

## MatrixAir™ Series Precision Air Conditioner

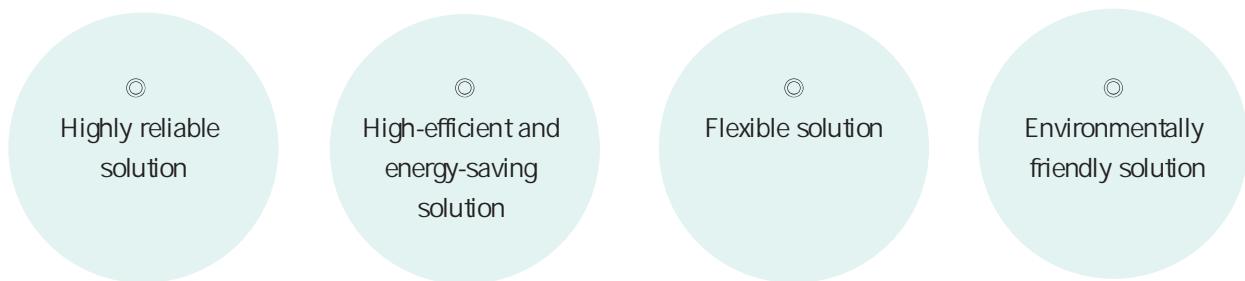
 **PLUG & POWER**  
By  MITSUBISHI ELECTRIC



## How to achieve accurate cooling of data center better?

Kstar MatrixAir<sup>TM</sup> Series Precision Air Conditioner, provides you with perfect solution.

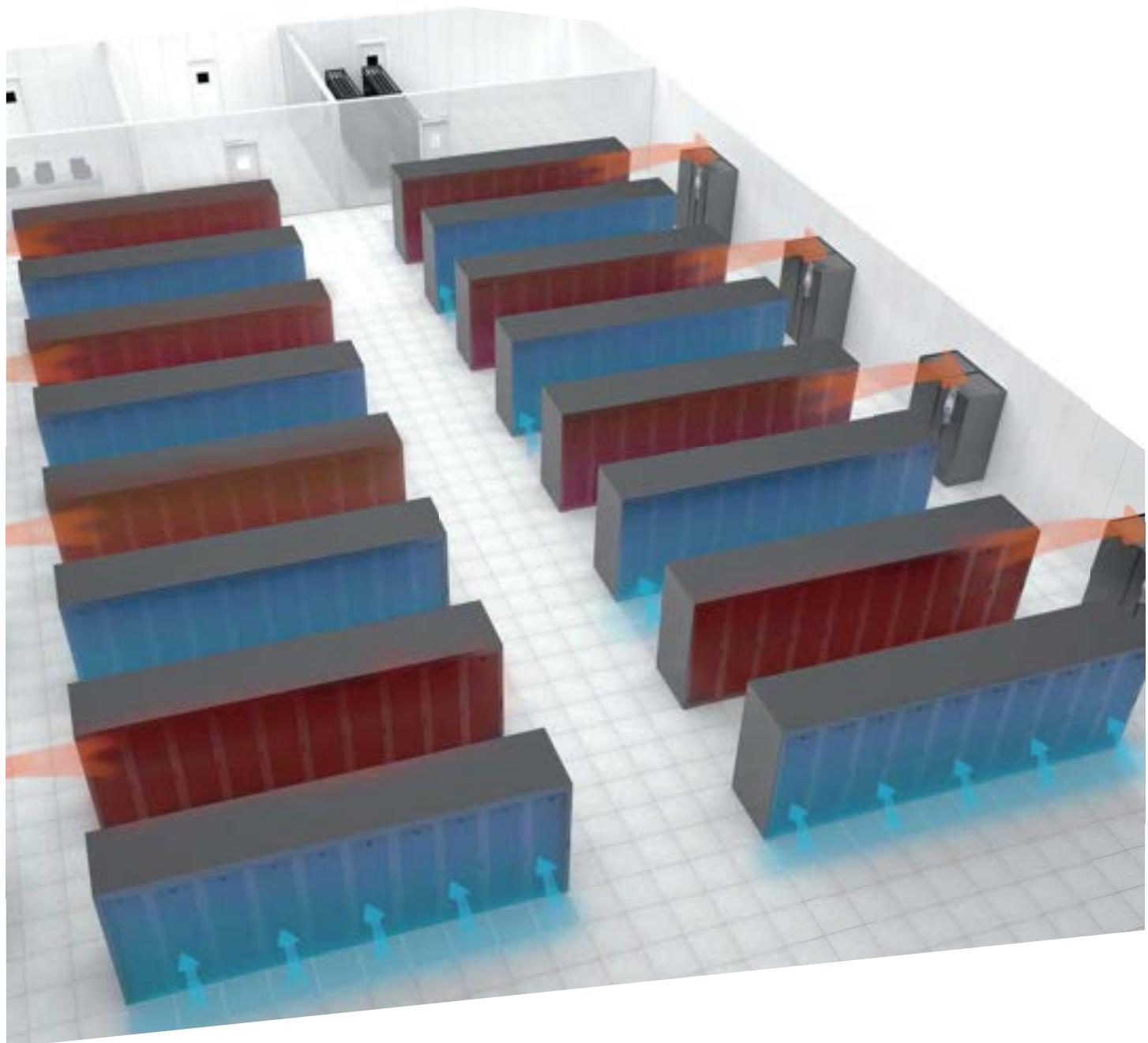
Reliability·High Efficiency·Environmentally Friendly·Flexibility



<ul style="list-style-type: none"> <li>· Severe test</li> <li>· Well designed cooling system</li> <li>· High-quality components</li> <li>· Advanced and reliable intelligent control system</li> </ul>	<ul style="list-style-type: none"> <li>· High-efficient configuration</li> <li>· Accurate refrigerant flow regulation</li> <li>· Intelligent humidification control</li> <li>· Electronic expansion valve</li> <li>· EC fan</li> <li>· Adjustable heating capacity</li> </ul>	<ul style="list-style-type: none"> <li>· Personalized and customized design</li> <li>· Wide range cooling capacity</li> <li>· Modular structure design</li> <li>· Seven cooling types</li> </ul>	<ul style="list-style-type: none"> <li>· Refrigerant R410A</li> </ul>
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## High Reliability

Kstar's MatrixAir™ series precision air conditioner integrates advanced energy-saving and environmentally friendly technology in the industry, relies on comprehensive development tools and technical resources and is carefully designed according to high standards. It can ensure the high reliability of unit with high-quality system design. It is a new generation of advanced, reliable, high-efficient, energy-saving, safe and environmentally friendly products in key cooling industry. It can guarantee the continuous, high-efficient and reliable operation of the key IT equipment of the data center for 24 hours of 365 days in the whole year.



### ◎ Severe Test Verification

MatrixAir™ series precision air conditioner has undergone the comprehensive and severe test in Kstar's performance test laboratory to ensure that the unit can still run reliably under harsh conditions.

### ◎ Well designed cooling system

- Higher heat exchange efficiency, more stable and reliable flow control, more reliable air distribution and layout, can realize the high energy efficiency and high reliability of MatrixAir™.

### ◎ High-quality Components

MatrixAir™ adopts high-quality components that have been strictly designed and selected. Compressor, fan, valve, electrical system and heating and humidification system components are recognized brands in the industry. High-quality components can ensure the high reliability and ultra-long life of air conditioner system.



## High Reliability



### ◎ Advanced and Reliable Intelligent Control System

MatrixAir™ adopts powerful professional precision air conditioner intelligent control system to realize high-efficient, energy-saving, stable and reliable control of the unit with superior performance.

- Support 64 units for group control.
- Standard RS485 intelligent communication interface, SNMP card optional.
- Graphical state display and temperature & humidity curve display.
- Alarm notification and it can record more than 3000 alarm events.
- Display and setting of environmental parameters.
- Reminding of running time and maintenance of main components.
- Multi-level password protection.
- 7 inches color touch screen is standard equipment, friendly interface, simple operation.



## High Reliability

Energy saving comes from efficiency, and high which requires intelligent coordination. MatrixAir™ series precision air conditioner system consists of high-efficiency components and intelligent control system that can quickly and accurately adjust the output. It can intelligently coordinate all outputs, achieve better efficiency and realized more energy-saving operation.

### ◎ High-efficiency Configuration

#### ▼ EC Fan

Compared with belt-driven forward centrifugal fan, backward centrifugal fan means lower power consumption, less maintenance and better air distribution, which can improve cooling efficiency. EC fan with efficiency up to 90% will provide a wide range of air volume regulation and lower energy consumption.



#### ▼ High-efficiency Scroll Compressor

Its excellent quality guarantees the high efficiency, high reliability, low noise and ultra-long life of the unit

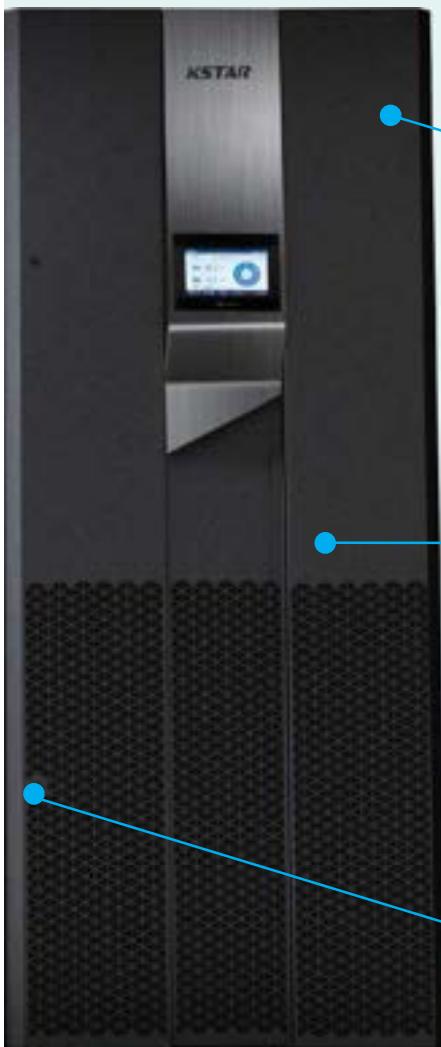


### ◎ Intelligent Humidification Control

Air conditioner system can respond quickly to output requirements; Humidification capacity is adjustable.

### ◎ Dynamic Airflow

EC fan can respond quickly to output requirements; EC fan can save up to 30% energy than conventional AC fans.



#### ▼ High-efficiency Heating System

High-efficiency heater has high thermal density, compact structure, fast and stable heating, low surface temperature and long service life; It has different power level for heating and it can select proper heating power according to real-time environment and easily maintain accurate environment

#### ▼ Electronic Expansion Valve

The electronic expansion valve controlled by microcomputer can accurately control the refrigerant flow in the system and realize the improvement of unit start-up features, fast and stable working condition control and better refrigeration performance; Relying on the wide flow characteristics of electronic expansion valve, the air conditioner system can make full use of the lower external ambient temperature and save energy consumption up to 30%.

#### ▼ High-efficiency Humidification System

It is equipped with intelligent humidification control system and washable humidifying barrel. Humidification capacity is adjustable, and support automatic water drainage and flushing. It is suitable for different water quality. It is energy-saving and water-saving, safe and aseptic.

#### ◎ Adjustable heating power

Adjustable heating power can make it intelligently choose heating power level according to real-time environment and easily maintain accurate environment

#### ◎ High-efficient Flow Control

The valve can accurately and quickly make the output suitable for various states and improve the performance and efficiency of air conditioner system; The electronic expansion valve controlled by microcomputer can save energy consumption up to 30%.

## Flexibility

Seven cooling types, Up-flow type and down-flow type, wide cooling range and personalized and customized design are available for Kstar MatrixAir™ series precision air conditioner system, which can flexibly meet different needs of users.

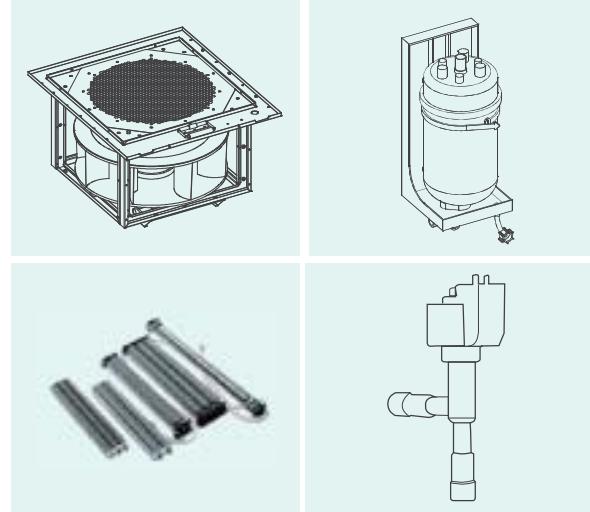
### ○ Modular Components with High Adaptability

Kstar MatrixAir™ series precision air conditioner is composed of high-quality modular components that can be flexibly applied and applicable to different needs of data center.

- Fan component
- Humidification component
- Expansion valve component
- Heating component
- Cooling component

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Plenum	Large-power heater	DC inverter compressor
External remote temperature & humidity sensor	Level F5 high-efficiency filter	Low temperature kits
Floor Stand	Water leakage detection system	High static pressure



### ○ Rich and Flexibly-matched Options

Kstar's professional engineers can flexibly combine a refrigeration solution that accurately matches the project from multiple options according to the needs of users.

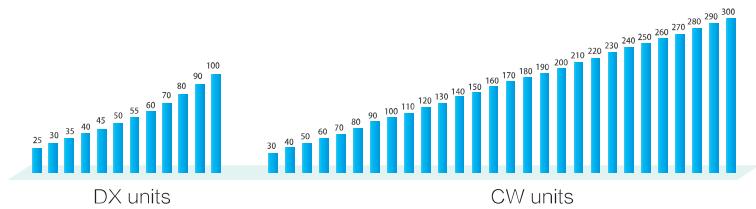


### ○ Flexible Expansion Capacity

Kstar MatrixAir™ series precision air conditioner adopts modular structure, and each unit has an independent intelligent control system, which supports network group control of multiple units and can be flexibly arranged in a centralized or decentralized mode so as to meet the expansibility demand of growing data center on cooling capacity.

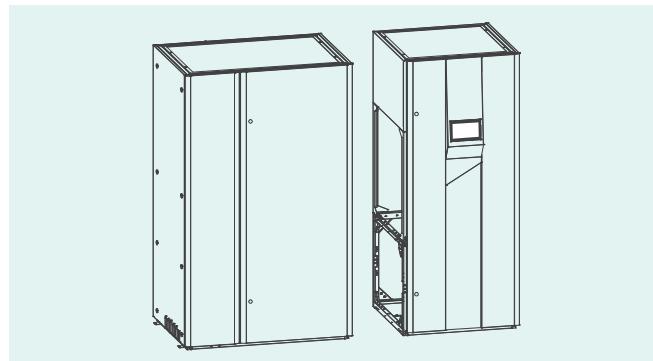
## ◎ Wide Cooling Range

The cooling capacity range provided by Kstar MatrixAir™ series precision air conditioner is 25kW-300kW, which can fully meet the requirements of data center on refrigeration level.



## ◎ Modular Structure Design

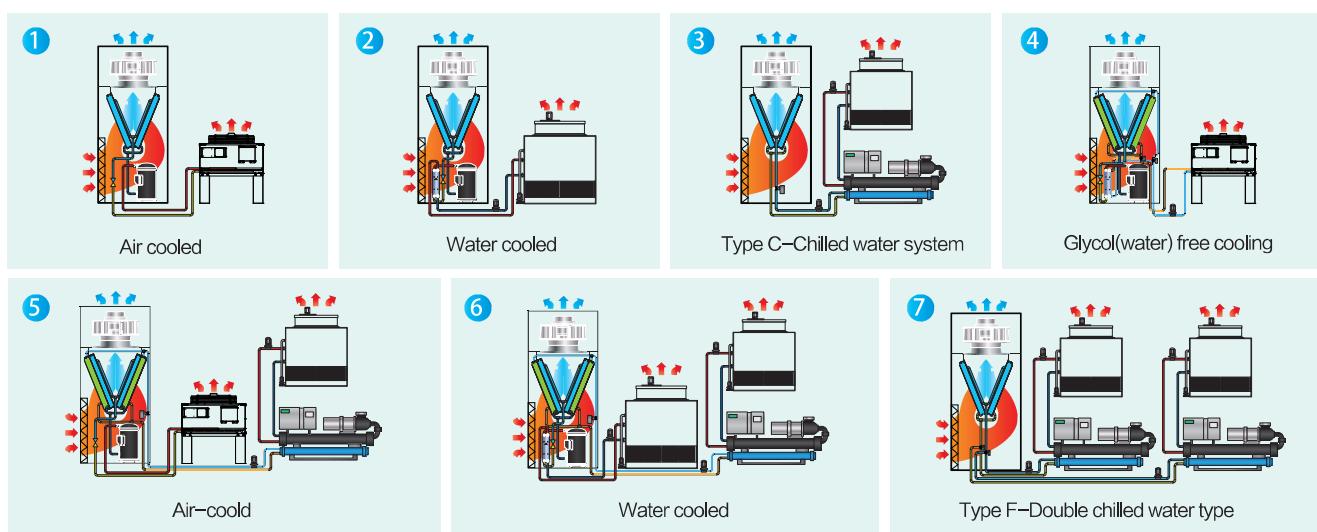
Kstar MatrixAir™ series precision air conditioner adopts modular structure design, with more compact unit structure and smaller footprint; moreover, it supports modular split and solves the difficult problem in the handling and maintenance of compact space. Full frontal maintenance is available, and lateral and rear parts can also be opened for maintenance.



## ◎ Seven Cooling Types

Seven kinds of cooling systems are optional for Kstar MatrixAir™ series precision air conditioner, including ① Air-cooled type (A), ② water-cooled type (W), ③ chilled water type (C), ④ glycol(water) free cooling (G), ⑤ air-cooled double cooling source type (D), ⑥ water-cooled double cooling source ⑦ double chilled water type. They can meet different needs of users.

The dual cooling system of Kstar MatrixAir™ series precision air conditioner is designed, with better redundancy and strong ability to cope with faults.



## Technical Parameters



## ▼ DX Unit

Air cooled MT****A Water cooled MT****W	Unit	025	030	035	040	045	050	040	050	060	070	080	090	100
<b>EC fan, air/water cooled</b>														
Total cooling capacity <sup>1)</sup>	kW	26.9	32.7	37.2	41.8	45.9	51.7	42.6	52.8	61.7	71.1	81.8	92.1	101.3
Sensible capacity <sup>1)</sup>	kW	25.0	31.4	35.0	39.7	44.1	49.6	40.5	49.6	59.2	66.1	78.5	86.6	94.2
Air volume	m <sup>3</sup> /h	7800	8600	9500	12000	13000	13500	12500	13500	18700	19300	21600	24000	26000
Sensible heat ratio (SHR)	%	93	96	94	95	96	96	95	94	96	93	96	94	93
Standard electric heating <sup>2)</sup>	kW	6	6	6	9	9	9	9	9	9	9	12	12	12
Large-power electric heating	kW	12	12	12	18	18	18	18	18	18	18	18	18	18
Number of compressors	PCS	1	1	1	1	1	1	2	2	2	2	2	2	2
Humidification capacity	kg/h	6	8	8	10	10	10	10	10	10	10	12	12	12
Humidification capacity	kg/h	8	8	8	15	15	15	15	15	15	15	15	15	15
Number of fan	pcs	1	1	1	1	1	1	1	1	2	2	2	2	2
Fan type	/													
Full load current-(air cooled)	A	28.8	32.7	35.1	42.2	48.3	52.1	43.8	53.6	58.7	63.5	76.3	81.7	96.6
Full load current-(water cooled)	A	26.1	30.2	32.6	39.7	45.8	48.5	41.3	50.0	53.7	58.8	71.3	76.7	91.6
Unit weight	kg	275	290	330	372	424	485	490	510	660	710	800	850	876
Unit width	mm	850	928	928	928	928	928	1378	1378	1828	1828	1828	1828	1828
Unit depth	mm	850	995	995	995	995	995	995	995	995	995	995	995	995
Unit height	mm	1960	1975	1975	1975	1975	1975	1975	1975	1975	1975	1975	1975	1975

Notes: 1. Parameter table

1) Air/water cooled unit data is based on 24°C and 50%RH indoor return air temperature and humidity.

2) Chilled water data is based on 28°C and 40%RH indoor return air temperature and humidity, inlet chilled water temperature of 10°C and outlet chilled water temperature of 15°C;

3) Three-level power step control is adopted for electric heating;

2. Power supply type: 380V&400V/3P/50Hz, 380V&400V/3P/60Hz. The PAC for 50Hz and the PAC for 60Hz is different type. The PAC for 50Hz power is not compatible with 60Hz, and the PAC for 60Hz power is not compatible with 50Hz.

3. The units of other cooling types, air supply type unit and customized products can be provided. For more data, please contact Shenzhen Kstar Science & Technology Co., Ltd;

4. Shenzhen Kstar Science & Technology Co., Ltd. reserves the right of final interpretation of the data without prior notice if the data in the table is changed due to technical progress of the product.

## ▼CW Unit ( Chilled Water Type )

MT****C	Unit	30	40	50	60	70	80	90	100	110	120
Total cooling capacity <sup>2)</sup>	kW	32.8	41.6	51.5	61.7	71.9	81.6	92	101.5	112	122.3
Sensible capacity <sup>2)</sup>	kW	32.8	41.6	51.5	61.7	71.9	81.6	92	101.5	112	122.3
Air volume	m <sup>3</sup> /h	9500	11000	12000	14000	15000	20000	21500	24000	25000	26000
Water flow <sup>2)</sup>	m <sup>3</sup> /h	5.8	7.8	8.9	11.2	12.9	15.0	17.2	18.6	19.8	22.6
Water pressure drop <sup>2)</sup>	kPa	45	50	60	60	65	70	70	62	68	72
Optional electric heating power <sup>3)</sup>	kW	6	6	6	9	9	12	12	12	12	12
Optional humidification capacity	kg/h	6	8	8	8	8	10	10	12	12	12
Number of fan	pcs	1	1	1	1	2	2	2	2	2	2
Power of fan	kW	1.4	1.7	2.3	2.4	2.8	4	4	4.3	4.7	5.5
Fan type	/										
EC fan											
Full load current (constant temperature and humidity)	A	25	30	30	33	33	47	47	50	50	50
Full load current (single cooling)	A	6	6	6	6	12	12	12	12	12	12
Inlet and outlet pipe diameter	mm	32	32	32	42	42	42	42	54	54	54
Unit weight	kg	340	380	390	450	460	550	563	567	570	592
Unit width	mm	928	928	928	928	1828	1828	1828	1828	1828	1828
Unit depth	mm	995	995	995	995	995	995	995	995	995	995
Unit height	mm	1975	1975	1975	1975	1975	1975	1975	1975	1975	1975

## Technical Parameters

### ▼CW Unit ( Chilled Water Type )

MT***C	Unit	130	140	150	160	170	180	190	200	250	300
Total cooling capacity <sup>2)</sup>	kW	131.6	140.9	152.9	162.3	172.5	182.6	192	202.9	244.5	274.1
Sensible capacity <sup>2)</sup>	kW	131.6	140.9	152.9	162.3	172.5	182.6	192	202.9	244.5	274.1
Air volume	m <sup>3</sup> /h	30000	32000	34500	36000	37000	39000	40000	41000	48000	52000
Water flow <sup>2)</sup>	m <sup>3</sup> /h	25.1	27.1	27.9	30.5	31.3	33.9	35.7	37.8	37.8	37.8
Water pressure drop <sup>2)</sup>	kPa	77	82	85	90	95	100	110	110	150	150
Optional electric heating power <sup>3)</sup>	kW	12	12	12	12	12	12	12	12	12	12
Optional humidification capacity	kg/h	12	12	12	12	12	12	12	12	12	12
Number of fan	pcs	2	2	3	3	3	3	3	3	4	4
Power of fan	kW	7.1	7.2	7.7	7.4	7.6	7.6	7.6	8.6	10.5	12.1
Fan type	/					EC fan					
Full load current (constant temperature and humidity)	A	50	50	50	57	57	57	57	57	63	63
Full load current (single cooling)	A	12	12	12	18	18	18	18	18	24	24
Inlet and outlet pipe diameter	mm	54	54	54	67	67	67	67	67	67	67
Unit weight	kg	620	630	660	720	730	740	750	900	1150	1250
Unit width	mm	1828	1828	2728	2728	2728	2728	2728	2728	3628	3628
Unit depth	mm	995	995	995	995	995	995	995	995	995	995
Unit height	mm	1975	1975	1975	1975	1975	1975	1975	1975	1975	1975

#### Notes:

1. Parameter table
- 1) Air/water cooled unit data is based on 24°C and 50%RH indoor return air temperature and humidity.
- 2) Chilled water unit data is based on 28°C and 40%RH indoor return air temperature and humidity, inlet chilled water temperature of 10°C and outlet chilled water temperature of 15°C.
- 3) Three-level power step control is adopted for electric heating.
2. **Power supply type: The power is compatible with 380V&400V/3P/50Hz and 380V&400V/3P/60Hz.**
3. The units of other cooling types, air supply type unit and customized products can be provided. For more data, please contact Shenzhen Kstar Science & Technology Co., Ltd.
4. Shenzhen Kstar Science & Technology Co., Ltd. reserves the right of final interpretation of the data without prior notice if the data in the table is changed due to technical progress of the product

## ▼ Air-cooled/Water-cooled Double Cooling source Unit

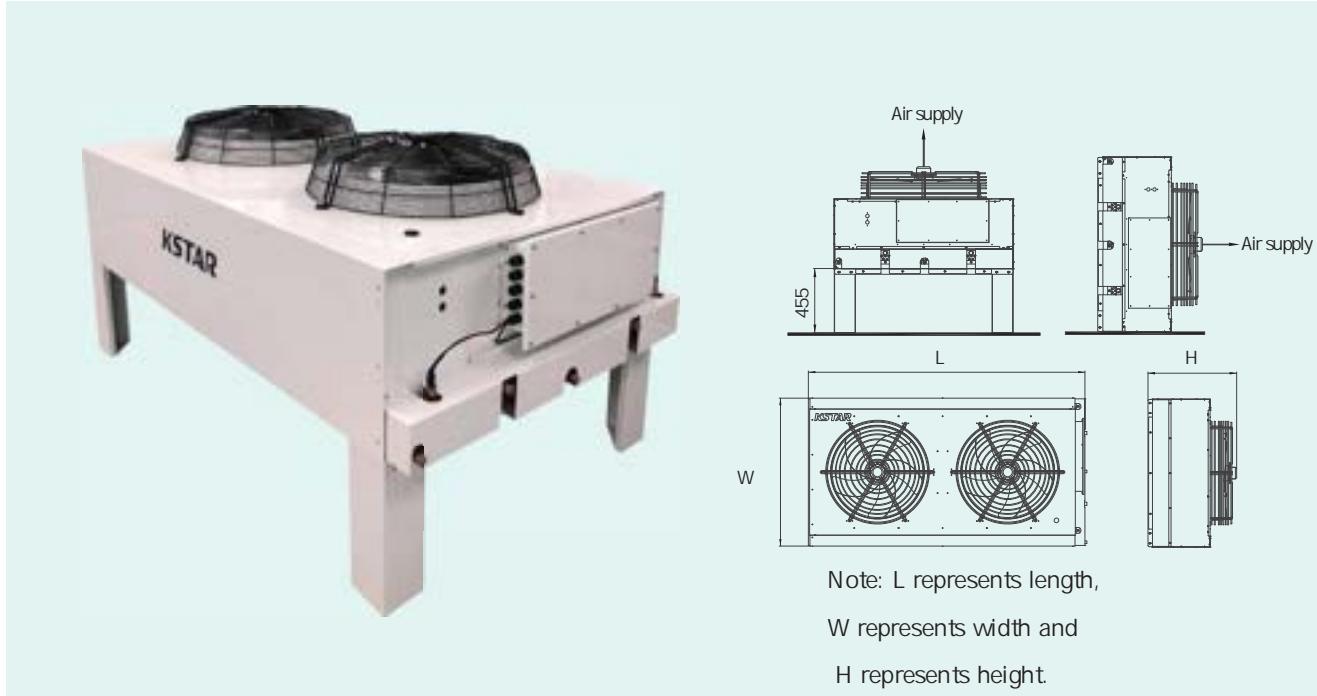
Air cooled MT***D Water cooled MT***E	Unit	25	30	35	40	45	50	40	50	60	70	80	90	100
Air volume	m <sup>3</sup> /h	7800	8600	9500	12000	13000	13500	12500	13500	18700	19300	21600	24000	26000
DX Total cooling capacity <sup>1)</sup>	kW	26.9	32.7	37.2	41.8	45.9	51.7	42.6	52.8	61.7	71.1	81.8	92.1	101.3
DX Sensible cooling capacity <sup>1)</sup>	kW	25	31.4	35	39.7	44.1	49.6	40.5	49.6	59.2	66.1	78.5	86.6	94.2
CW Total cooling capacity <sup>2)</sup>	kW	25.5	30.5	35.7	43.5	43.8	54.4	43.5	54.4	62.4	70.5	81.1	90.6	99.1
CW Sensible cooling capacity <sup>2)</sup>	kW	22.2	26.5	31.4	37.8	38.1	47.9	37.8	47.9	54.3	62.0	70.6	79.7	86.2
Water flow <sup>2)</sup>	m <sup>3</sup> /h	5.8	7.8	8.9	17.2	11.2	18.6	11.2	18.6	19.8	22.6	25.1	27.1	27.9
Water pressure drop <sup>2)</sup>	kPa	45	50	60	70	60	62	60	62	68	72	77	82	85
Electric heating <sup>3)</sup>	kW	6	6	6	9	9	9	9	9	9	12	12	12	12
Humidification capacity	kg/h	6	8	8	10	10	10	10	10	10	10	12	12	12
Number of compressor	Pcs	1	1	1	1	1	1	2	2	2	2	2	2	2
Number of fan	pcs	1	1	1	1	1	1	1	1	2	2	2	2	2
Full load current	A	29.8	33.5	36.2	43.3	49.3	53.0	44.9	54.5	60.5	65.5	78.0	83.3	98.6
Inlet and outlet pipe diameter	mm	32	32	32	32	32	32	32	32	42	42	54	54	54
Unit weight	kg	375	460	500	542	594	655	611	675	760	810	970	1020	1046
Unit width	mm	850	1578	1578	1578	1578	1578	1578	1578	2278	2278	2678	2678	2678
Unit depth	mm	850	995	995	995	995	995	995	995	995	995	995	995	995
Unit height	mm	1960	1975	1975	1975	1975	1975	1975	1975	1975	1975	1975	1975	1975

## Notes:

1. Parameter table
- 1) Air/water cooled unit data is based on 24°C and 50%RH indoor return air temperature and humidity.
- 2) Chilled water unit is based on 28°C and 40%RH indoor return air temperature and humidity, inlet chilled water temperature of 10°C and outlet chilled water temperature of 15°C.
- 3) Three-level power step control is adopted for electric heating.
2. Power supply type: 380V&400V/3P/50Hz, 380V&400V/3P/60Hz. The PAC for 50Hz and the PAC for 60Hz is different type. The PAC for 50Hz power is not compatible with 60Hz, and the PAC for 60Hz power is not compatible with 50Hz.
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## KC Series Air-cooled Condenser

Kstar KC series air-cooled condenser is a product with superior performance, environmentally friendly and energy-saving feature and flexible application, which can meet strict application requirements.



Note: L represents length,

W represents width and

H represents height.

- Dual Anti-corrosion
  - High-quality corrosion-resistant aluminum alloy
  - Surface high temperature coating protection
- Enhanced Heat Transfer
  - Enhanced heat transfer internal rifled copper tube
  - High-quality corrugated heat exchange fin
- Dual Protection
  - Integrated manifold protective cover
  - Protection against coil damage
- Intelligent Control System
  - Highly sensitive pressure sensor
  - Intelligent variable frequency stepless speed regulation controller
- High-quality Fans
  - Industry recognized axial fan is of high quality and maintenance-free.
  - Variable frequency speed regulation high-efficiency fan is more energy saving and has lower noise.
- 24kW~84kW Single and Dual System Design, with Heat Exchange Capacity of 24kW~84kW
  - Flexibly matched with indoor unit 1+1 and indoor unit 1+2
  - The combined heat exchange capacity can be expanded to 168kW.
- Positive Pressure Seal Maintained among All Fans
- Standard IP55 Electrical Box Configuration

### ▼ KC Single System Air-cooled Condenser

KCS**	Unit	024	028	032	036	042	048	054	064	072	084
Voltage	V	380 / 400	380 / 400	380 / 400	380 / 400	380 / 400	380 / 400	380 / 400	380 / 400	380 / 400	380 / 400
Frequency	Hz	50 / 60	50 / 60	50 / 60	50 / 60	50 / 60	50 / 60	50 / 60	50 / 60	50 / 60	50 / 60
Phase	P	3	3	3	3	3	3	3	3	3	3
Full-load current	A	1.8	1.8	1.8	2.5	2.5	2.5	2.5	3.6	5.0	5.0
Weight	kg	100	110	110	120	130	140	148	150	180	230
Unit length	mm	1380	1380	1380	1380	1580	1780	1780	1980	2180	2380
Unit width	mm	975	975	975	975	1274	1274	1274	1274	1274	1274
Unit height	mm	700	700	700	700	700	700	700	700	700	700
Tripod height	mm	455	455	455	455	455	455	455	455	455	455

### ▼ KC Dual System Air-cooled Condenser

KCD**	Unit	048	054	064	072	084
Voltage	V	380 / 400	380 / 400	380 / 400	380 / 400	380 / 400
Frequency	Hz	50 / 60	50 / 60	50 / 60	50 / 60	50 / 60
Phase	P	3	3	3	3	3
Full load current	A	2.5	2.5	3.6	5.0	5.0
Weight	kg	140	148	150	180	230
Unit length	mm	1780	1780	1980	2180	2380
Unit width	mm	1274	1274	1274	1274	1274
Unit height	mm	700	700	700	700	700
Tripod height	mm	455	455	455	455	455

Notes: 1. The minimum operating environment temperature of standard unit is -20°C, and the minimum operating environment temperature of low-temperature unit is -40°C;

2. Low-noise and customized products can be provided. For more data, please contact Shenzhen Kstar Science & Technology Co., Ltd;

3. Power supply type: The power is compatible with 380V&400V/3P/50Hz and 380V&400V/3P/60Hz.

4. Shenzhen Kstar Science & Technology Co., Ltd. reserves the right of final interpretation of the data without prior notice if the data in the table is changed due to technical progress of the product