MRCOOL®

COMFORT MADE SIMPLE

Hyper Heat Single-Zone 24k-60k
Ducted Air Handler & Condenser

SERVICE MANUAL

Version Date: 06/27/23

Outdoor Unit

Contents

1. Dimensional Drawings

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

ODU Model	Panel Plate
CENTRAL-24-HP-230A00	D30
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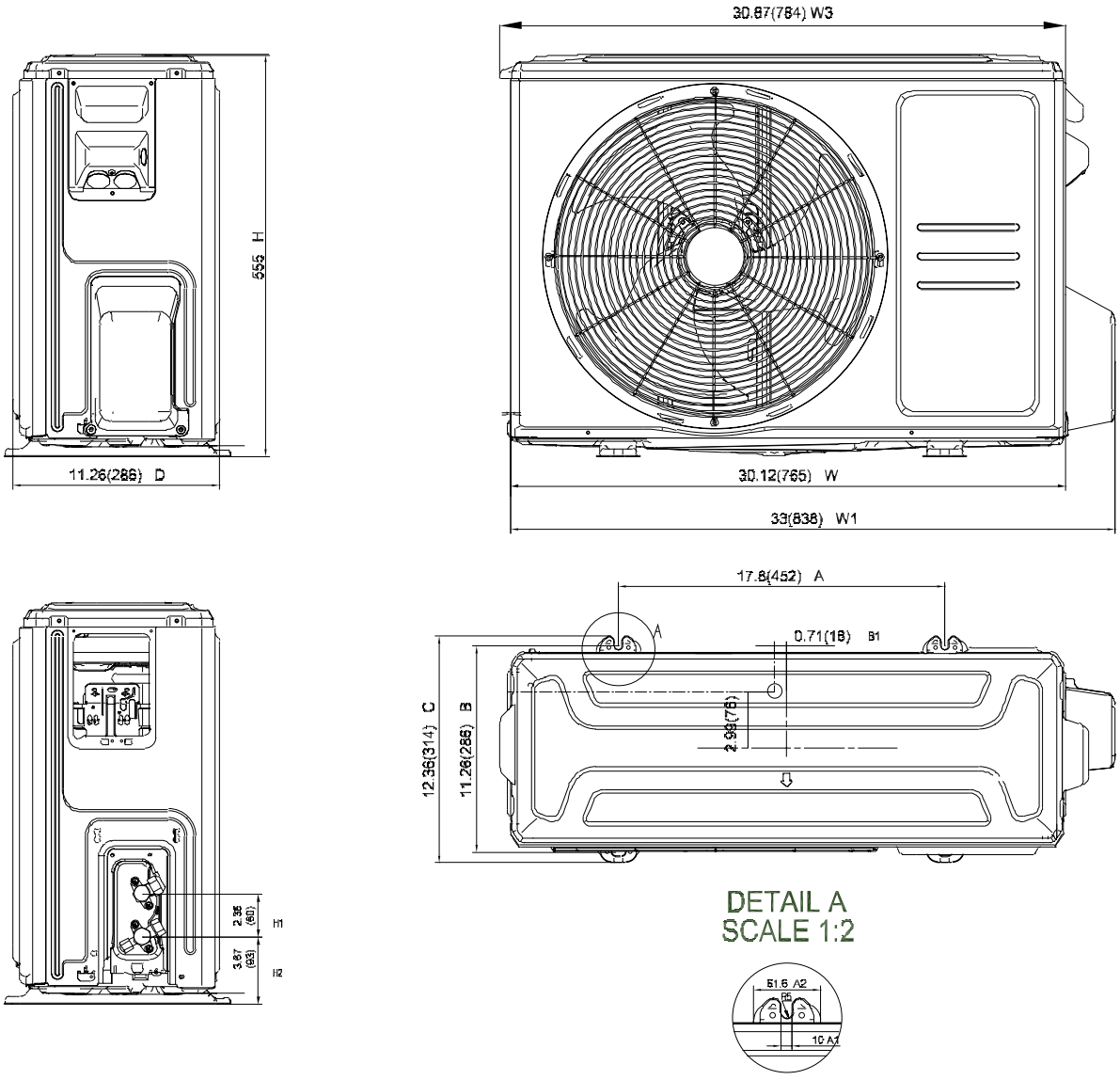
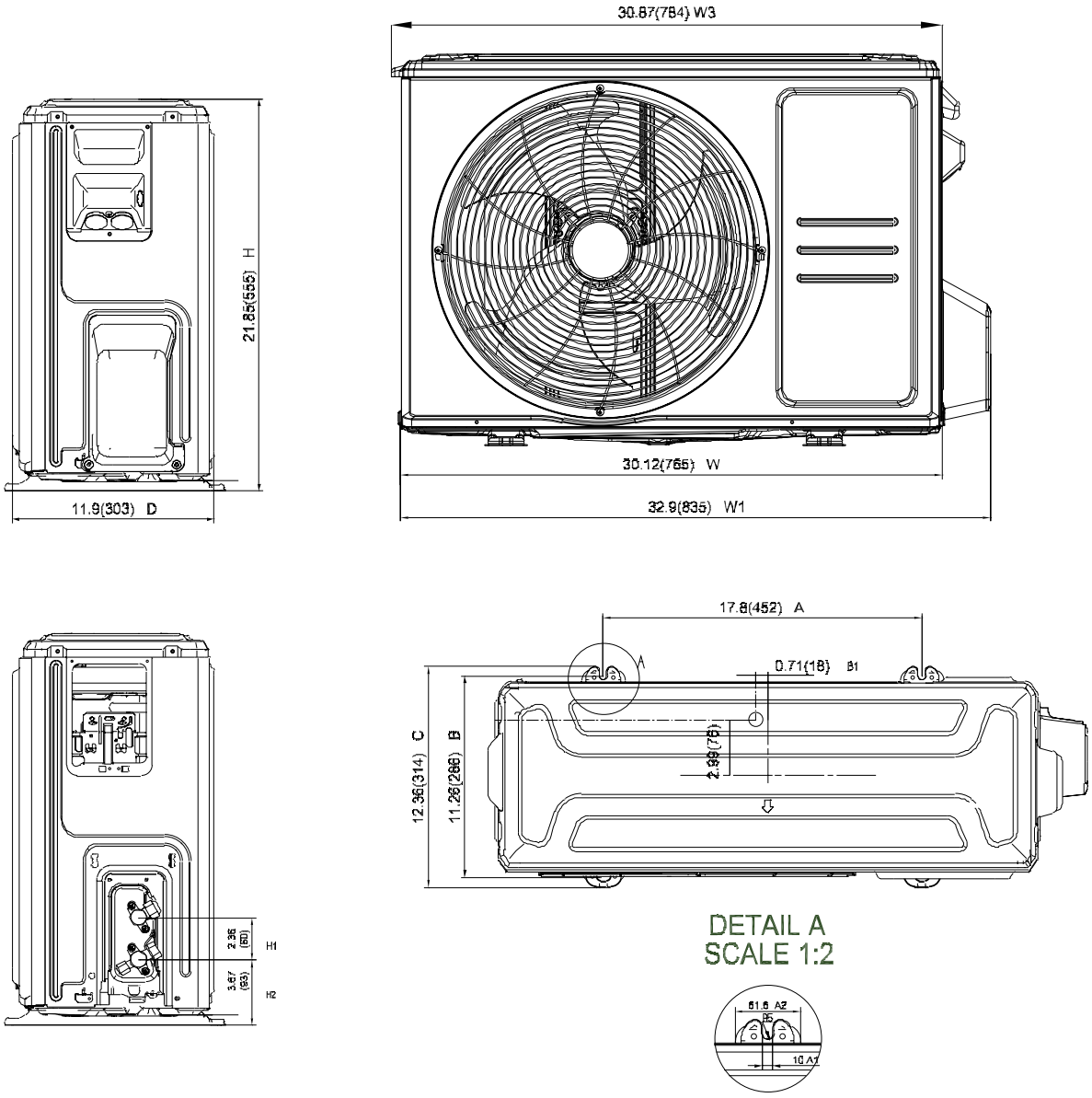
CENTRAL-36-HP-230A00	E30
CENTRAL-48-HP-230A00	E30
CENTRAL-60-HP-230A00	E30
CENTRAL-48-HP-C-230-00	E30
CENTRAL-60-HP-C-230-00	E30

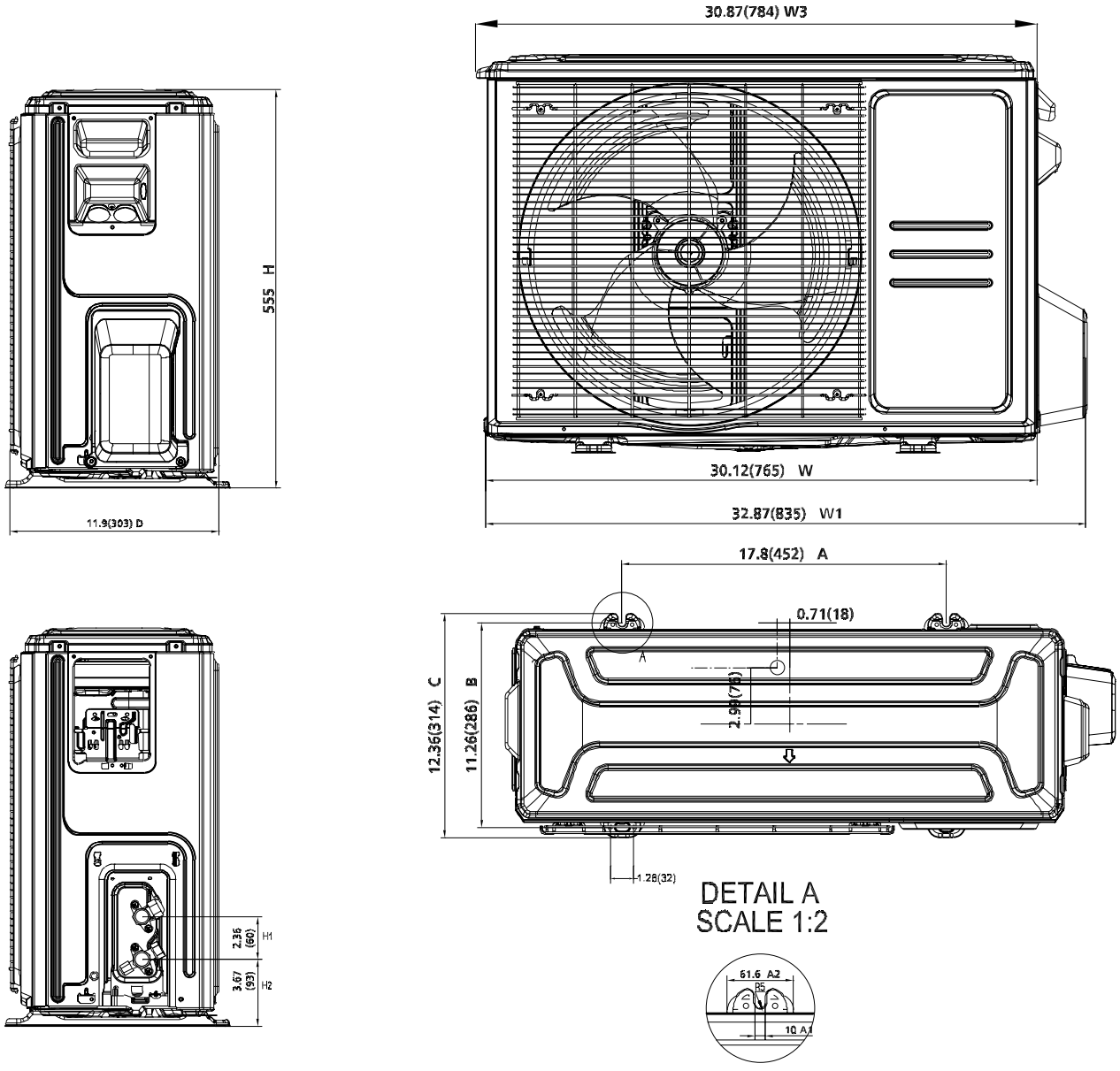
Panel Plate X230 (Rounded grille 1)



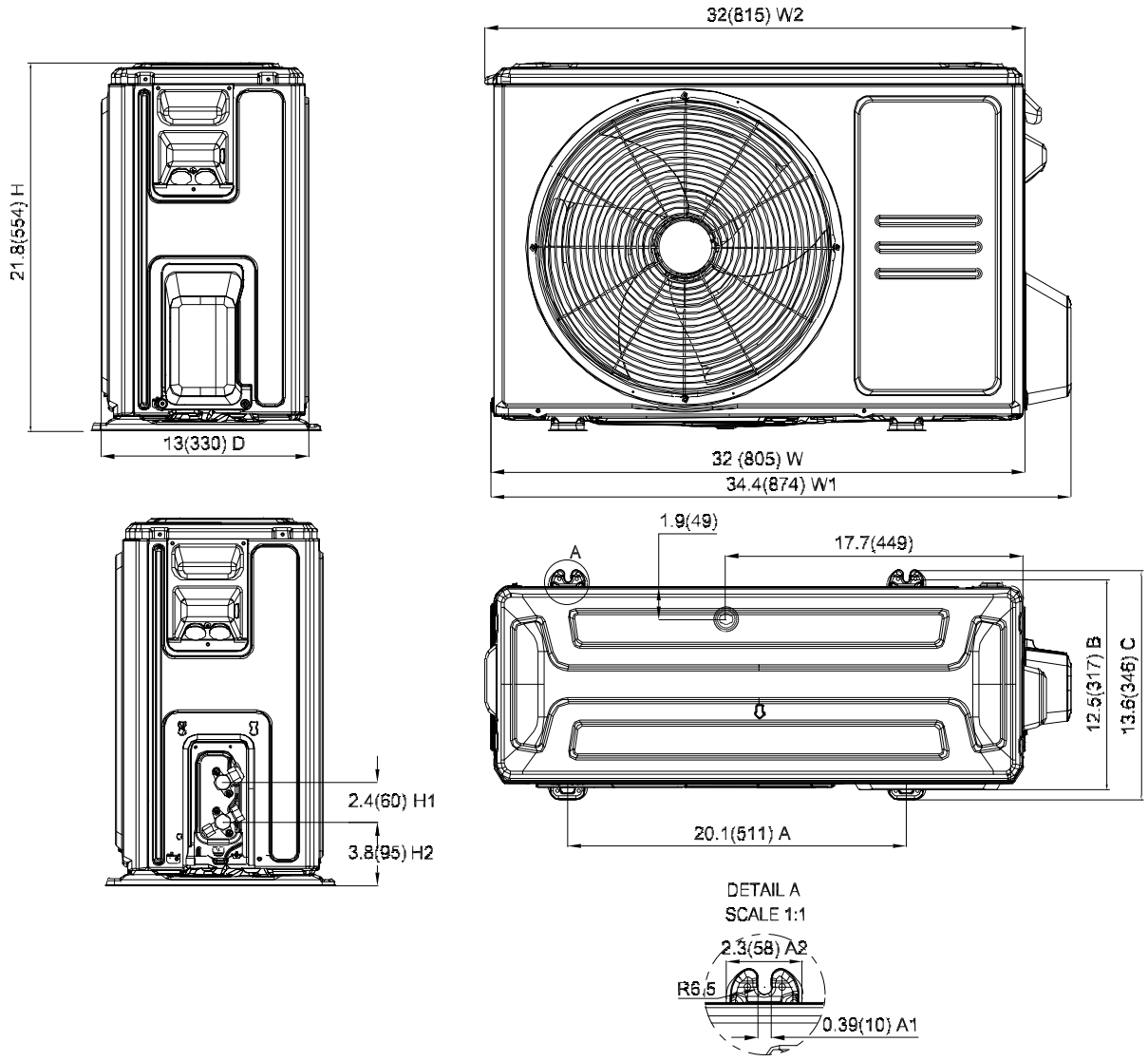
Panel Plate X230 (Rounded grille 2)



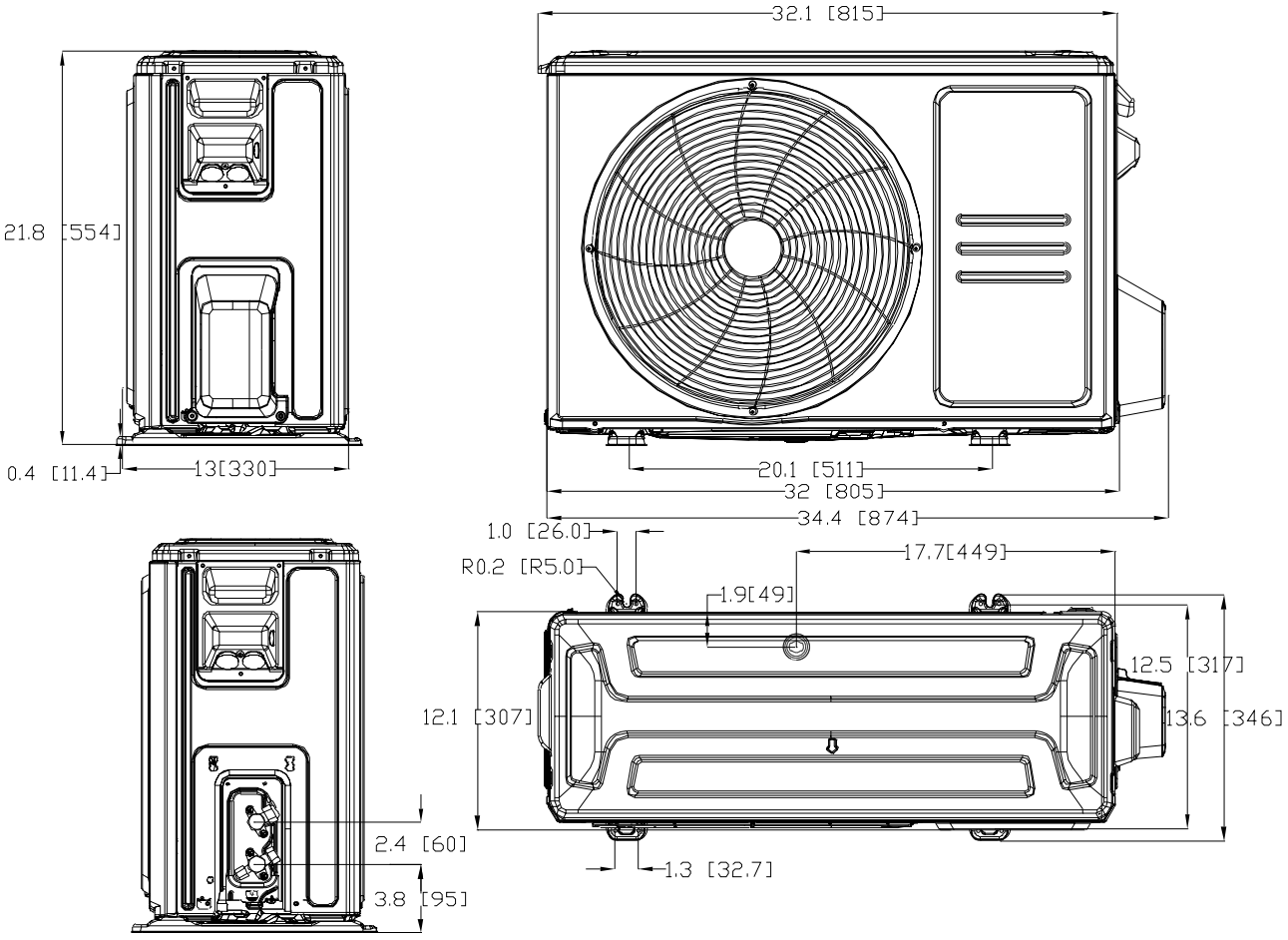
Panel Plate X230(Square grille)



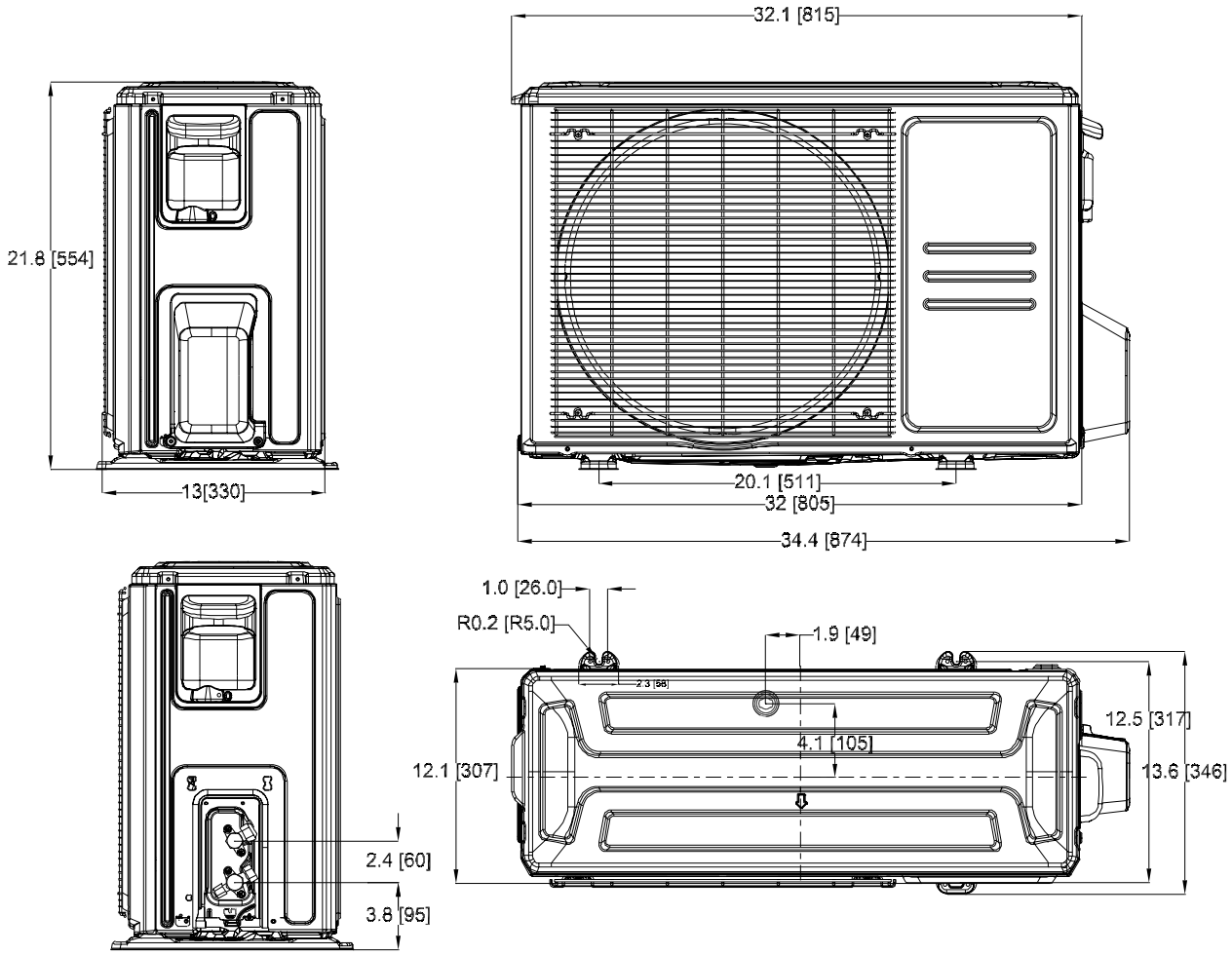
Panel Plate X330(Rounded grille 1)



Panel Plate X330(Rounded grille 2)



Panel Plate X330(Square grille)



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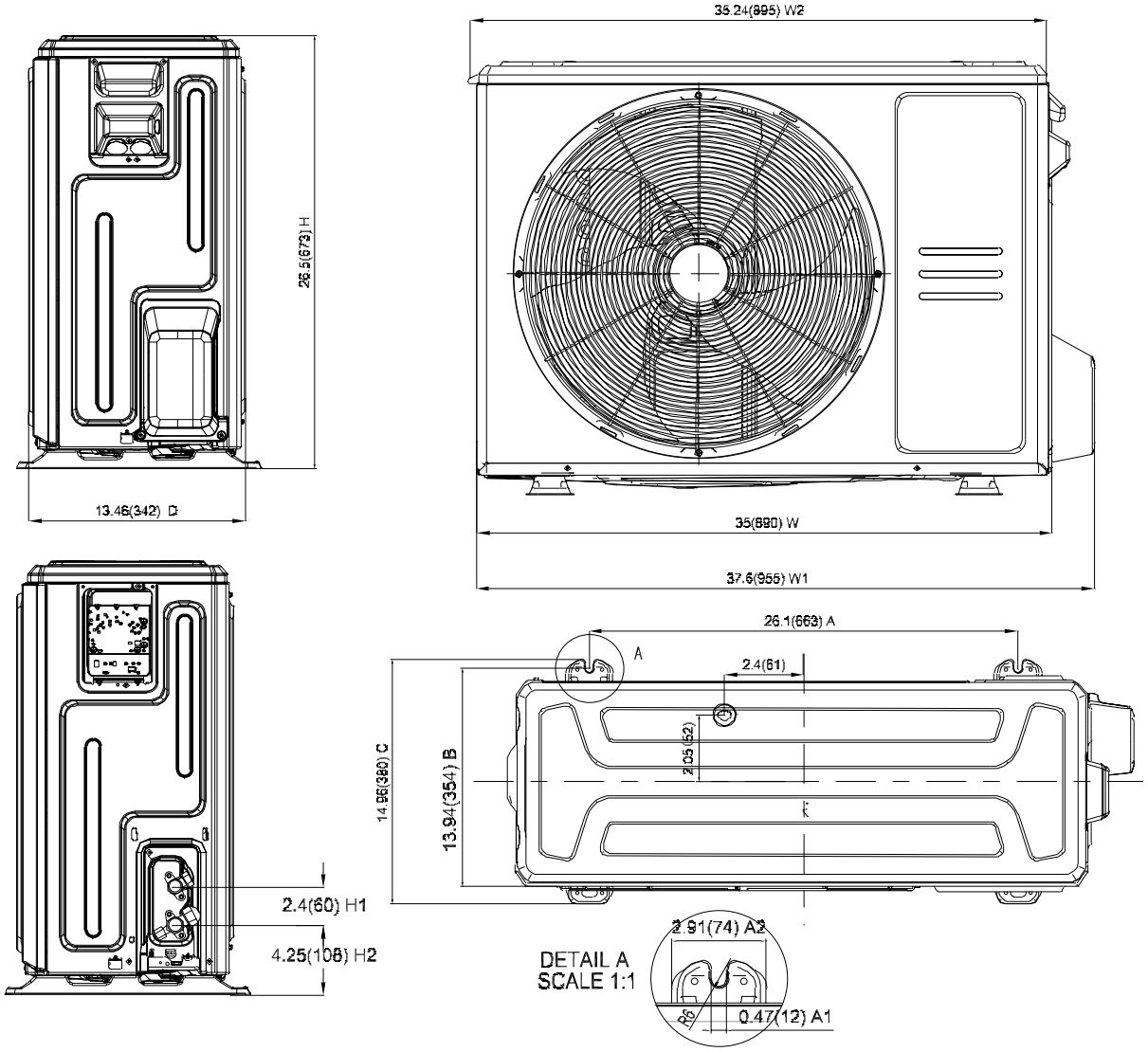

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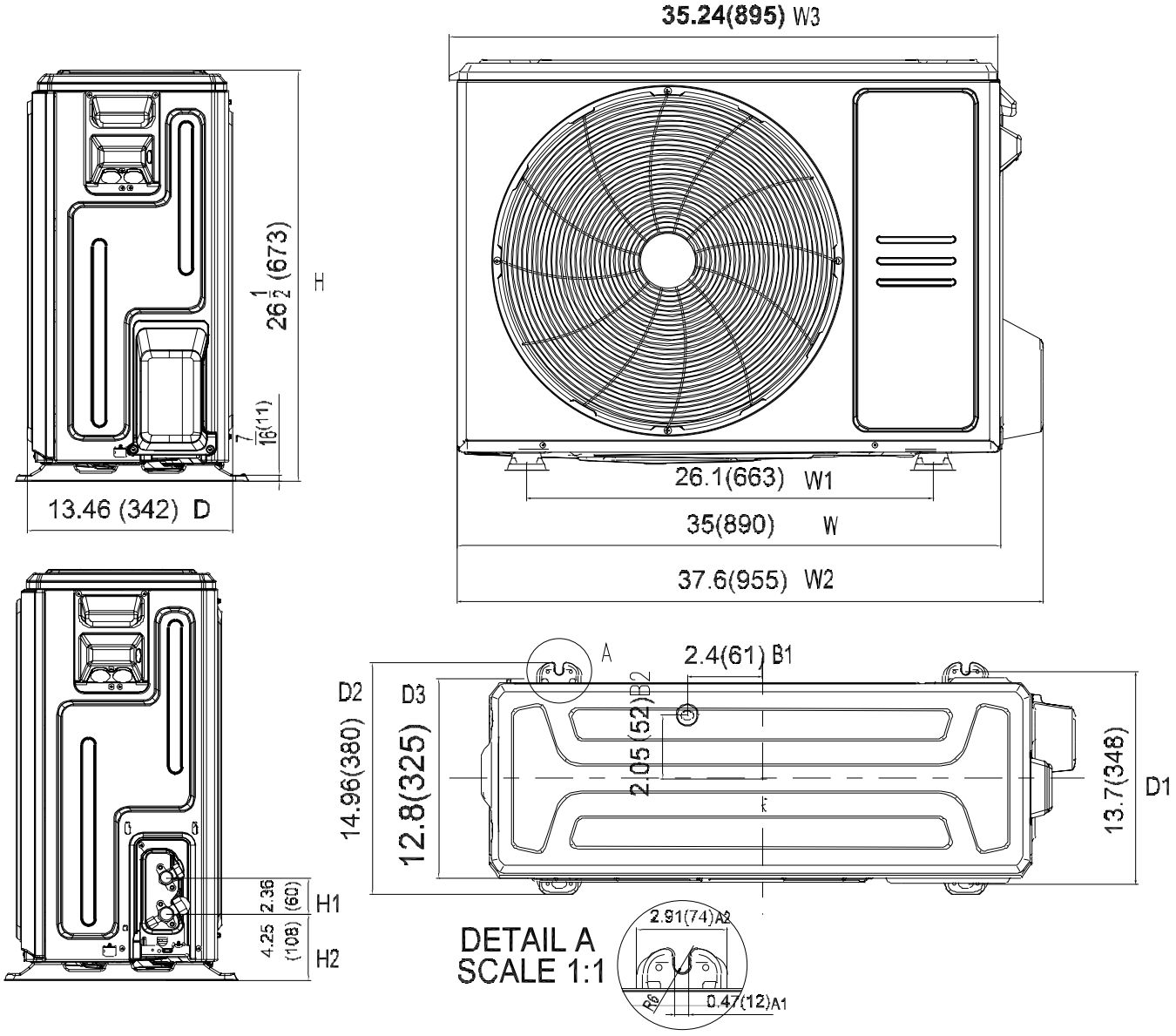
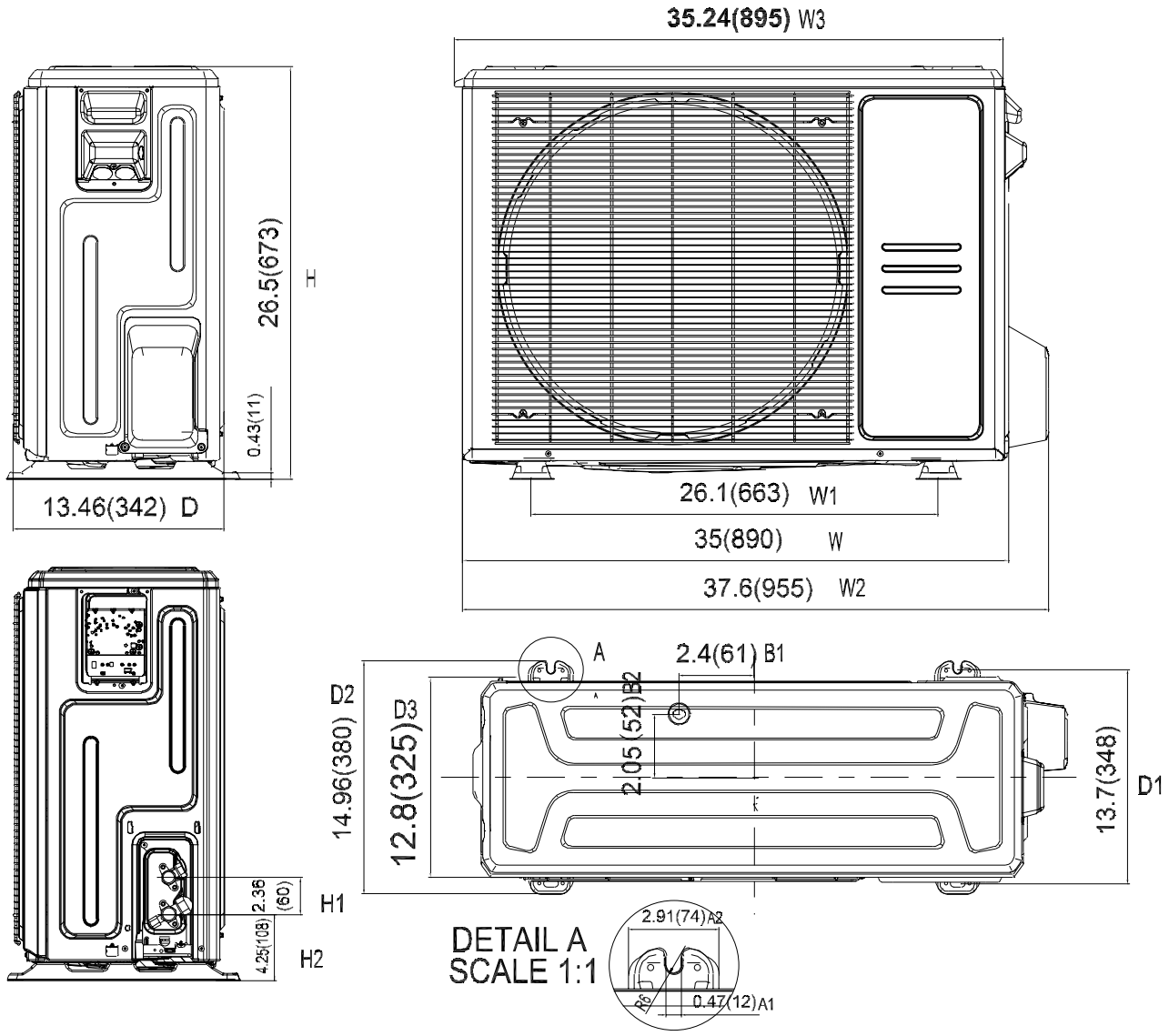
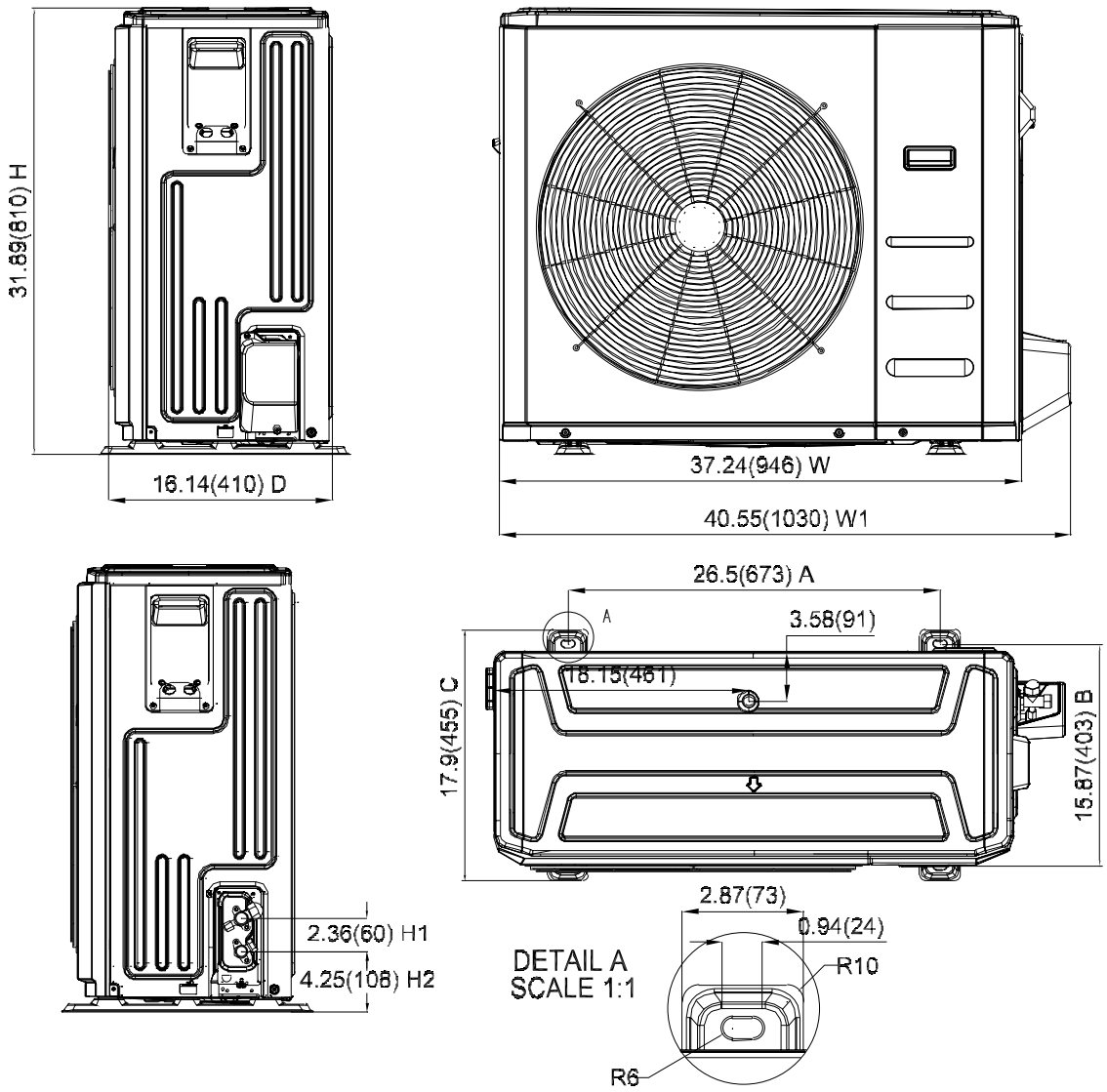


Panel Plate X430(Square grille)



Panel Plate D30(Rounded grille 1)



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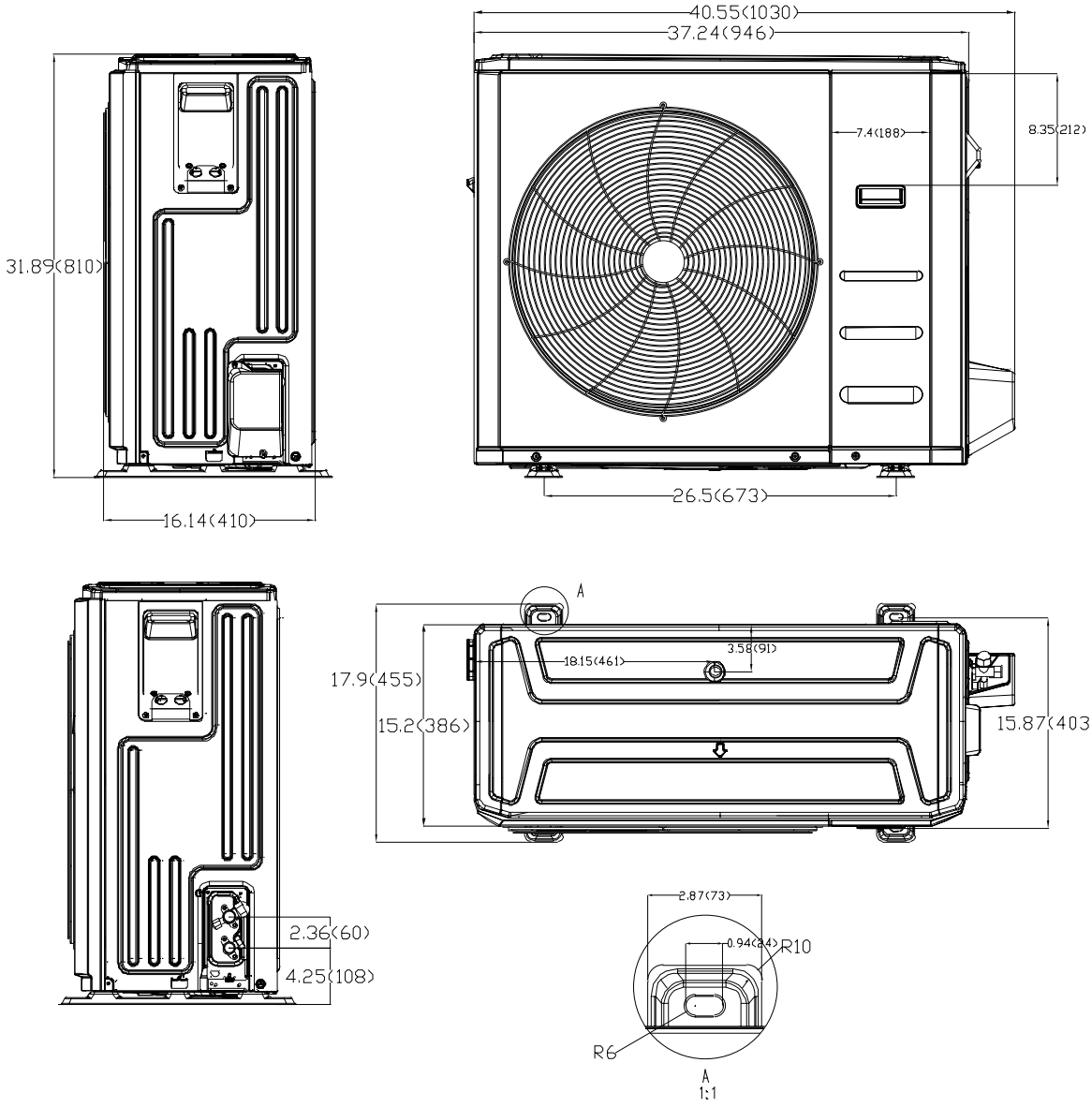
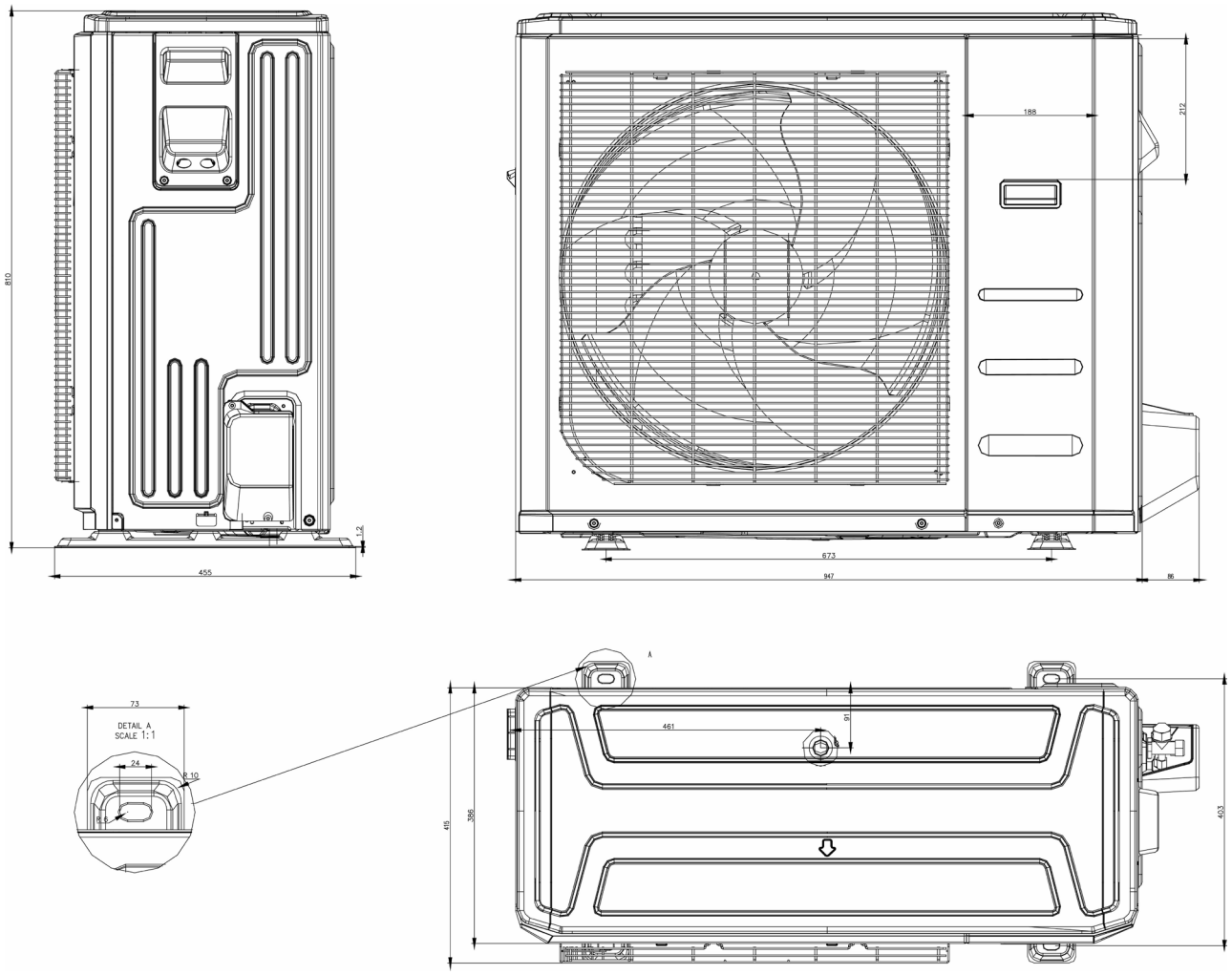
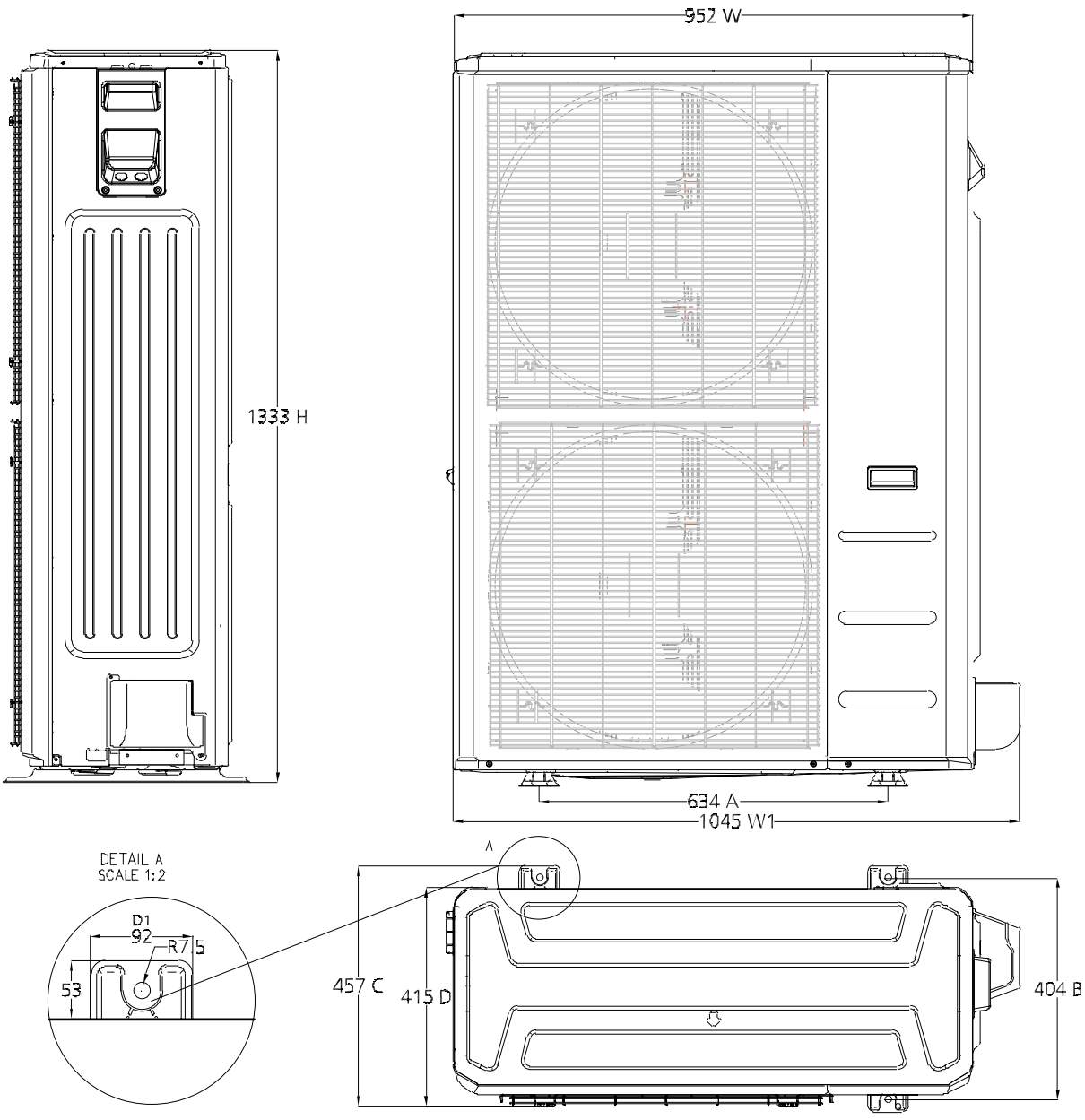


Panel Plate D30(Square grille)



Panel Plate E30(Square grille)



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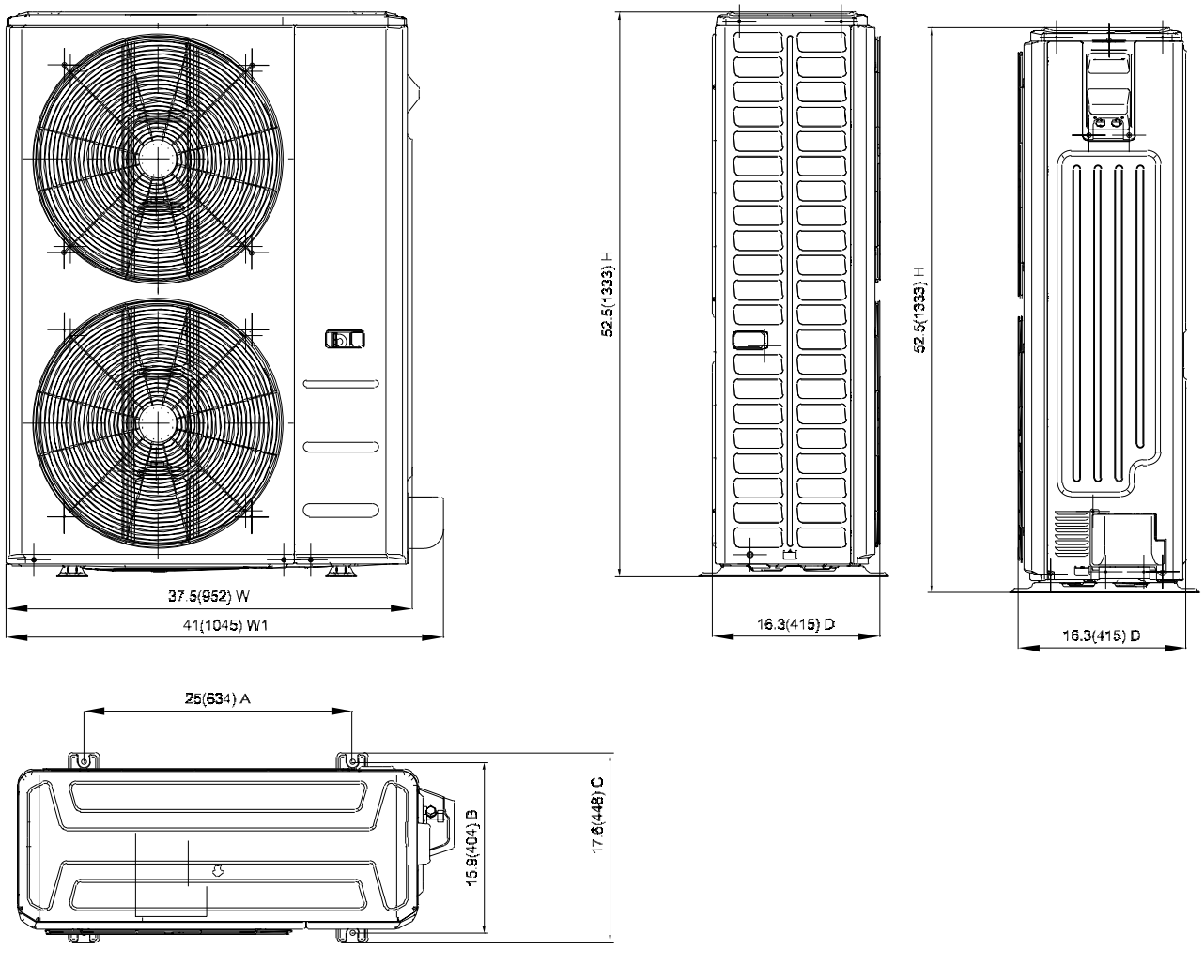
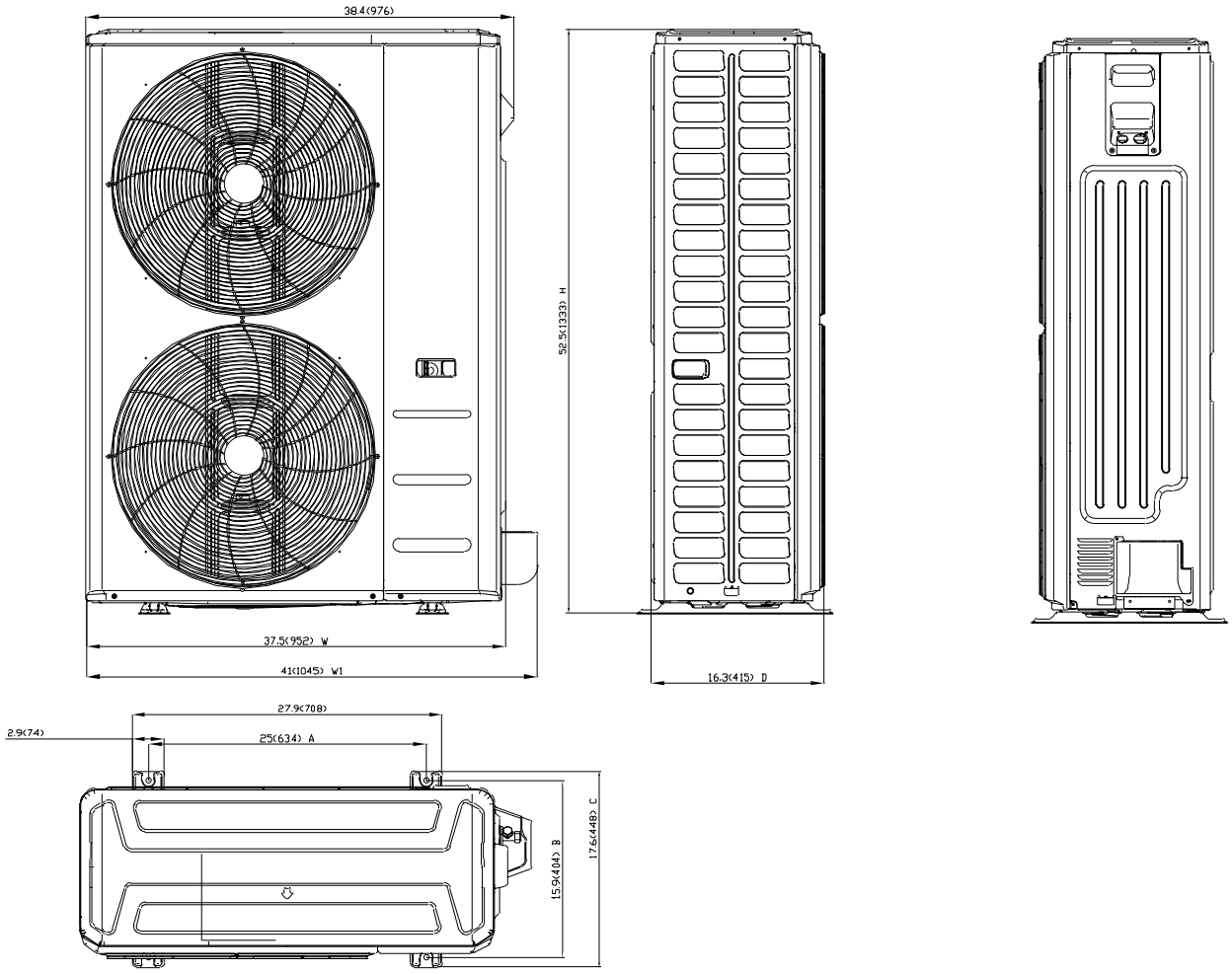
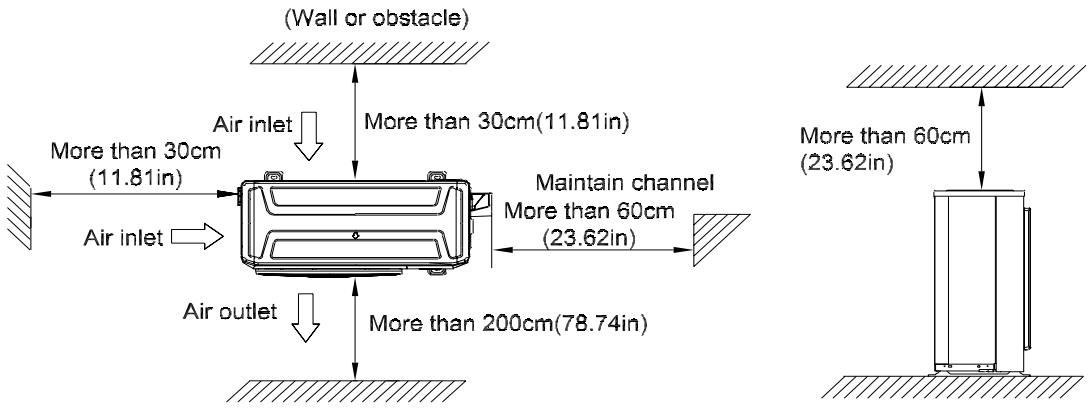


Panel Plate E30(Rounded grille 2)



2. Service Place



3. Capacity Correction Factor for Height Difference

Capacity(Btu/h)	6k~9k		Pipe Length (m/ft)			
Cooling			7.5/24.6	10/32.8	20/65.6	25/82
Height difference H (m)	Indoor Upper than Outdoor	10/32.8		0.969	0.936	0.920
		5/16.4	0.995	0.979	0.946	0.929
		0	1.000	0.984	0.951	0.934
	Outdoor Upper than Indoor	-5/-16.4	1.000	0.984	0.951	0.934
		-10/-32.8		0.984	0.951	0.934
Heating			7.5/24.6	10/32.8	20/65.6	25/82
Height difference H (m)	Indoor Upper than Outdoor	10/32.8		0.989	0.967	0.956
		5/16.4	1.000	0.989	0.967	0.956
		0	1.000	0.989	0.967	0.956
	Outdoor Upper than Indoor	-5/-16.4	0.992	0.981	0.959	0.948
		-10/-32.8		0.973	0.952	0.941

Capacity(Btu/h)	12k		Pipe Length (m/ft)			
Cooling			7.5/24.6	10/32.8	20/65.6	25/82
Height difference H (m)	Indoor Upper than Outdoor	10/32.8		0.974	0.953	0.942
		5/16.4	0.995	0.984	0.962	0.951
		0	1.000	0.989	0.967	0.956
	Outdoor Upper than Indoor	-5/-16.4	1.000	0.989	0.967	0.956
		-10/-32.8		0.989	0.967	0.956
Heating			7.5/24.6	10/32.8	20/65.6	25/82
Height difference H (m)	Indoor Upper than Outdoor	10/32.8		0.994	0.981	0.974
		5/16.4	1.000	0.994	0.981	0.974
		0	1.000	0.994	0.981	0.974
	Outdoor Upper than Indoor	-5/-16.4	0.992	0.986	0.973	0.966
		-10/-32.8		0.978	0.965	0.958

Capacity(Btu/h)	18k		Pipe Length (m/ft)			
Cooling			7.5/24.6	10/32.8	20/65.6	30/98.4
Height difference H (m)	Indoor Upper than Outdoor	20/65.6			0.941	0.919
		10/32.8		0.974	0.951	0.928
		5/16.4	0.995	0.983	0.960	0.937
		0	1.000	0.988	0.965	0.942
	Outdoor Upper than Indoor	-5/-16.4	1.000	0.988	0.965	0.942
		-10/-32.8		0.988	0.965	0.942
		-20/-65.6			0.965	0.942

Capacity(Btu/h)	18k		Pipe Length (m/ft)			
Heating			7.5/24.6	10/32.8	20/65.6	30/98.4
Height difference H (m)	Indoor Upper than Outdoor	20/65.6			0.987	0.978
		10/32.8		0.996	0.987	0.978
		5/16.4	1.000	0.996	0.987	0.978
		0	1.000	0.996	0.987	0.978
	Outdoor Upper than Indoor	-5/-16.4	0.992	0.988	0.979	0.970
		-10/-32.8		0.980	0.971	0.962
		-20/-65.6			0.963	0.955

Capacity (Btu/h)	24k		Pipe Length (m/ft)					
Cooling			7.5/24.6	10/32.8	20/65.6	30/98.4	40/131.2	50/164
Height difference H (m)	Indoor Upper than Outdoor	25/82				0.917	0.898	0.879
		20/65.6			0.946	0.926	0.907	0.887
		10/32.8		0.975	0.955	0.936	0.916	0.896
		5/16.4	0.995	0.985	0.965	0.945	0.925	0.905
		0	1.000	0.990	0.970	0.950	0.930	0.910
	Outdoor Upper than Indoor	-5/-16.4	1.000	0.990	0.970	0.950	0.930	0.910
		-10/-32.8		0.990	0.970	0.950	0.930	0.910
		-20/-65.6			0.970	0.950	0.930	0.910
		-25/-82				0.950	0.930	0.910
Heating			7.5/24.6	10/32.8	20/65.6	30/98.4	40/131.2	50/164
Height difference H (m)	Indoor Upper than Outdoor	25/82				0.984	0.978	0.972
		20/65.6			0.991	0.984	0.978	0.972
		10/32.8		0.997	0.991	0.984	0.978	0.972
		5/16.4	1.000	0.997	0.991	0.984	0.978	0.972
		0	1.000	0.997	0.991	0.984	0.978	0.972
	Outdoor Upper than Indoor	-5/-16.4	0.992	0.989	0.983	0.977	0.970	0.964
		-10/-32.8		0.981	0.975	0.969	0.963	0.957
		-20/-65.6			0.967	0.961	0.955	0.949
		-25/-82				0.953	0.947	0.941

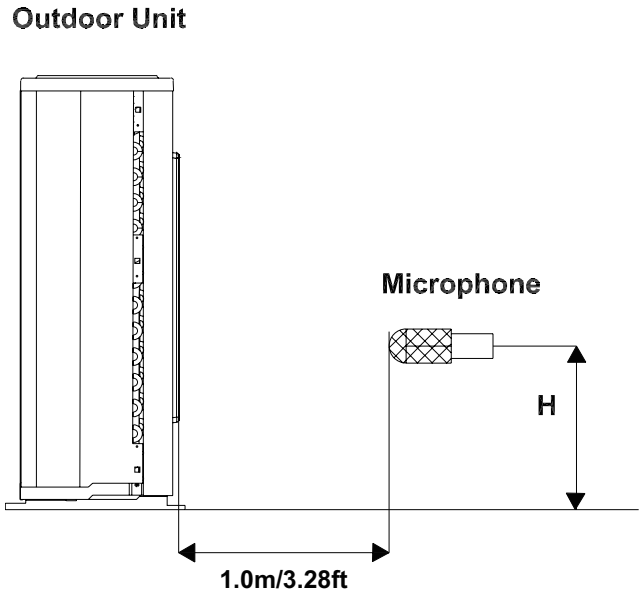
Capacity (Btu/h)	30k		Pipe Length (m/ft)					
Cooling			7.5/24.6	10/32.8	20/65.6	30/98.4	40/131.2	50/164
Height difference H (m)	Indoor Upper than Outdoor	25/82				0.891	0.862	0.832
		20/65.6			0.930	0.900	0.871	0.841
		10/32.8		0.970	0.940	0.910	0.879	0.849
		5/16.4	0.995	0.980	0.949	0.919	0.888	0.858
		0	1.000	0.985	0.954	0.923	0.893	0.862
	Outdoor Upper than Indoor	-5/-16.4	1.000	0.985	0.954	0.923	0.893	0.862
		-10/-32.8		0.985	0.954	0.923	0.893	0.862
		-20/-65.6			0.954	0.923	0.893	0.862
		-25/-82				0.923	0.893	0.862
Heating			7.5/24.6	10/32.8	20/65.6	30/98.4	40/131.2	50/164
Height difference H (m)	Indoor Upper than Outdoor	25/82				0.961	0.945	0.929
		20/65.6			0.976	0.961	0.945	0.929
		10/32.8		0.992	0.976	0.961	0.945	0.929
		5/16.4	1.000	0.992	0.976	0.961	0.945	0.929
		0	1.000	0.992	0.976	0.961	0.945	0.929
	Outdoor Upper than Indoor	-5/-16.4	0.992	0.984	0.969	0.953	0.937	0.922
		-10/-32.8		0.976	0.961	0.945	0.930	0.914
		-20/-65.6			0.953	0.938	0.922	0.907
		-25/-82				0.930	0.915	0.900

Capacity (Btu/h)	36k		Pipe Length (m/ft)					
Cooling			7.5/24.6	15/49.2	25/82	35/114.8	50/164	65/213.3
Height difference H (m)	Indoor Upper than Outdoor	30/98.4				0.889	0.850	0.812
		20/65.6			0.924	0.898	0.859	0.820
		10/32.8		0.959	0.933	0.907	0.868	0.828
		5/16.4	0.995	0.969	0.942	0.916	0.876	0.837
		0	1.000	0.974	0.947	0.921	0.881	0.841
	Outdoor Upper than Indoor	-5/-16.4	1.000	0.974	0.947	0.921	0.881	0.841
		-10/-32.8		0.974	0.947	0.921	0.881	0.841
		-20/-65.6			0.947	0.921	0.881	0.841
		-30/-98.4				0.921	0.881	0.841
Heating			7.5/24.6	15/49.2	25/82	35/114.8	50/164	65/213.3
Height difference H (m)	Indoor Upper than Outdoor	30/98.4				0.964	0.945	0.927
		20/65.6			0.976	0.964	0.945	0.927
		10/32.8		0.988	0.976	0.964	0.945	0.927
		5/16.4	1.000	0.988	0.976	0.964	0.945	0.927
		0	1.000	0.988	0.976	0.964	0.945	0.927
	Outdoor Upper than Indoor	-5/-16.4	0.992	0.980	0.968	0.956	0.938	0.920
		-10/-32.8		0.972	0.960	0.948	0.930	0.912
		-20/-65.6			0.952	0.941	0.923	0.905
		-30/-98.4				0.933	0.915	0.898

Capacity (Btu/h)	48k		Pipe Length (m/ft)					
Cooling			7.5/24.6	15/49.2	25/82	35/114.8	50/164	65/213.3
Height difference H (m)	Indoor Upper than Outdoor	30/98.4				0.884	0.843	0.802
		20/65.6			0.920	0.893	0.852	0.810
		10/32.8		0.957	0.930	0.902	0.860	0.819
		5/16.4	0.995	0.967	0.939	0.911	0.869	0.827
		0	1.000	0.972	0.944	0.916	0.873	0.831
	Outdoor Upper than Indoor	-5/-16.4	1.000	0.972	0.944	0.916	0.873	0.831
		-10/-32.8		0.972	0.944	0.916	0.873	0.831
		-20/-65.6			0.944	0.916	0.873	0.831
		-30/-98.4				0.916	0.873	0.831
Heating			7.5/24.6	15/49.2	25/82	35/114.8	50/164	65/213.3
Height difference H (m)	Indoor Upper than Outdoor	30/98.4				0.958	0.936	0.915
		20/65.6			0.972	0.958	0.936	0.915
		10/32.8		0.986	0.972	0.958	0.936	0.915
		5/16.4	1.000	0.986	0.972	0.958	0.936	0.915
		0	1.000	0.986	0.972	0.958	0.936	0.915
	Outdoor Upper than Indoor	-5/-16.4	0.992	0.978	0.964	0.950	0.929	0.908
		-10/-32.8		0.970	0.956	0.942	0.921	0.900
		-20/-65.6			0.949	0.935	0.914	0.893
		-30/-98.4				0.927	0.907	0.886

Capacity (Btu/h)	60k		Pipe Length (m/ft)					
Cooling			7.5/24.6	15/49.2	25/82	35/114.8	50/164	65/213.3
Height difference H (m)	Indoor Upper than Outdoor	30/98.4				0.870	0.823	0.775
		20/65.6			0.911	0.879	0.831	0.783
		10/32.8		0.953	0.920	0.888	0.840	0.791
		5/16.4	0.995	0.962	0.930	0.897	0.848	0.799
		0	1.000	0.967	0.934	0.902	0.852	0.803
	Outdoor Upper than Indoor	-5/-16.4	1.000	0.967	0.934	0.902	0.852	0.803
		-10/-32.8		0.967	0.934	0.902	0.852	0.803
		-20/-65.6			0.934	0.902	0.852	0.803
		-30/-98.4				0.902	0.852	0.803
Heating			7.5/24.6	15/49.2	25/82	35/114.8	50/164	65/213.3
Height difference H (m)	Indoor Upper than Outdoor	30/98.4				0.955	0.932	0.909
		20/65.6			0.970	0.955	0.932	0.909
		10/32.8		0.985	0.970	0.955	0.932	0.909
		5/16.4	1.000	0.985	0.970	0.955	0.932	0.909
		0	1.000	0.985	0.970	0.955	0.932	0.909
	Outdoor Upper than Indoor	-5/-16.4	0.992	0.977	0.962	0.947	0.924	0.902
		-10/-32.8		0.969	0.954	0.939	0.917	0.895
		-20/-65.6			0.947	0.932	0.910	0.887
		-30/-98.4				0.924	0.902	0.880

4. Noise Criterion Curves



Note: H= 0.5 × height of outdoor unit

Notes:

-Sound measured at 1.0m/3.28ft away from the center of the unit.

-Data is valid at free field condition

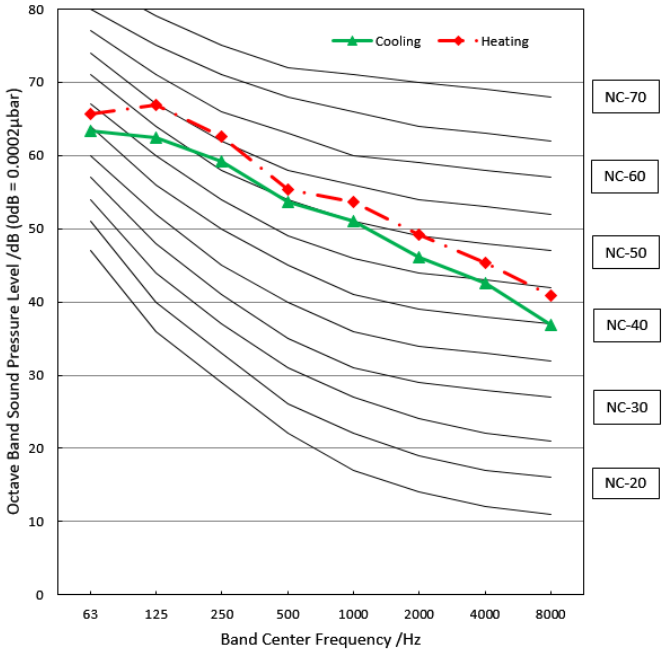
-Data is valid at nominal operation condition

-Reference acoustic pressure OdB=20μPa

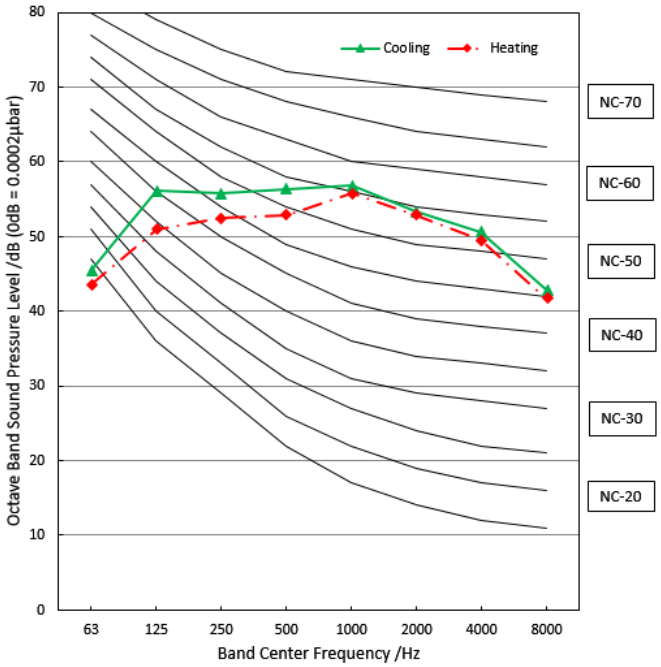
-Sound level will vary depending on arrange off actors such as the construction (acoustic absorption coefficient) of particular room in which the equipment is installed.

-The operating conditions are assumed to be standard.

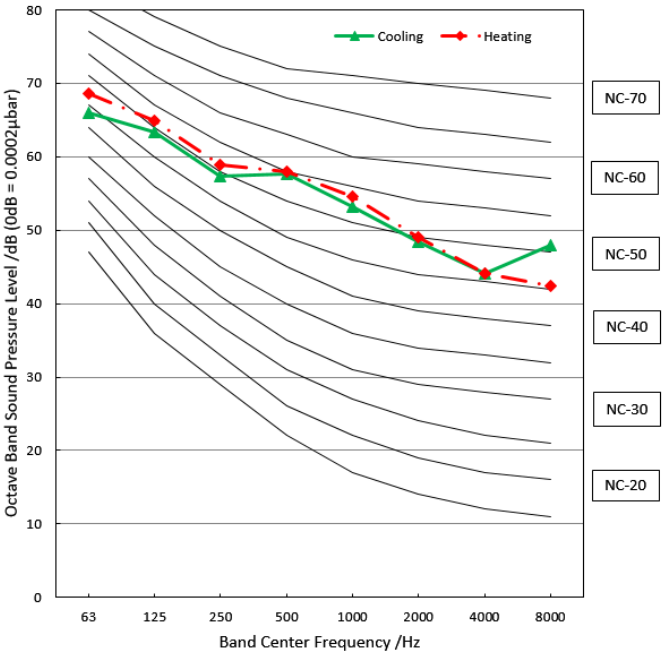
CENTRAL-24-HP-230A00



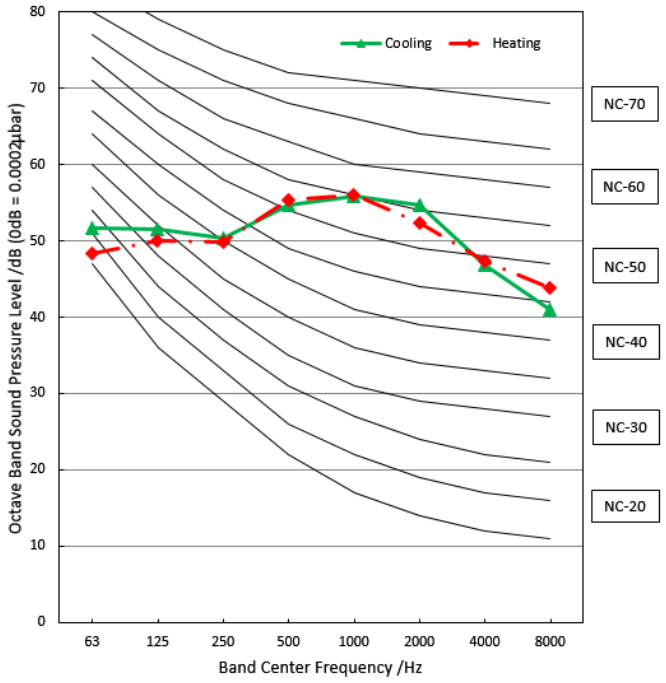
CENTRAL-36-HP-C-230-00



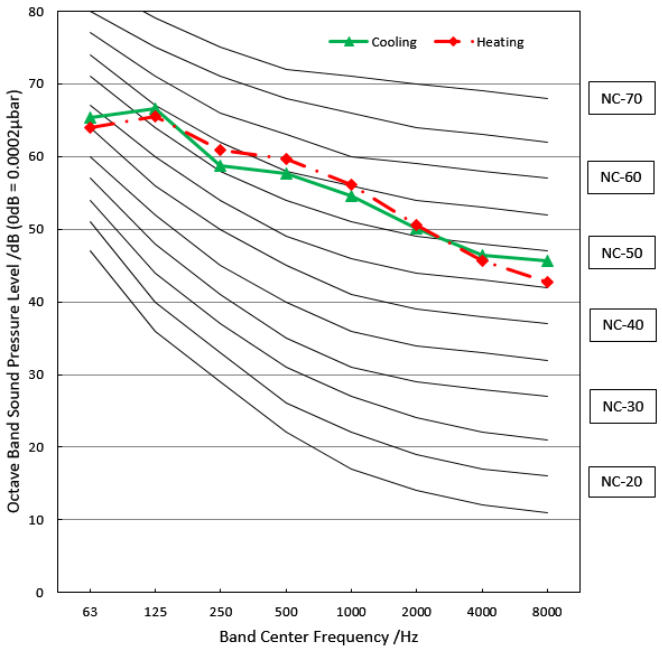
CENTRAL-36-HP-230A00



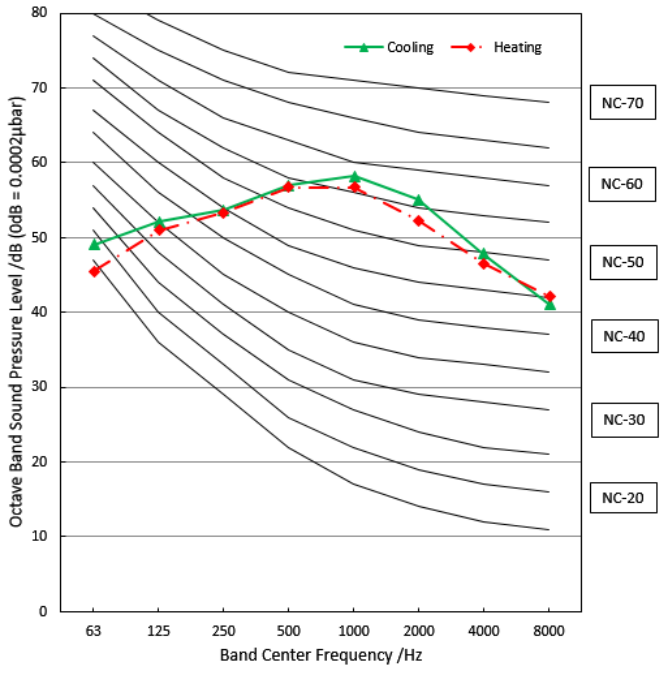
CENTRAL-48-HP-C-230-00



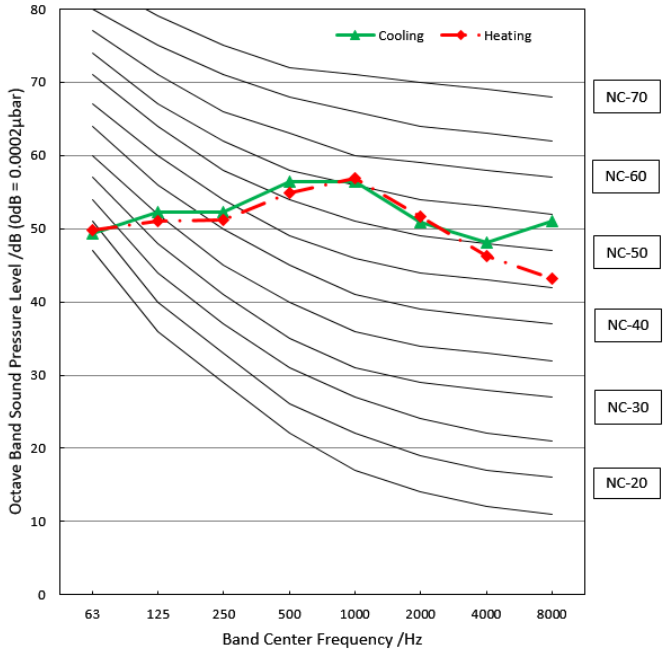
CENTRAL-48-HP-230A00



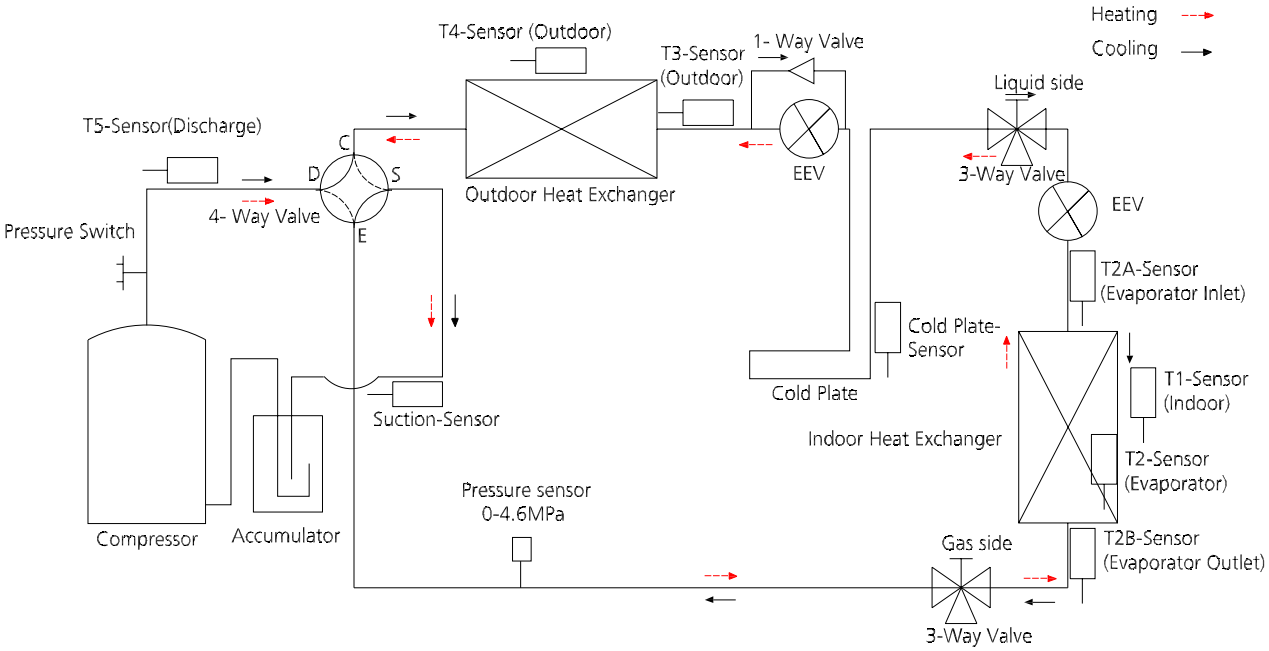
CENTRAL-60-HP-230A00



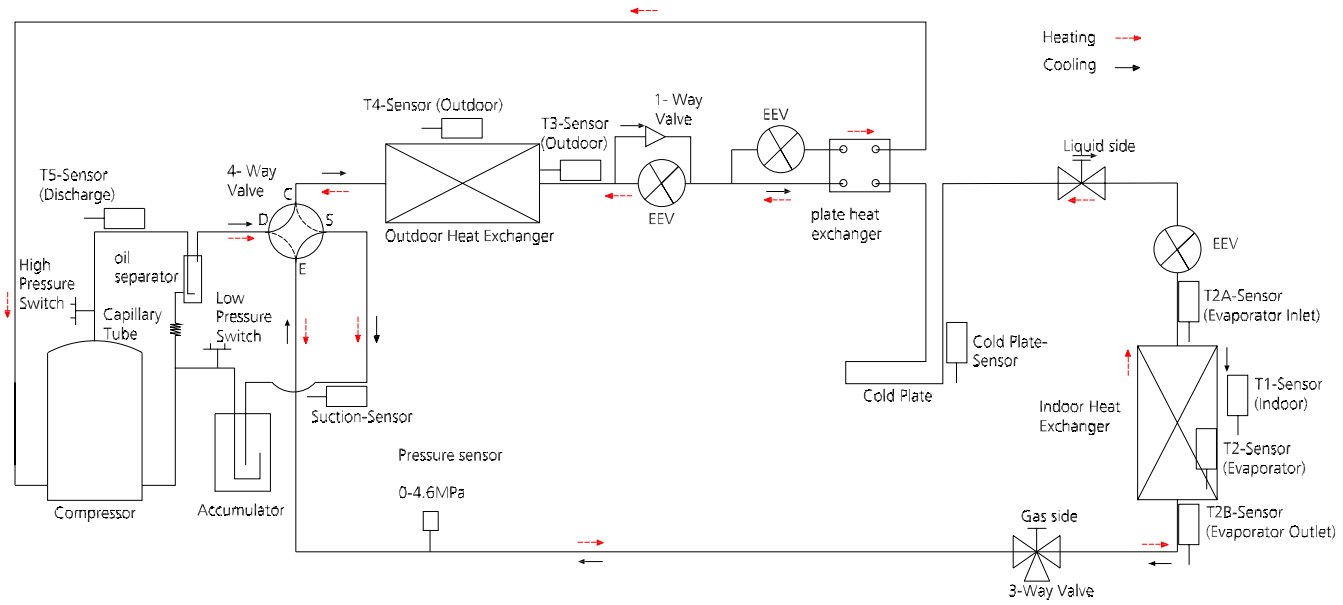
CENTRAL-HP-C-230-00



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.	
CENTRAL-24-HP-C-230-00	19(3/4)	9.52(3/8)	7.5/24.6	50/164	0	25/82	65g/m (0.69oz/ft)
CENTRAL-36-HP-C-230-00	19(3/4)	9.52(3/8)	7.5/24.6	65/213	0	30/98.4	
CENTRAL-48-HP-C-230-00	19(3/4)	9.52(3/8)	7.5/24.6	65/213	0	30/98.4	
CENTRAL-60-HP-C-230-00	22(7/8)	9.52(3/8)	7.5/24.6	65/213	0	30/98.4	



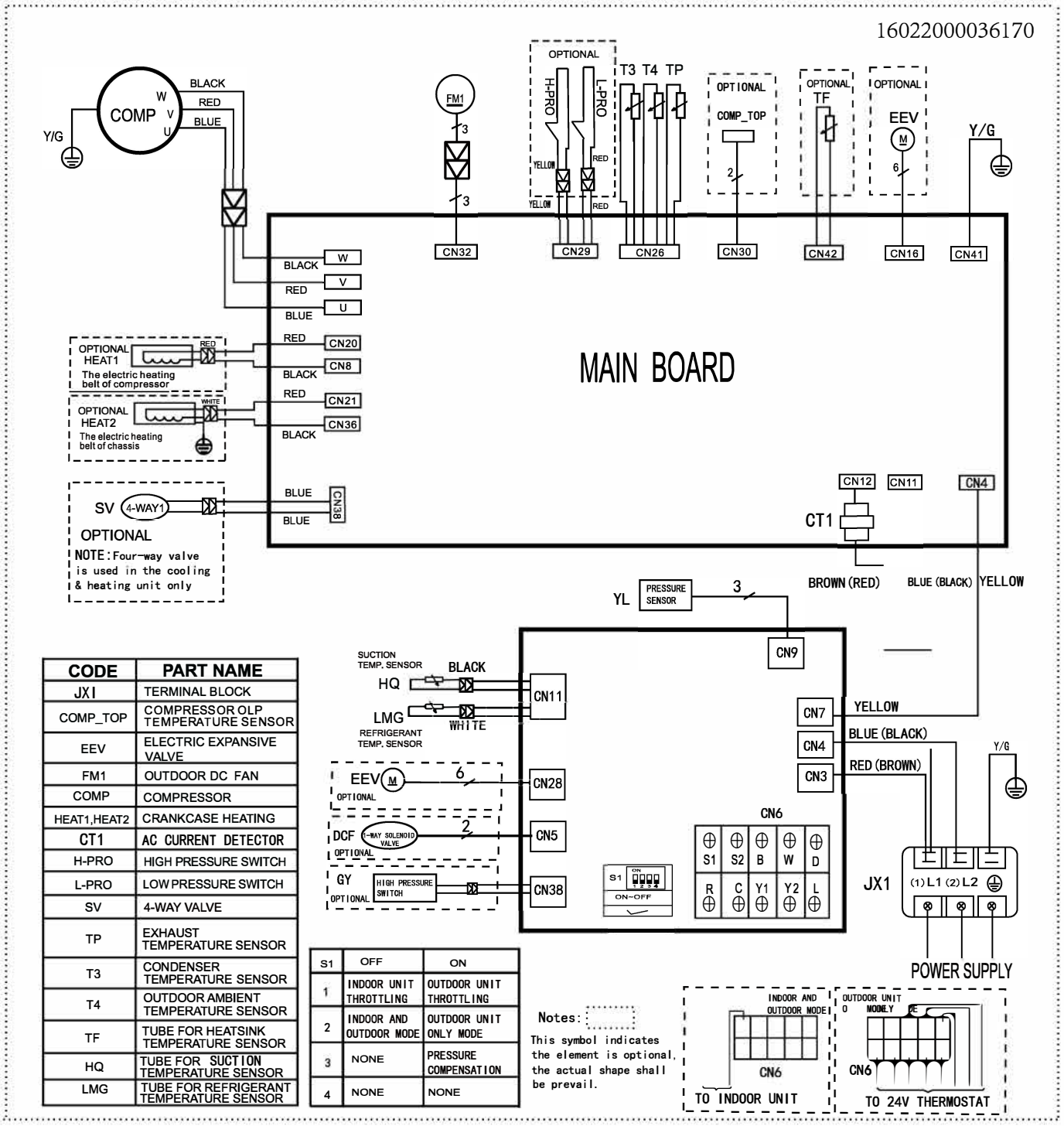
Model No.	Pipe Size (Diameter:ø) mm(inch)		Piping length (m/ft)		Elevation (m/ft)		Additional Refrigerant
	Gas	Liquid	Rated	Max.	Rated	Max.	
CENTRAL-36-HP-230A00	19(3/4)	9.52(3/8)	7.5/24.6	65/213	0	30/98.4	65g/m (0.69oz/ft)
CENTRAL-48-HP-230A00	19(3/4)	9.52(3/8)	7.5/24.6	65/213	0	30/98.4	
CENTRAL-60-HP-230A00	22(7/8)	9.52(3/8)	7.5/24.6	65/213	0	30/98.4	

6. Electrical Wiring Diagrams

ODU Model	ODU Wiring Diagram
CENTRAL-24-HP-C-230-00	16022000036170
CENTRAL-36-HP-C-230-00	
CENTRAL-48-HP-C-230-00	16022000036169
CENTRAL-60-HP-C-230-00	
CENTRAL-36-HP-230A00	16022000036969
CENTRAL-48-HP-230A00	
CENTRAL-60-HP-230A00	

ODU Model	ODU Main Printed Circuit Board	Inverter Module Printed Board	24V Printed Board
CENTRAL-24-HP-C-230-00	17122000047742	/	17122000054047
CENTRAL-36-HP-C-230-00			
CENTRAL-36-HP-230A00	17122000037804	17122000042012	17122000054047
CENTRAL-48-HP-C-230-00			
CENTRAL-60-HP-C-230-00			
CENTRAL-48-HP-230A00			
CENTRAL-60-HP-230A00			

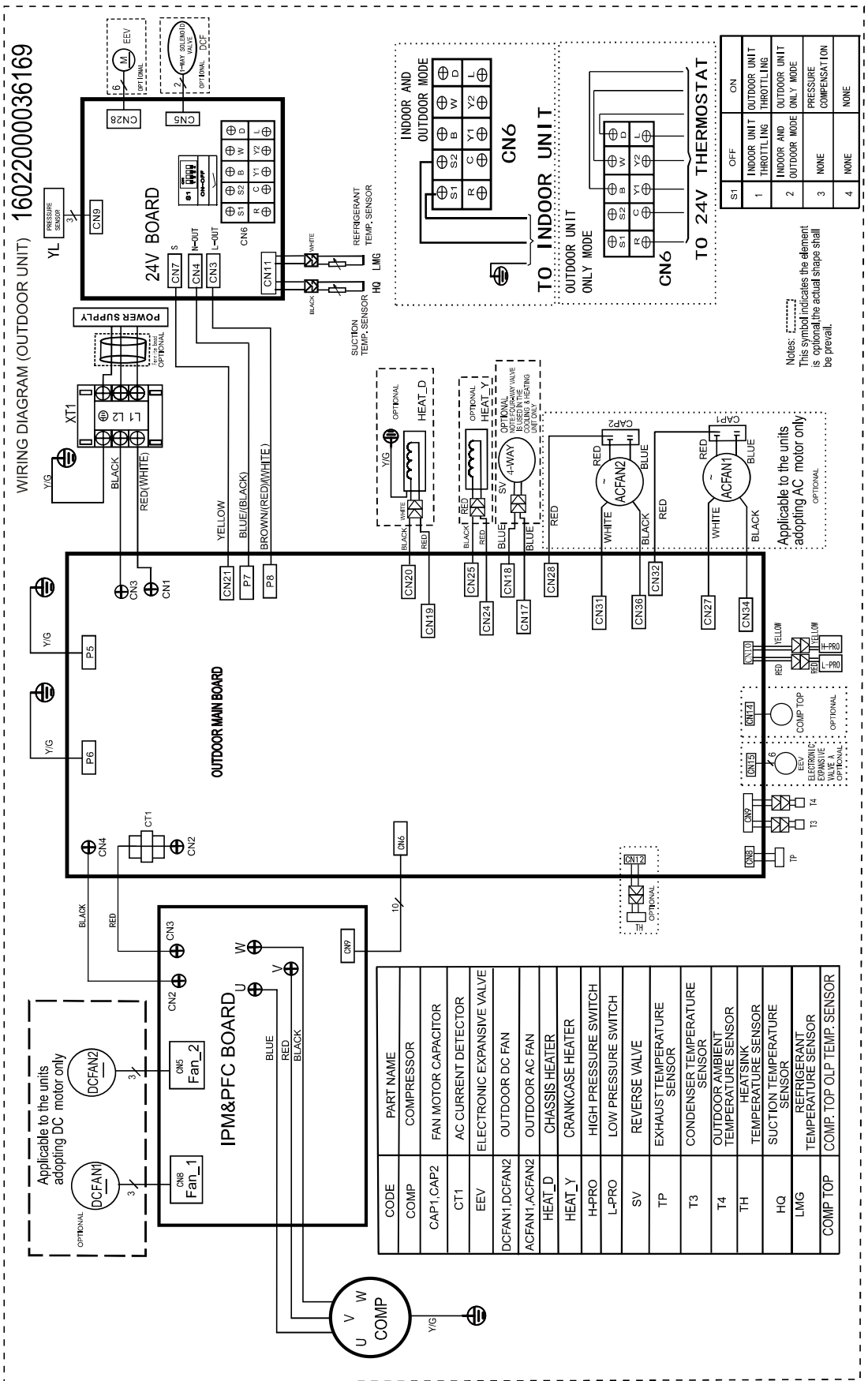
Outdoor unit wiring diagram:16022000036170

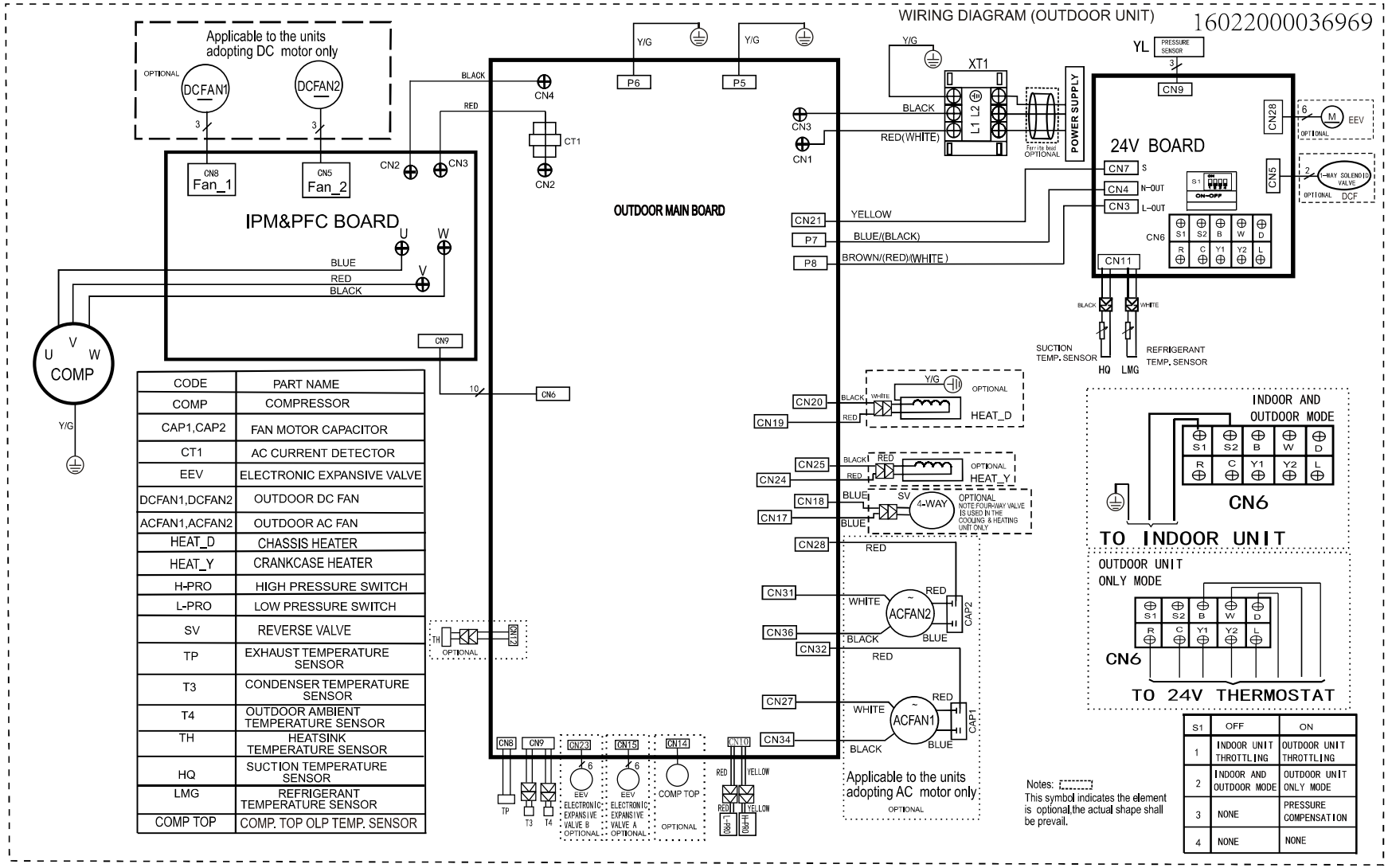


CODE	PART NAME
JXI	TERMINAL BLOCK
COMP_TOP	COMPRESSOR OLP TEMPERATURE SENSOR
EEV	ELECTRIC EXPANSIVE VALVE
FM1	OUTDOOR DC FAN
COMP	COMPRESSOR
HEAT1,HEAT2	CRANKCASE HEATING
CT1	AC CURRENT DETECTOR
H-PRO	HIGH PRESSURE SWITCH
L-PRO	LOW PRESSURE SWITCH
SV	4-WAY VALVE
TP	EXHAUST TEMPERATURE SENSOR
T3	CONDENSER TEMPERATURE SENSOR
T4	OUTDOOR AMBIENT TEMPERATURE SENSOR
TF	TUBE FOR HEATSINK TEMPERATURE SENSOR
HQ	TUBE FOR SUCTION TEMPERATURE SENSOR
LMG	TUBE FOR REFRIGERANT TEMPERATURE SENSOR

S1	OFF	ON
1	INDOOR UNIT THROTTLING	OUTDOOR UNIT THROTTLING
2	INDOOR AND OUTDOOR MODE	OUTDOOR UNIT ONLY MODE
3	NONE	PRESSURE COMPENSATION
4	NONE	NONE

Outdoor unit wiring diagram:16022000036169

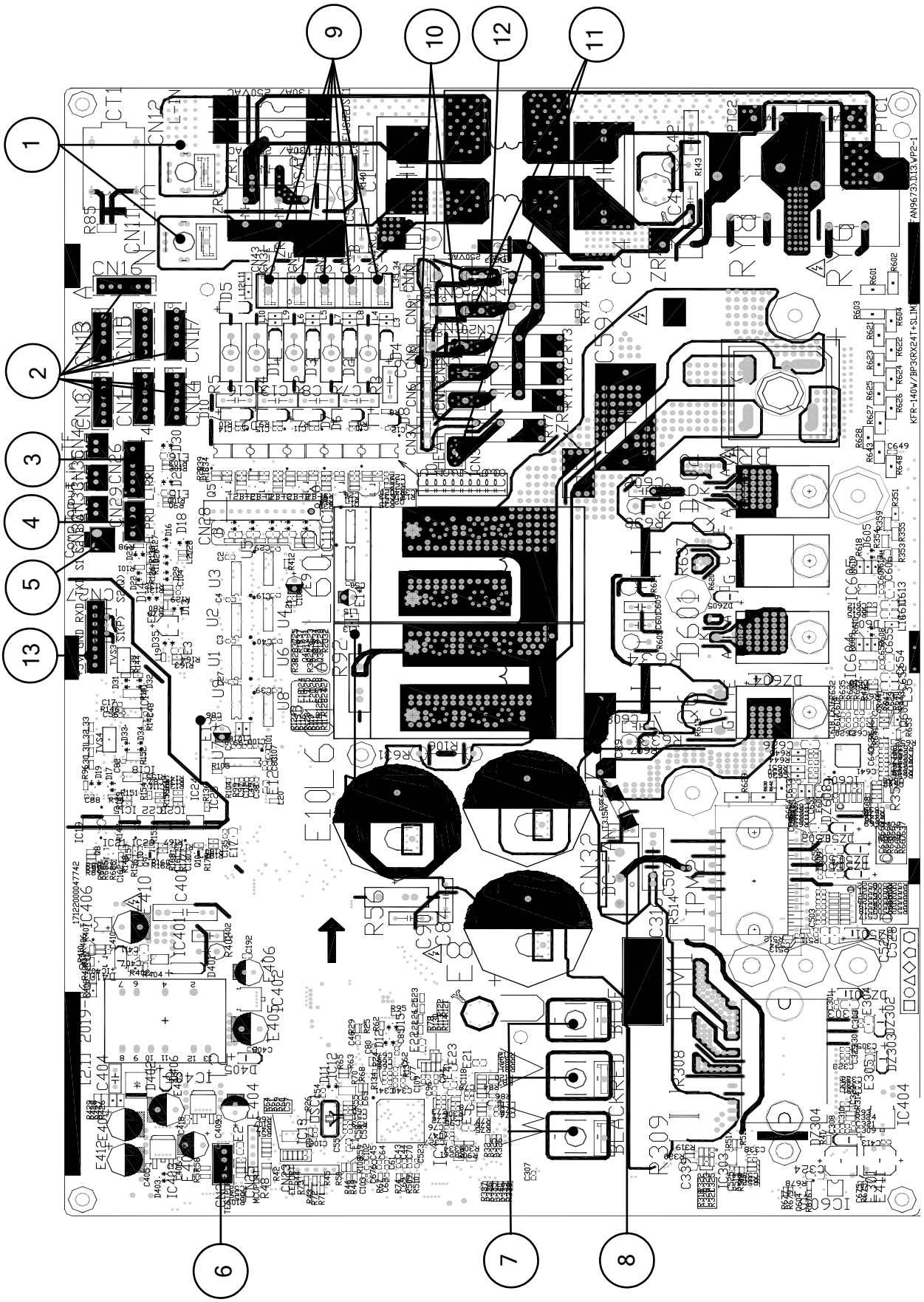




CODE	PART NAME
COMP	COMPRESSOR
CAP1,CAP2	FAN MOTOR CAPACITOR
CT1	AC CURRENT DETECTOR
EEV	ELECTRONIC EXPANSIVE VALVE
DCFAN1,DCFAN2	OUTDOOR DC FAN
ACFAN1,ACFAN2	OUTDOOR AC FAN
HEAT_D	CHASSIS HEATER
HEAT_Y	CRANKCASE HEATER
H-PRO	HIGH PRESSURE SWITCH
L-PRO	LOW PRESSURE SWITCH
SV	REVERSE VALVE
TP	EXHAUST TEMPERATURE SENSOR
T3	CONDENSER TEMPERATURE SENSOR
T4	OUTDOOR AMBIENT TEMPERATURE SENSOR
TH	HEATSINK TEMPERATURE SENSOR
HQ	SUCTION TEMPERATURE SENSOR
LMG	REFRIGERANT TEMPERATURE SENSOR
COMP TOP	COMP. TOP OLP TEMP. SENSOR

S1	OFF	ON
1	INDOOR UNIT THROTTLING	OUTDOOR UNIT THROTTLING
2	INDOOR AND OUTDOOR MODE	OUTDOOR UNIT ONLY MODE
3	NONE	PRESSURE COMPENSATION
4	NONE	NONE

Outdoor unit printed circuit board diagram: 17122000047742

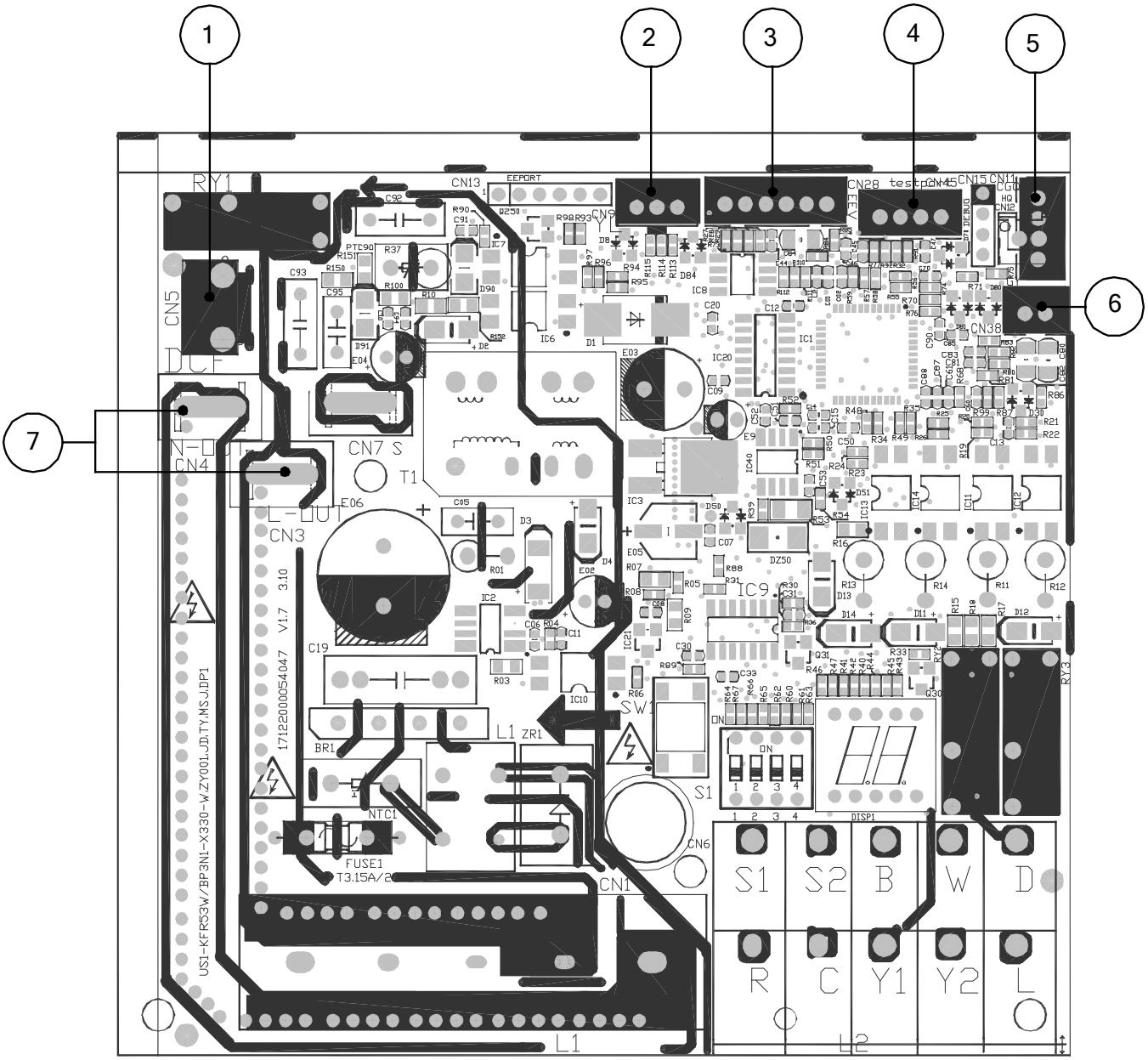


No.	Name	CN#	Meaning
1	Power Supply	CN11	N_in: connect to N-line (208-230V AC input)
		CN12	L_in: connect to L-line (208-230V AC input)
2	EEV-A	CN16	connect to electric expansion valve
	EEV-B	CN13	
	EEV-C	CN3	
	EEV-D	CN15	
	EEV-E	CN1	
	EEV-F	CN17	
	EEV-G	CN14	
3	T3 T4 TP	CN26	connect to pipe temp. sensor T3, ambient temp. sensor T4, exhaust temp. sensor TP
4	H-PRO,L-RPO	CN29	connect to high and low pressure swtich(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.

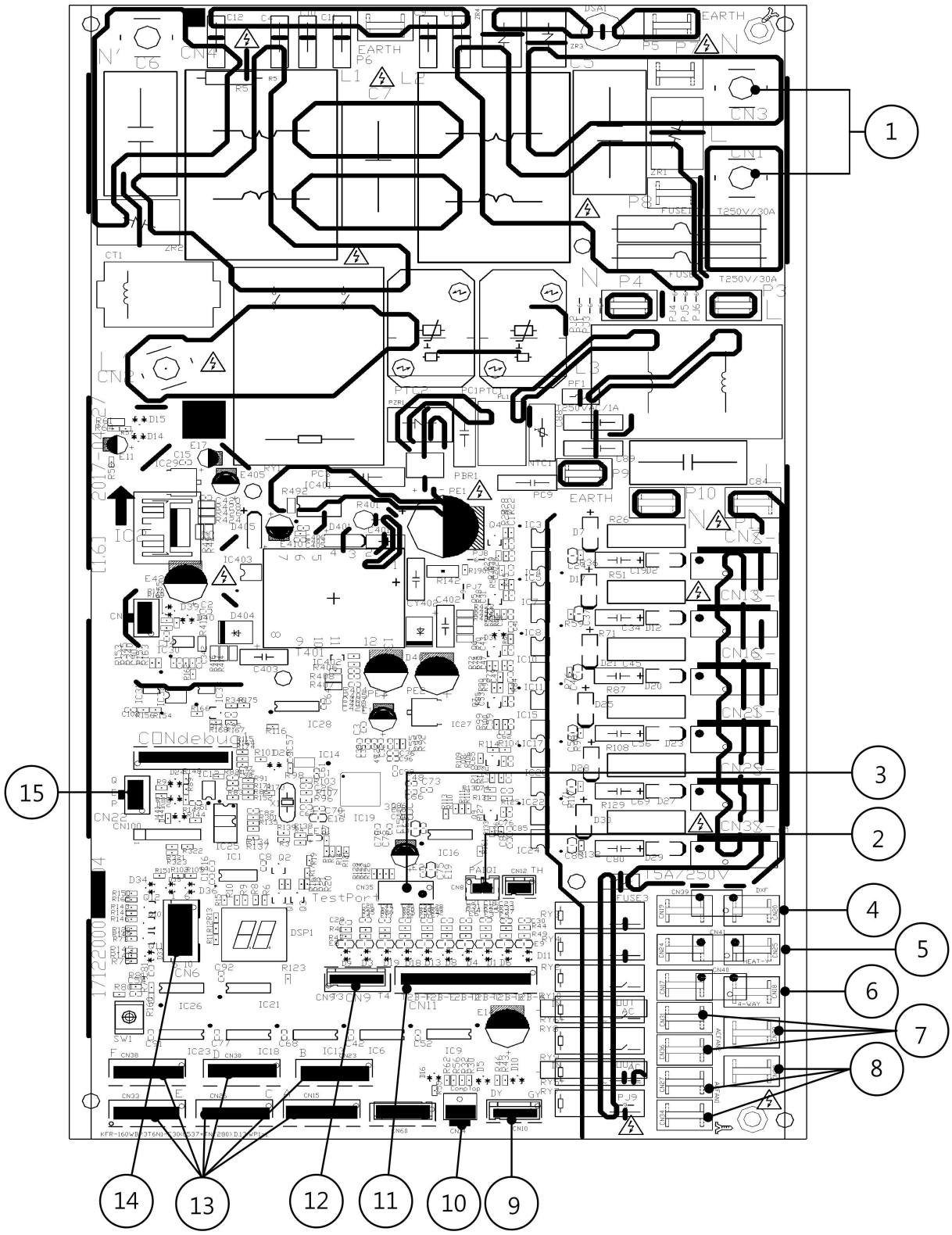
Outdoor unit printed circuit board diagram: 17122000054047



No.	Name	CN#	Meaning
1	/	CN5	connect to one-way solenoid valve
2	/	CN9	connect to pressure sensor (5VDC)
3	/	CN28	connect to electric expansion valve (12VDC)
4	TESTPORT	CN45	used for testing (5VDC)
5	/	CN11	connect to suction temp. sensor, cold plate temp. sensor (5VDC)
6	H-PRO	CN38	connect to high pressure switch (5VDC)
7	Power Supply	CN3	connect to main board L-Out
		CN4	connect to main board N-Out

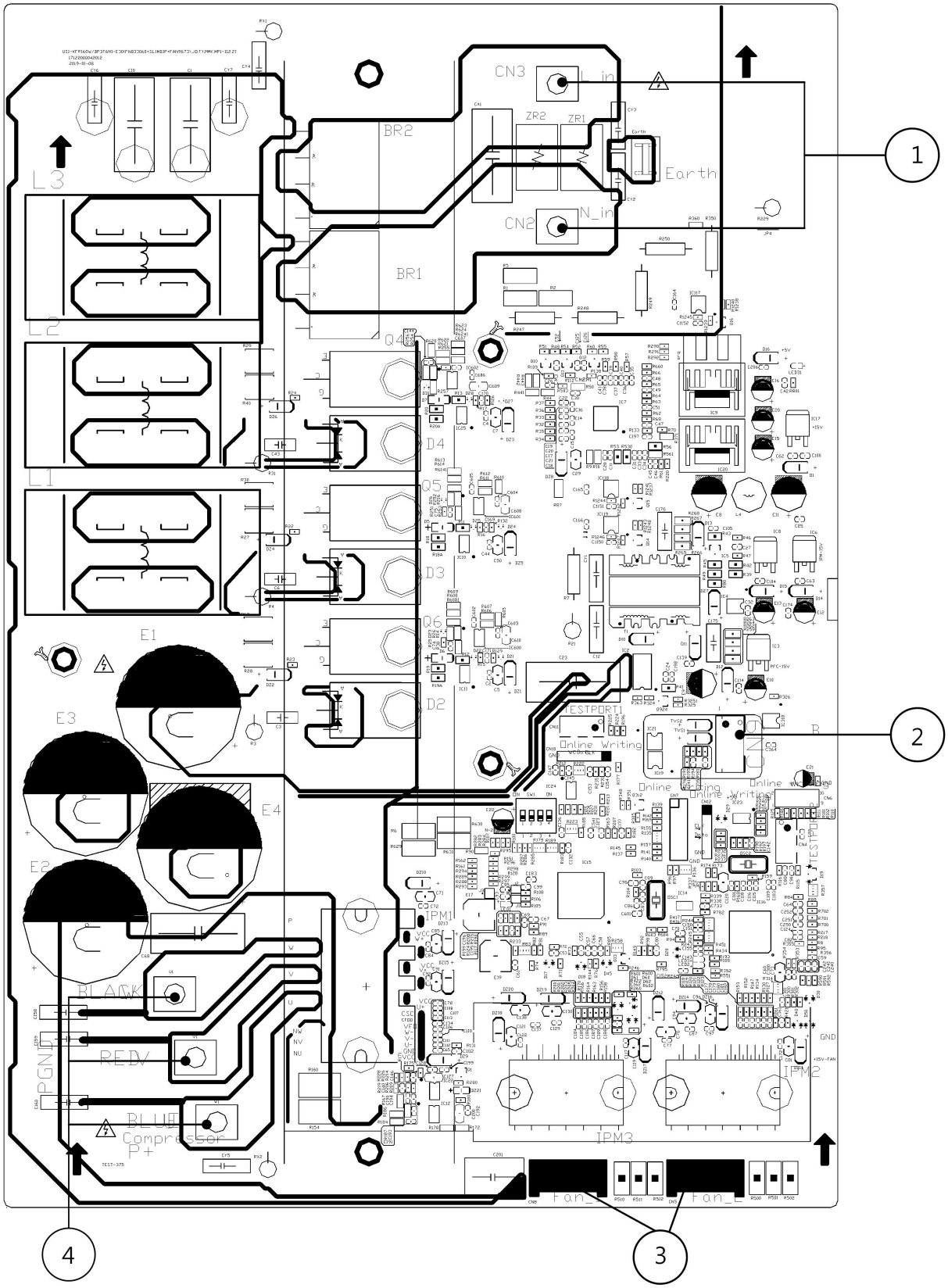
Note: This section is for reference only. Please take practicality as standard.

Outdoor unit printed circuit board diagram: 17122000037804



No.	Name	CN#	Meaning
1	Power Supply	CN1	L1_in: connect to L1-line (230V AC input)
		CN3	L2_in: connect to L2-line (230V AC input)
2	TP	CN8	Exhaust temp. sensor TP
3	TESTPORT	CN35	used for testing
4	HEAT1	CN19/CN20	connect to chassis heater, 208-230V AC when is ON
5	HEAT2	CN24/CN25	connect to compressor heater, 208-230V AC when is ON
6	4-WAY	CN17/CN18	connect to 4 way valve, 208-230V AC when is ON.
7	AC-FAN2	CN31/CN36/CN28	connect to AC fan2
8	AC-FAN1	CN27/CN34/CN32	connect to AC fan1
9	H-PRO/L-PRO	CN10	connect to low&high pressure switch
10	Compressor Top	CN14	connect to compressor top temperature sensor
11	T2B	CN11	connect to pipe temp. sensor T2B
12	T4 T3	CN9	connect to pipe temp. sensor T3, ambient temp. sensor T4
13	PMV	CN15/CN23/CN26/ CN30/CN33/CN38	connect to Electric Expansion Valve(A~F)
14	/	CN6	connect to IPM&PFC board CN9
15	PQE	CN22	Communication to indoor unit

Outdoor unit IPM board diagram: 17122000042012



No.	Name	CN#	Meaning
1	Power Supply	CN3	connect to main board L-Out
		CN2	connect to main board N-Out
2	/	CN9	connect to main board CN6
3	FAN_DC	FAN_1/FAN_2	connect to outdoor DC fan 1& DC fan 2
4	CN_COMP	U1	connect to compressor
		V1	
		W1	

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