

R134a

# ECO COOLER

## AIR COOLED CHILLER

STANDARD MODEL

50Hz

150 kW – 2000 kW

WITH ECONOMIZER

2022

**ECO COOLER**  
AIR CONDITIONER

MULTI STAGE EVAPORATIVE COOLING

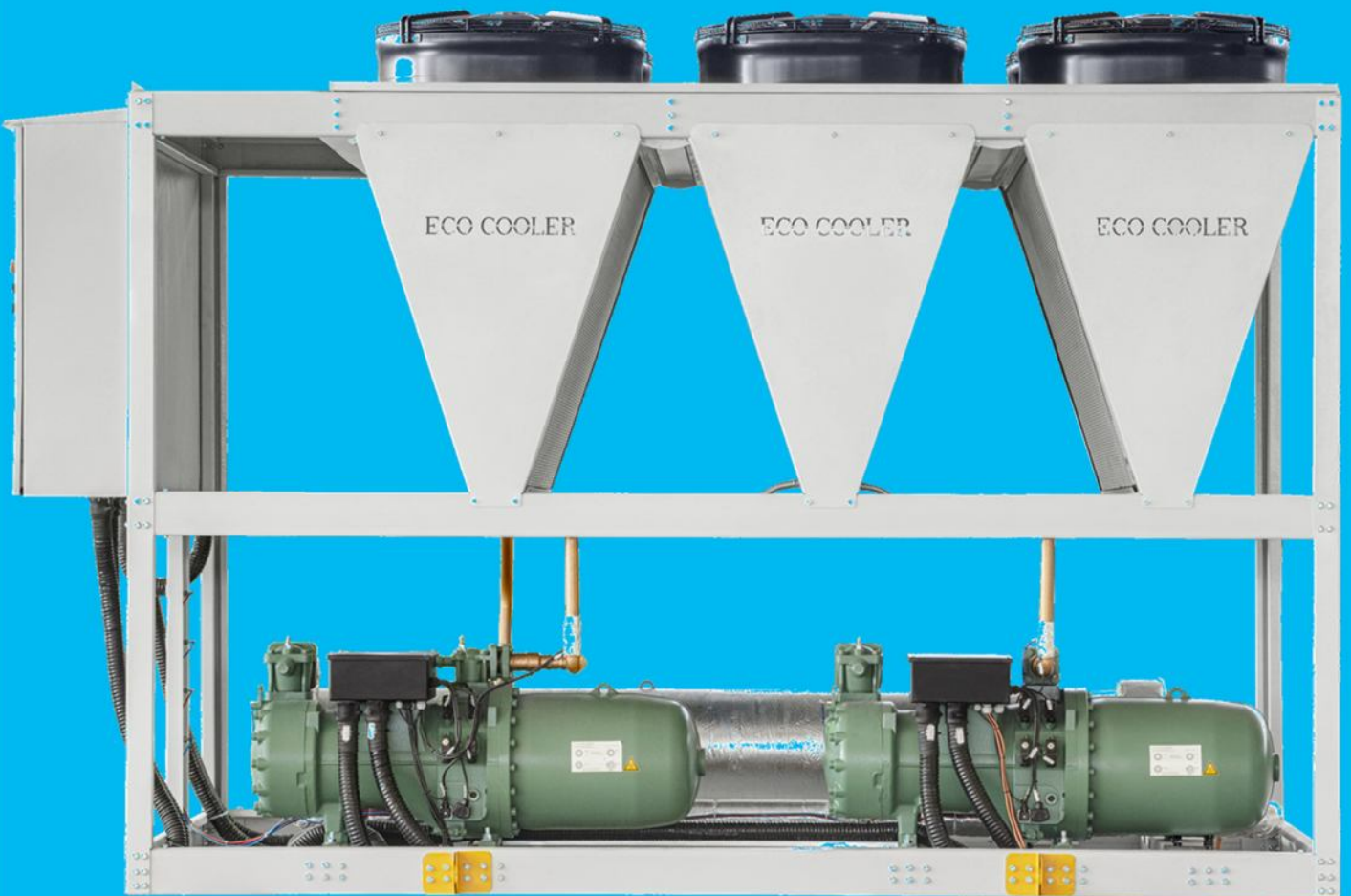




Special Public places  
Commercial, Office, Hospital, Restaurant,  
Coffee shop & Etc .

# ECO COOLER

AIR CONDITIONER





ECO COOLER

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## INTRODUCTION

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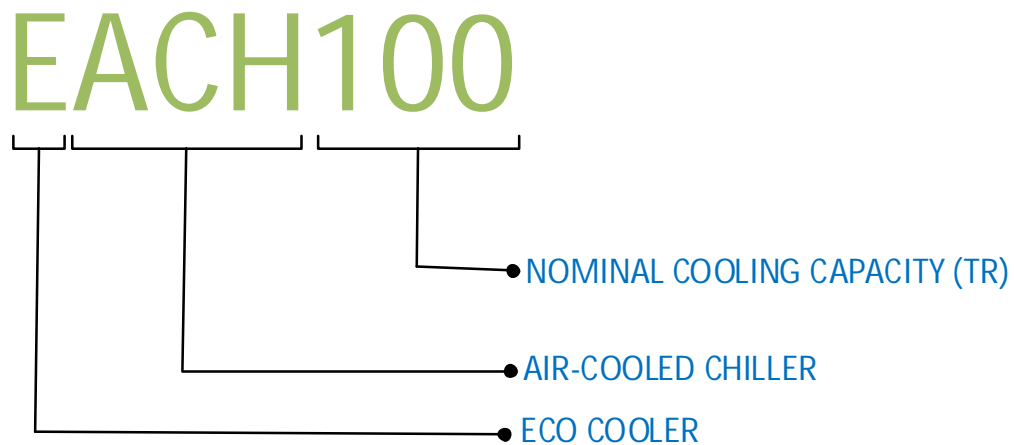
Eco Cooler connection with customer is permanent and does not lead to sell units. Our motto is making the best environment for people to build a better world to live.

Eco Cooler Air cooled water chillers **EACH** series designed to be suitable for all weather conditions, from cold to moderate to hot climates, the various environment, from residential building to industrial sites with polluted environment. Optimum performance, high efficiency, low power consumption, easy installation and low noise operations are the features of the EACH chillers.

**EACH** series cooling capacities are available from 45 TR (158 kW) to 430 TR (1512 kW). Models are in two categories of STANDARD (for cold and moderate climates) and HIGH EFFICIENT (for hot and tropical climates) conditions.

## NOMENCLATURE

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## FEATURES AND BENEFITS

- Optimized energy efficiency both at full and part load conditions
- Low operating sound levels are achieved by the latest compressor and fan design
- Stepped and Stepless screw compressor with professional control system to minimize energy consumption and optimize the unit performance.
- Compact design for minimized installation space and small footprint
- One, two, three or four truly independent refrigerant circuits for outstanding reliability
- Using microchannel technology for condenser with higher corrosion resistance and longer life and 30% refrigerant charge compared to traditional solutions.
- Structure and base in hot-dip galvanized steel with electrostatic powder painting.
- Electrical expansion valve: quickly and precisely adapts to the effective load required.
- Connectable to Building Management Systems (BMS) via MODBUS, BACNet and CANBUS protocols.

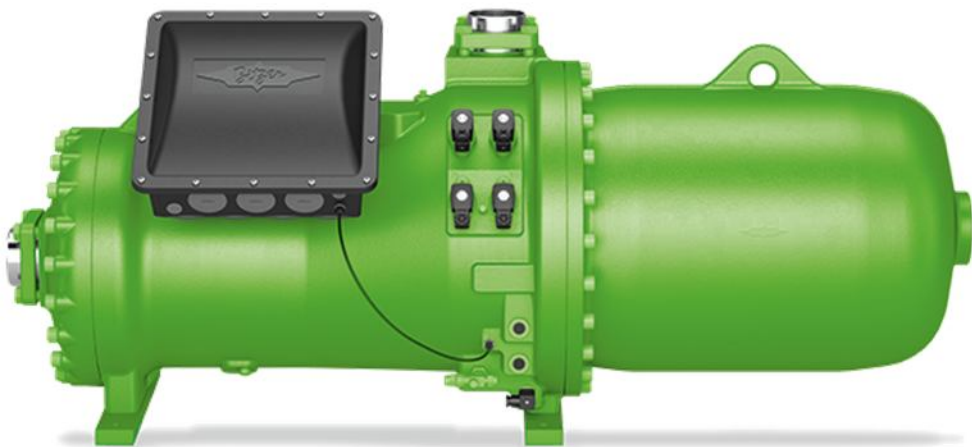




## STANDARD SPECIFICATIONS

### SEMI HERMETIC SCREW COMPRESSOR

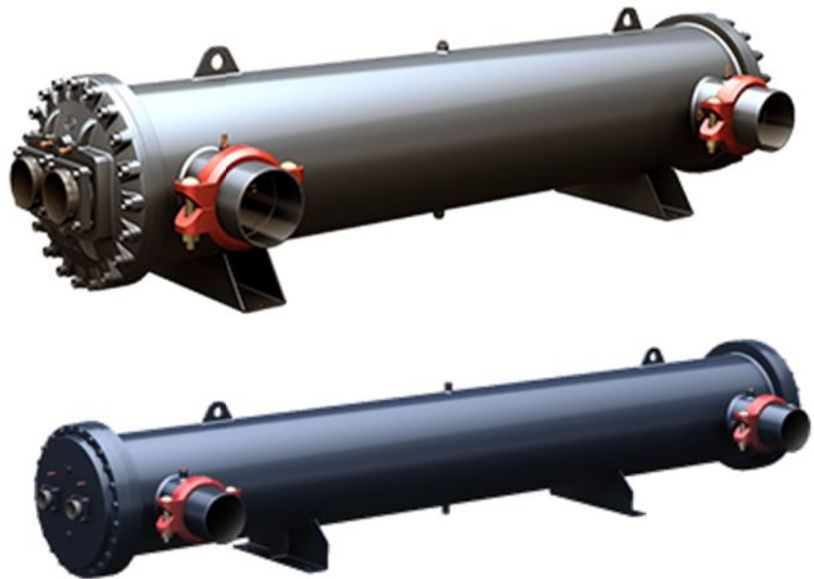
EACH compressors features mechanical capacity control, which enables very good efficiency and simple system integration. It features mechanical capacity control, which enables very good efficiency and simple system integration. Screw Compressors are equipped to solenoid valve for stepped or stepless capacity control, suction and discharge shut-off valve, oil sight glass, check valve in discharge gas outlet, oil fill/drain service valve, directly flanged on three stage oil separator, robust axial bearings in tandem configuration, internal pressure relief valve as a burst protection and manual lock-out electronic protection system for thermal motor winding temperature, phase reversal, discharge gas temperature protection controls.



## STANDARD SPECIFICATIONS

### SHELL AND TUBE EVAPORATOR

The evaporator is a high efficiency DX shell & tube heat exchanger design with inner grooved copper tubes roller expanded into the tube sheet. evaporators are tested with a refrigerant side of 30 bars and a water side of 10 bars. Helium leak test is a standard test for evaporators. A guarantee is offered against coolant leak for up to 2 gr/year. Tests are performed at various pressure levels for multi circuit evaporator and prevention of leakage between circuits is guaranteed. Water connections are grooved pipe. Each shell includes a vent, a drain and fittings for temperature control sensors and is insulated with 3/4 inch equal insulation. Evaporator heaters with thermostat are provided to help protect the evaporator from freezing at ambient temperatures down to -29°C.

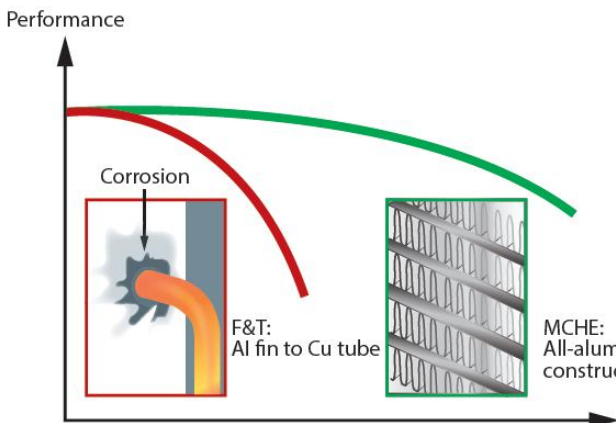
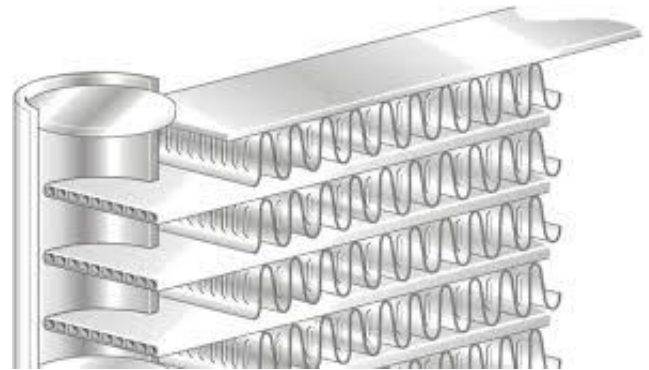
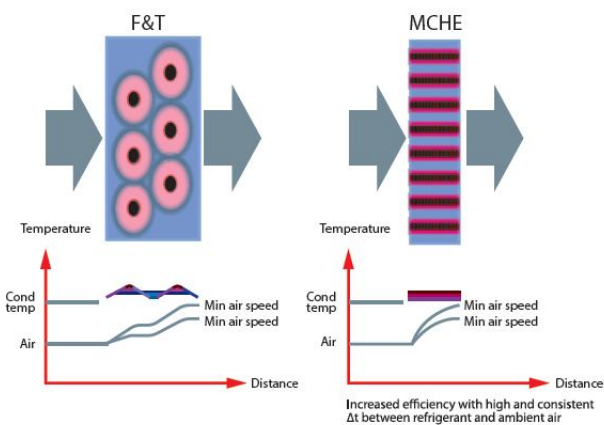


# STANDARD SPECIFICATIONS

## CONDENSERS COIL

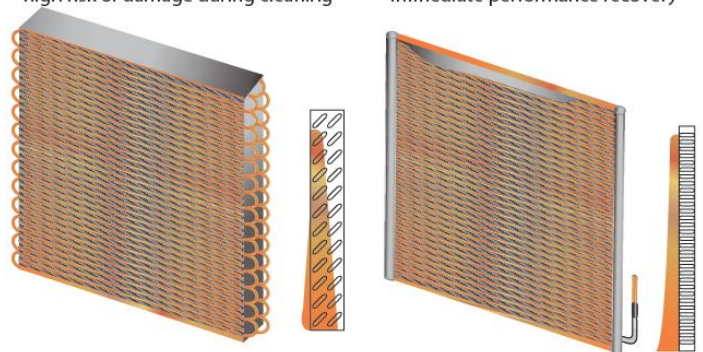
The condenser coils are built up microchannel technology. Integral NOCOLOK brazing low contact resistance improve the heat transfer performance perfectly. AL-AL structure without electric potential difference makes high corrosion resistance. The advantages of microchannel condensers over finned-tube coil are:

- Smaller diameter, more tube holes and larger internal surface intensify unit capacity as per volume.
- Small cross sectional area makes low air flow resistance, small eddy area and low noise.
- Parallel arrangement of flat tubes enlarge refrigerant circulation area.
- Adjusting the position and quantity of baffles to adapt to refrigerant phase transition and optimize heat transfer and pressure drop.
- The structure effectively breaks air thermal boundary layer, reducing heat exchanging resistance.
- Waving path makes the contacts longer to intensify heat exchanging.



F&T  
dust removal difficult - heat transfer loss  
high risk of damage during cleaning

MCHE  
dust removal easy  
immediate performance recovery



## STANDARD SPECIFICATIONS

### CONDENSER FAN

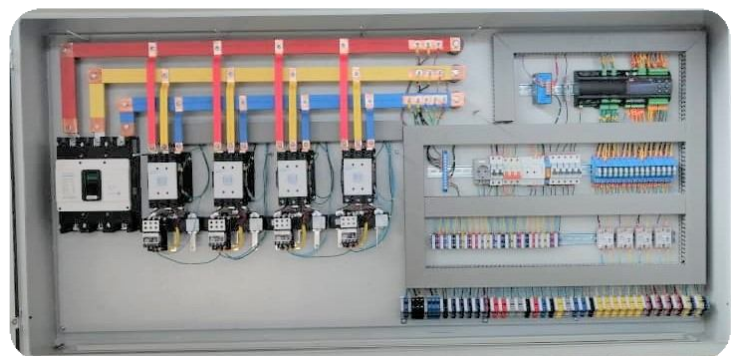
Direct drive vertical discharge condenser fans are dynamically balanced. Totally enclosed air over motors completely seal the motor windings to prevent exposure to ambient conditions. Three-phase condenser fan motors with permanently lubricated ball bearings and internal thermal overload protection are provided. Improved acoustic performance due to an optimized blade-design external rotor motors comply with protection class IP54. The winding insulation corresponds to insulation class F. Through the use of deep groove ball bearings, closed on both sides, with specially paired grease lubricant, maintenance-free and low-noise operation is guaranteed.



### CONTROL PANEL

Chillers are equipped with a latest version of controller designed to ensure energy saving and unit efficiency. Available functions :

- Monitoring operating parameters including water inlet and outlet temperature, suction and discharge temperature, suction and discharge pressure
- Protecting the system from frosting water
- Stepped or stepless Capacity control
- Controlling Fan start/stop with pressure
- Adjusting Fan speed through controlling inverter (as per request)
- Connection to building Management System (BMS) via MODBUS protocol
- keeping all the faults in the alarm history
- Compressors hour equalization



## STANDARD SPECIFICATIONS

### REFRIGERATION PIPE LINE

- INDEPENDENT REFRIGERATION CIRCUIT PER COMPRESSOR
- ELECTRONIC EXPANSION VALVE: Used to regulate the refrigerant flow to the evaporator and maintain a constant superheat and provide capacity required.
- LIQUID LINE REPLACEABLE CORE TYPE FILTER DRIER: Refrigerant circuits are kept free of harmful moisture, sludge, acids and oil contaminating particles by the filter drier.



- LIQUID LINE MOISTURE INDICATOR SIGHT GLASS: Installed in the liquid line. An easy-to-read color indicator shows moisture contents and provides a mean for checking the system refrigerant charge.
- LIQUID, DISCHARGE AND SUCTION LINES SHUT OFF VALVE
- DISCHARGE, SUCTION AND LIQUID LINE PIPES: All pipelines are sized to minimize pressure drop and keep proper velocity ensuring oil return.
- LIQUID INJECTION KIT: For cooling the compressor in high compressor discharge temperature.

## STANDARD SPECIFICATIONS

### ELECTRICAL PANEL

- COMPRESSOR PART WINDING START
- COMPRESSOR IN-BUILT PROTECTION DEVICE
- STARTER: The starter is operated by the control circuit and provides power to the compressor motors. These devices are rated to handle safely both RLA and LRA of motors.
- CRANKCASE HEATERS: Each compressor has immersion type crankcase heater. The compressor crankcase heater is always on when the compressors are de-energized. This protects the system against refrigerant Migration, oil dilution and potential compressor failure.
- HIGH PRESSURE SWITCH: This switch provides an additional safety protection in case of excessive discharge pressure.
- LOW PRESSURE SWITCH: This switch provides an additional safety protection in case of very low suction pressure to avoid water freezing.
- UNIT ON-OFF SWITCH: On Off Switch is provided for manually switching the unit control circuit.
- INDICATOR LIGHTS: LED lights indicates power ON to the units, MENU adjustment and FAULT indications due to trip on safety devices.
- UNDER VOLTAGE AND PHASE PROTECTION: This feature protects the chiller against low incoming voltage as well as single phasing , phase reversal and phase imbalance by de-energizing the control circuit.
- FAN MOTOR CIRCUIT BREAKER: For each pair of condenser fan motor.
- COMPRESSOR CIRCUIT BREAKERS: Protects compressor against overload and short circuit. When tripped, the breaker opens the power supply to the compressor and control circuit through auxiliary contacts. These circuit breakers are provided with thermal adjustable switch for precise overload setting.
- EXTERNAL OVERLOAD RELAY FOR EACH COMPRESSOR
- CONTROL FUSED FOR SHORT CIRCUIT PROTECTION

## OPTIONAL FEATURES



- **WATER FLOW SWITCH:** Paddle type field adjustable flow switch for water cooler circuits, Interlock into safety circuits so that the unit will remain off unit water flow is determine.
- **UNIT MOUNTING SPRING ISOLATORS:** This housed spring assemblies have a neoprene friction pad on the bottom to prevent vibration transmission.
- **COMPRESSOR SILENCER BOX:** reduces the compressor operating noise and keeps the compressor clean.
- **COPPER FINS/TUBES CONDENSER COILS:** For seashore salty corrosive environments.
- **PRE-COATED ALUMINUM FINS CONDENSER COILS (MHG):** For seashore or acid corrosive environments.
- **BUILDING MANAGEMENT SYSTEM (BMS):** MODBUS, BACNET, and CANBUS protocol
- **NON-FUSED MAIN DISCONNECT SWITCHES:** De-energize power supply during servicing/repair works as well as with door interlock.
- **EVAORATOR HEATER TAPE:** Prevent freezing up of water on low ambient.
- **GROUND CURRENT PROTECTION:** Additional protection for compressor in the case of abnormal current leakage.

# TECHNICAL DATA

UNIT MODEL (EACH)		45	50	55	60	70	80	90	100	115	130	140	150
COOLING CAPACITY*	RT	46.5	54.6	54.6	60.0	77.1	79.4	92.9	109.7	116.6	135.7	135.7	152.9
	kW	162.6	191.1	191.1	210.0	270.0	278.0	325.0	384.0	408.0	475.0	475.0	535.0
POWER INPUT (kW)		45.2	50.0	50.0	56.7	71.3	70.4	90.3	100.1	112.5	123.2	123.2	142.0
TOTAL EER (W/W)		3.2	3.3	3.3	3.3	3.3	3.4	3.2	3.3	3.2	3.3	3.3	3.3
COMPRESSOR		Semi Hermetic Compact Screw											
QUANTITY (No.)		1						2					
OIL GRADE		BSE170 Or Equivalent											
OIL CHARGE PER COMPRESSOR (Liter)		14	14	14	21	21	14	14	14	21	21	21	21
CAPACITY CONTROL (%) (STEPPED)		100-25											
CONDENSER TYPE		MICRO CHANNEL											
CONDENSER QTY (No.)		6	8	8	8	10	12	12	8	8	10	10	10
TOTAL FACE AREA (m <sup>2</sup> )		6	8	8	8	10	12	12	16	16	20	20	20
CONDENSER FAN		Propeller Direct Driven , 800mm dia , 920 rpm											
FAN QTY (No.)		3	4	4	4	5	6	6	8	8	10	10	10
AIR FLOW RATE (m <sup>3</sup> /h)		67500	90000	90000	90000	112500	135000	135000	180000	180000	225000	225000	225000
MOTOR POWER FAN (kW)		5.7	7.6	7.6	7.6	9.5	11.4	11.4	15.2	15.2	19	19	19
EVAPORATOR		Direct Expansion Shell & Tube											
EVAPORATOR QTY (No.)		1											
WATER FLOW RATE (m <sup>3</sup> /h)		25.3	29.7	29.7	32.7	42.0	43.3	50.6	59.8	63.5	73.9	73.9	83.3
WATER VOLUME PER COOLER (Liter)		128	172	172	172	167	167	167	167	166	160	160	270
WATER CONNECTION SIZE (IN /OUT) DIAMETER (mm)		125	150	150	150	150	150	150	150	150	150	150	150
EXPANSION VALVE		Electronic											
POWER REQUIREMENT		400V/3PH/50Hz											
ECONOMIZER EXPANSION DEVICE		Mechanical											
ECONOMIZER		Braze Plate Heat Exchanger											
ECONOMIZER LOAD (kW)		17.5	21.8	21.8	29.4	30.1	27.7	35.1	43.5	58.7	56.2	56.2	60.3
REFRIGERATION CIRCUITS (No.)		1						2					
APPROXIMATE WEIGHT (kg)		1258	1533	1538	1843	2013	2338	2348	2540	3170	3435	3435	3625
DIMENSION	HEIGHT (m)	2.59	2.59	2.59	2.59	2.59	2.59	2.59	2.59	2.59	2.59	2.59	2.59
	WIDTH (m)	1.27	1.27	1.27	1.27	1.27	1.27	1.27	2.27	2.27	2.27	2.27	2.27
	LENGTH (m)	2.91	3.88	3.88	3.88	4.85	5.82	5.82	3.88	3.88	4.85	4.85	4.85

\*Capacity rating are based on Standard ARI-550/590 conditions of: 35 °C (95 °F) ambient/ 7 °C (44.6 °F) Leaving Chilled Water Temperature / 5 °C (9 °F) Inlet-Outlet Water Temperature Difference/ 0.018 m<sup>2</sup>.°C/kW (0.0001 ft<sup>2</sup>. h.°F /Btu) Fouling Factor



# TECHNICAL DATA

UNIT MODEL (EACH)		160	170	180	190	200	220	230	240	250	260	270	280
COOLING CAPACITY*	RT	152.9	172.9	172.9	194.3	194.3	230.0	230.0	230.0	265.4	265.4	265.4	303.1
	kW	535.0	605.0	605.0	680.0	680.0	805.0	805.0	805.0	929.0	929.0	929.0	1061.0
POWER INPUT (kW)		142.0	158.9	158.9	176.6	176.6	211.0	211.0	211.0	234.0	234.0	234.0	275.0
TOTAL EER (W/W)		3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.5	3.5	3.5	3.4
COMPRESSOR		Semi Hermetic Compact Screw											
QUANTITY (No.)		2											
OIL GRADE		BSE170 Or Equivalent											
OIL CHARGE PER COMPRESSOR (Liter)		18	18	18	18	18	29	29	29	29	29	29	29
CAPACITY CONTROL (%) (STEPPED)		100-25											
CONDENSER TYPE		MICRO CHANNEL											
CONDENSER QTY (No.)		10	12	12	14	14	16	16	16	18	18	18	20
TOTAL FACE AREA (m <sup>2</sup> )		20	24	24	28	28	32	32	32	36	36	36	40
CONDENSER FAN		Propeller Direct Driven , 800mm dia , 920 rpm											
FAN QTY (No.)		10	12	12	14	14	16	16	16	18	18	18	20
AIR FLOW RATE (m <sup>3</sup> /h)		225000	270000	270000	315000	315000	360000	360000	360000	405000	405000	405000	450000
MOTOR POWER FAN (kW)		19	22.8	22.8	26.6	26.6	30.4	30.4	30.4	34.2	34.2	34.2	38
EVAPORATOR		Direct Expansion Shell & Tube											
EVAPORATOR QTY (No.)		1											
WATER FLOW RATE (m <sup>3</sup> /h)		83.3	94.2	94.2	105.8	105.8	125.3	125.3	125.3	144.6	144.6	144.6	165.2
WATER VOLUME PER COOLER (Liter)		270	260	260	252	252	470	470	470	455	455	455	433
WATER CONNECTION SIZE (IN /OUT) DIAMETER (mm)		150	150	150	150	150	200	200	200	200	200	200	200
EXPANSION VALVE		Electrical											
POWER REQUIREMENT		400V/3PH/50Hz											
ECONOMIZER EXPANSION DEVICE		Mechanical											
ECONOMIZER		Braze Plate Heat Exchanger											
ECONOMIZER LOAD (kW)		60.3	69.9	69.9	67.7	67.7	88.8	88.8	88.8	89.6	89.6	89.6	107.1
REFRIGERATION CIRCUITS (No.)		2											
APPROXIMATE WEIGHT (kg)		3657	3909	3909	4193	4193	5518	5518	5518	5812	5812	5812	6226
DIMENSION	HEIGHT (m)	2.59	2.59	2.59	2.59	2.59	2.59	2.59	2.59	2.59	2.59	2.59	2.59
	WIDTH (m)	2.27	2.27	2.27	2.27	2.27	2.27	2.27	2.27	2.27	2.27	2.27	2.27
	LENGTH (m)	4.85	5.82	5.82	6.79	6.79	7.76	7.76	7.76	8.73	8.73	8.73	9.7

\*Capacity rating are based on Standard ARI-550/590 conditions of: 35 °C (95 °F) ambient / 7 °C (44.6 °F) Leaving Chilled Water Temperature / 5 °C (9 °F) Inlet-Outlet Water Temperature Difference/ 0.018 m<sup>2</sup>.°C/kW (0.0001 ft<sup>2</sup>. h.°F /Btu) Fouling Factor

# TECHNICAL DATA

UNIT MODEL (EACH)		300	320	330	340	350	360	380	400	420	430	440	450
COOLING CAPACITY*	RT	303.1	344.0	344.0	344.0	344.0	370.3	370.3	400.9	460.0	460.0	460.0	460.0
	kW	1061.0	1204.0	1204.0	1204.0	1204.0	1296.0	1296.0	1403.0	1610.0	1610.0	1610.0	1610.0
POWER INPUT (kW)		275.0	301.0	301.0	301.0	301.0	347.0	347.0	369.0	422.0	422.0	422.0	422.0
TOTAL EER (W/W)		3.4	3.5	3.5	3.5	3.5	3.3	3.3	3.3	3.3	3.3	3.3	3.3
COMPRESSOR		Semi Hermetic Compact Screw											
QUANTITY (No.)		2						4					
OIL GRADE		BSE170 Or Equivalent											
OIL CHARGE PER COMPRESSOR (Liter)		29	29	29	29	29	31	31	31	29	29	29	29
CAPACITY CONTROL (%) (STEPPED)		100-25											
CONDENSER TYPE		MICRO CHANNEL											
CONDENSER QTY (No.)		20	24	24	24	24	26	26	28	32	32	32	32
TOTAL FACE AREA (m <sup>2</sup> )		40	48	48	48	48	52	52	56	64	64	64	64
CONDENSER FAN		Propeller Direct Driven , 800mm dia , 920 rpm											
FAN QTY (No.)		20	24	24	24	24	26	26	28	32	32	32	32
AIR FLOW RATE (m <sup>3</sup> /h)		450000	540000	540000	540000	540000	585000	585000	630000	720000	720000	720000	720000
MOTOR POWER FAN (kW)		38	45.6	45.6	45.6	45.6	49.4	49.4	53.2	60.8	60.8	60.8	60.8
EVAPORATOR		Direct Expansion Shell & Tube											
EVAPORATOR QTY (No.)		1	1	1	1	1	1	1	1	2	2	2	2
WATER FLOW RATE (m <sup>3</sup> /h)		165.2	187.4	187.4	187.4	187.4	201.7	201.7	218.4	250.6	250.6	250.6	250.6
WATER VOLUME PER COOLER (Liter)		433	440	440	440	440	590	590	550	470	470	470	470
WATER CONNECTION SIZE (IN/OUT) DIAMETER (mm)		200	200	200	200	200	250	250	250	200	200	200	200
EXPANSION VALVE		Electrical											
POWER REQUIREMENT		400V/3PH/50Hz											
ECONOMIZER EXPANSION DEVICE		Mechanical											
ECONOMIZER		Braze Plate Heat Exchanger											
ECONOMIZER LOAD (kW)		107	100	100	100	100	115	115	110	178	178	178	178
REFRIGERATION CIRCUITS (No.)		2						4					
APPROXIMATE WEIGHT (kg)		6226	6825	6825	6825	6825	7440	7440	7844	10973	10973	10973	10973
DIMENSION	HEIGHT (m)	2.59	2.59	2.59	2.59	2.59	2.59	2.59	2.59	2.59	2.59	2.59	2.59
	WIDTH (m)	2.27	2.27	2.27	2.27	2.27	2.27	2.27	2.27	2.27	2.27	2.27	2.27
	LENGTH (m)	9.7	11.64	11.64	11.64	11.64	12.61	12.61	13.58	15.52	15.52	15.52	15.52

\*Capacity rating are based on Standard ARI-550/590 conditions of: 35 °C (95 °F) ambient/ 7 °C (44.6 °F) Leaving Chilled Water Temperature / 5 °C (9 °F) Inlet-Outlet Water Temperature Difference/ 0.018 m<sup>2</sup>.°C/kW (0.0001 ft<sup>2</sup>. h.°F /Btu) Fouling Factor

## PERFORMANCE DATA TABLES

LEAVING CHILLED WATER TEMP. (LCWT)	UNIT SIZE	30°C (86°F) AMBIENT TEMPERATURE				
		COOLING CAPACITY		COMP. POWER (kW)	Total EER (W/W)	WATER FLOW (m <sup>3</sup> /h)
		RT	kW			
7°C	EACH-45	48.4	169.3	40.4	3.7	26.4
	EACH-50	56.5	197.9	44.9	3.8	30.8
	EACH-55	56.5	197.9	44.9	3.8	30.8
	EACH-60	62	217	50.6	3.7	33.8
	EACH-70	80	280	63.5	3.8	43.6
	EACH-80	82.3	288	63.3	3.9	44.8
	EACH-90	96.9	339	80.8	3.7	52.8
	EACH-100	113.4	397	89.9	3.8	61.8
	EACH-115	120.3	421	100.4	3.6	65.5
	EACH-130	140	490	110.1	3.8	76.3
	EACH-140	140	490	110.1	3.8	76.3
	EACH-150	158.6	555	126.6	3.8	86.4
	EACH-160	158.6	555	126.6	3.8	86.4
	EACH-170	179.1	627	142.3	3.8	97.6
	EACH-180	179.1	627	142.3	3.8	97.6
	EACH-190	201.4	705	157.8	3.8	109.7
	EACH-200	201.4	705	157.8	3.8	109.7
	EACH-220	238.6	835	188.9	3.8	130
	EACH-230	238.6	835	188.9	3.8	130
	EACH-240	238.6	835	188.9	3.8	130
	EACH-250	274.9	962	212	3.9	149.7
	EACH-260	274.9	962	212	3.9	149.7
	EACH-270	274.9	962	212	3.9	149.7
	EACH-280	314	1099	247	3.9	171.1
	EACH-300	314	1099	247	3.9	171.1
	EACH-320	356	1246	271	3.9	193.9
	EACH-330	356	1246	271	3.9	193.9
	EACH-340	356	1246	271	3.9	193.9
	EACH-350	356	1246	271	3.9	193.9
	EACH-360	384.9	1347	315	3.7	209.7
EACH-380	384.9	1347	315	3.7	209.7	
EACH-400	415.7	1455	333	3.8	226.5	
EACH-420	477.1	1670	377.8	3.8	259.9	
EACH-430	477.1	1670	377.8	3.8	259.9	
EACH-440	477.1	1670	377.8	3.8	259.9	
EACH-450	477.1	1670	377.8	3.8	259.9	

1- ECHA Chillers are rated based on Standard ARI-550/590-98 conditions of: 5 °C (9 °F) Inlet/Outlet Water Temperature Difference and 0.018 m<sup>2</sup>.°C/kW (0.0001 ft<sup>2</sup>. h.°F /Btu) Fouling Factor

2- Direct interpolation is permissible. Do not extrapolate.

3- Energy Efficiency Ratio (EER) is for the overall unit, refer to electrical data for fan power input.

## PERFORMANCE DATA TABLES

LEAVING CHILLED WATER TEMP. (LCWT)	UNIT SIZE	35°C (95°F) AMBIENT TEMPERATURE				
		COOLING CAPACITY		COMP. POWER (kW)	Total EER (W/W)	WATER FLOW (m <sup>3</sup> /h)
		RT	kW			
7°C	EACH-45	46.5	162.6	45.2	3.2	25.3
	EACH-50	54.6	191.1	50	3.3	29.7
	EACH-55	54.6	191.1	50	3.3	29.7
	EACH-60	60	210	56.7	3.3	32.7
	EACH-70	77.1	270	71.3	3.3	42
	EACH-80	79.4	278	70.4	3.4	43.3
	EACH-90	92.9	325	90.3	3.2	50.6
	EACH-100	109.7	384	100.1	3.3	59.8
	EACH-115	116.6	408	112.5	3.2	63.5
	EACH-130	135.7	475	123.2	3.3	73.9
	EACH-140	135.7	475	123.2	3.3	73.9
	EACH-150	152.9	535	142	3.3	83.3
	EACH-160	152.9	535	142	3.3	83.3
	EACH-170	172.9	605	158.9	3.3	94.2
	EACH-180	172.9	605	158.9	3.3	94.2
	EACH-190	194.3	680	176.6	3.3	105.8
	EACH-200	194.3	680	176.6	3.3	105.8
	EACH-220	230	805	211	3.3	125.3
	EACH-230	230	805	211	3.3	125.3
	EACH-240	230	805	211	3.3	125.3
	EACH-250	265.4	929	234	3.5	144.6
	EACH-260	265.4	929	234	3.5	144.6
	EACH-270	265.4	929	234	3.5	144.6
	EACH-280	303.1	1061	275	3.4	165.2
	EACH-300	303.1	1061	275	3.4	165.2
	EACH-320	344	1204	301	3.5	187.4
	EACH-330	344	1204	301	3.5	187.4
	EACH-340	344	1204	301	3.5	187.4
	EACH-350	344	1204	301	3.5	187.4
	EACH-360	370.3	1296	347	3.3	201.7
EACH-380	370.3	1296	347	3.3	201.7	
EACH-400	400.9	1403	369	3.3	218.4	
EACH-420	460	1610	422	3.4	250.6	
EACH-430	460	1610	422	3.4	250.6	
EACH-440	460	1610	422	3.4	250.6	
EACH-450	460	1610	422	3.4	250.6	

1- ECHA Chillers are rated based on Standard ARI-550/590-98 conditions of: 5 °C (9 °F) Inlet/Outlet Water Temperature Difference and 0.018 m<sup>2</sup>.°C/kW (0.0001 ft<sup>2</sup>. h.°F /Btu) Fouling Factor

2- Direct interpolation is permissible. Do not extrapolate.

3- Energy Efficiency Ratio (EER) is for the overall unit, refer to electrical data for fan power input.

## PERFORMANCE DATA TABLES

LEAVING CHILLED WATER TEMP. (LCWT)	UNIT SIZE	40°C (104°F) AMBIENT TEMPERATURE				
		COOLING CAPACITY		COMP. POWER (kW)	Total EER (W/W)	WATER FLOW (m <sup>3</sup> /h)
		RT	kW			
7°C	EACH-45	44.3	155.1	50.7	2.8	24.1
	EACH-50	52.3	183	55.8	2.9	28.5
	EACH-55	52.3	183	55.8	2.9	28.5
	EACH-60	58	203	63.6	2.9	31.6
	EACH-70	74	259	79.9	2.9	40.3
	EACH-80	76	266	78.3	3	41.4
	EACH-90	88.3	309	100.9	2.8	48.1
	EACH-100	105.4	369	111.8	2.9	57.4
	EACH-115	113.1	396	126.5	2.8	61.6
	EACH-130	130.9	458	138.3	2.9	71.3
	EACH-140	130.9	458	138.3	2.9	71.3
	EACH-150	146.3	512	159.2	2.9	79.7
	EACH-160	146.3	512	159.2	2.9	79.7
	EACH-170	166	581	178.3	2.9	90.4
	EACH-180	166	581	178.3	2.9	90.4
	EACH-190	186.9	654	197.7	2.9	101.8
	EACH-200	186.9	654	197.7	2.9	101.8
	EACH-220	220.3	771	235	2.9	120
	EACH-230	220.3	771	235	2.9	120
	EACH-240	220.3	771	235	2.9	120
	EACH-250	254.3	890	259	3	138.5
	EACH-260	254.3	890	259	3	138.5
	EACH-270	254.3	890	259	3	138.5
	EACH-280	291.1	1019	305	3	158.6
	EACH-300	291.1	1019	305	3	158.6
	EACH-320	330.6	1157	335	3	180.1
	EACH-330	330.6	1157	335	3	180.1
	EACH-340	330.6	1157	335	3	180.1
	EACH-350	330.6	1157	335	3	180.1
	EACH-360	355.4	1244	381	2.9	193.6
EACH-380	355.4	1244	381	2.9	193.6	
EACH-400	385.7	1350	407	2.9	210.1	
EACH-420	440.6	1542	470	2.9	240	
EACH-430	440.6	1542	470	2.9	240	
EACH-440	440.6	1542	470	2.9	240	
EACH-450	440.6	1542	470	2.9	240	

1- ECHA Chillers are rated based on Standard ARI-550/590-98 conditions of: 5 °C (9 °F) Inlet/Outlet Water Temperature Difference and 0.018 m<sup>2</sup>.°C/kW (0.0001 ft<sup>2</sup>. h.°F /Btu) Fouling Factor

2- Direct interpolation is permissible. Do not extrapolate.

3- Energy Efficiency Ratio (EER) is for the overall unit, refer to electrical data for fan power input.

## PERFORMANCE DATA TABLES

LEAVING CHILLED WATER TEMP. (LCWT)	UNIT SIZE	45°C (113°F) AMBIENT TEMPERATURE				
		COOLING CAPACITY		COMP. POWER (kW)	Total EER (W/W)	WATER FLOW (m³/h)
		RT	kW			
7°C	EACH-45	42.5	148.6	55.6	2.4	23.1
	EACH-50	49.9	174.5	62.5	2.5	27.2
	EACH-55	49.9	174.5	62.5	2.5	27.2
	EACH-60	56	196.1	70.7	2.5	30.5
	EACH-70	70.9	248	88.5	2.5	38.6
	EACH-80	72.6	254	87.1	2.6	39.5
	EACH-90	84.3	295	110.8	2.4	45.9
	EACH-100	100	350	125	2.5	54.5
	EACH-115	109.4	383	141.3	2.4	59.6
	EACH-130	125.7	440	155.5	2.5	68.5
	EACH-140	125.7	440	155.5	2.5	68.5
	EACH-150	140.6	492	176.3	2.5	76.6
	EACH-160	140.6	492	176.3	2.5	76.6
	EACH-170	158.3	554	199.7	2.5	86.2
	EACH-180	158.3	554	199.7	2.5	86.2
	EACH-190	178.9	626	222	2.5	97.4
	EACH-200	178.9	626	222	2.5	97.4
	EACH-220	209.4	733	261	2.5	114.1
	EACH-230	209.4	733	261	2.5	114.1
	EACH-240	209.4	733	261	2.5	114.1
	EACH-250	242	847	286	2.6	131.8
	EACH-260	242	847	286	2.6	131.8
	EACH-270	242	847	286	2.6	131.8
	EACH-280	279.1	977	335	2.6	152.1
	EACH-300	279.1	977	335	2.6	152.1
	EACH-320	315.7	1105	371	2.7	172
	EACH-330	315.7	1105	371	2.7	172
	EACH-340	315.7	1105	371	2.7	172
	EACH-350	315.7	1105	371	2.7	172
	EACH-360	336.9	1179	418	2.5	183.5
EACH-380	336.9	1179	418	2.5	183.5	
EACH-400	367.4	1286	447	2.6	200.2	
EACH-420	418.9	1466	522	2.5	228.2	
EACH-430	418.9	1466	522	2.5	228.2	
EACH-440	418.9	1466	522	2.5	228.2	
EACH-450	418.9	1466	522	2.5	228.2	

1- ECHA Chillers are rated based on Standard ARI-550/590-98 conditions of: 5 °C (9 °F) Inlet/Outlet Water Temperature Difference and 0.018 m².°C/kW (0.0001 ft². h.°F /Btu) Fouling Factor

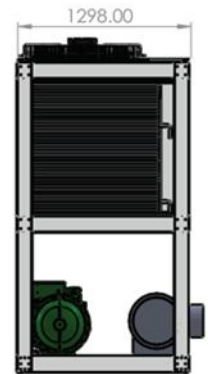
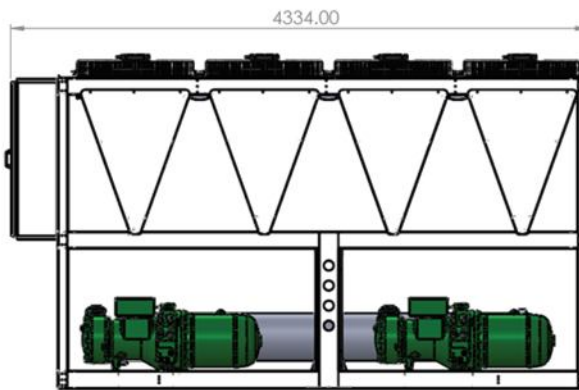
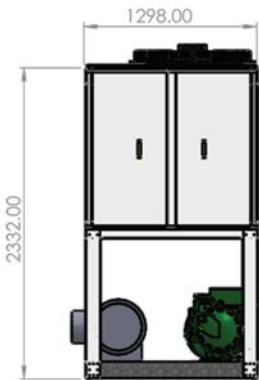
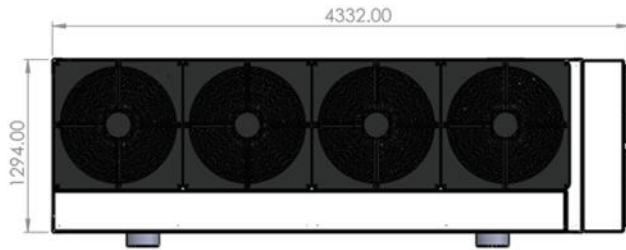
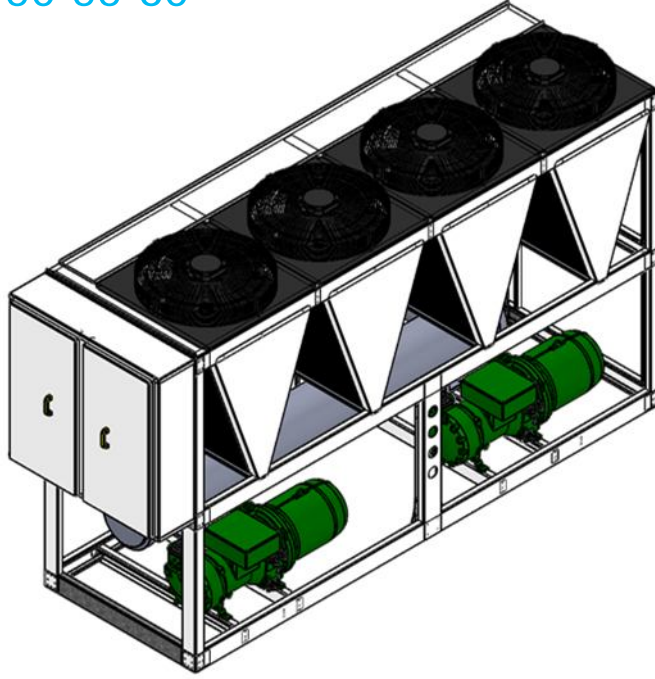
2- Direct interpolation is permissible. Do not extrapolate.

3- Energy Efficiency Ratio (EER) is for the overall unit, refer to electrical data for fan power input.



# UNIT DIMENSIONS

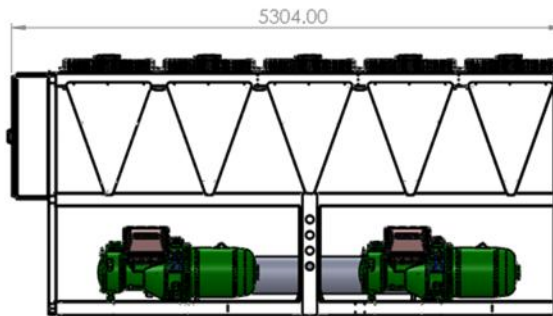
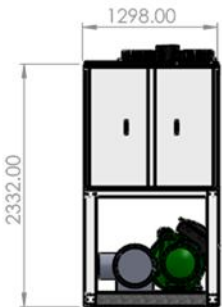
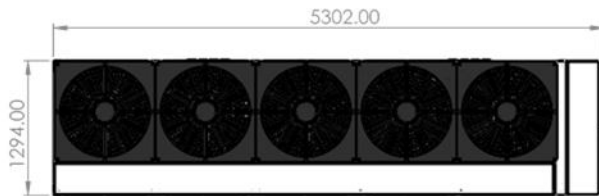
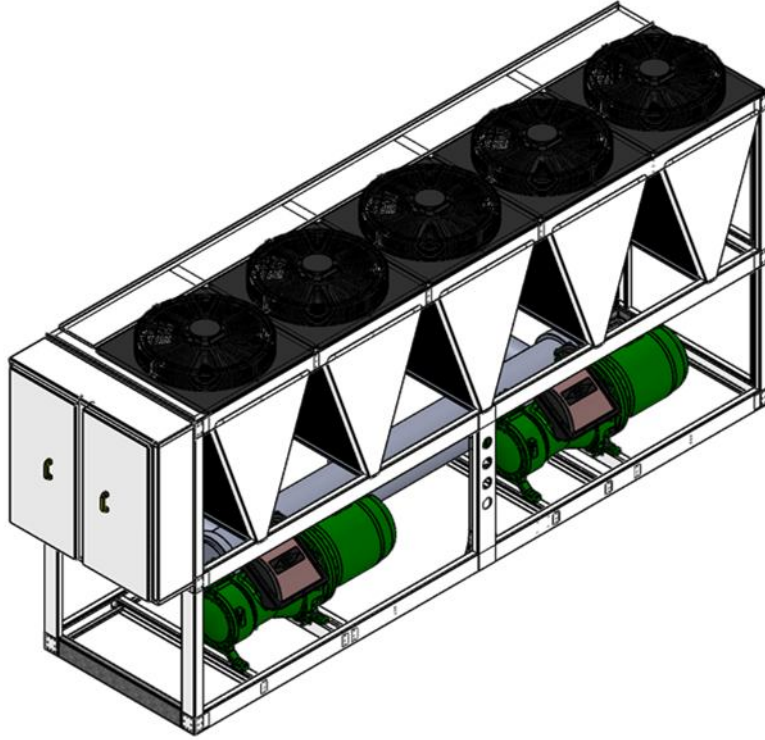
EACH 45-50-55-60





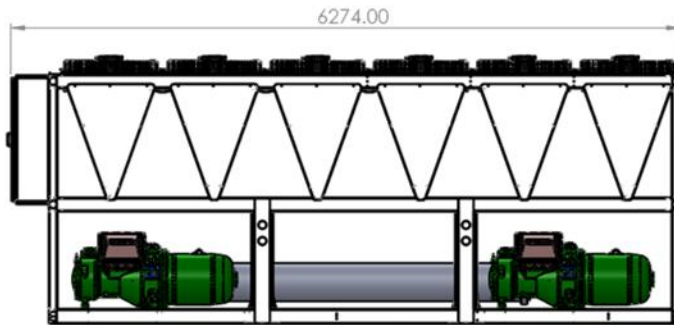
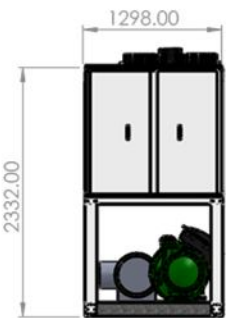
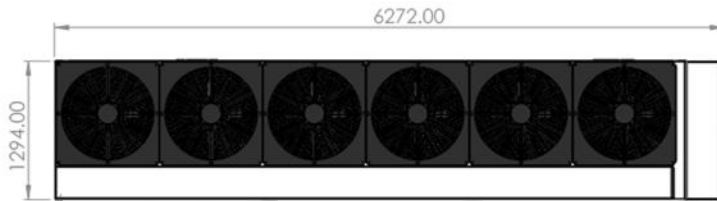
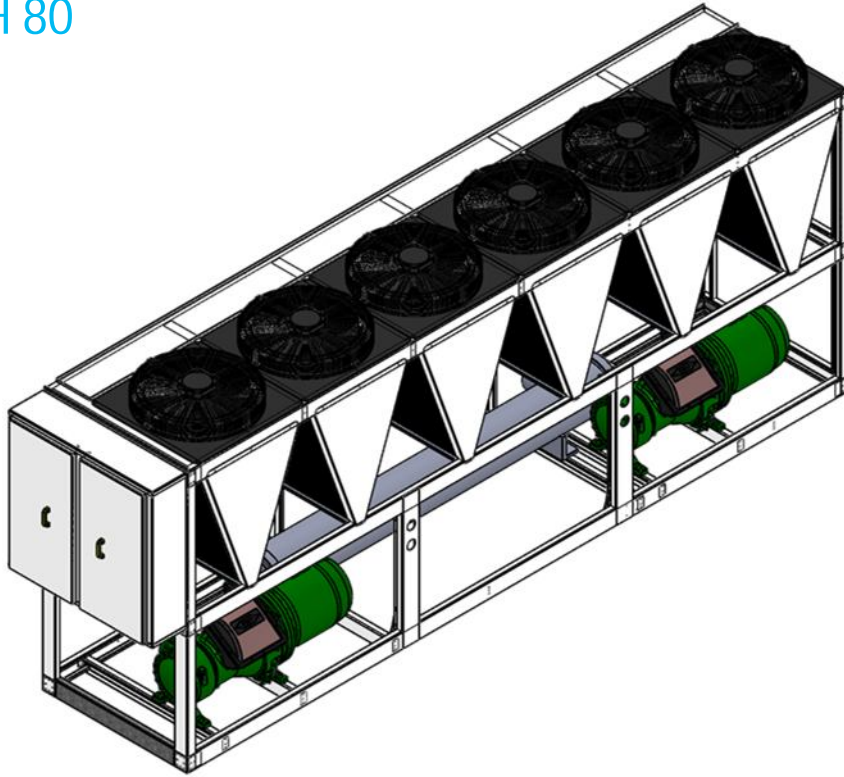
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EACH 70



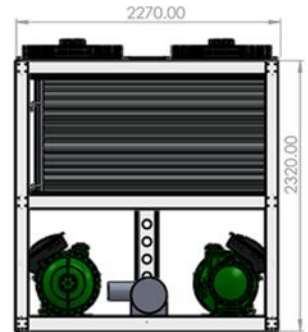
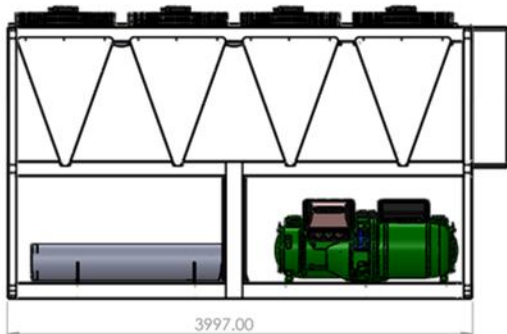
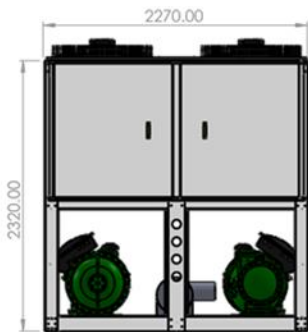
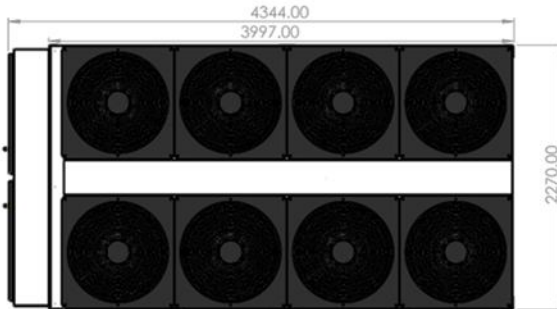
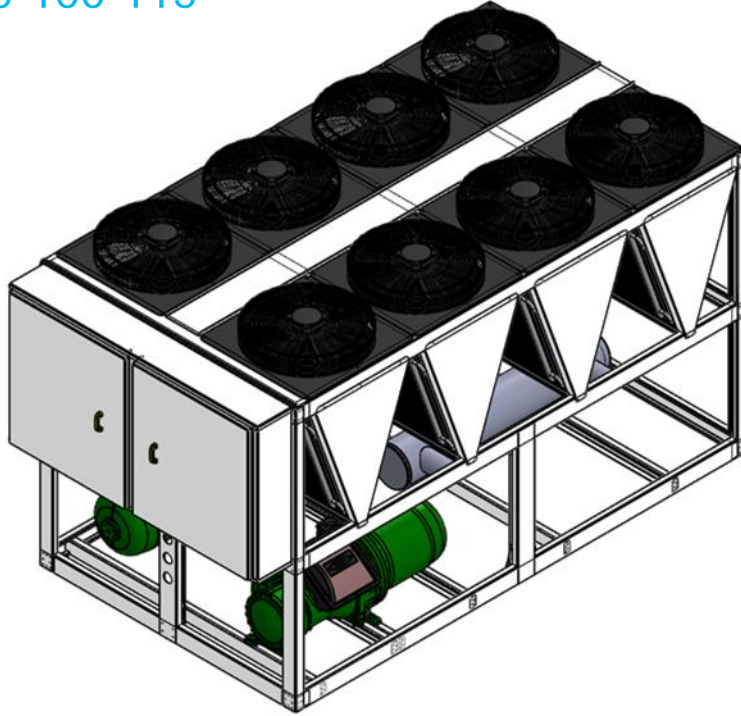
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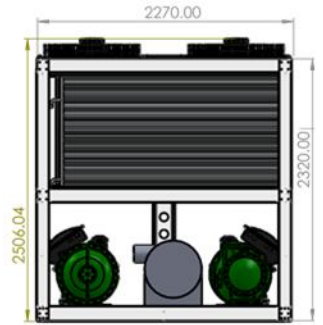
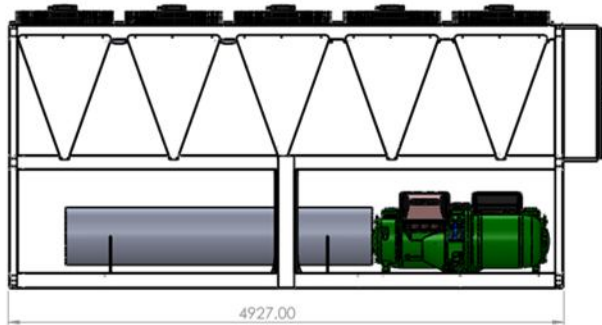
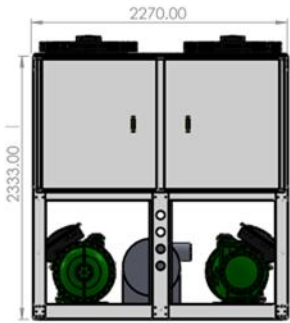
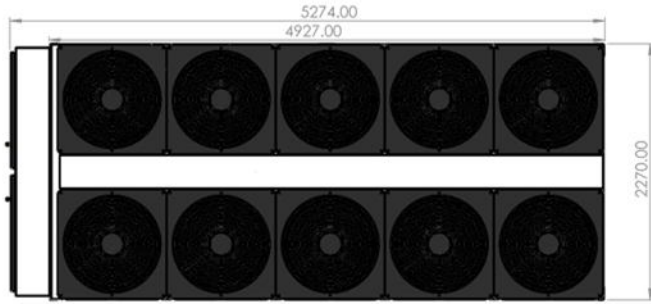
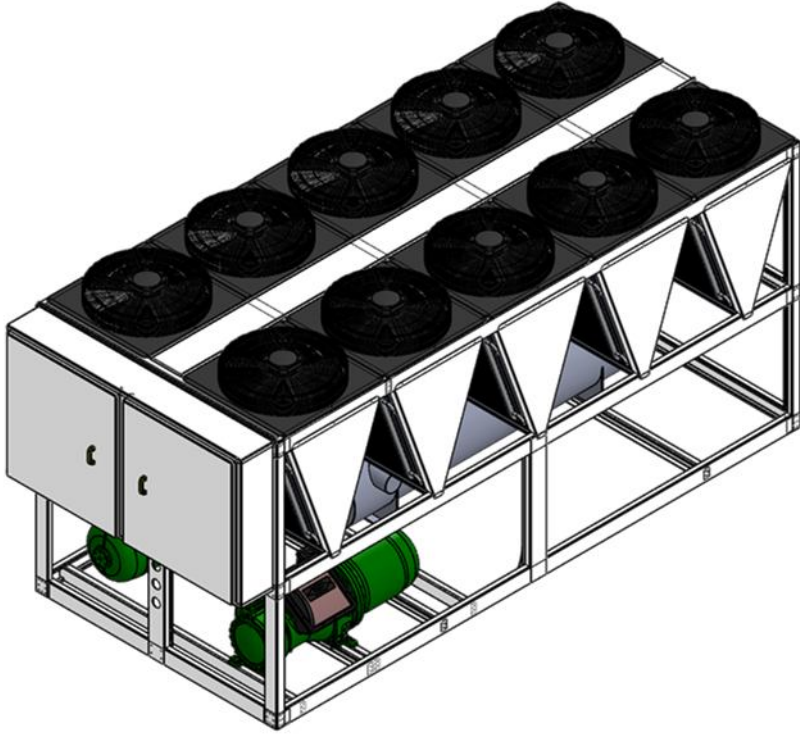
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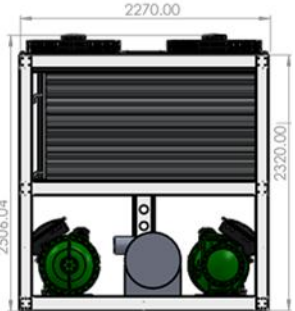
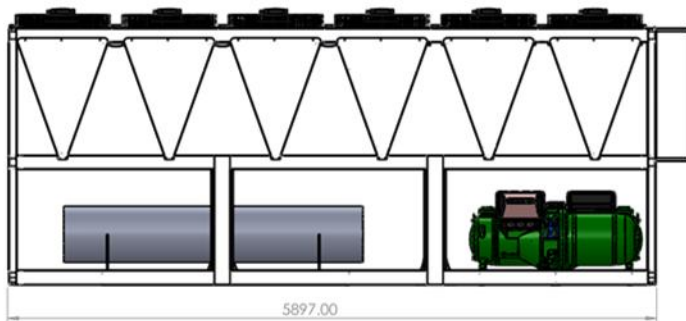
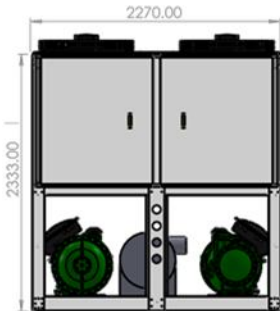
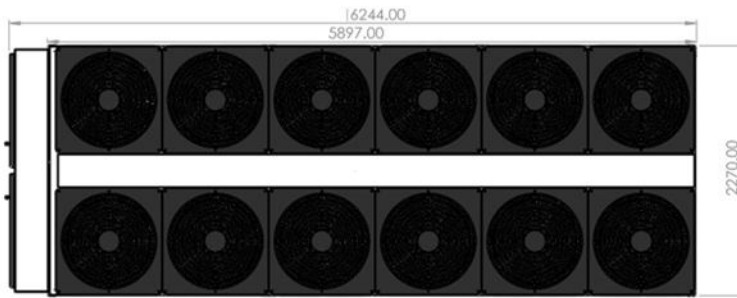
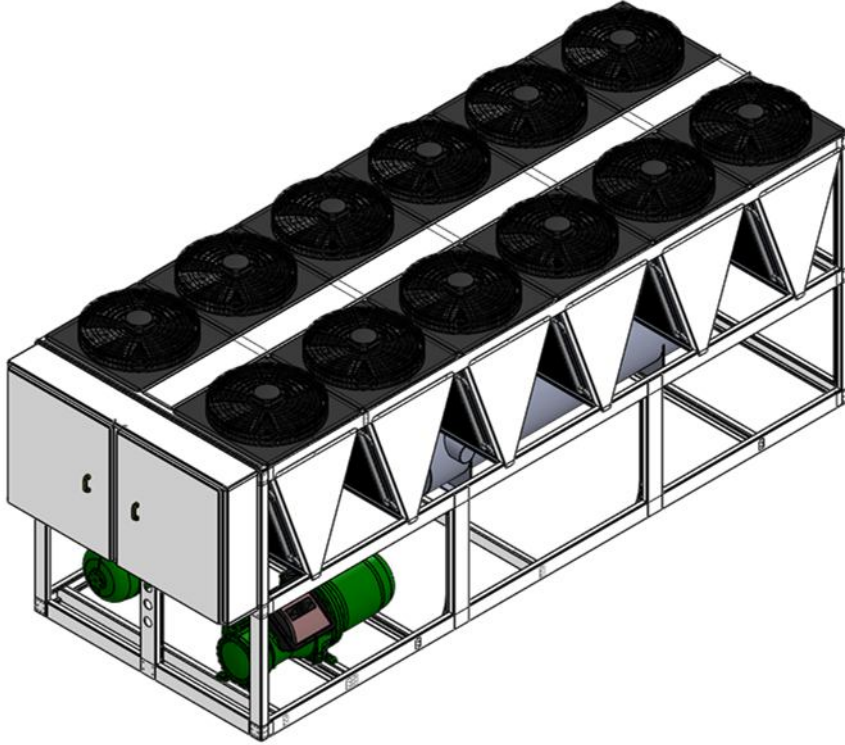
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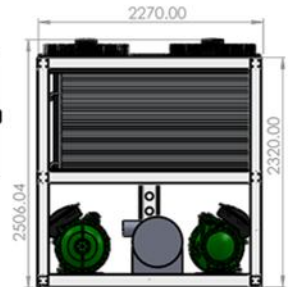
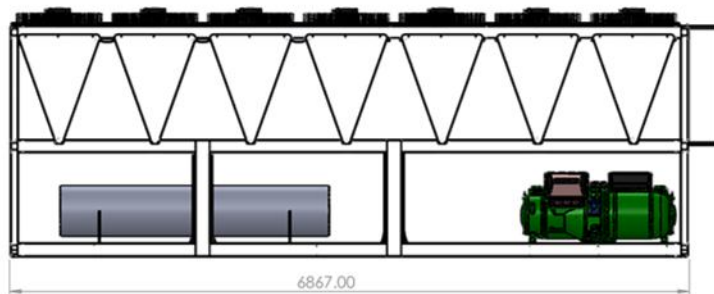
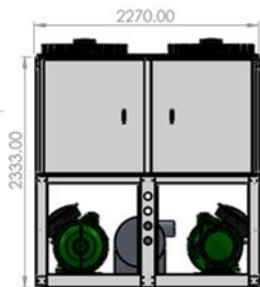
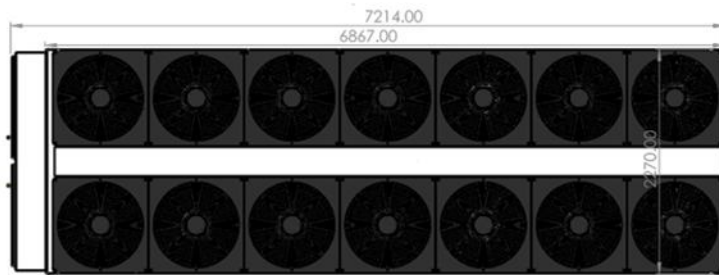
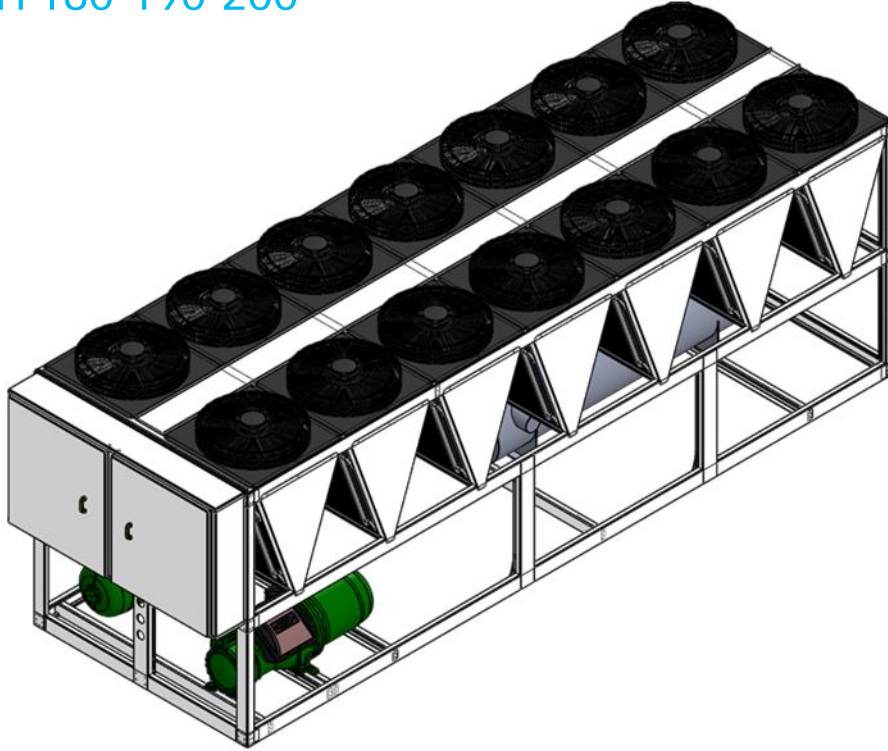
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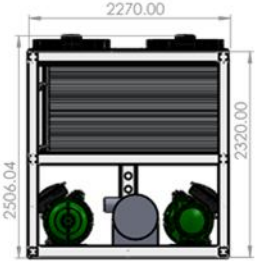
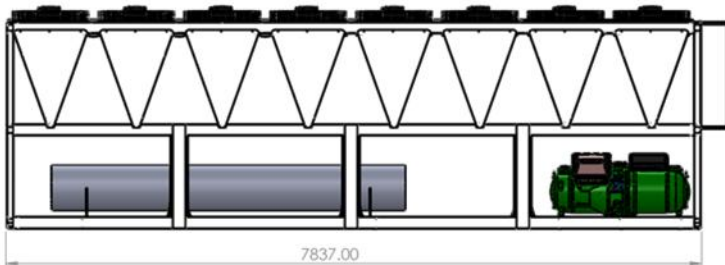
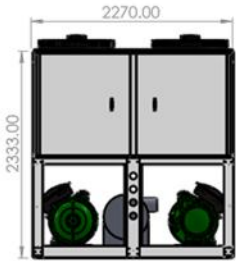
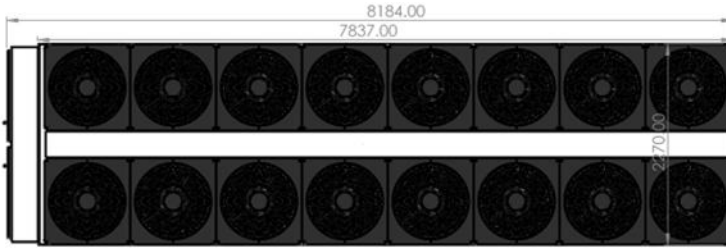
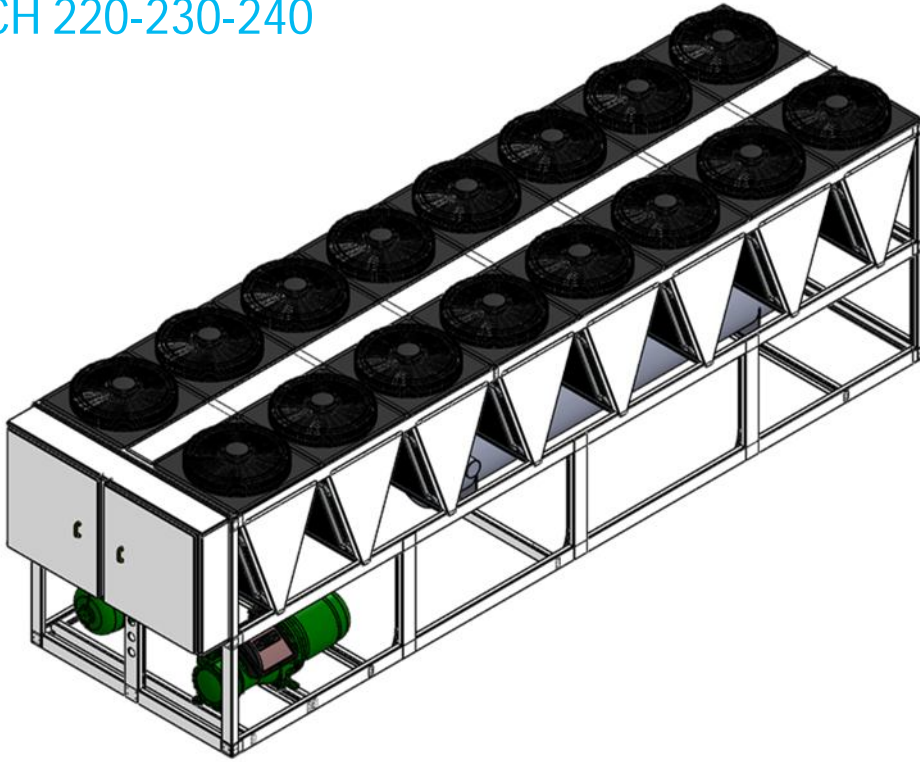
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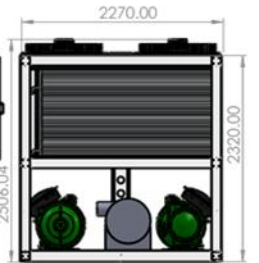
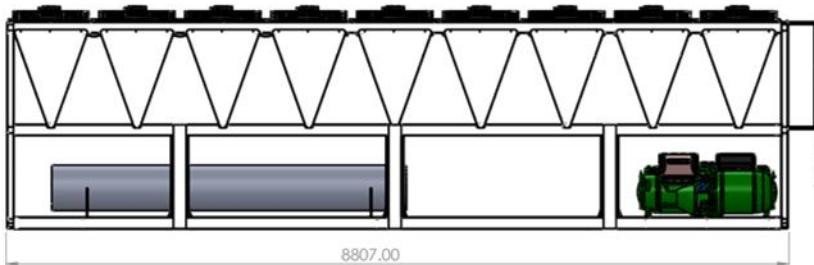
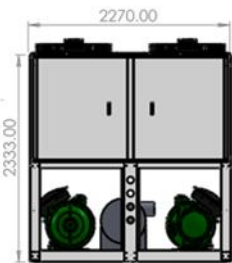
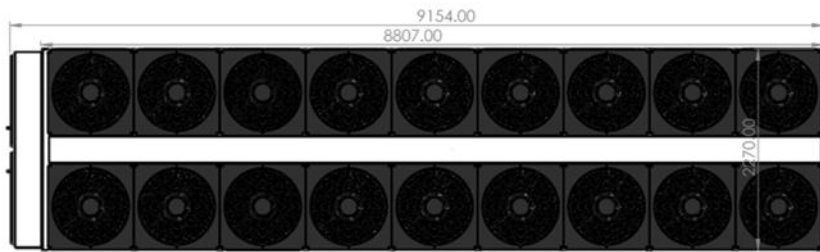
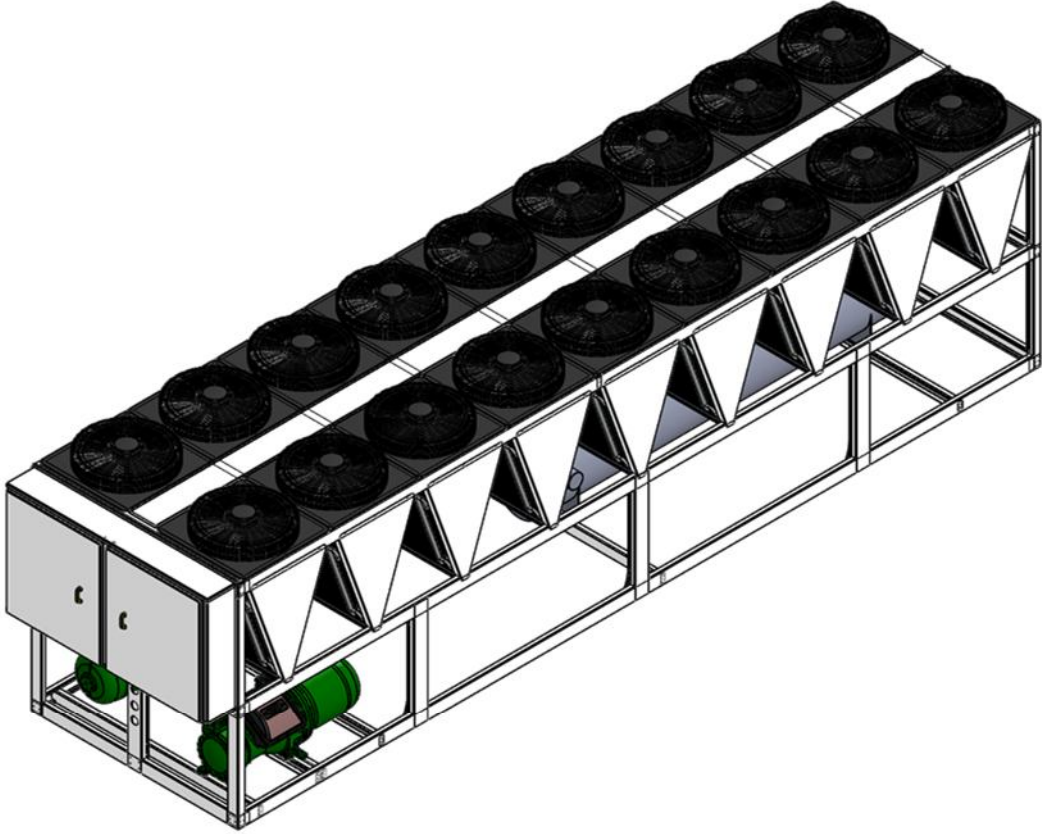
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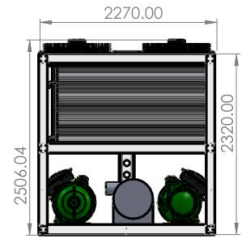
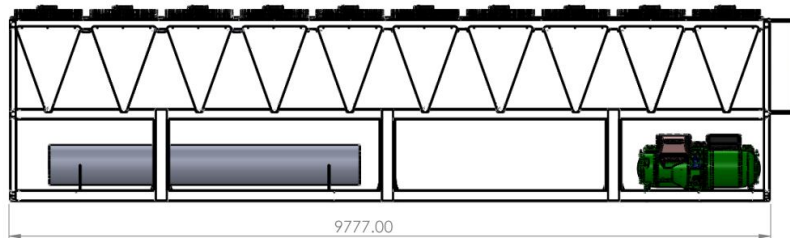
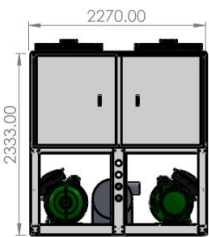
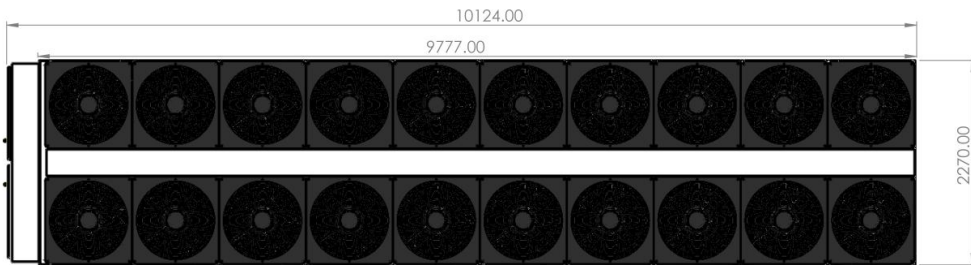
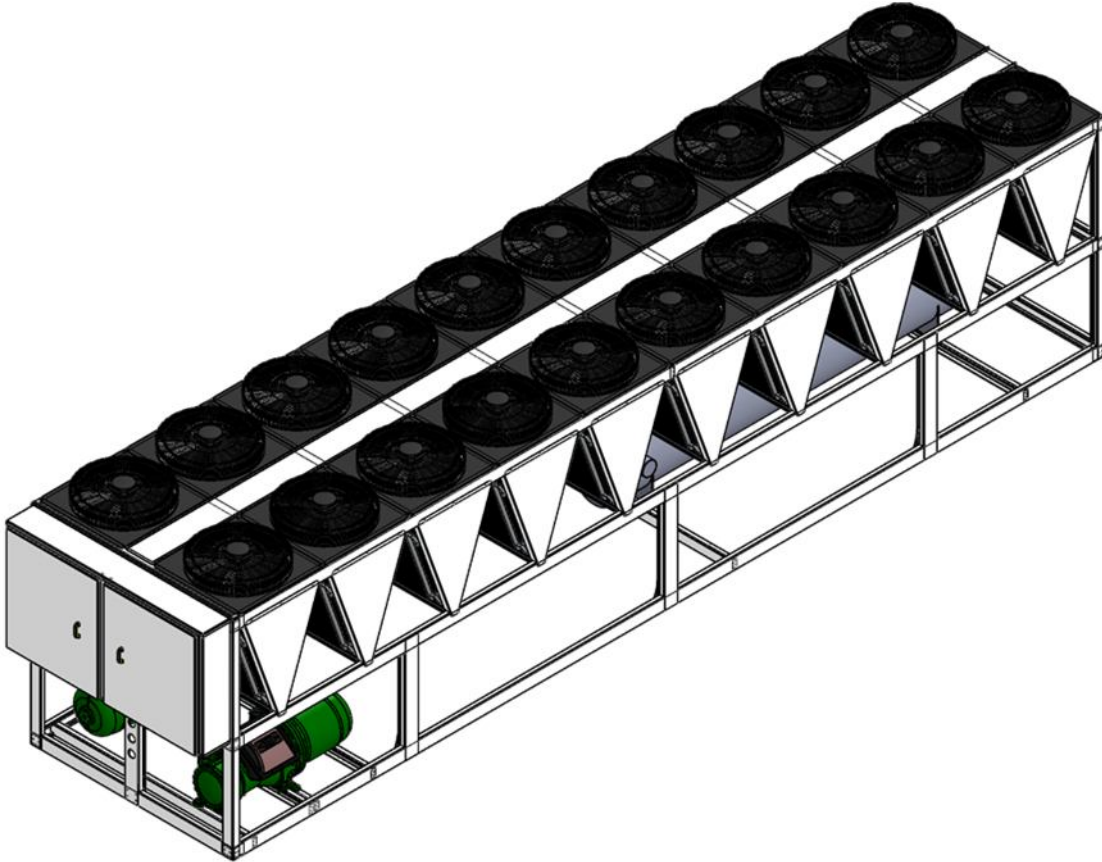
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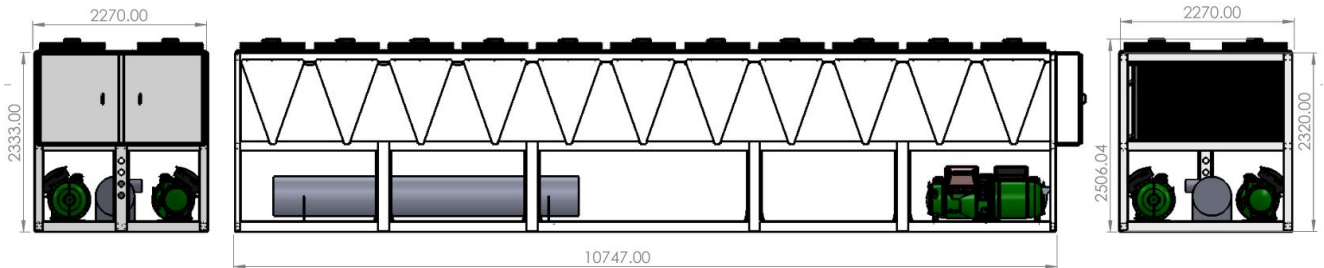
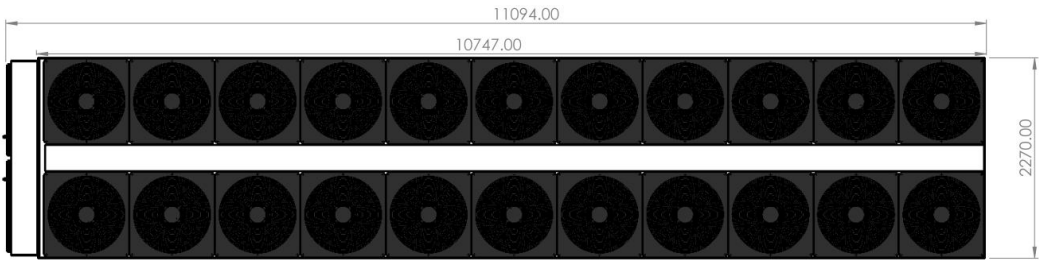
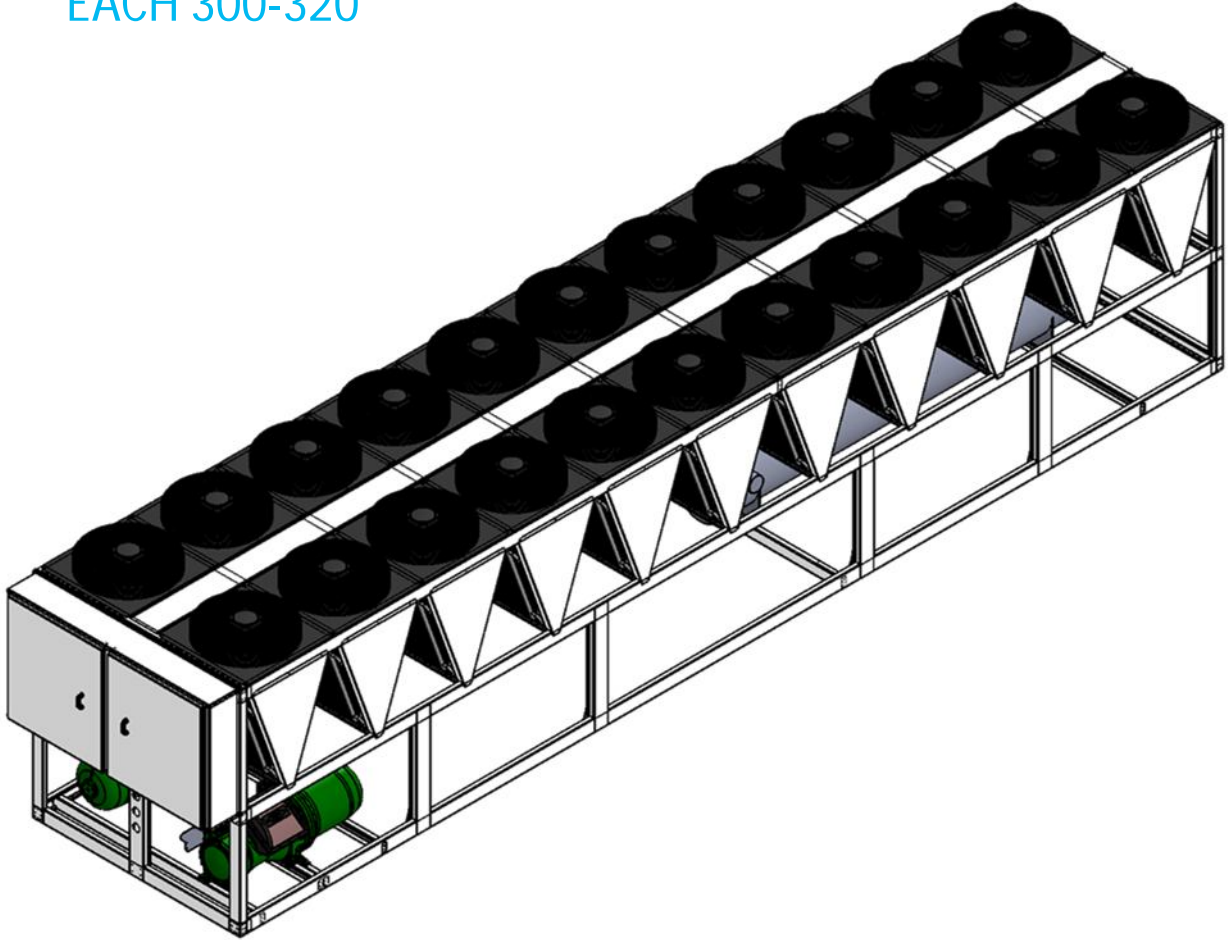


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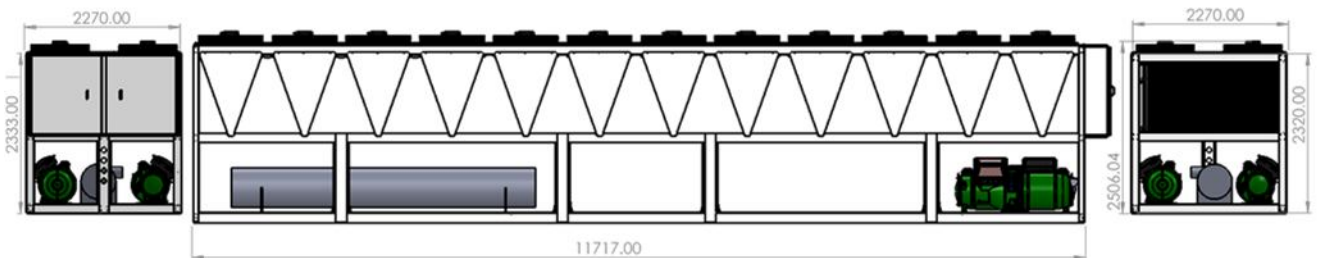
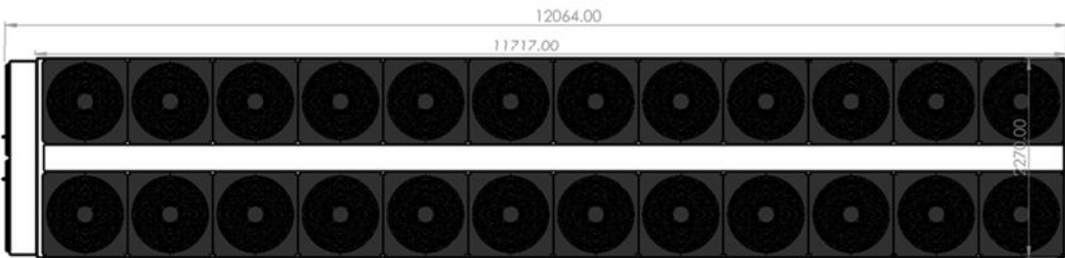
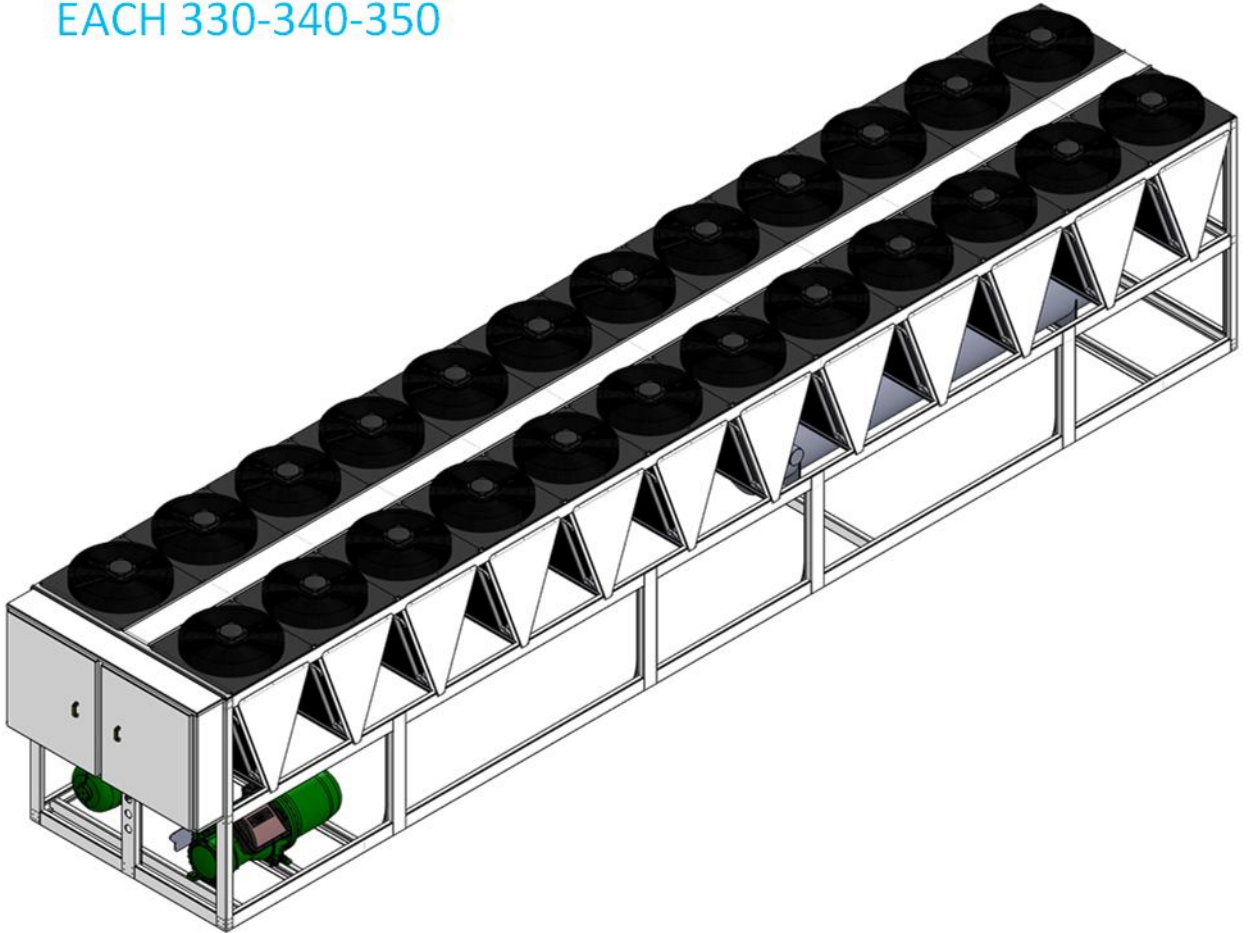
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EACH 300-320

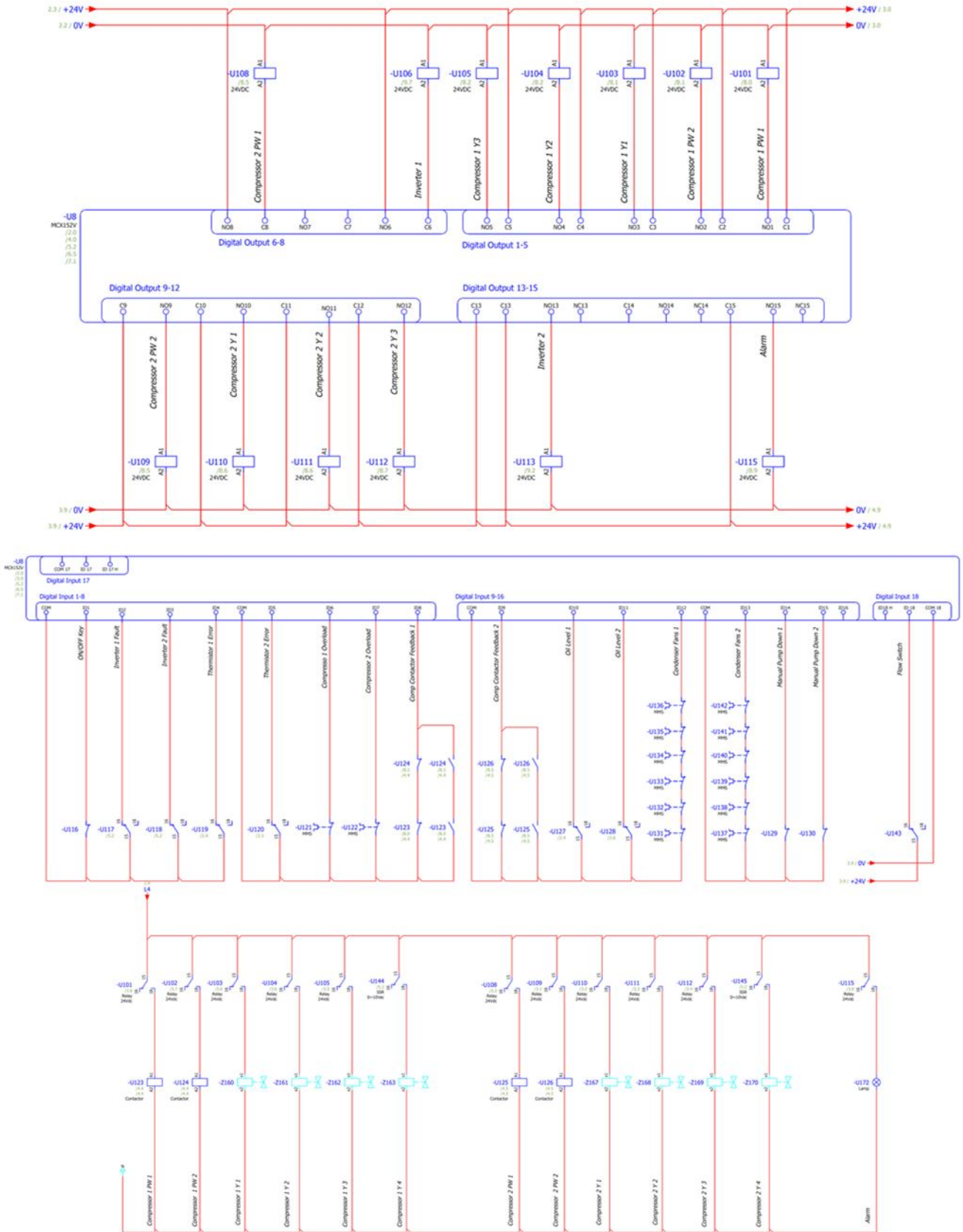


# UNIT DIMENSIONS

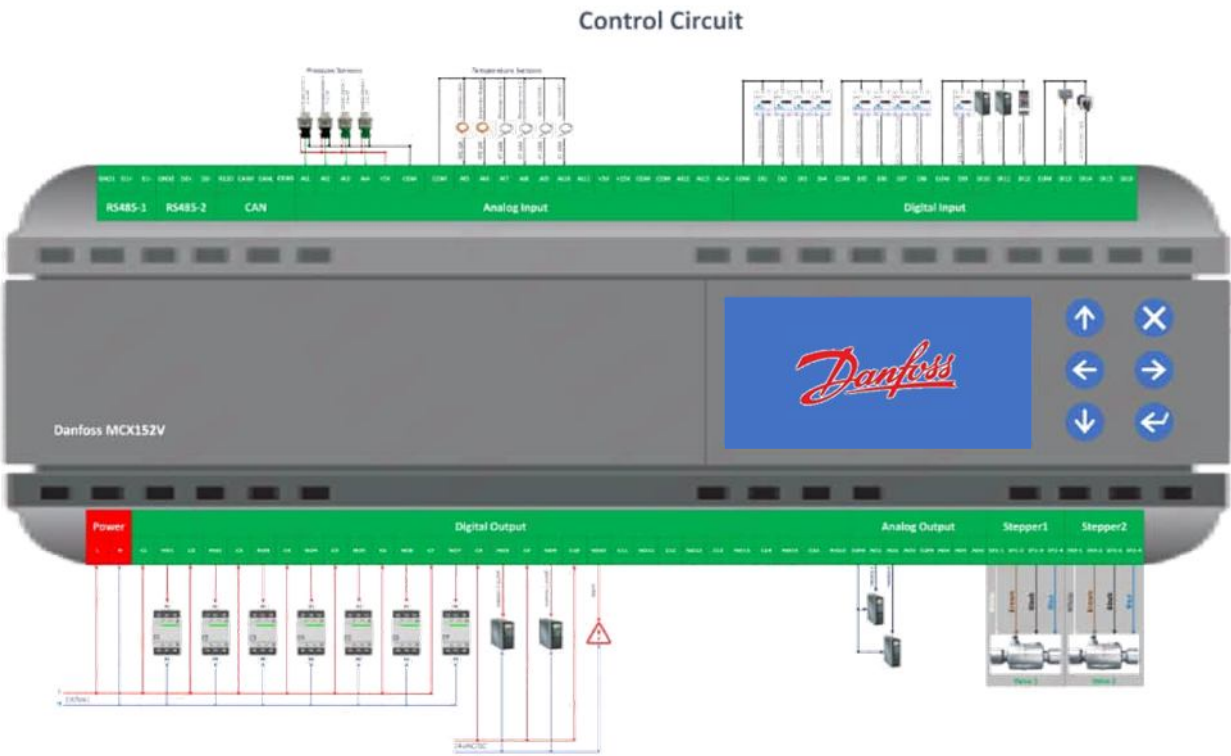
EACH 330-340-350



# Typical electrical wiring diagram



# TYPICAL WIRING DIAGRAM



### Power Circuit





# . NOTE .

A large rectangular area with rounded corners, outlined in light blue, containing numerous horizontal light blue lines for writing. This area is intended for taking notes.





**ECO COOLER**  
AIR CONDITIONER