
Outdoor Unit

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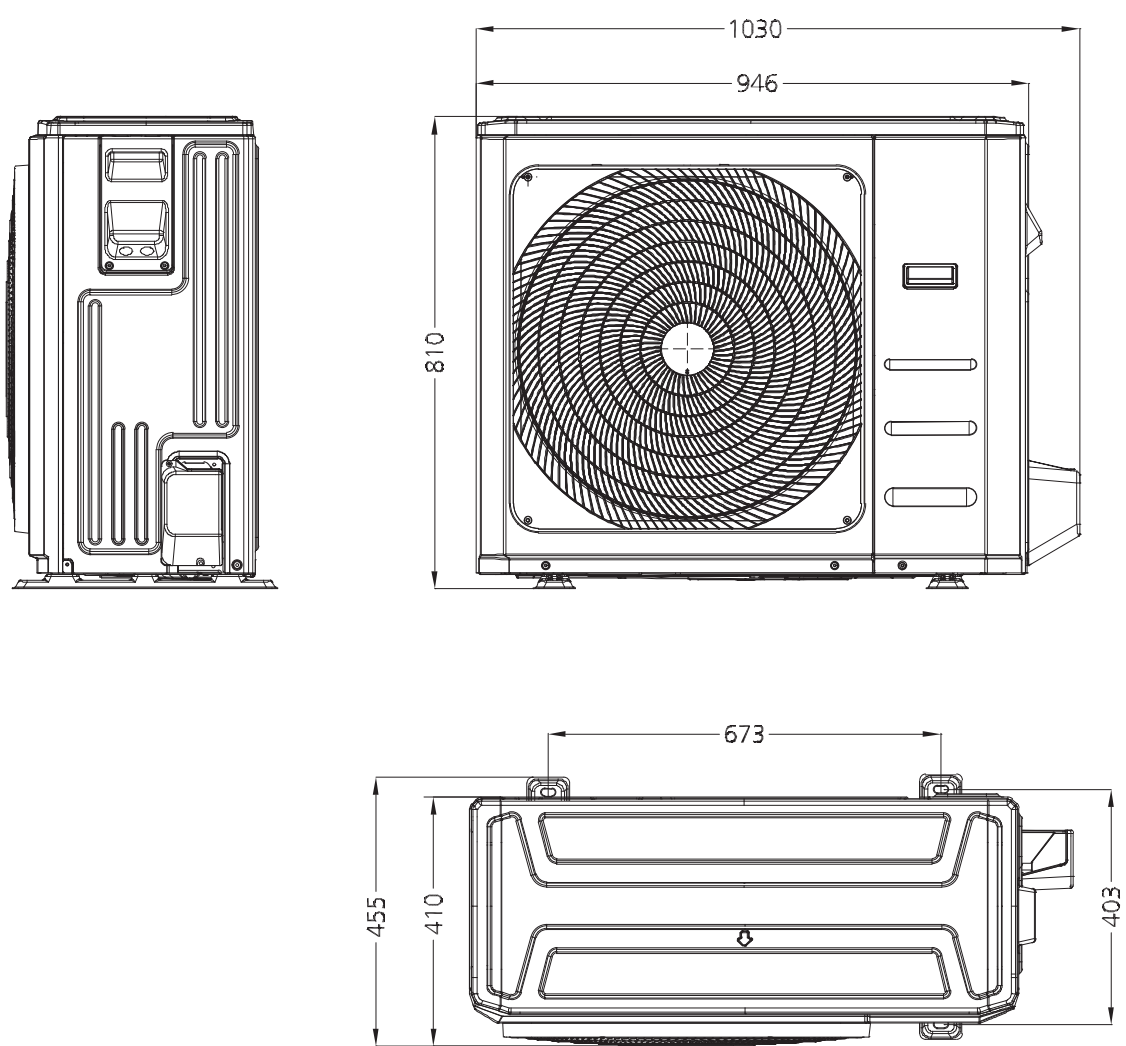
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1. Dimensional Drawings

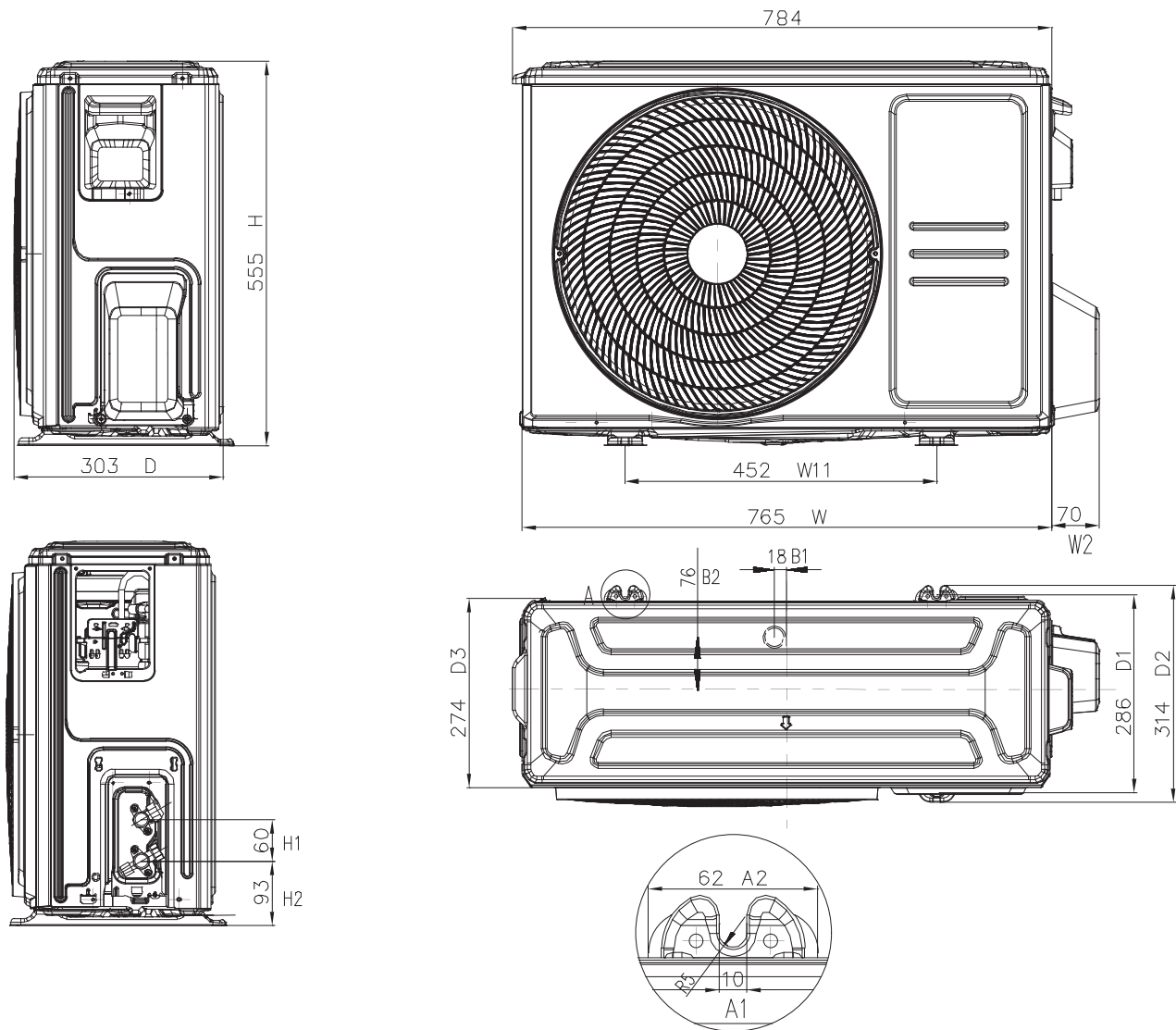
Please check the corresponding dimensional drawing according to the panel plate.

ODU Model	Panel Plate
KOX230-12HFN32X	X230
KOX330-18HFN32X	X330
KOX430-24HFN32X	X430
KOD30U-36HFJ32X	D30
KOD30U-36HFN32X	D30
KOE30U-48HFN32X	E30
KOE30U-55HFN32X	E30

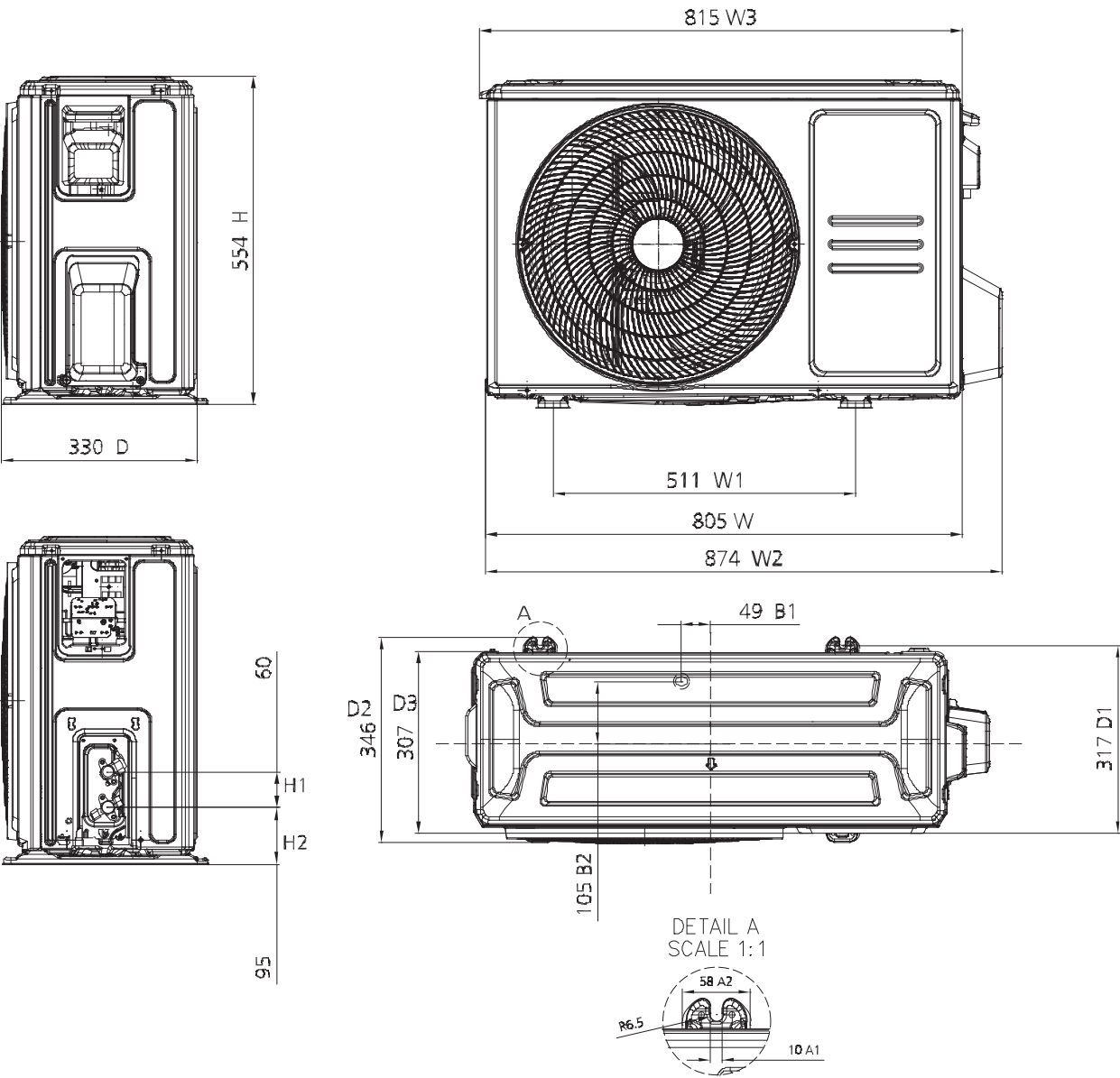
Panel Plate D30



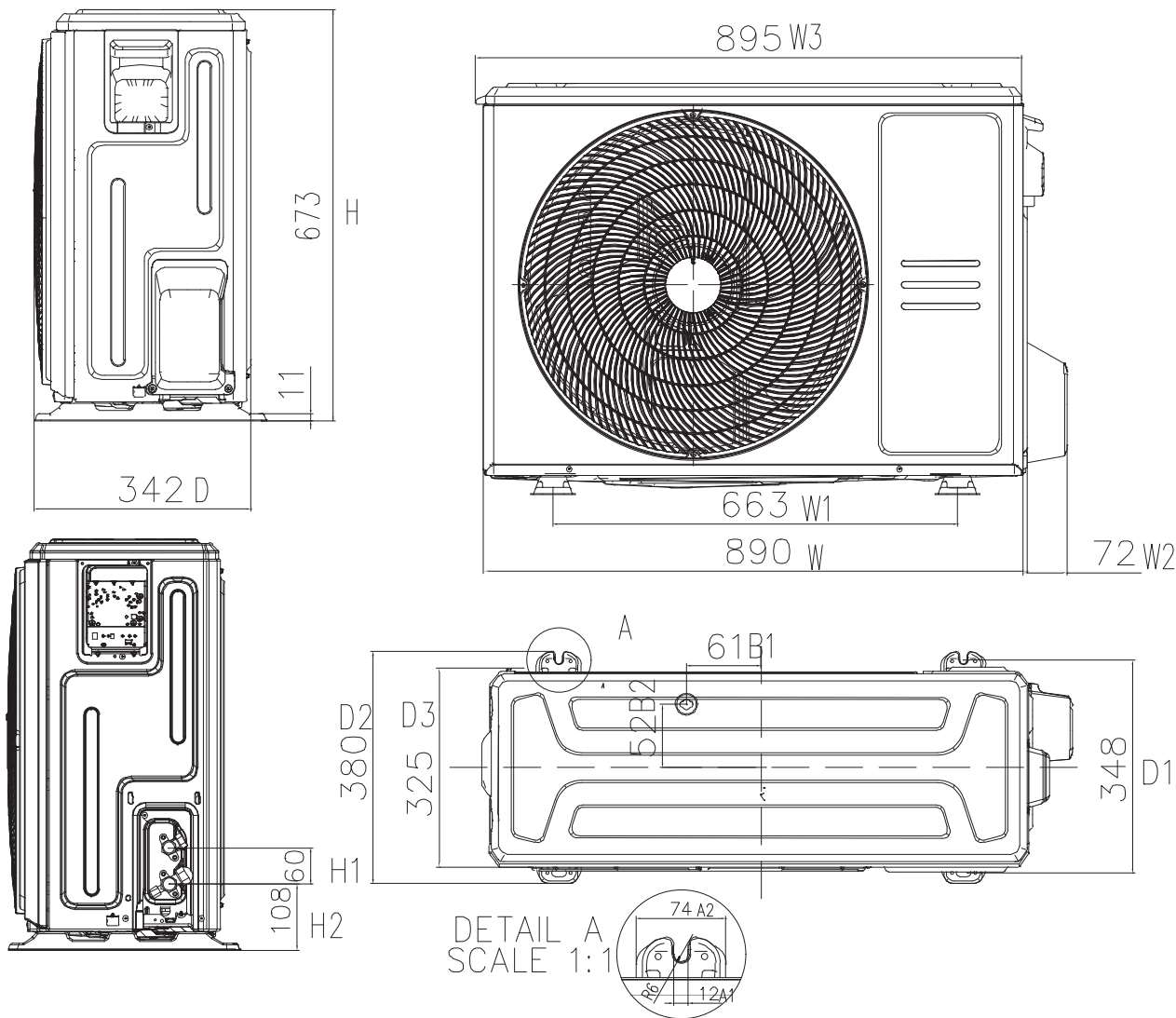
Panel Plate X230



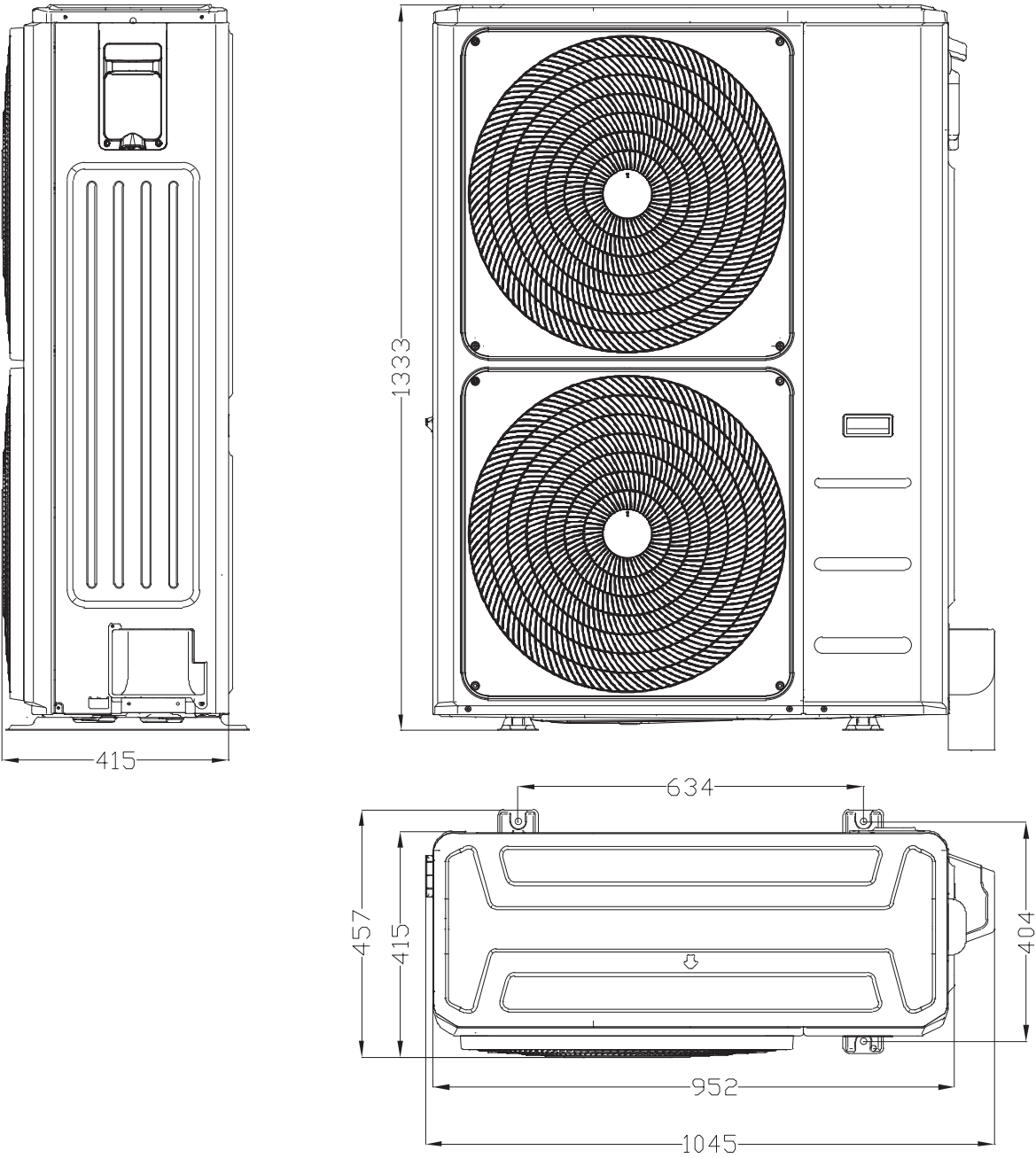
Panel Plate X330



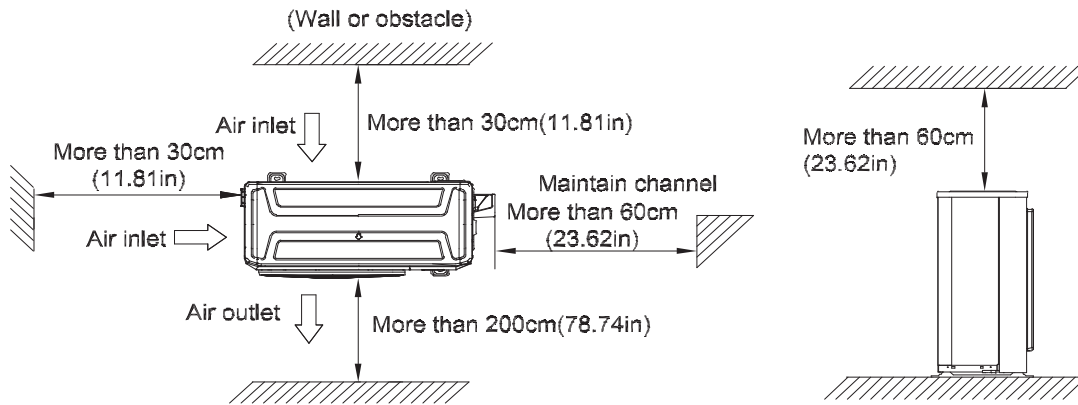
Panel Plate X430



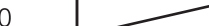
Panel Plate E30



2. Service Place



3. Capacity Correction Factor for Height Difference

Capacity(Btu/h)		12k		Pipe Length (m)			
Cooling				5	10	20	25
Height difference H (m)	Indoor Upper than Outdoor	10		0.973	0.948	0.936	
		5	0.995	0.983	0.958	0.945	
		0	1.000	0.988	0.963	0.950	
	Outdoor Upper than Indoor	-5	1.000	0.988	0.963	0.950	
		-10		0.988	0.963	0.950	
Heating				5	10	15	20
Height difference H (m)	Indoor Upper than Outdoor	10		0.993	0.978	0.970	
		5	1.000	0.993	0.978	0.970	
		0	1.000	0.993	0.978	0.970	
	Outdoor Upper than Indoor	-5	0.992	0.985	0.970	0.962	
		-10		0.977	0.962	0.955	

Capacity(Btu/h)			18k		Pipe Length (m)			
Cooling					5	10	20	30
Height difference H (m)	Indoor Upper than Outdoor	20			0.928	0.912		
		10		0.969	0.937	0.921		
		5	0.995	0.979	0.946	0.930		
		0	1.000	0.984	0.951	0.935		
	Outdoor Upper than Indoor	-5	1.000	0.984	0.951	0.935		
		-10		0.984	0.951	0.935		
		-20			0.951	0.935		
Heating					5	10	20	30
Height difference H (m)	Indoor Upper than Outdoor	20			0.982	0.976		
		10		0.994	0.982	0.976		
		5	1.000	0.994	0.982	0.976		
		0	1.000	0.994	0.982	0.976		
	Outdoor Upper than Indoor	-5	0.992	0.986	0.974	0.968		
		-10		0.978	0.966	0.960		
		-20			0.959	0.953		

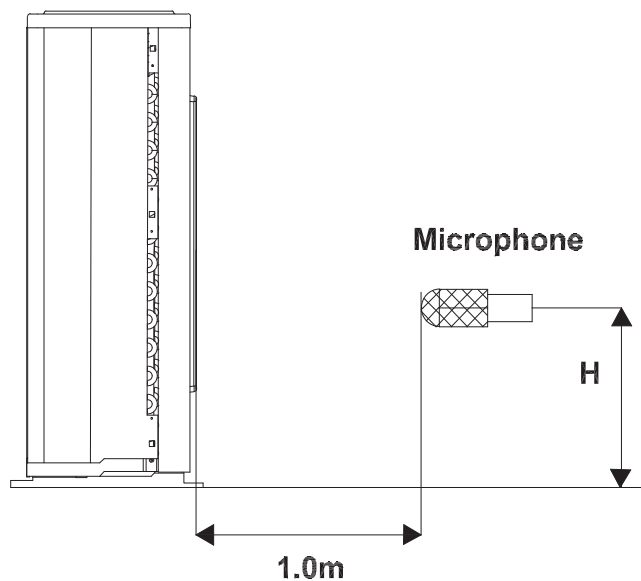
Capacity (Btu/h)	24k		Pipe Length (m)					
Cooling			5	10	20	30	40	50
Height difference H (m)	Indoor Upper than Outdoor	25				0.914	0.894	0.874
		20			0.944	0.924	0.903	0.883
		10		0.975	0.954	0.933	0.912	0.891
		5	0.995	0.984	0.963	0.942	0.921	0.900
		0	1.000	0.989	0.968	0.947	0.926	0.905
	Outdoor Upper than Indoor	-5	1.000	0.989	0.968	0.947	0.926	0.905
		-10		0.989	0.968	0.947	0.926	0.905
		-20			0.968	0.947	0.926	0.905
		-25				0.947	0.926	0.905
Heating			5	10	20	30	40	50
Height difference H (m)	Indoor Upper than Outdoor	25				0.983	0.977	0.970
		20			0.990	0.983	0.977	0.970
		10		0.997	0.990	0.983	0.977	0.970
		5	1.000	0.997	0.990	0.983	0.977	0.970
		0	1.000	0.997	0.990	0.983	0.977	0.970
	Outdoor Upper than Indoor	-5	0.992	0.989	0.982	0.975	0.969	0.962
		-10		0.981	0.974	0.968	0.961	0.955
		-20			0.966	0.960	0.953	0.947
		-25				0.952	0.946	0.939

Capacity (Btu/h)	36k		Pipe Length (m)						
Cooling			5	15	25	35	50	65	75
Height difference H (m)	Indoor Upper than Outdoor	30				0.885	0.845	0.805	0.778
		20			0.921	0.894	0.854	0.813	0.786
		10		0.958	0.931	0.903	0.862	0.822	0.794
		5	0.995	0.967	0.940	0.912	0.871	0.830	0.802
		0	1.000	0.972	0.945	0.917	0.876	0.834	0.806
	Outdoor Upper than Indoor	-5	1.000	0.972	0.945	0.917	0.876	0.834	0.806
		-10		0.972	0.945	0.917	0.876	0.834	0.806
		-20			0.945	0.917	0.876	0.834	0.806
		-30				0.917	0.876	0.834	0.806
Heating			5	15	25	35	50	65	75
Height difference H (m)	Indoor Upper than Outdoor	30				0.962	0.943	0.924	0.911
		20			0.975	0.962	0.943	0.924	0.911
		10		0.987	0.975	0.962	0.943	0.924	0.911
		5	1.000	0.987	0.975	0.962	0.943	0.924	0.911
		0	1.000	0.987	0.975	0.962	0.943	0.924	0.911
	Outdoor Upper than Indoor	-5	0.992	0.979	0.967	0.954	0.935	0.917	0.904
		-10		0.972	0.959	0.947	0.928	0.909	0.896
		-20			0.951	0.939	0.921	0.902	0.889
		-30				0.932	0.913	0.895	0.882

Capacity (Btu/h)	48k		Pipe Length (m)						
Cooling			5	15	25	35	50	65	75
Height difference H (m)	Indoor Upper than Outdoor	30				0.880	0.838	0.796	0.768
		20			0.918	0.889	0.846	0.804	0.775
		10		0.956	0.927	0.898	0.855	0.812	0.783
		5	0.995	0.966	0.937	0.907	0.864	0.820	0.791
		0	1.000	0.971	0.941	0.912	0.868	0.824	0.795
	Outdoor Upper than Indoor	-5	1.000	0.971	0.941	0.912	0.868	0.824	0.795
		-10		0.971	0.941	0.912	0.868	0.824	0.795
		-20			0.941	0.912	0.868	0.824	0.795
		-30				0.912	0.868	0.824	0.795
Heating			5	15	25	35	50	65	75
Height difference H (m)	Indoor Upper than Outdoor	30				0.956	0.933	0.911	0.896
		20			0.970	0.956	0.933	0.911	0.896
		10		0.985	0.970	0.956	0.933	0.911	0.896
		5	1.000	0.985	0.970	0.956	0.933	0.911	0.896
		0	1.000	0.985	0.970	0.956	0.933	0.911	0.896
	Outdoor Upper than Indoor	-5	0.992	0.977	0.963	0.948	0.926	0.904	0.889
		-10		0.969	0.955	0.940	0.918	0.896	0.882
		-20			0.947	0.933	0.911	0.889	0.875
-30					0.925	0.904	0.882	0.868	

Capacity (Btu/h)	55k		Pipe Length (m)						
Cooling			5	15	25	35	50	65	75
Height difference H (m)	Indoor Upper than Outdoor	30				0.866	0.816	0.767	0.734
		20			0.908	0.875	0.825	0.774	0.741
		10		0.951	0.917	0.884	0.833	0.782	0.749
		5	0.995	0.961	0.927	0.893	0.841	0.790	0.756
		0	1.000	0.966	0.931	0.897	0.846	0.794	0.760
	Outdoor Upper than Indoor	-5	1.000	0.966	0.931	0.897	0.846	0.794	0.760
		-10		0.966	0.931	0.897	0.846	0.794	0.760
		-20			0.931	0.897	0.846	0.794	0.760
		-30				0.897	0.846	0.794	0.760
Heating			5	15	25	35	50	65	75
Height difference H (m)	Indoor Upper than Outdoor	30				0.953	0.929	0.905	0.889
		20			0.968	0.953	0.929	0.905	0.889
		10		0.984	0.968	0.953	0.929	0.905	0.889
		5	1.000	0.984	0.968	0.953	0.929	0.905	0.889
		0	1.000	0.984	0.968	0.953	0.929	0.905	0.889
	Outdoor Upper than Indoor	-5	0.992	0.976	0.961	0.945	0.921	0.898	0.882
		-10		0.968	0.953	0.937	0.914	0.891	0.875
		-20			0.945	0.930	0.907	0.883	0.868
		-30				0.922	0.899	0.876	0.861

4. Noise Criterion Curves

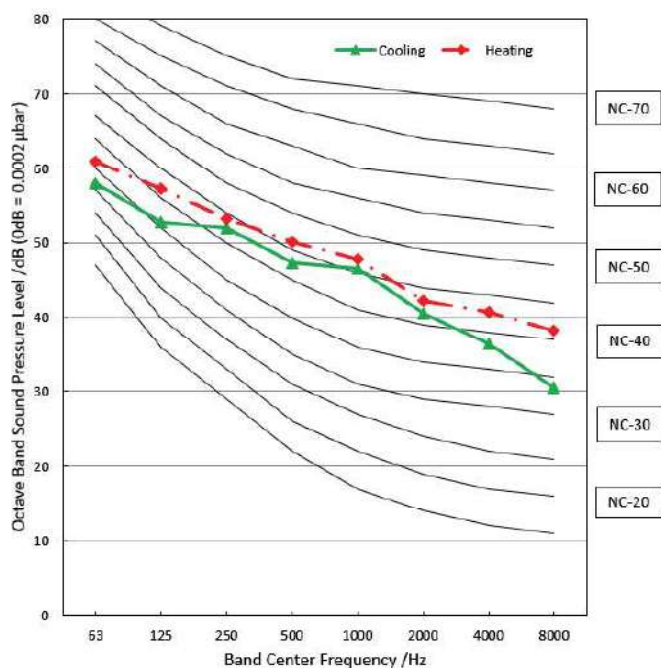


Note: $H = 0.5 \times \text{height of outdoor unit}$

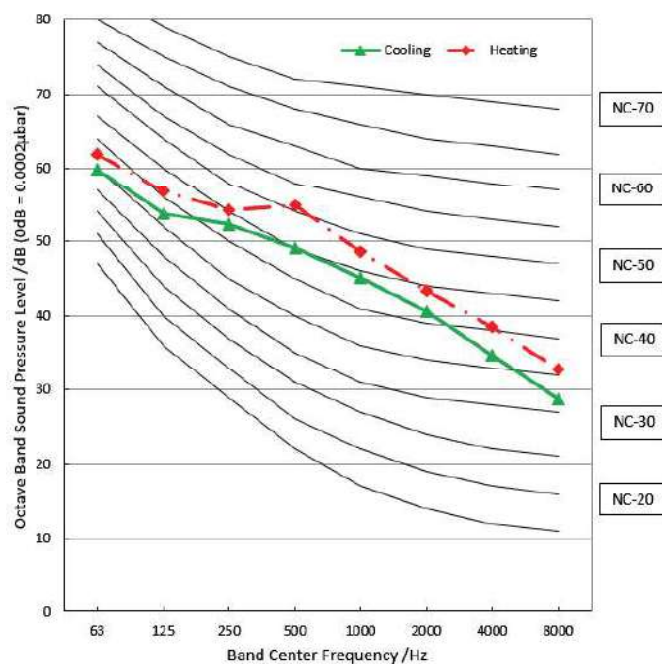
Notes:

- Sound measured at 1.0m away from the center of the unit.
- Data is valid at free field condition
- Data is valid at nominal operation condition
- Reference acoustic pressure $OdB=20\mu Pa$
- Sound level will vary depending on arrangement of factors such as the construction (acoustic absorption coefficient) of particular room in which the equipment is installed.
- The operating conditions are assumed to be standard.

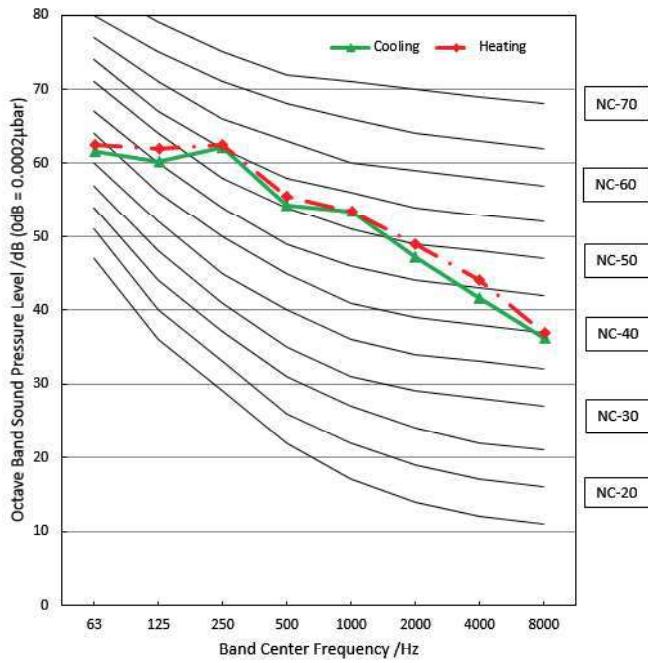
KOX230-12HFN32X



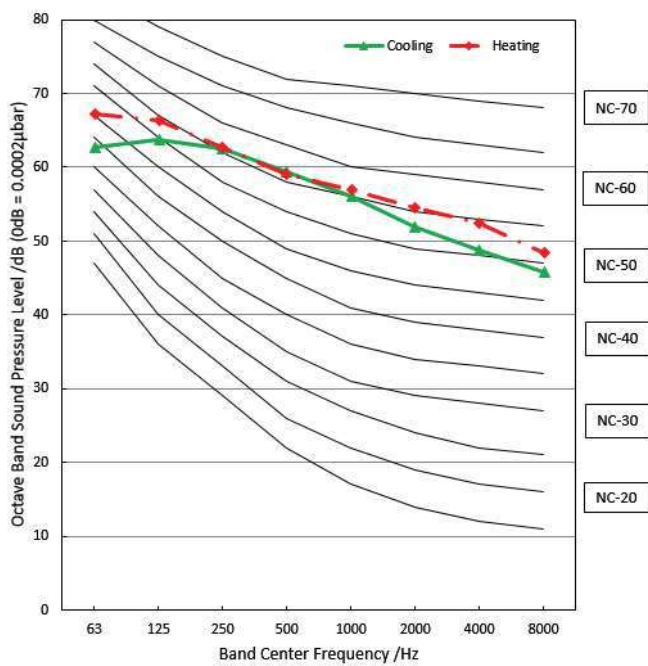
KOX330-18HFN32X



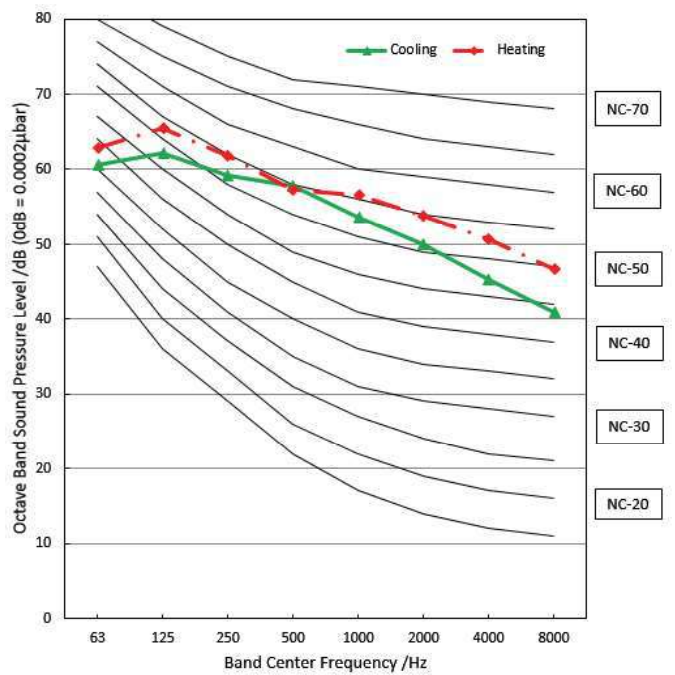
KOX430-24HFN32X



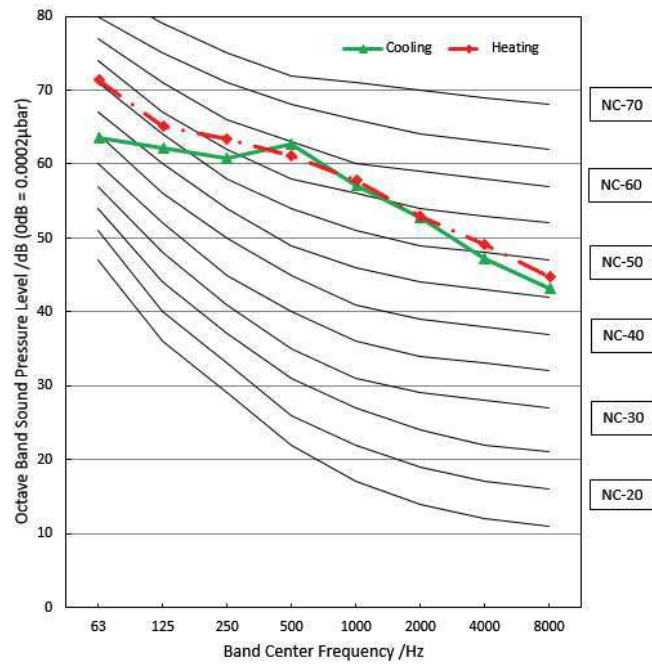
KOD30U-36HFJ32X



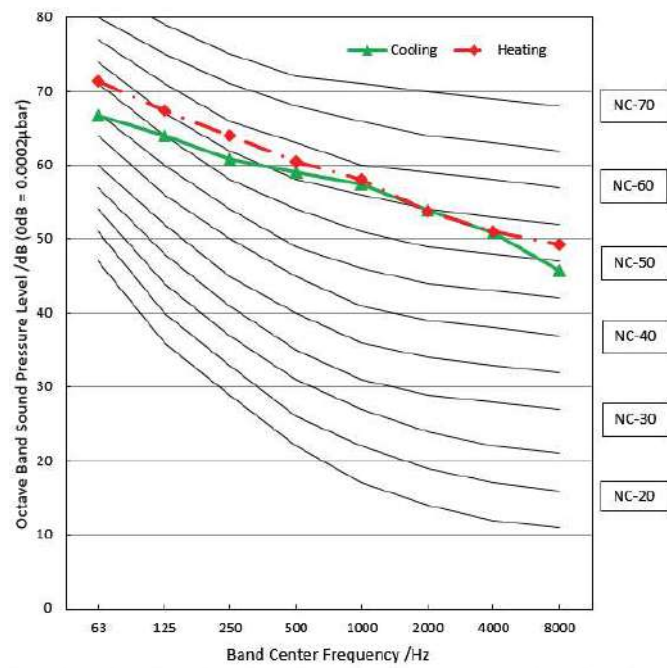
KOD30U-36HFN32X



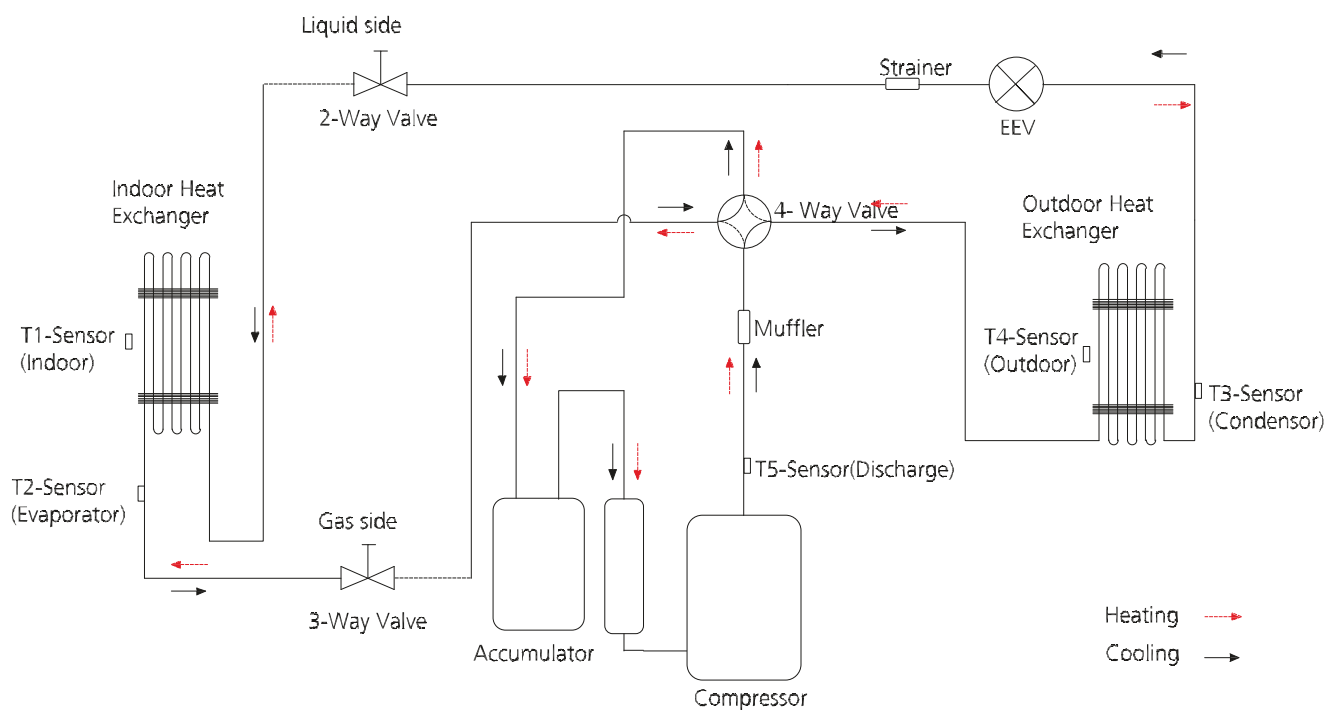
KOE30U-48HFN32X



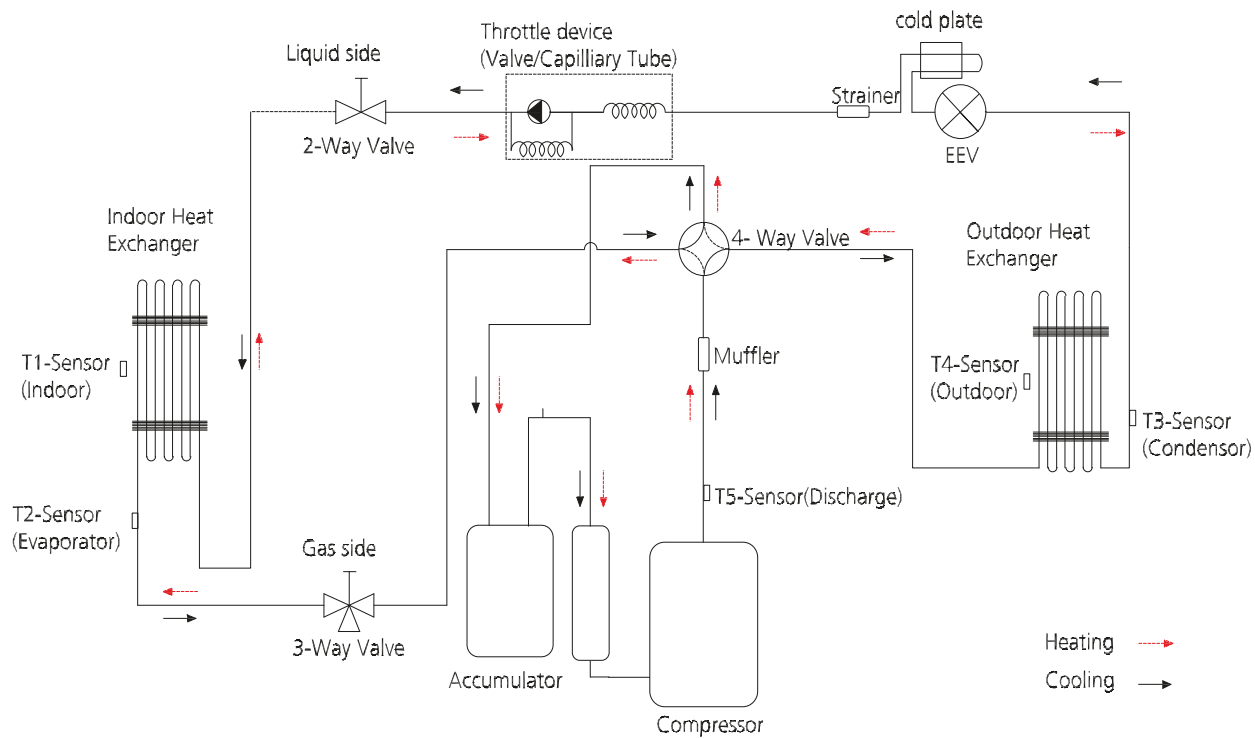
KOE30U-55HFN32X



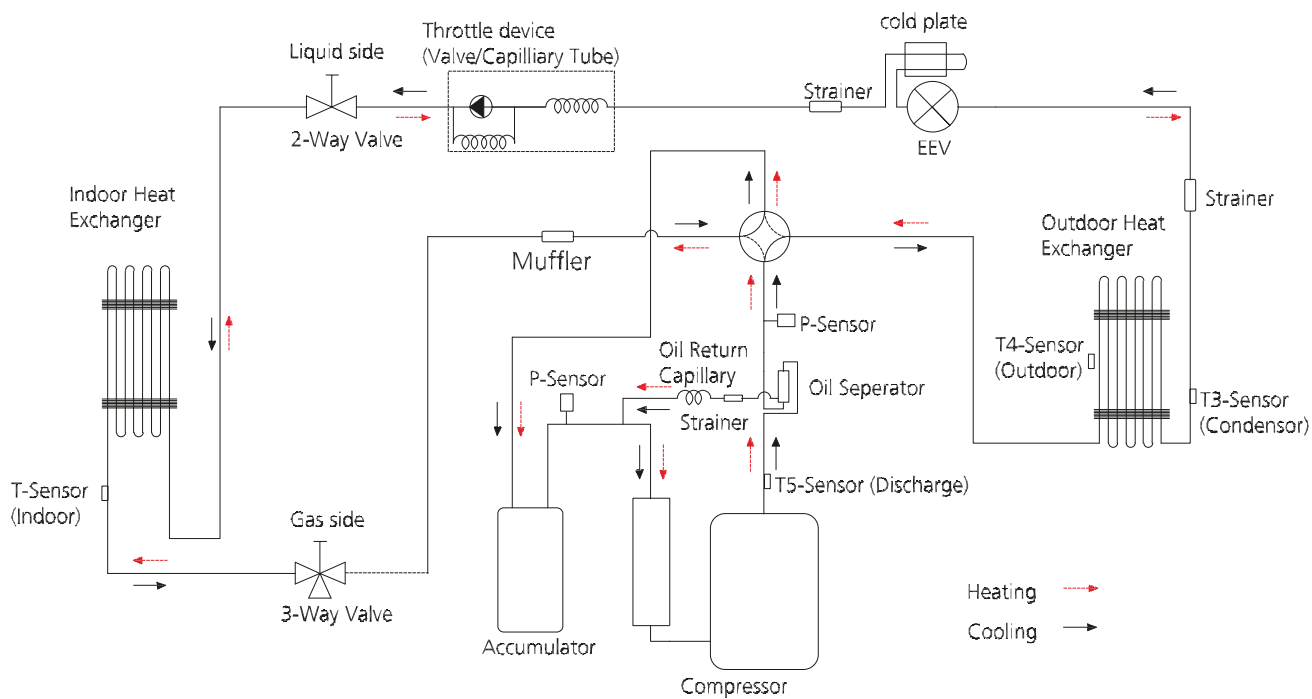
5. Refrigerant Cycle Diagrams



Model	Pipe Size (Diameter:ø) mm(inch)		Piping length (m/ft)		Elevation (m/ ft)		Additional Refrigerant
	Gas	Liquid	Rated	Max.	Rated	Max.	
KOX230-12HFN32X	9.52(3/8)	6.35(1/4)	5/16.4	25/82	0	10/32.8	12g/m (0.13oz/ft)
KOX330-18HFN32X	12.7(1/2)	6.35(1/4)	5/16.4	30/98.4	0	20/65.6	



Model	Pipe Size (Diameter:ø) mm(inch)		Piping length (m/ft)		Elevation (m/ft)		Additional Refrigerant
	Gas	Liquid	Rated	Max.	Rated	Max.	
KOX430-24HFN32X	15.9(5/8)	9.52(3/8)	5/16.4	50/164	0	25/82	24g/m (0.26oz/ft)



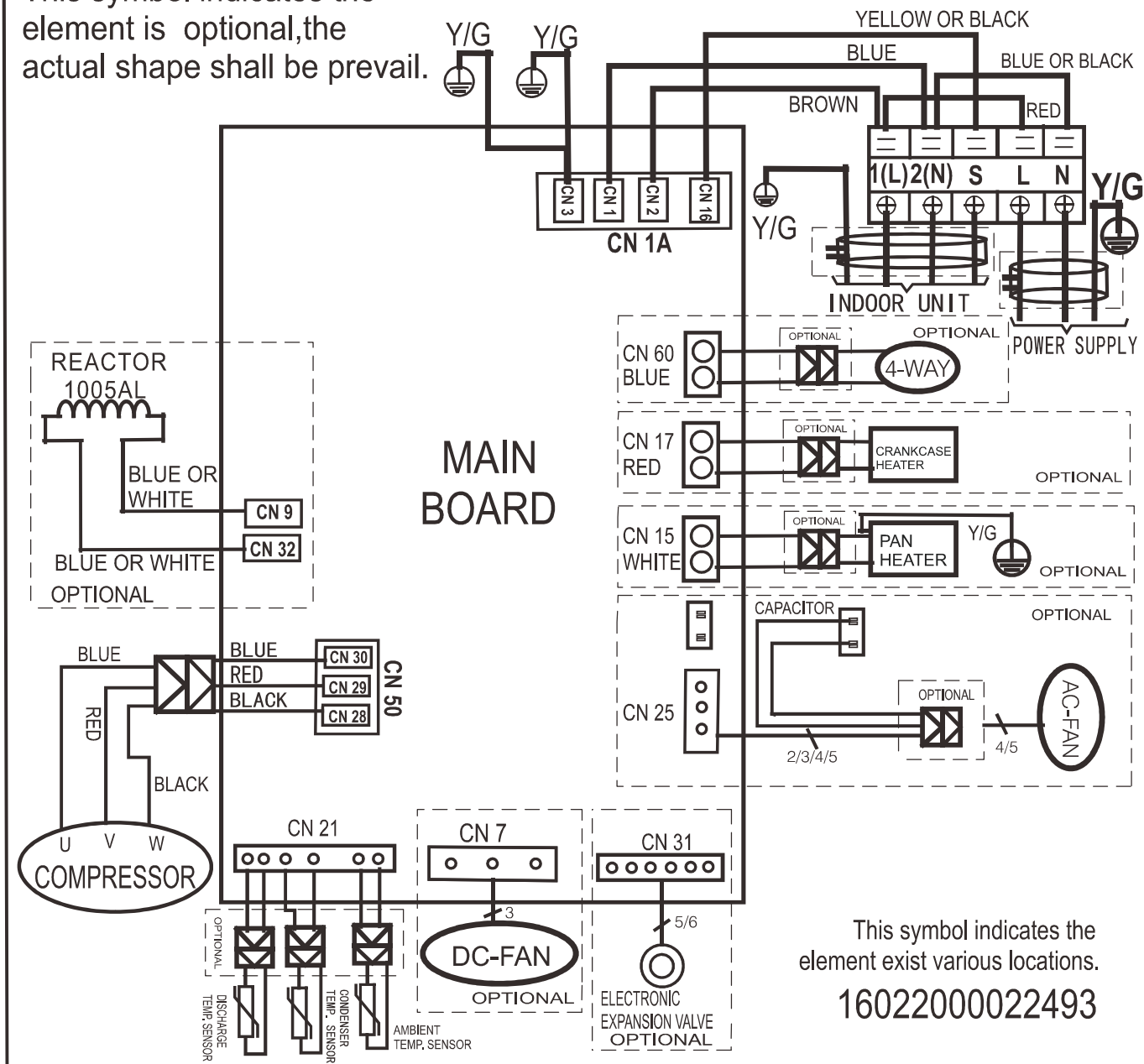
Model	Pipe Size (Diameter:ø) mm(inch)		Piping length (m/ft)		Elevation (m/ft)		Additional Refrigerant
	Gas	Liquid	Rated	Max.	Rated	Max.	
KOD30U-36HFJ32X	15.9(5/8)	9.52(3/8)	5/16.4	75/246.1	0	30/98.4	24g/m (0.26oz/ft)
KOD30U-36HFN32X	15.9(5/8)	9.52(3/8)					
KOE30U-48HFN32X	15.9(5/8)	9.52(3/8)					
KOE30U-55HFN32X	15.9(5/8)	9.52(3/8)					

6. Electrical Wiring Diagrams

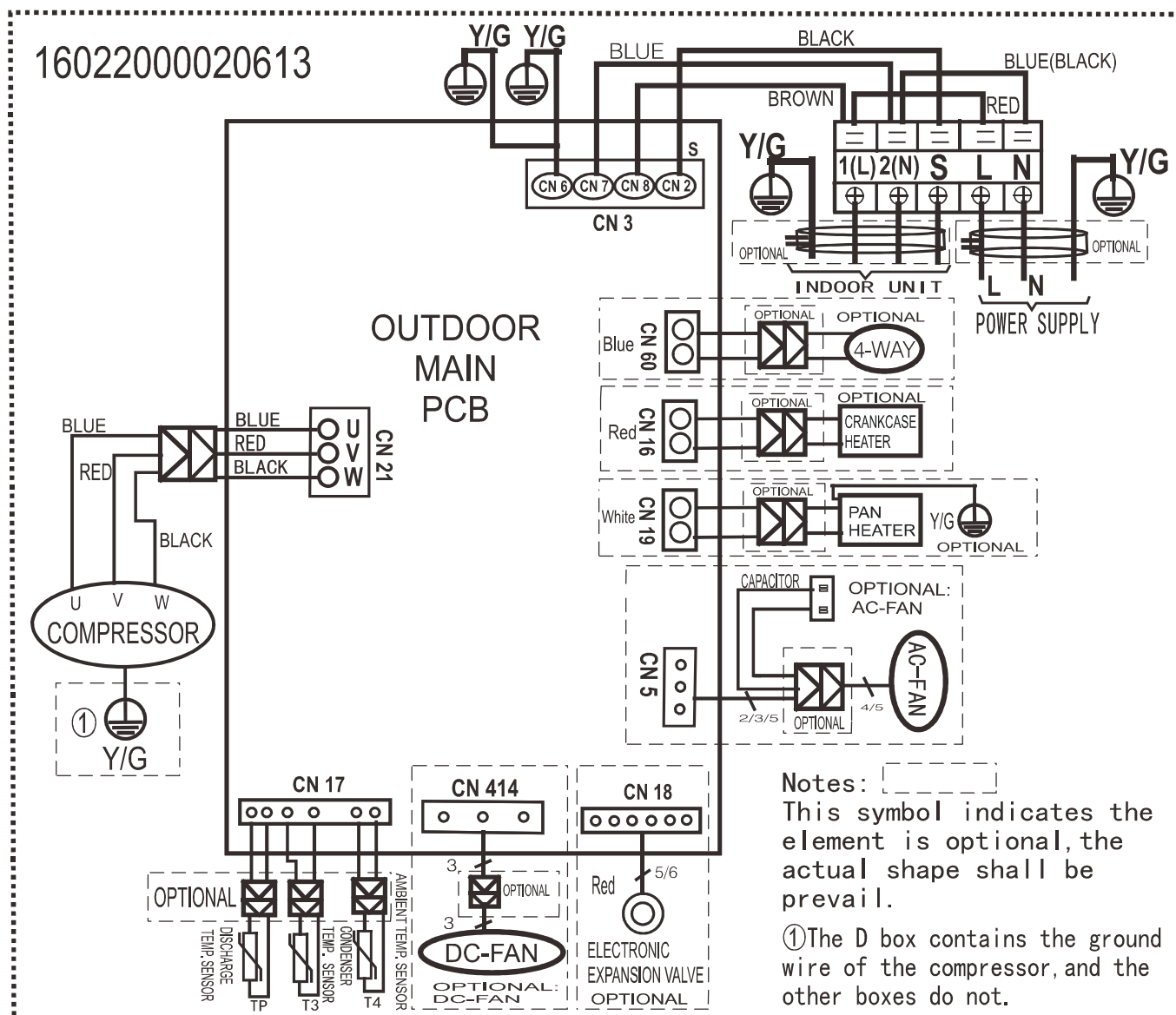
ODU Model	ODU Wiring Diagram	ODU Main Printed Circuit Board	ODU IPM Printed Circuit Board
KOX230-12HFN32X	16022000022493	17122000048121	/
KOX330-18HFN32X		17122000048121	/
KOX430-24HFN32X	16022000020613	17122000048064	/
KOD30U-36HFJ32X	16022000035289	17122000047742	/
KOD30U-36HFN32X	16022000033470	17122000041841	17122000008625
KOE30U-48HFN32X	16022000033470	17122000041841	17122000021912
KOE30U-55HFN32X		17122000041841	17122000021912

Notes: []

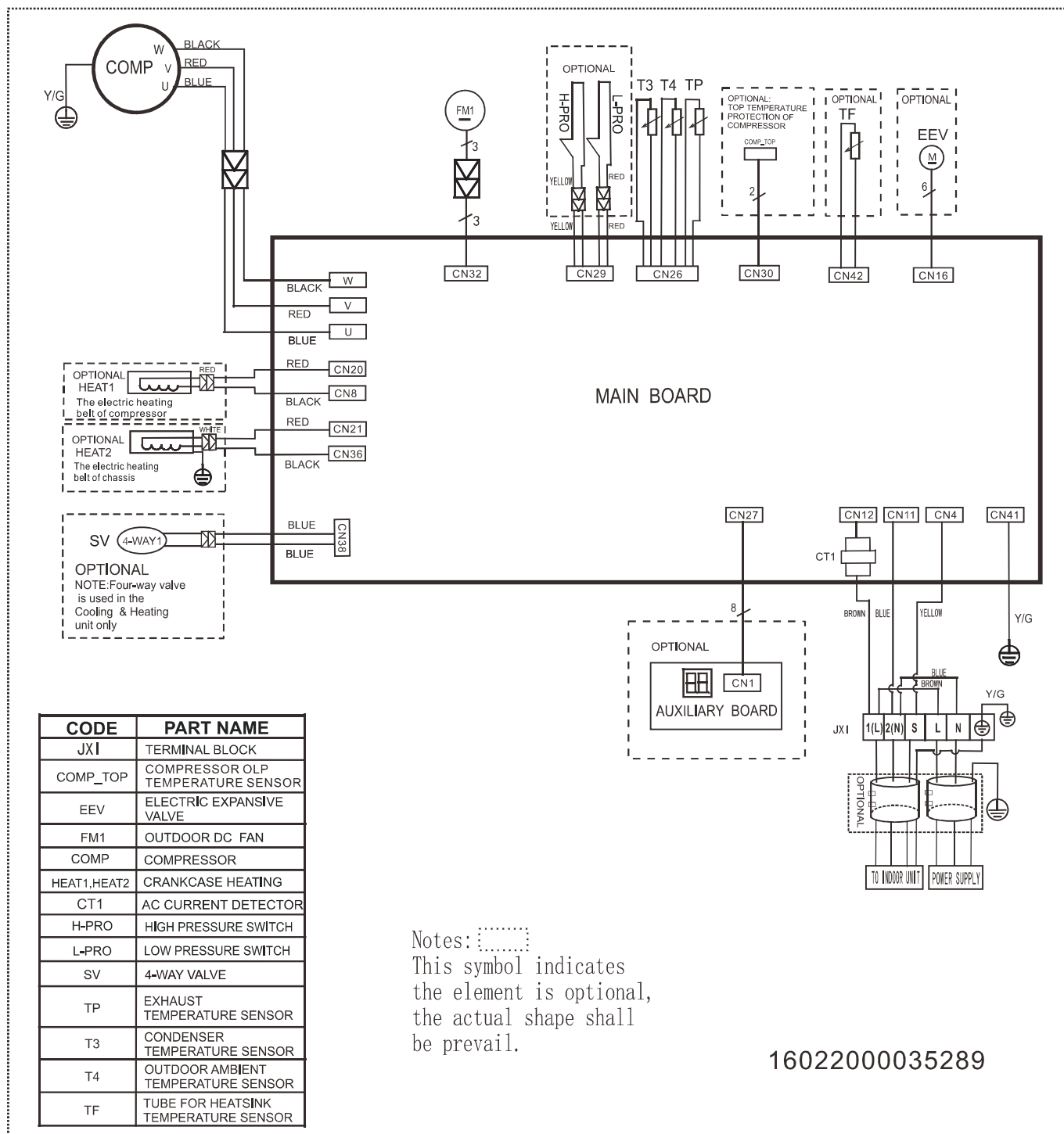
This symbol indicates the element is optional, the actual shape shall prevail.



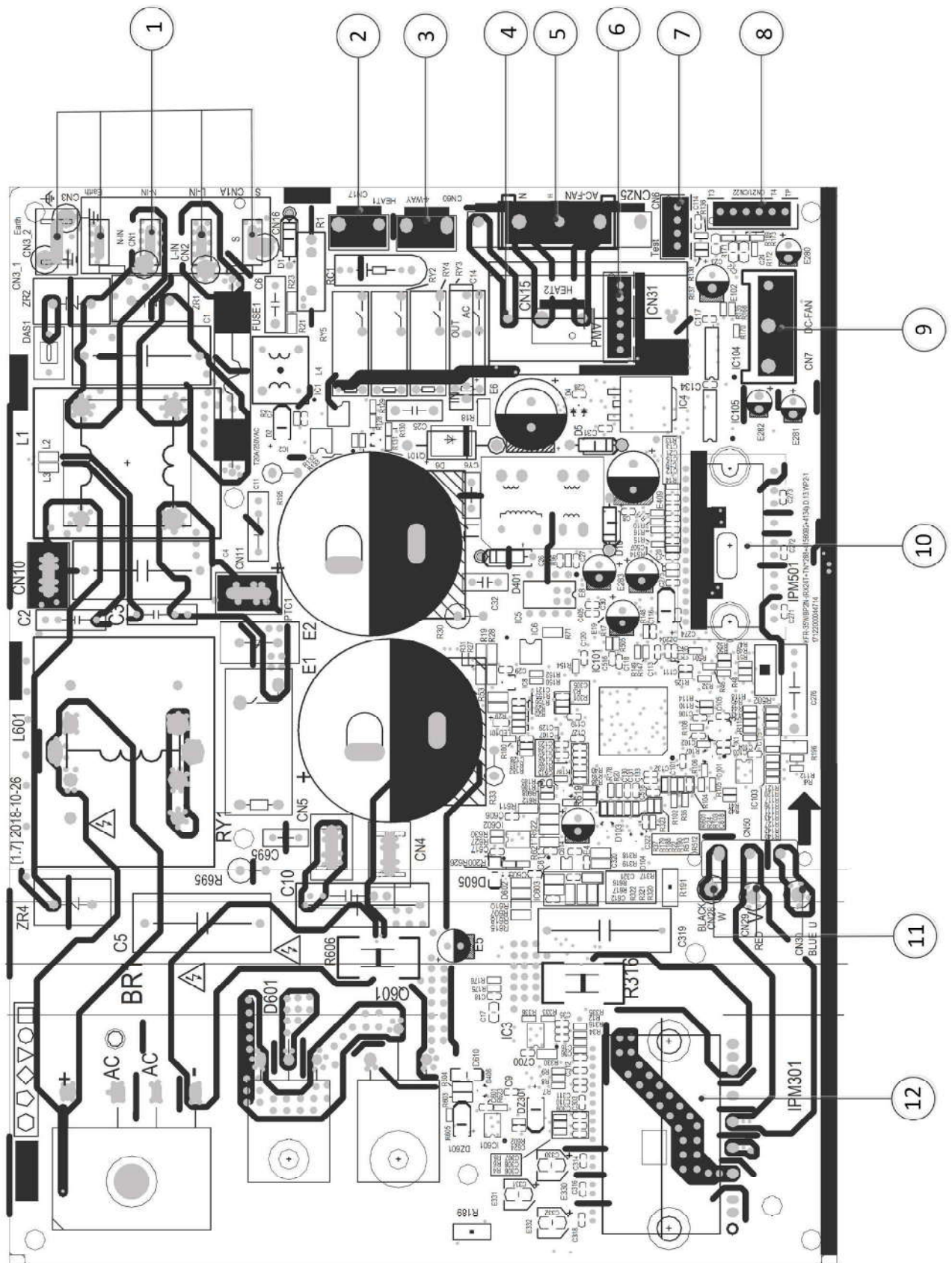
Outdoor unit wiring diagram: 16022000020613



Outdoor unit wiring diagram: 16022000035289



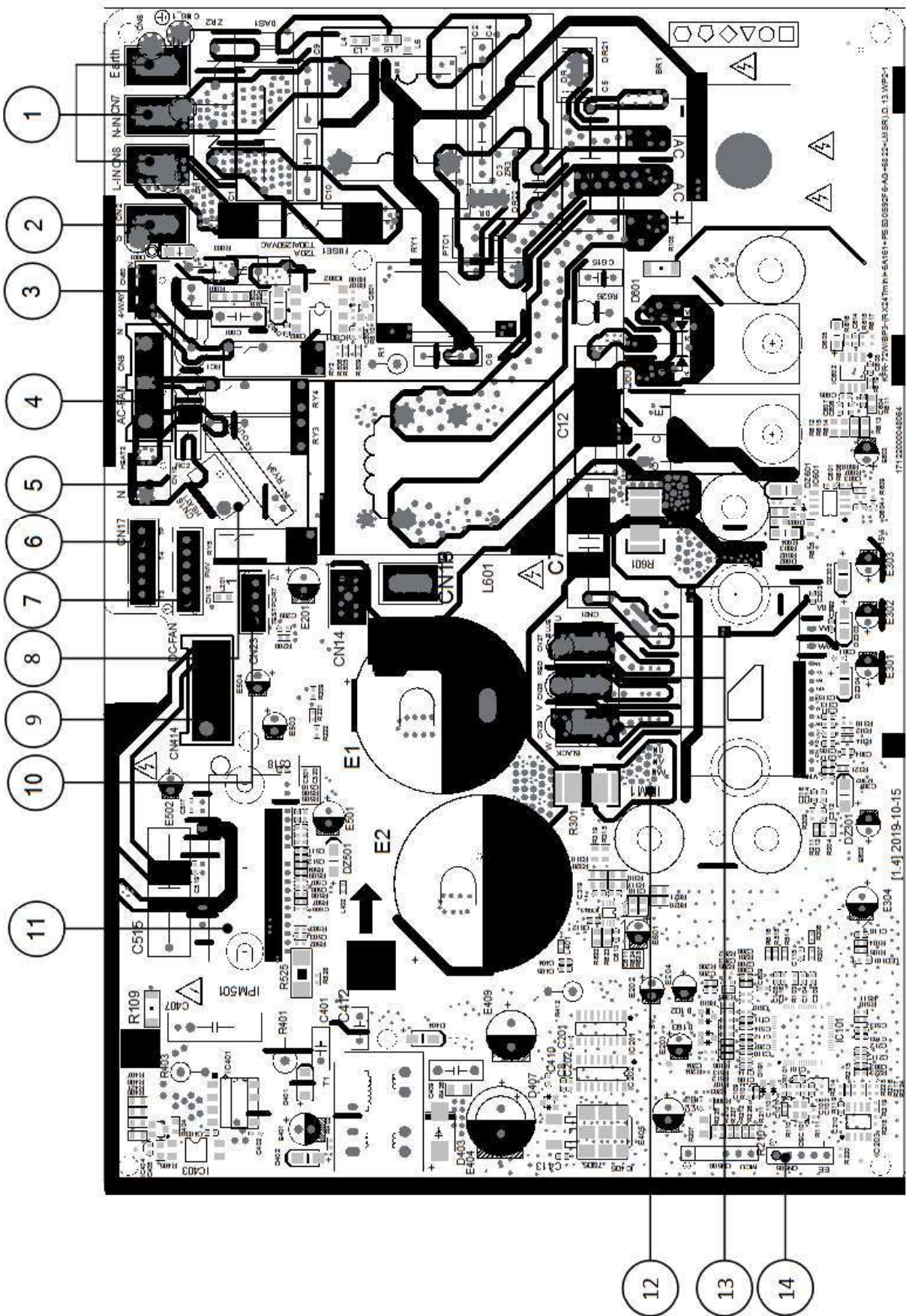
Outdoor unit printed circuit board diagram: 17122000044714, 17122000048121, 17122000046453



No.	Name	CN#	Meaning
1	CN1A	CN3	Earth: connect to Ground
		CN1	N_in: connect to N-line (208-230V AC input)
		CN2	L_in: connect to L-line (208-230V AC input)
		CN16	S: connect to indoor unit communication
2	HEAT1	CN17	connect to compressor heater, 208-230V AC when is ON
3	4-WAY	CN60	connect to 4 way valve, 208-230V AC when is ON.
4	HEAT2	CN15	connect to chassis heater, 208-230V AC when is ON
5	AC-FAN	CN25	connect to AC fan
6	PMV	CN31	connect to Electric Expansion Valve
7	TESTPORT	CN6	used for testing
8	TP T4 T3	CN21/CN22	connect to pipe temp. sensor T3, ambient temp. sensor T4, exhaust temp. sensor TP
9	DC-FAN	CN7	connect to DC fan
10	FAN_IPM	IPM 501	IPM for DC fan
11	W	CN28	connect to compressor
	V	CN29	0V AC (standby)
	U	CN30	10-200V AC (running)
12	COMP_IPM	IPM 301	IPM for compressor

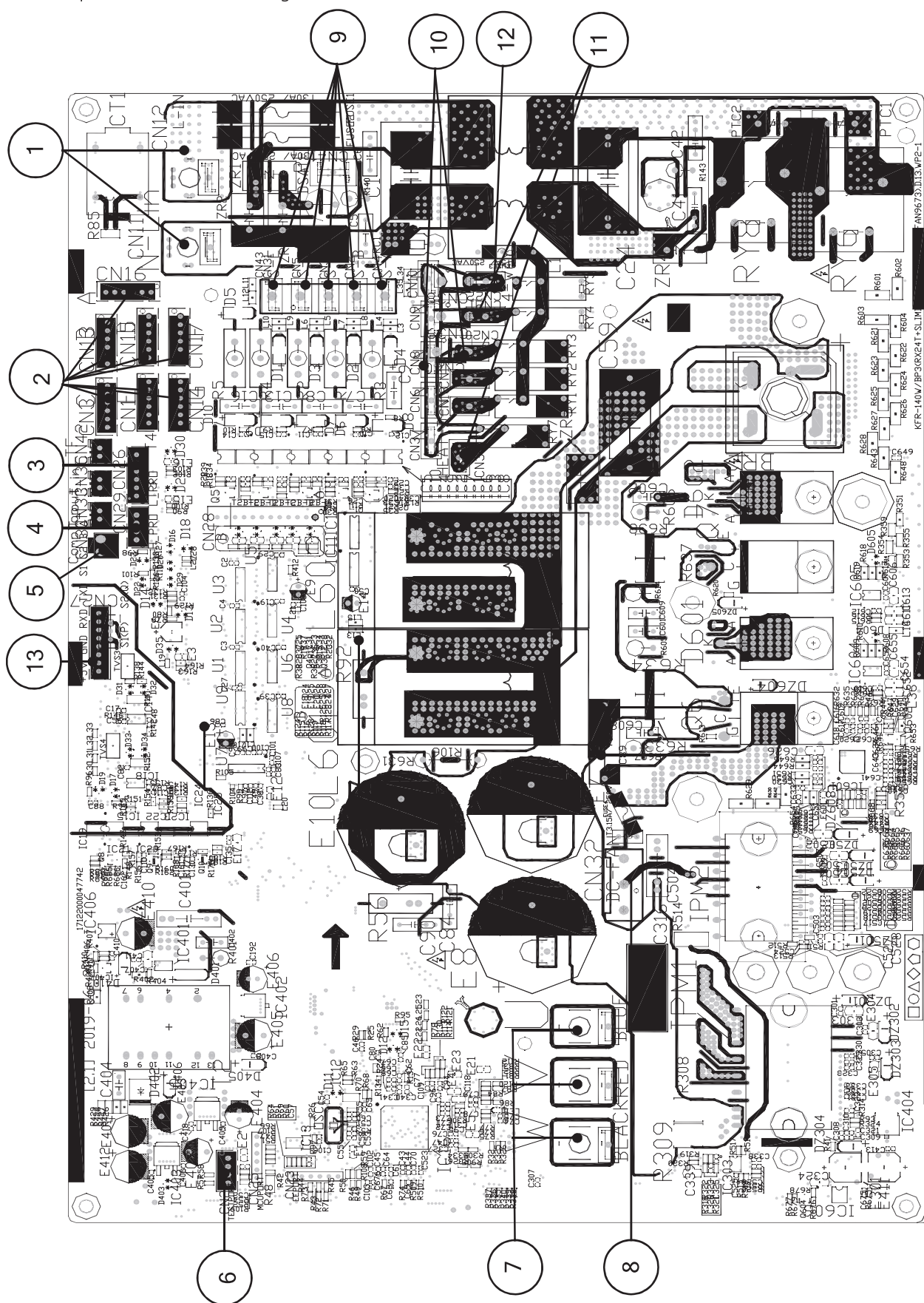
Note: This section is for reference only. Please take practicality as standard.

Outdoor unit printed circuit board diagram: 17122000048064



No.	Name	CN#	Meaning
1	Power Supply	CN6	Earth: connect to Ground
		CN7	N_in: connect to N-line (208-230V AC input)
		CN8	L_in: connect to L-line (208-230V AC input)
2	S	CN2	S: connect to indoor unit communication
3	4-WAY	CN60	connect to 4 way valve, 208-230V AC when is ON.
4	AC-FAN	CN5	connect to AC fan
5	HEAT2	CN19	connect to chassis heater, 208-230V AC when is ON
6	TP T4 T3	CN17	connect to pipe temp. sensor T3, ambient temp. sensor T4, exhaust temp. sensor TP
7	PMV	CN18	connect to Electric Expansion Valve
8	HEAT1	CN16	connect to compressor heater, 208-230V AC when is ON
9	DC-FAN	CN414	connect to DC fan
10	TESTPORT	CN23	used for testing
11	FAN_IPM	IPM501	IPM for DC fan
12	COMP_IPM	IPM1	IPM for compressor
13	U	CN27	connect to compressor
	V	CN28	0V AC (standby)
	W	CN29	200-300V AC (running)
14	EE_PORT	CN505	EEPROM programer port

Note: This section is for reference only. Please take practicality as standard.

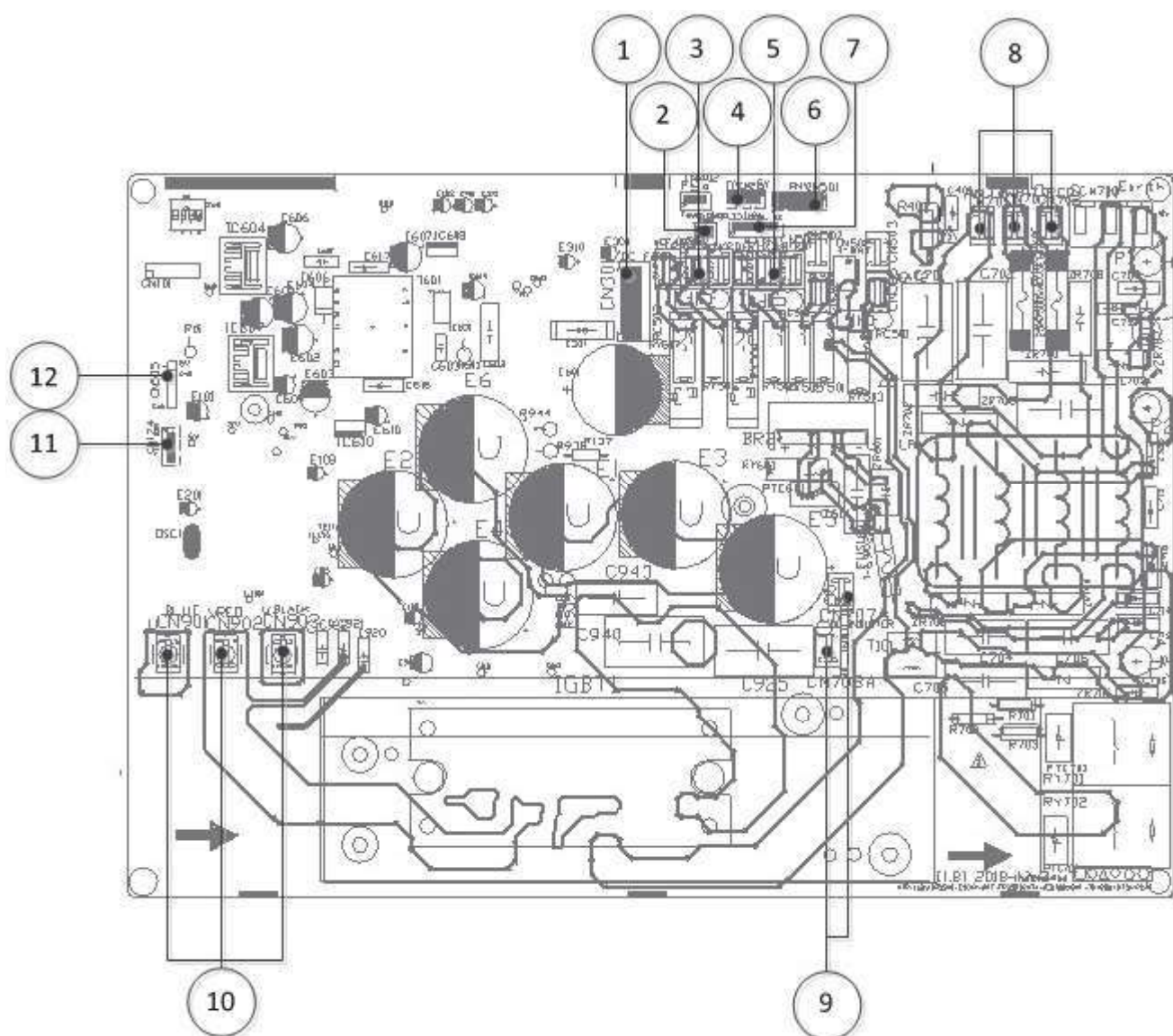


No.	Name	CN#	Meaning
1	Power Supply	CN11	N_in: connect to N-line (208-230V AC input)
		CN12	L_in: connect to L-line (208-230V AC input)
2	EEV-A	CN16	connect to electric expansion valve
	EEV-B	CN13	
	EEV-C	CN3	
	EEV-D	CN15	
	EEV-E	CN1	
	EEV-F	CN17	
	EEV-G	CN14	
3	T3 T4 TP	CN26	connect to pipe temp. sensor T3, ambient temp. sensor T4, exhaust temp. sensor TP
4	H-PRO,L-RPO	CN29	connect to high and low pressure switch(pin1-pin2&pin3-pin4:5VDC pulse wave)
5	OLP TEMP. SENSOR	CN30	connect to compressor top temp. sensor (5VDC Pulse wave)
6	TESTPORT	CN24	used for testing
7	COMPRESSOR	U	connect to compressor
		V	0V AC (standby)
		W	10-200V AC (running)
8	DC-FAN	CN32	connect to DC fan
9	S-E	CN31	S: connect to indoor unit communication(pin1-pin2: 24VDC Pulse wave; pin2-pin3: 208-230V AC input)
	S-D	CN5	
	S-C(mono)	CN34	
	S-B	CN2	
	S-A	CN4	

No.	Name	CN#	Meaning
10	HEAT_D	CN8	connect to the heater, 208-230V AC when is ON
		CN20	
11	HEAT_Y	CN21	
		CN36	
12	4-WAY	CN38	connect to 4 way valve, 208-230V AC when is ON.
13	/	CN27	connect to key board CN1

Note: This section is for reference only. Please take practicality as standard.

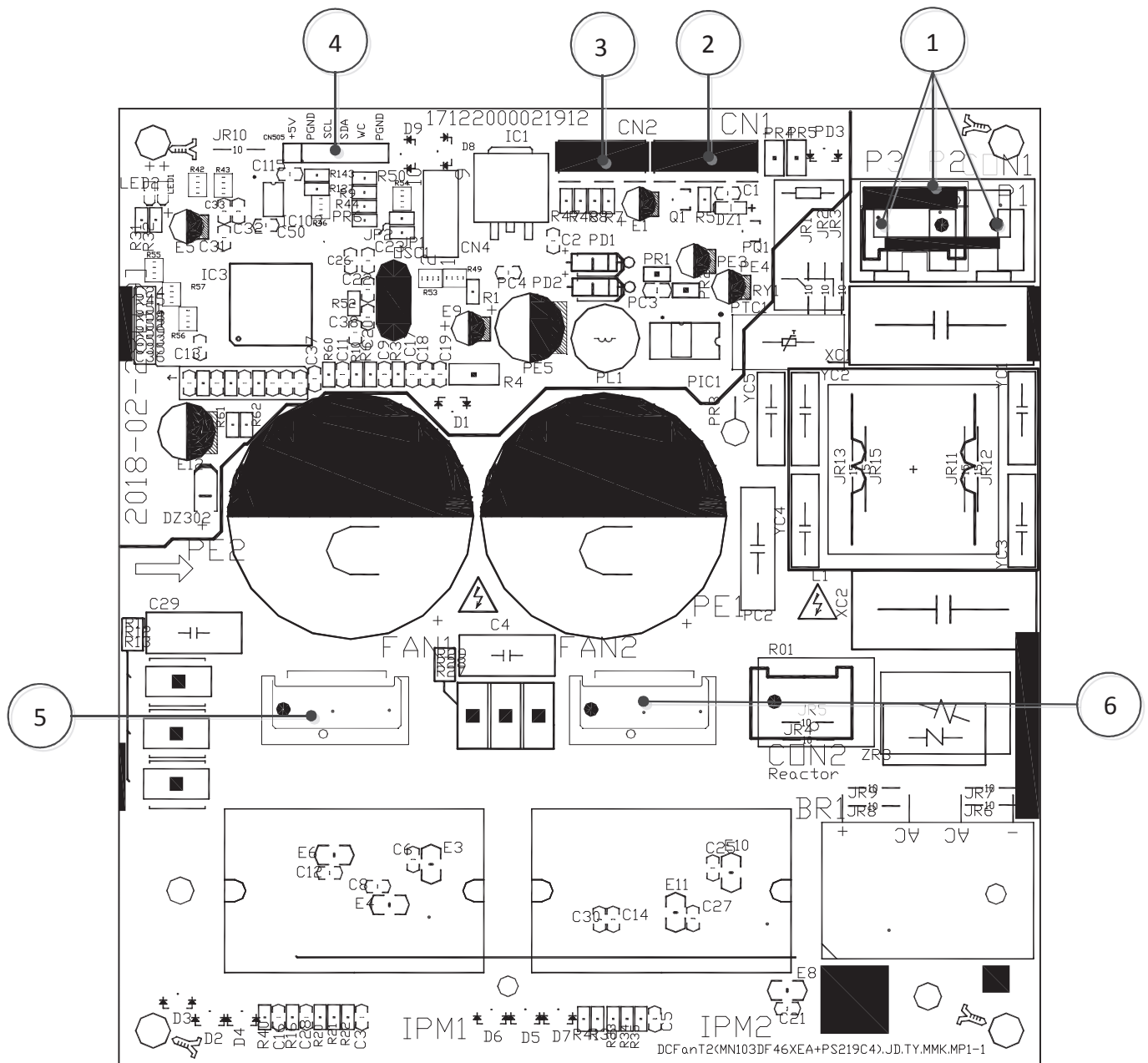
Outdoor unit printed circuit board diagram: 17122000041841



No.	Name	CN#	Meaning
1	CN301	CN301	Connect to DC fan motor
2	CN23	CN23	Connect to Comp Top
3	CN705	CN705	Connect to AC fan motor
	CN706	CN706	Connect to AC fan motor
	CN709	CN709	Connect to AC fan motor
4	CN22	CN22	Connect to high/low pressure protect
5	CN715	CN715	Connect to AC fan motor
	CN714	CN714	
	CN714	CN714	
6	CN501	CN501	Connect to electronic expansive valve
7	CN24	CN24	Connect to condenser temperature, outdoor ambient and discharge sensor
8	CN704	CN704	Power Supply (L1)
	CN703	CN703	Power Supply (L2)
	CN702	CN702	Power Supply (L3)
9	CN708A	CN708A	Connect to reactor
	CN707A	CN707A	
10	U	U	Connect to compressor
	V	V	
	W	W	
11	CN174	CN174	Test port
12	CN505	CN505	EEprom port

Note: This section is for reference only. Please take practicality as standard.

Outdoor unit DC motor driver board diagram: 17122000021912



No.	Name	CN#	Meaning
1	POWER	CON1	Power supply 208-230V AC
		P2	
		P3	
2	CN1	CN1	connect to main board
3	TESTPORT	CN2	used for testing
4	CN505	CN505	connect to PC communication
5	FAN1	FAN1	connect to DC fan1
6	FAN2	FAN2	connect to DC fan2
