

# MEDICOOL

Medical Air-Cooled Chiller



MEDICOOL air-cooled chiller is designed and manufactured to provide chilled water (coolant) for MRI, CT and other large medical equipment. MEDICOOL meet the requirement of 24X7 continuous operation thanks to its two fully independent refrigeration circuits, highly reliable components and intelligent control system.

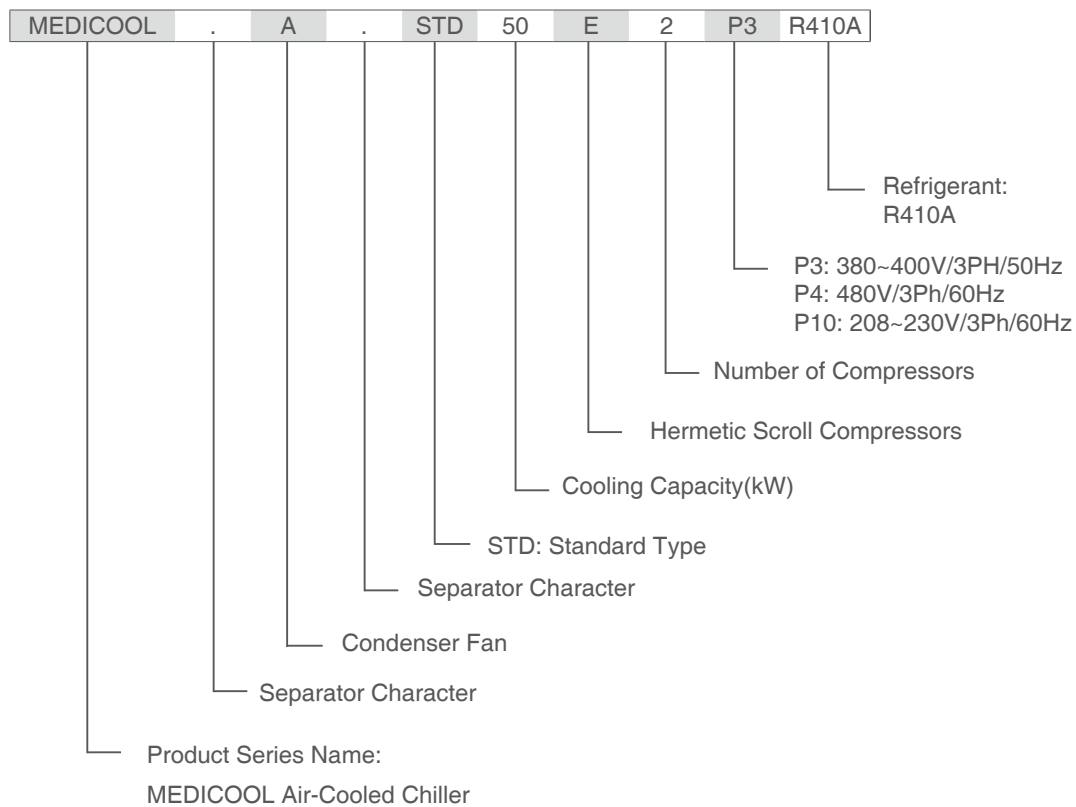
MEDICOOL Chiller is a remarkable product from AIRSYS with more than 10 years of global field application for various medical equipment manufacturer.

MEDICOOL has a variety of models to choose from, together with many options and accessories, the chiller

can meet the demand and challenge for cooling capacity, low noise, marine or corrosive environment, location and space for installation, etc. The operation is fully automatic controlled by a microprocessor, it can also be operated or monitored remotely, connected into other BMS system via the communication card available for different solutions.

MEDICOOL Chillers are completely manufactured and tested in the factory. The installation will need only the proper piping and power cable wiring. No working on the refrigeration circuit is required.

## Unit Identification



## Working Condition

- +5°C Lowest evaporator outlet water temperature
- +25°C Highest evaporator inlet water temperature
- +50°C Highest ambient temperature, Standard Unit, R410A Refrigerant
- 30°C Lowest ambient temperature, Standard Unit

## Main Features

### High reliability

Since MEDICOOL is designed for MRI and other high-end medical equipment cooling, reliability is the most important feature. All components are from well known international suppliers, with at least 10 years proving experience with Airsys. The chiller (except the 07E1) has 2 fully independent refrigeration circuit. If one system failed, the other system is still providing 50% of the cooling capacity which will meet the needs of most of MRI scan (except the extreme scanning conditions). The MTBF is more than 25,000 Hours. In addition, the failed circuit can be repaired when the other circuit is in operation.

### Continuous Operation

MEDICOOL can work 24X7 for more than 10 years. The selected component like compressor, fan, pumps are designed to work continuously for more than 10 years. Fully automatic computer control system monitors the status of each part of the unit, which will be helpful for the service engineer to carry out preventive maintenance service.

### High efficient design

High efficient compressors, pump and fans are used to improve the efficiency of the chiller.

### Environmental Friendly

The chiller is charged with R410A refrigerant, minimizing the greenhouse gas emissions and the damage to the ozone layer. The Helium Leak Detection (HLD) technology is used during the production process to keep the leakage level under 2 g / year.

### Free Cooling (Optional)

For installation in cold geographical regions, we recommend the Free Cooling system. This system has an extra free cooling coil installed on the chiller, when ambient temperature is cold (below 10C for example), the free cooling coil will start to work and reduce the compressor working time. When ambient temperature

is low enough, the compressor operation can be fully avoided. The technology will save a great deal of energy (above 15%) and reduce the compressor working hours, extend the life of the chiller and increase the reliability during winter operation.

### Low Ambient Temperature Start & Operating Kit(Optional)

By condensing fan speed control and hot gas bypass, chiller can operate at -40°C ambient temperature.

### Corrosion Proof Kit

All units use corrosion preventive material, adapted to work in a variety of outdoor environments. With the special Corrosion Proof Kit, stainless steel chassis, aluminum alloy panel, epoxy resin (gold) heat exchanger aluminum coil, the chiller can withstand the harsh environment in coastal or heavy industrial polluted area with more than 10 years life.

### Easy to Maintain

The structure of the chiller is very service friendly. Electric box is located in a separated compartment. All the refrigeration and water circuit (components) are separated from the air flow, which means service can be done when unit is in operation. The user interface is also Plug and Play, can be either installed on the unit, or in the operation/equipment room where the operation people is convenient.

### Electric Box

Electric box is equipped with safety lock main switch and User interface on the door. Each load is equipped with its own MCB, fuses and contactors. No extra Power Distribution Unit (PDU) is needed.

### Noise Control

Compressors are installed in a separate compartment, isolated from the air flow. This will minimize the noise level. The unit uses a high efficient and low-noise fan, external rotor and blade in one piece, speed regulated controller according to high pressure of the system.

### **Pump & Water Circuit**

The chiller is equipped with a highly reliable pump, automatically controlled. The water circuit has a large water tank to maintain the stability of the coolant temperature. The flow switch is also installed to protect the compressor and evaporator in case of a pump failure. A standby pump integrated in the chiller piping system is optional.

### **Main Components**

Corrosion proof panels and frames  
Hermetic scroll compressor  
External rotor axial fan  
Pump  
Thermal expansion valve  
Water tank  
Stainless steel plate evaporator  
Copper tube/Aluminum fin condenser  
Flow switch  
High and low pressure transducer  
High and low pressure switch  
Loss phase and current overload switch  
Electrical and controller box

### **Factory Test**

Every MEDICOOL chiller will go through a full function test at the end of the production process and be charged with refrigerant.

### **Safety and Quality Certification**

MEDICOOL chiller is designed to meet all the requirements of CE and UL safety regulation, as well as RoHS.

Airsys is a holder of quality certification ISO 9001, 14000, 18000, 13485.

### **Optional Features**

RS485 Communication Card  
SMS alarm module  
pCOweb card for internet monitoring  
Standby pump kit (integrated in the chiller piping system)  
Low Ambient kit \*  
Free Cooling \*  
High Ambient kit \*  
Seismic kit \*

\* For special conditions, AIRSYS can provide customized products. With demand, please contact AIRSYS.

## Microprocessor Control

The controller hardware is supplied by Carel, Italy, while the software is developed by Airsys engineering team.

The controller has 3 major functions:

- Setting the control parameters, this will decide how the chiller work according to the existing control logic. A lot of adjustable parameters will make the chiller working properly in all the different conditions and applications.
- Display the working status, showing all the operation information, such as high and low pressure, component working hours, manual or automatic on/off of the component, etc.. These information is essential for a proper maintenance of the unit.
- Sending out alarms, protect the unit from damage. The alarm can be sent to remote service people via SMS, email.

## Main Operating Parameters

Temperature display: inlet/outlet water, ambient (free cooling only)

Compressor, fan, pump working status

Cooling System High / Low pressure value

Working hours of compressor, fan, pump

Compressor starts frequency

## Alarm Display

Displays the last 10 alarm with year / month / day / hour / minute

Maintenance Guide: The cause of the alarm occurs, the specific location and solutions for simple analysis

Condenser fan failure

High pressure pre-alarm

High pressure block

Low pressure block

Compressor motor overload

Pump failure

Outlet water temperature too high / low

Low water flow

Sensor failure

Supply voltage too high / low, phase sequence/lost.

## Special Features

Restart automatically when power restored

Automatic switching compressor startup sequence, balancing the compressor running time

Multi-level password protection

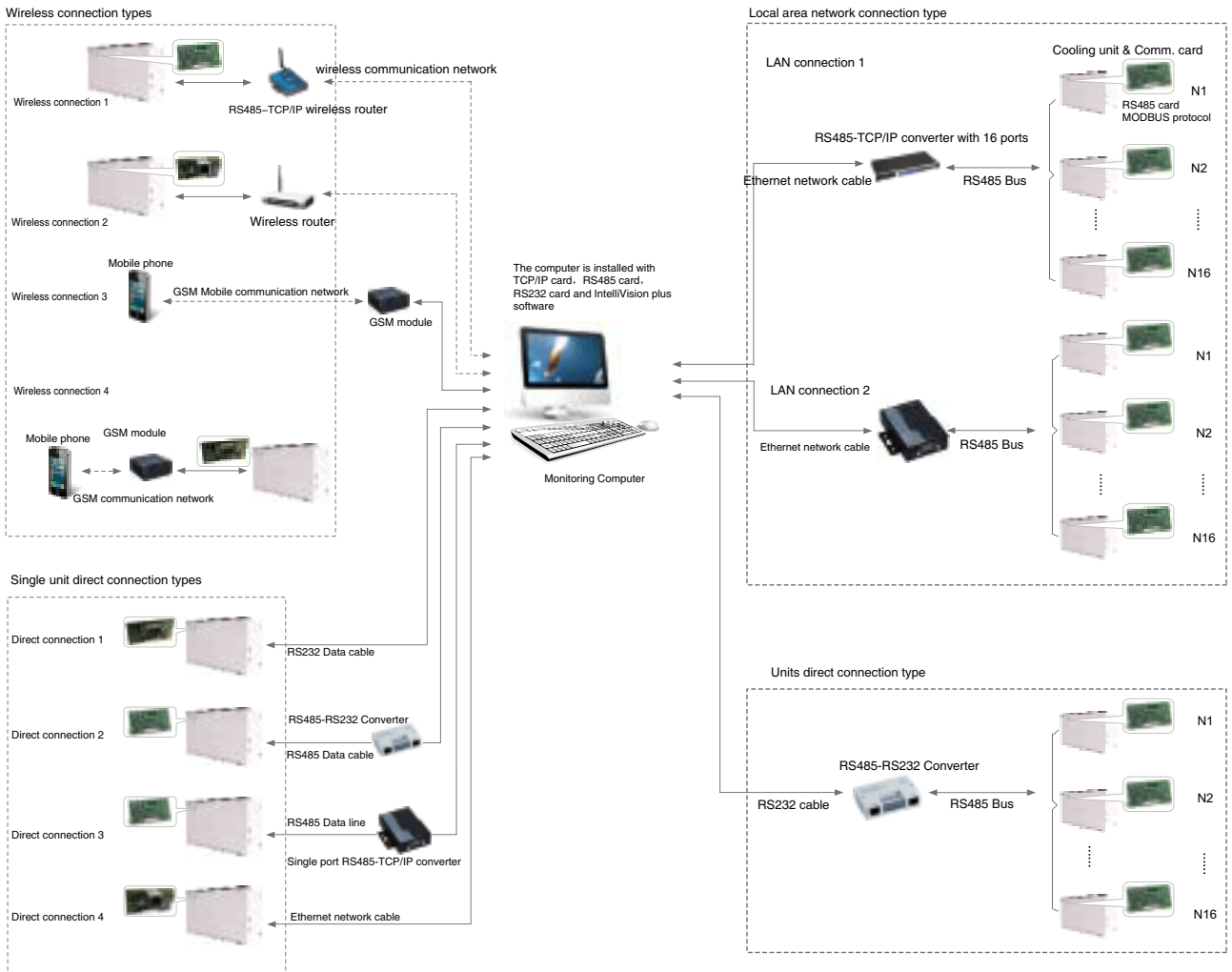
# Remote Network Monitoring

## Connections with Other Building Control Systems

AIRSYS provides open communication protocol for third-party monitoring systems, integration to the BA system. On the other hand, IntelliVision Plus also provides standard ACCESS database for third party to collect the data.

## Schematic Remote Network Monitoring

Remote display controller is a standard configuration, by which you can control and check the status of the chiller from indoor operation room.



## Specification

Model		07E1P3R410A	32E2P3R410A	50E2P3R410A	66E2P3R410A	80E2P3R410A
Norminal Cooling Capacity (1)	kW	7.5	31.5	46.4	64	79.6
Cooling Capacity (2)	kW	6.3	26.5	39.4	54.6	67
Cooling Capacity (3)	kW	5.9	24.9	37.1	51.6	61.8
Coolant Supply Temperature	°C	6 to 16	6 to 16	6 to 16	6 to 16	6 to 16
Ambient Temperature	°C	-30 to 50	-30 to 50	-30 to 50	-30 to 50	-30 to 50
Power Supply		400V/3Ph/50Hz				
Power Input (1)	kW	2.12	8.5	12.3	16.7	21.1
Power Input (2)	kW	2.7	10.7	15.3	20.7	26.1
Power Input (3)	kW	2.9	11.5	16.4	22.1	27.9
Maximum Power Input	kW	3.6	14.1	19.4	26.8	33.9
Maximum Input Current	A	6.9	27.0	35.8	52.0	63.1
Start Current	A	42	72	109	154	157
Number of Compressor	n.	1	2	2	2	2
Refrigerant		R410A	R410A	R410A	R410A	R410A
Evaporator	n.	1	2	2	2	2
Coolant Type		0 to 40% Ethlene Glycol Water Solution				
Flow Rate	l/min	14	65	104	134	163
Tank Volume	l	15	180	180	300	360
Tank Maximum Pressure	Bar	Open				
Pump	n.	1	1	1	1	1
Pump Power Input	kW	0.45	1.2	1.58	2.2	3.2
Chiller Deliver Head	mH <sub>2</sub> O	30	40	40	40	40
Cooling Fan	n.	1	2 independ circuits	2 independ circuits	2 independ circuits	2 independ circuits
Fan Power Input	kW	0.2	1.4	1.4	2.5	2.8
Air Volume	m <sup>3</sup> /h	2800	18000	20000	32000	36000
Size						
Length	mm	1000	2030	2030	2830	3305
Width	mm	700	1040	1040	1040	1140
Height	mm	1450	1950	1950	1910	1905
Net Weight (Without Optional Parts)	Kg	250	630	650	930	1070
Operating Weight (Without Optional Parts)	Kg	270	820	840	1240	1440
Sound Level (4)	dB(A)	65	65	65	<85-68	<85-72

### Remarks:

- (1) Ambient temperature 35°C, supply water temperature 10°C;
- (2) Ambient temperature 45°C, supply water temperature 10°C;
- (3) Ambient temperature 48°C, supply water temperature 10°C;
- (4) Measured at working condition (1), in open field and 1 meter from the unit.

## Specification

Model		07E1P4R410A	32E2P4R410A	50E2P4R410A	66E2P4R410A	80E2P4R410A
Norminal Cooling Capacity (1)	kW	7	32	51.4	66	76
Cooling Capacity (2)	kW	6.2	28	44.4	57.8	67.6
Cooling Capacity (3)	kW	5.8	27.2	42	54.8	64
Coolant Supply Temperature	°C	6 to 16	6 to 16	6 to 16	6 to 16	6 to 16
Ambient Temperature	°C	-30 to 50	-30 to 50	-30 to 50	-30 to 50	-30 to 50
Power Supply		480V/3Ph/60Hz				
Power Input (1)	kW	2	9.5	13.9	17.1	20
Power Input (2)	kW	2.4	12.0	17.2	20.7	24.7
Power Input (3)	kW	2.8	13.1	18.5	22.1	25.8
Maximum Power Input	kW	3.7	17.0	22.4	28.6	32.6
Maximum Input Current	A	7.0	28.0	38.0	51.7	57.5
Start Current	A	42	69	109	147	157
Number of Compressor	n.	1	2	2	2	2
Refrigerant		R410A	R410A	R410A	R410A	R410A
Evaporator	n.	1	2	2	2	2
Coolant Type		0 to 40% Ethlene Glycol Water Solution				
Flow Rate	l/min	14	65	104	134	163
Tank Volume	l	15	180	180	300	360
Tank Maximum Pressure	Bar	Open				
Pump	n.	1	1	1	1	1
Pump Power Input	kW	0.74	2.52	2.52	4	4
Chiller Deliver Head	mHzO	30	40	40	40	40
Cooling Fan	n.	1	2 independent circuits	2 independent circuits	2 independent circuits	2 independent circuits
Fan Power Input	kW	0.2	1.4	1.4	2.5	2.8
Air Volume	m³/h	2800	18000	20000	32000	36000
Size						
Length	mm	1000	2030	2030	2830	3305
Width	mm	700	1040	1040	1040	1140
Height	mm	1450	1950	1950	1910	1905
Net Weight (Without Optional Parts)	Kg	250	630	650	930	1070
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Sound Level (4)	dB(A)	65	65	65	<85-68	<85-72

### Remarks:

- (1) Ambient temperature 35°C, supply water temperature 10°C;
- (2) Ambient temperature 45°C, supply water temperature 10°C;
- (3) Ambient temperature 48°C, supply water temperature 10°C;
- (4) Measured at working condition (1), in open field and 1 meter from the unit.



## Specification

Model		07E1P10R410A	32E2P10R410A	50E2P10R410A	66E2P10R410A	80E2P10R410A
Norminal Cooling Capacity (1)	kW	7	32	51	66	76
Cooling Capacity (2)	kW	6.5	28.2	45	57.8	67.6
Cooling Capacity (3)	kW	6.4	26.7	42	54.8	64
Coolant Supply Temperature	°C	6 to 16	6 to 16	6 to 16	6 to 16	6 to 16
Ambient Temperature	°C	-30 to 50	-30 to 50	-30 to 50	-30 to 50	-30 to 50
Power Supply		208~230V/3Ph/60Hz				
Power Input (1)	kW	2.2	8.8	13.8	17.1	20
Power Input (2)	kW	2.8	10.8	16.4	20.7	24.7
Power Input (3)	kW	3.0	11.6	17.4	22.1	25.8
Maximum Power Input	kW	4.0	15.5	21.3	30.1	34.1
Maximum Input Current	A	15.3	47.6	67.8	94.2	105.4
Start Current	A	99	164	159	289	309
Number of Compressor	n.	1	2	2	2	2
Refrigerant		R410A	R410A	R410A	R410A	R410A
Evaporator	n.	1	2	2	2	2
Coolant Type		0 to 40% Ethlene Glycol Water Solution				
Flow Rate	l/min	14	65	104	134	163
Tank Volume	l	15	180	180	300	360
Tank Maximum Pressure	Bar	Open				
Pump	n.	1	1	1	1	1
Pump Power Input	kW	0.84	2.52	2.52	5.5	5.5
Chiller Deliver Head	mHzO	30	40	40	40	40
Cooling Fan	n.	1	2 independent circuits	2 independent circuits	2 independent circuits	2 independent circuits
Fan Power Input	kW	0.2	1.4	1.4	2.5	2.8
Air Volume	m <sup>3</sup> /h	2800	18000	20000	32000	36000
Size						
Length	mm	1000	2030	2030	2830	3305
Width	mm	700	1040	1040	1040	1140
Height	mm	1450	1950	1950	1910	1905
Net Weight (Without Optional Parts)	Kg	250	630	650	930	1070
Operating Weight (Without Optional Parts)	Kg	270	820	840	1240	1440
Sound Level (4)	dB(A)	65	65	65	<85-68	<85-72

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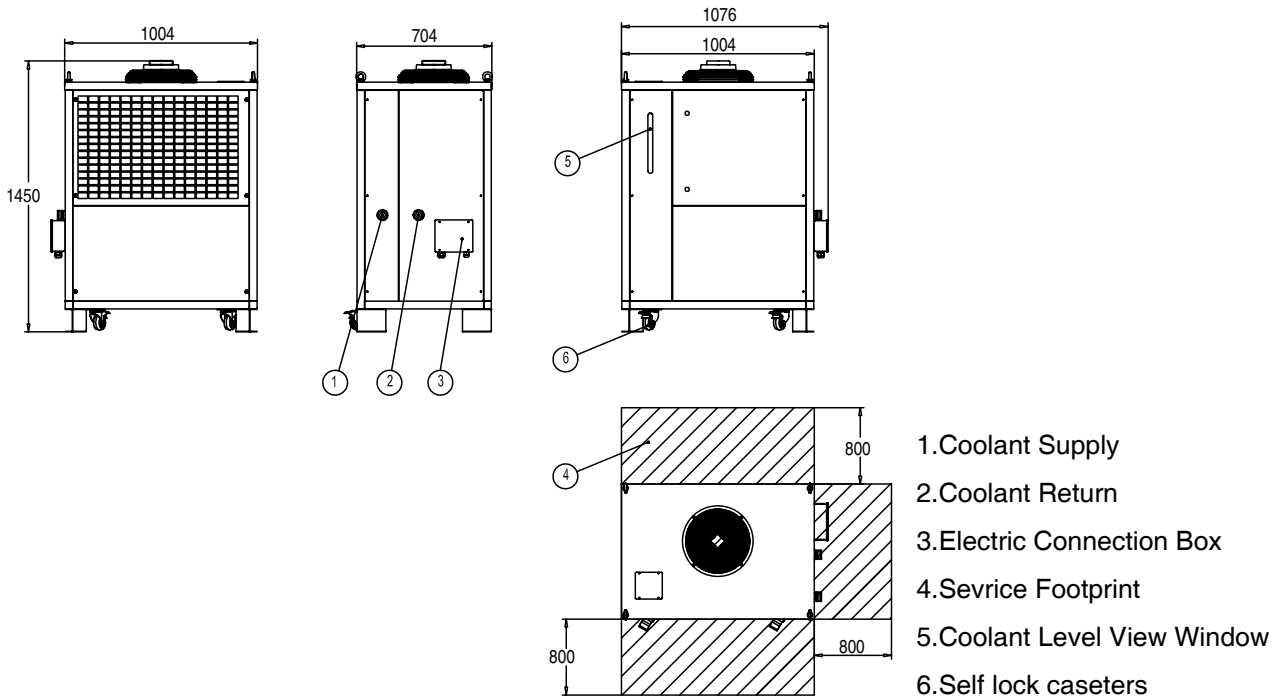
## Power Requirements

Supply voltage tolerance:  $\pm 10\%$

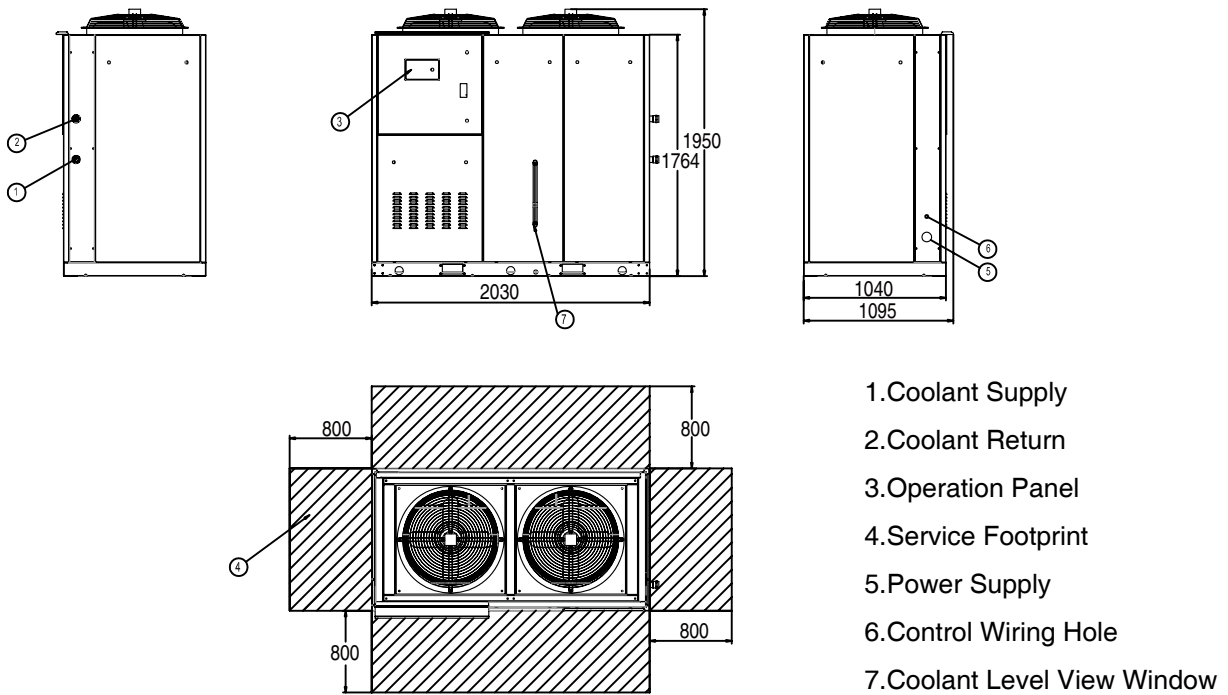
Power supply: Must have neutral line (zero line), three-phase four-wire or 5-wire

## Unit Outline Drawings

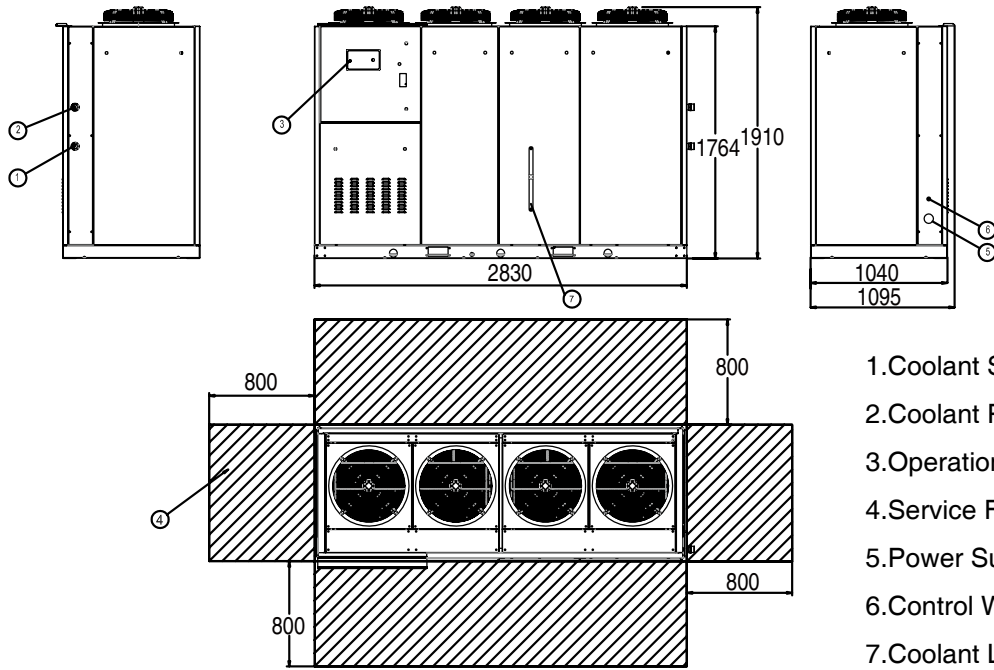
07E1



32E2 & 50E2

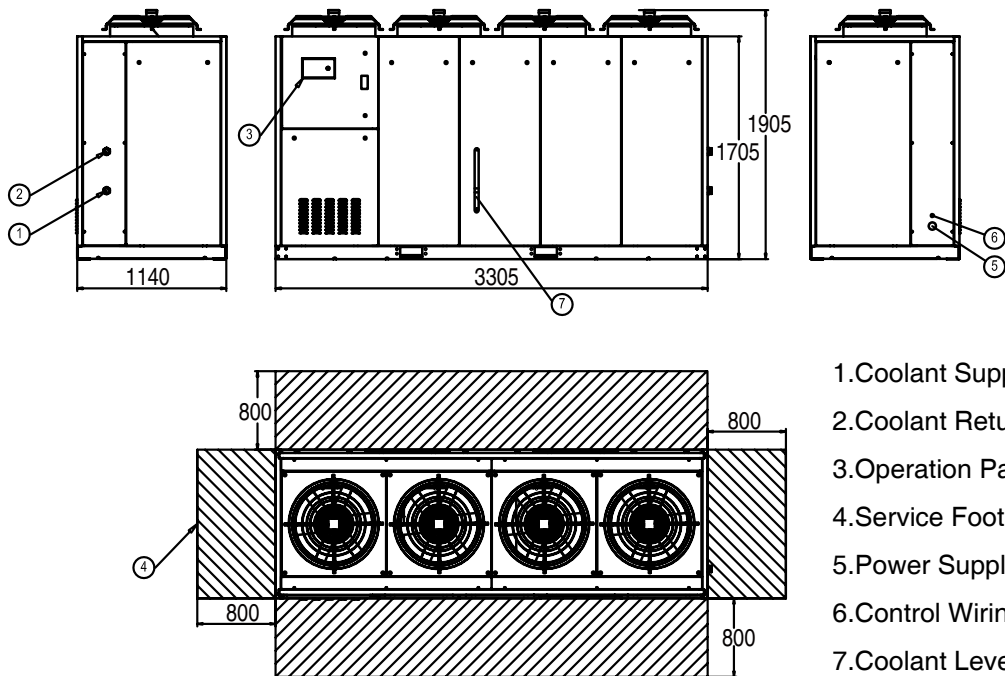


66E2



- 1.Coolant Supply
- 2.Coolant Return
- 3.Operation Panel
- 4.Service Footprint
- 5.Power Supply
- 6.Control Wiring Hole
- 7.Coolant Level View Window

80E2



- 1.Coolant Supply
- 2.Coolant Return
- 3.Operation Panel
- 4.Service Footprint
- 5.Power Supply
- 6.Control Wiring Hole
- 7.Coolant Level View Window

AIRSYS is a cooling product and solution provider for ICT (Information & Communication Technology) industry.

The products include:

- Air conditioner and Chiller for IT room and large data center
- Intelligent Control system (BAS) for IT room and data center
- Air conditioning equipments for telecom shelters
- Intelligent control system for shelter cooling.

Air conditioner and heat exchanger for telecom cabinets.

The solution include:

- Cooling system design
- System integration
- Installation and Commissioning
- Operation and Maintenance

AIRSYS is also a global leader in providing cooling solution for Medical Imaging System.

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