge Ft / m	66/20	100/30	131/40

SPECIFICATIONS

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2 Zones



3 Zones

4 Zones

5 Zones



		2Q20RT2BEA	3Q24RT2BEA	4Q36RT2BEA	5Q42RT2BEA
Cooling Non-Ducted	Rated Capacity Btu/hr	18,000	24,000	36,000	42,000
	Capacity Range Btu/hr	4,000-19,000	4,000-25,000	6,500-36,500	6,500-42,500
	SEER2	20.6	23.0	20.5	20.5
	EER2	12.3	12.2	11.0	10.5
Cooling Ducted	Rated Capacity Btu/hr	17,000	24,000	35,000	42,000
	Capacity Range Btu/hr	4,000-18,000	4,000-25,000	6,500-35,500	6,500-42,500
	SEER2	17.6	17.2	17.4	17.4
	EER2	10.8	10.5	10.2	10.2
Heating Non-Ducted	Rated Heating Capacity 47°F Btu/hr	22,000	25,000	36,000	42,500
	Capacity Range Btu/hr	4,000-23,000	4,000-26,000	6,500-37,000	6,500-43,500
	HSPF2 (IV)	10.5	10.5	10.0	9.5
	Rated Heating Capacity 5°F Btu/hr	20,000	22,800	34,000	35,000
	Heating Capacity at 5°F / Capacity at 47°F	91%	91%	94%	81%
	COP @ 5°F / COP @ 47°F	1.8 / 3.7	1.8 / 3.6	1.8 / 3.7	1.8 / 3.6
Heating Ducted	Rated Heating Capacity 47°F Btu/hr	22,000	26,000	35,000	42,500
	Capacity Range Btu/hr	4,000-23,000	4,000-27,000	6,500-36,000	6,500-43,500
	HSPF2 (IV)	10.5	10.0	10.0	9.5
	Rated Heating Capacity 5°F Btu/hr	20,000	22,000	30,000	35,000
	Heating Capacity at 5°F / Capacity at 47°F	90%	85%	84%	83%
	COP @ 5°F / COP @ 47°F	1.8 / 3.6	1.8 / 3.5	1.8 / 3.9	1.8 / 3.5
Operating Range	Cooling °F (°C)	14~115°F (-10~46°C)	14~115°F (-10~46°C)	14~115°F (-10~46°C)	14~115°F (-10~46°C)
	Heating °F (°C)	-22~75°F (-30~24°C)	-22~75°F (-30~24°C)	-22~75°F (-30~24°C)	-22~75°F (-30~24°C)
Power Supply	Voltage, Cycle, Phase V/Hz/-	208-230/60/1	208-230/60/1	208-230/60/1	208-230/60/1
	Wire Size Between IDU and ODU	14/4 AWG Stranded for L1, L2, C, G between ODU and each IDU; and 16/2 AWG Stranded Shielded for H1, H2 between ODU and nearest IDU	14/4 AWG Stranded for L1, L2, C, G between ODU and each IDU; and 16/2 AWG Stranded Shielded for H1, H2 between ODU and nearest IDU	14/4 AWG Stranded for L1, L2, C, G between ODU and each IDU; and 16/2 AWG Stranded Shielded for H1, H2 between ODU and nearest IDU	14/4 AWG Stranded for L1, L2, C, G between ODU and each IDU; and 16/2 AWG Stranded Shielded for H1, H2 between ODU and nearest IDU
	Maximum Fuse Size A	30	30	40	40
	Minimum Circuit Amp A	20	21	35	36
Outdoor Unit	Compressor Type	DC Inverter Rotary	DC Inverter Rotary	DC Inverter Rotary	DC Inverter Rotary
	Outdoor Fan Speed RPM	250~780	250~780	250~650	250~650
	Outdoor Noise Level dB	57	57	60	62
	Dimension: Height in (mm)	30 1/8 (765)	30 1/8 (765)	33 1/16 (840)	33 1/16 (840)
	Dimension: Width in (mm)	37 3/16 (945)	37 3/16 (945)	41 3/4 (1060)	41 3/4 (1060)
	Dimension: Depth in (mm)	15 13/16 (402)	15 13/16 (402)	15 13/16 (402)	15 13/16 (402)
	Weight (Net/Ship) - lbs (kg)	130/148 (59/67)	132/150 (60/68)	198/243 (90/110)	201/245 (91/111)
	Basepan Heater	Yes	Yes	Yes	Yes
Refrigerant Lines	Refrigerant	R454B	R454B	R454B	R454B
	Connections	Flare	Flare	Flare	Flare
	Liquid O.D. in	1/4 1/4	1/4 1/4 1/4	1/4 1/4 1/4 1/4	1/4 1/4 1/4 1/4 1/4
	Suction O.D. in	3/8 3/8	3/8 3/8 3/8	3/8 3/8 3/8 1/2	3/8 3/8 3/8 1/2 1/2
	Factory Charge Oz	60	71	113	123
	Maximum Line Length Ft / m	164/50	197/60	230/70	262/80
	Maximum Height Ft / m	50/15	50/15	50/15	50/15
	Minimum Line Length for Each Individual Indoor Unit Ft / m	10/3	10/3	10/3	10/3
	Maximum Line Length for Each Individual Indoor Unit Ft / m	82/25	82/25	82/25	82/25
	Maximum Line Length Without Additional Charge Ft / m	66/20	100/30	131/40	164/50

SPECIFICATIONS

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Standard Highwall

	QS07WB2BEA	QS09WB2BEA	QS12WB2BEA	QS15WB2BEA	QS18WB2BEA	QS24WB2BEA
Rated Capacity Btu/hr	7,000	9,000	12,000	15,000	18,000	24,000
Voltage, Cycle, Phase V/Hz/Phase	208-230/60/1	208-230/60/1	208-230/60/1	208-230/60/1	208-230/60/1	208-230/60/1
Fan Speed Stages	5 + Auto	5 + Auto	5 + Auto	5 + Auto	5 + Auto	5 + Auto
Motor Speed RPM: Cooling (Turbo/High/Med/Low/Quiet)	1250/1050/950/850/750	1250/1050/950/850/750	1250/1100/1000/900/750	1400/1350/1100/850/610	1250/1150/1050/950/800	1300/1200/1050/900/750
Motor Speed RPM: Heating (Turbo/High/Med/Low/Quiet)	1200/1020/895/770/700	1200/1020/895/770/700	1200/1020/920/820/700	1400/1350/1200/1050/610	1250/1150/1025/900/750	1300/1200/1050/900/750
Airflow CFM: Cooling (Turbo/High/Med/Low/Quiet)	360/290/260/230/210	360/290/260/230/210	360/300/272/240/210	410/370/280/210/170	570/520/480/420/330	800/730/630/535/440
Airflow CFM: Heating (Turbo/High/Med/Low/Quiet)	350/290/250/220/200	350/290/250/220/200	350/290/260/230/200	420/390/350/310/180	570/520/450/380/310	800/730/630/535/440
Indoor Sound Level dB: Cooling (Turbo/High/Med/Low/Quiet)	44/38/35/32/27	44/38/35/32/27	44/39/36/33/27	46/45/40/33/26	50/46/44/40/35	54/50/47/44/38
Indoor Sound Level dB: Heating (Turbo/High/Med/Low/Quiet)	42/36/32/28/26	42/36/32/28/26	42/36/32/29/26	44/43/40/37/23	48/46/41/38/33	54/50/47/44/38
Auto Up-Down Louver	Yes	Yes	Yes	Yes	Yes	Yes
Auto Left-Right Louver	No	No	No	No	No	No
Dimension: H x W x D in (mm)	11 7/8 x 34 1/4 x 7 3/4 (301 x 870 x 196)	11 7/8 x 34 1/4 x 7 3/4 (301 x 870 x 196)	11 7/8 x 34 1/4 x 7 3/4 (301 x 870 x 196)	12 1/4 x 36 1/8 x 8 3/8 (312 x 918 x 213)	12 7/8 x 39 3/8 x 8 3/4 (327 x 999 x 223)	13 1/2 x 44 1/2 x 9 1/8 (343 x 1129 x 232)
Weight (Net/Ship) - lbs (kg)	21.62/26.7 (9.8/12.1)	21.84/26.92 (9.9/12.2)	21.84/26.92 (9.9/12.2)	24.49/30.45 (11.1/13.8)	27.8/34.64 (12.6/15.7)	34.86/43.03 (15.8/19.5)
Liquid O.D. in	1/4	1/4	1/4	1/4	1/4	1/4
Suction O.D. in	3/8	3/8	3/8	3/8	1/2	1/2
Drain Pipe Size O.D. in	5/8	5/8	5/8	5/8	5/8	5/8
WiFi*	Built-in	Built-in	Built-in	Built-in	Built-in	Built-in
Factory-Installed Refrigerant Detection Sensor (RDS)	No	No	No	No	No	No
Refrigerant Detection Sensor (RDS) Compatible	Yes (UALS01A, sold separately)	Yes (UALS01A, sold separately)	Yes (UALS01A, sold separately)	Yes (UALS01A, sold separately)	Yes (UALS01A, sold separately)	Yes (UALS01A, sold separately)



Premium Highwall

	QS09WP2BEA	QS12WP2BEA	QS18WP2BEA	QS24WP2BEA
Rated Capacity Btu/hr	9,000	12,000	18,000	24,000
Voltage, Cycle, Phase V/Hz/Phase	208-230/60/1	208-230/60/1	208-230/60/1	208-230/60/1
Fan Speed Stages	5 + Auto	5 + Auto	5 + Auto	5 + Auto
Motor Speed RPM: Cooling (Turbo/High/Med/Low/Quiet)	1200/1100/875/650/610	1300/1250/1050/850/610	1300/1250/1050/850/800	1300/1200/1050/900/750
Motor Speed RPM: Heating (Turbo/High/Med/Low/Quiet)	1200/1100/900/700/610	1300/1250/1150/1050/610	1300/1250/1025/800/750	1300/1200/1050/900/750
Airflow CFM: Cooling (Turbo/High/Med/Low/Quiet)	395/355/310/260/170	410/370/280/210/170	580/530/480/400/350	800/730/630/535/440
Airflow CFM: Heating (Turbo/High/Med/Low/Quiet)	395/355/290/220/170	420/390/350/310/180	580/530/450/350/320	800/730/630/535/440
Indoor Sound Level dB: Cooling (Turbo/High/Med/Low/Quiet)	44/42/36/32/27	46/44/38/32/25	51/50/44/37/25	54/50/47/44/38
Indoor Sound Level dB: Heating (Turbo/High/Med/Low/Quiet)	43/41/37/32/29	43/42/39/36/25	49/47/40/35/26	54/50/47/44/38
Auto Up-Down Louver	Yes	Yes	Yes	Yes
Auto Left-Right Louver	Yes	Yes	Yes	Yes
Dimension: H x W x D in (mm)	12 1/4 x 36 x 8 3/8 (312 x 914 x 213)	12 1/4 x 36 x 8 3/8 (312 x 914 x 213)	12 7/8 x 39 3/4 x 8 3/4 (327 x 1009 x 223)	13 1/2 x 44 1/2 x 9 1/8 (343 x 1129 x 232)
Weight (Net/Ship) - lbs (kg)	24.49/30.56 (11.1/13.85)	24.49/30.56 (11.1/13.85)	29.57/36.63 (13.4/16.6)	34.86/43.03 (15.8/19.5)
Liquid O.D. in	1/4	1/4	1/4	1/4
Suction O.D. in	3/8	3/8	1/2	1/2
Drain Pipe Size O.D. in	5/8	5/8	5/8	5/8
WiFi*	Built-in	Built-in	Built-in	Built-in
Factory-Installed Refrigerant Detection Sensor (RDS)	No	No	No	No
Refrigerant Detection Sensor (RDS) Compatible	Yes (UALS01A, sold separately)	Yes (UALS01A, sold separately)	Yes (UALS01A, sold separately)	Yes (UALS01A, sold separately)

SPECIFICATIONS

ENGLISH



Cassette

	US09CB2BEA	US12CB2BEA	US18CB2BEA	US24LB2BEA
Panel Model	QACCP01WA	QACCP01WA	QACCP01WA	QALCP01WA
Rated Capacity Btu/hr	9,000	12,000	18,000	24,000
Voltage, Cycle, Phase V/Hz/Phase	208-230/60/1	208-230/60/1	208-230/60/1	208-230/60/1
Fan Speed Stages	5 + Auto	5 + Auto	5 + Auto	5 + Auto
Motor Speed RPM: Cooling (Turbo/High/Med/Low/Quiet)	830/760/690/620/560	830/760/690/620/560	850/800/760/680/590	620/580/540/430/360
Motor Speed RPM: Heating (Turbo/High/Med/Low/Quiet)	830/760/690/620/560	830/760/690/620/560	850/800/760/680/590	620/580/540/430/360
Airflow CFM: Cooling (Turbo/High/Med/Low/Quiet)	440/387/351/320/290	440/387/351/320/290	458/425/387/345/302	1033/873/858/640/400
Airflow CFM: Heating (Turbo/High/Med/Low/Quiet)	440/387/351/320/290	440/387/351/320/290	479/441/387/345/302	1033/873/858/640/400
Indoor Sound Level dB: Cooling (Turbo/High/Med/Low/Quiet)	42/40/36/32/25	45/42/40/36/32	45/42/40/36/32	46/44/41/38/35
Indoor Sound Level dB: Heating (Turbo/High/Med/Low/Quiet)	42/40/36/32/25	45/42/40/36/32	45/42/40/36/32	46/44/42/39/36
Chassis Dimension: HxWxD in (mm)	10 1/4 x 22 3/4 x 22 3/4 (260 x 575 x 575)	10 1/4 x 22 3/4 x 22 3/4 (260 x 575 x 575)	10 1/4 x 22 3/4 x 22 3/4 (260 x 575 x 575)	9 3/4 x 33 x 33 (248 x 840 x 840)
Panel Dimension: HxWxD in (mm)	2 3/8 x 27 7/16 x 27 7/16 (60 x 620 x 620)	2 3/8 x 27 7/16 x 27 7/16 (60 x 620 x 620)	2 3/8 x 27 7/16 x 27 7/16 (60 x 620 x 620)	1 15/16 x 37 3/8 x 37 3/8 (50 x 950 x 950)
Weight (Net/Ship) - lbs (kg)	32.41/47.4 (14.7/21.5)	32.41/47.4 (14.7/21.5)	32.41/47.4 (14.7/21.5)	56.22/85.32 (25.5/38.7)
Liquid Pipe O.D. (in)	1/4	1/4	1/4	3/8
Suction Pipe O.D. (in)	3/8	3/8	1/2	5/8
Drainpipe Size O.D. (in)	1*	1*	1*	1*
Condensate Pump Built-In	Yes	Yes	Yes	Yes
Max. Drain-Lift Height in (mm)	47 1/4 (1200)	47 1/4 (1200)	47 1/4 (1200)	47 1/4 (1200)
WiFi**	Built-in	Built-in	Built-in	Built-in
Factory-Installed Refrigerant Detection Sensor (RDS)	No	No	No	No
Refrigerant Detection Sensor (RDS) Compatible	Yes (UALS01A, sold separately)	Yes (UALS01A, sold separately)	Yes (UALS01A, sold separately)	Yes (UALS01A, sold separately)



Console

	US09FB2BEA	US12FB2BEA	US18FB2BEA
Rated Capacity Btu/hr	9,000	12,000	18,000
Voltage, Cycle, Phase V/Hz/Phase	208-230/60/1	208-230/60/1	208-230/60/1
Fan Speed Stages	5 + Auto	5 + Auto	5 + Auto
Motor Speed RPM: Cooling (Turbo/High/Med/Low/Quiet)	700/560/480/410/360	800/590/510/440/390	850/710/690/560/510
Motor Speed RPM: Heating (Turbo/High/Med/Low/Quiet)	700/560/480/410/360	800/590/510/440/390	850/710/690/560/510
Airflow CFM: Cooling (Turbo/High/Med/Low/Quiet)	290/218/205/176/147	314/226/210/195/175	345/341/271/218/210
Airflow CFM: Heating (Turbo/High/Med/Low/Quiet)	312/206/205/176/147	311/223/200/195/175	345/300/280/218/210
Indoor Sound Level dB: Cooling (Turbo/High/Med/Low/Quiet)	44/40/37/32/24	47/41/37/33/25	49/44/43/40/37
Indoor Sound Level dB: Heating (Turbo/High/Med/Low/Quiet)	43/37/32/27/20	47/40/37/33/25	49/43/43/37/37
Dimension: HxWxD in (mm)	23 5/8 x 27 1/2 x 8 3/4 (600 x 700 x 220)	23 5/8 x 27 1/2 x 8 3/4 (600 x 700 x 220)	23 5/8 x 27 1/2 x 8 3/4 (600 x 700 x 220)
Weight (Net/Ship) - lbs (kg)	32.41/43.43 (14.7/19.7)	32.41/43.43 (14.7/19.7)	32.41/43.43 (14.7/19.7)
Liquid Pipe O.D. (in)	1/4	1/4	1/4
Suction Pipe O.D. (in)	3/8	3/8	1/2
Drainpipe Size O.D. in	5/8	5/8	5/8
WiFi*	Built-in	Built-in	Built-in
Factory-Installed Refrigerant Detection Sensor (RDS)	Yes	Yes	Yes



Mid-Static Ducted

	US07MB2BEA	US09MB2BEA	US12MB2BEA	US18MB2BEA	US24MB2BEA
Rated Cooling Capacity Btu/hr	7,000	9,000	12,000	18,000	24,000
Voltage, Cycle, Phase V/Hz/Phase	208-230/60/1	208-230/60/1	208-230/60/1	208-230/60/1	208-230/60/1
Fan Speed Stages	5 + Auto	5 + Auto	5 + Auto	5 + Auto	5 + Auto
Motor Speed RPM: Cooling (Turbo/High/Med/Low/Quiet)	830/780/700/640/560	880/800/720/640/560	950/870/780/680/600	880/820/760/700/640	1070/1030/880/790/740
Motor Speed RPM: Heating (Turbo/High/Med/Low/Quiet)	830/780/700/640/560	880/800/720/640/560	950/870/780/680/600	880/820/760/700/640	1070/1030/880/790/740
Airflow CFM: Cooling (Turbo/High/Med/Low/Quiet)	335/272/190/150/141	353/286/200/150/141	409/350/308/158/148	620/517/332/214/203	927/844/667/564/482
Airflow CFM: Heating (Turbo/High/Med/Low/Quiet)	335/272/190/150/141	358/292/208/155/145	412/355/311/163/152	627/523/337/217/205	927/844/667/564/482
Indoor Sound Level dB: Cooling (Turbo/High/Med/Low/Quiet)	42/39/37/35/32	44/41/38/35/32	47/44/41/38/35	48/45/42/39/36	47/46/41/38/37
Indoor Sound Level dB: Heating (Turbo/High/Med/Low/Quiet)	42/39/37/35/32	44/41/38/35/32	47/44/41/38/35	48/45/42/39/36	46/45/40/38/36
Dimension: HxWxD in (mm)	9 3/4 x 31 3/4 x 27 1/2 (248 x 805 x 700)	9 3/4 x 31 3/4 x 27 1/2 (248 x 805 x 700)	9 3/4 x 31 3/4 x 27 1/2 (248 x 805 x 700)	9 3/4 x 47 1/2 x 27 1/2 (248 x 1207 x 700)	9 3/4 x 47 1/2 x 27 1/2 (248 x 1207 x 700)
Weight (Net/Ship) - lbs (kg)	62.17/86.86 (28.2/39.4)	62.17/86.86 (28.2/39.4)	62.17/86.86 (28.2/39.4)	87.74/123.46 (39.8/56)	87.74/123.46 (39.8/56)
Max. External Static Pressure in.W.G (Pa)	0.6 (150)	0.6 (150)	0.6 (150)	0.6 (150)	0.6 (150)
Liquid Pipe O.D. (in)	1/4	1/4	1/4	1/4	3/8
Suction Pipe O.D. (in)	3/8	3/8	3/8	1/2	5/8
Drainpipe Size	1*	1*	1*	1*	1*
Condensate Pump Built-In	Yes	Yes	Yes	Yes	Yes
Max. Drain-Lift Height in(mm)	27 1/2 (700)	27 1/2 (700)	27 1/2 (700)	27 1/2 (700)	27 1/2 (700)
WiFi**	Built-in	Built-in	Built-in	Built-in	Built-in
Factory-Installed Refrigerant Detection Sensor (RDS)	Yes	Yes	Yes	Yes	Yes

Error Code Detection

1. Indoor Temperature Sensor Error/Indoor Heat Interaction Sensor Abnormality:

Normal operation temperature ranges from 120°F to -30°F. When the temperature exceeds this range, the error is detected. If the temperature goes back into range, the system will automatically resume.

2. Indoor/Outdoor Malfunction:

If the communication between the outdoor and indoor system cannot be received at the indoor unit for 8 minutes, the indoor system will report a communications failure and operation will be stopped.

3. Communication Abnormality:

If the indoor system can't receive the outdoor system for 8 minutes, the communication abnormality can be confirmed and reported and the outdoor system will be stopped.

Antifreezing Protection Indoor

To prevent frosting of the indoor coil, if the indoor coil temperature is 32°F or below for 5 minutes, the outdoor system will stop and the indoor fan will continue to operate. The outdoor system will restart when the indoor coil exceeds 50°F and the system has been stopped for minimum of 3 minutes. The error code will be stored in the memory but not be displayed.

When the Compressor First Starts

The compressor will start in low frequency. After a brief time delay, the compressor will reach operating speed to meet the demand requirement for capacity.

The Outdoor Fan Control (Exchange Fan)

When adjusting the fan speed, the unit should remain at each speed for 30+ seconds to avoid speed-change malfunctions. In Cooling Mode, the wait time between speed levels should be 15 seconds.

The Outdoor Fan Control When In Cooling or Dehumidifying Mode

Five seconds after compressor starts, the outdoor fan will start at medium speed. After 30 seconds, the fan speed will adjust according to the temperature conditions of the outdoor environment.

The Control of the Outdoor Unit Expansion Valve

When unit starts, the EEV valves will energize and change to a standard opening. When operation starts, the EEV will change position to keep the suction vapor superheat level at or near 10°F.

When the unit is shut off, the opening size of the indoor unit expansion valve is 5 steps.

Four-Way Valve Control

For the details of defrosting four-way valve control, see the defrosting process

In heating mode, the four way valve will shift. If the compressor fails to start or the operating mode switches then there will be a 2 minute pause before reattempting.

Anti-freezing Protection (Highwall Only)

This protection cycle prevents the indoor coil from developing an ice coating during low heat load operation. The indoor unit coil temperature sensor will shut off the outdoor unit and begin a defrost cycle if the indoor coil falls below 32°F for more than 2 minutes. The indoor unit will not display this operation. Once the indoor coil warms up, the system will re-enter cooling mode and operate normally.

Resumption of Operation After Power Loss

This describes the systems operation when power is lost or suddenly interrupted and then later restored. When powered on the system will check the SW1-4 dip switch to see if a wired controller is enabled and for it's system recovery settings. If SW1-4 is not set then the system will execute a start up as per the Standard Wireless Remote Control setup.

Wired controller: The wired controller comes with an auto-restart function (not separately set).

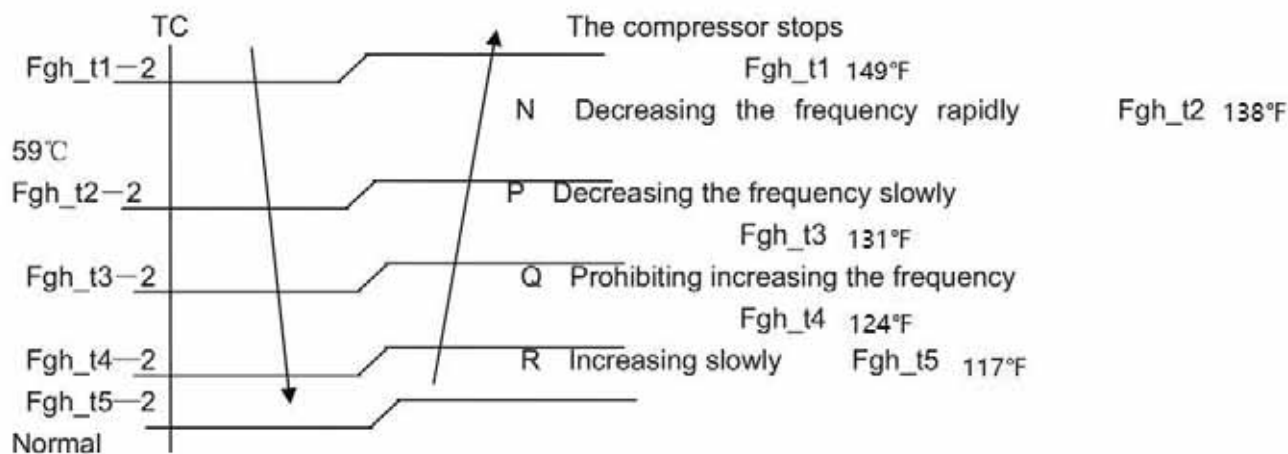
Standard Wireless Remote Control: On/off status, mode, fan speed, temperature setting, healthy, swing position by default will all be maintained..

If there is a timer or sleep function, it will be turned off when powered on again, and the timer and sleep will be canceled.

Over-Temperature Heat Mode Indoor Coil

The over-temperature routine will protect the system from excessive high indoor coil temperature during heat mode operation. The system will be stopped if the indoor coil temperature exceeds 149°F for 2 minutes. The outdoor system may be restarted when the indoor coil temperature falls below 108°F and the system has been stopped for a minimum of 3 minutes. The error code will be stored in the memory but will not be displayed.. Conditions that cause high indoor coil temperature include indoor fan failure, dirty indoor coil and operating the system in heat mode when outdoor air temperatures exceed operating limit. (Too warm outside)

Should this routine be initiated, the system will reduce compressor frequency until the indoor coil temperature reaches 117°F. Once this is achieved, the system will return to normal operation.



Base Pan Heater Operating Logic and Testing Process

Power supply: 196~254V AC

When the compressor starts in the heating mode, the following conditions will apply:

Outdoor Temperature	Pan Heater
>37°F (3°C)	OFF
28°F(-2°C) to 34°F (1°C)	OFF 20min, ON 10 min
10°F(-12°C) to 25°F (-4°C)	OFF 15min, ON 15min
<10°F (-12°C)	ON

Model No.	Spare Part No.	Resistance Value
2Q20RT2BEA	0150831548C	1. 220V/180W,(Power range: 162~198W).
3Q24RT2BEA		2. Cold state withstand voltage: 1500V/min, Hot state withstand voltage: 1200V/min. 3. Cold insulation resistance:>500MΩ, hot insulation resistance:>50MΩ.
2Q18FF2BEA	/	/
3Q24FF2BEA		
4Q36FF2BEA		
4Q36RT2BEA	0151045703	1. 220V/180W,(Power range:162~198W).
5Q42RT2BEA		2. Cold state withstand voltage:1500V/min,hot state withstand voltage: 1200V/min. 3. Cold insulation resistance:>500MΩ, hot insulation resistance:>50MΩ.

Compressor Heater Band Operating Logic and Testing

Power supply:196~254VAC

	Heater OFF	Heater ON
Ta>50°F(10°C) or Td≥68°F(20°C)	100%*60min	0
41°F(5°C)<Ta≤50°F(10°C) and Td<68°F(20°C)	50%*60min	50%*60min
32°F(0°C)<Ta≤41°F(5°C) and Td<68°F(20°C)	33%*60min	66%*60min
Ta≤32°F(0°C)and Td<68°F(20°C)	0	100%*60min

Model No.	Spare Part No.	Resistance Value
2Q20RT2BEA	0150400046A	- Rated voltage:AC220V,Power:27W±7% - Resistance:1793Ω±7%
3Q24RT2BEA		
2Q18FF2BEA		
3Q24FF2BEA		
4Q36FF2BEA		
4Q36RT2BEA	0010450251	- Rated voltage :AC240V, Power:28W±7% - Resistance:2057Ω±7%
5Q42RT2BEA		

Sleep Mode

Sleep mode is set by the controller. After entering sleep mode:

1. Display light off (default when entering sleep mode, it can be changed through the APP). In sleep mode, when activated from the controller, the indoor display will be on for 5 seconds, then switch off. If turning off the screen via the light button, the display will turn off after 5 seconds (this is separate from the light function).
2. Fan speed does not automatically change, but can be set by the controller (When the user select low fan speed on APP, the unit will switch to low speed)
3. The buzzer will be silent.
4. The default sleep temperature can be changed by the APP. During sleep, the user can use the remote controller, wired controller, centralized controller and APP to change the set temperature. The next time the unit goes to sleep, it will revert to the default sleep temperature.
5. Switch the modes to exit sleep mode.
6. Sleep time can be set through the APP.

Enhanced Defrost Mode

Remote control: With the ODU in heating mode or off, set fan speed to high, set temperature to 30°C, then press the sleep button 6 times within 5 seconds. When the unit beeps 3 times, it has entered manual defrost mode. The method is the same as the heating defrost.

Wired Controller: Enter the defrost mode via the wired controller interface

Anti-Cold Air Control During Defrosting

IDU will immediately stop the fan after receiving the defrosting signal. After defrosting, the IDU fan runs according to anti-cold air.

ECO Function

1. Activation

At startup, the ECO function may be activated via the app, or remote controller or wired controller ECO button. Temperature compensation is only compensated once upon entry, and the newly set temperature is no longer compensated during ECO operation.

In cooling mode or heating mode, the user press the ECO button (or via APP) to enter the ECO mode, and set the temperature 2°F (or 1°C) higher than the current set temperature (the default is °F adjustment), which can be adjusted in the APP. The adjusted set temperature shall not exceed the temperature range below.

2. Functions

ECO functions are effective for both cooling and heating modes.

- After entering ECO mode, the set temperature range of cooling and heating is 60°F to 86°F, and the operating range of the set temperature can be reduced through the APP (example: Set temperature range from 60 °F-86°F to 70°F-80°F). *Note: The maximum set temperature≥the minimum set temperature,and the displayed set temperature changes together.*
- In cooling mode, with ECO mode, when the set temperature reaches, the user can stop the IDU fan via APP (the ducted will reach the temperature and stop the air by default, and other IDUs won't).
- The different settings of ECO functions will be stored in the IDU memory. The settings remain the same the next time the unit enters ECO mode.
- Exit ECO mode only by pressing the ECO button or exiting from the APP.

Dry Mode (Dehumidifying Mode)

When $T_{ai} > T_{set} + 2^{\circ}\text{C}$, the system will operate in cooling mode, with the fan speed controlled according to cooling mode settings when in auto mode.

When $T_{set} < T_{ai} \leq T_{set} + 2^{\circ}\text{C}$, the system will enter Dry Mode. The system will run for 10 minutes with the indoor unit in low fan speed. After turning off for 6 minutes, the indoor unit stops running. On and off will run alternately. Turn off for 6 minutes and send a shutdown signal to the outdoor unit.

When $T_{ai} \leq T_{set}$, the system will shut down. If the ambient temperature is less than 16°C , the indoor fan will stop, otherwise it will continue to run with low speed fan.

Emergency Function (Emergency Power Turn-Off Button)

Wired controller: The wired controller comes with an auto-restart function (not separately set).

Remote controller: On/off status, mode, fan speed, temperature setting, healthy, swing position.

If there is a timer or sleep function, it will be turned off when powered on again, and the timer and sleep will be canceled.

Note: Power off and power on, check if there is a wired controller, if the wired controller executes the power-off memory of the wired controller

Forced Heating/Cooling Modes

Dip switch setting, cooling 60HZ, heating 50HZ fixed frequency operation.

WiFi

For WiFi connections: User makes commission request (turn on the unit, set the unit into cooling mode, fan speed, and 86°F or 30°C). Code writes "WiFiServiceRequest_Connect" to ERD Erd_RequestWifiState.

Turn off WiFi module: Press and hold the WiFi button for at least 3 seconds. If the WiFi module is in AP mode, connecting, reconnecting, scanning, connected but Off, or connected, a single press of the WiFi button will be ignored. Only if the WiFi button is pressed and held for at least 3 seconds will the WiFi module enter off mode.

Setting Temperature Compensation

Via Remote Controller:

Cooling mode: Press the on/off button and power on in cooling mode. Use the set temperature of 24°C as the reference point, and press the swing button (or sleep button) 7 times within 5 seconds. The indoor unit will beep twice, indicating it is now in compensation setting mode. At this time, adjusting the temperature point to 23°C will set temperature compensation to -1°C . Adjusting the temperature point to 22°C will set temperature compensation to -2°C , and so on. Maximum compensation is -8°C (16°C). Power off to set compensation. To cancel compensation, repeat the above and set the temperature point back to 24°C .

Heating mode: Press the swing button (or sleep button) 7 times within 5 seconds. The indoor unit will beep twice, indicating it is now in compensation setting mode. Select heating mode via the controller, then press temperature key to select set temperature and compensation temperature (current set temperature -24°C . That is, at 24°C the compensation temperature is 0 degrees, and 25°C means -1°C of compensation temperature. After the setting is completed, turn off the controller. The indoor unit will beep four times to indicate it has exited temperature compensation setting mode. The compensated temperature is stored in EE, and it will be carried out according to power failure compensation.

Via Wired Controller:

Set according to the temperature compensation method of the wired controller.

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2Q20RT2BEA
3Q24RT2BEA
4Q36RT2BEA
5Q42RT2BEA

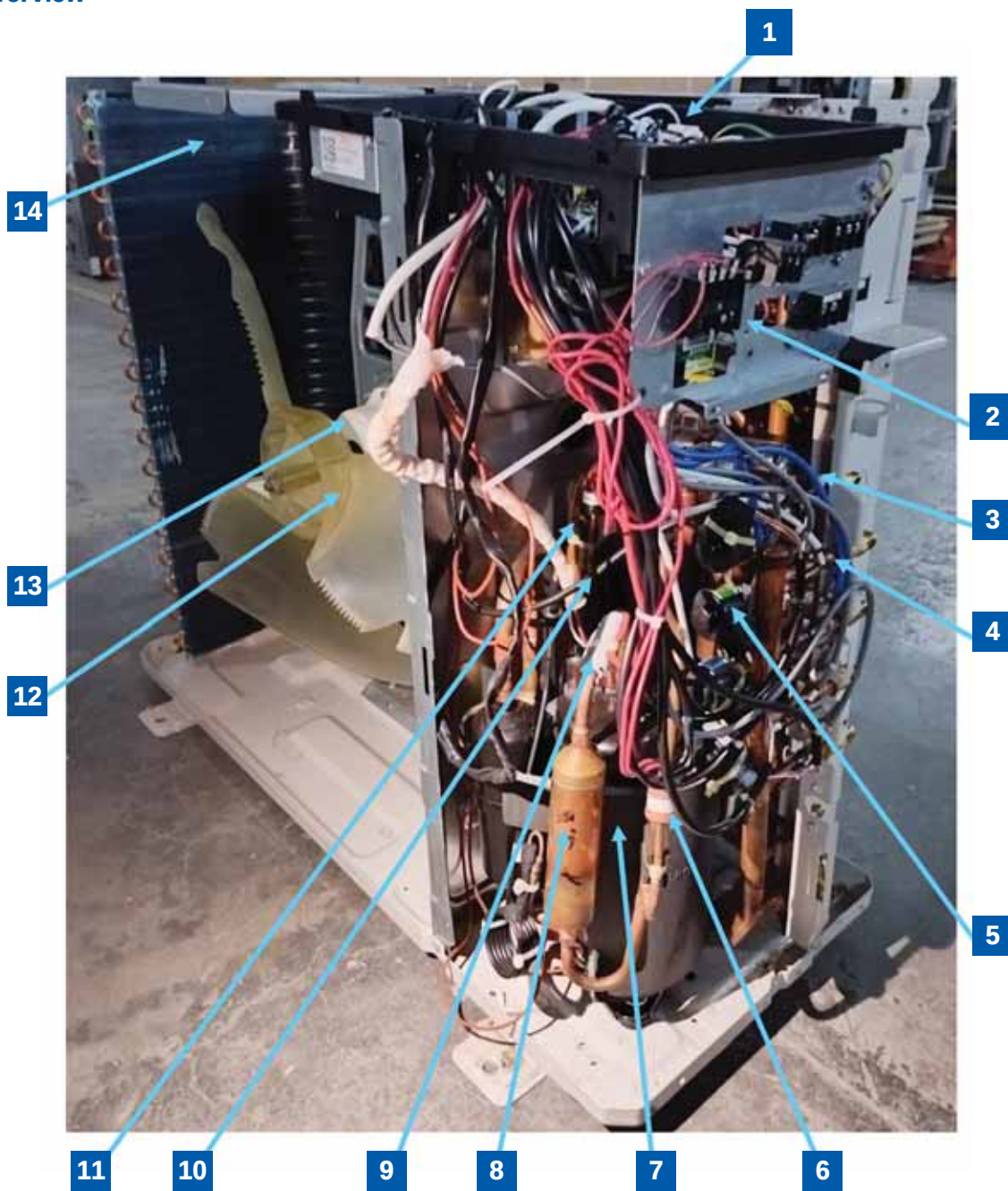


2Q18FF2BEA
3Q24FF2BEA
4Q36FF2BEA

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Component Overview



1 PCB and Module Board

2 Terminal Block

3 Liquid Temperature

4 Gas Temperature

5 EEV

6 High Pressure Switch

7 Compressor

8 Silencer

9 Td

10 Gas-Liquid Separator

11 Low Pressure Switch

12 Fan

13 Motor

14 Condenser

Suction Temperature Sensor



Gas-Liquid Separator



Ambient Temperature Sensor



Discharge Temperature Sensor



Terminal Block



EEV Assembly



Compressor & Silencer



4-Way Valve

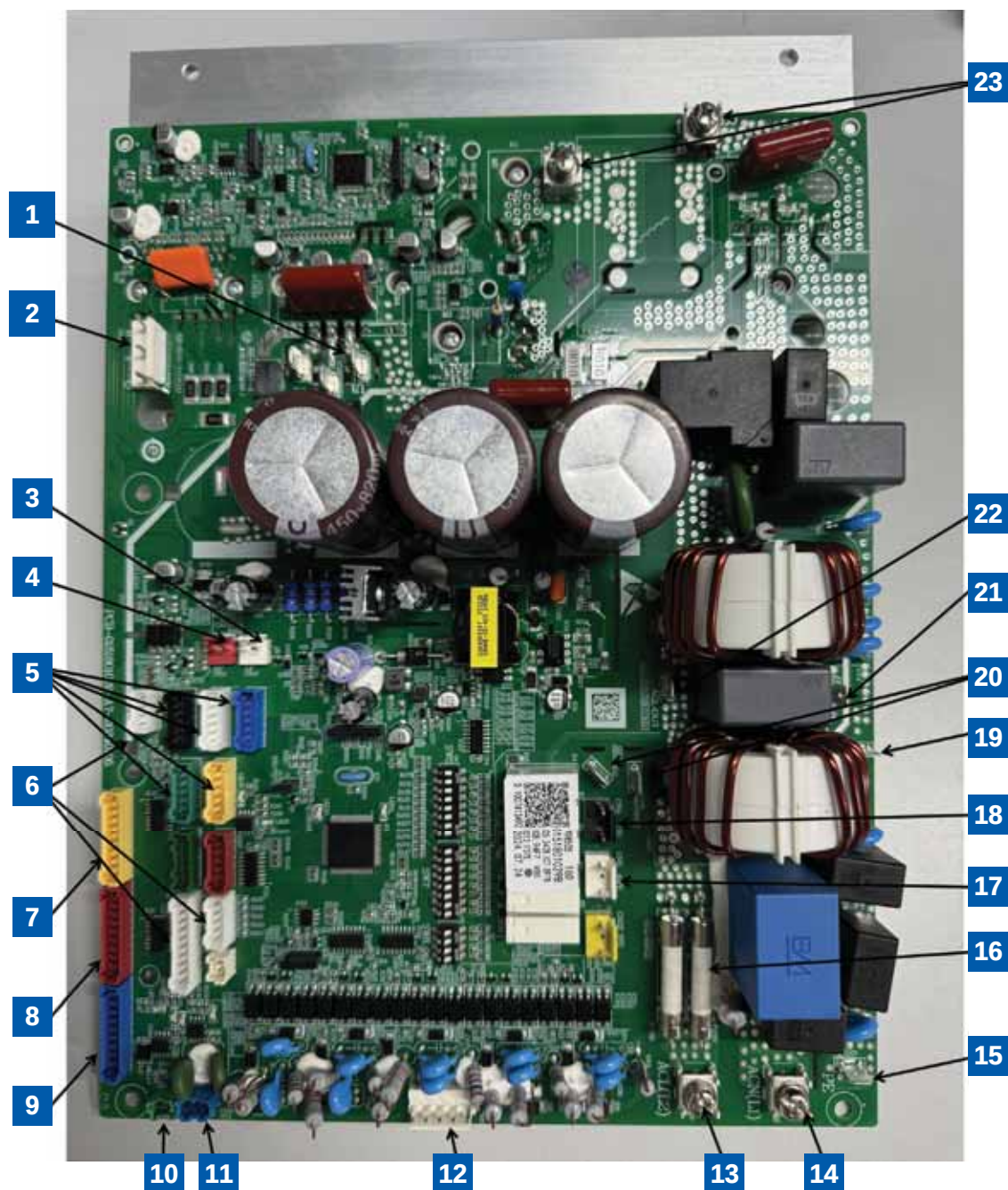


High Pressure Switch



PCB Overview

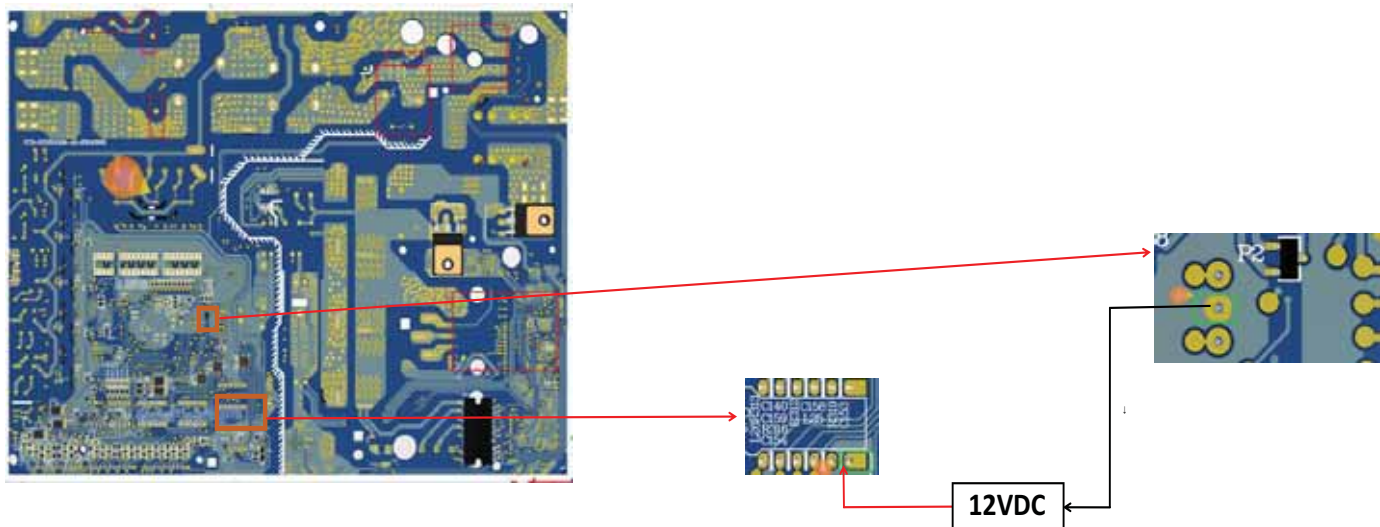
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1	U1V1W1	7	CN24	13	CN53	19	CN60
2	CN41	8	CN1	14	CN52	20	CON8 CON9
3	CN13	9	CN14	15	PE	21	P5
4	CN12	10	CN29	16	FUSE1 FUSE2	22	P4
5	CN16-CN20	11	CN10 OTA	17	CN5	23	Reactor Terminal
6	CN26 CN23 CN8	12	CN21	18	CN4		

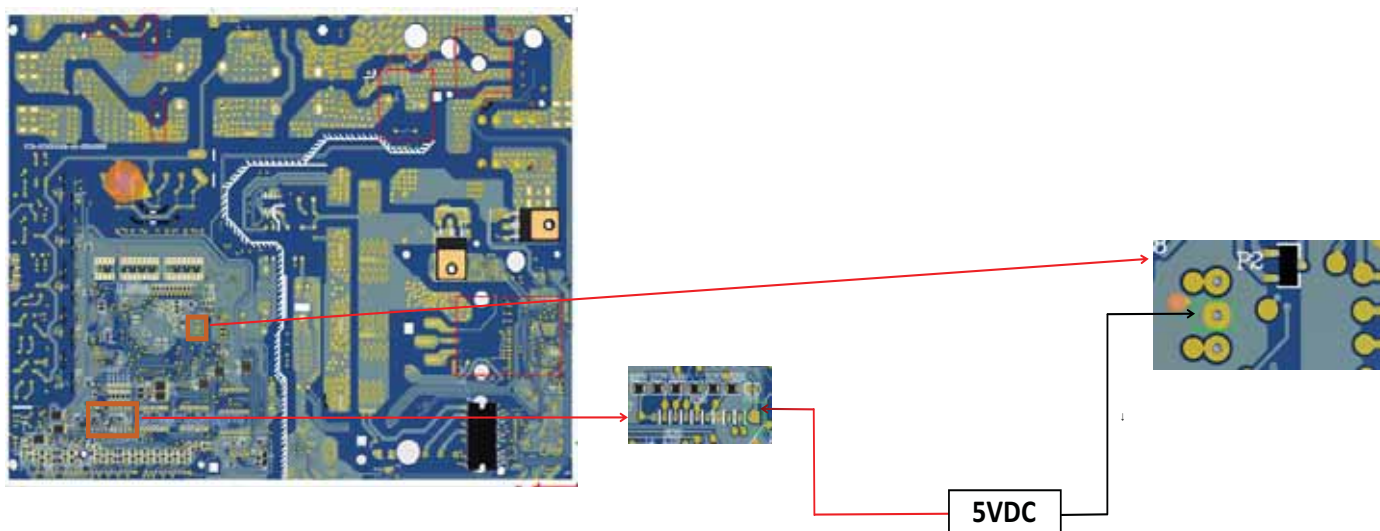
Main Control Board 12V

- The input voltage of relay K1, K2, K3, K4, K5, K6 affects the electrical output of the electric heater, chassis heater, four way valve and SV.
- The input voltage of the electronic expansion valve and IC9, IC10, IC11, IC12 affects the output of the electronic expansion valve CN2, CN3, CN16, CN17, CN18, CN19, and CN20.
- Relay RY input voltage affects the relay PTC suction and there is a risk of PTC burn.
- The input voltage of the IC19 affects the 5V voltage output.



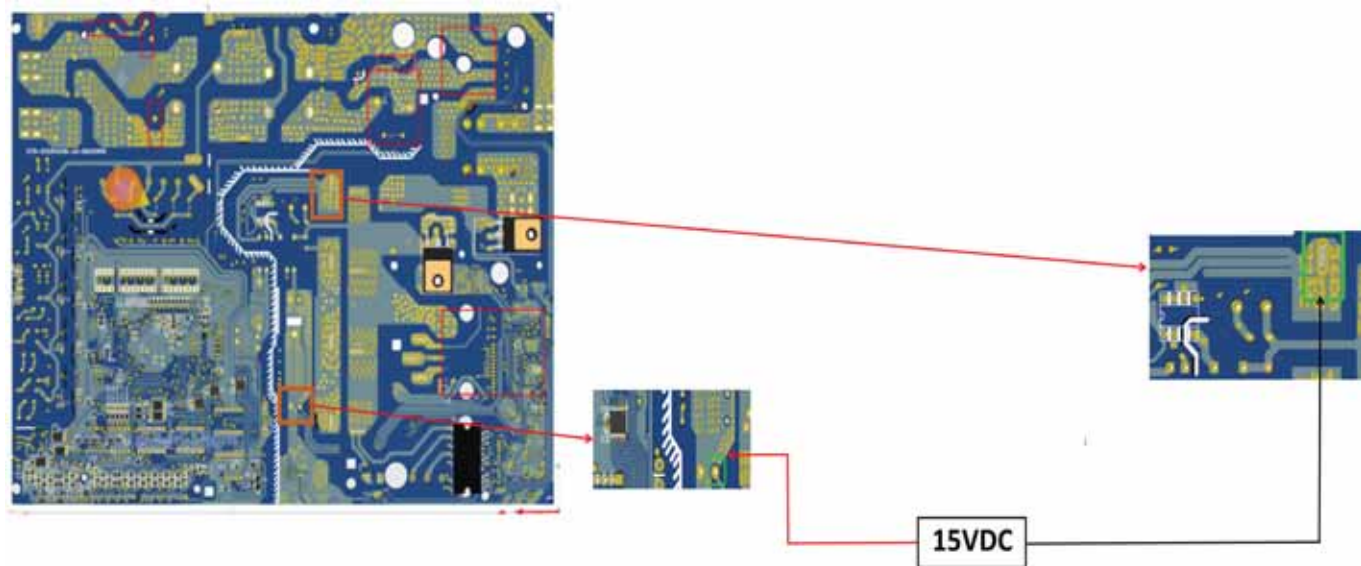
Main Control Board 5V

- The input voltage of the main chip IC18 and EE chip IC13 will affect the normal operation of the IC18 and IC13, and some programs in main control board cannot be started or reset normally.
- The input voltage of the dip switch loop affects the function selection of the DIP switch.
- The optocoupler and the signal voltage of the triode between ODU and IDU affect the communication between ODU and IDU.
- The signal voltage of the module communication loop affects the communication between the main control board and the inverter board.
- It affects high and low pressure CN13, CN12
- It affects the use of display boards and monitors.
- It affects the circuits of the PCB sensors CN7, ICN1, CN14 and CN24.



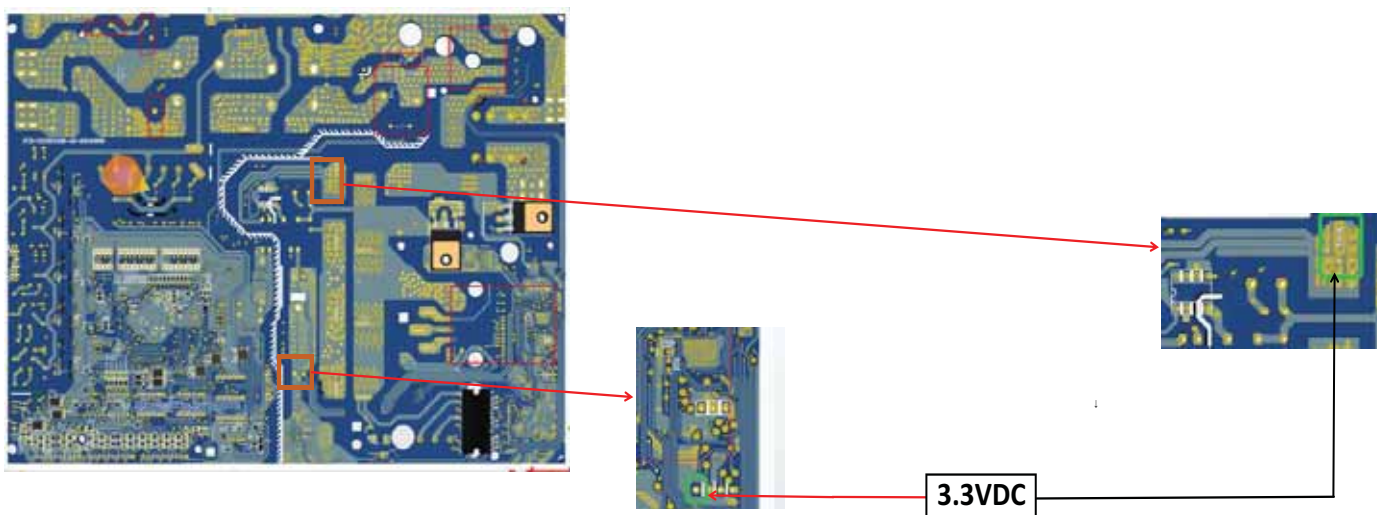
Inverter Board 15V

- The input voltage of the IC20 affects the 3.3V output of the PBC
- The IPM2 input voltage affects the output of the DC fan CN41
- The input voltage of IPM1 affects the output of the compressor
- The input voltage of IC3 affects the normal use of IGBT and IG1. It also affects the operation of PFC circuit.



Inverter Board 3.3V

- The inverter board's main chip IC5 and EE IC7 input voltage affects the normal operation of the IC5 and IC7. Some programs in main control board cannot be started or reset properly.
- It affects module communication with the main control board.
- The input voltage of IC1, IC4, IC2, IC6 and IC48 affects the PFC boosting circuit, fan output, and press output.



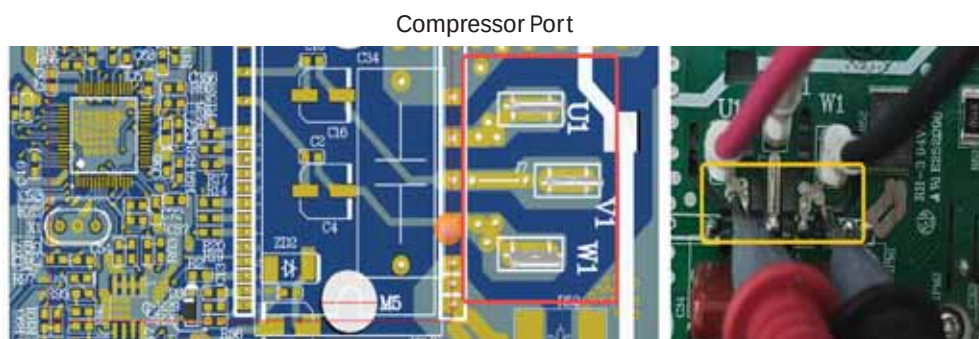
Fan Motor

- The fan is three-phase U, V, and W, and the current between each phase is about 1A.
- Multimeter DC current range tests the current between any two phases.
- The fan motor is tested at about 16V DC.



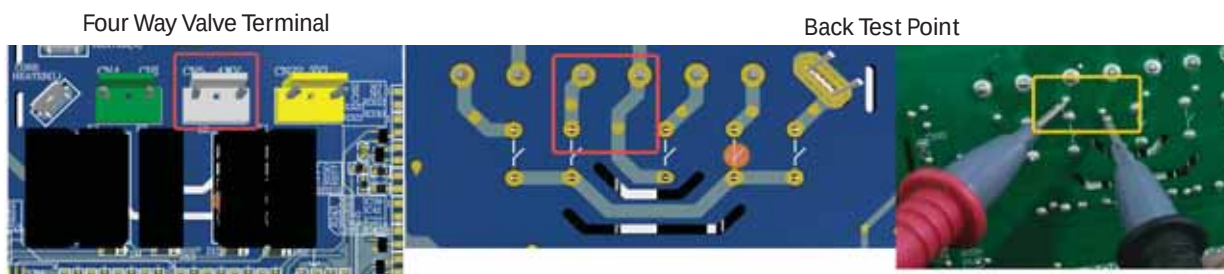
Compressor

- The compressor is three-phase U V W, and the current between each phase is about 1A in the no-load state of the compressor. Multimeter DC current range Tests the current between any two phases. (The copper foil tinning on the front of the compressor port can be tested)



Four Way Valve

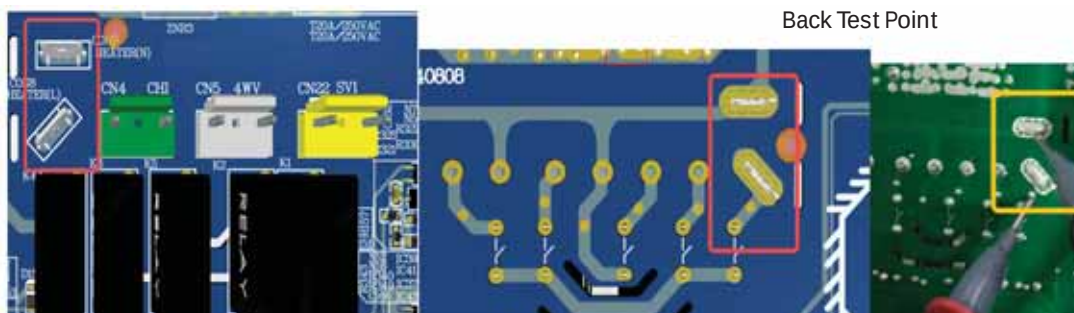
- In the case of relay suction, if the output voltage of the test port is 0V (AC), it means that the four way valve is abnormal.
- If it is 220V (AC) -15%~+10%, it means normal.



Crankcase Heater

- In the case of relay suction, if the output voltage of the test port is 0V (AC), it means that the crankcase heater is abnormal; if it is 220V (AC), it means normal.

Crankcase Heater Terminal

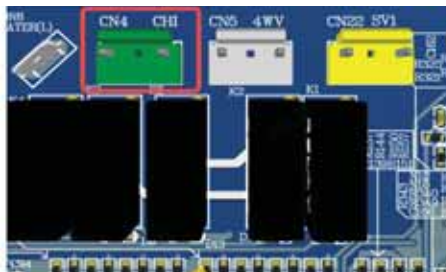


Back Test Point

Chassis Heater

- In the case of relay suction, if the output voltage of the test port is 0VAC, it means that the chassis heater is abnormal. If it is 220VAC, it means normal.

Chassis Heater Terminal



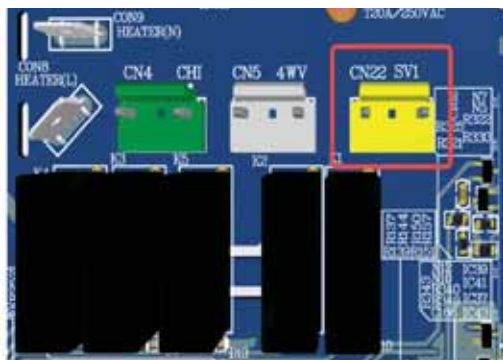
Back Test Point



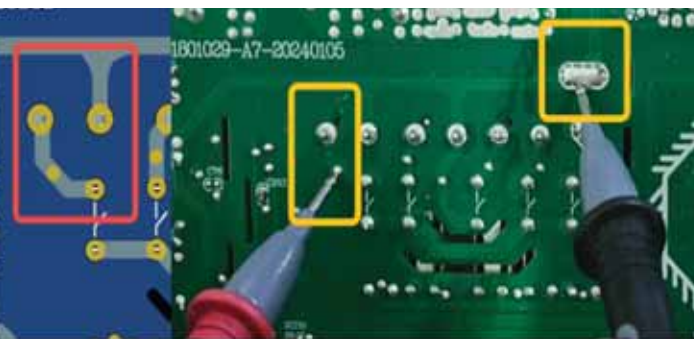
SV

- In the case of relay suction, if the output voltage of the test port is 0VAC, it means that the chassis heater is abnormal. If it is 220VAC, it means normal.

SV Terminal



Back Test Point



Electronic Expansion Valve (EEV)

- Measure the voltage between the electronic expansion valve output pin and 12V. If the voltage is 0V (DC), it means that the electronic expansion valve is abnormal.
- If the voltage is 12V (actually lower than 12V), it means normal.
- (The electronic expansion valve actually has four outputs at each port, and all outputs need to be tested).

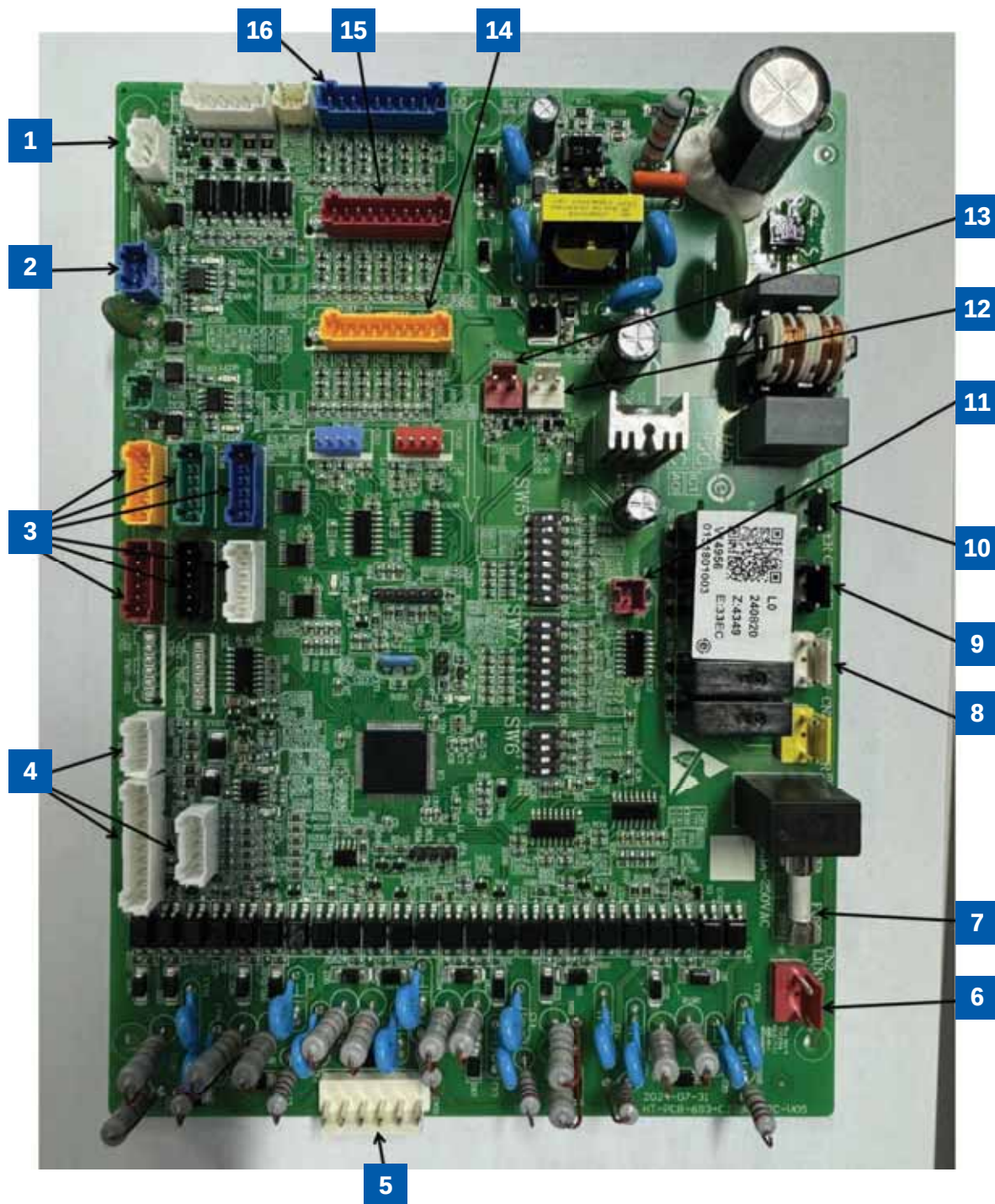
Back Test Points



EEV Terminals



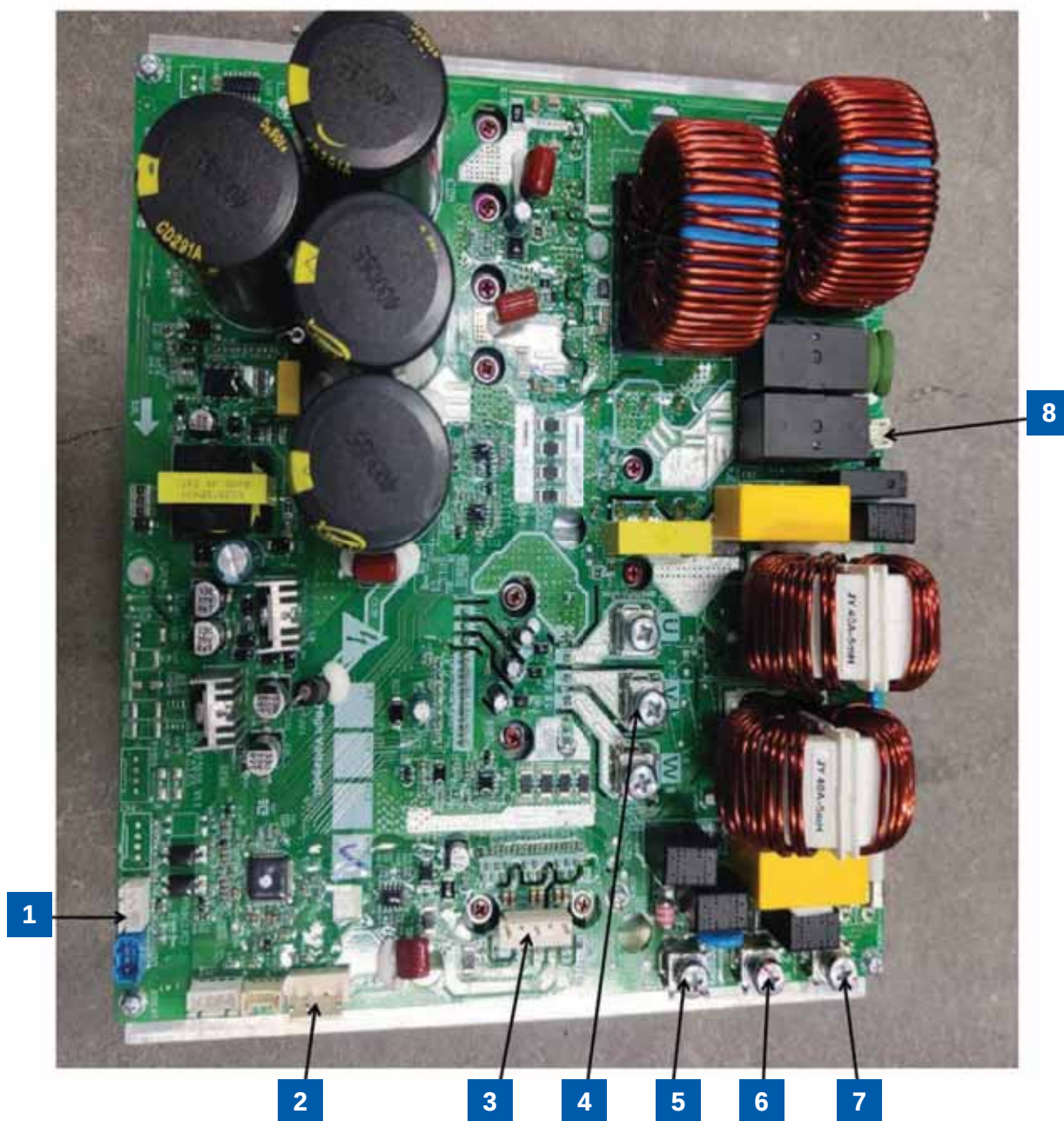
0151801003



1	CN9	7	FUSE1 FUSE2	13	CN12
2	CN10	8	CN5	14	CN24
3	CN3 CN16-20	9	CN4	15	CN1
4	CN8 CN23 CN26	10	CN28	16	CN14
5	CN21	11	CN34		
6	CN2	12	CN13		

0150406834H

ENGLISH



- 1** CN1
- 2** CN7
- 3** DCFAN1
- 4** U1V1W1

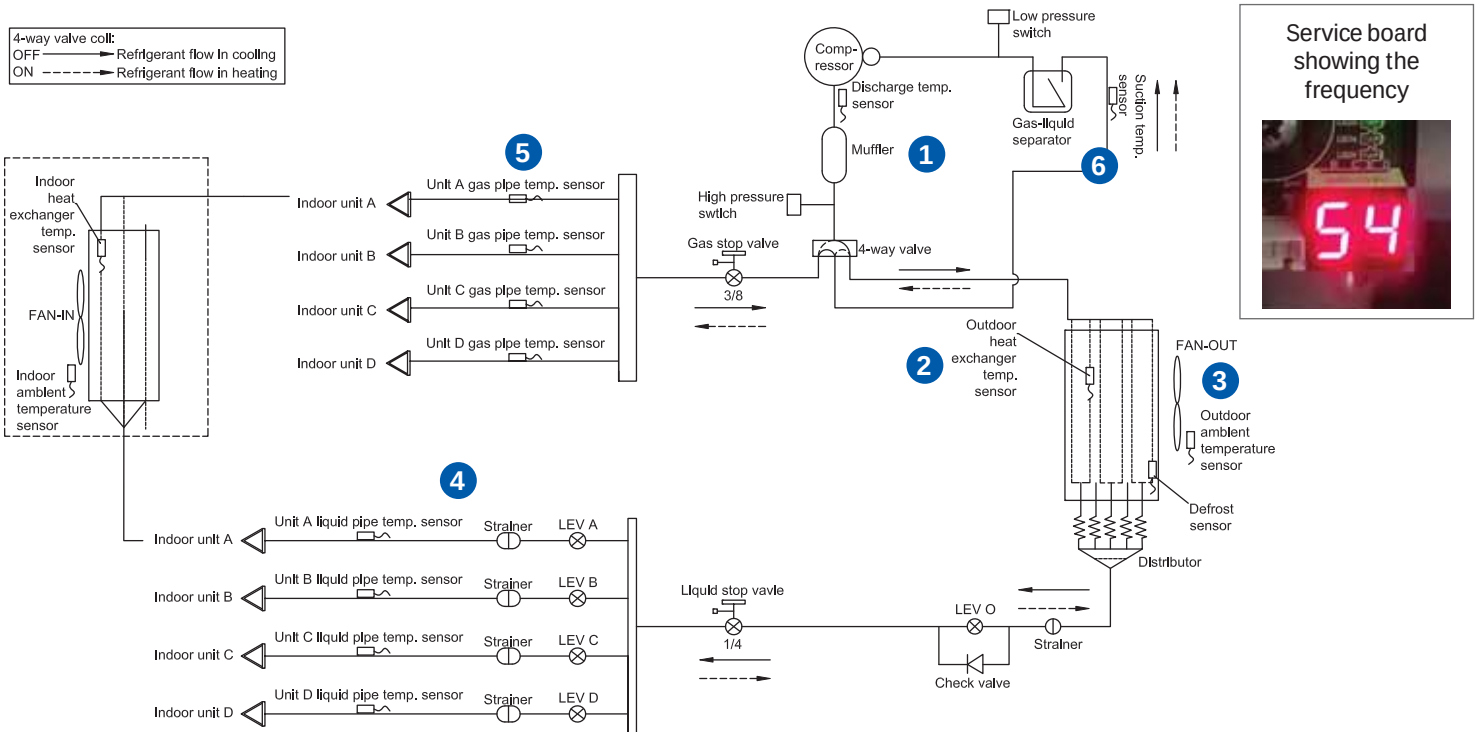
- 5** EARTH
- 6** L1
- 7** L2
- 8** CN2

Cooling Mode

On a call for cooling, the indoor unit will send the room temperature and set-point requirement to the outdoor unit PCB via the data signal wire path. The indoor louvers will open and the indoor fan motor will start.

The outdoor unit will energize the EEVs that are controlling refrigerant flow to the calling indoor units. The position of the EEVs will be set to an initial position based upon the outdoor air temperature.

The 4-way valve is de-energized. After a 3-minute time delay, the outdoor fan motor will be energized. Shortly after the outdoor fan motor turns on, the compressor will start in low frequency. Picture of Service board showing compressor frequency.



- 1 Discharge Temperature Sensor (Td):** The temperature of the compressor discharge hot gas will be monitored by the Discharge Temperature Sensor. If the sensor reads too hot or cool, the frequency/status of the operation will be adjusted accordingly.

The hot gas will leave the oil separator and enter the 4-way valve, which directs the hot gas to the outdoor coil. The refrigerant will condense in the outdoor coil and be subcooled. The refrigerant is now in a liquid state.

- 2 Outdoor Heat Exchanger (Coil) Temperature Sensor (Tc):** This sensor monitors the temperature of the outdoor coil during condensing operation. If abnormal condensing temperature is detected, the outdoor fan motor speed or compressor frequency may be adjusted.

- 3 Outdoor Ambient Temperature Sensor (Ta):** The outdoor air temperature will be monitored by the PCB. If the outdoor air temperature rises or falls, the speed of the outdoor fan may be changed.

- 4 Liquid Pipe Temperature Sensor (Tc2):** The Liquid Pipe Sensor will monitor the temperature of the refrigerant leaving the EEV.

The low pressure low temperature refrigerant will enter the mixed phase liquid line and travel to the indoor unit. Heat from the indoor air passing across the evaporator coil will transfer to the cold refrigerant, sending cool air into the space and changing the liquid refrigerant into a cool vapor.

The cold vapor will travel down the vapor line and return to the outdoor unit via a path through the gas stop valve.

- 5 Gas Pipe Temperature Sensor (Tc1):** The Gas Pipe Sensor will monitor the temperature of the gas pipe to calculate the difference between Liquid Pipe Temperature and Gas Pipe Temperature. If a change in EEV port opening size is needed, the EEV will make a small adjustment.

The vaporized refrigerant enters the 4-way valve and travels to the vapor line accumulator. The accumulator will trap any liquid refrigerant if present to prevent it from entering the compressor.

The vapor will exit the accumulator and enter the compressor. This cycle will repeat until the demand for cooling ends.

- 6 Suction Temperature Sensor (Ts):** The temperature of the suction gas entering the compressor is monitored by the Suction Temperature Sensor. Before stopping operation, the EEV may open to feed more refrigerant or close to warm up the line.

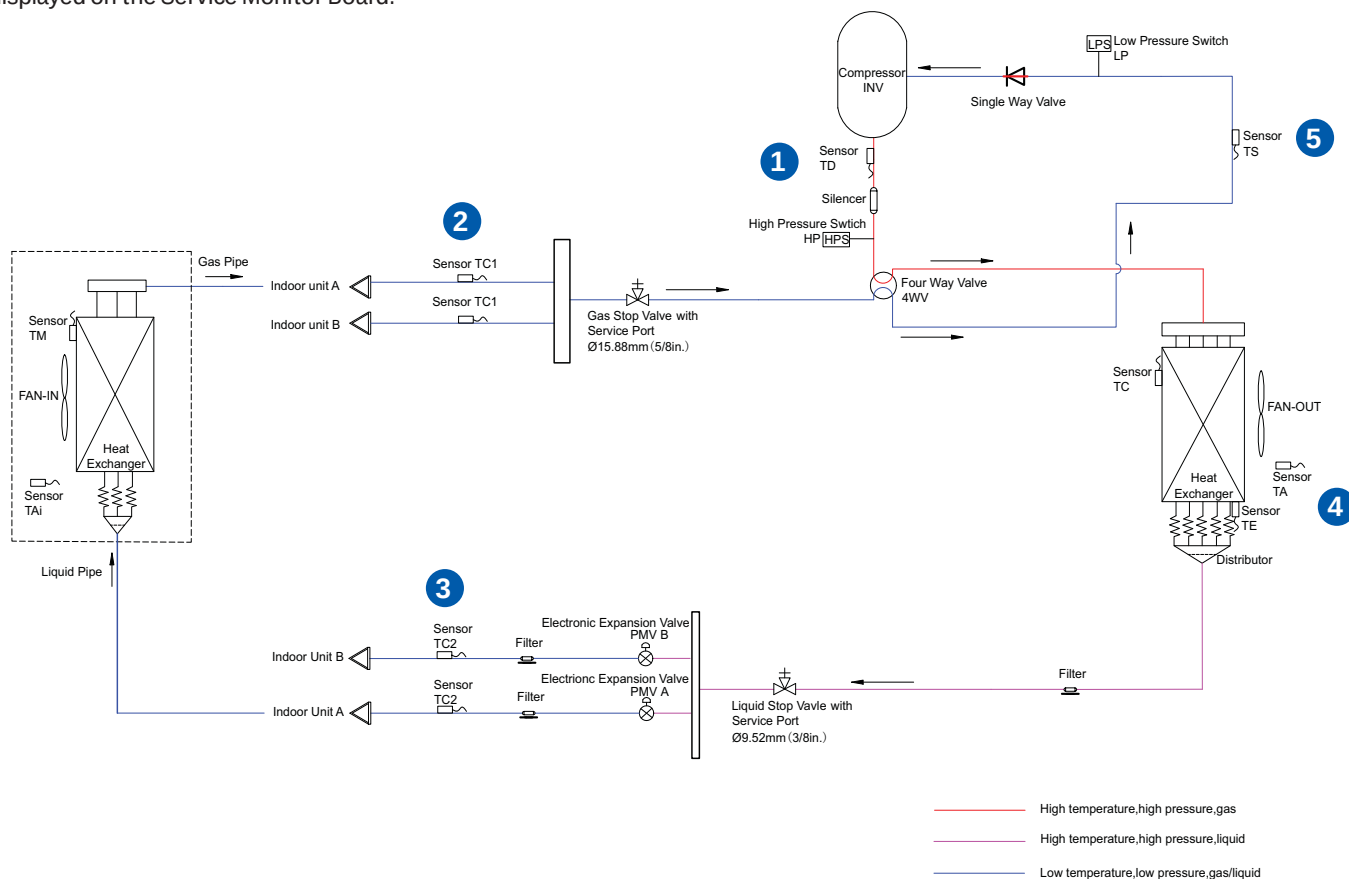
The demand becomes less as the indoor temperature drops toward the desired temperature, so the compressor will reduce speed. When the set temperature is reached, the compressor and outdoor fan will shut off. The circulating fan of each indoor unit continues to run.

Heating Mode

On a call for heating, the indoor unit will send the room temperature and set-point requirement to the outdoor unit PCB via the data signal wire path. The indoor unit louvers will open. The fan will not start until the coil has warmed sufficiently to avoid cold drafts.

The 4-way valve will energize and the outdoor fan will start. The compressor starts at a slow speed and will increase based upon demand. The indoor fan starts after the indoor coil is warm enough to avoid circulating cool air.

With the compressor operating, refrigerant will begin to flow throughout the refrigeration circuit. The operating frequency of the compressor will be displayed on the Service Monitor Board.



- 1 Discharge Temperature Sensor (Td):** The temperature of the compressor discharge hot gas will be monitored by the Discharge Temperature Sensor. If the sensor reads too hot or cool, the frequency/status of the operation will be adjusted as needed.

The hot gas will leave the oil separator and enter the 4-way valve. The 4-way valve will direct the hot gas to ALL of the indoor coils.

Note: Any indoor unit that is in heating mode will have its louver open and indoor fan running. Non-calling indoor units will receive hot gas but their fans will remain on very low speed with the louver open. When demand for heat increases, the indoor fan will speed up to meet the increased demand.

- 2 Gas Pipe Temperature Sensor (Tc1) & Indoor Heat Exchanger Temperature Sensor (Toci):** The temperature of Tc1 should now be hot. This will indicate the 4-way valve is directing hot gas to the indoor coils. The PCB will detect the temperature difference and generate an Error Code.

The indoor heat exchanger temperature sensor will monitor the temperature of the indoor coil to ensure it is hot enough to prevent blowing cold air. Once adequately warm temperature is sensed at the indoor coil, the PCB will increase the fan speed if needed to meet the demand.

The hot gas entering the indoor coil will condense into a saturated mix and then be subcooled. The refrigerant will return to the outdoor unit via the liquid line.

- 3 Liquid Pipe Temperature Sensor (Tc2):** This sensor monitors the temperature of the refrigerant liquid returning from the indoor coil. The indoor EEV opening angle is adjusted according to the degree of superheat.

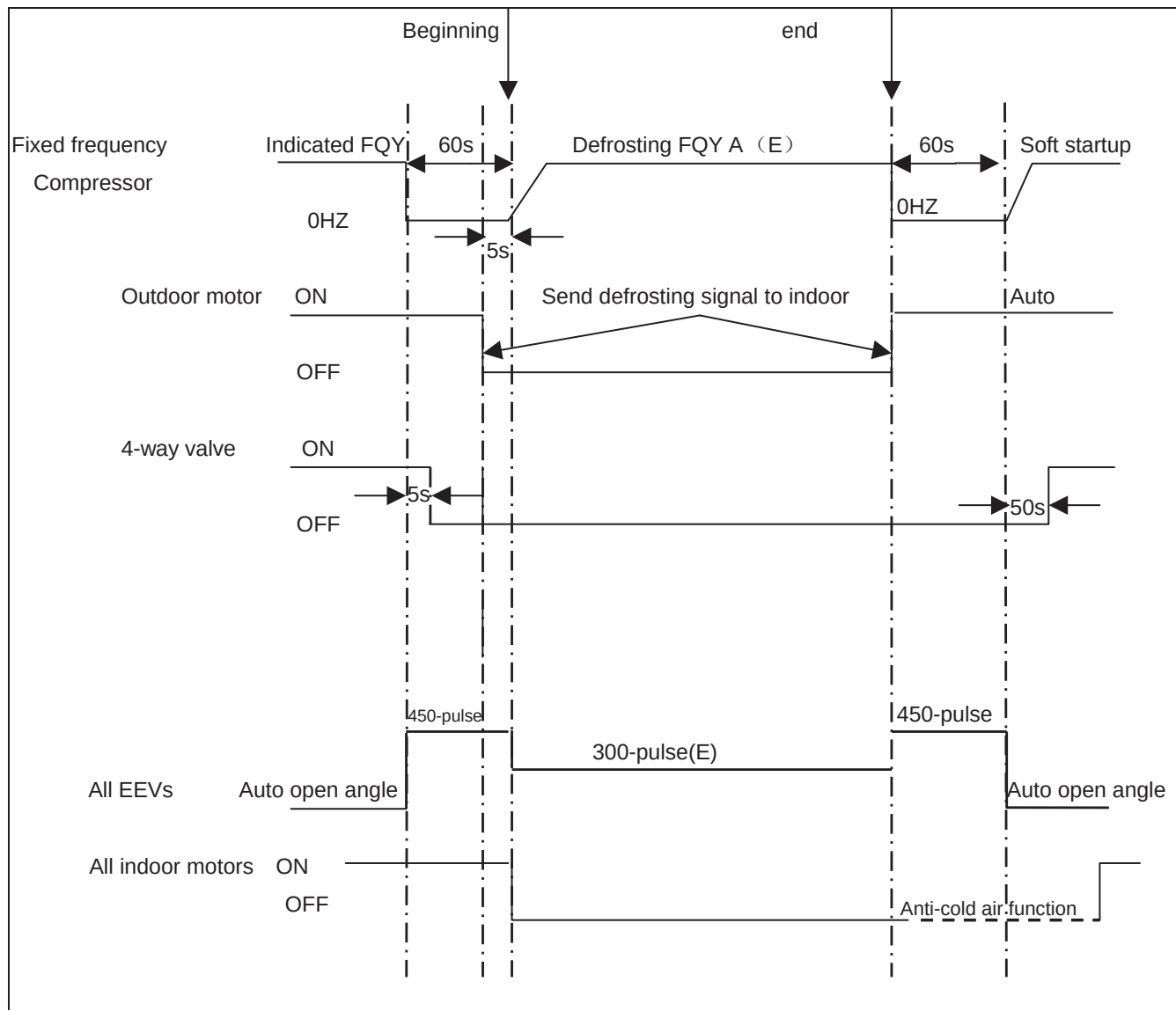
As the outdoor coil absorbs heat from the surrounding air, the very cold liquid refrigerant is changed to a cool vapor. This vapor travels through the 4-way valve to the accumulator.

- 4 Defrost Temperature Sensor (Te):** The outdoor coil temperature will be sensed by the Defrost Sensor. The sensor will use this temperature to adjust EEV open angle and to calculate when a defrost cycle is necessary.

- 5 Suction Temperature Sensor (Ts):** The temperature of the suction gas entering the compressor is monitored by the Suction Temperature Sensor.

As the demand becomes less while the indoor temperature rises toward the desired temperature, the compressor will reduce speed. When the set temperature is reached, the compressor and outdoor fan will shut off. The circulating fan of each indoor unit continues to run.

Defrost Cycle



Electronic Expansion Valve (EEV) Control

Electronic characteristics

Max. open angle	480 pulses
-----------------	------------

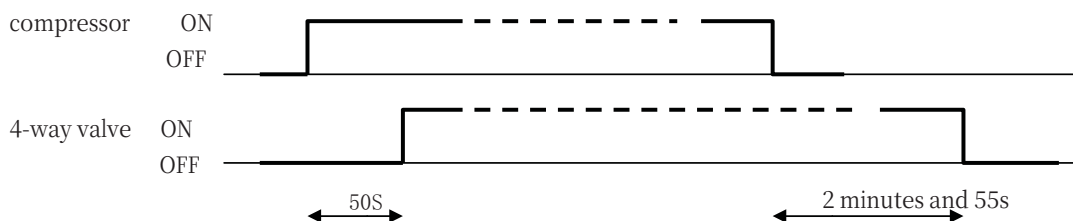
Open angle limitation of EEV

	Unit stop	Max. open angle	Thermostat OFF	Min. open angle
Cool/ dry	5 pulses	470 pulses	5 pulses	80 pulses
Heat	50 pulses	470 pulses	50 pulses	80 pulses

The EEV routinely opens and closes to maintain the compressor discharge temperature within an acceptable range.

4-Way Valve Heating Control

When the compressor starts in the heating mode, there is a 1-minute delay before power is applied to the 4-way valve to switch the flow of hot refrigerant to the indoor coil. When the call for heat is satisfied and the compressor shuts off, a 3-minute delay will occur before the 4-way valve is powered down and switches back to the at-rest (cooling) position.



If the 4-way valve does not switch into the heating mode, after 15 minutes of compressor run time and the indoor coil temperature is below 41°F/5°C, the compressor will stop and the unit will display a 17-flash error code on the outdoor PCB.

Compressor Sump Heater

The sump (crankcase) heater keeps refrigerant at a higher temperature than the coldest part of the system. This prevents refrigerant from mixing with the compressor oil and also dries condensed refrigerant inside the sump. The sump heater will be energized when the ambient temperature is below 81°F/27°C and will be off when the ambient is 90°F/32°C.

	Heater OFF	Heater ON*min
Ta>50°F(10°C) OR Td>=68°F(20°C)	100%*60min	0
41°F(5°C)<Ta ≤50°F(10°C)and Td<68°F(20°C)	50%*60min	50%*60min
32°F(0°C)<Ta ≤41°F(5°C)and Td<68°F(20°C)	33%*60min	66%*60min
32°F(0°C)>=Ta and Td<68°F(20°C)	0	100%*60min

Defrost Control

In the heating mode and along with the ambient sensor, the defrost sensor monitors the temperature of the outdoor coil to determine if defrost is needed. If the compressor has been running for 10 minutes continuously and for 45 minutes overall, the difference between the ambient sensor (Ta) and the defrost sensor (Te) will be checked. The system will initiate the defrost cycle if the following conditions can be met for 5 continuous minutes:

$$T_e \leq C \times T_a - A$$

Te: Defrost temperature sensor

Ta: Ambient temperature

C: If $T_a < 32^\circ\text{F}/0^\circ\text{C}$ then $C=0.80$, If $T_a \geq 32^\circ\text{F}/0^\circ\text{C}$ then $C=0.60$

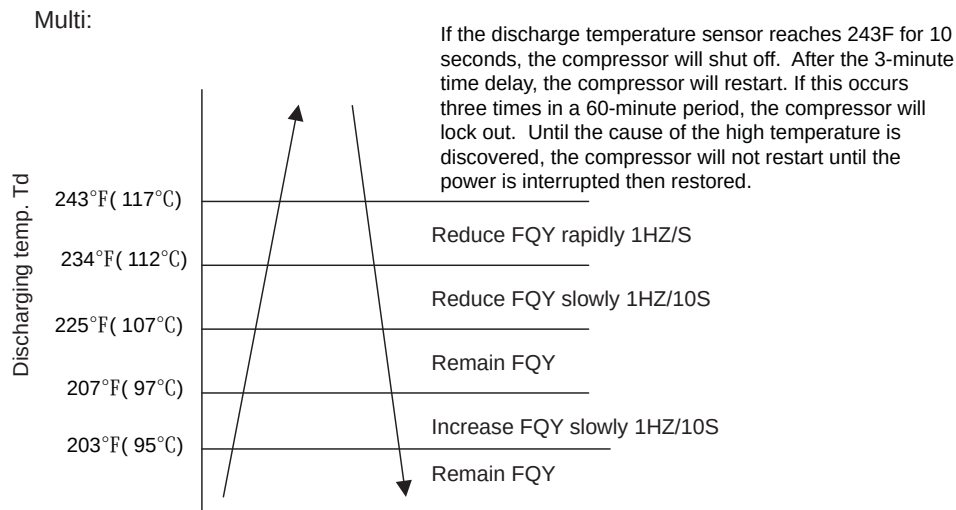
A: 8, moderate climate (factory setting) 6, severe climate (alternate setting)

End defrosting: If the defrost sensor (Te) detects the temperature of the outdoor coil is above 44°F (7°C) for 60 seconds or is above 54°F (12°C) for 30 seconds, the defrost cycle will terminate. If these temperatures cannot be reached, the defrost cycle will automatically terminate in 10 minutes.

Timed Defrost Option (SW1-4 ON): When the outdoor ambient temperature sensor (Ta) detects temperature less than 32°F (0°C), In heating mode, if the compressor runs continuously for 60 minutes or cumulatively for 240 minutes the system will defrost. Defrosting frequency is 68 HZ, with a defrosting time of 60 minutes.

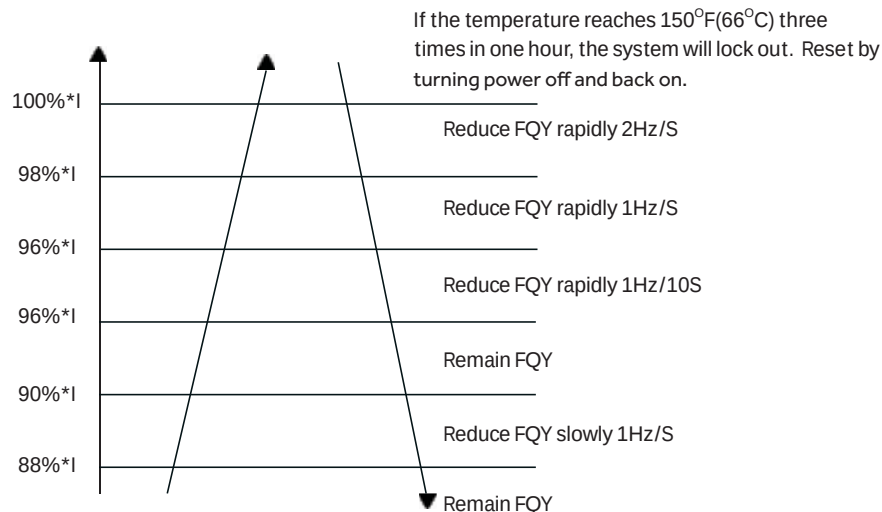
Discharge Sensor Protection

If the discharge temperature is higher than normal, the compressor will slow down to lower the temperature.



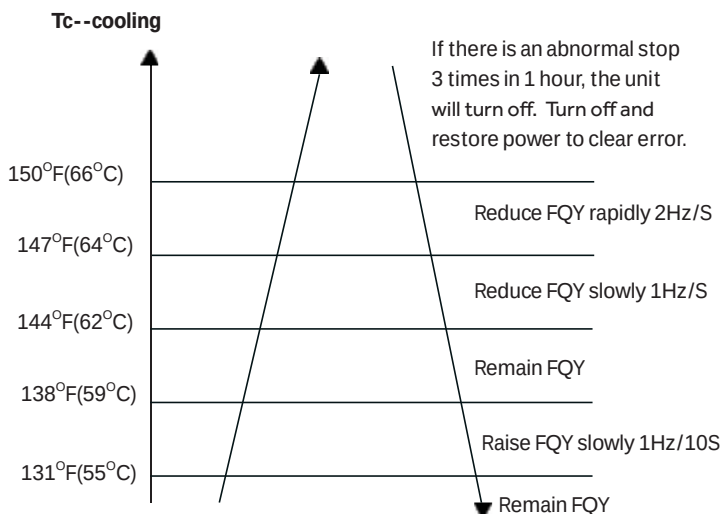
High Current Protection

The below table is the outdoor unit protection current and compressor current.



High Pressure Protection

High Pressure Protection in Cooling



Low Pressure Protection

With the compressor running, if the low pressure switch opens for 1 minute, the compressor will stop.

If this condition occurs 3 times in an hour, the compressor will lock out and a low pressure error code will be displayed at the indoor unit.

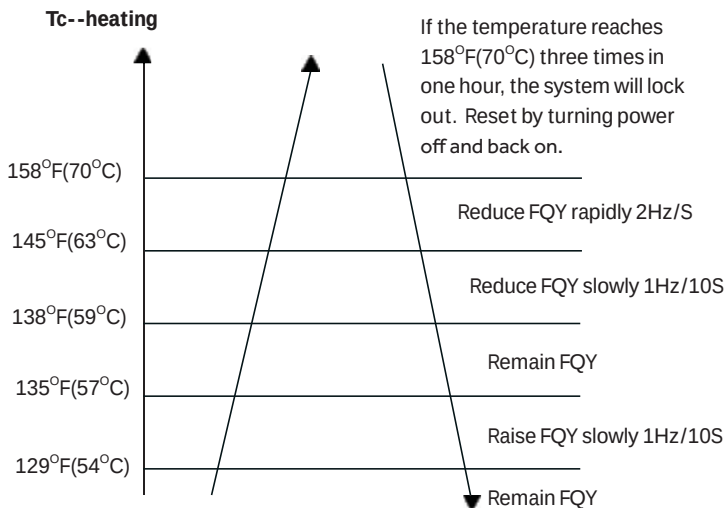
If the compressor is not running and the switch opens for 30 seconds, a low pressure error code will be displayed.

The low pressure switch does not stop compressor operation or signal an error code during the following conditions:

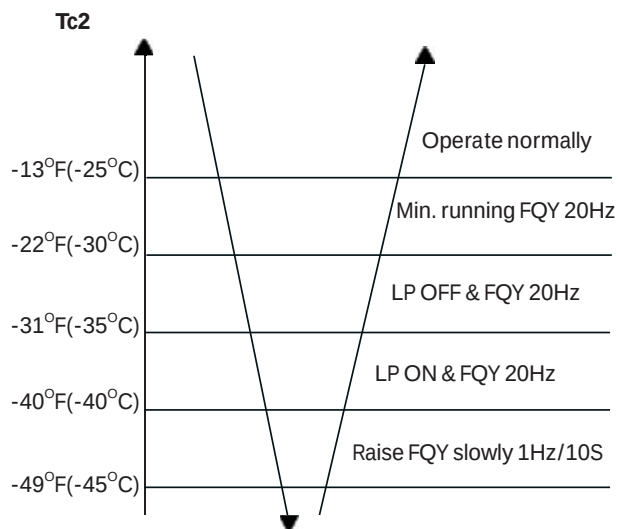
- The first 8 minutes of run time when the compressor starts a new cycle
- During defrost
- When the ambient temperature is below 32°F/0°C
- Following the termination of an oil return cycle

When any of the above 4 conditions are present, low pressure protection is provided by the coil temperature sensors in both heating (Te) and cooling (Tc2) modes.

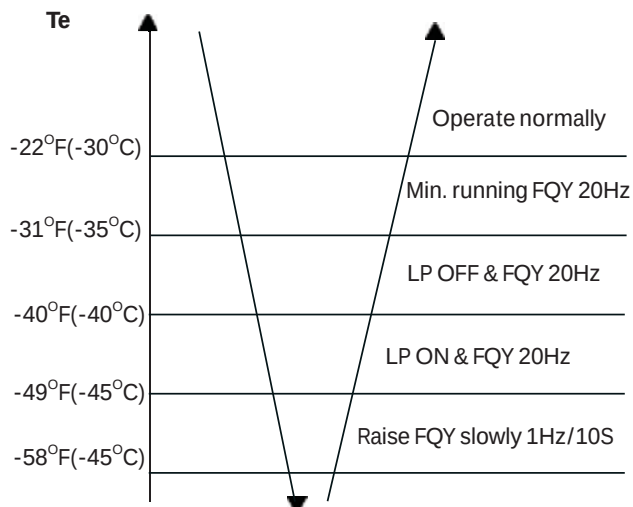
High Pressure Protection In Heating



Low Pressure Protection in Cooling Mode:



Low Pressure Protection in Heating Mode:



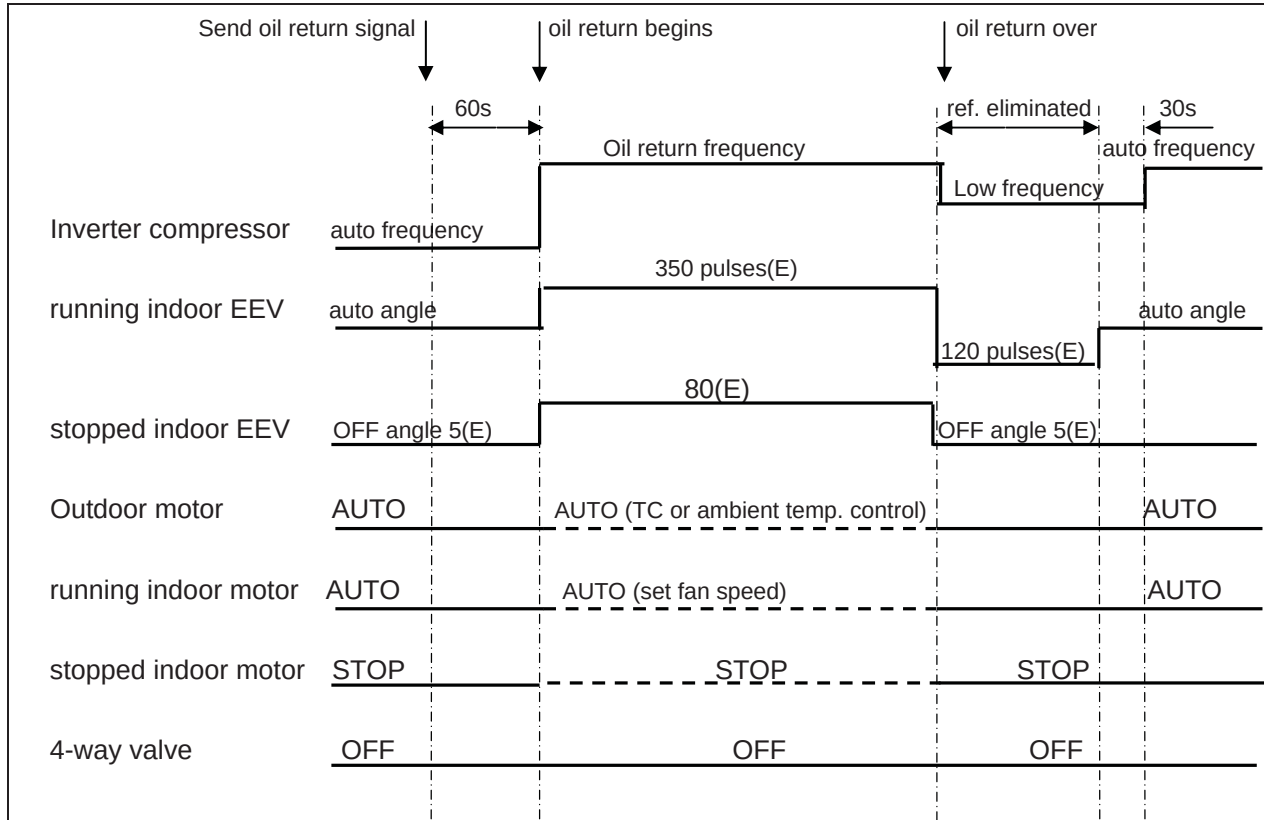
Oil Return Cycle

When the compressor is operating at low load conditions, or the operating frequency has been below 70Hz continuously for 4 hours, the system will enter the oil return cycle. This ensures that oil which may be trapped within the system at low loads will return to the compressor crankcase.

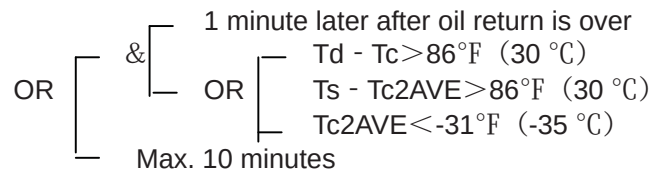
If a 4-hour low speed run time has occurred, the oil return procedure initiates by automatically ramping up the compressor speed to at least 85Hz for a pre-set time, up to a 9-minute maximum. The higher speed will wick hiding oil into the now faster-moving refrigerant and deposit it in the compressor crankcase. To avoid occupant discomfort when the oil return cycle is active, the indoor fan shuts off.

Should an error code result in a system shutdown, the oil return cycle timing will resume when the error code has been cleared.

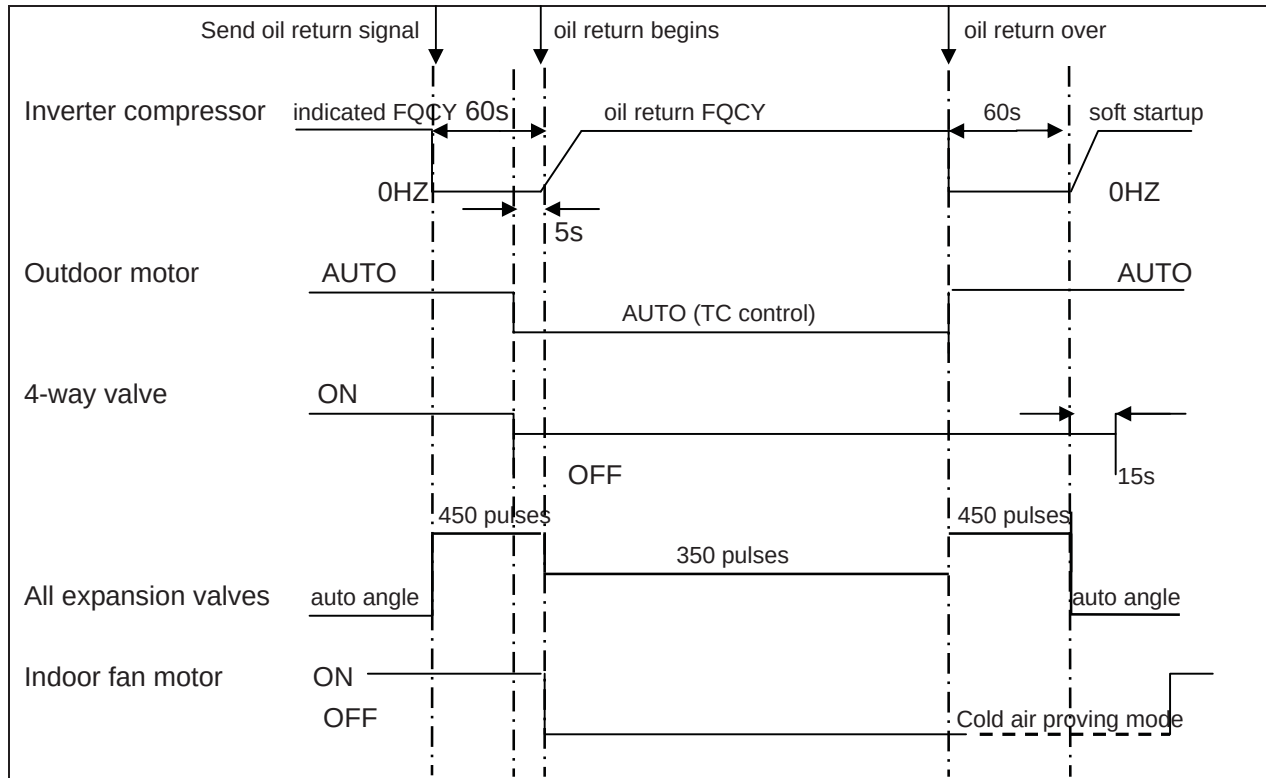
Oil Return in Cooling Mode



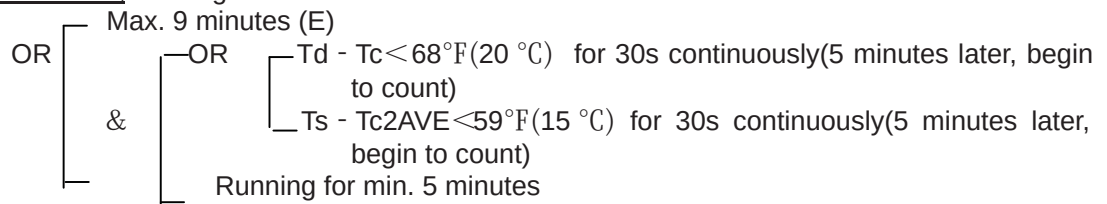
Oil Return Exit Conditions, Cooling:



Oil Return in Heating Mode

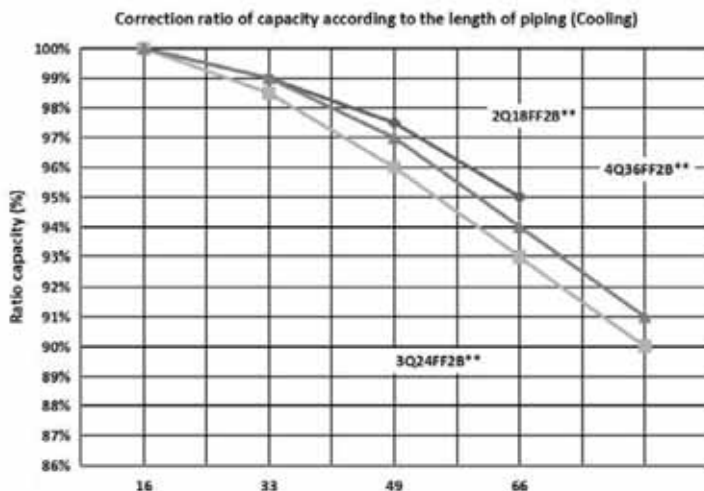


Oil Return Exit Conditions, Heating:

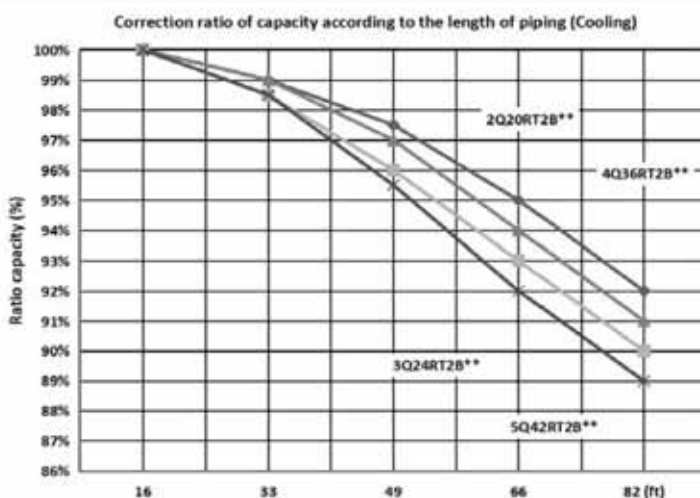


Correction Ratio of Capacity According to the Length of Piping

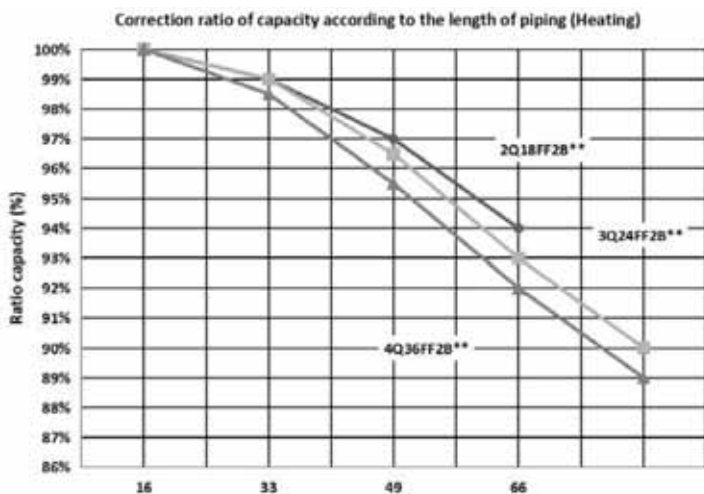
Cooling	Pipe length (ft)				
	16	33	49	66	82 (ft)
2Q18FF2BEA	100.0%	99.0%	97.5%	95.0%	
3Q24FF2BEA	100.0%	98.5%	96.0%	93.0%	90.0%
4Q36FF2BEA	100.0%	99.0%	97.0%	94.0%	91.0%



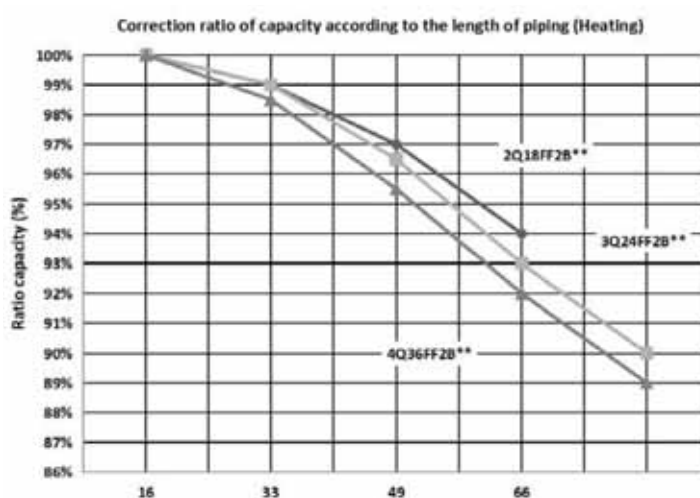
Heating	Pipe length (ft)				
	16	33	49	66	82 (ft)
2Q20RT2BEA	100.0%	99.0%	97.5%	95.0%	92.0%
3Q24RT2BEA	100.0%	98.5%	96.0%	93.0%	90.0%
4Q36RT2BEA	100.0%	99.0%	97.0%	94.0%	91.0%
5Q42RT2BEA	100.0%	98.5%	95.5%	92.0%	89.0%



Heating	Pipe length (ft)				
	16	33	49	66	82 (ft)
2Q18FF2BEA	100.0%	99.0%	97.0%	94.0%	
3Q24FF2BEA	100.0%	99.0%	96.5%	93.0%	90.0%
4Q36FF2BEA	100.0%	98.5%	95.5%	92.0%	89.0%



Heating	Pipe length (ft)				
	16	33	49	66	82 (ft)
2Q20RT2BEA	100.0%	99.0%	97.0%	94.0%	91.0%
3Q24RT2BEA	100.0%	99.0%	96.5%	93.0%	90.0%
4Q36RT2BEA	100.0%	98.5%	95.5%	92.0%	89.0%
5Q42RT2BEA	100.0%	98.0%	94.5%	91.0%	88.0%



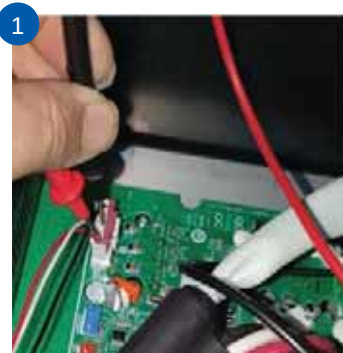
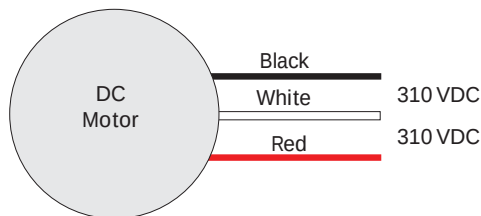
Outdoor Fan Motor

Check that the wiring and plug connections are in good condition.

If the outdoor unit fan motor does not run, or the Service Monitor Board indicates an error code of 09, check the following voltages at connector CN11 on the outdoor unit PCB. Set the meter to read DC volts with a minimum voltage range of 350 volts. All voltage values are approximate. Initiate forced cooling.

1. DC voltage between the Red and Black wires should read 310 - 334VDC. This is the main voltage for powering the fan motor.
2. DC voltage between the White and Black wires should read 310-334VDC. This is the main voltage for powering the fan motor.
3. DC voltage between the Red and White wires should read 310-334VDC. This is the main voltage for powering the fan motor.

If the outdoor fan initially runs, increases speed then stops, and the Service Monitor Board indicates an error code of 09, the feedback circuit is not functioning. Check that the wiring and plug connections are in good condition.



Note: PCB design may vary by model number

Fault Detection Methods for DC Motors

Rest the motor at room temperature (25°C) for a minimum of 2 hours. Next, use a multimeter to measure the resistance value between the red and black, red and white, black and white motor leads. The difference between the measured values should be no more than 3%.

Note that at different temperatures or fluctuating temperatures, the tolerance limit will fluctuate.



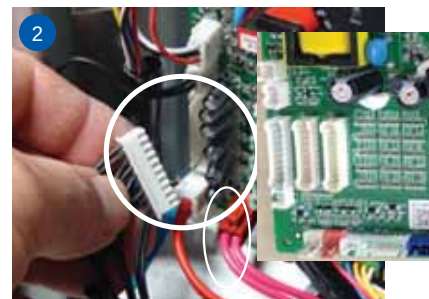
Temperature Sensor

The temperature sensors are negative coefficient thermistors, in which resistance decreases as temperature rises. Should the sensors fail, the PCB will generate an appropriate error code.

To check the calibration of the sensors:

1. Shut off power to the outdoor unit.
2. Disconnect the sensor at the circuit board plug.
3. Measure the temperature of the air surrounding the sensor.
4. Measure the electrical resistance of the sensor using needle probes. Do not force standard probes into the sensor plug.
5. Compare the measured resistance of the sensor against the resistance/temperature specifications (See chart in reference section)
6. If the sensor resistance is outside of the specification tolerances shown on the resistance/temperature table, replace the sensor.

Note: PCB design may vary by model number



4-Way Valve

The 4-way valve will control the direction of hot gas discharge via an internal slide assembly. The valve has a line voltage solenoid that is energized in heat mode. The solenoid will direct the internal slide to send the hot gas to the indoor coil. During cooling mode de-energized operation, the internal slide will direct compressor hot gas to the outdoor coil.

4-way valves may have a failure of the electrical solenoid that prevents the valve from shifting, or they may become stuck due to debris lodging inside the valve body. If the valve fails to direct the hot gas in the proper direction, temperature sensors within the outdoor unit will detect the problem and generate an error code.

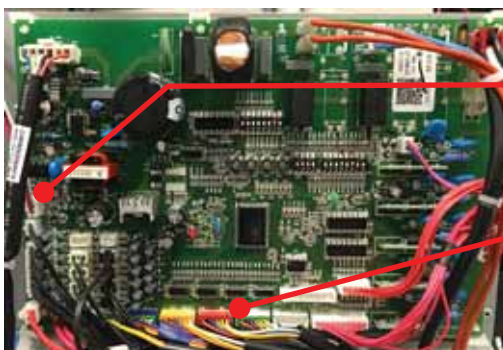
If the valve fails to shift the hot gas to the proper coil, or it only partially shifts, perform the following:

1. Check for correct refrigerant charge, and that all other operating parameters have been met.
2. In the heating mode, the solenoid will shift after a short time delay. Check for line voltage to the solenoid coil.
3. If the valve has voltage but fails to shift the hot gas to the indoor coil, shut the system down and unplug the 4-way valve from the PCB plug.
4. Use an ohmmeter to check continuity through the solenoid coil. If the coil resistance does not match the chart in this manual, or if a winding shows open or shorted, the solenoid coil will have to be replaced.
5. If the coil resistance is within the tolerance, use a magnet along the valve body to determine the location of the piston. If one end of the piston is against the end of the valve body, it is stuck and the valve must be replaced.
6. Partial shifting of the valve can be detected by measuring the temperature of the suction gas where it enters the reversing valve and then comparing that temperature to the temperature of the suction gas exiting the 4-way valve. There should be no more than 3F difference. Excessive temperature rise through the suction gas path is an indication of a stuck piston. If the piston will not become free by switching from heating to cooling several times, a slight tapping on the valve body, or by using a powerful magnet, the valve will require replacement.



Electronic Expansion Valve (EEV)

1. Check to see if the Electronic expansion valve (EEV) connector is correctly and firmly inserted in the PCB.
2. Turn the power off and back on again,
3. Check to see whether the EEV have a reposition sound. This sound will start after approx 2 min. If the EEV doesn't have noise, please disconnect the connector and check the resistance (refer to resistance tables below).
4. If the resistance is OK, The PCB may be at fault.

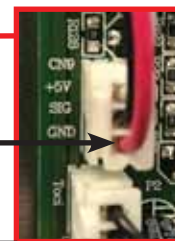


Note: PCB design may vary by model number

EEV Terminals



12VDC



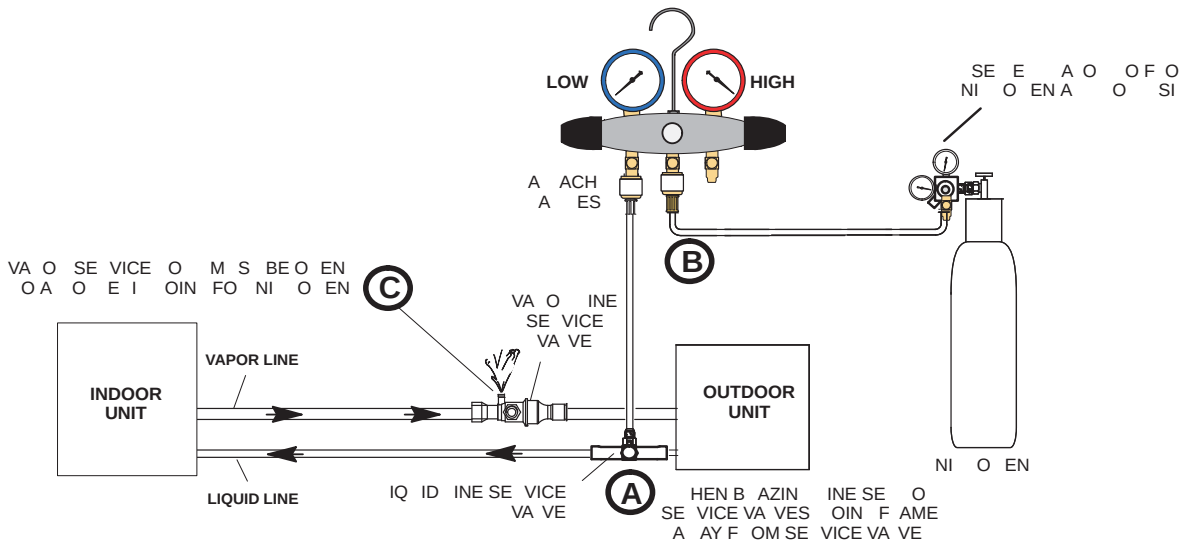
EEV (6-pin, 5 wire)

	White	Yellow	Orange	Blue	X	Red
White	-	92 Ω	92 Ω	92 Ω	-	46 Ω
Yellow	-	-	92 Ω	92 Ω	-	46 Ω
Orange	-	-	-	92 Ω	-	46 Ω
Blue	-	-	-	-	-	46 Ω
X	-	-	-	-	-	-
Red	-	-	-	-	-	-

Leak Test

Perform the following steps for EACH line set. The primary service valve has a 5/16" port. An adapter may be necessary.

- Remove the cap on the service valve.
- Using a tank of dry nitrogen and approved regulator, charge the system with 150 psig of dry nitrogen using mini-split adapter to connect the valve.
- Check for leaks at the flare fittings using soap bubbles or another detection device. If a leak is detected, make repairs to the fittings and recheck. Proceed if no leaks are detected within 3 minutes.
- Using the same tank/regulator, charge the system to 300 psig.
- Recheck for leaks. Proceed if no leaks are detected within 3 minutes.
- Using the same tank/regulator, charge the system to 500 psig.
- Recheck for leaks. Keep system pressurized for at least 20 minutes.



System Evacuation

NOTE: Do not open service valve.

- Remove the suction line cap and attach a micron gauge and vacuum pump. The port is 5/16". An adapter may be needed.
- Evacuate the system to at least 350 microns.
- Close the vacuum pump valve and check the micron gauge. If the gauge rises above 150 microns within 60 seconds, the evacuation is incomplete or there is a leak in the system. If the gauge does not rise above 150 microns in 60 seconds, the evacuation is complete.
- Once evacuation is complete, remove the adapter and hose connection from the suction line port and replaced the cap.

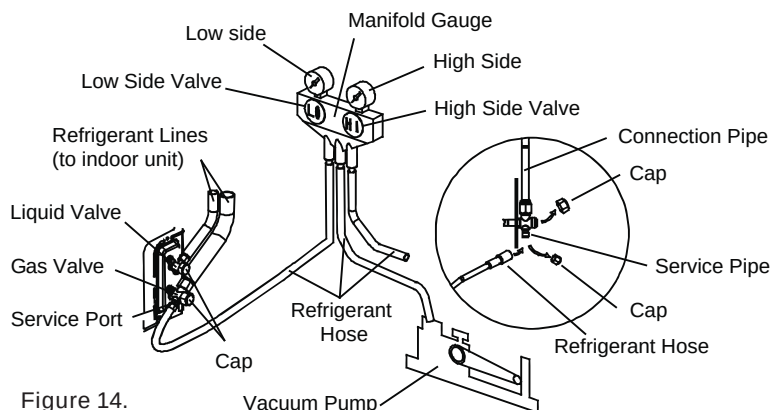
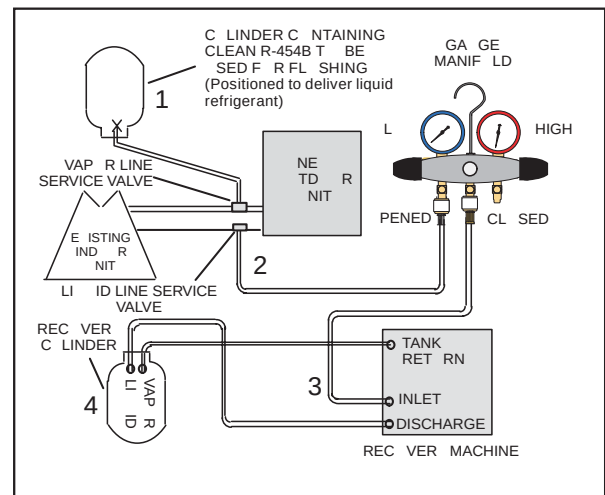


Figure 14.



Refrigerant Charging

- Add any additional refrigerant after evacuation using a digital scale.
- *NOTE: Charge liquid only.*
- Fill out the refrigerant charge label (See illustration below) using permanent ink.
- Place the factory refrigerant charge found on the outdoor nameplate in box number 1.
- Place the amount of additional refrigerant added in box number 2.
- Add boxes 1 and 2 together and place the value in the sum box (D).
- Adhere the completed label in the proximity of the product charging port and under the outside unit valve cover.
- If no sticker is found, write the charge amounts on outdoor unit with permanent marker above the charging port,
- Remove the cap from the liquid line valve. Using a hex wrench, open the valve, then replace and tighten the cap securely to avoid leaks.
- Remove the cap from the suction line valve. Using a hex wrench, open the valve, then replace and tighten the cap securely to avoid leaks.
- Wrap the line set, drain line, and 14/4 AWG wiring starting at the bottom of the bundle with an overlap type wrap until you reach the piping hole.
- Use a sealant to seal the piping hole opening on both sides of the wall in order to prevent drafts, weather, or pests from entering the building.
- This product contains fluorinated greenhouse gases covered by the Kyoto Protocol. Do not vent into the atmosphere.

Contains fluorinated greenhouse gases covered by the Kyoto Protocol

R454B

1= oz

2= oz

1+2= oz

F

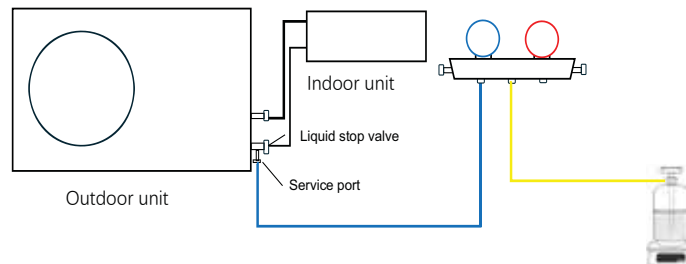
E

Refrigerant type: R-454B

GWP* value: 466

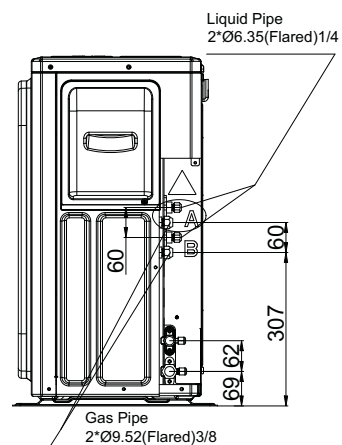
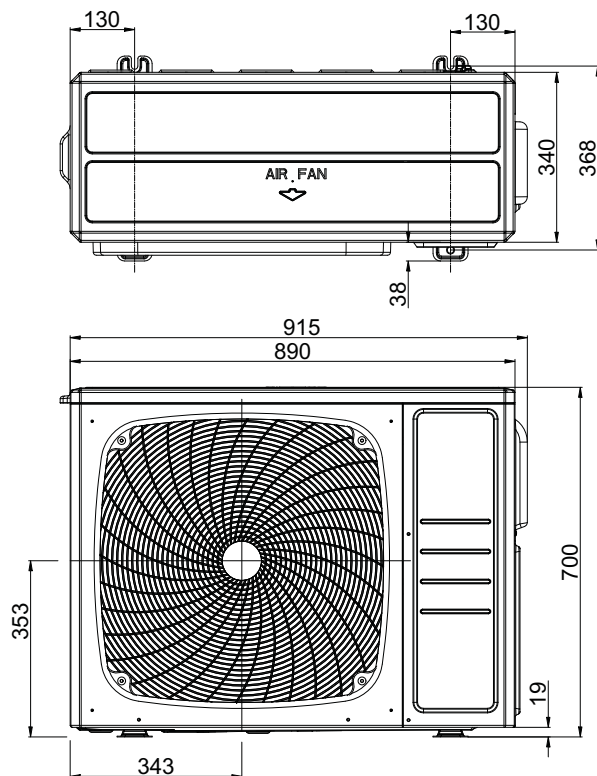
GWP = global warming potential

1. Close the high-pressure manifold gauge valves. Connect the gauge charging port hose to the refrigerant tank, and connect the low-side hose to the ODU gas line service port.
2. Evacuate the lineset between the pressure gauge and the refrigerant tank: Loosen the repair port connecting wire slightly, open the refrigerant tank valve slightly, and evacuate the connecting pipe. After completion, tighten the connecting pipe thread again and open the refrigerant tank valve.
3. The system must be charged with liquid refrigerant only. If the refrigerant tank does not have a siphon tube, place the refrigerant tank upside down on an electronic scale and record the weight. If the refrigerant tank itself has a siphon tube, place the refrigerant tank upright on an electronic scale and record the weight.
4. Open the low-pressure gauge valve, charge the system with liquid refrigerant. Record the changes in the weight of the refrigerant tank until the specified weight is reached. Upon completion, close the refrigerant tank valve, remove the connected hosing and tighten the service valve cap.

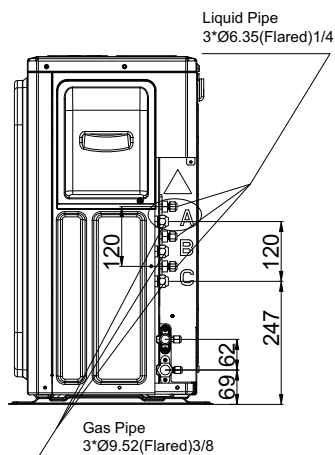
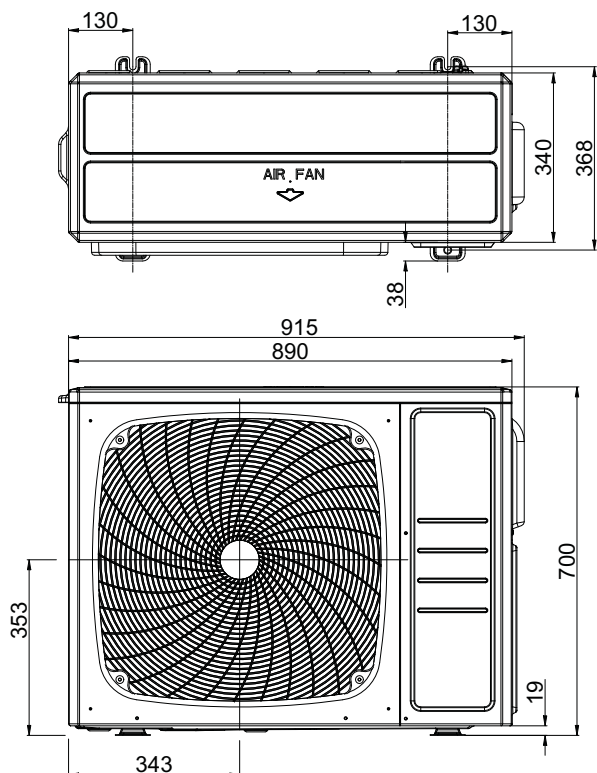


DIMENSION DRAWINGS

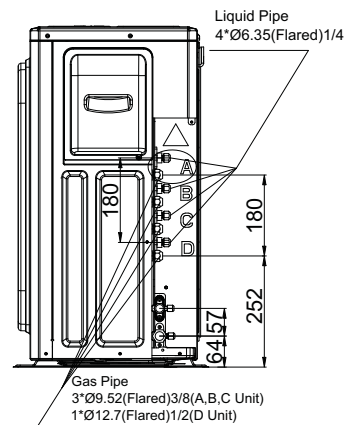
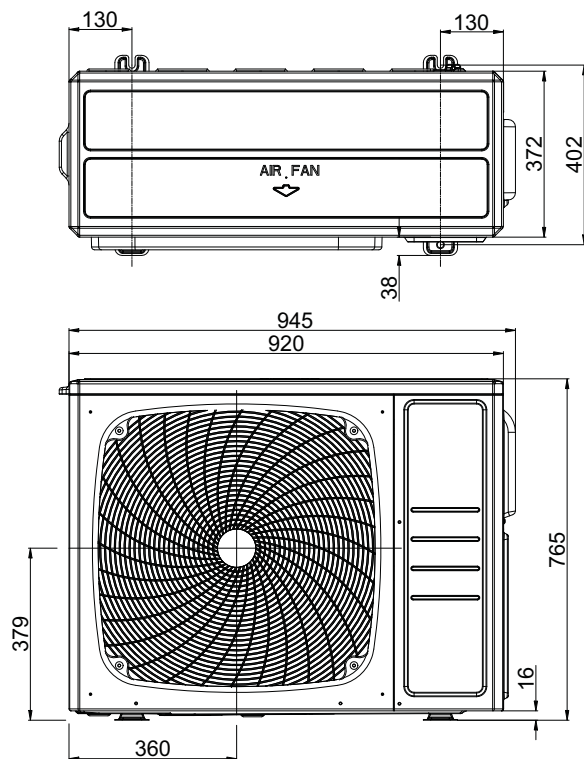
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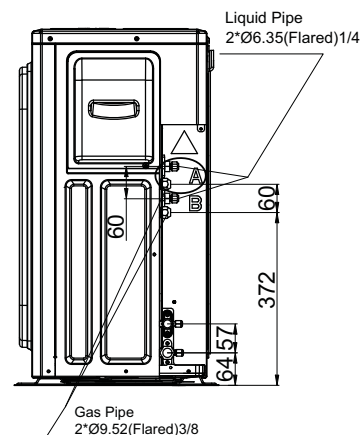
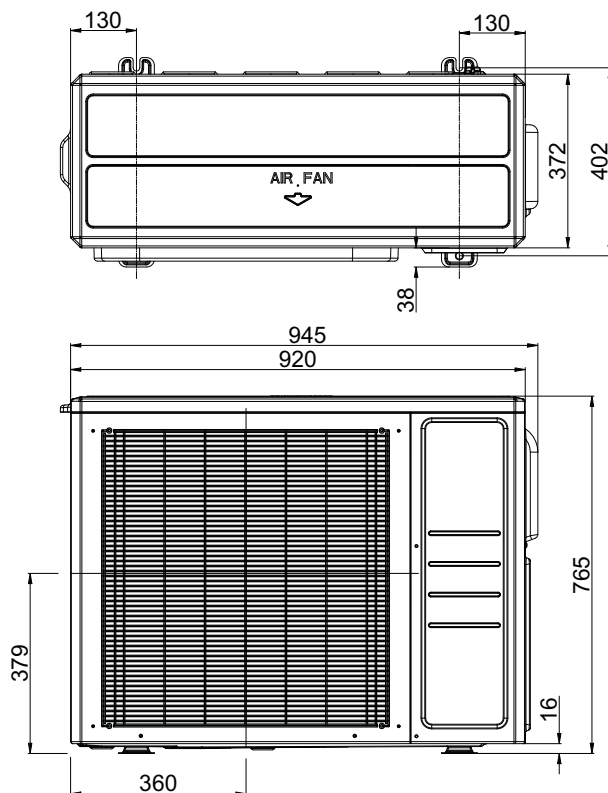
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4Q36FF2BEA

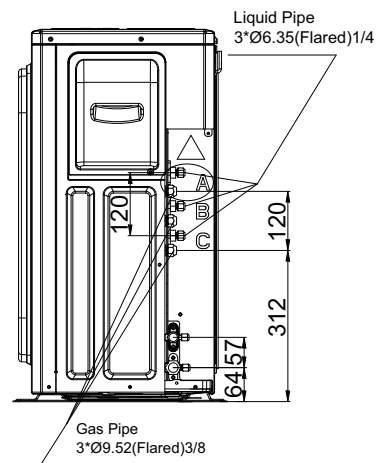
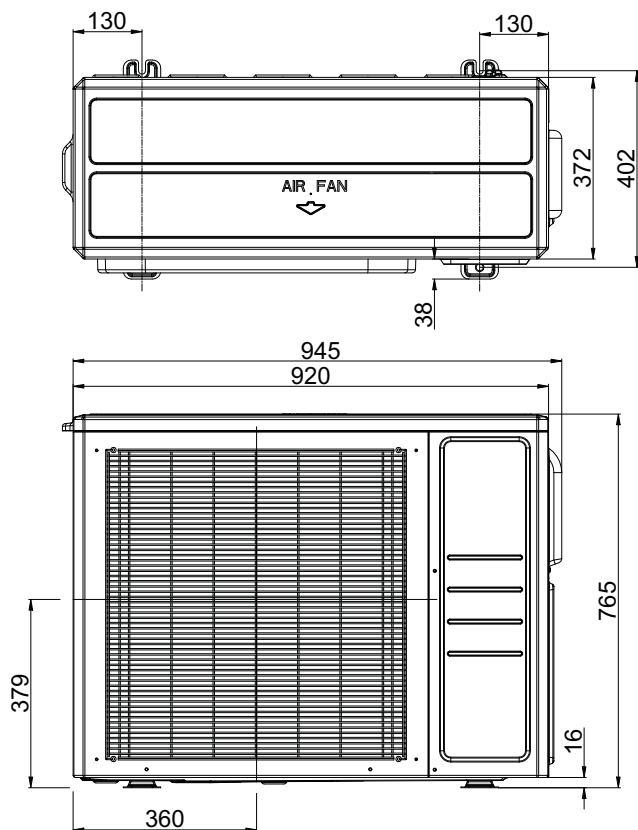


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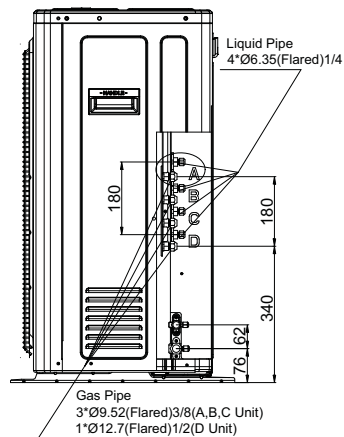
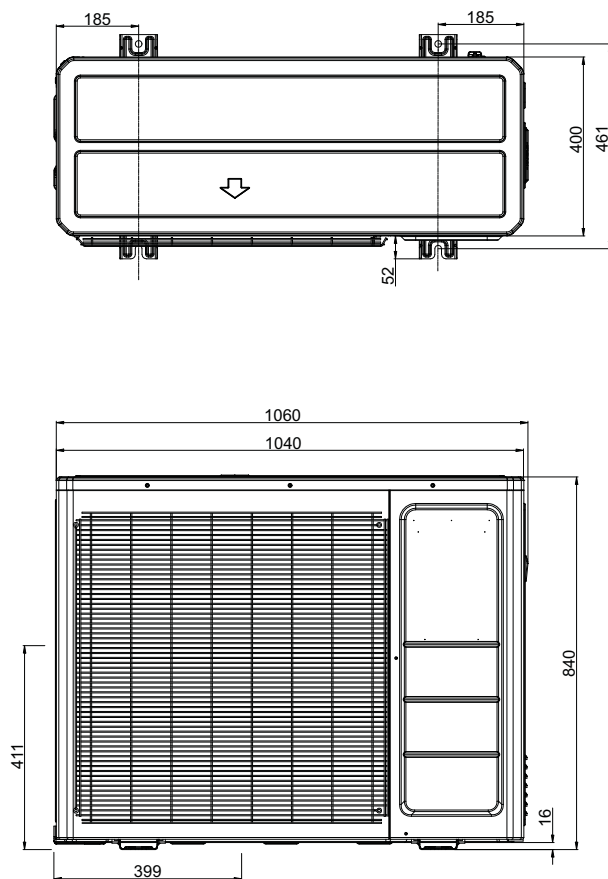


DIMENSION DRAWINGS

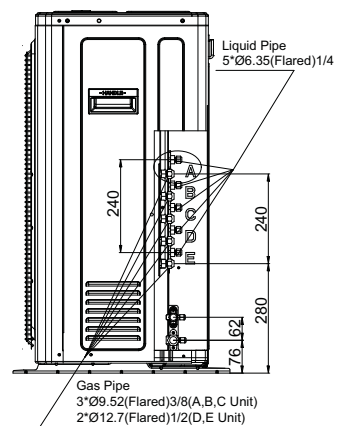
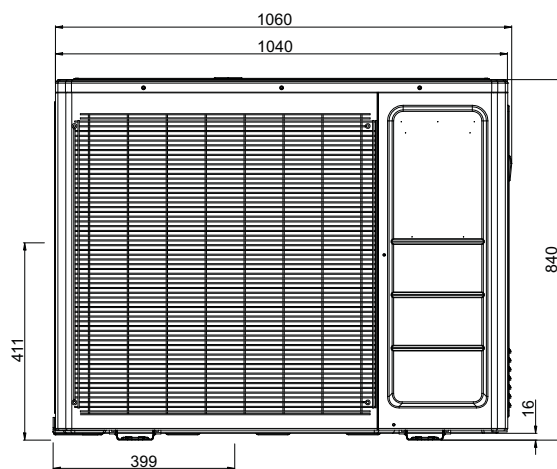
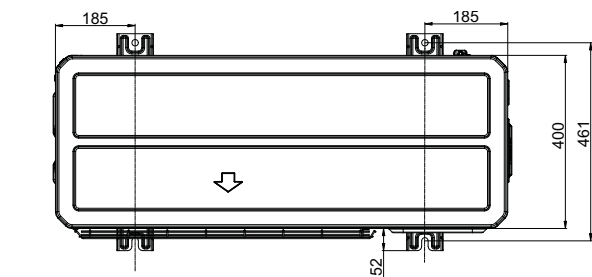
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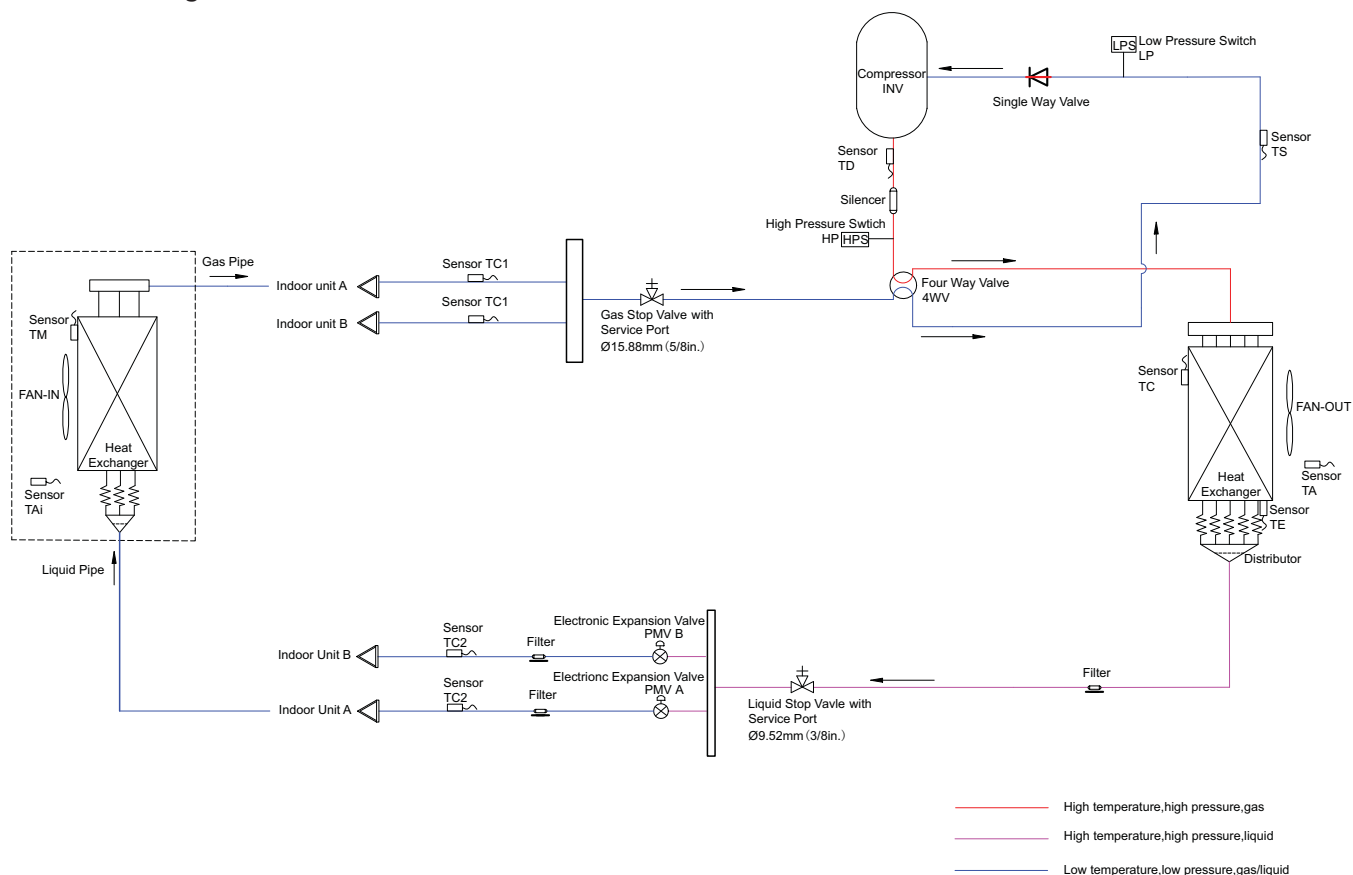


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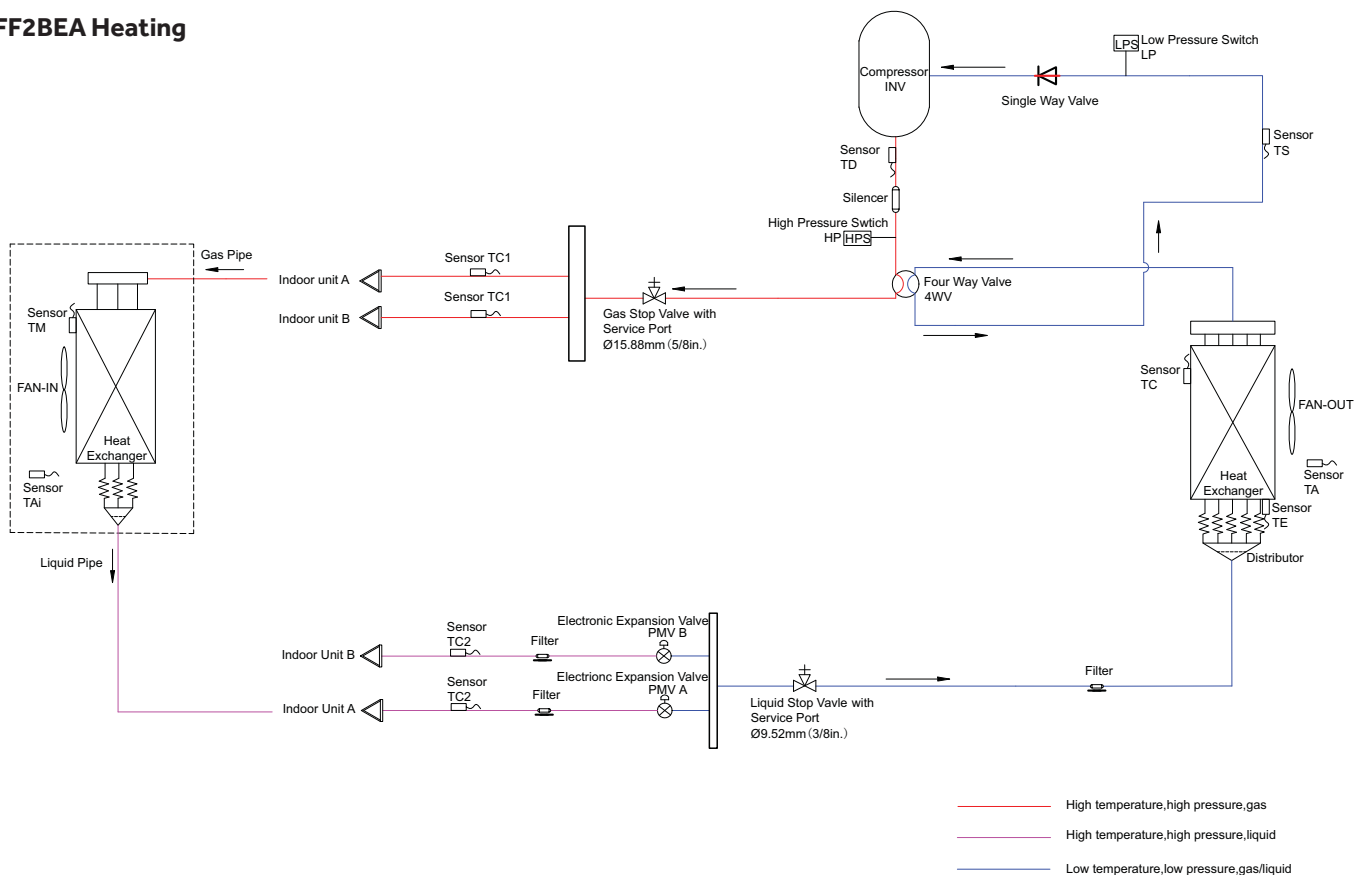


PIPING DIAGRAMS

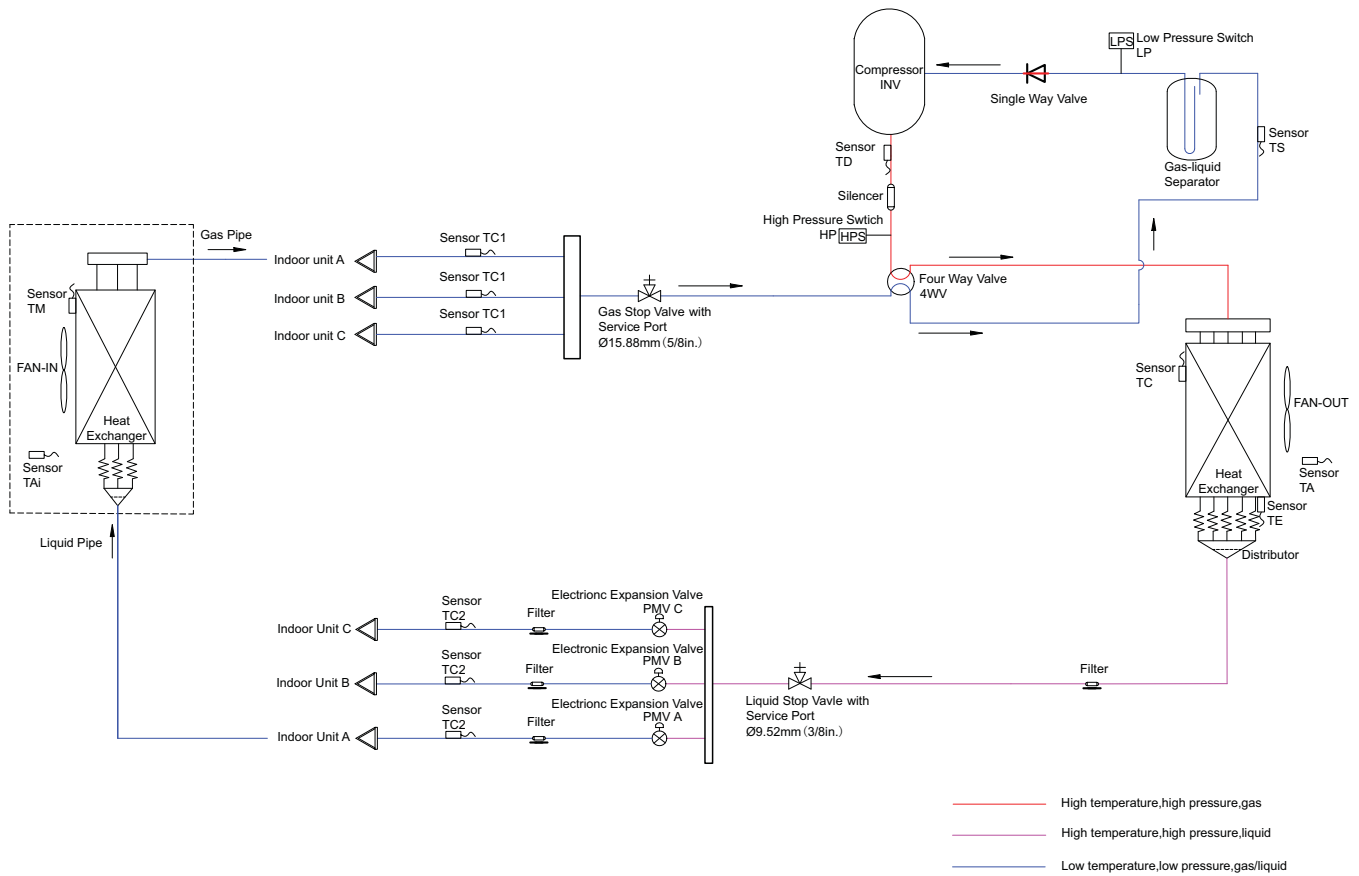
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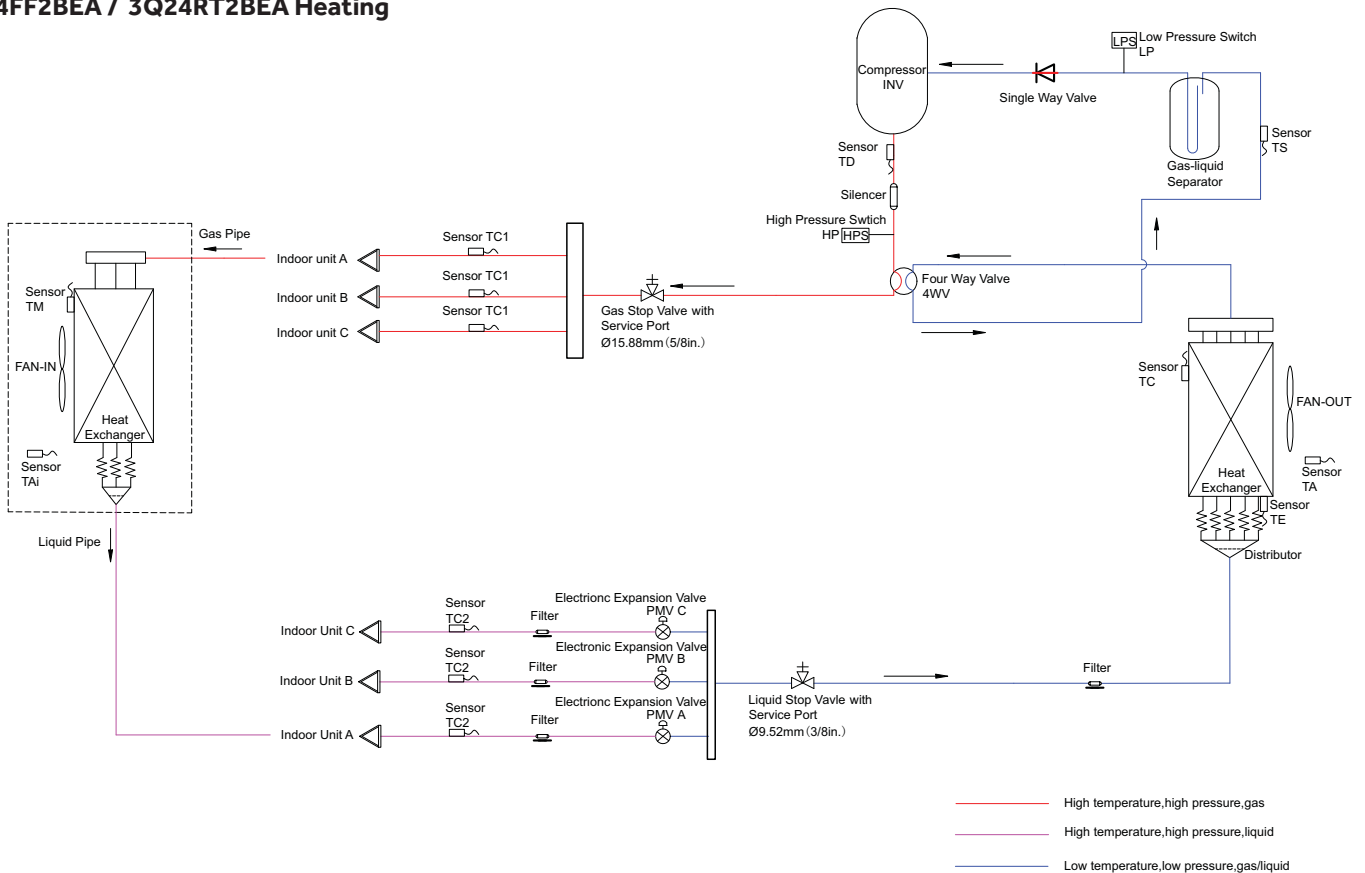
2Q18FF2BEA Heating



3Q24FF2BEA / 3Q24RT2BEA Cooling

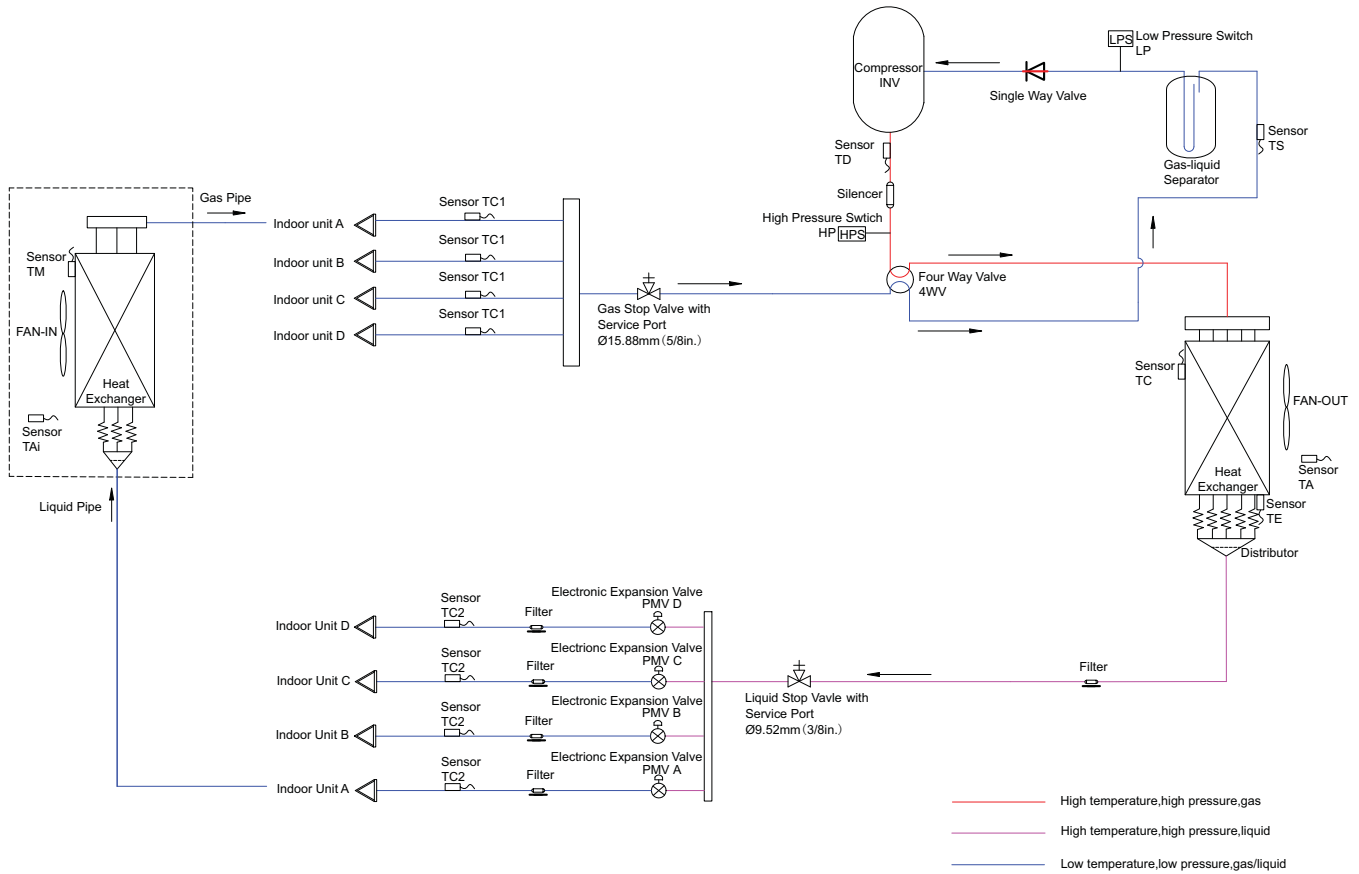


3Q24FF2BEA / 3Q24RT2BEA Heating

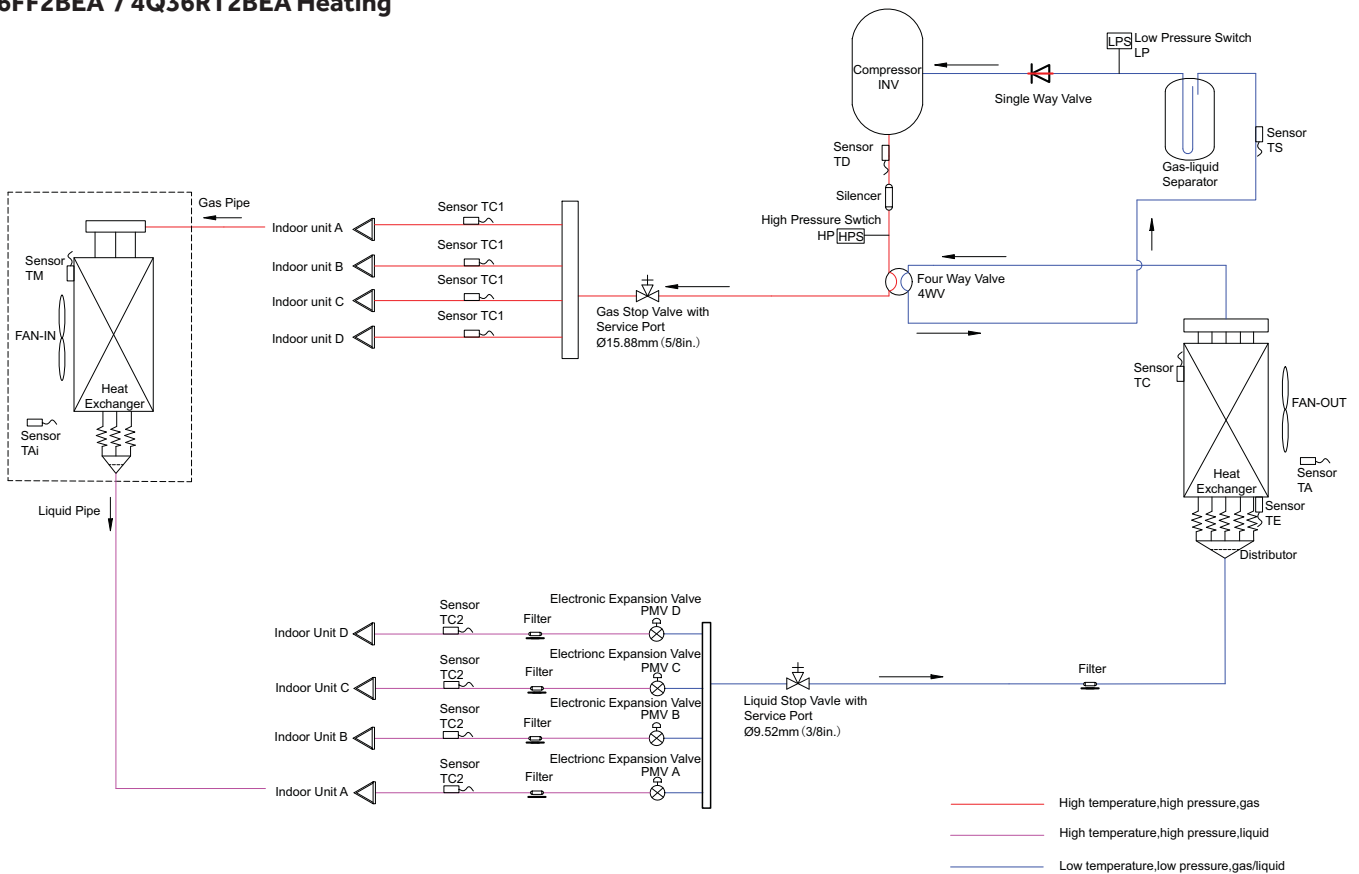


PIPING DIAGRAMS

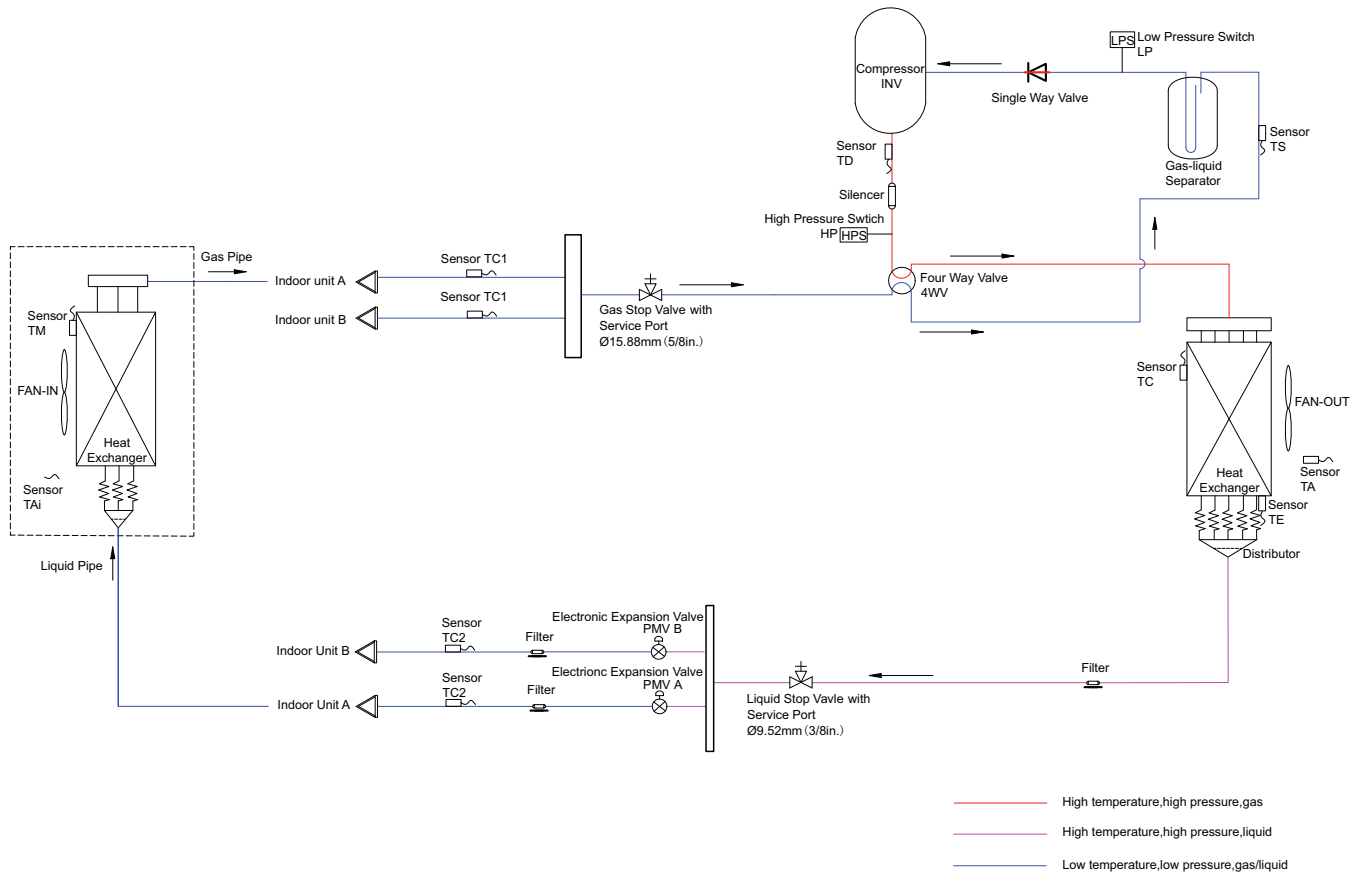
4Q36FF2BEA / 4Q36RT2BEA Cooling



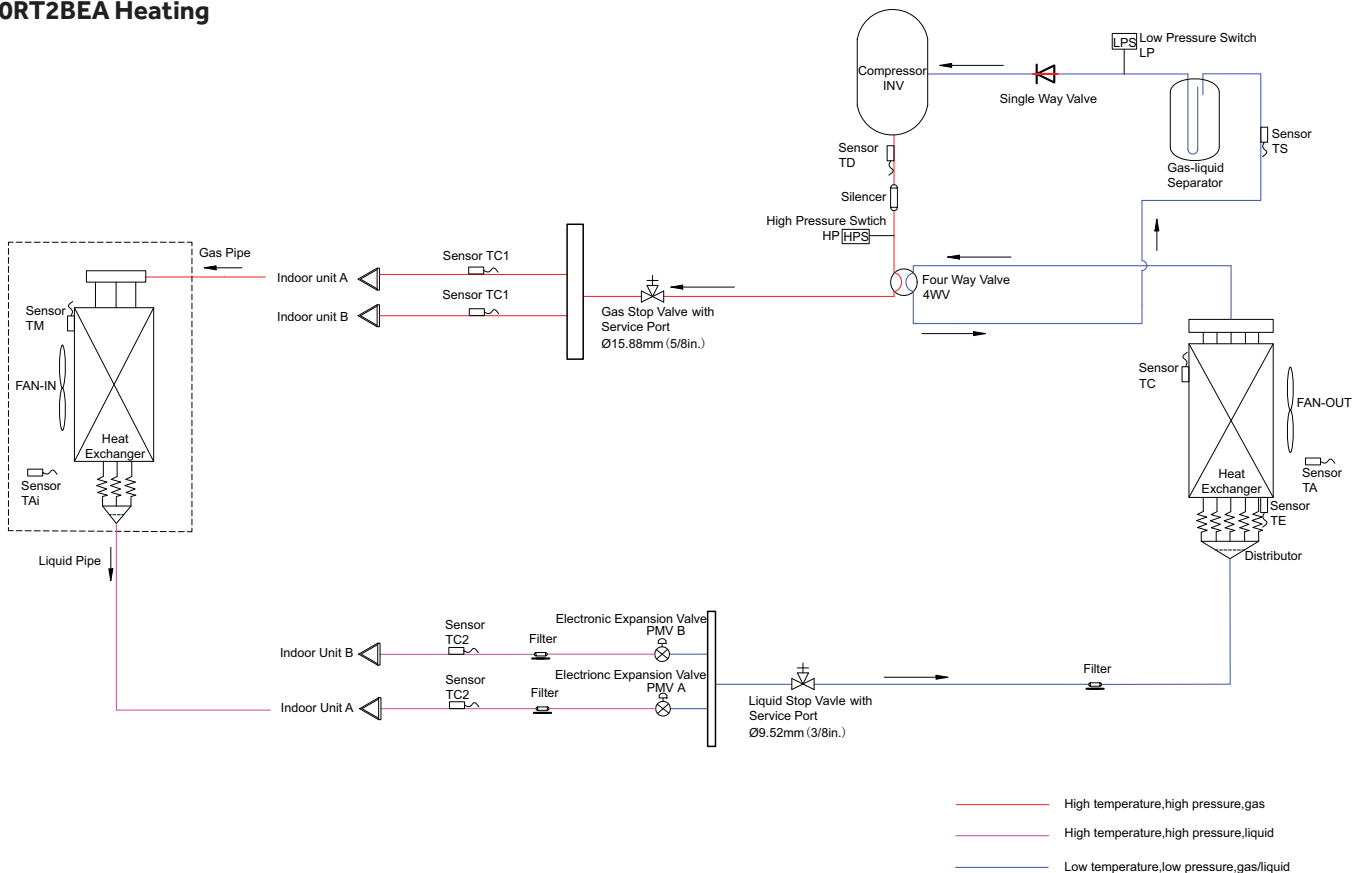
4Q36FF2BEA / 4Q36RT2BEA Heating



2Q20RT2BEA Cooling

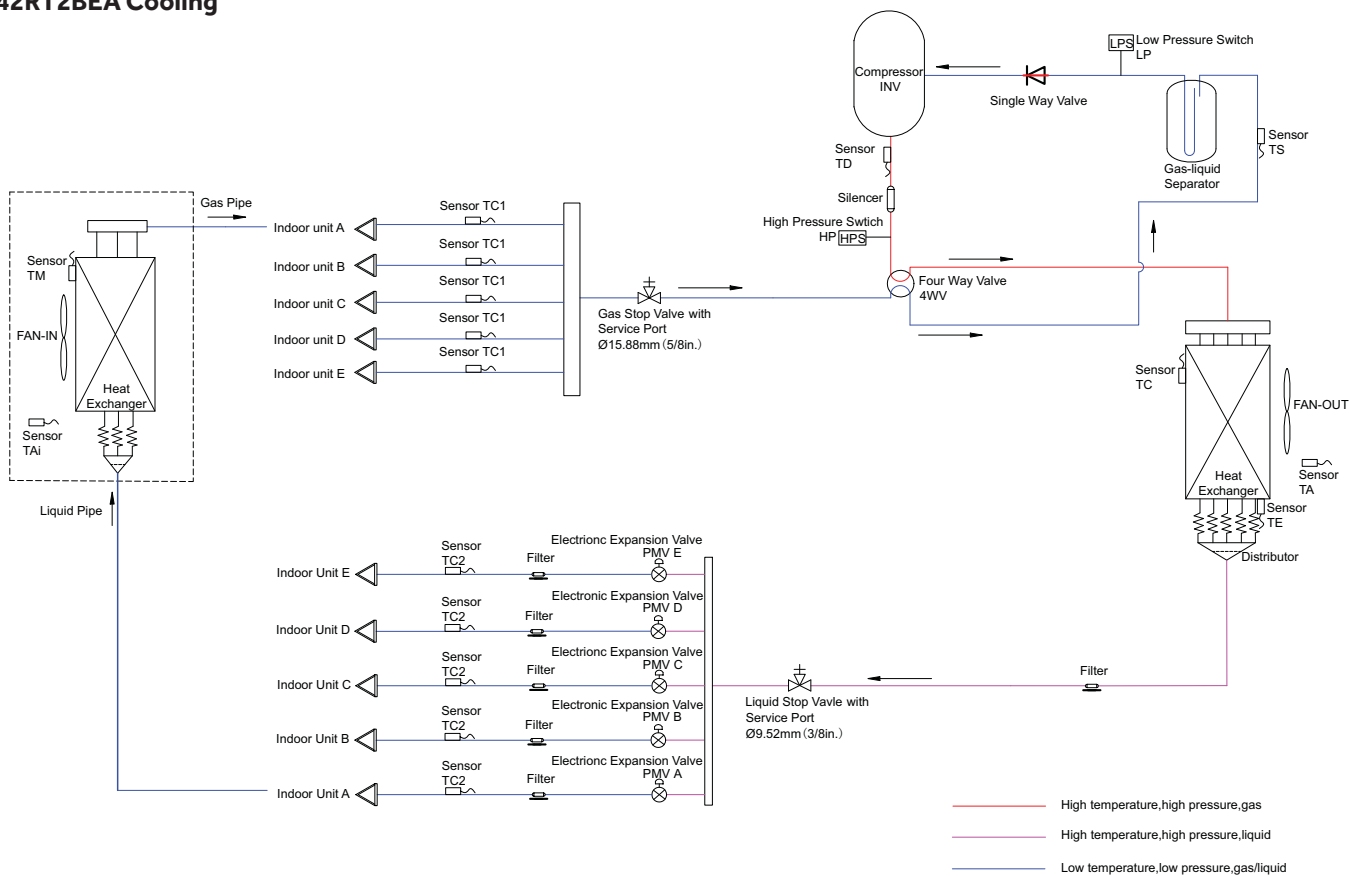


2Q20RT2BEA Heating

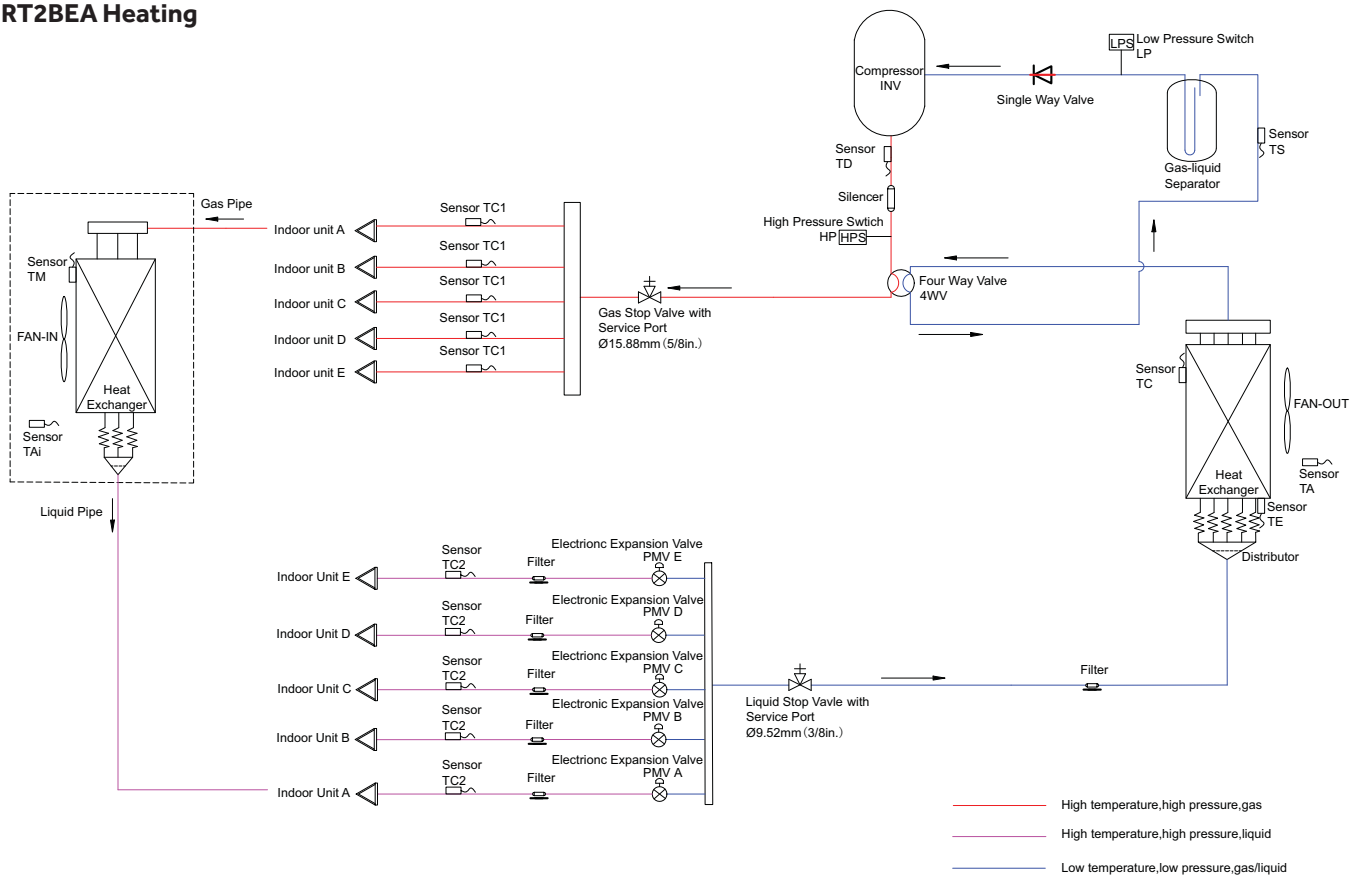


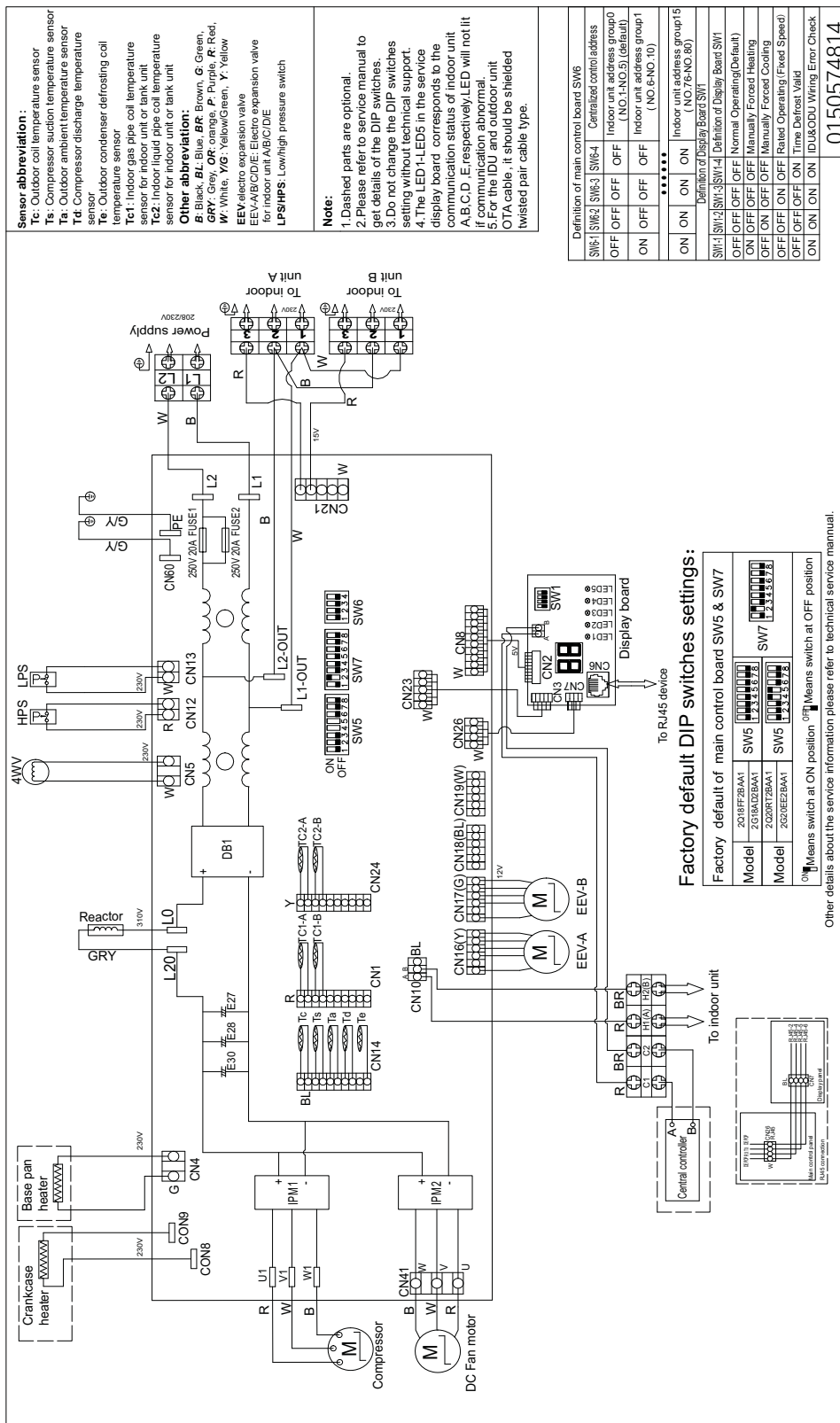
PIPING DIAGRAMS

5Q42RT2BEA Cooling



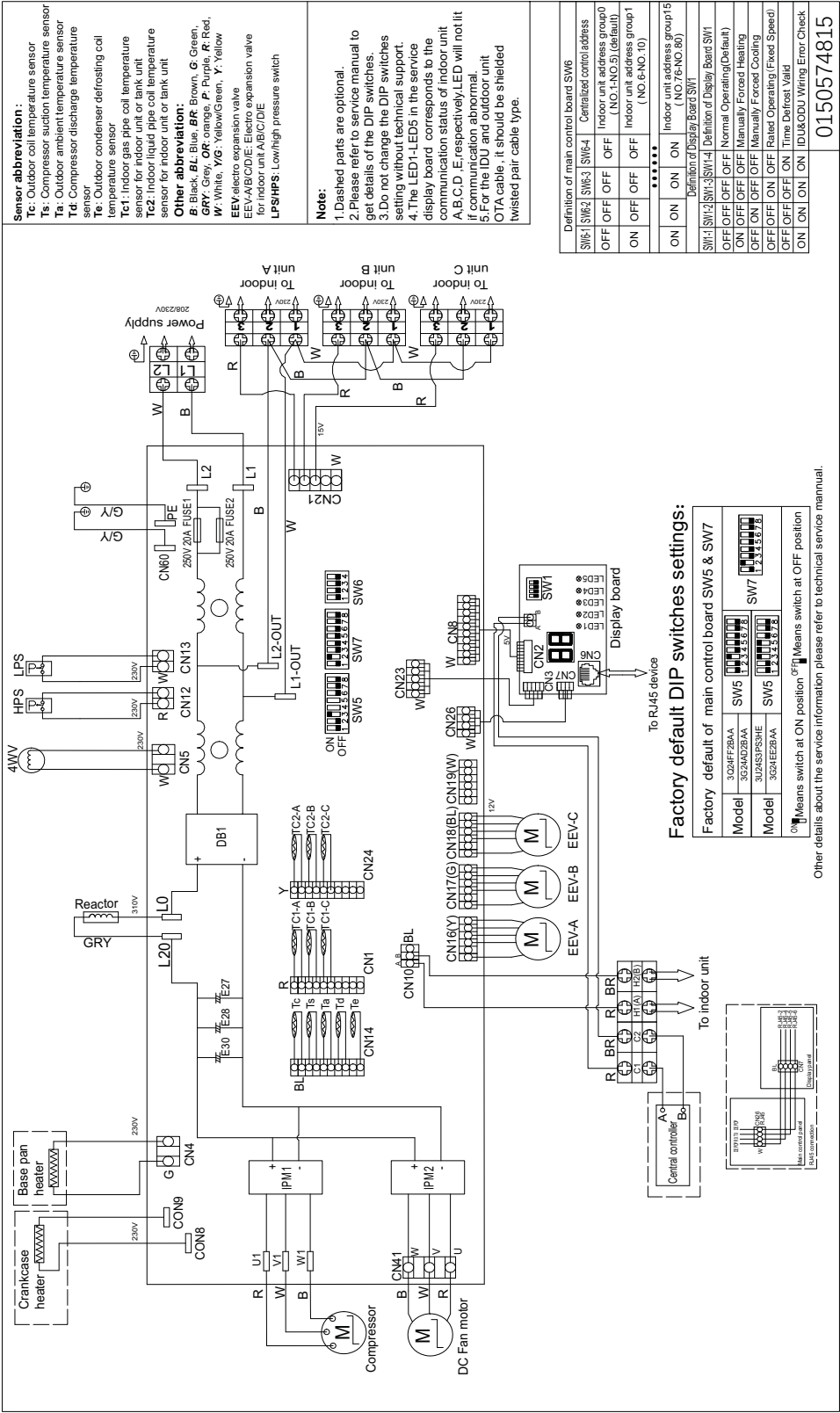
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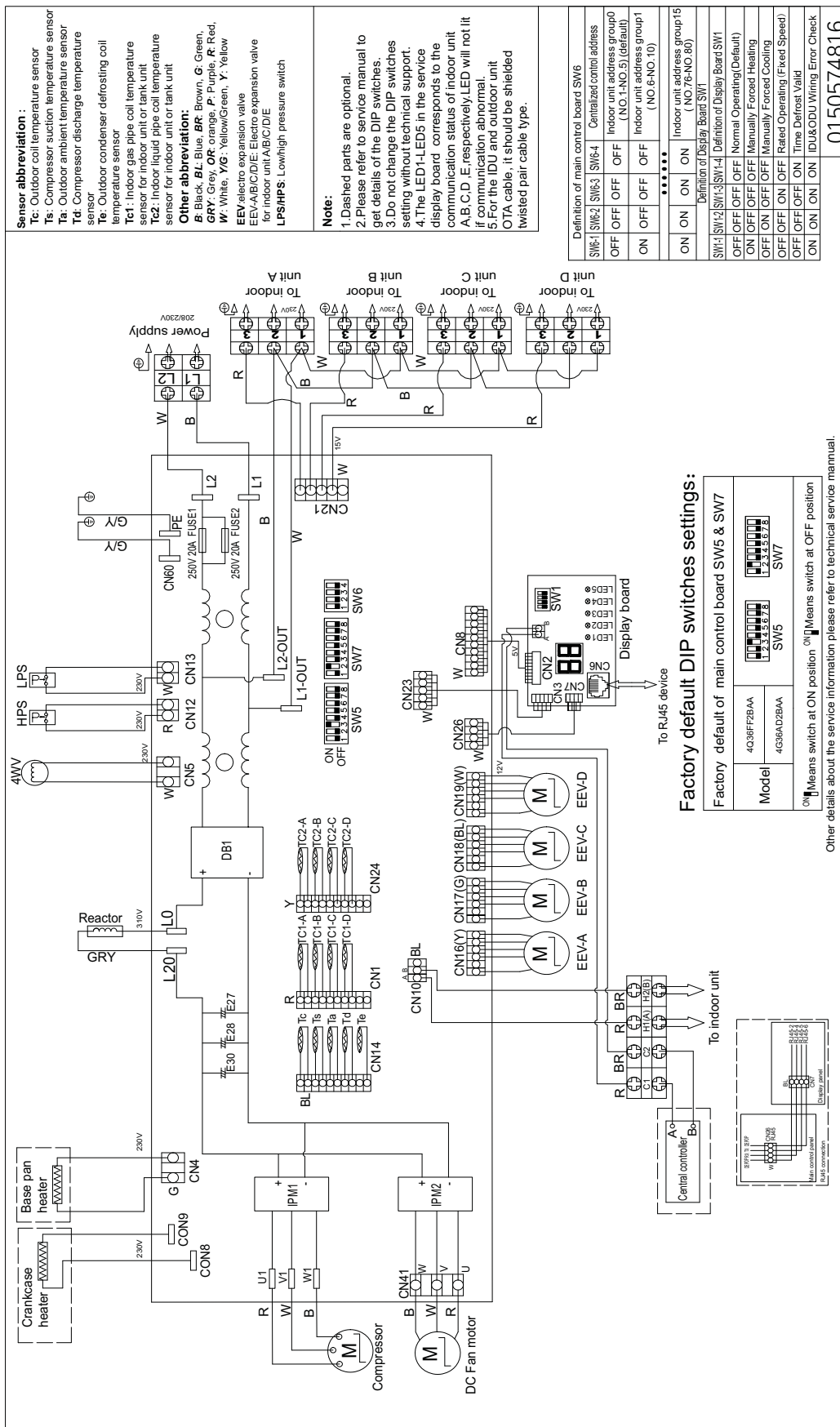




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3Q24FF2BEA / 3Q24RT2BEA





WIRING DIAGRAMS

Sensor abbreviation :
Tc: Outdoor coil temperature sensor
Ts: Compressor suction temperature sensor
Ta: Outdoor ambient temperature sensor
Td: Compressor discharge temperature sensor
Te: Outdoor condenser defrosting coil temperature sensor
Tc1: Indoor gas pipe coil temperature sensor for indoor unit or tank unit
Tc2: Indoor liquid pipe coil temperature sensor for indoor unit or tank unit

Other abbreviation:
B: Black, BL: Blue, BR: Brown, G: Green, GR: Grey, OR: orange, P: Purple, R: Red, W: White, Y/G: Yellow/Green, Y: Yellow

EEV: Electro expansion valve
EEV-A/EEV-C/DE: Electro expansion valve for indoor unit A/B/C/D/E

LPS/HPS: Low/high pressure switch

Note:
1. Dashed parts are optional.
2. Please refer to service manual to get details of the DIP switches.
3. Do not change the DIP switches setting without technical support.
4. The LED1-LED5 in the service display board corresponds to the communication status of indoor unit A,B,C,D,E respectively.LED will not lit if communication abnormal.
5. For the IDU and outdoor unit twisted pair cable type.

The diagram illustrates the Main control Board (MCU) as the central hub for the outdoor unit. It shows the following components and their connections:

- Power Supply:** 200V/230V input connected to L1, L2, and N. A 4W Base pan heater is connected to CN23. A 4W Compressor heater is connected to CN24.
- Compressor:** Connected to the Inverter Board via R, W, B, and U lines. The Inverter Board includes a PFC and PM section.
- DC Fan motor:** Connected to the MCU via R, W, B, and U lines.
- Sensors:** Various temperature sensors (Tc, Ts, Ta, Td, Te, Tc1, Tc2) are connected to the MCU through different terminal blocks (CN1, CN2, CN3, CN4, CN5, CN6, CN7, CN8, CN9, CN10, CN11, CN12, CN13, CN14, CN15, CN16, CN17, CN18, CN19, CN20, CN21, CN22, CN23, CN24, CN25, CN26, CN27, CN28, CN29, CN30, CN31, CN32, CN33, CN34).
- Display Board:** Connected to the MCU via CN25 and CN26. It includes a 12V supply and a 5V supply.
- Control Panel:** Connected to the MCU via CN27 and CN28. It includes a 12V supply and a 5V supply.
- Wiring:** The diagram shows various wiring paths (R, W, B, U, Y/G, EARTH) and terminal blocks (CN1, CN2, CN3, CN4, CN5, CN6, CN7, CN8, CN9, CN10, CN11, CN12, CN13, CN14, CN15, CN16, CN17, CN18, CN19, CN20, CN21, CN22, CN23, CN24, CN25, CN26, CN27, CN28, CN29, CN30, CN31, CN32, CN33, CN34).

Factory default DIP switches settings:

Model	4Q36RT2BEA1	4Q36ED2BEA1	SW5	SW7
MCU	ON	ON	ON	ON

ON: Means switch at ON position. OFF: Means switch at OFF position.

Other details about the service information please refer to technical service manual.

Definition of main control board SW6

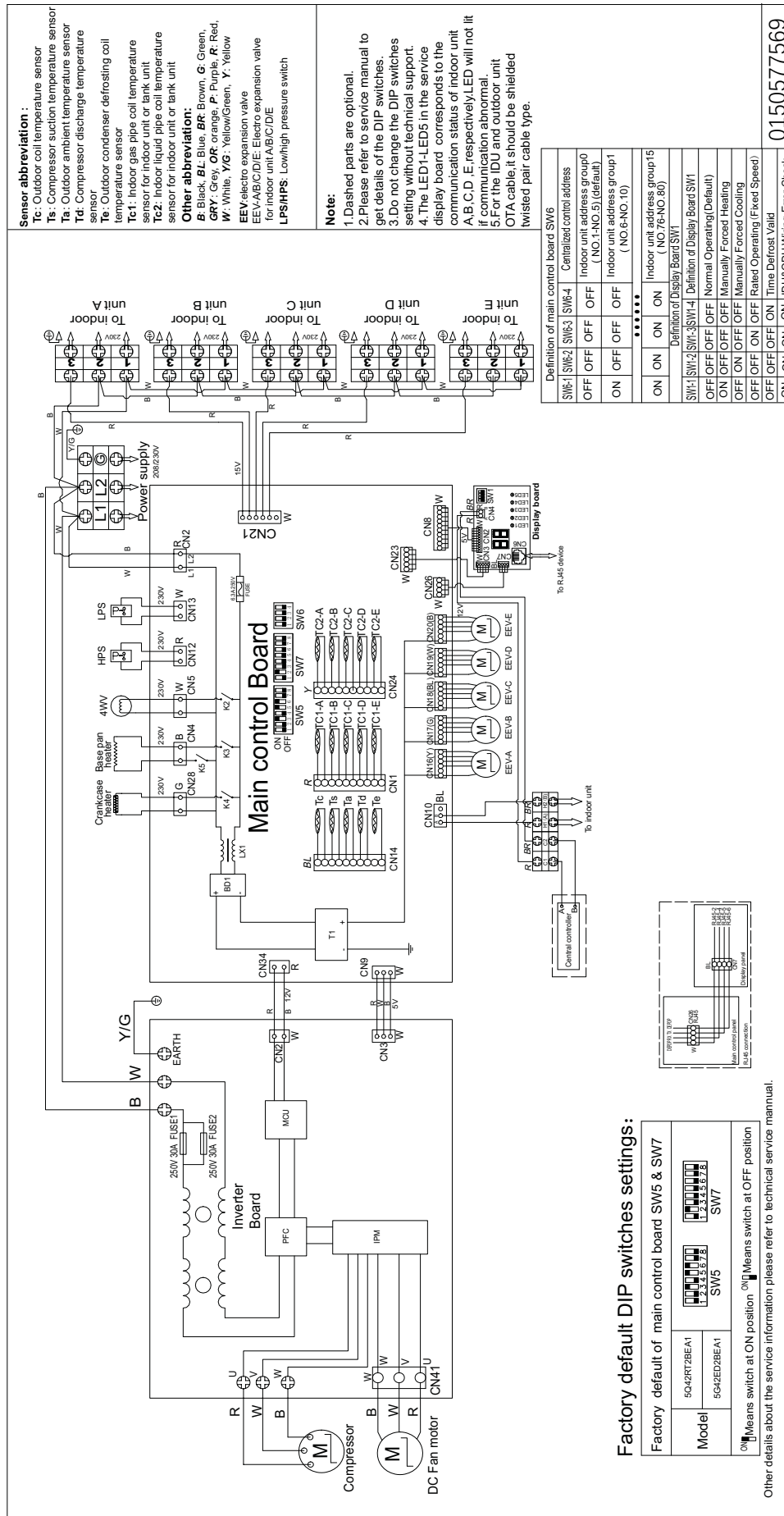
SW6-1	SW6-2	SW6-3	SW6-4	Centralized control address
OFF	OFF	OFF	OFF	Indoor unit address group0 (NO.1-NO.5) (default)
ON	OFF	OFF	OFF	Indoor unit address group1 (NO.6-NO.10)

.....

ON	ON	ON	ON	Indoor unit address group15 (NO.76-NO.80)
SW1-1	SW1-2	SW1-3	SW1-4	Definition of Display Board SW1
ON	OFF	OFF	OFF	Normal Operating(Default)
ON	OFF	OFF	OFF	Manually Forced Heating
ON	OFF	OFF	OFF	Manually Forced Cooling
ON	OFF	OFF	OFF	Rated Operating(Fixed Speed)
ON	ON	ON	ON	Time Defrost Valid
ON	ON	ON	ON	IDU&ODU Wiring Error Check

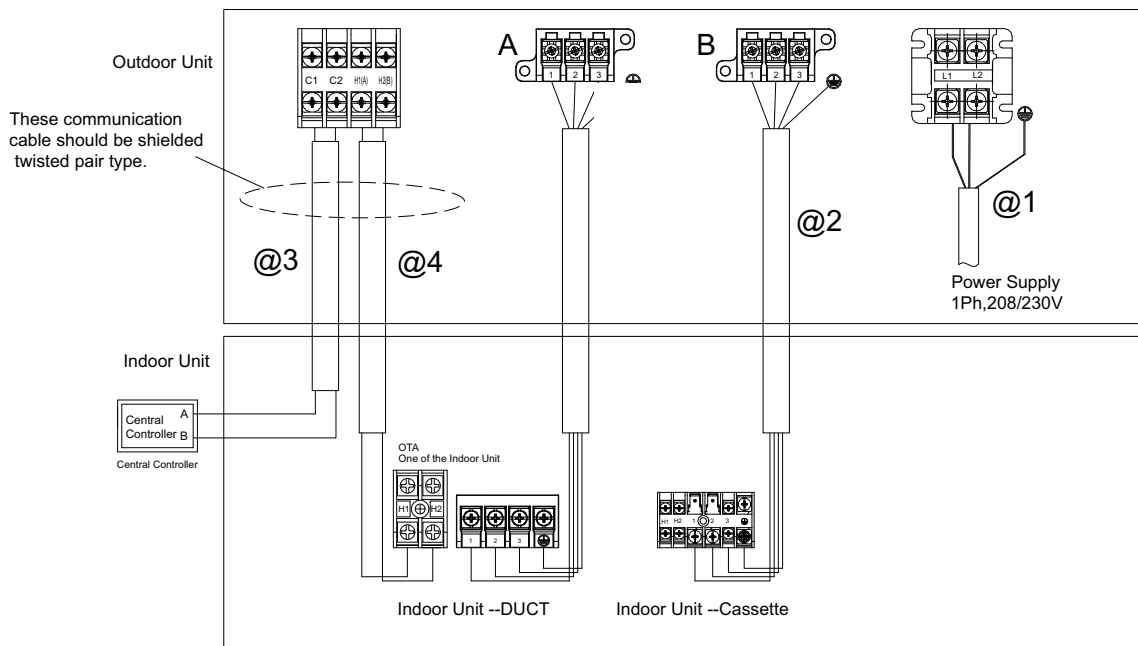
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5Q42RT2BEA



OUTDOOR/INDOOR WIRING CONNECTIONS

2Q18FF2BEA / 2Q20RT2BEA



@1 Power supply cable, 3*6mm²

@2 Communication cable for indoor unit and outdoor unit, 4*2.5mm²

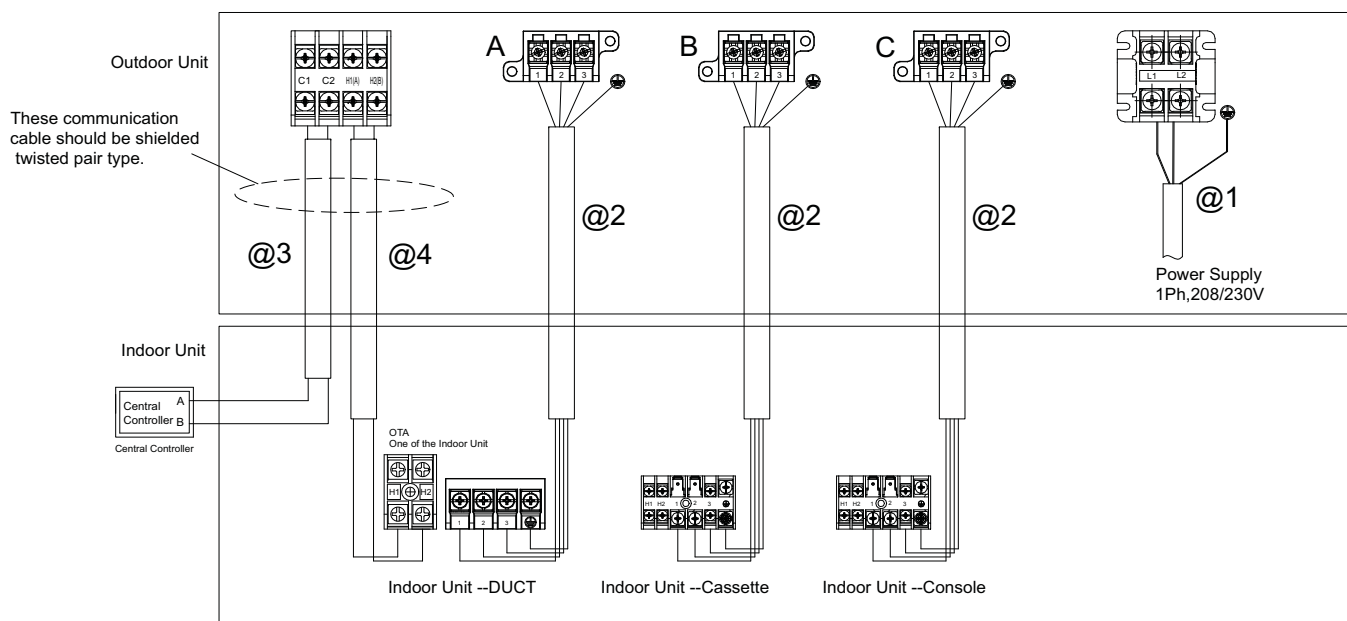
@3 Communication cable for central controller, wire specification to refer to wired controller manual and real installation length.

@4 Communication cable for OTA, one of the indoor unit and outdoor unit, 2*0.75mm²

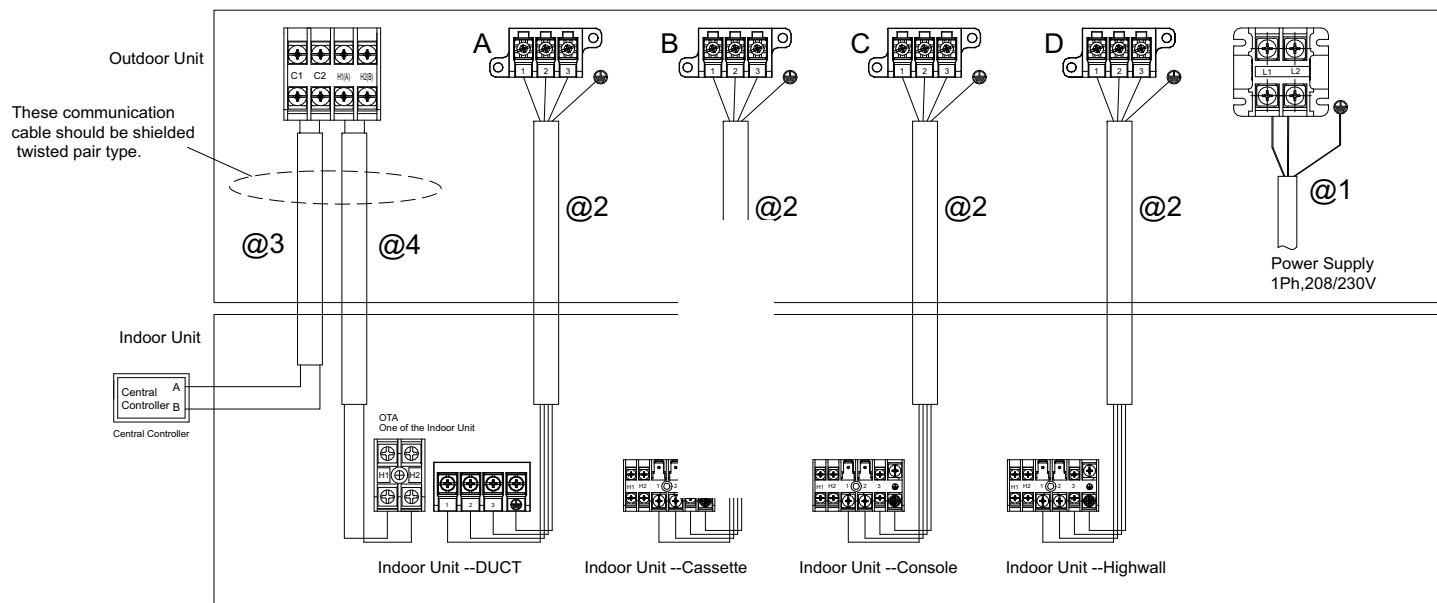
Caution:

1. The OTA communication cable should be shielded twisted pair type, and need to make the cable's shielded layer connect to earth or the unit shell which connect to earth (indoor side or outdoor side).
2. There should be independent pipeline for communication wire.
3. The distance between OTA communication cable and the power supply cable should be at least 10cm.
4. Ensure specifically there is a Ground Fault Detector (GFI) installed for both the outdoor and indoor unit.
5. If the installation is already fitted with a GFI, ensure that its rated current is large enough to withstand the current of the units (both outdoor and indoor).

3Q24FF2BEA / 3Q24RT2BEA / 3Q24RT2BEA



4Q36FF2BEA



@1 Power supply cable, 3*6mm²

@2 Communication cable for indoor unit and outdoor unit, 4*2.5mm²

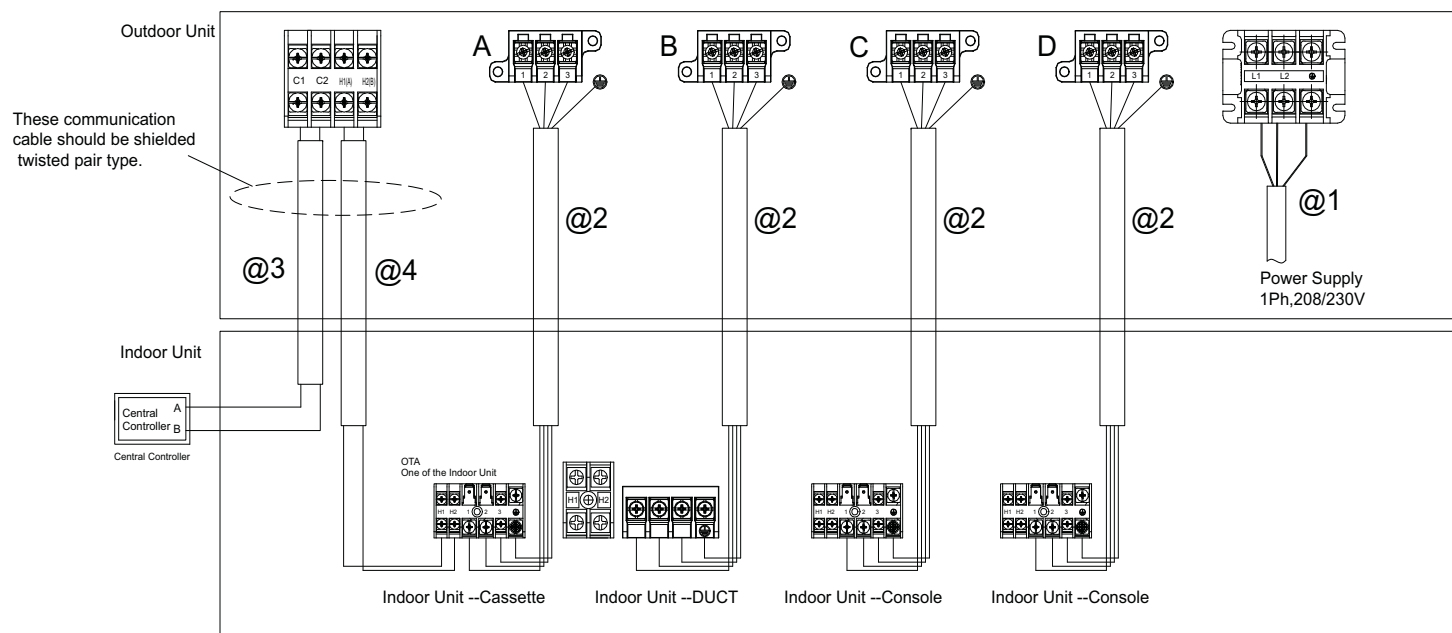
@3 Communication cable for central controller, wire specification to refer to wired controller manual and real installation length.

@4 Communication cable for OTA, one of the indoor unit and outdoor unit, 2*0.75mm²

Caution:

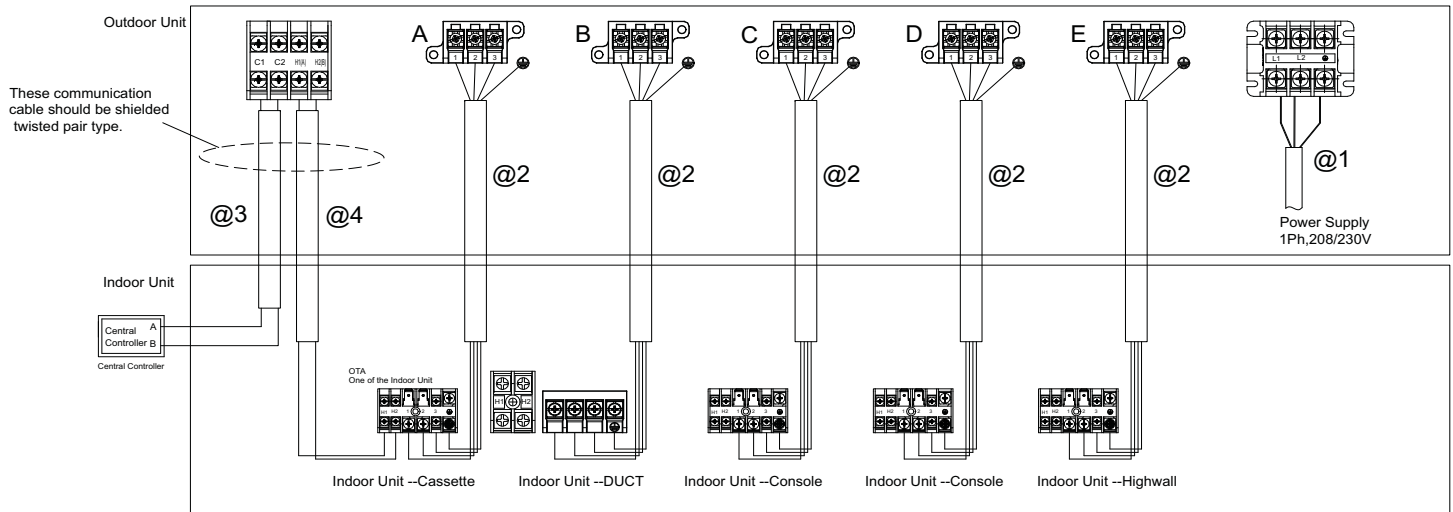
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4Q36RT2BEA



5Q42RT2BEA

ENGLISH



@1 Power supply cable, 3*6mm²

@2 Communication cable for indoor unit and outdoor unit, 4*2.5mm²

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@4 Communication cable for OTA, one of the indoor unit and outdoor unit, 2*0.75mm²

Caution:

1. The OTA communication cable should be shielded twisted pair type, and need to make the cable's shielded layer connect to earth or the unit shell which connect to earth (indoor side or outdoor side).
2. There should be independent pipeline for communication wire.
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QS07WB2BEA QS09WP2BEA
QS09WB2BEA QS12WP2BEA
QS12WB2BEA QS18WP2BEA
QS15WB2BEA QS24WP2BEA
QS18WB2BEA
QS24WB2BEA

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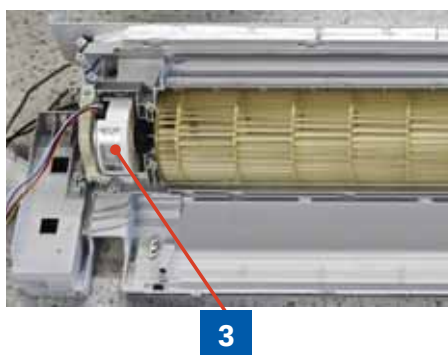
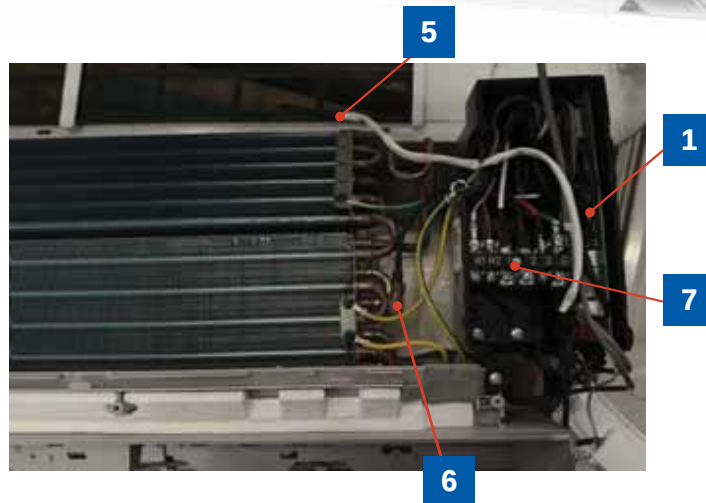
 Jumper Wire Settings..... C6, C7, C12, C13

 PCB Overview C14

WIRING DIAGRAM.....C15

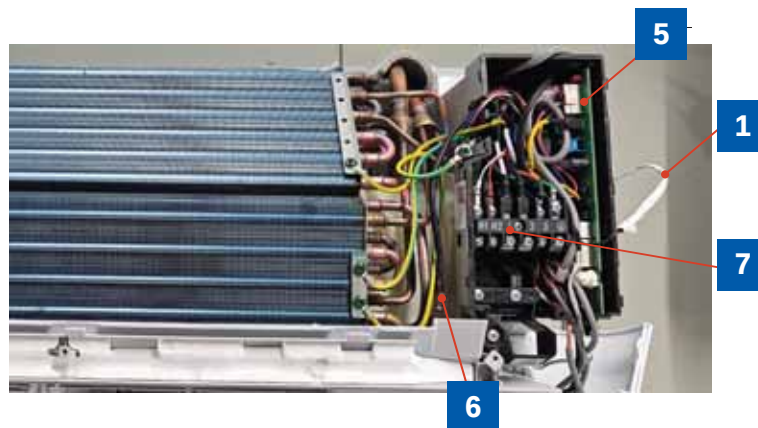
COMPONENTS

ENGLISH



- 1 Ambient Temperature Sensor
- 2 Display Panel
- 3 Fan Motor
- 4 Louver Motors
- 5 Power Control Board (PCB)
- 6 Piping Temperature Sensor
- 7 Terminal Block
- 8 R454B Leakage Sensor

QS18WP2BEA

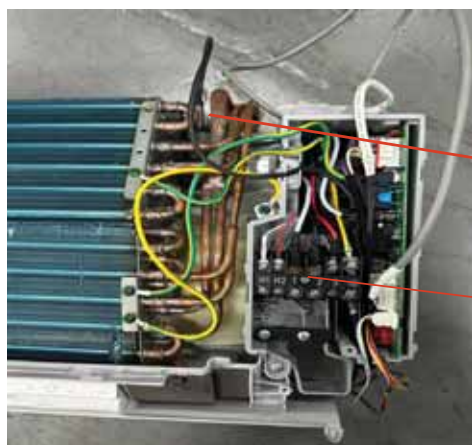


- 1** Ambient Temperature Sensor
- 2** Display Panel
- 3** Fan Motor
- 4** Louver Motors
- 5** Power Control Board (PCB)
- 6** Piping Temperature Sensor
- 7** Terminal Block
- 8** R454B Leak sensor

COMPONENTS

QS24WP2BEA

ENGLISH



- 1** Ambient Temperature Sensor
- 2** Display Panel
- 3** Fan Motor
- 4** Louver Motors
- 5** Power Control Board(PCB)
- 6** Piping Temperature Sensor
- 7** Terminal Block
- 8** R454B Leakage Sensor

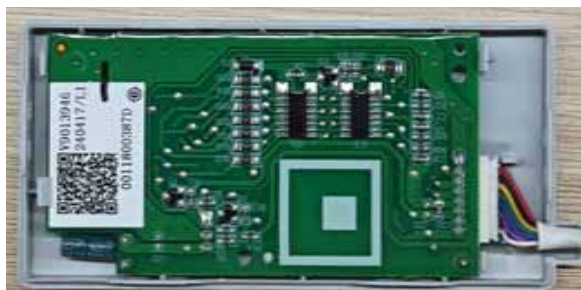
Terminal Block



The unit terminal block receives electrical power from the outdoor unit. There are 4 connections for electrical wires. Terminals 1 and 2 are connected to terminals 1 and 2 of the outdoor unit. This wiring supplies power to the indoor unit.

Terminal 3 is a communication wire. The indoor unit sends indoor air temperature, coil temperature and temperature setpoint information to the outdoor unit on this wire. If a splice or break in this wire is present, the indoor unit will not be able to communicate with the outdoor unit. The ERROR CODE will be an E7.

Display



The indoor display has an infrared communication circuit that receives operating commands from the remote control. This display will indicate operating modes, error codes, indoor air temperature, timer status, and power status.

The display board connects to the control board at Plug CN-7.

Ambient Temperature Sensor



The Ambient (room) Temperature Sensor is a negative coefficient thermistor that will decrease in resistance with increases in room air temperature. The sensor is located on a clip mounted in the return air stream.

The sensor connects to the control board at Plug CN-6.

Piping Temperature Sensor



The Piping Temperature Sensor is a negative coefficient thermistor that will decrease in resistance with increases in coil temperature. The sensor is

Located in a socket soldered to the surface of the indoor coil. This sensor will monitor the temperature of the indoor coil in both cooling and heating modes of operation. Should abnormally cold or hot coil temperature be detected by this sensor, the system will take steps to correct the condition or report an ERROR CODE.

The sensor connects to the control board at Plug CN-6.

QS09WP2BEA / QS12WP2BEA / QS18WP2BEA

Louver Stepper Motor



The motor moves the louver side to side depending upon selections made at the remote control.

These motors are connected at CN-5'

Emergency Button



If the remote control is non-functional, the Emergency Button can be used. 73°F-78°F will be maintained, until commands are received via the remote control.

Fan Motor



The Fan Motor is a variable speed motor. Fan speed will vary depending upon the temperature variation from set point, or can be set with the remote control to maintain a single set speed.

The Fan Motor is connected to the indoor control board via PLUG CN-9

Jumper Wire Settings



The PCB has a set of jumper wires that must be checked when replacing the PCB.

The replacement PCB is shipped with no jumper wires cut.

J7 and J3 Selects EEPROM , Cut wires to match the model type listed on the unit wiring diagram (See Page C15).

QS24WP2BEA

Louver Stepper Motor



The motor moves the louver side to side depending upon selections made at the remote control.

These motors are connected at CN-5'

Emergency Button



If the remote control is non-functional, the Emergency Button can be used. 73°F-78°F will be maintained, until commands are received via the remote control.

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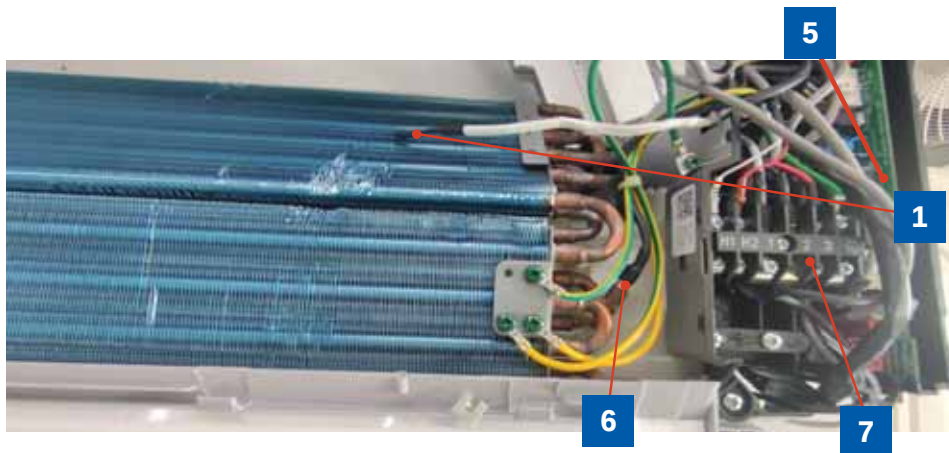
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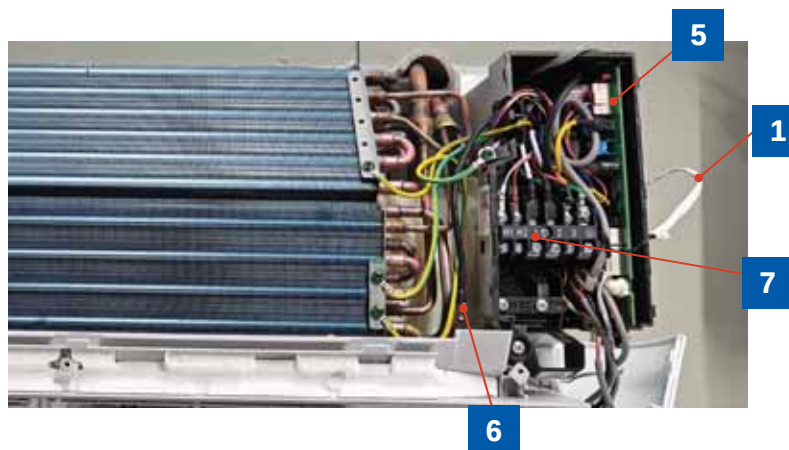
COMPONENTS

QS07WB2BEA / QS12WB2BEA / QS15WB2BEA

ENGLISH



- 1 Ambient Temperature Sensor
- 2 Display Panel
- 3 Fan Motor
- 4 Louver Motors
- 5 Power Control Board(PCB)
- 6 Piping Temperature Sensor
- 7 Terminal Block
- 8 R454B Leakage Sensor



- 1** Ambient Temperature Sensor
- 2** Display Panel
- 3** Fan Motor
- 4** Louver Motors
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QS07WB2BEA / QS09WB2BEA / QS12WB2BEA / QS15WB2BEA / QS18WB2BEA / QS24WB2BEA

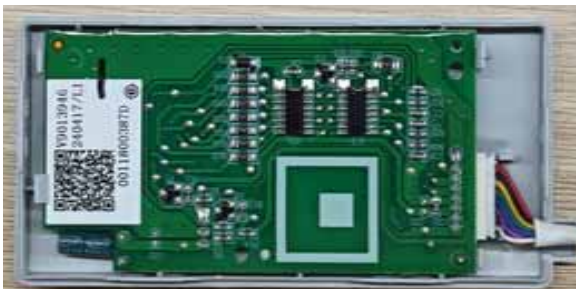
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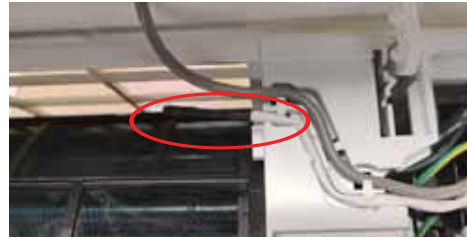
Display



The display board connects to the control board at Plug CN-7.

The indoor display has an infrared communication circuit that receives operating commands from the remote control. This display will indicate operating modes, error codes, indoor air temperature, timer status, and power status.

Ambient Temperature Sensor



The Ambient (room) Temperature Sensor is a negative coefficient thermistor that will decrease in resistance with increases in room air temperature. The sensor is located on a clip mounted in the return air stream.

The sensor connects to the control board at Plug CN-6.

Piping Temperature Sensor



The Piping Temperature Sensor is a negative coefficient thermistor that will decrease in resistance with increases in coil temperature. The sensor is located in a socket soldered to the surface of the indoor coil.

This sensor will monitor the temperature of the indoor coil in both cooling and heating modes of operation. Should abnormally cold or hot coil temperature be detected by this sensor, the system will take steps to correct the condition or report an ERROR CODE.

The sensor connects to the control board at Plug CN-6.

QS07WB2BEA / QS09WB2BEA / QS12WB2BEA

Louver Stepper Motor



The motor moves the louver side to side depending upon selections made at the remote control.

These motors are connected at CN-5'

Emergency Button



If the remote control is non-functional, the Emergency Button can be used. 73°F-78°F will be maintained, until commands are received via the remote control.

Fan Motor



The Fan Motor is a variable speed motor. Fan speed will vary depending upon the temperature variation from set point, or can be set with the remote control to maintain a single set speed.

The Fan Motor is connected to the indoor control board via PLUG CN-9.

QS15WB2BEA

Louver Stepper Motor



The motor moves the louver side to side depending upon selections made at the remote control.

These motors are connected at CN-5'

Emergency Button



If the remote control is non-functional, the Emergency Button can be used. 73°F-78°F will be maintained, until commands are received via the remote control.

Fan Motor



The Fan Motor is a variable speed motor. Fan speed will vary depending upon the temperature variation from set point, or can be set with the remote control to maintain a single set speed.

The Fan Motor is connected to the indoor control board via PLUG CN-9

Jumper Wire Settings



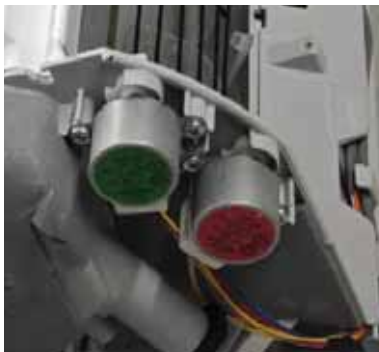
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The replacement PCB is shipped with no jumper wires cut.

J7 and J3 Selects EEPROM , Cut wires to match the model type listed on the unit wiring diagram (See Page C15).

QS18WB2BEA / QS24WB2BEA

Louver Stepper Motor



The motor moves the louver side to side depending upon selections made at the remote control.

These motors are connected at CN-5'

Emergency Button



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Fan Motor



The Fan Motor is a variable speed motor. Fan speed will vary depending upon the temperature variation from set point, or can be set with the remote control to maintain a single set speed.

The Fan Motor is connected to the indoor control board via PLUG CN-9.

Jumper Wire Settings



The PCB has a set of jumper wires that must be checked when replacing the PCB.

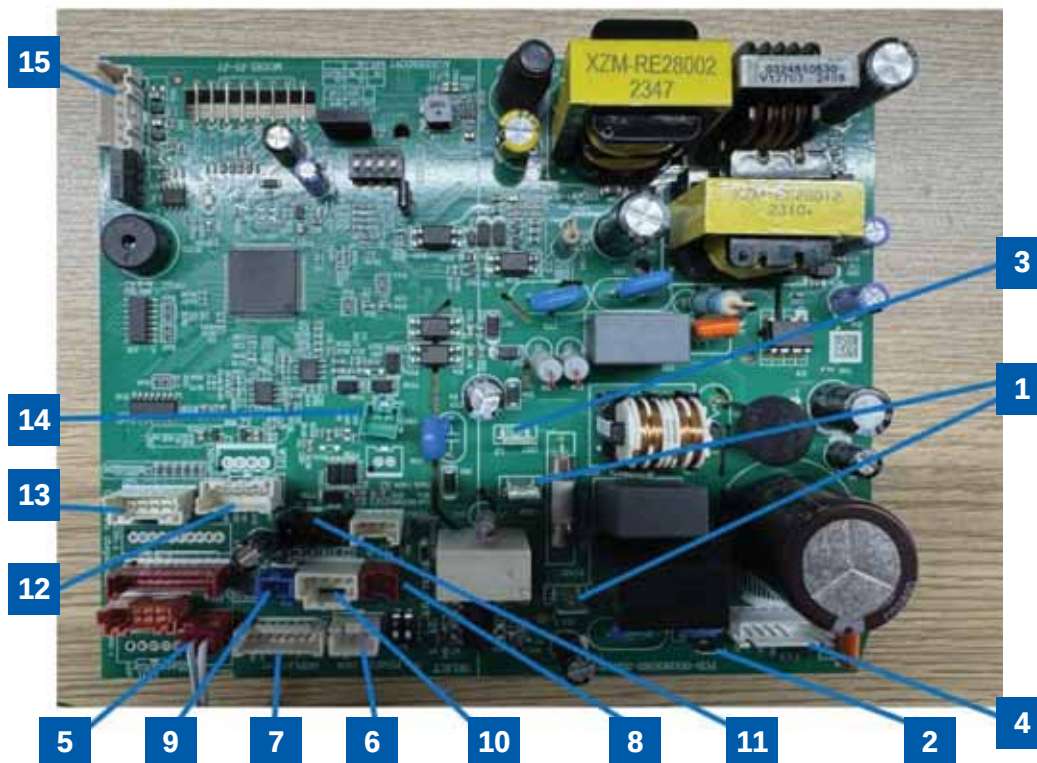
The replacement PCB is shipped with no jumper wires cut.

J7 and J3 Selects EEPROM , Cut wires to match the model type listed on the unit wiring diagram (See Page C15).

PCB Overview

QS09WP2BEA / QS12WP2BEA / QS18WP2BEA / QS24WP2BEA

QS07WB2BEA / QS09WB2BEA / QS12WB2BEA / QS15WB2BEA / QS18WB2BEA / QS24WB2BEA



- 1** CN17 and CN21: 230AC power from terminal block connections 1 (N) and 2(L)
- 2** CN27: Connector for GND
- 3** CN23: Communication connection between the indoor board and the outdoor board
- 4** CN9: Connector for the fan motor
- 5** CN14: Connector for the emergency switch
- 6** CN36: Connector for the centralized controller
- 7** CN7: Connector for the display board
- 8** CN1: Connector for non-polar wire controller
- 9** CNS51: Connector for the room cord
- 10** CN6: Connector for the temperature sensor
- 11** CN3: Connector for the leakage sensor
- 12** CN35: Connector for the WIFI
- 13** CN5: Connector for the up-down step motor
- 14** CN38: Connector for the RJ45
- 15** CN2: Connector for the OT

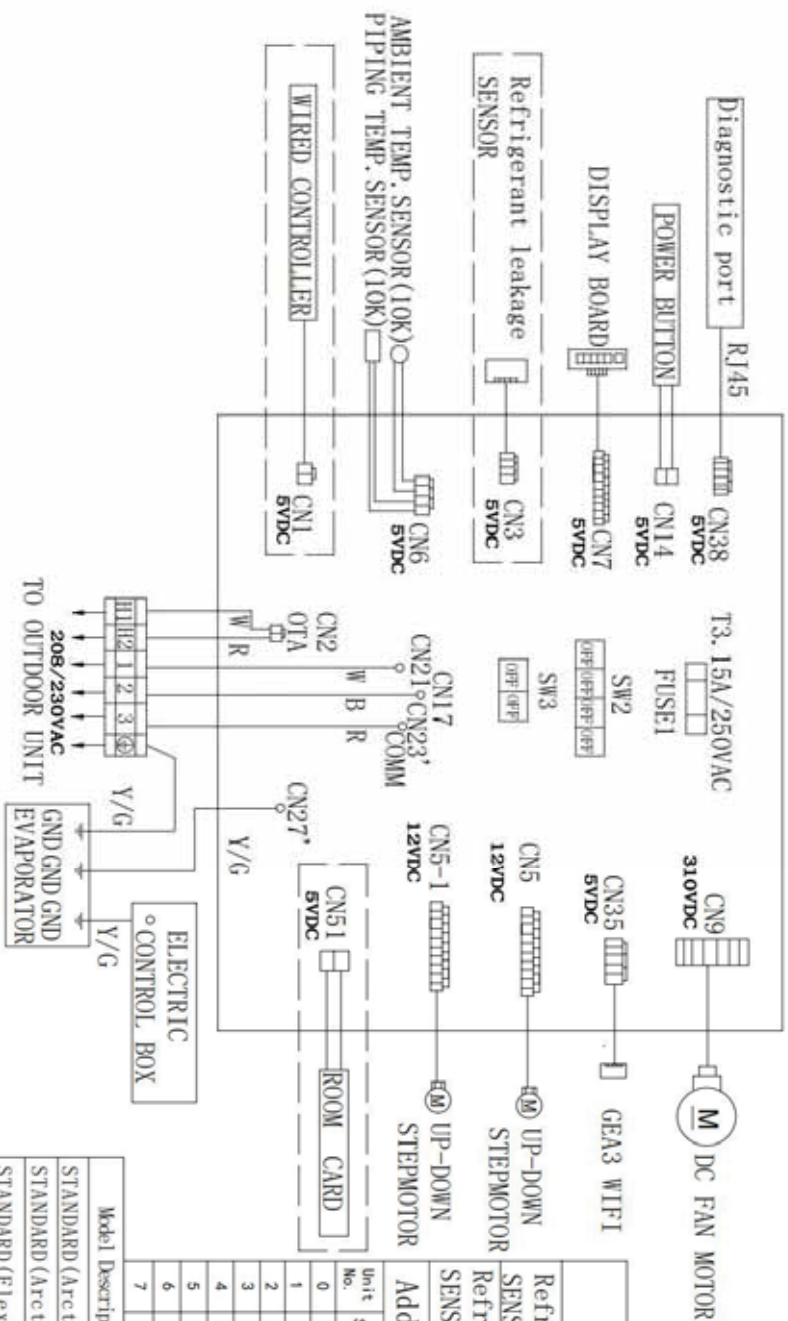
WIRING DIAGRAM

QS09WP2BEA / QS12WP2BEA / QS18WP2BEA / QS24WP2BEA

QS07WB2BEA / QS09WB2BEA / QS12WB2BEA / QS15WB2BEA / QS18WB2BEA / QS24WB2BEA

INDOOR UNIT WIRING DIAGRAM

0011534809B



Note: Before replacing the board, ensure the jumper wires are cut to match the model description.

Remarque: avant de remplacer la carte, assurez-vous que les fils de raccordement sont coupés pour correspondre à la description du modèle ci-dessous.

Nota: antes de reemplazar la placa, asegúrese de que los cables puente estén cortados para que coincidan con la descripción del modelo a continuación.

W: WHITE
Y/G: YELLOW/GREEN
R: RED
B: BLACK

Model Description	J7	J6	J5	J4	J3
STANDARD (Arctic) 30K	OFF	OFF	ON	OFF	OFF
STANDARD (Arctic) 36K	OFF	OFF	ON	OFF	ON
STANDARD (Flexfit) 30K	OFF	ON	ON	OFF	OFF
STANDARD (Flexfit) 36K	OFF	ON	ON	OFF	ON

Address for Wired Controller

Function	SW3 DIP Switch position 2
Refrigerant Leakage SENSOR enable	ON
Refrigerant Leakage SENSOR disable	OFF

- Notes:
- The dotted parts are optional.
 - The two pins of CN51 should be shorted, when the J1 is cut.
 - Before replacing the board, it is necessary to ensure that the machine is matched with the board code.

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US09CB2BEA
US12CB2BEA
US18CB2BEA
US24LB2BEA

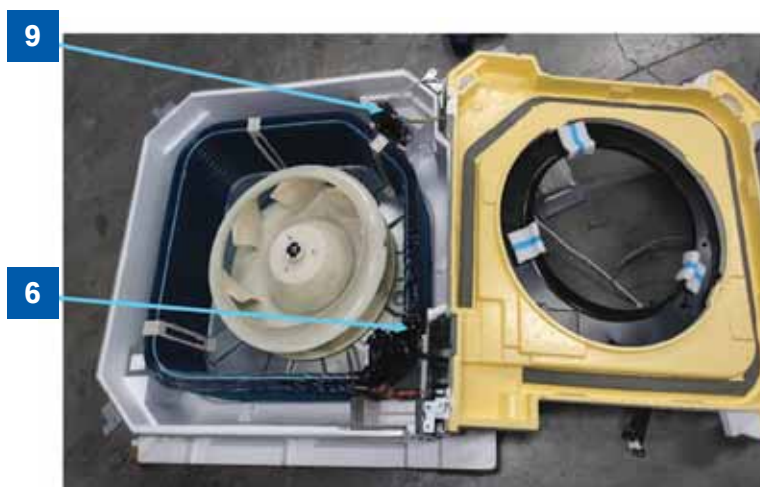
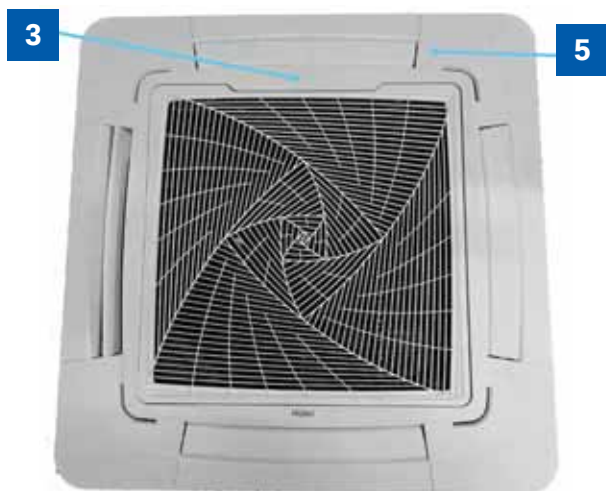
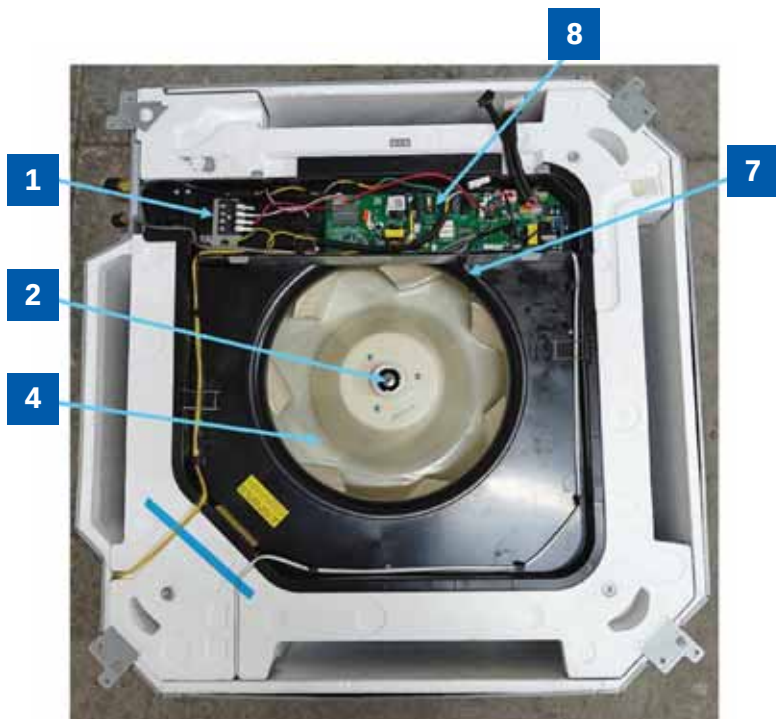
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COMPONENTS

US09CB2BEA / US12CB2BEA / US18CB2BEA / US24LB2BEA / US30LB2BEA / US36LB2BEA

ENGLISH



1 Terminal Block



Power to operate the indoor unit comes from the line voltage terminal block at the outdoor unit. The wiring includes 4 wires: 1, 2, 3 and ground. Wires 1 and 3 complete the data path. These wires should always be 14 gauge AWG stranded copper, non-shielded type wire. Splices in wires 1 or 3 may cause communication errors.

2 Blower Motor



The multi-speed blower motor will change speed to match the capacity demand from the outdoor unit. The blower motor is controlled by both the remote control and by commands from the outdoor unit ECU. The indoor blower motor is connected to the indoor unit control board. The wiring from the motor to the indoor board consists of four wire connected to pins Common, Low, Medium, and High speeds. During normal operation, the indoor control board will energize the indoor blower motor and request proper speed. The motor has a run capacitor that is located in the cassette unit's control box. The run capacitor connects to the motor via two orange wires. The capacitor is field-replaceable.

3 Display



The indoor unit has a display that communicates system mode. The indoor unit does not display temperatures or diagnostic codes. When a wired controller is used, this information is displayed on the wired controller. It is recommended to use a wired controller with the cassette unit. When servicing a diagnostic error, ALWAYS refer to the outdoor unit code to make diagnostic decision

4 Blower Assembly



The blower assembly consists of a plastic blower wheel that is connected to a PSC indoor blower motor. A set screw holds the blower wheel to the blower motor.

5 Louver Motors



The louver motors are stepper type motors that move the louvers up/down. The motors are controlled by pulsed voltage that cannot be measured. If the louver does not move when it should, check for a bind in the louvers.

6 Piping Temperature Sensor



The Piping Temperature Sensor senses indoor coil temperature in the cooling mode and in the heating mode. This sensor is used for Anti Freezing and Anti Cold Blow cycles. The sensor also provides critical temperature information to the ECU that may be used in frequency adjustments.

7 Ambient Temperature Sensor



The Ambient Temperature Sensor senses room temperature. This sensor provides room temperature information to the ECU for calculation of inverter capacity and temperature control. Both sensors are negative temperature coefficient type that reduce electrical resistance as temperature rises.

8 Control Board



The indoor unit circuit board controls the switching functions of the indoor unit. All control decisions are made by the outdoor unit ECU. The indoor board has some limited diagnostic capability which will be covered in this manual. Condensate Pump & Float Switch

9 Condensate Pump & Float Switch



In cooling mode (including automatic cooling operation and emergency switch setting cooling mode and dehumidification mode), the pump operates when the compressor is on, and the pump 5 minutes after. For other modes such as conversion heating pump, it also continues to operate for 5 minutes after.

Cooling standby, heating and fan mode, the pump does not run. When the float switch is opened, the water tank is full.

After the controller detects this signal for 2 seconds, the pump starts to work. After the float recovers, the pump continues to work 5 for an additional minutes.

Continuous detection of water full signal for more than 5 minutes, will stop the compressor. The pump continues to operate for 5 minutes. If the float switch is still open or disconnected, the drainage system is reported to be faulty. After the fault, the pump continues to operate until it is detected that the float switch is closed or for 5 minutes.

10 WiFi



Receives and sends wireless signals to enable APP control of system operation

11 Refrigerant Leakage Detector



Detects the concentration of refrigerant in the air. When the refrigerant leakage sensor detects a concentration = 10% of lower flammability limit, an alarm is triggered.

bA No refrigerant leakage detector is installed.

1. The sensor is not detected.
2. If the bA fault is still reported, the refrigerant sensor is abnormal.

AA LFL leakage higher than X% is detected.

1. Cut off the refrigerant, whether Ab is displayed after the refrigerant drops. If so, the sensor is normal; If Ab is not displayed consistently after the refrigerant concentration decreases, the detector is abnormal and needs to be replaced.

AC Communication failure.

1. Check wiring connections. If the fault persists, replace the sensor cable.

Ad Self-check fault.

1. The refrigerant sensor is missing (open circuit), install a new detector.
2. Detector bypass (short circuit). Replace the detector wiring harness. If the fault persists, replace the detector.
3. Detector output exceeds the declared range of the sensor or the expected state is abnormal, replace the refrigerant sensor.

AE/AF Detector life warning

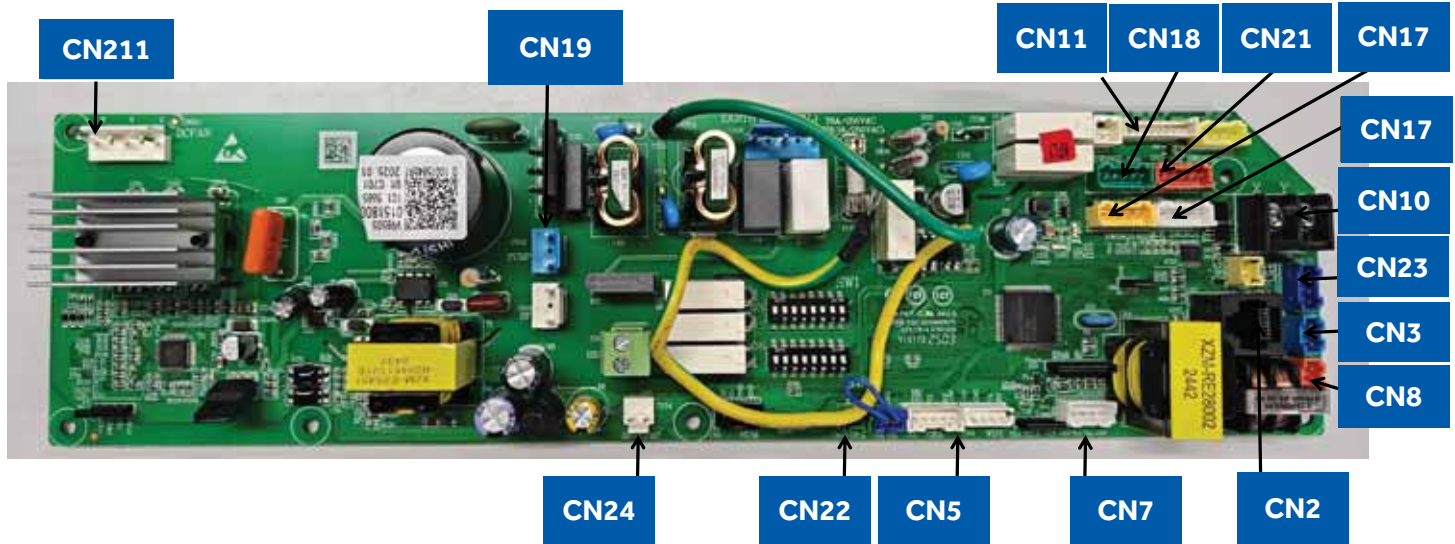
1. The fault is cleared after a new sensor is installed. If the fault persists, it may be a drive board fault.

Dip Switch SW1-5:

- 0: Refrigerant leakage detector function valid
- 1: Refrigerant leakage detector function invalid

PCB Overview

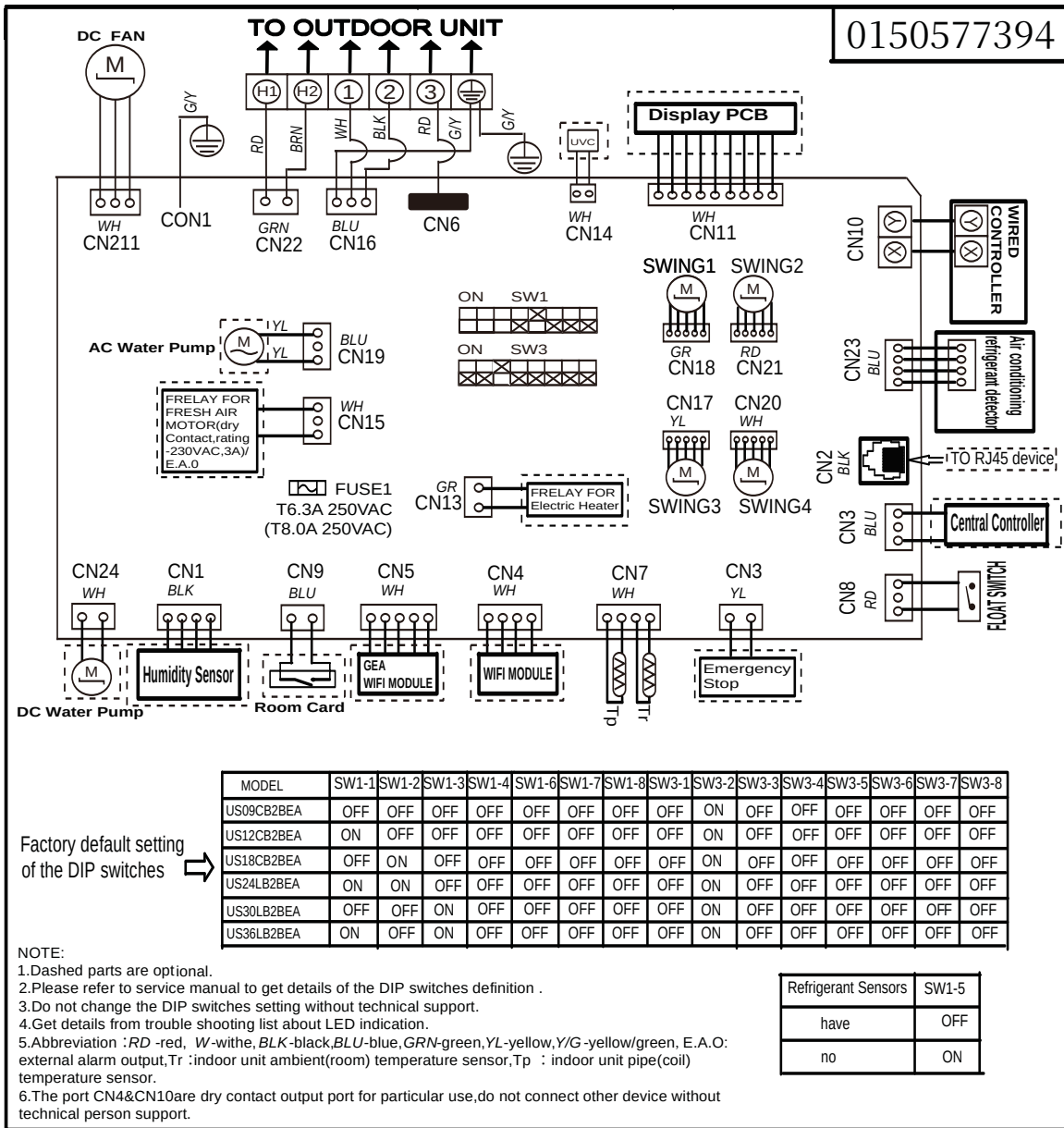
0151800985



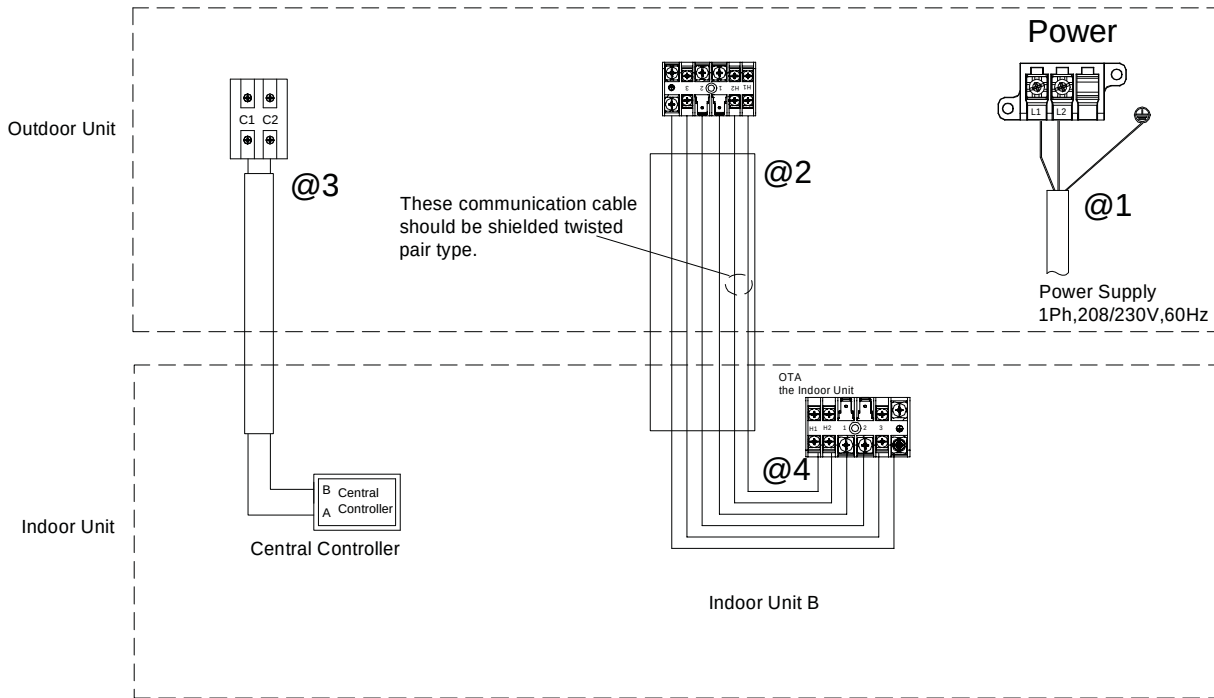
CN2	RJ45 Communication
CN3	Remote Control
CN5	WiFi
CN7	Sensor
CN8	Float Switch
CN10	Wired Controller
CN11	Light Board
CN17	Swing Motor
CN18	Swing Motor
CN19	AC Drain Pump
CN20	Swing Motor
CN21	Swing Motor
CN22	OTA485 Communication
CN23	Refrigerant Sensor
CN24	DC Drain Pump
CN211	Fan Motor

WIRING DIAGRAM

US09CB2BEA / US12CB2BEA / US18CB2BEA / US24LB2BEA / US30LB2BEA US36LB2BEA



US24LB2BEA



@1 Power supply cable, 3*4mm²

@2 Communication cable for indoor unit and outdoor unit, 4*2.5mm²

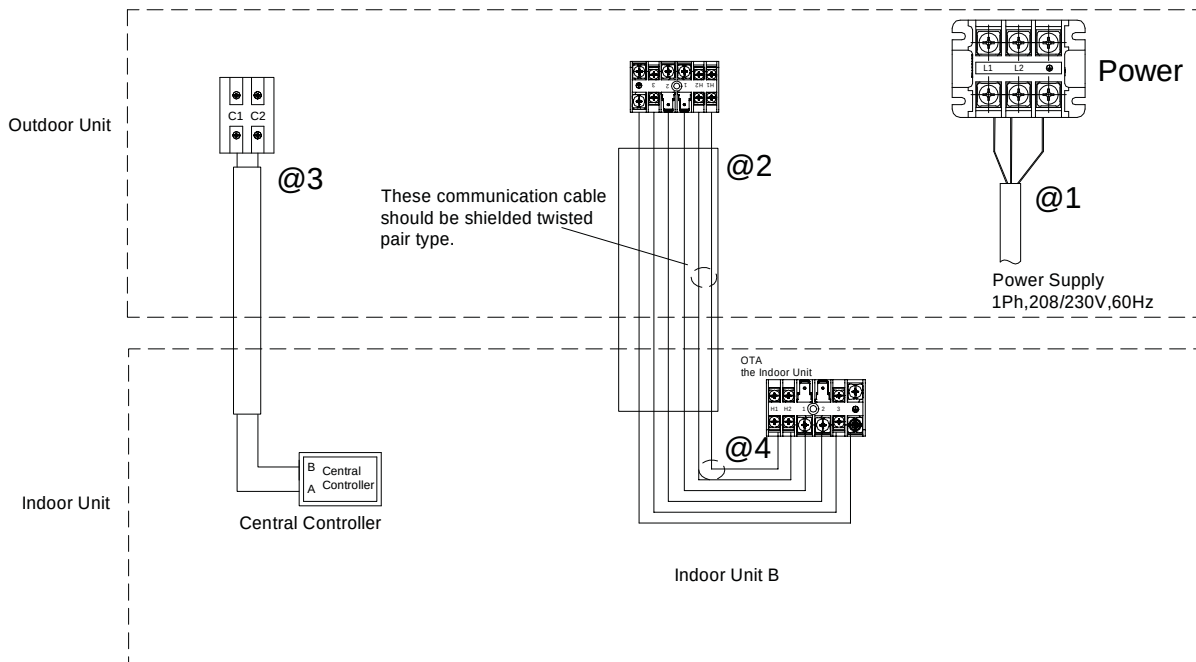
@3 Communication cable for central controller, wire specification to refer to wired controller manual and real installation length.

@4 The OTA communication cable (H1/H2) should be 2 x 16 AWG shielded.

Caution:

1. The OTA communication cable should be shielded twisted pair type, and need to make the cable's shielded layer connect to earth or the unit shell which connect to earth (indoor side or outdoor side).
2. There should be independent pipeline for communication wire.
3. The distance between OTA communication cable and the power supply cable should be at least 10cm.
4. Ensure specifically that there is an earth leakage breaker (ELB) installed for both the outdoor and indoor unit.
5. If the installation is already fitted with an earth leakage breaker (ELB), ensure that its rated current is large enough to withstand the current of the units (both outdoor and indoor).

US30LB2BEA / US36LB2BEA



Resistance Values

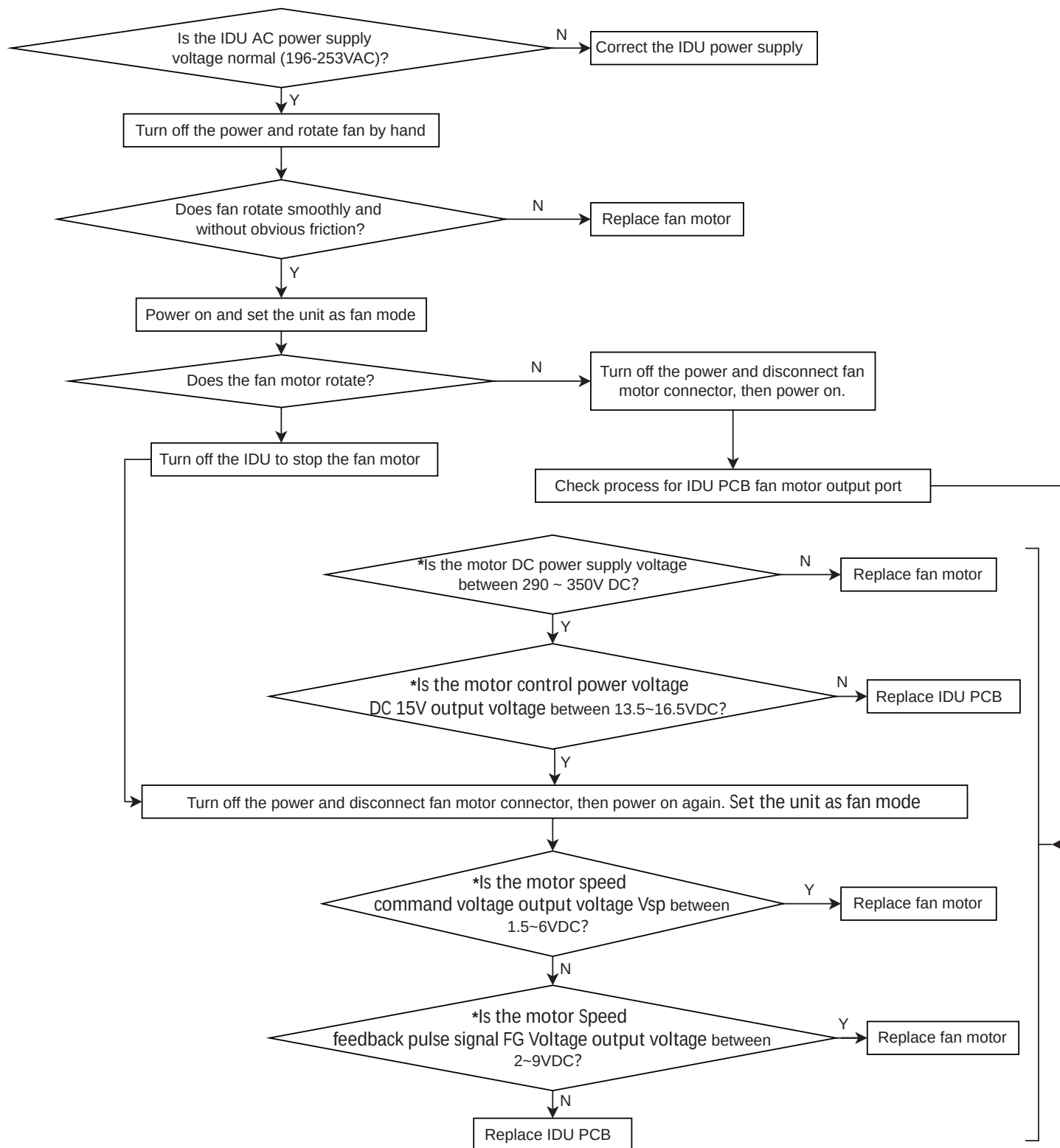
Model	US09CB2BEA	US12CB2BEA	US18CB2BEA	US24LB2BEA
Louver Resistance Value	0150401794A, 300Ω±7% 0150401794B, 300Ω±7%			

Measure the Resistance:

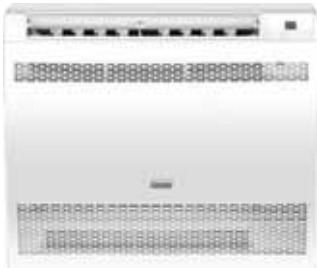
Use a multimeter to measure the resistance between any two phases (U, V, W) of the motor (as shown in the following diagram).



Fan Motor



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US09FB2BEA
US12FB2BEA
US18FB2BEA

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COMPONENTS E2

Louver Motor E2

Flap..... E2

Step Motor E2

Electrical Box..... E3

Pipe Bushing..... E3

Joint Connector..... E3

Flap..... E3

Fan Guard E3

Fan Wheel E3

Fan Motor E3

PCB Overview E4

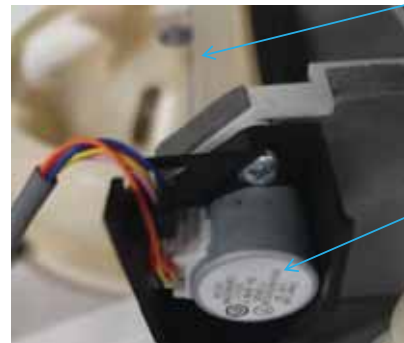
WIRING DIAGRAM..... E5

US09FB2BEA / US12FB2BEA / US18FB2BEA

ENGLISH



1



2

3

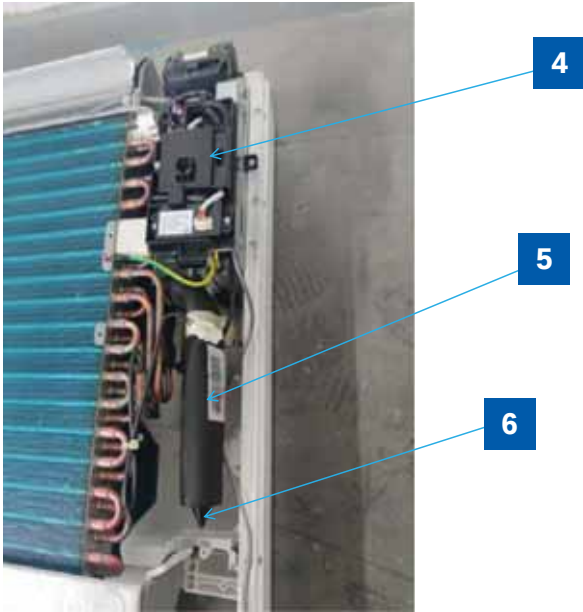
1 Louver Motor

The louver motors are stepper type motors that move the louvers up/down. The motors are controlled by pulsed voltage that cannot be measured. If the louver does not move when it should, check for a bind in the louvers.

2 Flap

3 Step Motor

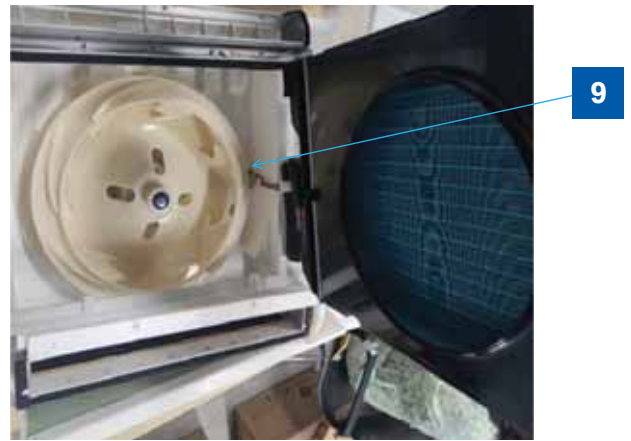
An electric device turning electrical pulses into precise mechanical motions, rotating a fixed angle per pulse, used for accurate control.



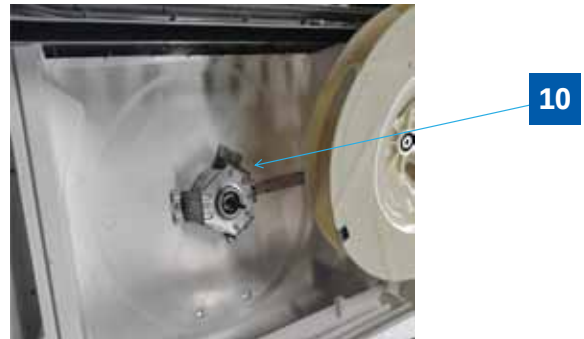
4 Electrical Box

5 Pipe Bushing

6 Joint Connector



9 Fan Wheel



10 Fan Motor



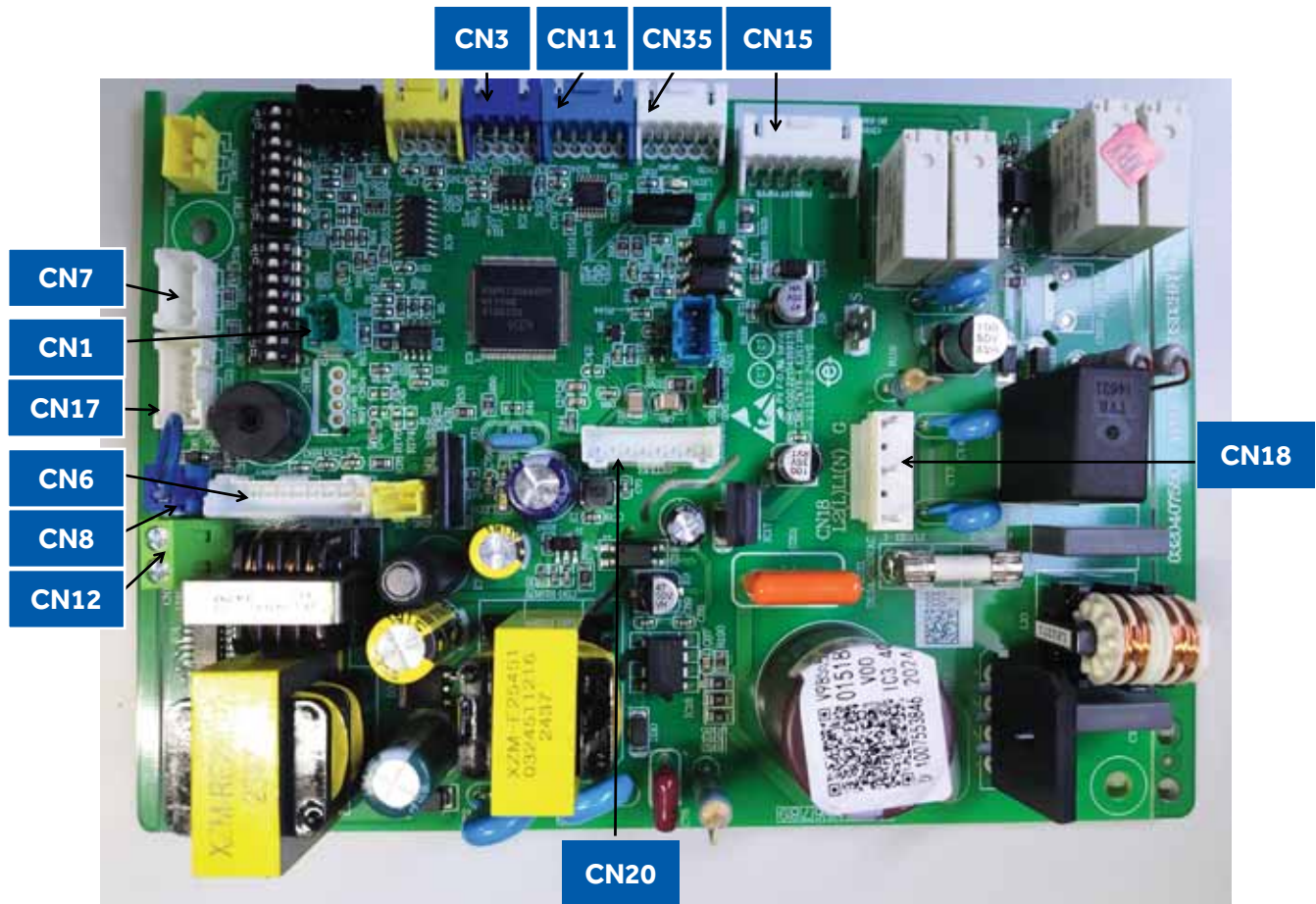
7 Flap

8 Fan Guard

PCB Overview

0151800987

US09FB2BEA / US12FB2BEA / US18FB2BEA

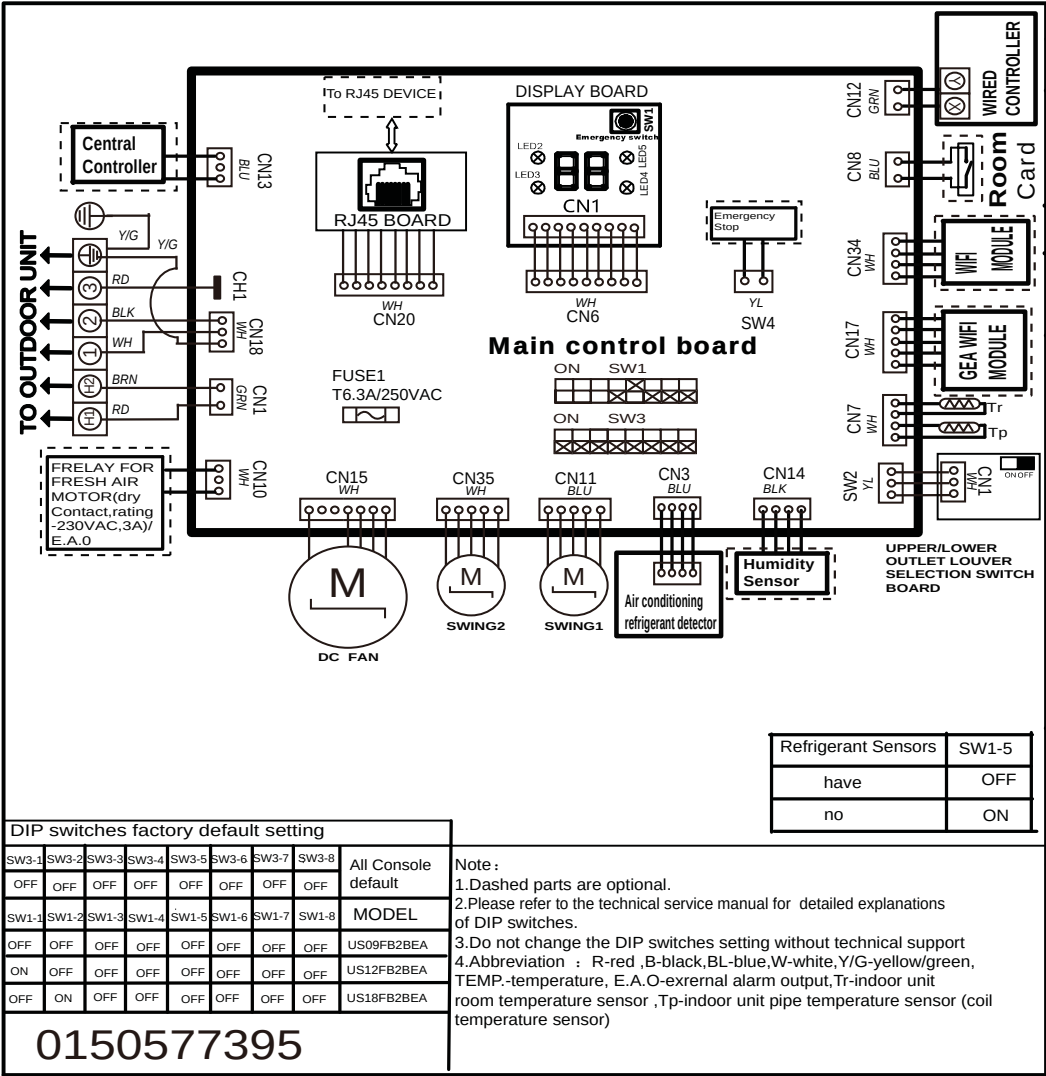


CN1	OTA
CN3	Refrigerant Sensor
CN6	Display Board
CN7	Sensor
CN8	Room Card
CN11	Left and Right Swing
CN12	Wired Controller
CN15	Fan Motor
CN17	WiFi
CN18	Power Supply
CN20	RJ45 Communication CN35 Up-and-Down Swing Motor

WIRING DIAGRAM

US09FB2BEA / US12FB2BEA / US18FB2BEA

ENGLISH



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US07MB2BEA
 US09MB2BEA
 US12MB2BEA
 US18MB2BEA
 US24MB2BEA

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Gravity Drain Ports	F3
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OUTDOOR/INDOOR WIRING CONNECTIONS	F5
SERVICE PROCEDURES	F6

COMPONENTS

US09MB2BEA / US12MB2BEA / US18MB2BEA / US24MB2BEA / US30MB2BEA
US36MB2BEA / US42MB2BEA / US48MB2BEA

ENGLISH



1 Evaporator Coil

2 Blower Assembly

The indoor unit features a DC variable speed blower motor that will change speed to match the capacity demand from the outdoor unit. The motor powers blower assembly.

The blower assembly consists of 2 plastic blowers. A set screw holds each blower wheel to the blower motor.

The indoor blower motor is connected to the indoor unit control board. The wiring from the motor to indoor board consists of 3 wires connected to pins that deliver line voltage.

During normal operation, the indoor control board will energize the indoor blower motor and request proper speed.

3 Terminal Block

Power to operate the indoor unit comes from the electrical line voltage terminal block at the outdoor unit. The wiring includes 4 wires, 1, 2, S and ground. Wires 1 and S complete the data path. These wires should always be 14 gauge AWG stranded cooper, non-shielded type wire. Splices in wires 1 or S may cause communication errors.

4 Control Board

Located under the electrical control box cover.

5 Ambient Temperature Sensor

The Ambient Temperature Sensor senses room temperature. This sensor provides room temperature information to the ECU for calculation of inverter capacity and temperature control. Both sensors are negative temperature coefficient type that reduce electrical resistance as temperature rises.

6 Piping Temperature Sensor

The Piping Temperature Sensor senses indoor coil temperature in the cooling mode and in the heating mode. This sensor is used for Anti Freezing and Anti Cold Blow cycles. The sensor also provides critical temperature information to the ECU that may be used in frequency adjustments.



7 Condensate Pump

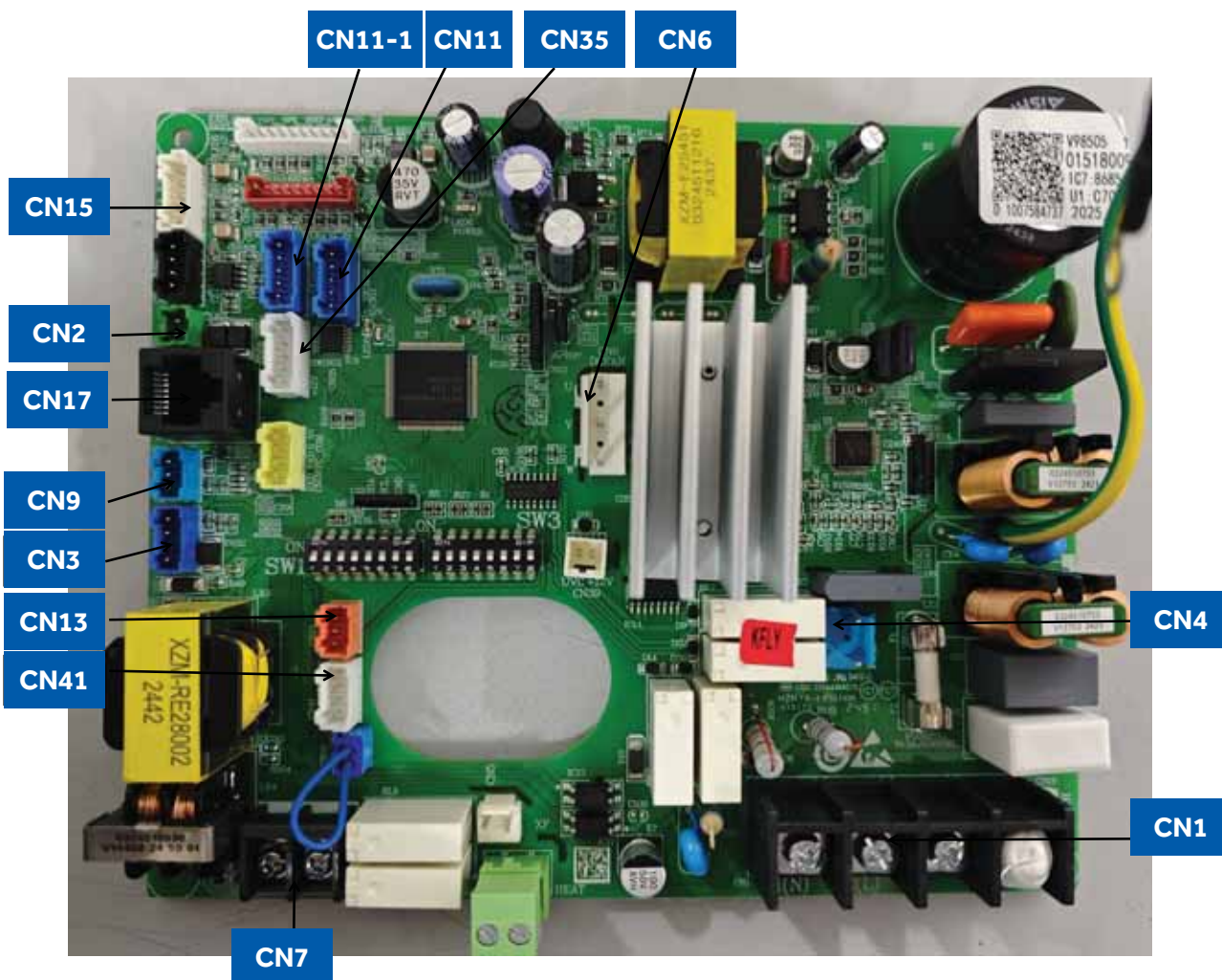
The Duct unit has a built-in condensate pump. The pump is connected to the circuit board. The pump is energized whenever the Float Switch indicates that water needs to be pumped from the cassette. The float switch connects onto the circuit board.

The float switch and pump are located behind the removable insulated cover next to the electrical control box. The pump is hermetically sealed and requires no maintenance. The float switch is a normally closed switch, that opens as water rises. The float switch requires no maintenance.

PCB Overview

0151800986

US09MB2BEA / US12MB2BEA / US18MB2BEA / US24MB2BEA / US30MB2BEA / US36MB2BEA



CN1 Power Supply

CN2 OTA

CN3 Refrigerant Sensor

CN4 Drain Pump

CN6 Fan Motor

CN7 Wired Controller

CN9 Remote Communication

CN11-1 Up-and-Down Swing

CN13 Float Switch

CN15 WiFi

CN17 RJ45 Communication

CN35 Left and Right Swing

CN41 Sensor

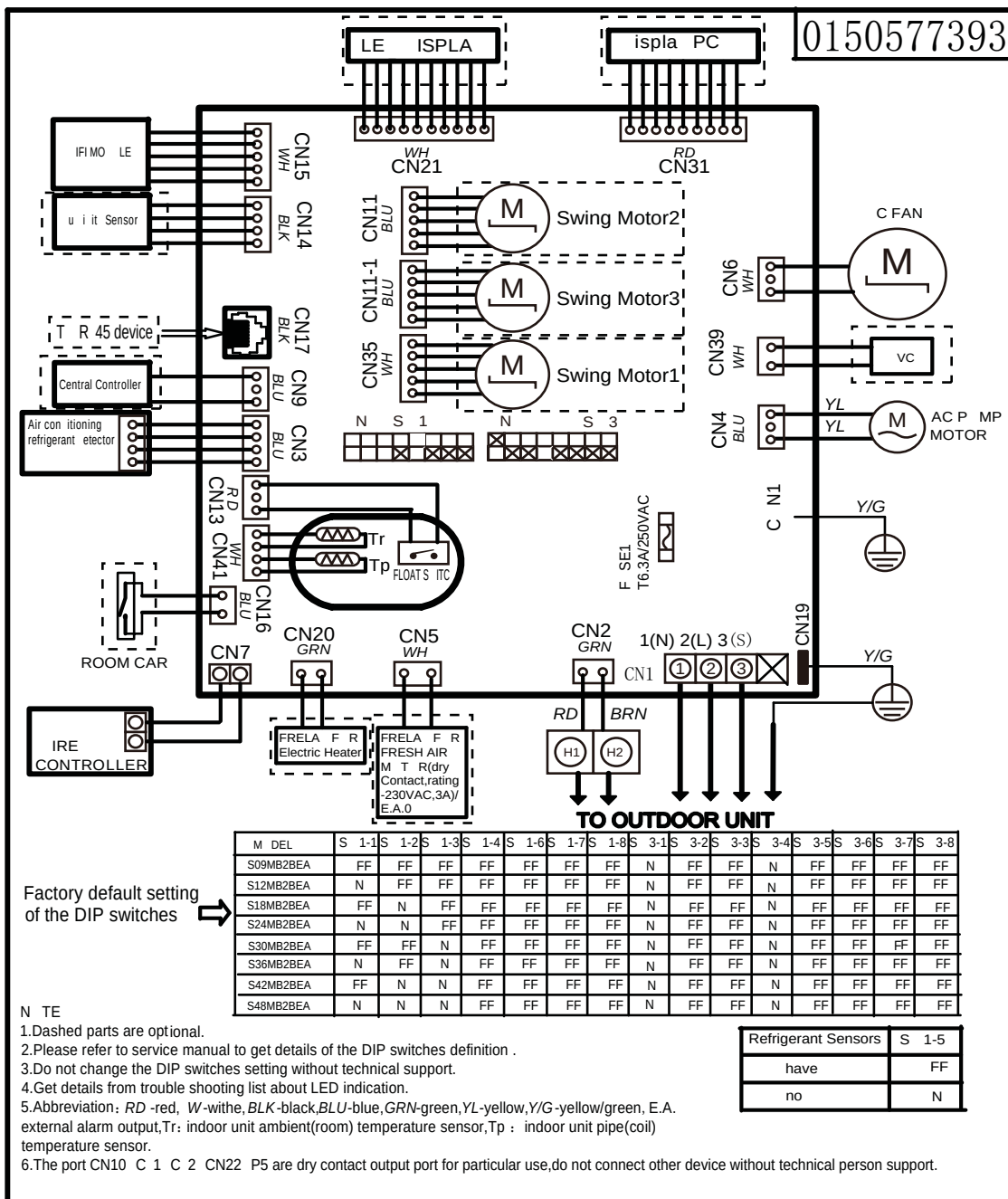
8 Gravity Drain Ports

The indoor units have the option for either gravity drain systems or the use of an internal condensate pump with float switch. If high lift is required, the water from the duct unit should be pumped to a field condensate pump that is capable of high lift.

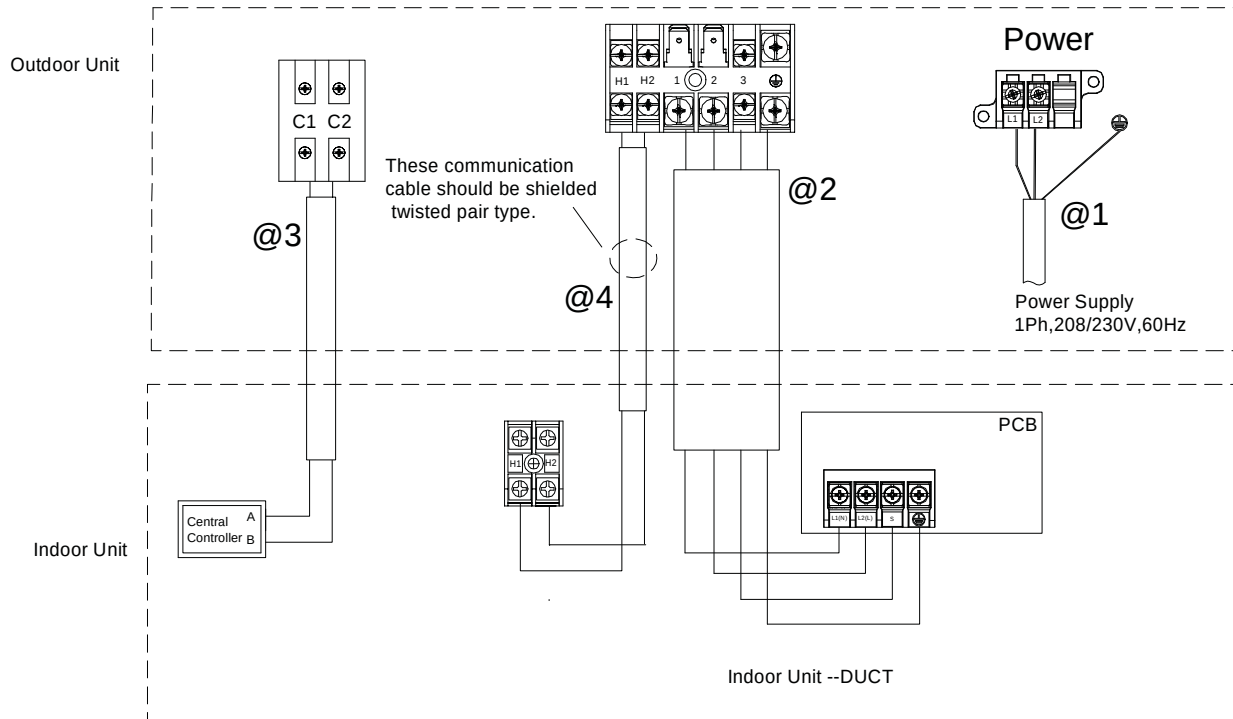
WIRING DIAGRAM

US09MB2BEA / US12MB2BEA / US18MB2BEA / US24MB2BEA / US30MB2BEA / US36MB2BEA

0150577393



US24MB2BEA



@1 Power supply cable, 3*4mm² for 9k/12k/18k/24k/36k, 3*6mm² for 42k/48k

@2 Communication cable for indoor unit and outdoor unit, 4*2.5mm²

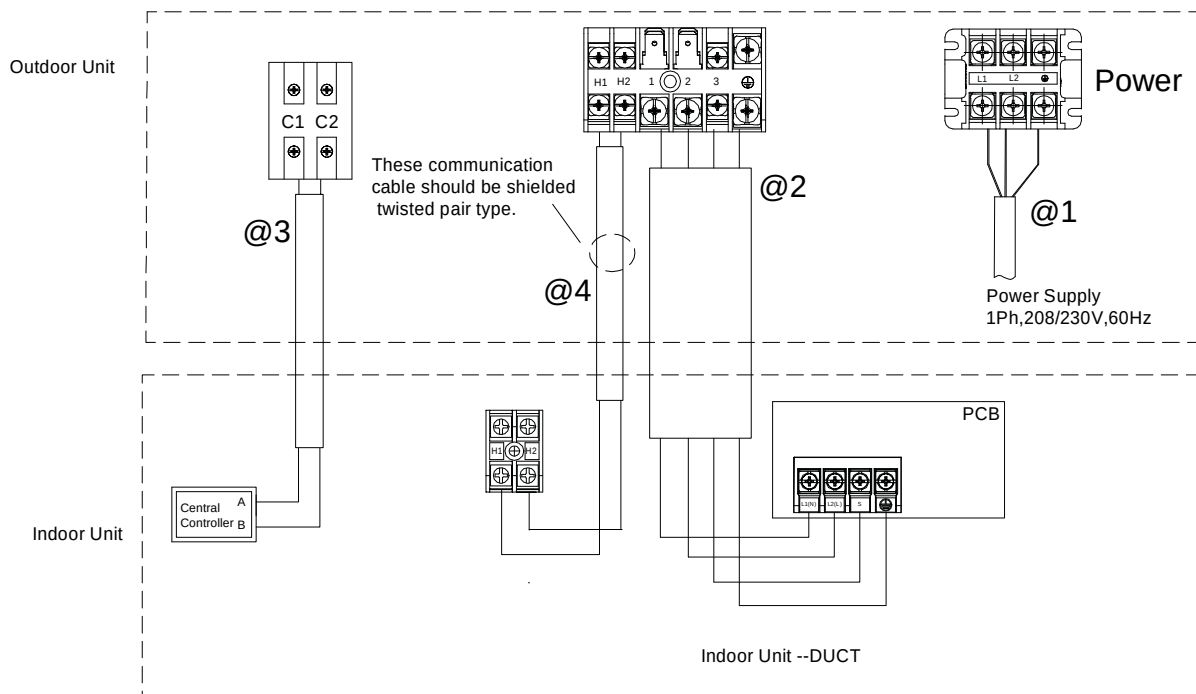
@3 Communication cable for central controller, wire specification to refer to wired controller manual and real installation length.

@4 The OTA communication cable (H1/H2) should be 2 x 16 AWG shielded.

Caution:

1. The OTA communication cable should be shielded twisted pair type, and need to make the cable's shielded layer connect to earth or the unit shell which connect to earth (indoor side or outdoor side).
2. There should be independent pipeline for communication wire.
3. The distance between OTA communication cable and the power supply cable should be at least 10cm.
4. Ensure specifically that there is an earth leakage breaker (ELB) installed for both the outdoor and indoor unit.
5. If the installation is already fitted with an earth leakage breaker (ELB), ensure that its rated current is large enough to withstand the current of the units (both outdoor and indoor).

US30MB2BEA / US36MB2BEA



Resistance Values

Model	US09MB2BEA	US12MB2BEA	US18MB2BEA
Fan Motor Model Resistance Value	0150401249C, 20.6±7%		0150402221C, 12.5±7%

Measure the Resistance:

Use a multimeter to measure the resistance between any two phases (U, V, W) of the motor (as shown in the following diagram).



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[13]	G20
[15]	G21
[16]	G22
[17]	G22
[18]	G23
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[25]	G23
[42]	G24
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[44]	G26
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E1/LED1: No Flash.....	G27
E2/LED1: No Flash	G27
E4	G28
E14	G28
E7/LED1: 15 Flash	G29
LED1: 21Flash	G30
LED1: 28Flash	G30
E22/LED1: 21 Flash	G31
F27/LED1: 21 Flash	G31
bA	G32
AA and Ab.....	G33
Ac	G34
Ad	G35
AE	G36
AF	G36

ERROR CODE	FAULT DESCRIPTION
1	OUTDOOR EEPROM FAILURE
2	IPM OVERCURRENT OR SHORT CIRCUIT
3	OUTDOOR ALTERNATING CURRENT, OVER CURRENT PROTECTION
4	COMMUNICATION FAILURE BETWEEN THE IPM AND OUTDOOR PCB
5	MODULE OPERATED OVERLOAD (COMPRESSOR OVERLOAD PROTECTION)
6	MODULE LOW OR HIGH VOLTAGE
7	COMPRESSOR CURRENT SAMPLING CIRCUIT FAULT
8	OVERHEAT PROTECTION FOR DISCHARGE TEMPERATURE
9	MALFUNCTION OF THE DC FAN MOTOR
10	MALFUNCTION OF DEFROST TEMPERATURE SENSOR
11	SUCTION TEMPERATURE SENSOR FAILURE
12	AMBIENT TEMPERATURE SENSOR FAILURE
13	DISCHARGE TEMPERATURE SENSOR FAILURE
15	COMMUNICATION FAILURE BETWEEN THE INDOOR & OUTDOOR UNIT
16	LACK OF REFRIGERANT OR DISCHARGING
17	4-WAY VALVE SWITCHING FAILURE
18	LOSS OF SYNCHRONISM DETECTION
19	POSITION DETECTION CIRCUIT FAULT OF COMPRESSOR
20	POWER SUPPLY SIDE HARDWARE INSTANTANEOUS OVERCURRENT
21	INDOOR THERMAL OVERLOAD (INDOOR THERMAL OVERLOAD & INDOOR ANTI-FROSTING PROTECTION)
23	MODULE THERMAL OVERLOAD
24	COMPRESSOR START FAILURE, OVER-CURRENT
25	PHASE CURRENT PROTECTION (IPM)
26	MCU RESET
27	MODULE CURRENT DETECT CIRCUIT MALFUNCTION
28	LIQUID PIPE SENSOR FAILURE: CIRCUIT A
29	LIQUID PIPE SENSOR FAILURE: CIRCUIT B
30	LIQUID PIPE SENSOR FAILURE: CIRCUIT C
31	LIQUID PIPE SENSOR FAILURE: CIRCUIT D
32	GAS PIPE SENSOR FAILURE: CIRCUIT A
33	GAS PIPE SENSOR FAILURE: CIRCUIT B
34	GAS PIPE SENSOR FAILURE: CIRCUIT C
35	GAS PIPE SENSOR FAILURE: CIRCUIT D

ERROR CODE	FAULT DESCRIPTION
36	GAS PIPE SENSOR FAILURE: CIRCUIT E
39	CONDENSING TEMPERATURE SENSOR
40	LIQUID PIPE SENSOR FAILURE: CIRCUIT E
42	HIGH PRESSURE SWITCH OPEN
43	LOW PRESSURE SWITCH OPEN
44	SYSTEM HIGH PRESSURE PROTECTION: OVERCHARGED, HIGH CONDENSING TEMPERATURE OR MALFUNCTION OF FAN MOTOR.
46	THE TEMPERATURE SENSOR OF THE DRIVER BOARD IS ABNORMAL
50	THREE-PHASE POWER SUPPLY PHASE LOSS FAULT
53	MODULE STARTUP FAILED
71	LOW OUTDOOR AMBIENT TEMPERATURE ALARM
AA AB	REFRIGERANT SENSOR LEAK DETECTED
AC	THE COMMUNICATION OF THE REFRIGERANT SENSOR IS ABNORMAL
AD	THE REFRIGERANT SENSOR SELF-CHECK IS FAULTY
AF	THE REFRIGERANT SENSOR SERVICE LIFE EXPIRES
BA	THE REFRIGERANT SENSOR HAS NO DIP SWITCH BREAKDOWN

- EEV: Electronic expansion valve
- MCB: Main control board
- ODU: Outdoor unit
- MCU: Micro Control Unit (main chip in the module board)

IDU: Indoor unit

Notes:

1. Setting of indoor address is not required.
2. Connecting wire between indoor and outdoor is polarized. Switching wires between indoor & outdoor connection position 1/2 /3 (C)/G will result in communication failure.
3. Quiet Operation setting (SW5-8 ON) will lower outdoor noise level. It will also reduce operating capacity slightly.
4. Do not change the DIP switches setting without technical support. See service manual for other dipswitch settings. Improperly set switch may cause damage or other malfunctions.
5. For some particular protection type malfunctions, this system can retry up to three times before generating a fault code

1	2	3	4	Definition of service display SW1
OFF	OFF	OFF	OFF	Normal Operating(default)
ON	OFF	OFF	OFF	Manually forced Heating: compressor 50rps; *EEV 200pls;ODU fan motor speed high
OFF	ON	OFF	OFF	Manually forced Cooling: compressor 60rps; EEV 200pls;ODU fan motor speed high
OFF	OFF	ON	OFF	Rated Operating (fixed speed)
OFF	OFF	OFF	ON	Time Defrost Valid
ON	ON	ON	ON	IDU&ODU Wiring Error Check valid

Error Code 3

Compressor drive module DC input over current DC input over current been detected by compressor drive module or input current higher than main board setting. Before replacing the IPM, check these potential causes of high current:

- Overcharge
- Dirty outdoor coil when cooling
- Hot conditioned space
- High temperature or excessive load
- Refrigeration circuit restriction
- Seized compressor
- Faulty wiring or wiring connections
- The filter of the indoor unit is dirty during heating
- The indoor fan motor in the heating mode is faulty

Error Code 5/20

The IPM is protecting the compressor from overload, which can be caused by low building power supply, restrictions, a non-condensable in the system, a plugged coil, an excessive load, or a refrigerant overcharge.

Error Code 7

This code indicates that the compressor is locked or has an instant stop. This fault is detected by the compressor frequency conversion module as a phase loss in the input power of the three-phase module. After the compressor frequency conversion module makes its own judgment, it sends the module fault code to the outdoor electrical controller through the communication port. This fault is not locked and can be automatically restored after the module fault is resolved.

Error Code 19

This code indicates a fault in the position detection circuit. This fault is caused by a current sampling circuit failure in the compressor frequency conversion module. The compressor frequency conversion module determines it by itself and sends the module fault code to the outdoor electric controller through the communication port, or it detects a fault in the input current sampling circuit of the compressor frequency conversion module and determines it by itself, sending the module fault code to the outdoor electric controller through the communication port.

Error Code 20

This code indicates the operating voltage of the system is too low .check line voltage for proper limits. A sudden voltage drop resulting in over-current triggers this failure.

Error Code 23

This code indicates an IPM thermal overload. This error was generated by a temperature sensor located in the IPM heat sink. Causes of overheating are typically overcharge of refrigerant, excessively plugged coil, sensor open or shorted, or a non-condensable in system.

Error Code 26

Module reset indicates possible PCB power anomalies. This usually occurs when low line voltage conditions are present.

Error Code 27

The IPM has detected that the compressor current is too high.

Possible Causes:

- Overcharge
- Dirty outdoor coil
- Hot conditioned space temperature or high load
- Refrigeration circuit restriction
- Seized compressor
- Defective IPM

Error Code 28/29/30/31/40

This code indicates that the sampling resistance of the fine tubes of the A/B/C/D/E unit is abnormal. This sensor is used to detect the temperature of the fine tubes of the indoor unit. When the temperature sensor is short-circuited or open-circuited for one minute, a fault is reported. It is necessary to check whether this sensor is short-circuited or short-circuited. If there is a problem, the CN1 sensor needs to be replaced.

Error Code 32/33/34/35/36

This code indicates that the sampling resistance of the thick tube of the A/B/C/D/E unit is abnormal. This sensor is used to detect the temperature of the thin tube of the indoor unit. When the temperature sensor is short-circuited or open-circuited for one minute, a fault is reported. It is necessary to check whether this sensor is short-circuited or short-circuited. If there is a problem, the CN24 sensor needs to be replaced.

Error Code 38

This code indicates a module failure: an unknown failure. When the frequency conversion module sends an unidentifiable fault code, a failure is reported.

Error Code 39

This code indicates an electrical failure of Tc sensor that is used to sense the condensing temperature of the outdoor coil. The sensor is connected to the PCB via wires at Plug CN-14.

Error Code 46

Compressor driver module heat sink sensor abnormal. The compressor driver module heat sink sensor temperature short circuit or open circuit

- PCB fault
- Outside temperature is below -35°C.

ERROR CODES

US09CB2BEA / US12CB2BEA / US18CB2BEA / US24LB2BEA / US30LB2BEA / US36LB2BEA

US09MB2BEA / US12MB2BEA / US18MB2BEA / US24MB2BEA / US30MB2BEA / US36MB2BEA

LED2 FLASH TIMES		PANEL DISPLAY	WIRED CONTROLLER DISPLAY	DESCRIPTION	POSSIBLE CAUSES
TENS PLACE	ONES PLACE				
0	1	E1	1	INDOOR UNIT AMBIENT TEMPERATURE SENSOR MALFUNCTION	SENSOR DISCONNECTED, BROKEN, AT WRONG POSITION, OR SHORT CIRCUIT.
0	2	E2	2	INDOOR UNIT PIPING TEMPERATURE SENSOR MALFUNCTION	SENSOR DISCONNECTED, BROKEN, AT WRONG POSITION, OR SHORT CIRCUIT.
0	4	E4	4	INDOOR PCB EEPROM WRONG	EEPROM CHIP DISCONNECTED, BROKEN, WRONG PROGRAMMED, OR PCB BROKEN.
0	7	E7	7	ABNORMAL COMMUNICATION BETWEEN INDOOR AND OUTDOOR UNITS	WRONG CONNECTION, WIRES DISCONNECTED, WRONG ADDRESS SETTING OF INDOOR UNIT, FAULTY POWER SUPPLY, OR FAULTY PCB
0	8	E8	07 FLASHING ON THE UPPER RIGHT CORNER	ABNORMAL COMMUNICATION BETWEEN WIRED CONTROLLER AND INDOOR UNIT	WRONG CONNECTION, WIRED CONTROLLER BROKEN, OR PCB FAULTY.
0	12	E12	0C	DRAIN SYSTEM MALFUNCTION	PUMP MOTOR DISCONNECTED OR AT WRONG POSITION, FLOAT SWITCH DISCONNECTED, WRONG POSITION, OR SHORT CIRCUIT BRIDGE DISCONNECTED
0	13	E13	0D	ZERO CROSS SIGNAL WRONG	ZERO CROSS SIGNAL DETECTED WRONG.
0	14	E14	0E	INDOOR UNIT DC FAN MOTOR ABNORMAL	DC FAN MOTOR DISCONNECTED, FAN BROKEN, OR CIRCUIT BROKEN
M(≥2)	N(≥0)	F1-F45	OUTDOOR ERROR CODE +20 CORRESPOND HEX CODE	OUTDOOR UNIT ERROR	SEE CORRESPOND OUTDOOR UNIT ERROR TROUBLESHOOTING. REMARK: F1 MEANS OUTDOOR ERROR CODE 1, F2 MEANS OUTDOOR ERROR CODE 2, AND SO ON.
18	6	bA	BA	THE REFRIGERANT DETECTOR IS NOT INSTALLED	NO REFRIGERANT DETECTOR IS INSTALLED
17	0	AA	AA	REFRIGERANT LEAKAGE	FAULT "AA" CANNOT BE CLEARED. ONLY THE LEAKAGE CONCENTRATION DECREASES AND THE FAULT IS TURNED TO "AB". SEE THE TECHNICAL MANUAL FOR ELIMINATION
17	2	Ac	AC	THE COMMUNICATION OF THE REFRIGERANT SENSOR IS FAULTY	WHEN THE AIR CONDITIONER IS RUNNING, THE CABLE HARNESS OF THE REFRIGERANT SENSOR FALLS OFF.
17	3	Ad	AD	THE REFRIGERANT SENSOR SELF CHECK IS FAULTY	THE REFRIGERANT SENSOR IS FAULTY.
17	4	AE	AE	REFRIGERANT SENSOR LIFE THRESHOLD	REFRIGERANT SENSOR LIFE THRESHOLD REMINDER
17	5	AF	AF	THE REFRIGERANT SENSOR EXPIRES	REFRIGERANT SENSOR LIFE THRESHOLD, NEED TO BE REPLACED

Note:

- For more details about the outdoor unit failure, please refer to the outdoor unit troubleshooting list.
- SW1-5 OFF: Start the refrigerant sensor function. SW1-5 ON: Disable the refrigerant sensor function.

ERROR CODES

US09FB2BEA / US12FB2BEA / US18FB2BEA

PANEL DISPLAY	WIRED CONTROLLER DISPLAY (YR-E17)	DESCRIPTION	POSSIBLE CAUSES
E1	1	INDOOR UNIT AMBIENT TEMPERATURE SENSOR MALFUNCTION	SENSOR DISCONNECTED,OR BROK EN,OR AT WRONG POSITION,OR SHORT CIRCUIT
E2	2	INDOOR UNIT PIPING TEMPERATURE SENSOR MALFUNCTION	SENSOR DISCONNECTED,OR B ,KEN,OR AT WRONG POSITION OR SHORT CIRCUIT
E4	4	INDOOR PCB EEPROM WRONG	EEPROM CHIP DISCONNECTED OR BROKEN OR WRONG PROGRAM- MED OR PCB BROKEN
E7	7	ABNORMAL COMMUNICATION BETWEEN INDOOR AND OUTDOOR UNITS	WRONG CONNECTION, WIRES DISCONNECTED, WRONG ADDRESS SETTING OF INDOOR UNIT, FAULTY POWER SUPPLY, OR FAULTY PCB
EB	07 FLASHING ON THE UPPER RIGHT CORNER	ABNORMAL COMMUNICATION BETWEEN WIRED CONTROLLER AND INDOOR UNIT	WRONG CONNECTION, WIRED CONTROLLER BROKEN, OR PCB FAULTY.
E12	OC	DRAIN SYSTEM MALFUNCTION	PUMP MOTOR DISCONNECTED OR AT WRONG POSITION,FLOAT SWITCH DISCONNECTED, WRONG POSITION, OR SHORT CIRCUIT BRIDGE DISCONNECTED
E13	OD	ZERO CROSS SIGNAL WRONG	ZERO CROSS SIGNAL DETECTED WRONG.
E14	OE	INDOOR UNIT DC FAN MOTOR ABNORMAL	DC FAN MOTOR DISCONNECTED, FAN BROKEN, OR CIRCUIT BROKEN
F1-- F45	OUTDOOR ERROR CODE+20 CORRESPOND HEX CODE	OUTDOOR UNIT ERROR	SEE CORRESPOND OUTDOOR UNIT ERROR TROUBLE SHOOTING. REMARK: F1 MEANS OUTDOOR ERROR CODE 1, F2 MEANS OUTDOOR ERROR CODE 2, AND SO ON.

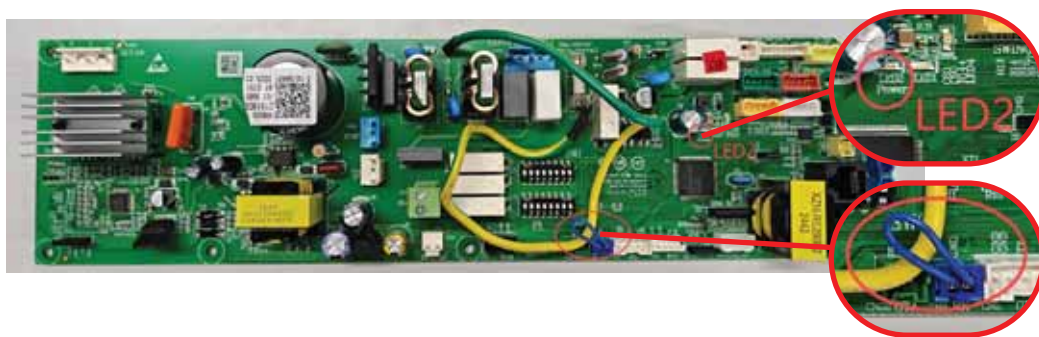
QS09WP2BEA / QS12WP2BEA / QS18WP2BEA / QS24WP2BEA

QS07WB2BEA / QS09WB2BEA / QS12WB2BEA / QS15WB2BEA / QS18WB2BEA / QS24WB2BEA

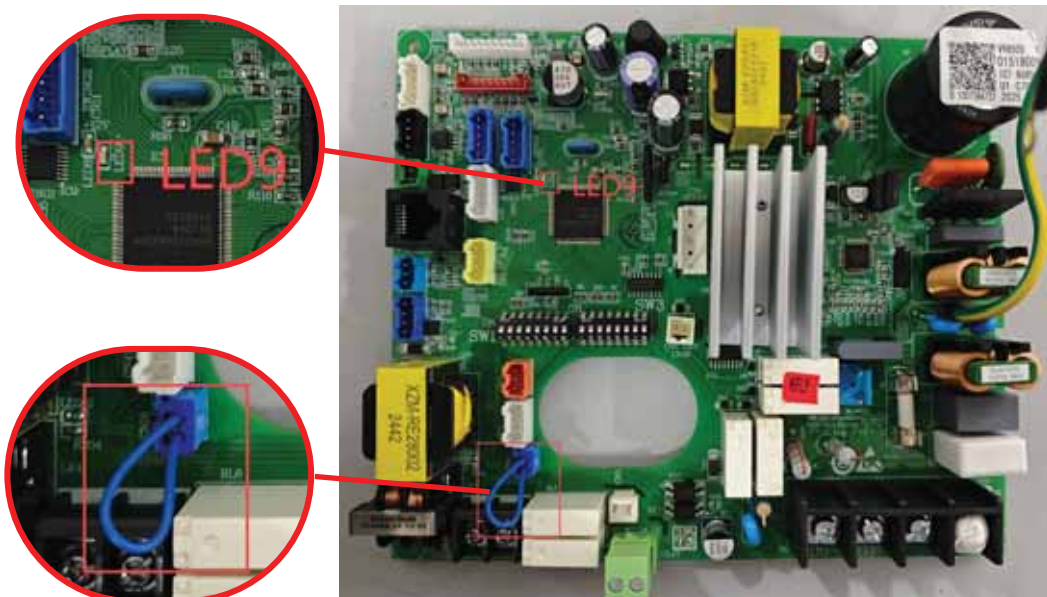
OUTDOOR LED	FAULT DESCRIPTION	INDOOR DISPLAY
/	ROOM TEMPERATURE SENSOR FAILURE	E1
/	INDOOR COIL TEMPERATURE SENSOR FAILURE	E2
/	INDOOR EEPROM ERROR	E4
15	COMMUNICATION FAILURE BETWEEN THE INDOOR & OUTDOOR UNIT	E7
/	INDOOR FAN MOTOR FAILURE	E14
21	IDU ANTI-FROSTING PROTECTION (COOLING MODE ONLY)	/
21	INDOOR UNIT OVER TEMPERATURE (HEATING MODE ONLY)	/
28	LACK OF REFRIGERANT OR DISCHARGING	/
/	REFRIGERANT LEAKAGE FAULT >10% LFL	AA
/	REFRIGERANT LEAKAGE FAULT <8% LFL	Ab
/	LEAK SENSOR COMMUNICATION FAULT	Ac
/	LEAKAGE SENSOR SELF-CHECK FAULT SELF-CHECK FAULT	Ad
/	SENSOR REACHING END OF LIFE WARNING	AE
/	LEAKAGE SENSOR END OF LIFE	AF
/	DIP SWITCH ENABLED. NO SENSOR DETECTED	bA

Error Code LED and Jump Wire Identification

US09CB2BEA / US12CB2BEA / US18CB2BEA / US24LB2BEA / US30LB2BEA / US36LB2BEA



US09MB2BEA / US12MB2BEA / US18MB2BEA / US24MB2BEA / US30MB2BEA / US36MB2BEA



US09FB2BEA / US12FB2BEA / US18FB2BEA



OUTDOOR UNIT DIP SWITCH SETTINGS

PCB 0151801029

2Q18FF2BEA / 3Q24FF2BEA

ENGLISH

DIP SWITCHES					SETTING ITEM	DESCRIPTION
NO.	SETTING					
SW5-1 SW5-2	SW5-1		SW5-2		Outdoor Mode Setting	
	OFF		OFF			Heat Pump α=8(Default)
	OFF		ON			Heat Pump α=6
	ON		OFF			Cooling Only
	ON		ON			Heat Pump Only α=6
SW5-3 SW5-4 SW5-5 SW5-6	SW5-3	SW5-4	SW5-5	SW5-6	Outdoor Air Conditioning Option	
	OFF	OFF	OFF	OFF		2Q18FF2BEA
	OFF	OFF	OFF	ON		3Q24FF2BEA
	OFF	ON	ON	OFF		
	OFF	ON	ON	ON		
	ON	OFF	OFF	OFF		
	ON	OFF	OFF	ON		
	ON	OFF	ON	ON		
SW5-7	OFF				Modified Temperature Difference Factor	Default
	ON					
SW5-8	OFF				Silent Operation	Default
	ON					

DIP SWITCHES					SETTING ITEM	DESCRIPTION
NO.	SETTING					
SW6-1 SW6-2 SW6-3 SW6-4	SW6-1	SW6-2	SW6-3	SW6-4	Outdoor Address	Indoor Address
	OFF	OFF	OFF	OFF	0#	1-5
	ON	OFF	OFF	OFF	1#	6-10
	OFF	ON	OFF	OFF	2#	11-15
	ON	ON	OFF	OFF	3#	16-20
	...	...	...	...	...	...
	ON	ON	ON	ON	15#	76-80

Note: this is for addressing individual units when connected to a multi-unit centralized controller

DIP SWITCHES			SETTING ITEM	DESCRIPTION
NO.	SETTING			
SW7-1	OFF		First-In First Out	Default
	ON		Outdoor Ambient Temperature Priority	
SW7-2	SW7-2	SW7-3		
SW7-3	ON	OFF	American Model	Default
SW7-4	OFF			Default
SW7-5	OFF			Default
SW7-6	OFF			Default
SW7-7	OFF			Default
SW7-8	OFF			Default

OUTDOOR UNIT DIP SWITCH SETTINGS

PCB 0151801029B

2Q20RT2BEA / 3Q24RT2BEA / 4Q36FF2BEA

DIP SWITCHES					SETTING ITEM	DESCRIPTION
NO.	SETTING					
SW5-1 SW5-2	SW5-1		SW5-2		Outdoor Mode Setting	Heat Pump α=8(Default)
	OFF		OFF			Heat Pump α=6
	OFF		ON			Cooling Only
	ON		OFF			Heat Pump Only α=6
	ON		ON			
SW5-3 SW5-4 SW5-5 SW5-6	SW5-3	SW5-4	SW5-5	SW5-6	Outdoor Air Conditioning Option	
	OFF	OFF	OFF	OFF		
	OFF	OFF	OFF	ON		
	OFF	ON	ON	OFF		2Q20RT2BEA
	OFF	ON	ON	ON		3Q24RT2BEA
	ON	OFF	OFF	OFF		4Q36FF2BEA
	ON	OFF	OFF	ON		
	ON	OFF	ON	ON		
SW5-7	OFF				Modified Temperature Difference Factor	Default
	ON					
SW5-8	OFF				Silent Operation	Default
	ON					

SW5-7: Modified temperature difference factor

Modified temperature difference factor refers to the correction of the target coil temperature based on the difference between the indoor ambient temperature and the set temperature

ON – The target temperature will be adjusted based upon the set temperature to ambient temperature

OFF – No adjustment will be made to the target coil temperature

SW5-8: Silent operation

If the unit is running, the fan speed and frequency shall be implemented in accordance with the following conditions; if the unit is not started at this time, the following conditions shall be implemented after the unit is started:

IF SILENT MODE On (SW5-8 ON): The maximum fan speed of the Outdoor fan motor is level 5; if the current speed is less than or equal to level 5, it shall operate at the current speed; if it is higher than level 5, it shall operate at level 5.

The maximum allowable operating frequency of the compressor is reduced by 15HZ (E); if the current frequency is less than or equal to "maximum frequency - 15HZ", it shall operate at the current frequency. If it is higher than "maximum frequency - 15HZ", it shall operate at "maximum frequency - 15HZ". The maximum frequency refers to the maximum value among all ambient temperature division intervals. Other frequency limiting conditions remain valid.

DIP SWITCHES					SETTING ITEM	DESCRIPTION
NO.	SETTING					
SW6-1 SW6-2 SW6-3 SW6-4	SW6-1	SW6-2	SW6-3	SW6-4	Outdoor Address	Indoor Address
	OFF	OFF	OFF	OFF	0#	1-5
	ON	OFF	OFF	OFF	1#	6-10
	OFF	ON	OFF	OFF	2#	11-15
	ON	ON	OFF	OFF	3#	16-20
	...	...	...	...	...	...
	ON	ON	ON	ON	15#	76-80

DIP SWITCHES			SETTING ITEM	DESCRIPTION
NO.	SETTING			
SW7-1	OFF		First-In First Out	Default
	ON		Outdoor Ambient Temperature Priority	
SW7-2	SW7-2	SW7-3		
SW7-3	ON	OFF	American Model	Default
SW7-4	OFF			Default
SW7-5	OFF			Default
SW7-6	OFF			Default
SW7-7	OFF			Default
SW7-8	OFF			Default

OUTDOOR UNIT DIP SWITCH SETTINGS

PCB 0151801003 0150406834H

4Q36RT2BEA / 5Q42RT2BEA

ENGLISH

DIP SWITCHES					SETTING ITEM	DESCRIPTION
NO.	SETTING					
SW5-1 SW5-2	SW5-1		SW5-2		Outdoor Mode Setting	
	OFF		OFF			Heat Pump α=8(Default)
	OFF		ON			Heat Pump α=6
	ON		OFF			Cooling Only
	ON		ON			Heat Pump Only α=6
SW5-3 SW5-4 SW5-5 SW5-6	SW5-3	SW5-4	SW5-5	SW5-6	Outdoor Air conditioning option	
	OFF	OFF	OFF	OFF		
	OFF	OFF	OFF	ON		
	OFF	ON	ON	OFF		
	OFF	ON	ON	ON		
	ON	OFF	OFF	OFF		
	ON	OFF	OFF	ON		4Q36RT2BEA
	ON	OFF	ON	ON		5Q42RT2BEA
SW5-7	OFF				Modified temperature difference factor	Default
	ON					
SW5-8	OFF				Silent operation	Default
	ON					

DIP SWITCHES					SETTING ITEM	DESCRIPTION
NO.	SETTING					
SW6-1 SW6-2 SW6-3 SW6-4	SW6-1	SW6-2	SW6-3	SW6-4	Outdoor address	Indoor address
	OFF	OFF	OFF	OFF	0#	1-5
	ON	OFF	OFF	OFF	1#	6-10
	OFF	ON	OFF	OFF	2#	11-15
	ON	ON	OFF	OFF	3#	16-20
	...	...	...	...	...	...
	ON	ON	ON	ON	15#	76-80

DIP SWITCHES			SETTING ITEM	DESCRIPTION
NO.	SETTING			
SW7-1	OFF		First-in first out	Default
	ON		Outdoor ambient temperature priority	
SW7-2	SW7-2	SW7-3		
SW7-3	ON	OFF	American model	Default
SW7-4	OFF			Default
SW7-5	OFF			Default
SW7-6	OFF			Default
SW7-7	OFF			Default
SW7-8	OFF			Default

INDOOR UNIT DIP SWITCH SETTINGS

BM1

In the following table, 1 represents ON and 0 represents OFF.

SW1-1 SW1-2 SW1-3	HP	SW1-1	SW1-2	SW1-3	HP
		0	0	0	09K
		1	0	0	12K
		0	1	0	18K
		1	1	0	24K
		0	0	1	30K
		1	0	1	36K
		0	1	1	42K
		1	1	1	48K
SW1_4	Room Card	0			Room Card Invalid
		1			Room Card Valid
SW1_5	Refrigerant Detector	0			Refrigerant Detector is Functional
		1			The Refrigerant Detector Function is Invalid
SW1_6	Fresh Air	0			Fresh Air
	Fault Alarm	1			Fault Alarm
SW1_7	Filter/Refrigeration Fan Stops	0			None-Filter Alarm Reminder+Refrigeration Fan Stops
		1			Filter Reminder+Refrigeration Fan Does Not Stop
SW1_8	US/Non-US Models	0			US Models
		1			Non US Models

BM3

In the following table, 1 represents ON and 0 represents OFF.

SW3_1	Special Fresh Air	[1]				Special Fresh Air Selection for Duct Unit
		0				Valid
		1				Invalid
SW3_2	Model	[2]				Model
		0				Cassette Single Swing Wind - Synchronized Swing of Swing Blades
		1				Cassette Unit Four Swing Wind - Four Swing Blades Swing at Different Angles, Misaligned Swing
SW3_3*	Electrical Heating	[3]				Electromechanical Heating Selection of Air Duct
		0				Invalid
		1				Valid
SW3_4	Model	0				Ultra-Slim Ducted Unit with 4-Level Static Pressure
		1				Medium Static Pressure Duct with 10-Level Static Pressure Adjustment
SW3_5 SW3_6 SW3_7 SW3_8	Wired Controller Indoor Unit Group	[5]	[6]	[7]	[8]	Wired Controller Indoor Unit Address (Group Address)
		0	0	0	0	0 # (Wired Control Host) (Default)
		0	0	0	1	1#(Line-Controlled Slave Machine)
		0	0	1	0	2#(Line-Controlled Slave Machine)
		0	0	1	1	3#(Line-Controlled Slave Machine)
		...	...	...	...	
		1	1	1	1	15#(Line-Controlled Slave Machine)

SW3_1 The fan selection function in cooling mode is only applicable to duct and slim duct.

SW3_4 Only applicable to slim duct

Identification of duct, cassette, and console based on hardware jumpers.

Model Identification Code Comparison Table.

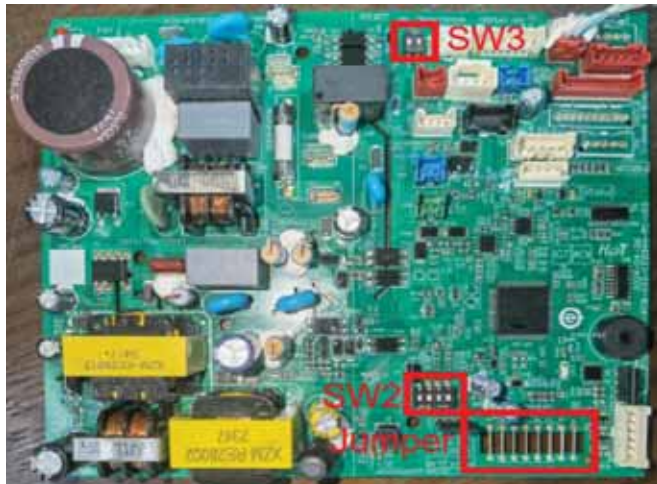
Number	RJ1	RJ2	RJ3	SW3-2	SW3-3	Model
1	0	0	0	0	0	Crane
2				0	1	Cassette with 1 Oscillating Wind
3				1	0	Cassette with Four-Way Oscillating Wind
4				1	1	Cassette with Light Panel
5	0	0	1	0	0	Console
6	0	1	0	0	0	Small Duct
7	0	1	0	0	1	High-Capacity Duct
8	-	-	-	-	-	Reserve

- Suitable for convertible, 2HP cassette (matched with single swing wind), 2HP cassette (matched with four swing wind), 3HP cassette (equipped with display board)
- For example, if the convertible has 0 0 0 0, the resistance should be welded RJ1/RJ2/RJ3.
- Simultaneously dial the second digit of code BM3 to OFF and the third digit to OFF.
- The same setup method is used for other models.

INDOOR UNIT DIP SWITCH SETTINGS

QS09WP2BEA / QS12WP2BEA / QS18WP2BEA / QS24WP2BEA

QS07WB2BEA / QS09WB2BEA / QS12WB2BEA / QS15WB2BEA / QS18WB2BEA / QS24WB2BEA



DIP SWITCHES					SETTING ITEM	DESCRIPTION
NO.	SETTING					
SW2-1 SW2-2 SW2-3 SW2-4	SW2-1	SW2-2	SW2-3	SW2-4	Controller Address	Default
	OFF	OFF	OFF	OFF	0#	
	OFF	OFF	OFF	ON	1#	
	OFF	OFF	ON	OFF	2#	
	OFF	OFF	ON	ON	3#	
	OFF	ON	OFF	OFF	4#	
	OFF	ON	OFF	ON	5#	
	OFF	ON	ON	OFF	6#	
	OFF	ON	ON	ON	7#	
	ON	OFF	OFF	OFF	8#	
	ON	OFF	OFF	ON	9#	
	ON	OFF	ON	OFF	10#	
	ON	OFF	ON	ON	11#	
	ON	ON	OFF	OFF	12#	
	ON	ON	OFF	ON	13#	
	ON	ON	ON	OFF	14#	
ON	ON	ON	ON	15#		

DIP SWITCHES		SETTING ITEM	DESCRIPTION
NO.	SETTING		
SW3-1	OFF	Central Controller	Default
	ON	24V Controller	
SW3-2	OFF	Refrigerant Leakage Sensor Disable	
	ON	Refrigerant Leakage Sensor Enable	Default

DIP SWITCHES		SETTING ITEM	DESCRIPTION
NO.	SETTING		
J1	OFF	Room card valid	
	ON	Room card invalid	Default
J2	OFF	Slave	
	ON	Master	Default
J8	OFF	WiFi 2.18 protocol	
	ON	WiFi GE3 protocol	Default

DIP SWITCHES						SETTING ITEM	DESCRIPTION
NO.	SETTING						
J7-J-3	J7	J6	J5	J4	J3	Controller Address	
	OFF	OFF	OFF	OFF	OFF	Arctic 09K	
	OFF	OFF	OFF	OFF	ON	Arctic 12K	
	OFF	OFF	OFF	ON	OFF	Arctic 18K	
	OFF	OFF	OFF	ON	ON	Arctic 24K	
	OFF	OFF	ON	OFF	OFF	Reserved	
	OFF	OFF	ON	OFF	ON	Reserved	
	OFF	OFF	ON	ON	OFF	FlexFit 06K	
	OFF	OFF	ON	ON	ON	FlexFit 09K/ Tempo 9K	
	OFF	ON	OFF	OFF	OFF	FlexFit 12K/ Tempo 12K	
	OFF	ON	OFF	OFF	ON	FlexFit 15K	
	OFF	ON	OFF	ON	OFF	FlexFit 18K/ Tempo 18K	
	OFF	ON	OFF	ON	ON	FlexFit 24K/ Tempo 24K	
	OFF	ON	ON	OFF	OFF	FlexFit 30K	
	OFF	ON	ON	OFF	ON	FlexFit 36K	
	OFF	ON	ON	ON	OFF	Reserved	
	OFF	ON	ON	ON	ON	Reserved	
	ON	OFF	OFF	OFF	OFF	Reserved	
	ON	OFF	OFF	OFF	ON	Reserved	
	ON	OFF	OFF	ON	OFF	Reserved	
	--	--	--	--	--	Reserved	
	ON	ON	ON	ON	ON	Reserved	

SENSOR RESISTANCE TABLES

MODEL	TEMPERATURE SENSOR
	RESISTANCE VALUE
1Q24RT2BEA	TE B25/50=3700K±3%, R25=10KΩ±3% TD B25/80=4450K±3%, R80=50KΩ±3% TA B25/50=3700K±3%, R25=10KΩ±3% TS B25/50=3700K±3%, R25=10KΩ±3% TC B25/50=3700K±3%, R25=10KΩ±3%"
1Q3036RT2BEA	TE B25/50=3700K±3%, R25=10KΩ±3% TD B25/80=4450K±3%, R80=50KΩ±3% TA B25/50=3700K±3%, R25=10KΩ±3% TS B25/50=3700K±3%, R25=10KΩ±3% TC B25/50=3700K±3%, R25=10KΩ±3%"

MODEL	FUNCTION	PART CODE	CHARACTERISTICS
2Q18FF2BEA	Outdoor Ambient Temperature Sensor	0150403772C	TE B25/50=3700K±3%R25=10KΩ±3% TD B25/80=4450K±3%R80=50KΩ±3% TA B25/50=3700K±3%R25=10KΩ±3% TS B25/50=3700K±3%R25=10KΩ±3% TC B25/50=3700K±3%R25=10KΩ±3%
	Gas Pipe Temperature Sensor	0150402454B	B25/50=3700K±3% R25=10KΩ±3%
	Liquid Pipe Temperature Sensor	0150402454A	B25/50=3700K±3% R25=10KΩ±3%
3Q24FF2BEA	Outdoor Ambient Temperature Sensor	0150403772C	TE B25/50=3700K±3%R25=10KΩ±3% TD B25/80=4450K±3%R80=50KΩ±3% TA B25/50=3700K±3%R25=10KΩ±3% TS B25/50=3700K±3%R25=10KΩ±3% TC B25/50=3700K±3%R25=10KΩ±3%
	Gas Pipe Temperature Sensor	0150405725	B25/50=3700K±3% R25=10KΩ±3%
	Liquid Pipe Temperature Sensor	0150405726	B25/50=3700K±3% R25=10KΩ±3%
2Q20RT2BEA	Outdoor Ambient Temperature Sensor	0150403772C	TE B25/50=3700K±3%R25=10KΩ±3% TD B25/80=4450K±3%R80=50KΩ±3% TA B25/50=3700K±3%R25=10KΩ±3% TS B25/50=3700K±3%R25=10KΩ±3% TC B25/50=3700K±3%R25=10KΩ±3%
	Gas Pipe Temperature Sensor	0150405722	B25/50=3700K±3% R25=10KΩ±3%
	Liquid Pipe Temperature Sensor	0150405724	B25/50=3700K±3% R25=10KΩ±3%
3Q24RT2BEA	Outdoor Ambient Temperature Sensor	0150403772C	TE B25/50=3700K±3%R25=10KΩ±3% TD B25/80=4450K±3%R80=50KΩ±3% TA B25/50=3700K±3%R25=10KΩ±3% TS B25/50=3700K±3%R25=10KΩ±3% TC B25/50=3700K±3%R25=10KΩ±3%
	Gas Pipe Temperature Sensor	0150405725	B25/50=3700K±3% R25=10KΩ±3%
	Liquid Pipe Temperature Sensor	0150405726	B25/50=3700K±3% R25=10KΩ±3%

MODEL	FUNCTION	PART CODE	CHARACTERISTICS
4Q36FF2BEA	Outdoor Ambient Temperature Sensor	0150403772C	TE B25/50=3700K±3%R25=10KΩ±3% TD B25/80=4450K±3%R80=50KΩ±3% TA B25/50=3700K±3%R25=10KΩ±3% TS B25/50=3700K±3%R25=10KΩ±3% TC B25/50=3700K±3%R25=10KΩ±3%
	Gas Pipe Temperature Sensor	0150403772A	B25/50=3700K±3% R25=10KΩ±3%
	Liquid Pipe Temperature Sensor	0150403772B	B25/50=3700K±3% R25=10KΩ±3%
4Q36RT2BEA	Outdoor Ambient Temperature Sensor	0150403772C	TE B25/50=3700K±3%R25=10KΩ±3% TD B25/80=4450K±3%R80=50KΩ±3% TA B25/50=3700K±3%R25=10KΩ±3% TS B25/50=3700K±3%R25=10KΩ±3% TC B25/50=3700K±3%R25=10KΩ±3%
	Gas Pipe Temperature Sensor	0150403772A	B25/50=3700K±3% R25=10KΩ±3%
	Liquid Pipe Temperature Sensor	0150403772B	B25/50=3700K±3% R25=10KΩ±3%
5Q42RT2BEA	Outdoor Ambient Temperature Sensor	0150403772D	TE B25/50=3700K±3%R25=10KΩ±3% TD B25/80=4450K±3%R80=50KΩ±3% TA B25/50=3700K±3%R25=10KΩ±3% TS B25/50=3700K±3%R25=10KΩ±3% TC B25/50=3700K±3%R25=10KΩ±3%
	Gas Pipe Temperature Sensor	0150403772D	B25/50=3700K±3% R25=10KΩ±3%
	Liquid Pipe Temperature Sensor	0150403772D	B25/50=3700K±3% R25=10KΩ±3%

MODEL	AMBIENT TEMPERATURE SENSOR	PIPE TEMPERATURE SENSOR
	RESISTANCE VALUE	RESISTANCE VALUE
US18CB2BEA	"R25=10KΩ±3% B25/50=3700K±3%"	"R25=10KΩ±3% B25/50=3700K±3%"
US24LB2BEA		
US30LB2BEA		
US36LB2BEA		
US09MB2BEA	"R25=10KΩ±3% B25/50=3700K±3%"	"R25=10KΩ±3% B25/50=3700K±3%"
US12MB2BEA		
US18MB2BEA		
US24MB2BEA		
US30MB2BEA		
US36MB2BEA		
US09FB2BEA	"R25=10KΩ±3% B25/50=3700K±3%"	"R25=23KΩ±3% B25/50=4200K±3%"
US12FB2BEA		
US18FB2BEA		

SENSOR RESISTANCE TABLES

ENGLISH

B25/50=3700K±3% R25=10KΩ±3%							
Temp	Resistance(KΩ)			Temp	Resistance(KΩ)		
(°C)	Rmax	R (t) Normal	Rmin	(°C)	Rmax	R (t) Normal	Rmin
-40	246.890	229.239	211.587	11	18.864	18.135	17.406
-39	233.754	217.183	200.612	12	18.039	17.354	16.669
-38	221.368	205.809	190.250	13	17.254	16.611	15.968
-37	209.686	195.075	180.464	14	16.507	15.903	15.299
-36	198.665	184.942	171.219	15	15.797	15.229	14.661
-35	188.265	175.375	162.485	16	15.120	14.587	14.054
-34	178.449	166.339	154.230	17	14.476	13.975	13.474
-33	169.181	157.803	146.426	18	13.862	13.392	12.922
-32	160.429	149.738	139.046	19	13.277	12.836	12.395
-31	152.162	142.114	132.067	20	12.720	12.306	11.892
-30	144.350	134.907	125.464	21	12.189	11.801	11.413
-29	136.519	127.675	118.831	22	11.683	11.319	10.955
-28	129.381	121.081	112.781	23	11.200	10.858	10.516
-27	122.638	114.849	107.060	24	10.739	10.419	10.099
-26	116.268	108.958	101.648	25	10.300	10.000	9.700
-25	110.249	103.388	96.527	26	9.894	9.600	9.306
-24	104.563	98.123	91.683	27	9.505	9.217	8.929
-23	99.190	93.144	87.098	28	9.134	8.852	8.570
-22	94.111	88.435	82.759	29	8.779	8.503	8.227
-21	89.311	83.982	78.653	30	8.441	8.170	7.899
-20	84.518	79.529	74.540	31	8.116	7.851	7.586
-19	80.484	75.785	71.086	32	7.805	7.546	7.287
-18	76.428	72.015	67.602	33	7.509	7.255	7.001
-17	72.591	68.447	64.303	34	7.225	6.976	6.727
-16	68.963	65.071	61.179	35	6.953	6.710	6.467
-15	65.530	61.874	58.218	36	6.692	6.454	6.216
-14	62.283	58.848	55.413	37	6.443	6.210	5.977
-13	59.210	55.983	52.756	38	6.204	5.976	5.748
-12	56.300	53.269	50.238	39	5.976	5.753	5.530
-11	53.547	50.699	47.851	40	5.756	5.538	5.320
-10	50.940	48.264	45.588	41	5.546	5.333	5.120
-9	48.472	45.957	43.442	42	5.345	5.136	4.927
-8	46.134	43.770	41.406	43	5.151	4.947	4.743
-7	43.918	41.697	39.476	44	4.967	4.767	4.567
-6	41.819	39.731	37.643	45	4.788	4.593	4.398
-5	39.830	37.868	35.906	46	4.618	4.427	4.236
-4	37.944	36.100	34.256	47	4.455	4.268	4.081
-3	36.157	34.423	32.689	48	4.298	4.115	3.932
-2	34.462	32.832	31.202	49	4.147	3.968	3.789
-1	32.854	31.322	29.790	50	4.004	3.829	3.654

SENSOR RESISTANCE TABLES

B25/50=3700K±3% R25=10KΩ±3%							
Temp	Resistance(KΩ)			Temp	Resistance(KΩ)		
(°C)	Rmax	R (t) Normal	Rmin	(°C)	Rmax	R (t) Normal	Rmin
0	31.362	29.920	28.478	51	3.863	3.692	3.521
1	29.881	28.527	27.173	52	3.729	3.562	3.395
2	28.507	27.234	25.961	53	3.601	3.438	3.275
3	27.202	26.006	24.810	54	3.478	3.318	3.158
4	25.965	24.840	23.715	55	3.359	3.203	3.047
5	24.788	23.731	22.674	56	3.246	3.093	2.940
6	23.672	22.678	21.684	57	3.136	2.987	2.838
7	22.610	21.676	20.742	58	3.031	2.885	2.739
8	21.601	20.723	19.845	59	2.930	2.787	2.644
9	20.642	19.817	18.992	60	2.833	2.693	2.553
10	19.730	18.955	18.180	61	2.739	2.602	2.465
62	2.649	2.515	2.381	84	1.321	1.238	1.155
63	2.562	2.431	2.300	85	1.281	1.200	1.119
64	2.478	2.350	2.222	86	1.244	1.165	1.086
65	2.398	2.273	2.148	87	1.209	1.131	1.053
66	2.320	2.198	2.076	88	1.173	1.097	1.021
67	2.246	2.126	2.006	89	1.140	1.065	0.990
68	2.174	2.057	1.940	90	1.107	1.034	0.961
69	2.104	1.990	1.876	91	1.076	1.004	0.932
70	2.038	1.926	1.814	92	1.045	0.975	0.905
71	1.974	1.864	1.754	93	1.016	0.947	0.878
72	1.912	1.805	1.698	94	0.987	0.920	0.853
73	1.853	1.748	1.643	95	0.960	0.894	0.828
74	1.795	1.692	1.589	96	0.934	0.869	0.804
75	1.739	1.639	1.539	97	0.907	0.844	0.781
76	1.686	1.588	1.490	98	0.883	0.821	0.759
77	1.634	1.538	1.442	99	0.859	0.798	0.737
78	1.585	1.491	1.397	100	0.836	0.776	0.716
79	1.537	1.445	1.353	101	0.814	0.755	0.696
80	1.490	1.400	1.310	102	0.791	0.734	0.677
81	1.445	1.357	1.269	103	0.771	0.715	0.659
82	1.402	1.316	1.230	104	0.750	0.695	0.640
83	1.361	1.276	1.191	105	0.731	0.677	0.623

SENSOR RESISTANCE TABLES

ENGLISH

B25/80=4450K±3% R80=50KΩ±3%							
Temp	Resistance(KΩ)			Temp	Resistance(KΩ)		
(°C)	Rmax	R (t) Normal	Rmin	(°C)	Rmax	R (t) Normal	Rmin
-40	23982.342	21280.977	18579.613	11	1126.419	1041.293	956.167
-39	22397.462	19890.917	17384.372	12	1067.463	987.477	907.491
-38	20925.744	18599.155	16272.567	13	1011.977	936.799	861.621
-37	19558.506	17398.211	15237.916	14	959.732	889.052	818.372
-36	18287.777	16281.212	14274.647	15	910.510	844.042	777.574
-35	17106.237	15241.843	13377.450	16	864.114	801.590	739.066
-34	16007.159	14274.298	12541.437	17	820.361	761.533	702.705
-33	14984.359	13373.234	11762.109	18	779.081	723.717	668.353
-32	14032.148	12533.735	11035.322	19	740.117	688.001	635.885
-31	13145.291	11751.273	10357.255	20	703.323	654.254	605.185
-30	12318.968	11021.678	9724.388	21	668.565	622.355	576.145
-29	11551.311	10343.407	9135.504	22	635.715	592.189	548.663
-28	10835.229	9710.234	8585.239	23	604.657	563.651	522.645
-27	10167.003	9118.935	8070.867	24	575.282	536.644	498.006
-26	9543.200	8566.532	7589.865	25	547.490	511.076	474.662
-25	8960.652	8050.276	7139.901	26	521.186	486.862	452.538
-24	8416.430	7567.624	6718.818	27	496.281	463.922	431.563
-23	7907.828	7116.224	6324.620	28	472.693	442.182	411.671
-22	7432.345	6693.901	5955.457	29	450.344	421.572	392.800
-21	6987.666	6298.642	5609.618	30	429.165	402.028	374.891
-20	6571.650	5928.583	5285.516	31	409.087	383.489	357.891
-19	6187.164	5586.374	4985.585	32	390.047	365.898	341.749
-18	5826.712	5265.313	4703.915	33	371.986	349.201	326.416
-17	5488.692	4964.004	4439.315	34	354.850	333.349	311.848
-16	5171.616	4681.148	4190.680	35	338.586	318.295	298.004
-15	4874.100	4415.539	3956.978	36	323.147	303.995	284.843
-14	4594.858	4166.054	3737.249	37	308.485	290.407	272.329
-13	4332.694	3931.647	3530.600	38	294.559	277.493	260.427
-12	4086.494	3711.346	3336.198	39	281.328	265.216	249.104
-11	3855.222	3504.244	3153.266	40	268.753	253.541	238.329
-10	3637.915	3309.498	2981.082	41	256.801	242.437	228.073
-9	3433.673	3126.321	2818.969	42	245.438	231.873	218.308
-8	3241.661	2953.980	2666.299	43	234.630	221.820	209.010
-7	3061.098	2791.790	2522.482	44	224.350	212.252	200.154
-6	2891.257	2639.114	2386.971	45	214.569	203.142	191.715
-5	2731.460	2495.357	2259.253	46	205.260	194.467	183.674
-4	2581.076	2359.962	2138.848	47	196.399	186.204	176.009
-3	2439.514	2232.412	2025.310	48	187.963	178.333	168.703
-2	2306.222	2112.221	1918.220	49	179.929	170.832	161.735
-1	2180.688	1998.938	1817.187	50	172.275	163.682	155.089
0	2094.972	1921.993	1749.014	51	164.984	156.866	148.748
1	1975.099	1813.265	1651.431	52	158.036	150.367	142.698
2	1863.127	1711.646	1560.165	53	151.412	144.168	136.924
3	1758.449	1616.593	1474.737	54	145.099	138.255	131.411
4	1660.513	1527.611	1394.709	55	139.078	132.613	126.148
5	1568.817	1444.250	1319.683	56	133.336	127.229	121.122
6	1482.897	1366.096	1249.295	57	127.858	122.089	116.320
7	1402.336	1292.773	1183.210	58	122.630	117.181	111.732

SENSOR RESISTANCE TABLES

B25/80=4450K±3% R80=50KΩ±3%							
Temp	Resistance(KΩ)			Temp	Resistance(KΩ)		
(°C)	Rmax	R (t) Normal	Rmin	(°C)	Rmax	R (t) Normal	Rmin
8	1326.746	1223.935	1121.124	59	117.641	112.494	107.347
9	1255.774	1159.265	1062.756	60	112.879	108.018	103.157
10	1189.098	1098.474	1007.850	61	108.332	103.741	99.150
62	103.989	99.654	95.319	107	20.667	19.720	18.773
63	99.841	95.748	91.655	108	20.020	19.091	18.162
64	95.879	92.014	88.149	109	19.397	18.485	17.573
65	92.091	88.443	84.795	110	18.795	17.900	17.005
66	88.472	85.028	81.584	111	18.215	17.337	16.459
67	85.011	81.761	78.511	112	17.655	16.793	15.931
68	81.703	78.636	75.569	113	17.114	16.268	15.422
69	78.538	75.645	72.752	114	16.593	15.763	14.933
70	75.510	72.781	70.052	115	16.090	15.275	14.460
71	72.614	70.040	67.466	116	15.603	14.804	14.005
72	69.842	67.415	64.988	117	15.133	14.349	13.565
73	67.189	64.901	62.613	118	14.681	13.911	13.141
74	64.649	62.493	60.337	119	14.243	13.488	12.733
75	62.216	60.185	58.154	120	13.821	13.080	12.339
76	59.886	57.973	56.060	121	13.412	12.685	11.958
77	57.653	55.852	54.051	122	13.019	12.305	11.591
78	55.515	53.820	52.125	123	12.638	11.938	11.238
79	53.465	51.870	50.275	124	12.271	11.584	10.897
80	51.500	50.000	48.500	125	11.917	11.242	10.567
81	49.684	48.206	46.728	126	11.573	10.911	10.249
82	47.940	46.484	45.028	127	11.243	10.593	9.943
83	46.267	44.832	43.397	128	10.923	10.285	9.647
84	44.659	43.246	41.833	129	10.614	9.988	9.362
85	43.114	41.723	40.332	130	10.315	9.701	9.087
86	41.629	40.260	38.891	131	10.028	9.425	8.822
87	40.203	38.856	37.509	132	9.750	9.158	8.566
88	38.831	37.506	36.181	133	9.481	8.900	8.319
89	37.513	36.209	34.905	134	9.222	8.651	8.080
90	36.244	34.962	33.680	135	8.972	8.411	7.850
91	35.025	33.764	32.503	136	8.731	8.180	7.629
92	33.851	32.612	31.373	137	8.498	7.957	7.416
93	32.722	31.504	30.286	138	8.273	7.741	7.209
94	31.636	30.439	29.242	139	8.055	7.533	7.011
95	30.590	29.413	28.236	140	7.846	7.333	6.820
96	29.583	28.427	27.271	141	7.628	7.125	6.621
97	28.614	27.478	26.342	142	7.417	6.923	6.429
98	27.680	26.564	25.448	143	7.213	6.728	6.243
99	26.781	25.685	24.589	144	7.014	6.538	6.062
100	25.914	24.838	23.762	145	6.822	6.355	5.888
101	25.080	24.023	22.966	146	6.636	6.178	5.719
102	24.275	23.237	22.199	147	6.455	6.006	5.556
103	23.500	22.481	21.462	148	6.280	5.839	5.398
104	22.753	21.752	20.751	149	6.111	5.678	5.244
105	22.031	21.049	20.067	150	5.946	5.521	5.096
106	21.336	20.372	19.408				

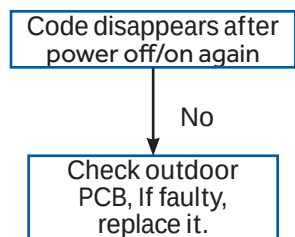
[1]

Outdoor EEPROM malfunction

EEPROM communication error; EEPROM data check error (model ID, checksum, etc.); EEPROM data logic error (wider data range, wrong order, etc.)

Possible Causes:

- EEPROM is bad
- Loose EEPROM wiring



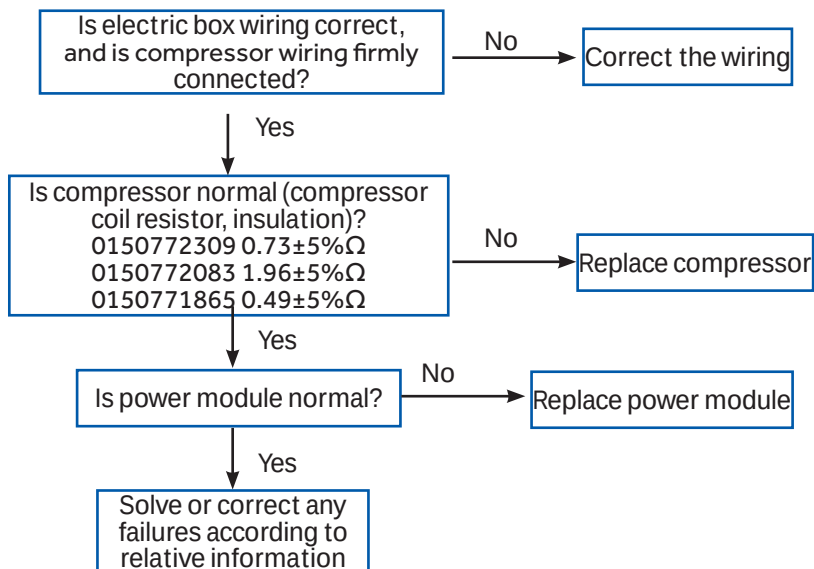
[2]

Compressor Drive Module's IPM overcurrent or short circuit

Input over current detected by PIM's hardware.

Possible Causes:

- The IPM is bad
- Loose compressor wire
- The compressor is bad



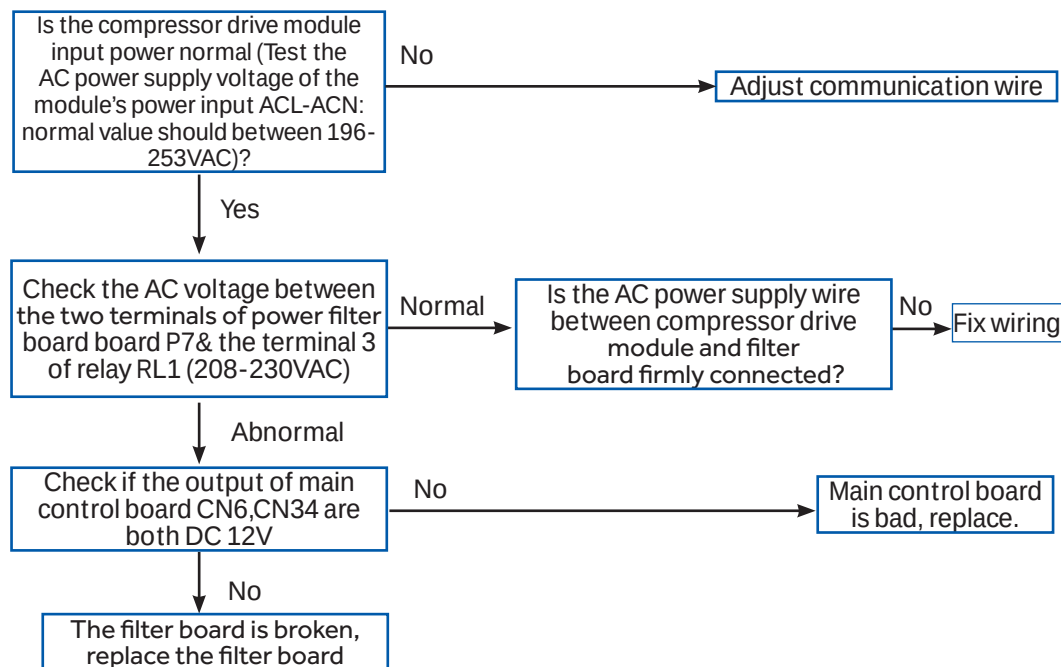
[4]

Communication abnormal between PCB and IPM

Control board can not communicate with the compressor driver module for over 4 minutes

Possible Causes:

- The communication wire is bad
- The PCB is bad
- The power module is bad



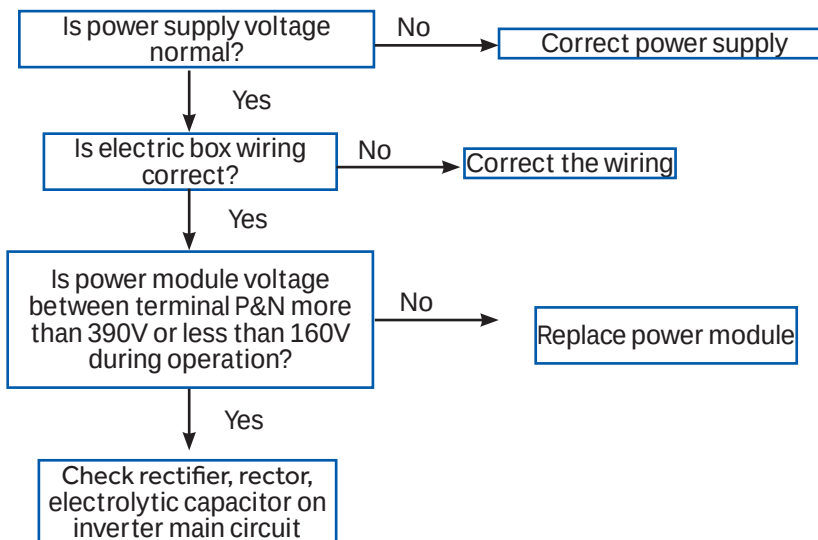
[6]

Compressor Drive Module low or high voltage

Driver module AC power supply voltage over 280VAC, or driver module DC-BUS voltage over 390VDC.

Possible Causes:

- The power supply is abnormal
- Incorrect wiring
- Power module is bad



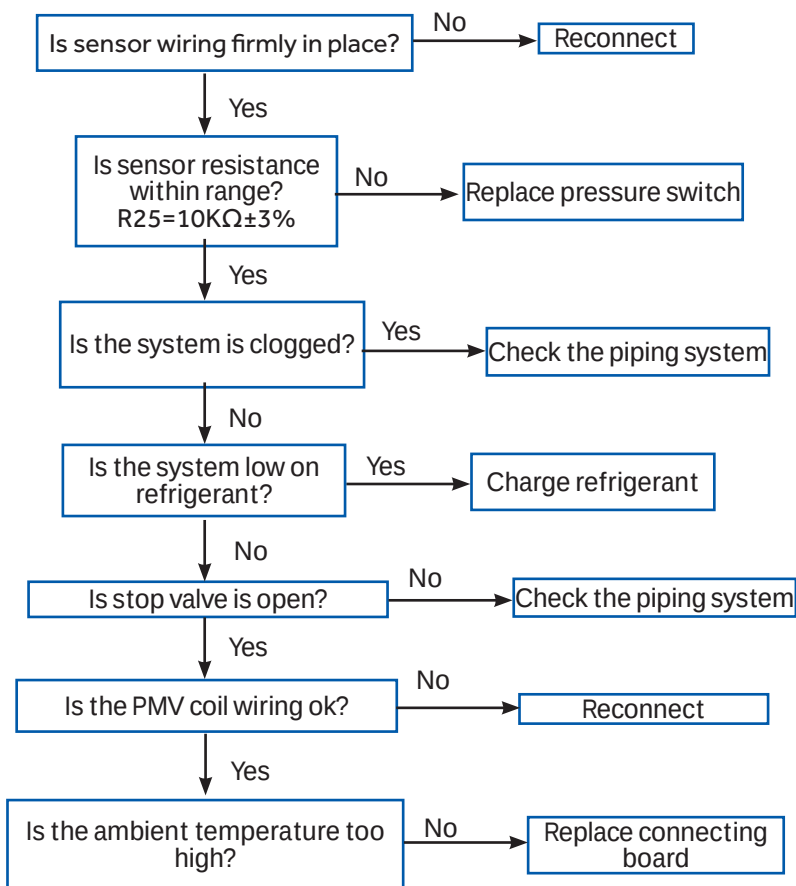
[8]

Overheat protection for discharge temperature

Compressor discharge temperature over 115°C. Error clears within 3 minutes if temperature lowers below 115°C. Error status lock if it occurs 3 times in 1 hour.

Possible Causes:

- The sensor is bad or fixed bad
- The system is clogged
- The system lack of refrigerant
- The valve opening is wrong
- Check ODU fan motor is operating



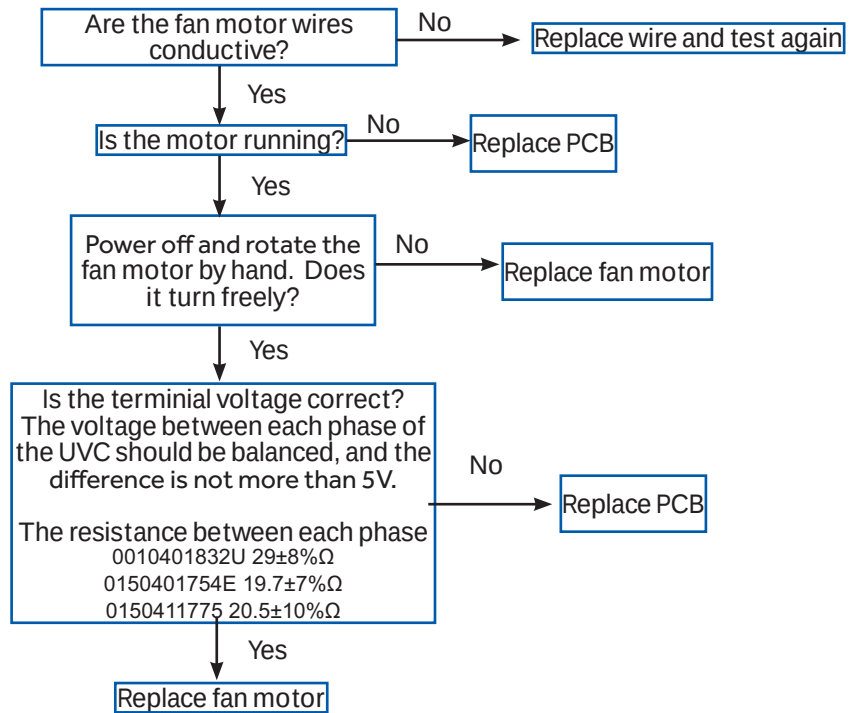
[9]

DC fan motor fault

DC fan motor damaged, not connected, or related circuit broken. Error status confirms and locks if occurs 3 times within 30 minutes.

Possible Causes:

- Loose motor wiring
- The motor is bad
- The PCB is bad



[10]

Outdoor defrosting temp. sensor T_e abnormal

[11]

Suction temp. sensor T_s abnormal

[12]

Outdoor ambient temp. sensor T_a abnormal

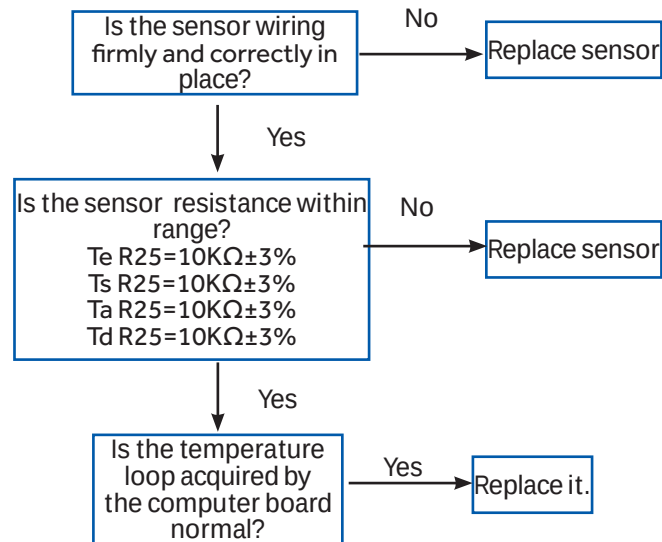
[13]

Discharging temp. sensor T_d abnormal

Sensor temperature has been detected below or higher than expected, or has been detected as a shorted or open circuit (for expected temperature, refer to part failure code)

Possible Causes:

- Bad sensor connection
- The sensor is bad
- Sensor resistance drift
- The temperature acquired by PCB is not accurate



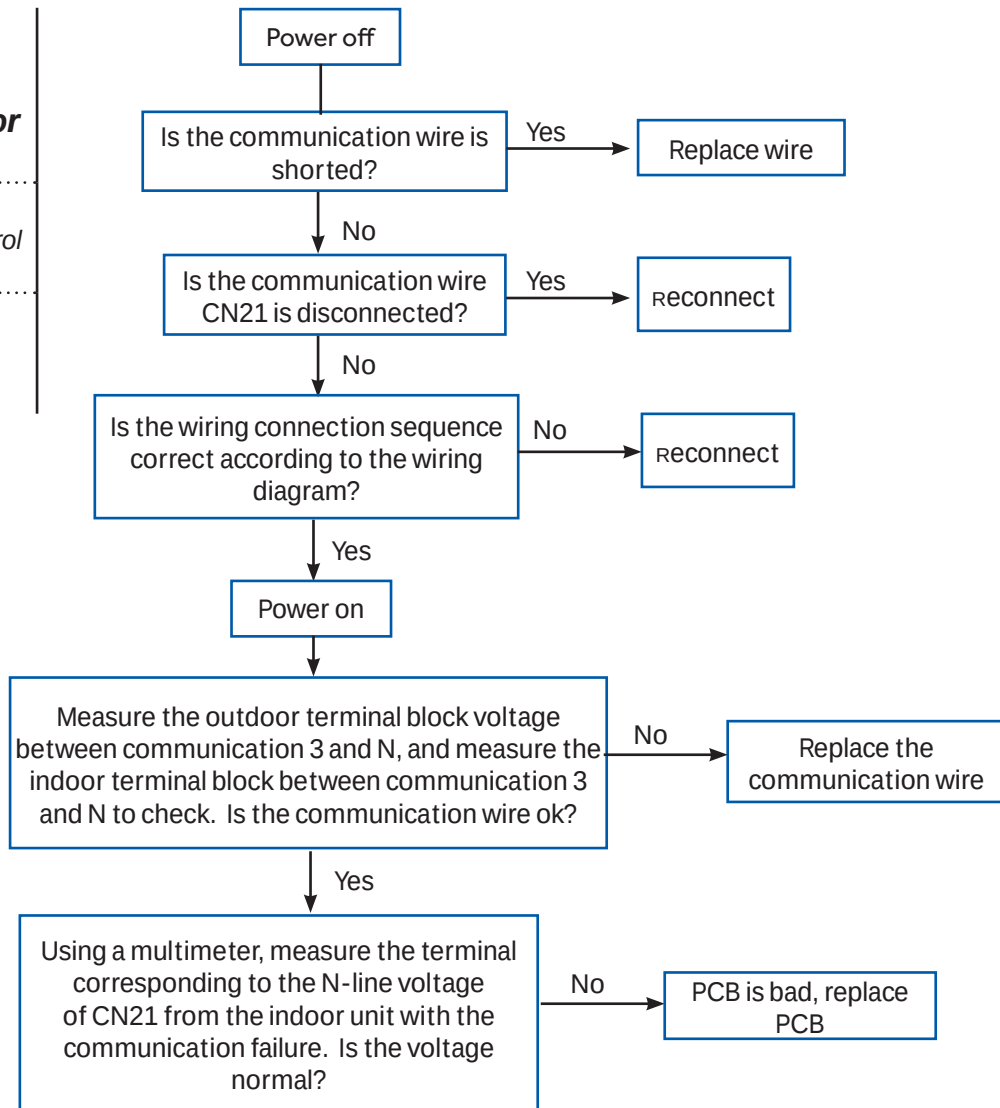
[15]

Communication abnormal between indoor unit and outdoor unit DC fan motor fault

Outdoor unit control board cannot communicate with the indoor unit control board for over 4 minutes.

Possible Causes:

- Bad communication wiring
- The PCB is bad



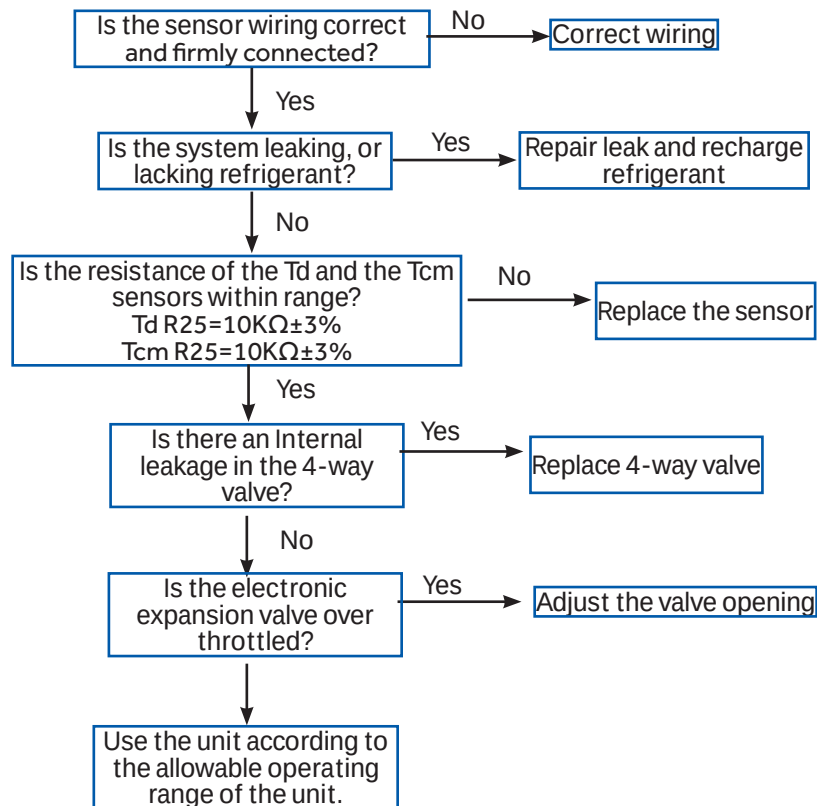
[16]

Lack of refrigerant or discharging pipe blocked

Discharge & suction temperature $T_d - T_s \geq 80^\circ\text{C}$ 10 minutes after compressor start. Error status locks if it occurs 3 times in 1 hour.

Possible Causes:

- Wrong sensor connection
- Lack of refrigerant
- The sensor is bad
- The 4-way valve is bad
- The electronic expansion valve is bad
- Out of the operating range



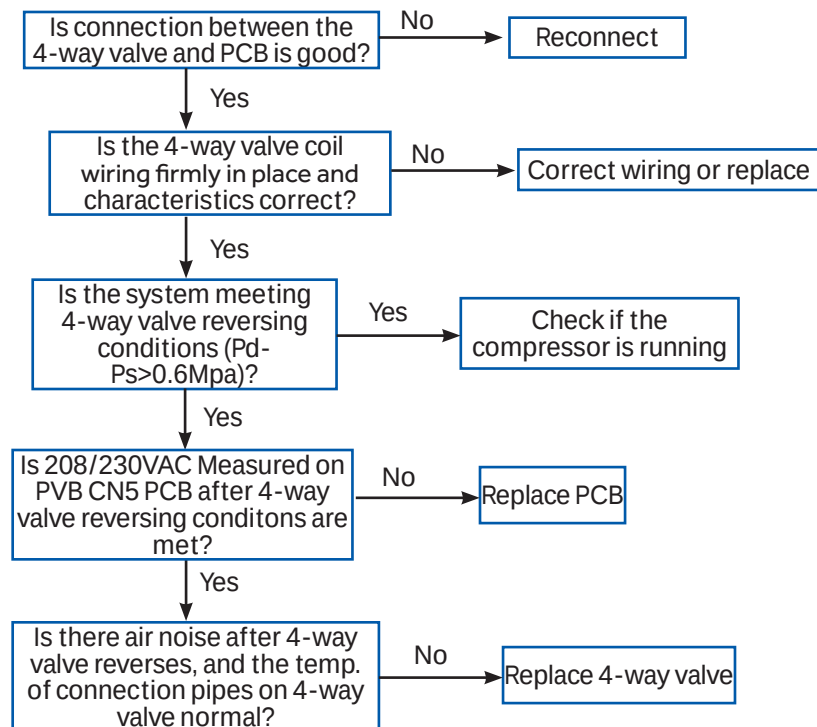
[17]

4-way valve reversing failure

Indoor pipe & indoor ambient temperature $T_m - T_{ai} \geq 5^\circ\text{C}$ 10 minutes after compressor started. Error status locks if it occurs 3 times in 1 hour.

Possible Causes:

- The 4-way valve is bad
- The PCB is bad
- The 4-way valve coil connection is bad
- The system pressure difference is too small.



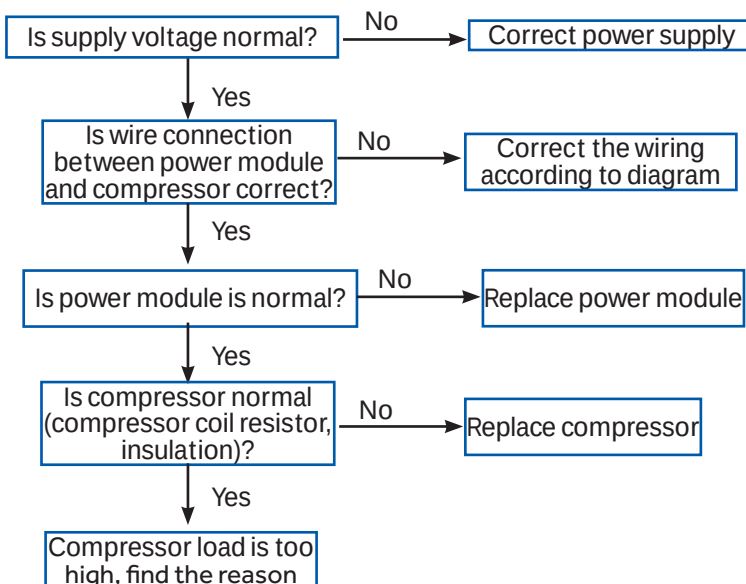
[18]

Compressor motor desynchronizing

Motor desynchronizing occurred. Caused by overload, load sharply fluctuating, abnormal compressor current sensor circuit, or one of the inverter gate drive signals is missing.

Possible Causes:

- The power supply is abnormal
- Incorrect compressor wiring
- The power module is bad
- The compressor is bad
- The system is overload



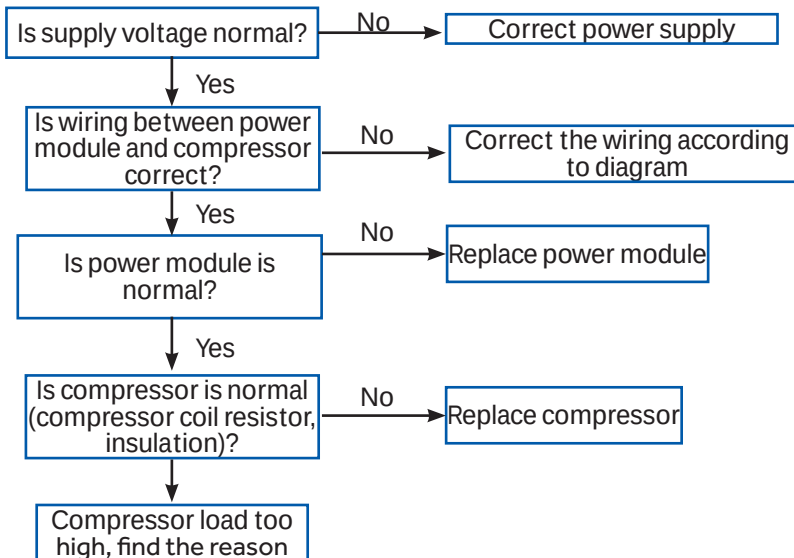
[24]

Compressor startup failure

Compressor start failure has been detected by driver module.

Possible Causes:

- The power supply is abnormal
- Incorrect compressor wiring
- The power module is bad
- The compressor is bad
- System overload



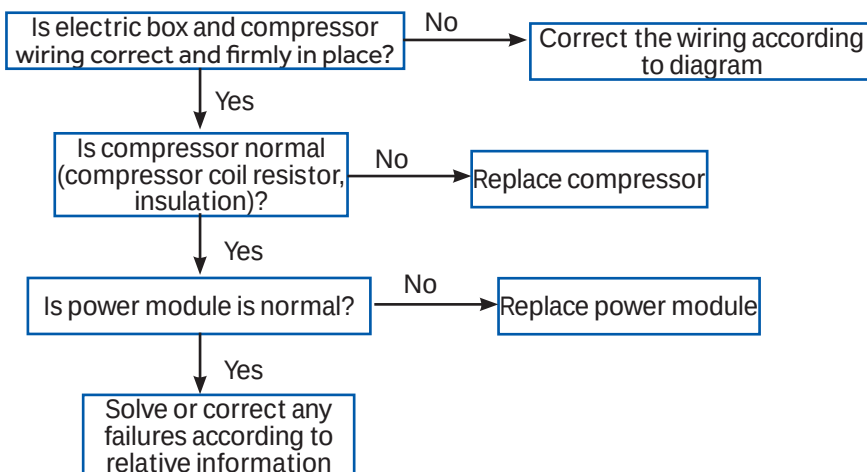
[25]

Input overcurrent of the drive module

Compressor drive module input current higher than 32A (double fan model), or 27A (single fan). Locks if it occurs 3 times in 1 hour.

Possible Causes:

- Incorrect compressor wiring
- The power module is bad
- The compressor is bad



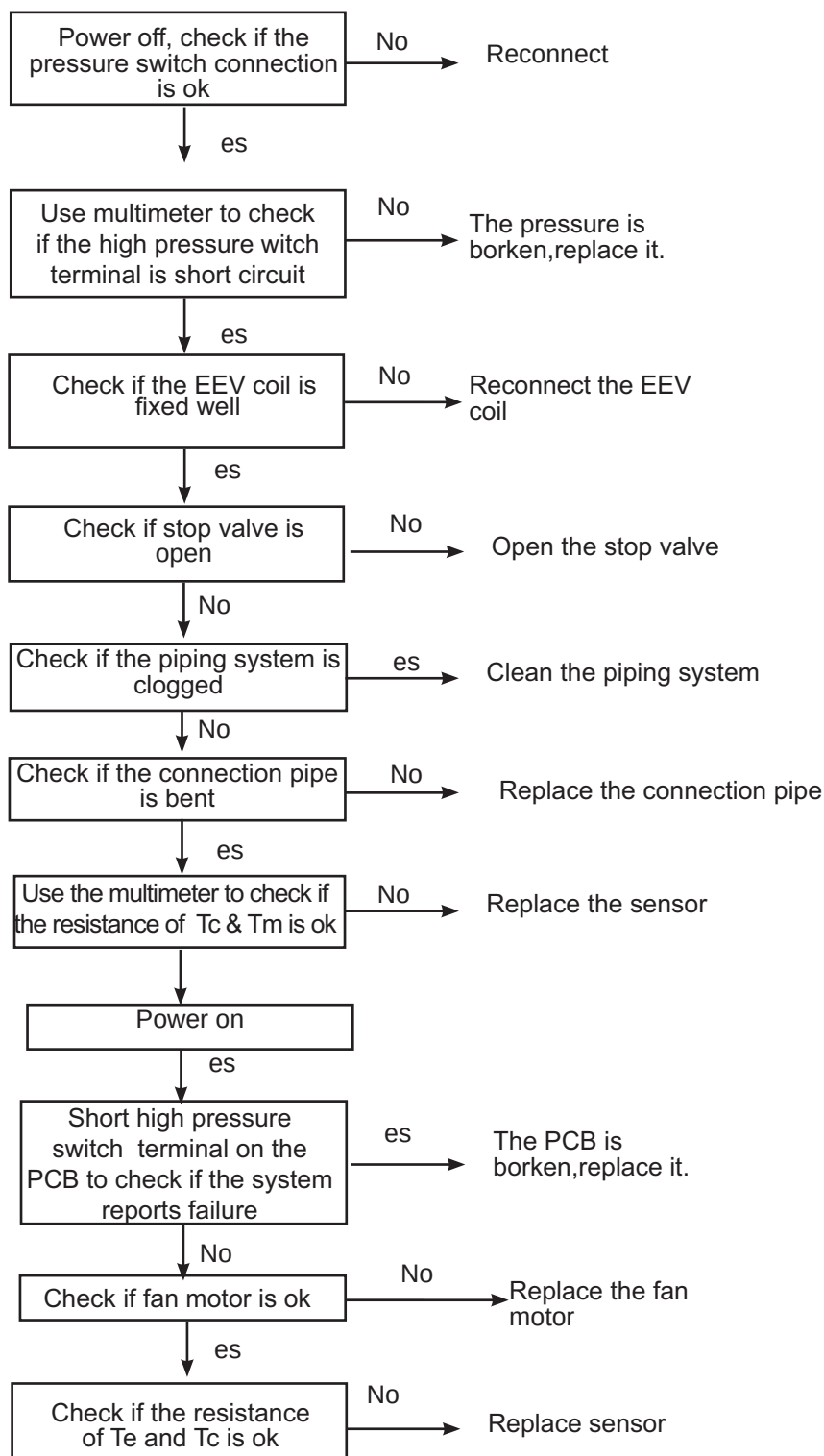
[42]

Open high pressure switch

High pressure switch: Switch circuit has been detected open for 30 seconds (after 3 minute of compressor run time). Error locks if it occurs 3 times in 1 hour.

Possible Causes:

- Incorrect pressure switch wiring
- Abnormal system pressure
- System is clogged
- Incorrect refrigerant charge
- Bad valve
- Pressure switch is bad
- PCB is bad

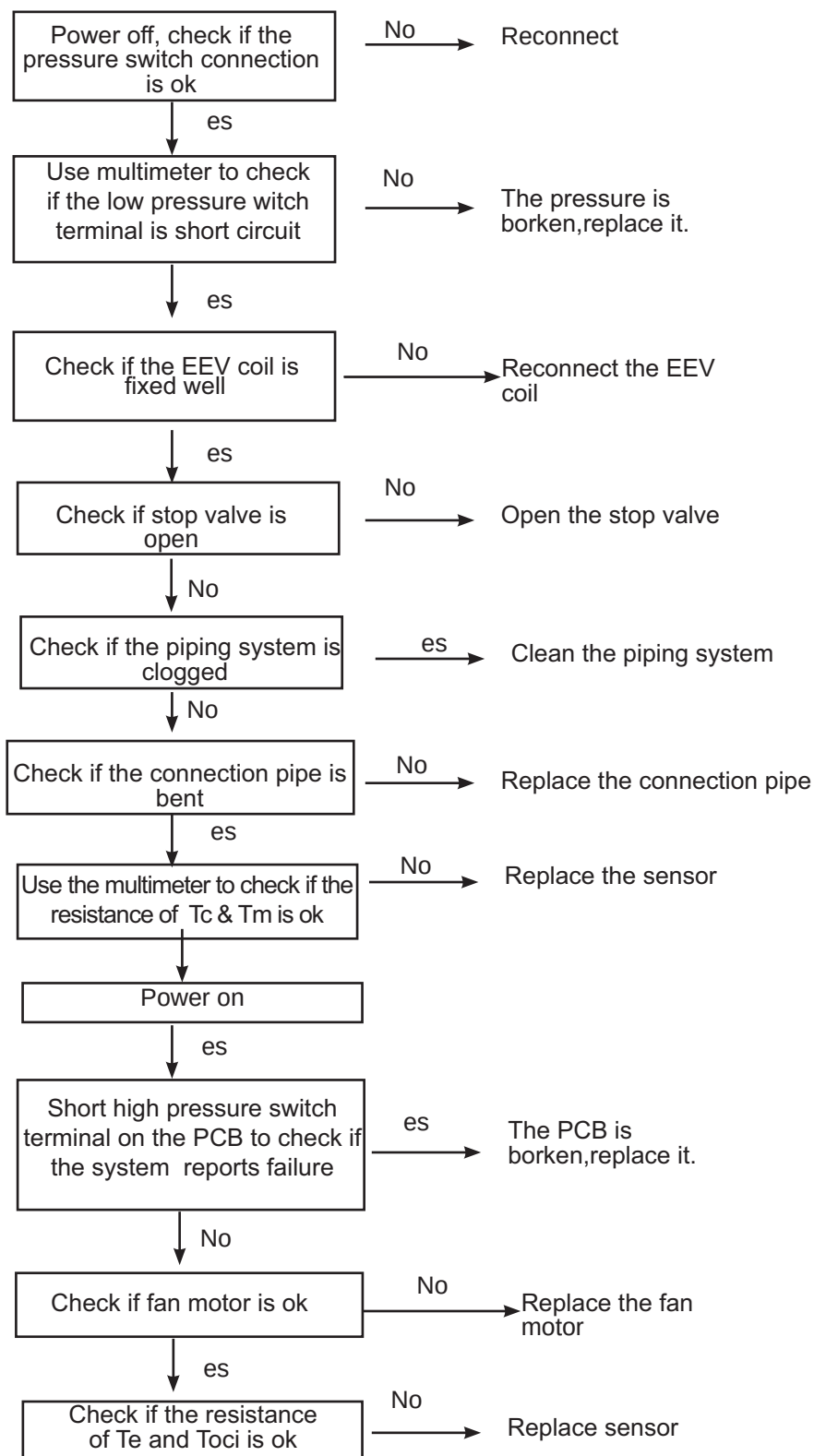


[43]

Open low pressure switch

Low pressure switch: Switch has been detected open for 60 seconds (after 3 minute of compressor run time) or open for 30 seconds during standby. **Possible Causes:**

- Incorrect pressure switch wiring
- Abnormal system pressure
- System is clogged
- Incorrect refrigerant charge
- Bad valve
- Pressure switch is bad
- PCB is bad



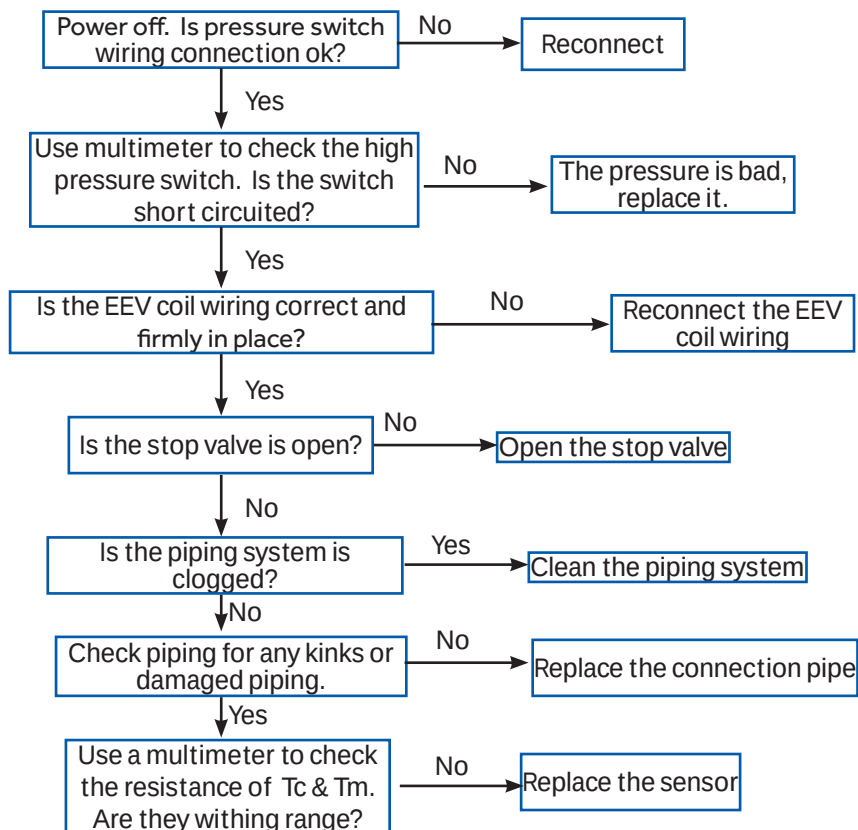
[44]

High pressure detected in system

The minimum temperature value of indoor pipe T_m and outdoor T_s is lower than -45°C during cooling mode, or minimum temperature value of outdoor T_c and outdoor T_e is lower than -45°C .

Possible Causes:

- High pressure sensor detection value is incorrect
- Refrigerant overcharge
- Blocked liquid line piping
- The outdoor unit cannot be turned on normally due to failure to open outdoor heat exchanger electronic expansion valve when heating.
- The operation environment is beyond the allowed range.



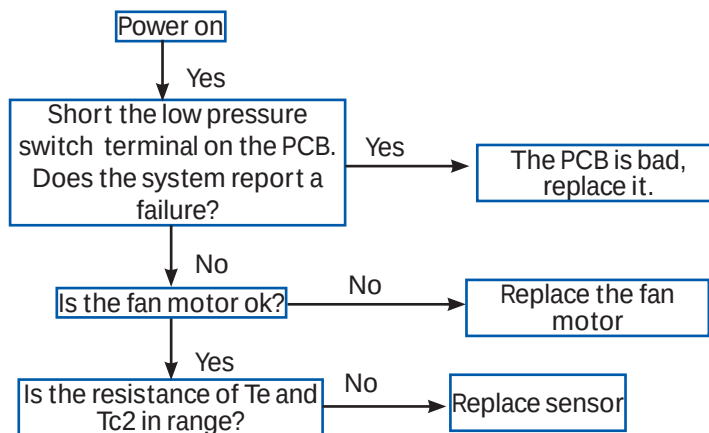
[45]

Low pressure detected in system

The minimum temperature value of indoor pipe T_m and outdoor T_s is lower than -45°C during cooling mode, or minimum temperature value of outdoor T_c and outdoor T_e is lower than -45°C .

Possible Causes:

- Low pressure sensor detection value is incorrect
- Low refrigerant charge
- System air leakage
- Blocked low pressure or liquid line piping
- The outdoor unit cannot be turned on normally due to failure to open outdoor heat exchanger electronic expansion valve when heating.
- The operation environment is beyond the allowed range.



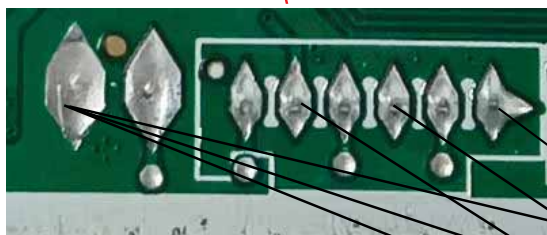
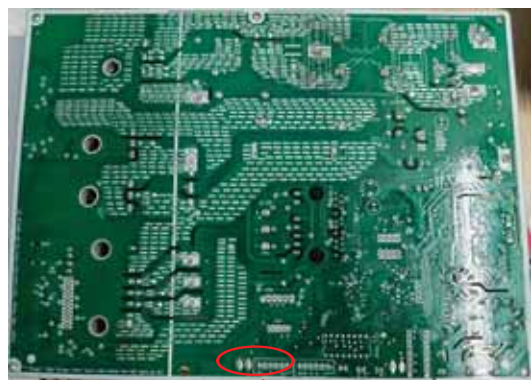
E1/LED1: No Flash Room Temperature Sensor Failure

E2/LED1: No Flash Indoor Coil Temperature Sensor Failure

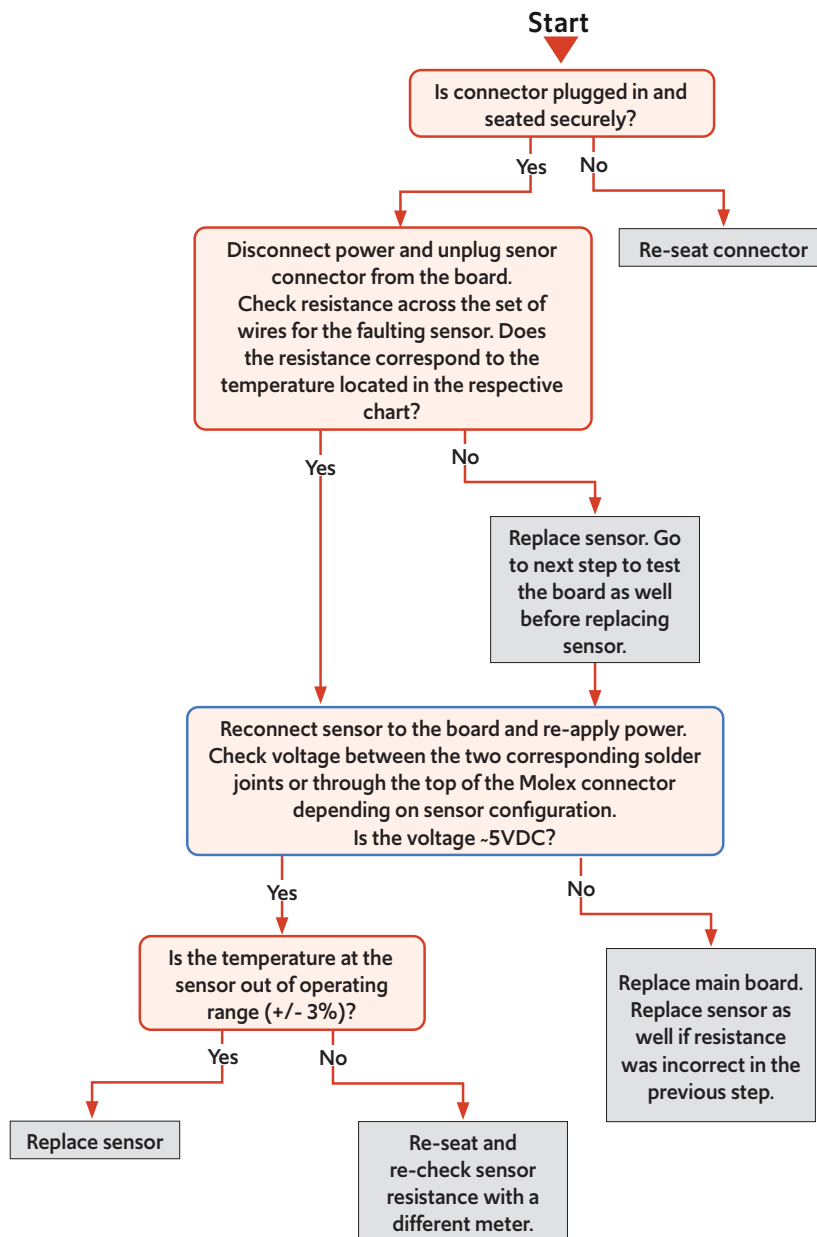
Thermistor input is more than 4.92V or less than 0.08V during compressor operation

Possible Causes:

- Faulty connector connection
- Faulty thermistor
- Faulty PCB



- 5V Discharge Temperature Sensor
- 5V Defrost Temperature Sensor
- 5V Ambient Temperature Sensor

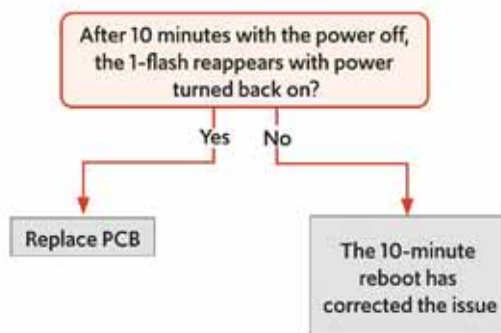


E4 Indoor EEPROM Error

EEPROM data error or the EEPROM is damaged

Possible Causes:

- Faulty EEPROM data
- Faulty EEPROM
- Faulty PCB

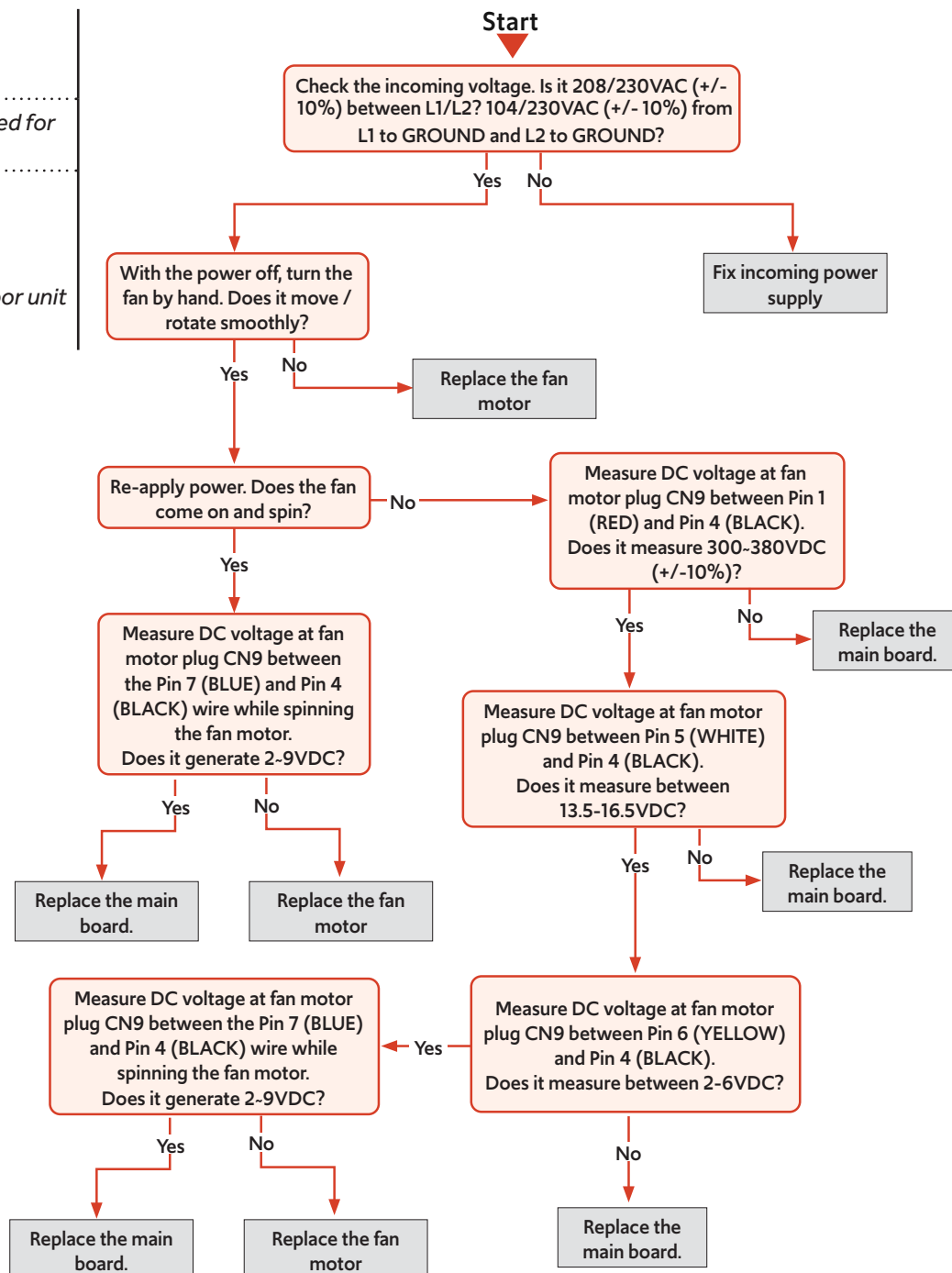


E14 Indoor Fan Motor Failure

No rotation feedback signal detected for 2 minutes

Possible Causes:

- Faulty fan motor
- Fan motor overheat protection
- Detection error due to faulty indoor unit PCB



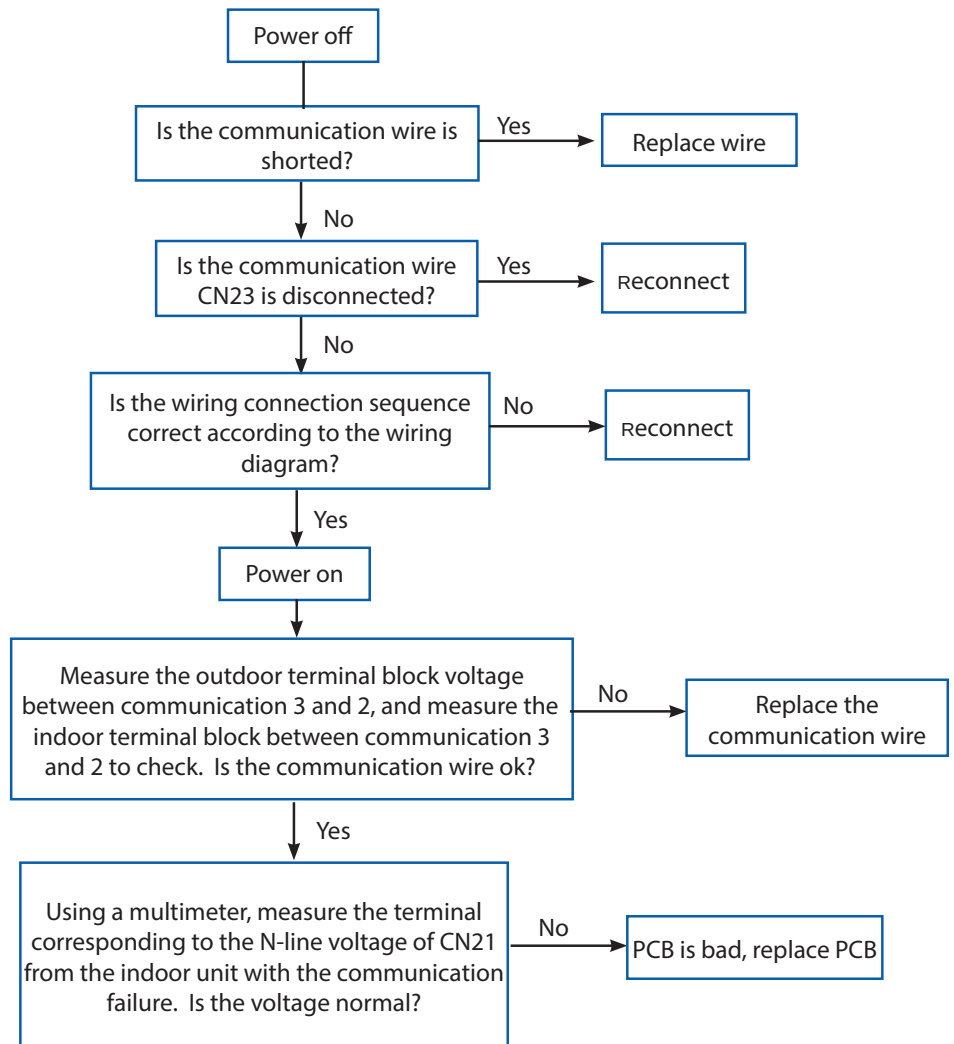
E7/LED1: 15 Flash

ID and OD Loss of Communication

- Outdoor PCB communication failure
- Indoor PCB communication failure

Possible Causes:

- Communication wiring disconnected
- Faulty indoor PCB
- Faulty outdoor PCB
- Faulty Outdoor Fan (may cause communication signal interference)



outdoor terminal



indoor terminal



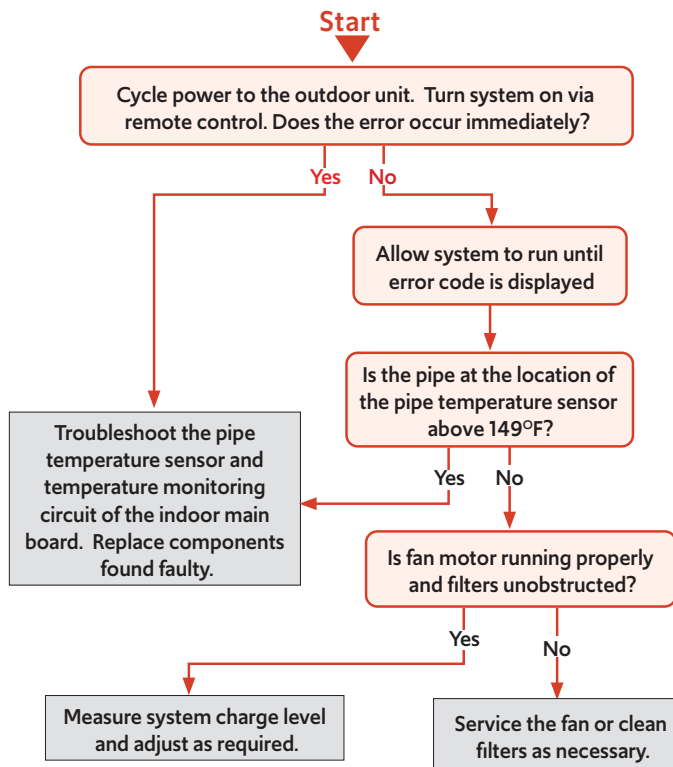
LED1: 21Flash Indoor Unit Over Temperature (Heating Mode Only)

Activated when the temperature being sensed by the heat exchanger pipe sensor rises above 149°F twice in 30 minutes.

Possible Causes:

- Faulty electronic expansion valve
- Dirty heat exchanger
- Faulty heat-exchange sensor
- Refrigerant undercharge

Note: this is a resetting fault that will not lockout operation.

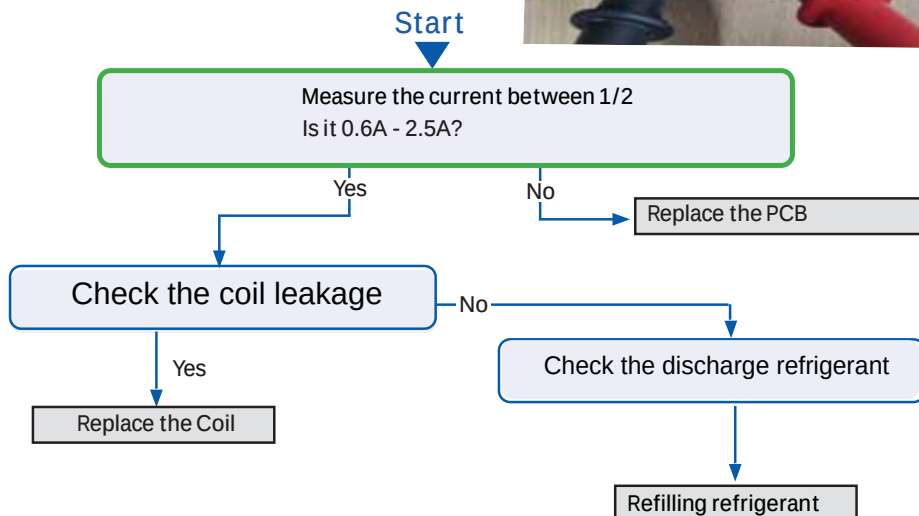


LED1: 28 Flash Lack of refrigerant or discharging

Compressor operation frequency more than 46Hz, the current between 0.6A and 2.5A

Possible Causes:

- Coil leakage
- Discharge refrigerant

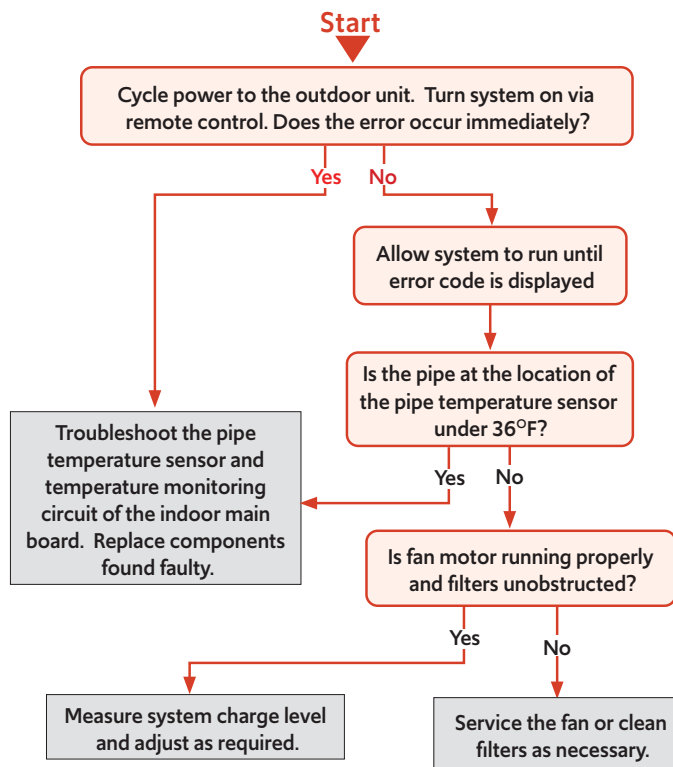


E22/LED1: 21 Flash Indoor Unit Anti- frosting protection (Cooling Mode Only)

Activated when the temperature being sensed by the heat exchanger pipe sensor rises under 36°F twice in 30 minutes. Compressor operation frequency more than 46Hz, the current between 0.6A and 2.5A

Possible Causes:

- Faulty electronic expansion valve
- Dirty heat exchanger
- Faulty heat-exchange sensor
- Refrigerant undercharge



F27/LED1: 21 Flash Compressor Current Sampling Circuit Fault

Detection Conditions:

It is compressor block fault, the compressor will not work when this fault happen. It also can be self recovery when this fault happens.

Possible Causes:

- Ambient temperature is too low
- Compressor damage

bA

DIP Switch Enabled, No Sensor Detected

Detection Conditions:

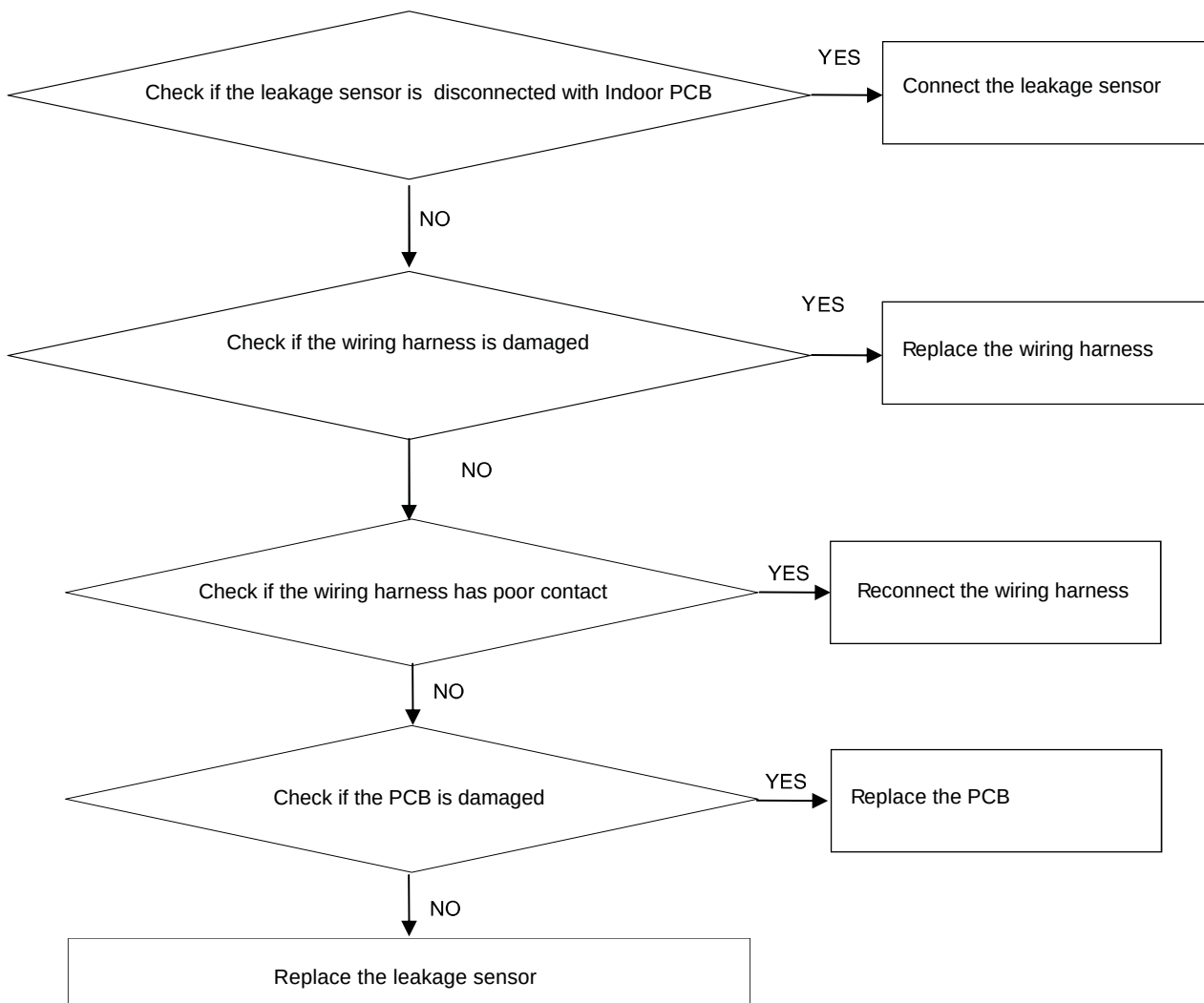
DIP Switch Enabled, No Sensor Detected

Possible Causes:

- Loose wiring terminals
- Damaged wiring harness
- The leakage sensor is not connected
- PCB damage

* Caution

Be sure to turn off power switch before connect or disconnect connector, or else parts damage may be occurred.



AA and Ab

Refrigerant Leakage Fault

Detection Conditions:

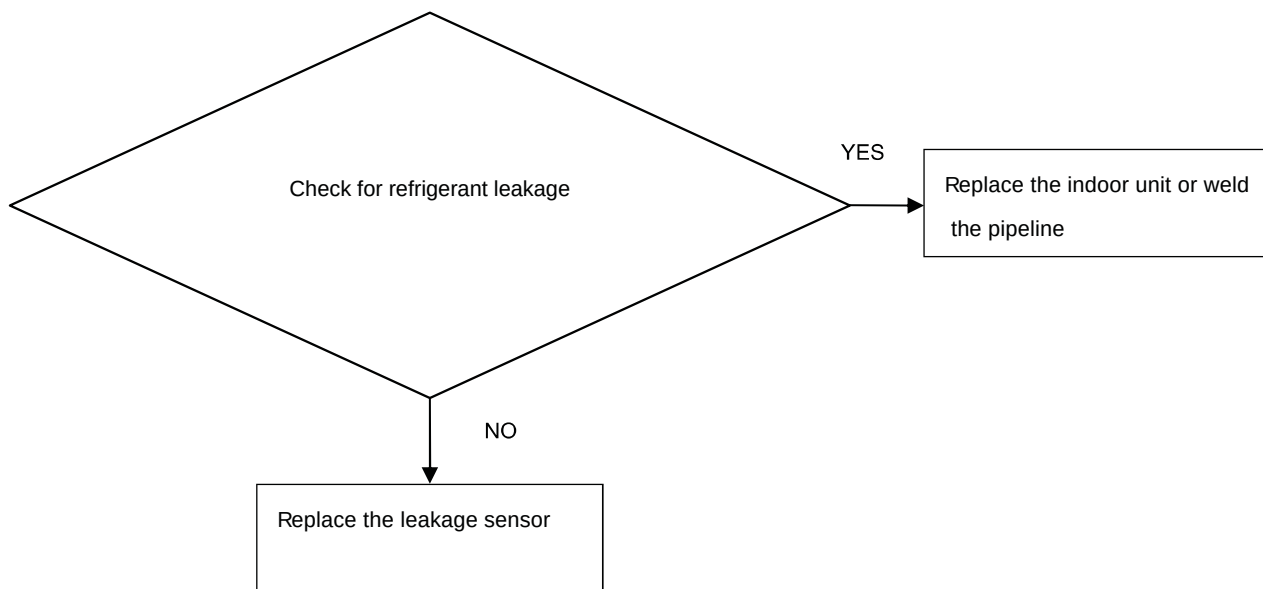
- AA: Refrigerant concentration over 10% LFL
- Ab: AA display after 5 minutes and refrigerant concentration of less than 8% LFL detected

Possible Causes:

- Pipe cracking
- The union nut is not secured

* Caution

Be sure to turn off power switch before connect or disconnect connector, or else parts damage may be occurred.



Ac

Leakage Sensor Communication Fault

Detection Conditions:

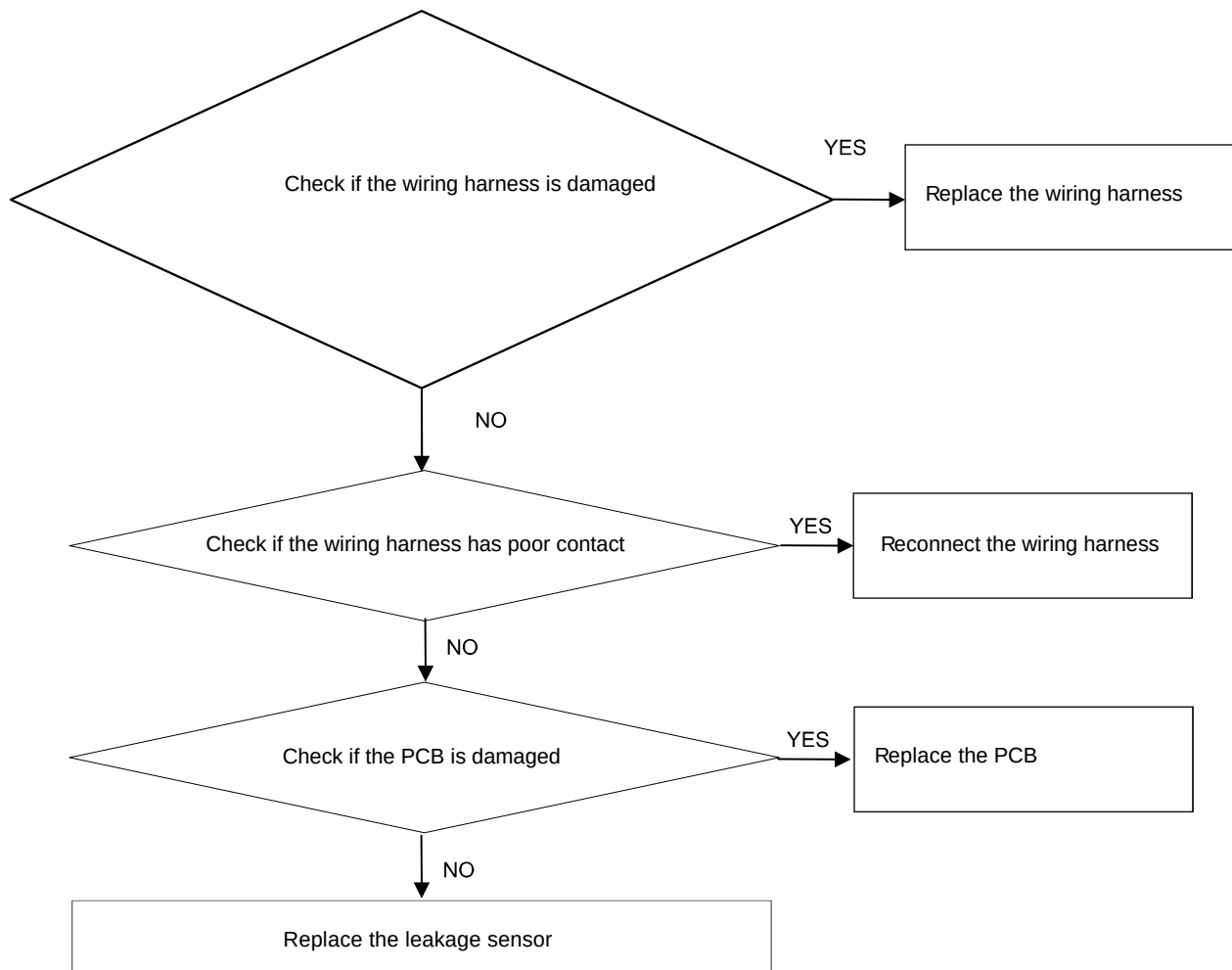
The communication between the leakage sensor and the PCB is faulty

Possible Causes:

- Loose wiring terminals
- Damaged wiring harness
- PCB damage

* Caution

Be sure to turn off power switch before connect or disconnect connector, or else parts damage may be occurred.



Ad

Leakage Sensor Self-Check Fault

Detection Conditions:

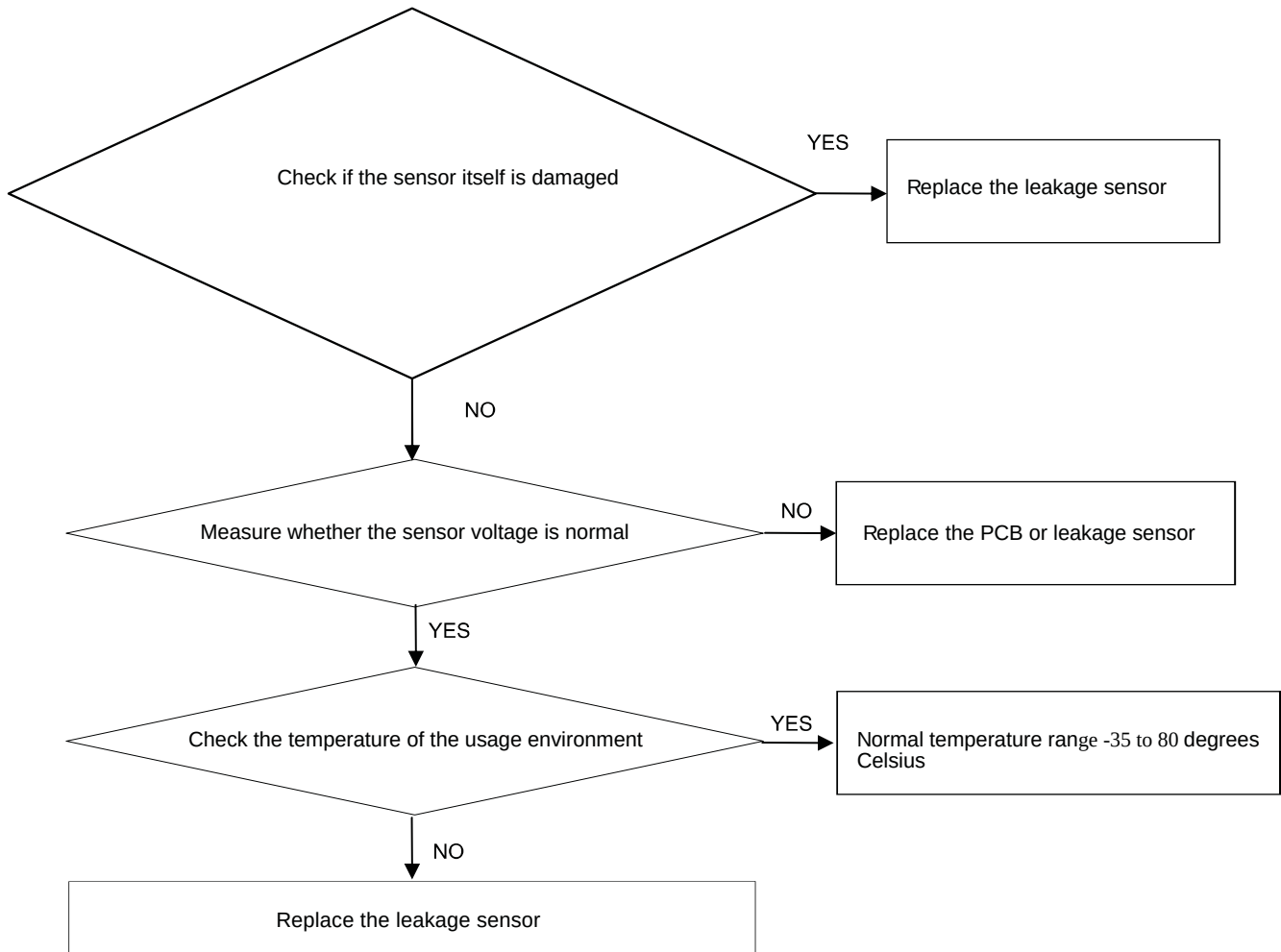
Leakage sensor self-test failed

Possible Causes:

- Power supply overvoltage and undervoltage (5VDC)
- The temperature value detected by the leakage sensor exceeds the limit value
- Internal sensor error

* Caution

Be sure to turn off power switch before connect or disconnect connector, or else parts damage may be occurred.



AE

Leakage Sensor Reaching-End-of-Life Warning

Detection Conditions:

The sensor is 6 months away from the end of its life

Possible Causes:

- The sensor approaching the end of life
- End of life counting error of sensor

AF

Leakage Sensor End- Of- Life

Detection Conditions:

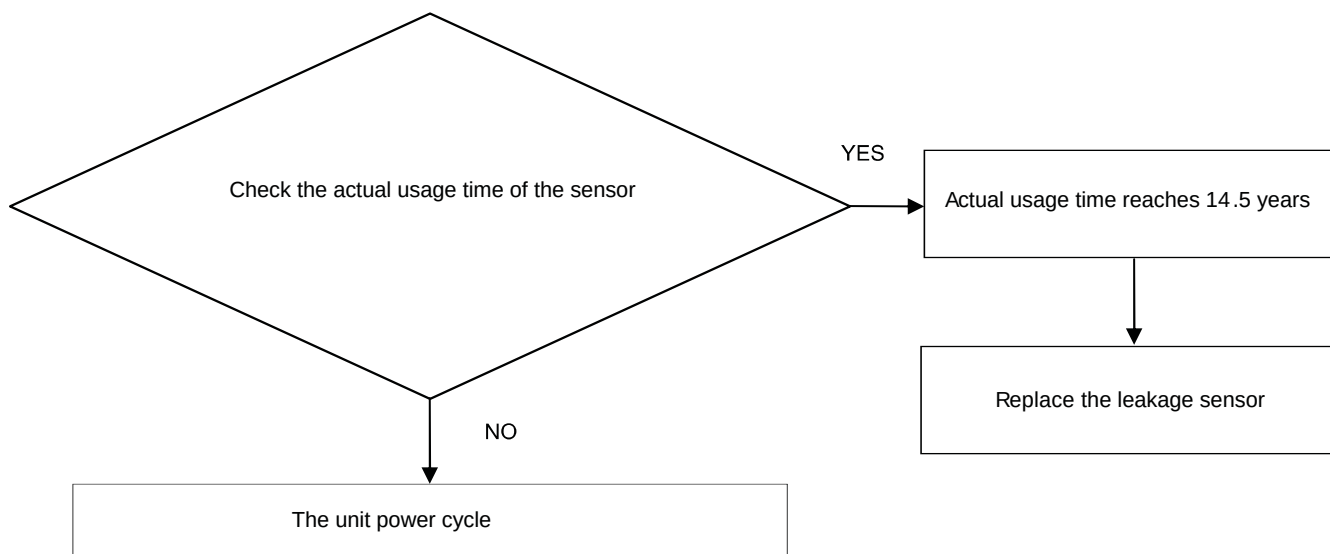
The sensors have reached the end of life

Possible Causes:

- The sensor approaching the end of life
- End of life counting error of sensor

* Caution

Be sure to turn off power switch before connect or disconnect connector, or else parts damage may be occurred.



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