



## Precision Cooling Solution

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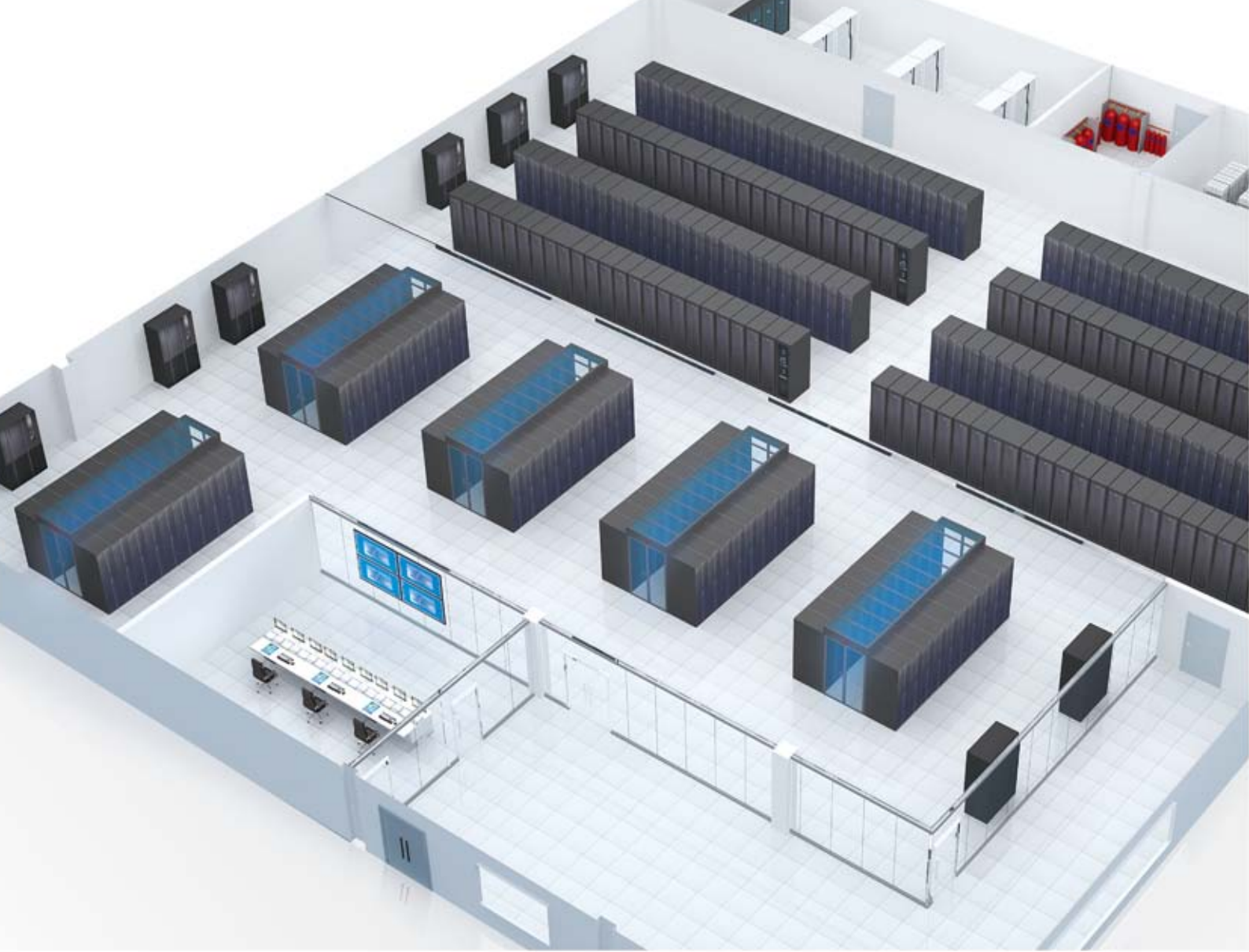
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# Contents

<b>01</b>	Hot/Cold Aisle Containment Product Introduction	01
	Product Overview	01
	Product Features	02
<b>03</b>	MatrixAir Series Precision Air Conditioner	03
	Product Introductions	03
	Technical Specifications	14
<b>21</b>	StationAir Series Precision Air Conditioner	21
	Product Introductions	21
	Technical Specifications	24
<b>25</b>	FocusAir Series Inrow Precision Air Conditioner	25
	Product Introductions	25
	Technical Specifications	31
<b>32</b>	KSTAR The advantage of fluorine pump free-cooling precision air conditioner	32
	Product Introductions	32
	Technical Specifications	35
<b>37</b>	Precision Air Conditioner Customized Solution	37
<b>38</b>	Precision Air Conditioner Green and Environmental Protection Features	38
<b>38</b>	Enterprise Qualification Authentications	38





## Hot / Cold Aisle Containment Product Introduction

### © Product Overview

The equipment of enterprise data center room generally faced with high density fever, high power energy consumption, limited room and cabinet space, and room planning behind the growth in demand for business and other issues. All along, in order to meet the rising data center cooling requirements of the engine room, computer room air conditioner equipment is also continuing to increase and replacement. However, engine room still exists the problem of local heat island. Cold air and hot air are mixed directly and waste large amounts of cooling capacity. The equipment in the cabinet upper can not get the cold quantity of demand, the overall energy consumption PUE value is still high. Especially with the increasing power consumption of the server device, the needs of cabinet cooling capacity greatly enhanced. KSTAR's hot/cold aisle containment product is an energy-saving program for medium to large data center deployments. It can greatly improve data center cooling capacity and more efficient make full use of cabinet and engine room space.

## ◎ Product Features

### ● Modular Design, Flexible Configuration

According to different application requirements, product provides several sizes and components. The design of hot/cold aisle containment is a unit module, that is, the corresponding two cabinets as a unit and each unit can separate installation or removal. It can be connected with the adjacent unit, easy removal.

### ● Effective Air Seal, to Prevent the Short Circuit of the Air Flow, Good Energy Saving Effect

- The unit module at the top of hot/cold aisle containment closely connected. Effectively prevent airflow leakage
- The strip of rubber and the brush used between enclosed doors and cabinet door, It can maximize the isolation air
- The glass of door use 5mm toughened glass to effectively increase the heat insulation, sound insulation effect
- The good sealing seal used in door frame, it can prevent cold air leak on the hot/cold aisle containment
- Automatic door system (optional) with semi automatic delay closing assembly, effectively prevent the loss of cold air if you forget to close door.

### ● Reliable Security

- The hot/cold aisle containment system use non flammable, flame retardant materials
- The built-in smoke detection system supports the roof automatic drop and seamless access to the engine room fire system.
- Compatible with mainstream monitoring system, timing control the hot/cold aisle containment state
- Optional emergency open door system can realize a key to open the door

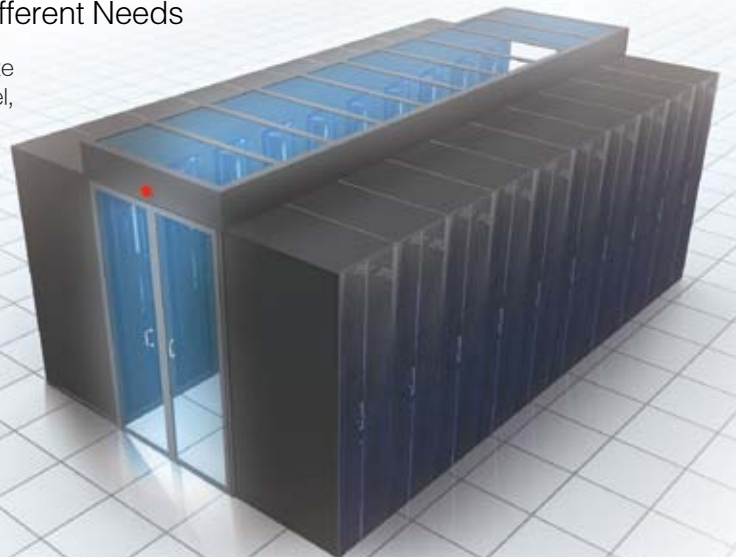
### ● Customization Capabilities to Meet the Different Needs

According to the needs of different users to customize different system modules, it can meet to different channel, hot/cold aisle containment, or single and double rows.

### ● Provide Complete Sets of Products, Convenient Installation, Maintenance

Provide one-stop complete sets of products, including UPS, air conditioning, power supply and distribution system, the cabinet, hot/cold aisle containment module, monitoring system.

All products Seamless coordination, unified installation, maintenance, management and services





## How to Improve Data Center Cooling Effect Better?

# MatrixAir™ Precision Air Conditioner, A Perfect Solution for You.

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### Reliability • Efficiency • Environment Protection • Flexibility

#### ⦿ High Reliability

- High strength testing verification
- Highly efficient and stable system matching design
- High quality components
- Advanced and reliable intelligent control system

#### ⦿ High Efficiency

- High efficiency configuration
- Precisely controlled refrigerant flow
- Intelligent humidification control
- Electronic expansion valve
- Dynamic airflow
- 3 kinds of staged heating system

#### ⦿ Flexiable

- Personalized customized design
- Wide range cooling capacity
- Module design
- Six kinds of sizes
- Seven kinds of cooling types

#### ⦿ Environment Protection

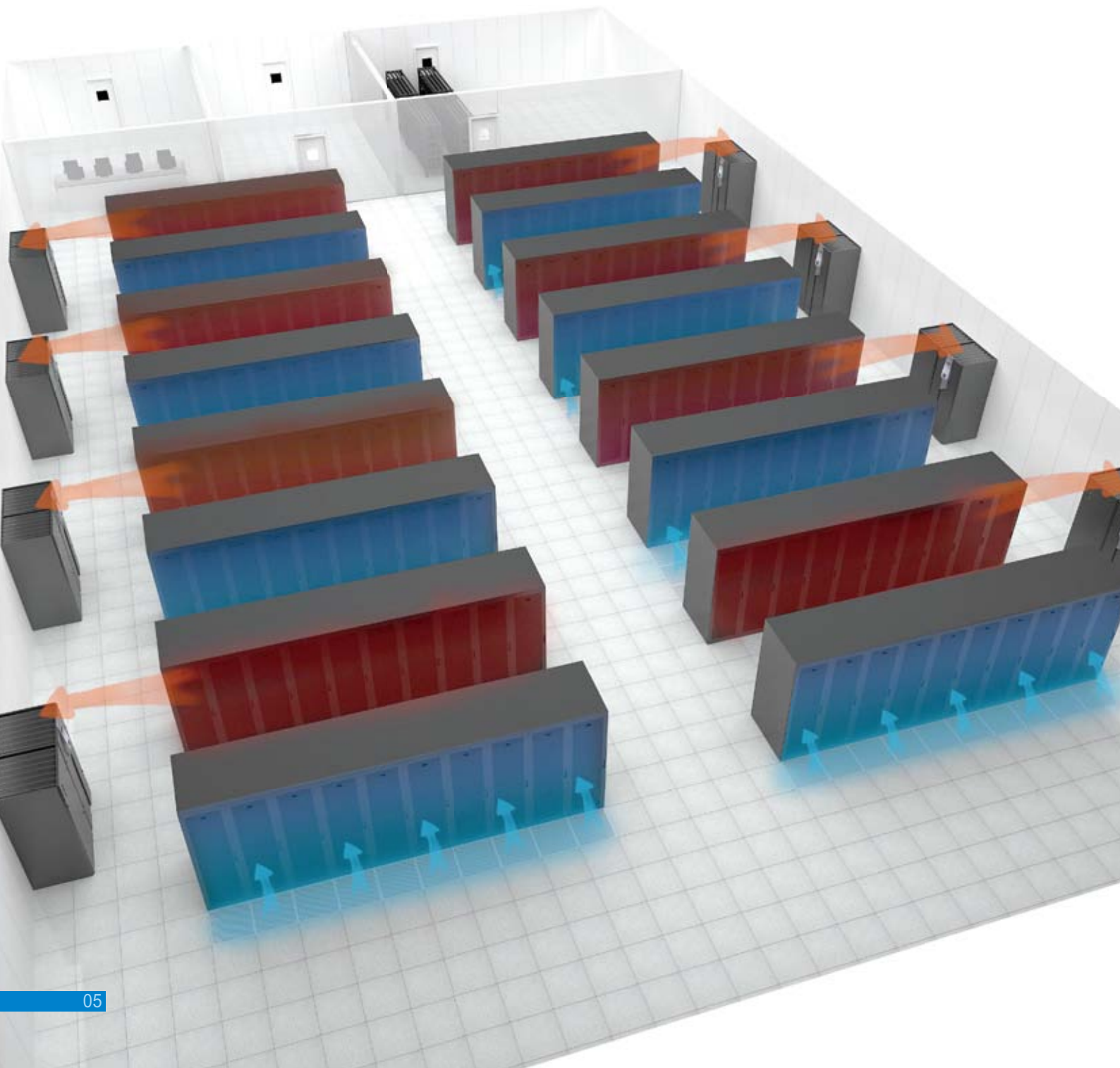
- Green refrigerant



MatrixAir™ Series  
Precision Air Conditioner Solution Features

High Reliability

With the powerful platform of technical tools and resources, KSTAR concentrates on every step of R&D and production to build MatrixAir™ precision air conditioner, green, reliable and efficient, to protect your data center critical IT equipment running 365 days × 24 hours.



## ◎ High Strength Test Verification

Every MatrixAir™ unit was fully tested and verified to be able to run under extreme condition.

## ◎ Highly Efficient and Stable System Matching Design

The refrigeration system of MatrixAir™ was carefully designed. Better heat exchanging effect, better flow control, better air distribution to make unit more efficient and more robust.

## ◎ High Quality Components

MatrixAir™ unit is made of carefully selected components. Compressor, fan, valves, control system, heating and humidifying system are all industry recognized brands, which keep the unit reliable and long life.





## ◎ Advanced and Reliable Intelligent Control System

- The powerful control system of MatrixAir™ unit can achieve the high efficiency, energy saving and reliability.
- Group working mode (achieve energy saving operation, rotating operation and rotating when main unit fails)
- Remote monitoring access with common protocol
- Status and alarm display by diagram
- All alarm records
- Display and setting the environmental parameters
- Records the operating time of main components and maintenance time
- Multiple level password protection
- Auto restart after power regains
- Optional 5.7" (320 × 240) color touch screen, the page more friendly, the manipulation more convenient.



Standard Controller



Standard Controller



MatrixAir™ is made of highly efficient components and precise control system. All components are carefully controlled to work together in harmonized and efficient mode.

## ◎ Efficient Configurations

### ● High Efficiency Fan

Backward centrifugal fan means lower energy consumption, less maintenance, better air distribution and cooling efficiency comparing with the forward fan. Optional EC fan with 90% efficiency motor brings wider airflow range and lower fan power consumption.



### ● High Efficiency Scroll Compressor

The high quality scroll compressor means high reliability, low noise and long running life.



## ◎ Intelligent Humidifying Control

Humidifying capacity is adjustable from 20%~100%.

## ◎ Dynamic Airflow

EC fan can make a quick response to the output requirement and gains maximum 30% energy saving than general fan.



● High Efficiency Heating System

Aluminum type heater with high heat density, compact structure, quickly heating, stable, lower surface temperature and long life can work on three staged and able to maintain temperature level precisely.



● Electronic Expansion Valve (EEV)

EEV' s wide flow capacity and precision control characteristics bring stable startup and better cooling operation; get best use of low environmental temperature, saving 30% energy cost maximum ( Optional ) .



● High Efficiency Humidifying System

Intelligent humidifying control system can automatically drain and flush, suitable for different water quality.

◎ 3 Kinds of Staged Heating System

Staged heater matches environmental requirements with adjustable heating output, stably maintaining optimum temperature envelop.

◎ Optimized Refrigerant Flow Control

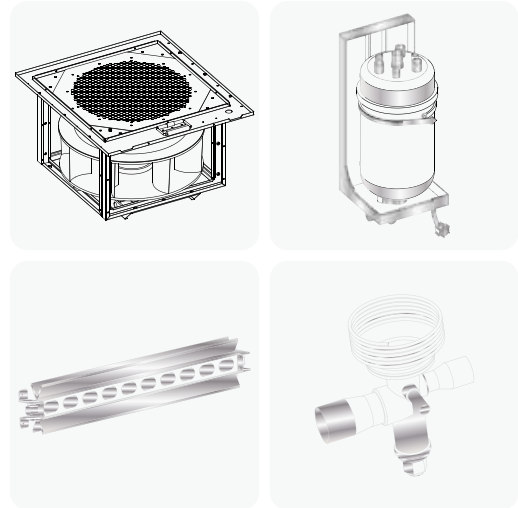
The valve' s output can match all situations, which could improve the performance and efficiency. Microcomputer controlled EEV could save 30% consumption.

MatrixAir™ precision air conditioner is available with 7 kinds of cooling types, 6 kinds of frames, upflow & downflow, wide cooling capacity range and any other customized configuration, to meet your specified requirements.

### Adaptable Modular Assembly

MatrixAir™ is built with high quality modular assembly, which is adjustable to match your data center design choice.

- Fan assembly
- Humidifying assembly
- Throttling assembly
- Heating assembly
- Cooling assembly



- Upflow air chamber
- Floor stand
- High power heater
- Level F5 high efficiency filter
- Large size display
- EEV (electronic expansion valve)
- Water leaking detection system
- Low-temperature operation component
- High ESP



### Customized Options

Per requirement, KSTAR is ready to go to design a suitable cooling solution only for you.

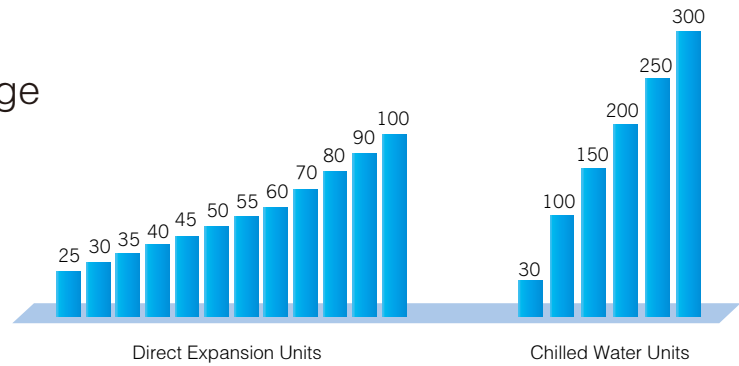
### Flexible Capacity Configuration

Every MatrixAir™ unit has a separate control system, supporting ground working mode, or stand alone working mode. It can be planned and deployed as your business changes.



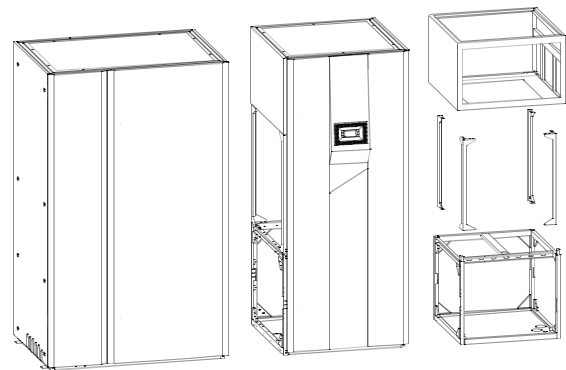
## Wide Cooling Capacity Range

The cooling capacity of MatrixAir™ is from 25kW to 300kW and is extendable to 200kW above, to overcome the mega data center capacity challenges.



## Modular Structure Design

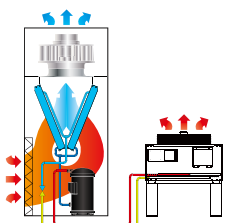
Compact Footprint, Easier Service, Easier Transportation.  
The MatrixAir™ is designed with modularity mechanical frame. The unit can be torn down to several modular sub-assemblies. It is easy to be transported to site wherever the lift space is limited. It can be front serviced for all components, the flank and back side also can be opened.



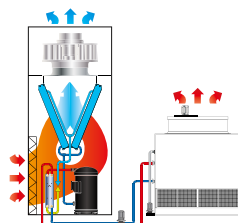
## 7 Kinds of Cooling Types

MatrixAir™ is available with 7 kinds of cooling types: air cooled, water cooled, chilled water, glycol cooled, air dual cooled, water dual cooled and dual chilled water systems.

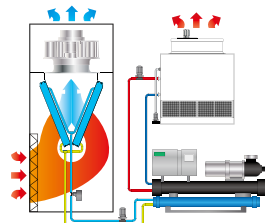
The dual cooling system of MatrixAir™ series precision air conditioner is better in the aspect of redundancy, and stronger fault strain ability.



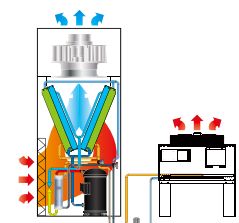
1 A type - Air Cooled



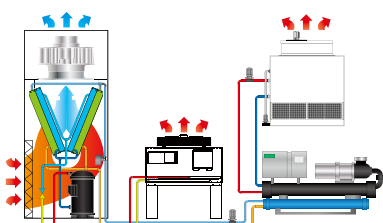
2 W type - Water Cooled



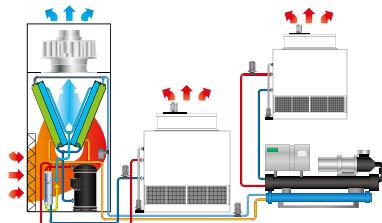
3 C type - Chilled Water



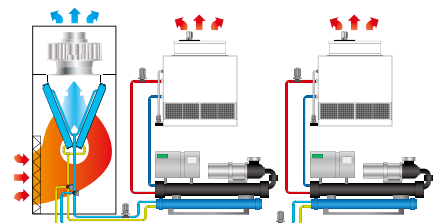
4 G type - Glycol Cooled



5 D type - Air Dual Cooled



6 E type - Water Dual Cooled



7 F type - Dual Chilled Water



## ◎ 6 Kinds of Frame Sizes

The MatrixAir™ full capacity ranges are built with 6 kinds of frame sizes, and each size is compatible with upflow and downflow. The depth of unit is 850mm, the height is 1960mm, and the width is from 850mm to 2810mm.



**Note:** Chilled water series built with 9 kinds of frame size, and each size is compatible with upper air supply and downside air supply. The depth of unit is 850mm, the height is 1960mm, and the width is from 854mm to 3654mm.

# MatrixAir™ Technical Specifications

DX Units (Upflow)														
Air-cooled MT***UA		Unit	025	030	035	045	055	040	050	060	070	080	090	100
Water cooled MT***UW														
<b>AC Fan,Air-cooled/Water cooled</b>														
Total Cooling Capacity <sup>1)</sup>	kw		26.7	30.8	35.5	45.5	54.5	41.2	53.5	61.4	70.9	81.3	90.6	104.4
Sensible Cooling Capacity <sup>1)</sup>	kw		24.3	29.3	32.7	42.8	51.8	37.9	49.2	57.7	63.8	77.2	83.4	95.0
Air volume	m <sup>3</sup> /h		7500	8000	8500	13000	15000	12500	14000	18000	18500	21000	23000	25000
Sensible heat ratio	/		0.91	0.95	0.92	0.94	0.95	0.92	0.92	0.94	0.90	0.95	0.92	0.91
<b>EC Fan,Air-cooled/Water cooled</b>														
Total Cooling Capacity <sup>1)</sup>	kw		26.9	31.2	35.7	45.9	54.7	41.6	53.8	61.7	71.1	81.8	90.8	104.7
Sensible Cooling Capacity <sup>1)</sup>	kw		25.0	30.0	33.6	44.1	52.5	39.5	50.6	59.2	66.1	78.5	85.4	97.4
Air volume	m <sup>3</sup> /h		7800	8300	8800	13500	15400	13200	14600	18700	19300	21600	23900	26000
Sensible heat ratio	/		0.93	0.96	0.94	0.96	0.96	0.95	0.94	0.96	0.93	0.96	0.94	0.93
Heating capacity(Standard) <sup>3)</sup>	kw		6	6	6	9	9	9	9	9	9	12	12	12
Heating capacity(Max)	kw		12	12	12	18	18	18	18	18	18	24	24	24
Humidifying capacity (Standard)	kg/h		6	8	8	10	10	10	10	10	10	12	12	12
Humidifying capacity (Max)	kg/h		8	8	8	15	15	15	15	15	15	15	15	15
Number of compressors	pcs		1	1	1	1	1	2	2	2	2	2	2	2
Number of fans	pcs		1	1	1	2	2	2	2	2	2	3	3	3
Full-load current	A		31	31	33	48	53	44	56	57	61	77	83	93
Unit Weight	kg		380	450	460	610	620	670	700	760	770	970	990	1090
Unit Width	mm		850	1200	1200	1650	1650	1650	1650	2010	2010	2460	2460	2810
Unit Depth	mm		850	850	850	850	850	850	850	850	850	850	850	850
Unit Height	mm		1960	1960	1960	1960	1960	1960	1960	1960	1960	1960	1960	1960
<b>DX Units (Downflow)</b>														
Air-cooled MT***DA		Unit	025	030	035	045	055	040	050	060	070	080	090	100
Water cooled MT***DW														
<b>AC Fan,Air-cooled/Water cooled</b>														
Total Cooling Capacity <sup>1)</sup>	kw		26.7	30.8	35.5	45.5	54.5	41.2	53.5	61.4	70.9	81.3	90.6	104.4
Sensible Cooling Capacity <sup>1)</sup>	kw		24.3	29.3	32.7	42.8	51.8	37.9	49.2	57.7	63.8	77.2	83.4	95.0
Air volume	m <sup>3</sup> /h		7500	8000	8500	13000	15000	12500	14000	18000	18500	21000	23000	25000
Sensible heat ratio	/		0.91	0.95	0.92	0.94	0.95	0.92	0.92	0.94	0.90	0.95	0.92	0.91
<b>EC Fan,Air-cooled/Water cooled</b>														
Total Cooling Capacity <sup>1)</sup>	kw		26.9	31.2	35.7	45.9	54.7	41.6	53.8	61.7	71.1	81.8	90.8	104.7
Sensible Cooling Capacity <sup>1)</sup>	kw		25.0	30.0	33.6	44.1	52.5	39.5	50.6	59.2	66.1	78.5	85.4	97.4
Air volume	m <sup>3</sup> /h		7800	8300	8800	13500	15400	13200	14600	18700	19300	21600	23900	26000
Sensible heat ratio	/		0.93	0.96	0.94	0.96	0.96	0.95	0.94	0.96	0.93	0.96	0.94	0.93
Heating capacity(Standard) <sup>3)</sup>	kw		6	6	6	9	9	9	9	9	9	12	12	12
Heating capacity(Max)	kw		12	12	12	18	18	18	18	18	18	24	24	24
Humidifying capacity (Standard)	kg/h		6	8	8	10	10	10	10	10	10	12	12	12
Humidifying capacity (Max)	kg/h		8	8	8	15	15	15	15	15	15	15	15	15
Number of compressors	pcs		1	1	1	1	1	2	2	2	2	2	2	2
Number of fans	pcs		1	1	1	2	2	2	2	2	2	3	3	3
Full-load current	A		31	31	33	48	53	44	56	57	61	77	83	93
Unit Weight	kg		380	450	460	610	620	670	700	760	770	970	990	1090
Unit Width	mm		850	1200	1200	1650	1650	1650	1650	2010	2010	2460	2460	2810
Unit Depth	mm		850	850	850	850	850	850	850	850	850	850	850	850
Unit Height	mm		1960	1960	1960	1960	1960	1960	1960	1960	1960	1960	1960	1960

# MatrixAir™ Technical Specifications

CW Unit (chilled water Upflow)											
MT***UC	Unit	30	40	50	60	70	80	90	100	110	120
Total Cooling Capacity <sup>2)</sup>	kW	32.8	44.0	50.2	63.2	73.0	85.0	94.7	105.3	112.0	127.6
Sensible Cooling Capacity <sup>2)</sup>	kW	32.8	44.0	50.2	63.2	73.0	85.0	94.7	105.3	112.0	127.6
Air volume	m <sup>3</sup> /h	9500	11000	12000	14000	15000	20000	21500	24000	25000	26000
Sensible heat ratio	/	1	1	1	1	1	1	1	1	1	1
Water flow capacity <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
Heating capacity (standard) <sup>3)</sup>	kW	6	6	6	9	9	12	12	12	12	12
Heating capacity (Max)	kW	9	9	9	12	12	24	24	24	24	24
Humidifying capacity (Standard)	kg/h	6	8	8	8	8	10	10	12	12	12
Humidifying capacity (Max)	kg/h	8	8	8	8	8	15	15	15	15	15
Number of fans	pcs	1	1	1	1	2	2	2	2	2	2
Fan power	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 Constant 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
Size of inlet and outlet water pipes	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	854	854	854	1180	1680	1680	1680	1680	1680	1680
Unit Depth	mm	970	970	970	970	970	970	970	970	970	970
Unit Height	mm	1975	1975	1975	1975	1975	1975	1975	1975	1975	1975

CW Unit (chilled water Upflow)											
MT***UC	Unit	130	140	150	160	170	180	190	200	250	300
Total Cooling Capacity <sup>2)</sup>	kW	142.1	153.0	158.0	172.4	177.2	191.6	202.0	214.0	254.5	274.1
Sensible Cooling Capacity <sup>2)</sup>	kW	142.1	153.0	158.0	172.4	177.2	191.6	202.0	214.0	254.5	274.1
Air volume	m <sup>3</sup> /h	30000	32000	34500	36000	37000	39000	40000	41000	48000	52000
Sensible heat ratio	/	1	1	1	1	1	1	1	1	1	1
Water flow capacity <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
Heating capacity(Standard) <sup>3)</sup>	kW	12	12	12	12	12	12	12	12	12	12
Heating capacity(Max)	kW	24	24	24	24	24	24	24	24	24	24
Humidifying capacity (Standard)	kg/h	12	12	12	12	12	12	12	12	12	12
Humidifying capacity (Max)	kg/h	15	15	15	15	15	15	15	15	15	15
Number of fans	pcs	2	2	2	3	3	3	3	3	4	4
Fan power	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 Constant 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
Size of inlet and outlet water pipes	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	2004	2004	2330	2504	2504	2504	2504	2830	3330	3654
Unit Depth	mm	970	970	970	970	970	970	970	970	970	970
Unit Height	mm	1975	1975	1975	1975	1975	1975	1975	1975	1975	1975



CW Unit (chilled water Downflow)											
MT***DC	Unit	30	40	50	60	70	80	90	100	110	120
Total Cooling Capacity <sup>2)</sup>	kW	32.8	44.0	50.2	63.2	73.0	85.0	94.7	105.3	112.0	127.6
Sensible Cooling Capacity <sup>2)</sup>	kW	32.8	44.0	50.2	63.2	73.0	85.0	94.7	105.3	112.0	127.6
Air volume	m <sup>3</sup> /h	9500	11000	12000	14000	15000	20000	21500	24000	25000	26000
Sensible heat ratio	/	1	1	1	1	1	1	1	1	1	1
Water flow capacity <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
Heating capacity (standard) <sup>3)</sup>	kW	6	6	6	9	9	12	12	12	12	12
Heating capacity (Max)	kW	9	9	9	12	12	24	24	24	24	24
Humidifying capacity (Standard)	kg/h	6	8	8	8	8	10	10	12	12	12
Humidifying capacity (Max)	kg/h	8	8	8	8	8	15	15	15	15	15
Number of fans	pcs	1	1	1	1	2	2	2	2	2	2
Fan power	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 Constant 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
Size of inlet and outlet water pipes	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	854	854	854	1180	1680	1680	1680	1680	1680	1680
Unit Depth	mm	970	970	970	970	970	970	970	970	970	970
Unit Height	mm	1975	1975	1975	1975	1975	1975	1975	1975	1975	1975

CW Unit (chilled water Downflow)											
MT***UC	Unit	130	140	150	160	170	180	190	200	250	300
Total Cooling Capacity <sup>2)</sup>	kW	142.1	153.0	158.0	172.4	177.2	191.6	202.0	214.0	254.5	274.1
Sensible Cooling Capacity <sup>2)</sup>	kW	142.1	153.0	158.0	172.4	177.2	191.6	202.0	214.0	254.5	274.1
Air volume	m <sup>3</sup> /h	30000	32000	34000	36000	37000	39000	40000	41000	48000	52000
Sensible heat ratio	/	1	1	1	1	1	1	1	1	1	1
Water flow capacity <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
Heating capacity(Standard) <sup>3)</sup>	kW	12	12	12	12	12	12	12	12	12	12
Heating capacity(Max)	kW	24	24	24	24	24	24	24	24	24	24
Humidifying capacity (Standard)	kg/h	12	12	12	12	12	12	12	12	12	12
Humidifying capacity (Max)	kg/h	15	15	15	15	15	15	15	15	15	15
Number of fans	pcs	2	2	2	3	3	3	3	3	4	4
Fan power	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 Constant 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
Size of inlet and outlet water pipes	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	2004	2004	2330	2504	2504	2504	2504	2830	3330	3654
Unit Depth	mm	970	970	970	970	970	970	970	970	970	970
Unit Height	mm	1975	1975	1975	1975	1975	1975	1975	1975	1975	1975

**Note** 1. Parameter table

- 1) Air/water cooled unit data based on 24°C, 50%RH indoor return air temperature.
- 2) Chilled water unit data based on 28°C, 50%RH indoor return air temperature. The inlet and outlet water temperature of chilled water are 10°C and 15°C.
- 3) Electric heating adopts three-level hierarchical control
2. The power supply type: 380~415V/3P/50Hz.
3. We can provide other customized product. If you need more information, please contact us.
4. Specifications are subject to change without prior notice.



# MatrixAir™ Technical Specifications

Air / Water cooled double cooling source unit (Upflow)													
Air MT***UD	Unit	25	30	35	45	55	40	50	60	70	80	90	100
Water MT***UE													
<b>AC Fan</b>													
Air volume	m <sup>3</sup> /h	7500	8000	8500	13000	15000	12500	14000	18000	18500	21000	23000	25000
DX Total Cooling Capacity <sup>1)</sup>	KW	26.7	30.8	35.5	45.5	54.5	41.2	53.5	61.4	70.9	81.3	90.6	104.4
DX Sensible Cooling Capacity <sup>1)</sup>	KW	24.3	29.3	32.7	42.8	51.8	37.9	49.2	57.7	63.8	77.2	83.4	95.0
DX Sensible heat ratio	/	0.91	0.95	0.92	0.94	0.95	0.92	0.92	0.94	0.90	0.95	0.92	0.91
CW Total Cooling Capacity <sup>2)</sup>	KW	27.6	32.4	41.2	56.5	61.5	54.5	59.3	67.4	71.0	90.6	97.6	106.6
CW Sensible Cooling Capacity <sup>2)</sup>	KW	25.3	29.3	36.6	50.2	55.6	47.8	53.5	60.5	64.1	80.8	87.9	94.8
CW Sensible heat ratio	/	0.92	0.90	0.89	0.89	0.90	0.88	0.90	0.90	0.90	0.89	0.90	0.89
Water flow capacity <sup>2)</sup>	m <sup>3</sup> /h	4.75	5.58	7.13	9.75	10.53	9.33	10.14	11.55	11.99	14.03	16.80	18.21
Pressure drop <sup>2)</sup>	kPa	51.6	75.3	93.3	85.5	99.0	77.6	92.2	62.2	68.0	97.4	104.8	124.1
<b>EC fan</b>													
Air volume	m <sup>3</sup> /h	7800	8300	8800	13500	15400	13200	14600	18700	19300	21600	23900	26000
DX Total Cooling Capacity <sup>1)</sup>	KW	26.9	31.2	35.7	45.9	54.7	41.6	53.8	61.7	71.1	81.8	90.8	104.7
DX Sensible Cooling Capacity <sup>1)</sup>	KW	25.0	30.0	33.6	44.1	52.5	39.5	50.6	59.2	66.1	78.5	85.4	97.4
DX Sensible heat ratio	/	0.93	0.96	0.94	0.96	0.96	0.95	0.94	0.96	0.93	0.96	0.94	0.93
CW Total Cooling Capacity <sup>2)</sup>	KW	28.3	33.2	42.8	57.3	62.3	55.3	60.2	67.9	71.7	91.3	98.1	108.2
CW Sensible Cooling Capacity <sup>2)</sup>	KW	26.4	29.8	38.5	51.6	56.5	49.7	54.7	61.2	64.5	83.1	90.0	97.6
CW Sensible heat ratio	/	0.93	0.90	0.90	0.90	0.91	0.90	0.91	0.90	0.90	0.91	0.92	0.90
Water flow capacity <sup>2)</sup>	m <sup>3</sup> /h	4.85	5.66	7.28	9.96	10.68	9.61	10.38	11.79	12.26	14.25	17.15	18.61
Pressure drop <sup>2)</sup>	kPa	53.6	77.5	94.5	88.9	101.7	82.1	96.3	64.6	70.9	100.2	109.1	126.4
Heating capacity(Standard) <sup>3)</sup>	KW	6	6	6	9	9	9	9	9	9	12	12	12
Heating capacity(Max)	KW	12	12	12	18	18	18	18	18	18	24	24	24
Humidifying capacity (Standard)	kg/h	6	8	8	10	10	10	10	10	10	12	12	12
Humidifying capacity (Max)	kg/h	8	8	8	15	15	15	15	15	15	15	15	15
Number of compressors	PCS	1	1	1	1	1	2	2	2	2	2	2	2
Number of fans	PCS	1	1	1	2	2	2	2	2	2	3	3	3
Full-load current	A	31	31	33	48	53	44	56	57	61	77	83	93
Size of inlet and outlet water pipes	mm	28	28	35	35	35	35	35	35	35	42	42	42
Unit Weight	kg	400	470	480	640	650	700	730	800	810	1020	1040	1140
Unit Width	mm	850	1200	1200	1650	1650	1650	1650	2010	2010	2460	2460	2810
Unit Depth	mm	850	850	850	850	850	850	850	850	850	850	850	850
Unit Height	mm	1960	1960	1960	1960	1960	1960	1960	1960	1960	1960	1960	1960

## Note

1. Parameter table
  - 1) DX Air/water cooled unit data based on 24°C, 50%RH indoor return air temperature.
  - 2) CW Chilled water unit data based on 24°C, 50%RH indoor return air temperature. The inlet and outlet water temperature of chilled water are 7°C and 12°C.
  - 3) Electric heating adopts three-level hierarchical control
2. The power supply type: 380~415V/3P/50Hz.
3. We can provide other customized product. If you need more information, please contact us.
4. Specifications are subject to change without prior notice.

Air / Water cooled double cooling source unit (Downflow)													
Air MT***DD	Unit	25	30	35	45	55	40	50	60	70	80	90	100
Water MT***DE													
<b>AC Fan</b>													
Air volume	m <sup>3</sup> /h	7500	8000	8500	13000	15000	12500	14000	18000	18500	21000	23000	25000
DX Total Cooling Capacity <sup>1)</sup>	KW	26.7	30.8	35.5	45.5	54.5	41.2	53.5	61.4	70.9	81.3	90.6	104.4
DX Sensible Cooling Capacity <sup>1)</sup>	KW	24.3	29.3	32.7	42.8	51.8	37.9	49.2	57.7	63.8	77.2	83.4	95.0
DX Sensible heat ratio	/	0.91	0.95	0.92	0.94	0.95	0.92	0.92	0.94	0.90	0.95	0.92	0.91
CW Total Cooling Capacity <sup>2)</sup>	KW	27.6	32.4	41.2	56.5	61.5	54.5	59.3	67.4	71.0	90.6	97.6	106.6
CW Sensible Cooling Capacity <sup>2)</sup>	KW	25.3	29.3	36.6	50.2	55.6	47.8	53.5	60.5	64.1	80.8	87.9	94.8
CW Sensible heat ratio	/	0.92	0.90	0.89	0.89	0.90	0.88	0.90	0.90	0.90	0.89	0.90	0.89
Water flow capacity <sup>2)</sup>	m <sup>3</sup> /h	4.75	5.58	7.13	9.75	10.53	9.33	10.14	11.55	11.99	14.03	16.80	18.21
Pressure drop <sup>2)</sup>	kPa	51.6	75.3	93.3	85.5	99.0	77.6	92.2	62.2	68.0	97.4	104.8	124.1
<b>EC fan</b>													
Air volume	m <sup>3</sup> /h	7800	8300	8800	13500	15400	13200	14600	18700	19300	21600	23900	26000
DX Total Cooling Capacity <sup>1)</sup>	KW	26.9	31.2	35.7	45.9	54.7	41.6	53.8	61.7	71.1	81.8	90.8	104.7
DX Sensible Cooling Capacity <sup>1)</sup>	KW	25.0	30.0	33.6	44.1	52.5	39.5	50.6	59.2	66.1	78.5	85.4	97.4
DX Sensible heat ratio	/	0.93	0.96	0.94	0.96	0.96	0.95	0.94	0.96	0.93	0.96	0.94	0.93
CW Total Cooling Capacity <sup>2)</sup>	KW	28.3	33.2	42.8	57.3	62.3	55.3	60.2	67.9	71.7	91.3	98.1	108.2
CW Sensible Cooling Capacity <sup>2)</sup>	KW	26.4	29.8	38.5	51.6	56.5	49.7	54.7	61.2	64.5	83.1	90.0	97.6
CW Sensible heat ratio	/	0.93	0.90	0.90	0.90	0.91	0.90	0.91	0.90	0.90	0.91	0.92	0.90
Water flow capacity <sup>2)</sup>	m <sup>3</sup> /h	4.85	5.66	7.28	9.96	10.68	9.61	10.38	11.79	12.26	14.25	17.15	18.61
Pressure drop <sup>2)</sup>	kPa	53.6	77.5	94.5	88.9	101.7	82.1	96.3	64.6	70.9	100.2	109.1	126.4
Heating capacity(Standard) <sup>3)</sup>	KW	6	6	6	9	9	9	9	9	9	12	12	12
Heating capacity(Max)	KW	12	12	12	18	18	18	18	18	18	24	24	24
Humidifying capacity (Standard)	kg/h	6	8	8	10	10	10	10	10	10	12	12	12
Humidifying capacity (Max)	kg/h	8	8	8	15	15	15	15	15	15	15	15	15
Number of compressors	PCS	1	1	1	1	1	2	2	2	2	2	2	2
Number of fans	PCS	1	1	1	2	2	2	2	2	2	3	3	3
Full-load current	A	31	31	33	48	53	44	56	57	61	77	83	93
Size of inlet and outlet water pipes	mm	28	28	35	35	35	35	35	35	35	42	42	42
Unit Weight	kg	400	470	480	640	650	700	730	800	810	1020	1040	1140
Unit Width	mm	850	1200	1200	1650	1650	1650	1650	2010	2010	2460	2460	2810
Unit Depth	mm	850	850	850	850	850	850	850	850	850	850	850	850
Unit Height	mm	1960	1960	1960	1960	1960	1960	1960	1960	1960	1960	1960	1960

**Note** 1. Parameter table

- 1) DX Air/water cooled unit data based on 24°C, 50%RH indoor return air temperature.
  - 2) CW Chilled water unit data based on 24°C, 50%RH indoor return air temperature. The inlet and outlet water temperature of chilled water are 7°C and 12°C.
  - 3) Electric heating adopts three-level hierarchical control
2. The power supply type: 380~415V/3P/50Hz.
  3. We can provide other customized product. If you need more information, please contact us.
  4. Specifications are subject to change without prior notice.

# KC Series Air-cooled Condenser

KC series air-cooled condenser is high performance, environment-friendly, flexible application. It can meet the rigorous application requirements.



## ◎ Double Anticorrosion Design

- High quality aluminium alloy
- Powder coated protection

## ◎ Double Protection

- Unitary Header cover
- Coil pipe protection against damage

## ◎ High Quality Fan

- Industry recognized brand, High quality and service free.
- Full speed controller and high efficient fan, High efficiency and low noise.

## ◎ Single and Dual System Available, Heat Exchange Capacity 24kW ~120kW

- Match with indoor unit 1+1 or 1+2. Free to choice.
- Combined heat exchange capacity can expand to 240kW.

## ◎ Positively Sealing Between Fans

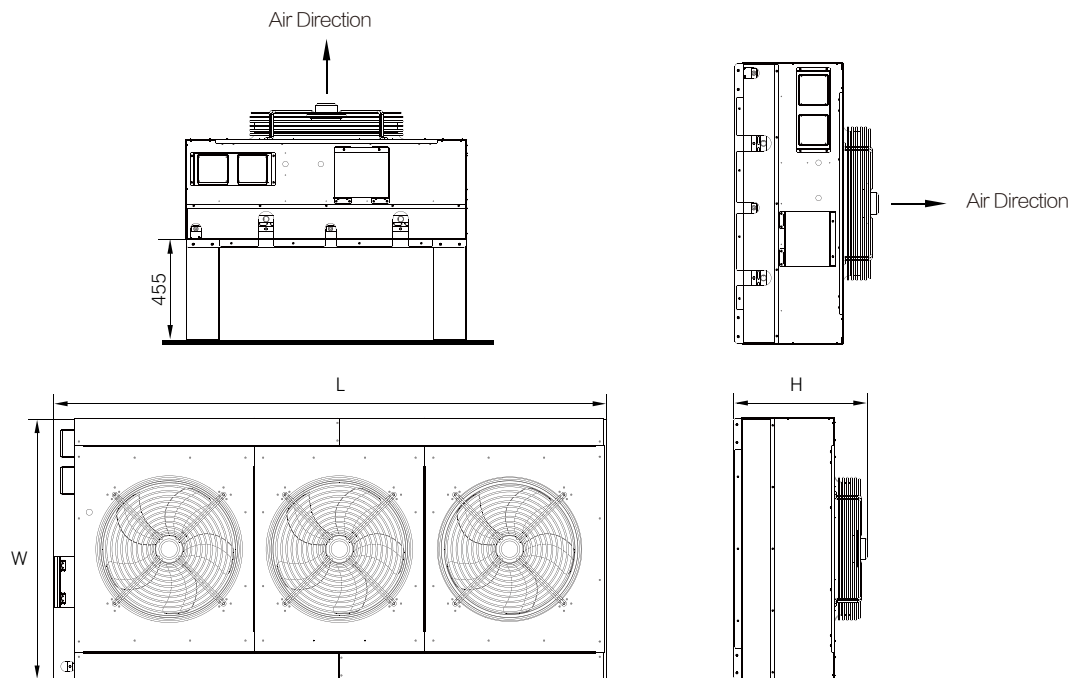
## ◎ Enhanced Heat Transfer

- Inner groove piping.
- High quality wavy fin

## ◎ Intelligent Control System

- High precision pressure transducer
- Intelligent full speed controller

## ◎ IP55 Electric Cabinet



Comment: L-length, W-width, H-height

## © KC Technical Specifications

KC Single air-cooled Condenser														
KCS***	Unit	024	028	032	036	042	048	054	064	072	084	096	108	120
Heat Exchanging Capacity	kw	23.8	27.2	31.0	36.8	42.2	47.6	54.4	62.4	71.6	82.3	95.4	101.6	124.8
Voltage	V	220	220	220	220	220	220	220	220	220	220	220	220	220
Frequency	Hz	50	50	50	50	50	50	50	50	50	50	50	50	50
Phase	P	1	1	1	1	1	1	1	1	1	1	1	1	1
Full-load current	A	2.98	2.98	2.98	5.96	5.96	5.96	5.96	5.96	8.94	8.94	8.94	8.94	11.92
Noise	dB(A)	54.9	52.9	54.1	44.8	53.0	52.0	52.1	55.1	51.8	52.1	54.2	56.9	57.9
weight	kg	117	124	125	138	143	152	165	185	225	235	260	270	300
Unit length	mm	1601	1401	1601	1801	1801	1801	1801	2001	2701	2701	3201	3201	3901
Unit width	mm	975	975	975	975	975	1274	1274	1274	1274	1274	1274	1274	1274
Unit height	mm	651	651	651	651	651	651	651	651	651	651	651	651	651
Foot stool Height	mm	455	455	455	455	455	455	455	455	455	455	455	455	455

KC Double air-cooled Condenser														
KCD***	Unit	048	054	064	072	084	096	108	120	-	-	-	-	-
Heat Exchanging Capacity	kw	47.6	54.4	62.4	71.6	82.3	95.4	101.6	124.8	-	-	-	-	-
Voltage	V	220	220	220	220	220	220	220	220	-	-	-	-	-
Frequency	Hz	50	50	50	50	50	50	50	50	-	-	-	-	-
Phase	P	1	1	1	1	1	1	1	1	-	-	-	-	-
Full-load current	A	5.96	5.96	5.96	8.94	8.94	8.94	8.94	11.92	-	-	-	-	-
Noise	dB(A)	52.0	52.1	55.1	51.8	52.1	54.2	56.9	57.9	-	-	-	-	-
weight	kg	152	165	185	225	235	260	270	300	-	-	-	-	-
Unit length	mm	1801	1801	2001	2701	2701	3201	3201	3901	-	-	-	-	-
Unit width	mm	1274	1274	1274	1274	1274	1274	1274	1274	-	-	-	-	-
Unit height	mm	651	651	651	651	651	651	651	651	-	-	-	-	-
Foot stool Height	mm	455	455	455	455	455	455	455	455	-	-	-	-	-

- Note**
1. Standard unit minimum working temperature is  $-20^{\circ}\text{C}$ , Low temperature unit minimum working temperature is  $-40^{\circ}\text{C}$
  2. We can provide low-noise type and other customized products.
  3. The noise data is sound pressure level value of 10m free field.
  4. Specifications are subject to change without prior notice.



# StationAir™ Series Precision Air Conditioner

## A Solution for Small and Medium-sized Data Center

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With the function of constant temperature and humidity, StationAir™ series Precision Air Conditioners are designed with large air volume and high sensible heat ratio to meet the needs of professional computer room;the design that operation for 365day×24hours non-stop efficient match cooling system with a large area of evaporator to ensure all-weather optimal energy-saving operation





### Green and Energy-saving

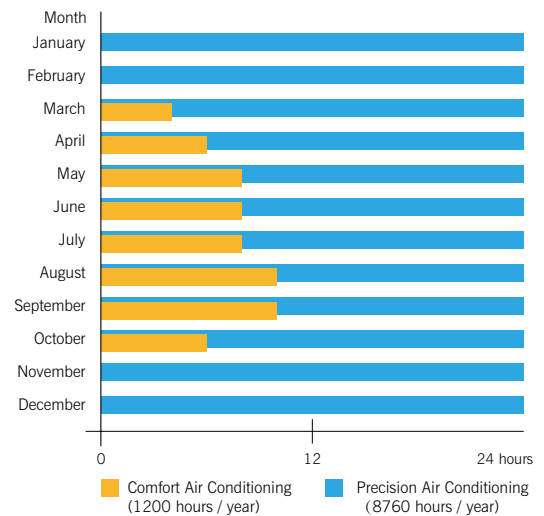
- High EER: Dictated matching of refrigeration system to ensure high energy efficiency ratio.
- High Sensible Heat Ratio: Designed with large air volume and small enthalpy difference to ensure the high sensible heat ratio.
- Green Refrigerant: R410a

### High Reliability

- Choosing the high efficient and high reliability famous brand compressor and backward centrifugal fan to guarantee the long life and high EER of the units.
- Using the industry recognized brand of high quality components to ensure the high reliability.
- All products went through rigorous testings.

### Designed to Operate 7 × 24

- KSTAR Precision air conditioners are designed to operate for 365day × 24hours non-stop in high efficiency and reliable status.
- The unit is designed to work under extreme weather condition, temperature down to -40°C when configured with the Low Temperature Kit.
- Stepless speed regulating outdoor fan system. Unit adaptable to all different outdoor condition.
- Electronic expansion valve ensures system be quick response to the changing working condition.



### Intelligent Controller

- Precise microcomputer control system, large-screen display, with multi-level password protection and experts fault diagnosis function.
- Equipped with the standard RS485 communication interface and supported the remote monitoring.  
Wide input voltage design, with self-recovery function after power resume, lack phase protection, fault phase protection and over or low voltage protection function is optional to ensure the unit uninterrupted working.
- It can flexibly switch from the main unit to the backup unit automatically to achieve the automatic switch and rotation.

## Flexible Application

- KSTAR Precision air conditioners have flexible configuration options for different project and meet the different needs of users.
- Flexible installation: quick connectors.
- Factory supplied with the connecting copper pipes, refrigerant and mounting brackets of outdoor unit.(ST005\ST007\ST012)
- A variety of air supply modes: upflow, downflow, front-flow and underflow.
- A variety of refrigeration types: air-cooled, water-cooled, chilled water and glycol-cooled and dual cooling system
- Rich options: EC fan, high efficiency filter and special humidifier
- Customized solutions: High or low temperature environmental solutions, low noise solutions, high altitude solutions, large air volume or high ESP solutions, long pipe connecting or high drop solutions.
- Small footprint, 100% front maintenance.

## Applications

- Small and medium-sized computer room
- Equipment room, Powerhouse
- Outdoor electronic house and communication equipment room
- Laboratory, testing room, storage room
- Computer room of commercial building



## Technical Parameters

DX Unit(air-cooled type)												
ST***	Unit	005			007			012			017	020
Unit Configuration	-	Single Cooling	Constant Temperature	Constant Temperature and Humidity	Single Cooling	Constant Temperature	Constant Temperature and Humidity	Single Cooling	Constant Temperature	Constant Temperature and Humidity	Constant Temperature and Humidity	Constant Temperature and Humidity
Total Cooling Capacity <sup>1)</sup>	kw	5.5			7.5			12.5			17.5	20.5
Sensible Cooling Capacity <sup>1)</sup>	kw	5.2			6.8			11.3			15.8	18.6
Air Volume	m <sup>3</sup> /h	2000			2250			2850			5000	6200
Sensible Heat Ratio	/	0.95			0.91			0.90			0.90	0.91
Heating Capacity	kw	-	3	3	-	3	3	-	4	4	6	6
Humidifying Capacity	kg/h	-	-	2.5	-	-	2.5	-	-	4	4.5	4.5
Number of compressors	pcs	1			1			1			1	1
Number of Fans	pcs	1			1			1			1	1
Voltage	V	220~240	220~240	380~415	220~240	220~240	380~415	380~415			380~415	380~415
Frequency	Hz	50	50	50	50	50	50	50			50	50
Phase	P	1	1	3	1	1	3	3			3	3
Full-load Current	A	11.1	24.7	15.6	14.1	27.7	18.6	10	16	16	23.6	28.5
Unit Weight	kg	105	110	120	115	120	130	165	170	180	280	300
Unit Width	mm	550			550			650			750	750
Unit Depth	mm	450			450			550			700	700
Unit Height	mm	1750			1750			1850			1900	1900
Supporting Outdoor unit												
KCS***	Unit	007			010			018			024	028
Heat Exchange Capability	kw	7.6			10.4			18.1			23.8	27.2
Voltage	V	220			220			220			220	220
Frequency	Hz	50			50			50			50	50
Phase	P	1			1			1			1	1
Full-load Current	A	1			2			2			2.98	2.98
Noise <sup>2)</sup>	dB(A)	38.5			43.9			43.6			54.9	52.9
Unit Weight	kg	38			48			60			117	124
Unit Width	mm	877			967			1014			1600	1400
Unit Depth	mm	340			398			375			975	975
Unit Height	mm	608			807			1244			650	650
Foot stool Height	mm	-			-			-			455	455

### NOTE

1. Parameter table

1) Air-cooled unit data based on 24°C, 50%RH indoor return air temperature.

2) The noise data is sound pressure level value of 10m free field.

2. ST005, ST007 and ST012 is prefilled refrigerant, and supplied with 5m connecting copper pipe and mounting brackets of outdoor unit.

3. Specifications are subject to change without prior notice.





# FocusAir™ Series Inrow Precision Air Conditioner

## A Solution for High Heat Density Data Center

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Designed for the special cooling requirement of new generation high heat density data center.

Close matching to the data center racks, this new generation cooling system features new air distributing path, real-time rack temperature monitoring, dynamic cooling output and modular size, to serve data center with high reliability, high efficiency, flexibility and predictability.





## ◎ Precise and Measurable Cooling

Matching to the heat source, the FocusAir™ series inrow precision air conditioner directly cools the high temperature hot air from the servers, shortens the air flow path, prevents the energy waste of cold and hot air mix. Through the real-time monitoring of the heat source load, it accurately regulates the cooling output and the air flow output, make the cooling capacity and air volume accurate and predictable, realizes the targeted and accurate cooling, perfectly solves the high heat density problems of data centers

## ◎ FocusAir™ Series Inrow Cooling Characteristics

- More Reasonable and Accurate Air Distribution

FocusAir™ serie distributes air flow to the inlet of the rack front door, sent the cold air to where required accurately. The unit adopts the EC stepless speed regulating DC fan, automatically matches the air flow requirement of servers.

Reasonable and accurate flow control minimizes the loss of cooling capacity and makes it easier to plan the cooling system.

Unique air distribution naturally achieves the cold aisle containment effect.



- Real-time Monitoring of the Heat Load

FocusAir™ series unit is compatible with multiple temperature sensors, monitoring the heat load change real-time, and directly control the supply air temperature (the inlet air temperature of servers), that is safe, reliable, and energy saving, making sure that the inlet air temperature of servers conform to the requirements and the equipment running in the best state.

- Flexibility and Compatibility of the Space Application

FoucesAir™ seriesseries unit is compatible with main manufacturers' racks, suitable for concrete or raised floor room. Rack size modular frame, 4 air supply types, 3 cooling types. Flexible to expand as business grows.

- Dynamic Coordination Output

The IT equipments of data center run all year around, and the operation condition is constantly changing. The FocusAir refrigeration system works based on the change of the heat load, dynamic coordinates cooling capacity output and air volume output of the unit, realizes real-time matching with the load change to keep the unit running in the best condition.



- Precise Air Volume Control

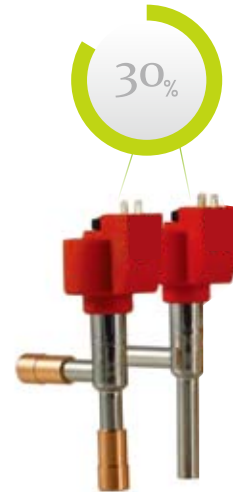
FocusAir™ series units are standard with the EC fan that can rapidly response to the output requirements; the effect of energy saving in the part load mode is remarkable, up to 30% higher than the conventional AC fan

## ● Stepless Speed Regulating Compressor

FocusAir™ series unit adopts stepless speed regulation compressor. Through adjusting the revolving speed of the compressor to accurately control the cooling output capacity, real-time match the changes in the heat source load and achieve precise cooling and energy efficient operation.

## ● Electronic Expansion Valve

The electronic expansion valve microcomputer controlled can rapidly and precisely adjust the refrigerant flow in system along with the change of cooling demand. It can ensure the high reliability and efficiency of the refrigeration system, achieve to improve the start-up features of the units and rapidly stabilize the working condition and make a better refrigeration performance. The wide flow characteristic of electronic expansion valve ensures that the air conditioner can make full use of the low temperature in outdoor environment and save up 30% energy consumption.



## ◎ Advanced Functional Design



### High Return Air Temperature Design

FocusAir™ series are designed in 100% sensible heat ratio with the high return air temperature and it makes the data center operating in the state of more energy saving.



### Multiple Sets of Temperature Sensor

Compatible with multiple sets of temperature sensor, real-time monitoring the heat load changes of the cabinet, accurate judging for refrigeration output.



### G4 Filtrating System

The G4 filter system of FocusAir™ series with the filter jamming switch is safe and reliable.



### Water Leaking Detection System

Equipped with the water leaking detection system can avoid the water leakage and make the system reliability.



### Monitoring

Communication monitoring can monitor the unit status, manage and control the data center in a better way.



### Rack Size Design, Compatible with the IT Environment

The compact design and compatibility conforming to different manufacturer make the FocusAir™ series unit suitable for different data centers.



### No Need Raised Floor

The unique style of the FocusAir™ series is the ideal choice for the data center without the raised floor.



### Humidifying/Heating System

It can deal with the temperature and humidity of the equipment room without the room level humidifying.



### Cold Aisle Containment Effect

Without adding additional air restraint accessory, the unique airflow design has realized the effect of Cold Aisle Containment.



### Avoiding the Water Leakage Trouble

Equipped with the condensing water pump, avoid the water leakage hidden trouble and make the system reliability.



## ◎ Unit Configuration of the FocusAir™ Series

### ● Advanced Intelligent Controller

FocusAir™ series choose the precision air conditioner intelligent control system that powerful and professional to achieve high efficiency and energy saving, stable and reliable.

- Multiple sets of the temperature sensor

The fan adjusts by the temperature change between return air and supply air with real-time monitoring regional environment.

The speed of the compressor or the opening of the chilled water valve adjusts according to the air supply temperature.

- Support network group control of multiple units

Through the network group control, the units can realize the

redundancy management of the rotation and the unit fault.

Support remote monitoring of common communication protocols (standard RS485 serial port)

Graphical status display and alarm reminding

Air volume and filter alarm

Environmental parameter display and setting

Running time and maintenance reminder of the main parts

Temperature sensors optional

Water leakage detectors optional

### ● Convenient Installation and Maintenance

- Maintained from front and back
- Connecting pipe from unit bottom and top

### ● 4 Kinds of Air Supply Types

FocusAir™ series can provide four different ways of air supply. They are two sides, right side, left side and front air supply.

### ● Components Configuration of DX Unit

Stepless speed regulating compressor

EC DC fan

Electronic expansion valve

Intelligent controller

Air filter

Humidifier optional

Heater optional

High efficiency heat exchanger

### ● Components Configuration of Chilled Water Unit

EC DC fan

Intelligent controller

Air filter

High efficiency heat exchanger

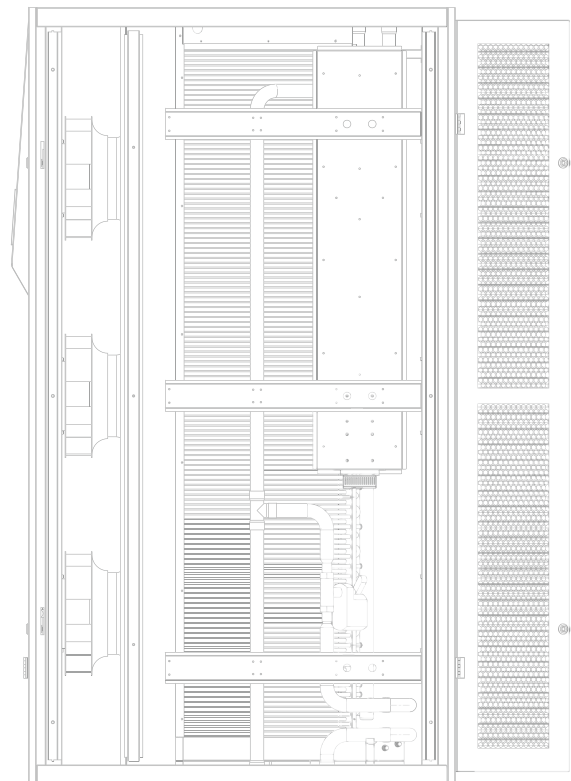
Two-port valve (three-port valve optional)

Humidifier optional

Heater optional

### ● 3 Kinds of Cooling Types

FocusAir™ series can provide three different refrigeration systems: A air-cooled type, W water-cooled type and C chilled water type.



# FocusAir™ Series Technical Parameters

CW Unit (Chilled Water)							
FS***	Unit	025		035		065	
Unit Configuration	-	Single Cooling	Constant Temperature and Humidity	Single Cooling	Constant Temperature and Humidity	Single Cooling	Constant Temperature and Humidity
Total Cooling Capacity <sup>2)</sup>	kW	24.6		35.5		67.0	
Sensible Cooling Capacity <sup>2)</sup>	kW	24.6		35.5		67.0	
Air Volume	m <sup>3</sup> /h	5100		6500		12000	
Sensible heat ratio	/	1		1		1	
Water inlet Capacity <sup>2)</sup>	m <sup>3</sup> /h	4.71		6.45		11.95	
Pressure drop <sup>2)</sup>	kPa	73.3		89.5		67.3	
Heating Capacity	kW	-		-		-	6
Humidifying Capacity	kg/h	-		-		-	3
Number of fans	pcs	6		3		3	
Voltage	V	220~240		220~240		380~415	
Frequency	Hz	50		50		50	
Phase	P	1		1		3	
Full-load Current	A	7.2		9.3		4.5	13.6
Size of inlet and outlet water pipes	mm	28		28		35	
Unit Weight	kg	190		215		306	316
Unit Width	mm	300		400		600	
Unit Depth <sup>5)</sup>	mm	1100		1100		1100	
Unit Height	mm	2000		2000		2000	
DX Unit (Direct Expansion)							
FS***	Unit	020		025		040	
Unit Configuration	-	Single Cooling	Constant Temperature and Humidity	Single Cooling	Constant Temperature and Humidity	Single Cooling	Constant Temperature and Humidity
Total Cooling Capacity <sup>1)</sup>	kW	23		25.5		40.4	
Sensible Cooling Capacity <sup>1)</sup>	kW	23		25.5		40.4	
Air Volume	m <sup>3</sup> /h	4920		5050		8080	
Sensible heat ratio	/	1		1		1	
Heating Capacity	kW	-		-		-	6
Humidifying Capacity	kg/h	-		-		-	3
Number of compressors	pcs	1		1		1	
Number of fans	pcs	6		3		3	
Voltage	V	380~415		380~415		380~415	
Frequency	Hz	50		50		50	
Phase	P	3		3		3	
Full-load Current	A	17.2		23.2		24.9	34
Unit Weight	kg	230		255		346	356
Unit Width	mm	300		400		600	
Unit Depth <sup>5)</sup>	mm	1100		1100		1100	
Unit Height	mm	2000		2000		2000	
Supporting Outdoor Unit							
KCS***	Unit	032		036		054	
Heat Exchanging Capacity	kW	31		36.8		54.4	
Voltage	V	220		220		220	
Frequency	Hz	50		50		50	
Phase	P	1		1		1	
Full-load Current	A	2.98		5.96		5.96	
Noise <sup>3)</sup>	Db(A)	54.1		44.8		52.1	
Weight	kg	125		138		165	
Unit Length	mm	1601		1801		1801	
Unit Width	mm	975		975		1274	
Unit Height	mm	651		651		651	
Foot stool Height	mm	455		455		455	

## NOTE 1.Parameter table

- 1) Air/water cooled unit data based on 37°C , 25%RH indoor return air temperature.
- 2) Chilled water unit data based on 37°C , 25%RH indoor return air temperature.  
The inlet and outlet water temperature of chilled water are 10°C and 15°C.
- 3) The noise data is sound pressure level value of 10m free field.
- 4) Standard outdoor unit minimum working temperature -20°C. Low temperature unit minimum working temperature -40°C;
- 5) Standard Unit with front air supply.

2.Specifications are subject to change without prior notice.



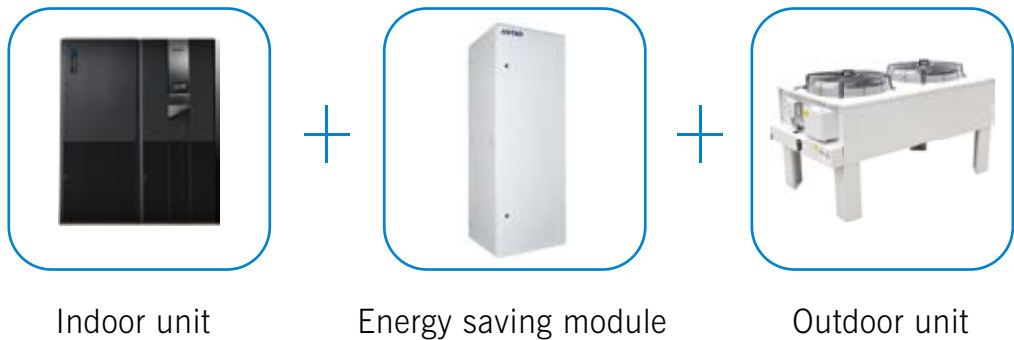


# KSTAR fluorine pump free-cooling energy-saving series precision air conditioner

KSTAR fluorine pump free-cooling air conditioner is an efficient and energy saving air conditioner developed by KSTAR , it can fully use of natural cold source to reduce the energy consumption of the unit. Based on the KSTAR standard air cooling unit, it can achieve the cooling function using the compressor system or the fluorine pump system through the refrigerant cycle, no need to add pipe net system and draw into the fresh air. With the integrated design concept, it has the advantages of installation and maintenance easily, high reliability, high efficiency, energy saving and so on. It can be applied in various types of data centers, communications room and other places.

## Composition

Fluorine pump free-cooling air conditioner is consisted of three parts, they are indoor unit, outdoor unit and energy saving module; it has the same Installation and using mode as standard air cooling unit, simple installation, easy to use and maintenance.



# The advantage of fluorine pump free-cooling precision air conditioner

## ◎Running feature

- When outdoor environment temperature is high, the condition isn't suitable to start up the fluorine pump system. At this time, turn on the compressor, the air conditioner works as normal.
- When outdoor air temperature is low enough, the condition is suitable to start up the fluorine pump system. At this time, turn off the compressor, turn on the fluorine pump system for cooling.

## ◎High efficiency and energy saving

- When the outdoor environment temperature is high, the high efficiency scroll compressor for cooling, high efficiency and energy saving
- When the outdoor environment temperature is low, the compressor is turned off, and fluorine pump system is turned on that can reduce the power usage greatly.
- Single compressor refrigeration system configures one fluorine pump energy saving module, Double compressor refrigeration system configures two fluorine pump energy saving modules.
- When the outdoor environment temperature is low, shut down the compressor to fully use of natural cold source and reduce energy consumption
- Fluorine pump free-cooling precision air conditioner use high efficiency and energy saving parts, so it has the advantage of environmental protection and energy saving as the KSTAR other precision air conditioner product.
- Intelligent energy saving controller ensure the unit running efficiently and stably.

## ◎High reliability

- Use high quality parts which have great performance over time.
- Advanced and reliable controller ensures that the unit switches the cooling mode automatically, various protection functions ensure the unit running safely and reliably.
- Intelligent control system can diagnose fault real time and alarm.

## ◎Easy to use

- Highly integrated and modular design, easy to install and maintain.
- No need to draw into fresh air or open the hole in the wall, keep the room tightness and cleanliness.
- No need to add the water pipe net system.
- All sides of the air conditioner can be removed, provide 100% frontal maintenance.
- Provide standard RS485 and SNMP port, 485 or SNMP communication card is optional for remote monitoring.

## MatrixAir™ Fluorine pump free-cooling precision air conditioner technical specifications

MT***UR/DR	Unit	025	030	035	045	055	040	050	060	070	080	090	100
<b>AC Fan</b>													
Compressor Total Cooling Capacity <sup>1)</sup>	kW	26.7	30.8	35.5	45.5	54.5	41.2	53.5	61.4	70.9	81.3	90.6	104.4
Fluorine pump Total Cooling Capacity <sup>2)</sup>	kW	26.3	30.4	35.3	45.1	54.3	40.5	52.9	61.1	70.5	80.9	90.2	104.1
Compressor Sensible Cooling Capacity <sup>1)</sup>	kW	24.3	29.3	32.7	42.8	51.8	37.9	49.2	57.7	63.8	77.2	83.4	95.0
Fluorine pump sensible Cooling Capacity <sup>2)</sup>	kW	24.2	28.6	32.5	41.9	50.5	37.7	49.2	56.8	64.9	76.1	83	95.8
Air volume	m <sup>3</sup> /h	7500	8000	8500	13000	15000	12500	14000	18000	18500	21000	23000	25000
Compressor Sensible heat ratio	/	0.91	0.95	0.92	0.94	0.95	0.92	0.92	0.94	0.90	0.95	0.92	0.91
Fluorine pump sensible heat ratio	/	0.92	0.94	0.92	0.93	0.93	0.93	0.93	0.93	0.92	0.94	0.92	0.92
<b>EC Fan</b>													
Compressor Total Cooling Capacity <sup>1)</sup>	kW	26.9	31.2	35.7	45.9	54.7	41.6	53.8	61.7	71.1	81.8	90.8	104.7
Fluorine pump Total Cooling Capacity <sup>2)</sup>	kW	26.7	30.9	35.7	45.5	55.6	41.1	53.3	61.5	70.9	81.3	90.6	104.5
Compressor Sensible Cooling Capacity <sup>1)</sup>	kW	25.0	30.0	33.6	44.1	52.5	39.5	50.6	59.2	66.1	78.5	85.4	97.4
Fluorine pump sensible Cooling Capacity <sup>2)</sup>	kW	24.8	29.4	33.2	42.8	52.3	38.6	50.1	58.4	65.9	77.3	84.3	97.2
Air volume	m <sup>3</sup> /h	7800	8300	8800	13500	15400	13200	14600	18700	19300	21600	23900	26000
Compressor Sensible heat ratio	/	0.93	0.96	0.94	0.96	0.96	0.95	0.94	0.96	0.93	0.96	0.94	0.93
Fluorine pump sensible heat ratio	/	0.93	0.95	0.93	0.94	0.94	0.94	0.94	0.95	0.93	0.95	0.93	0.93
Heating capacity(Standard)	kW	6	6	6	9	9	9	9	9	9	12	12	12
Heating capacity(Max)	kW	12	12	12	18	18	18	18	18	18	24	24	24
Humidifying capacity (Standard)	kg/h	6	8	8	10	10	10	10	10	10	12	12	12
Humidifying capacity (Max)	kg/h	8	8	8	15	15	15	15	15	15	15	15	15
Number of compressors	pcs	1	1	1	1	1	2	2	2	2	2	2	2
Number of fans	pcs	1	1	1	2	2	2	2	2	2	3	3	3
Full-load current	A	31	31	33	48	53	44	56	57	61	77	83	93
Unit Weight	kg	390	460	470	620	630	690	720	780	790	990	1010	1110
Unit Length	mm	850	1200	1200	1650	1650	1650	1650	2010	2010	2460	2460	2810
Unit depth	mm	850	850	850	850	850	850	850	850	850	850	850	850
Unit Height	mm	1960	1960	1960	1960	1960	1960	1960	1960	1960	1960	1960	1960
Single energy saving module width	mm							728					
Single energy saving module depth	mm							580					
Single energy saving module height	mm							2026					

### NOTE 1.Parameter table

- 1 ) Compressor cooled data based on 24℃, 50% RH indoor return air temperature
- 2 ) Fluorine pump data based on 24℃, 50% RH indoor return air temperature
2. The power supply type:380~415V / 3P / 50Hz
3. Specifications are subject to change without prior notice

## MatrixAir™ Fluorine pump free-cooling precision air conditioner outdoor unit technical specifications

KCS***	Unit	24	28	32	36	42	48	54	64
Heat exchanging	kW	23.8	27.2	31.0	36.8	42.2	47.6	54.4	62.4
Voltage	V	220	220	220	220	220	220	220	220
Frequency	HZ	50	50	50	50	50	50	50	50
Phase	P	1	1	1	1	1	1	1	1
Full-load current	A	2.98	2.98	2.98	5.96	5.96	5.96	5.96	5.96
Noise <sup>1)</sup>	dB(A)	54.9	52.9	54.1	50.7	53.0	52.0	52.1	55.1
Unit Weight	kg	117	124	125	138	143	152	165	185
Unit length	mm	1601	1401	1601	1801	1801	1801	1801	2001
Unit width	mm	975	975	975	975	975	1274	1274	1274
Unit height	mm	651	651	651	651	651	651	651	651
Foot stool height	mm	455	455	455	455	455	455	455	455

### NOTE 1.Parameter table

- 1 ) The noise data is sound pressure level value of 10m free field
- 2.Specifications are subject to change without prior notice

## ◎ FocusAir™ Fluorine pump free-cooling precision air conditioner technical specifications

FS***	Unit	020	025	040	
Unit configuration	-	Single cool	Single cool	Single cool	Constant temperature constant humidity
Compressor Total Cooling Capacity <sup>1)</sup>	kW	24.5	25.5	40.4	
Fluorine pump Total Cooling Capacity <sup>2)</sup>	kW	24.8	27.5	40.8	
Compressor Sensible Cooling Capacity <sup>1)</sup>	kW	24.5	25.5	40.4	
Fluorine pump sensible Cooling Capacity <sup>1)</sup>	kW	24.8	27.5	40.8	
Air volume	m <sup>3</sup> /h	4920	5050	8080	
Compressor Sensible heat ratio	/	1	1	1	
Fluorine pump sensible heat ratio	/	1	1	1	
Heating capacity	KW	-	-	-	6
Humidifying capacity	Kg/h	-	-	-	3
Number of compressors	PCS	1	1	1	
Number of fans	PCS	6	3	3	
Voltage	V	380	380	380	
Frequency	HZ	50	50	50	
Phase	P	3	3	3	
Full-load current	A	17.2	23.2	24.9	34
Unit Weight	kg	240	265	315	325
Unit length	mm	300	400	600	
Unit width	mm	1100	1100	1100	
Unit height	mm	2000	2000	2000	
Single energy saving module width	mm	728			
Single energy saving module depth	mm	580			
Single energy saving module height	mm	2026			

### NOTE 1.Parameter table

- 1 ) Compressor cooled data based on 37°C, 50% RH indoor return air temperature
- 2 ) Fluorine pump data based on 37°C, 25% RH indoor return air temperature

2. Specifications are subject to change without prior notice

## ◎ FocusAir™ fluorine pump free-cooling precision air conditioner outdoor unit technical specifications

KCS***	Unit	032	036	054
Heat exchanging	kW	31	36.8	54.4
Voltage	V	220	220	220
Frequency	HZ	50	50	50
Phase	P	1	1	1
Full-load current	A	2.98	5.96	5.96
Noise <sup>1)</sup>	dB ( A )	54.1	50.7	52.1
Unit Weight	kg	125	138	165
Unit length	mm	1601	1801	1801
Unit width	mm	975	975	1274
Unit height	mm	651	651	651
Foot stool height	mm	455	455	455

### NOTE 1.Parameter table

- 1 ) The noise data is sound pressure level value of 10m free field
- 2.Specifications are subject to change without prior notice

# Precision Air Conditioner Customized Programs



## High Temperature Solution

Support running in the outdoor environment of 45°C or higher temperature



## Low Temperature Solution

Support running in the outdoor environment of -40°C



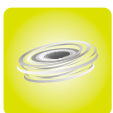
## Low Noise Solution

Support the low noise running when it has higher request for noise



## High Altitude Solution

Support operating in high altitude more than 1000m



## Large Air Volume Solution

Provide users with the solution of large air volume



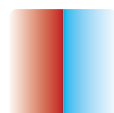
## Long Piping and High Vertical Rise Solution

Support the installation that the equivalent length is more than 30m and the vertical rise exceeds the standard value



## High ESP Solution

Support the pressure more than the standard ESP and meet the needs of the scene



## Restraint Effect of the Cold and Hot Channel Solution

Provide solutions of CAC and HAC



## Accurate Air Supply Solution

Provide users with the application of accurate air supply

# Green and Environmental Protection

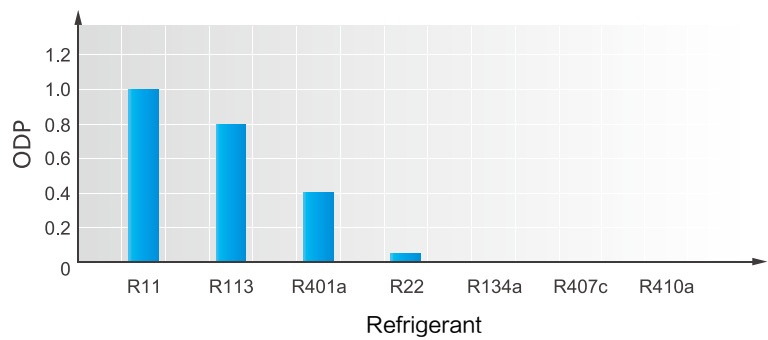
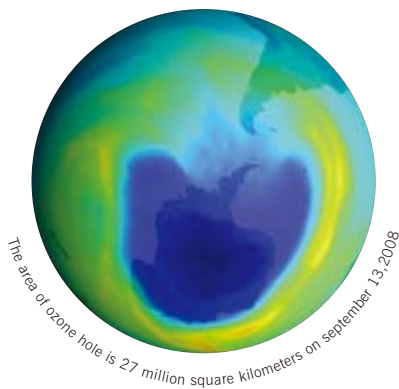
## Green Earth, Our Beautiful Homeland

KSTAR, promoting the development of china's green data center industry health by the wisdom of science and technology.

As a corporate citizen, KSTAR knows environment has impact on realizing enterprise sustainable development and human future life. so, KSTAR devotes ourself to reduce the pollution of environment by all kinds of way, promising to provide customer with the products and serves that innovative, high quality, meeting the requirements of environmental

protection, and doing business by the manner of being responsible for environment to realize the sustainable development of enterprise and society.

The area of ozone hole is 2007 square kilometers on september 13, 2008.



KSTAR selects and uses the green refrigerant R407c, R410a or R134a. KSTAR builds the green data centers.

