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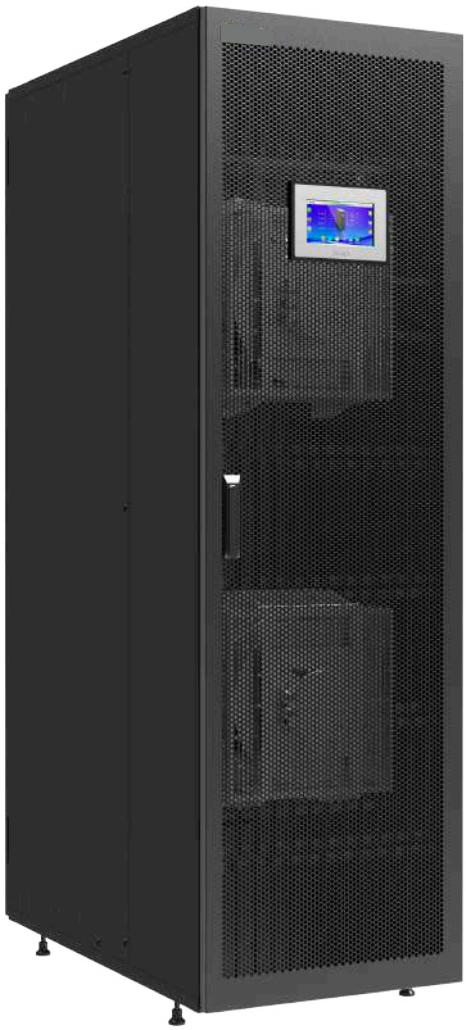
CoolRow precision air conditioner



iTeaQ CoolRow is a kind of in-row precision air conditioner designed for high-heat-density data center, modular data center, low PUE data center, container data center and computer room thermal optimization project.

High air return temperature	High energy efficiency	100% sensible heat ratio	Short distance air flow
In-Row installation	Same appearance style with IT cabinets	Rear air return	Front air flow

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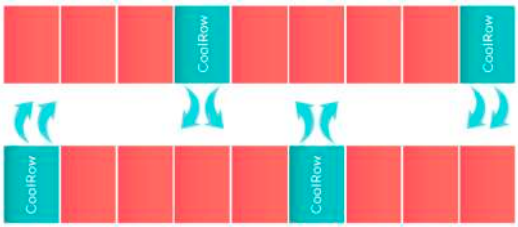
Typical Applications

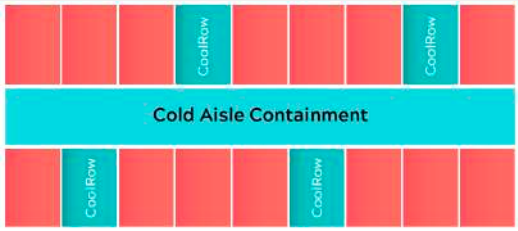
Application I: Data Center With Cabinets Face-to-Face and Back-to-Back Layout

Face-to-face and back-to-back layout of cabinets form a hot channel and a cold aisle. Distributed in each row of cabinets, CoolRow abstracts hot air from hot channel and supplies cool air to cold aisle. CoolRow installed at end of rows forms a wind curtain to prevent hot air mixed with cool air. This application features simple layout and easy implementation.



Application II: Data Centers With Sealed Cold Aisle

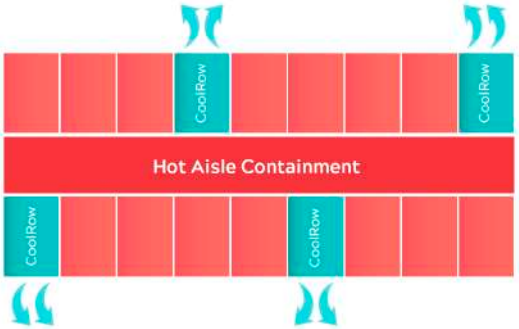
When CoolRow is installed in each row of cabinets which are placed face-to-face and back-to-back, a special structure is used to seal space at the front (air inlet side) of all cabinets. CoolRow abstracts hot air from hot aisle and supplies cool air into sealed cold aisle. CoolRow does not need to be installed at the end of each rows. Evenly layout of CoolRow helps optimize returned air distribution.



This application enables cooling capacity to be fully used by heat load and avoids loss of the cooling capacity without additional refrigeration for equipment rooms, with features of high efficiency and energy-saving. It is one of the most popular applications in data center solution.

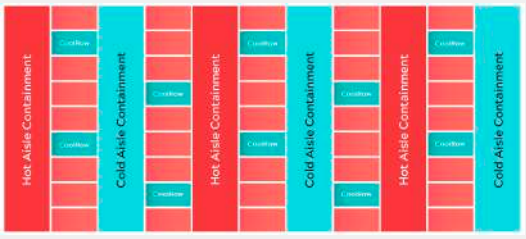
Application III: Data Centers With Sealed Hot Aisle

When cabinets rear space are sealed, CoolRow abstract hot air from sealed hot aisle and supplies cool air into cold aisle. This application improves returned air temperature for air conditioner air absorb. Air conditioners entire EER improves accordingly. It's suitable for equipment room with small space, equipment room is required to be sealed to prevent cooling performance dropping.



Application IV: Data Centers of Sealed Hot and Cold Aisle

This application mode combines features of Application II and Application III. Both hot aisle and cold aisle are sealed, which enables not only cooling capacity to be fully used but also EER to be improved. It is one of the most effective solution.



Application V: Data center with single-row cabinets and sealed cold aisle

Sealed cold aisle solution is also suitable for single-row cabinets with full utilization of cooling capacity, no additional cooling design for the equipment room environment, which helps improve energy efficiency.

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Client value

High Reliability

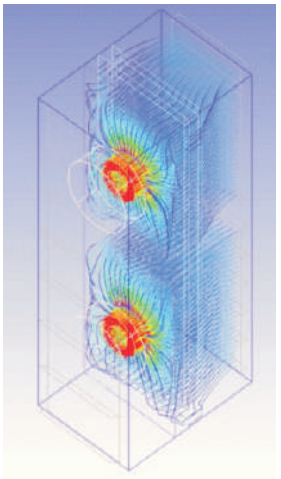
Main components are provided by top-level suppliers in refrigeration field. Each unit undergoes strict operating test before delivery. Operating time of main parts is recorded, and a warning is given when it is time for maintenance. Automatic diagnosis function is provided to quick troubleshooting.

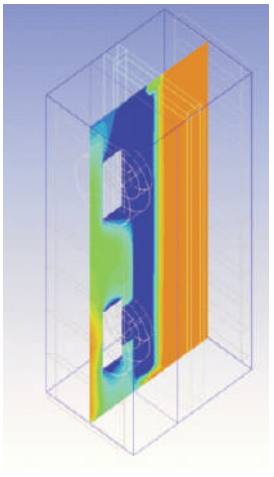
Excellent Energy Efficiency Performance

In-Row installation, close to heat load, short air circulation loop with high efficiency. CoolRow is designed with high-temperature returned air, improves EER significantly. SHR reaches 100%, which matches equipment in fully sensible heat application. Air flow distribution in equipment is optimized to prevent air flow mix and ensure high efficiency. Compared with traditional air conditioners, CoolRow EER is improved by more than 20%.

Refrigeration As Per Load Demands

Maximum 16 remote temperature sensors to collect important temperature data of equipment cabinets. CoolRow outputs accurate cooling capacity precisely according to data collected. Cooling capacity output adjusted from 20% to 100% to match heat loads.





CFD Analysis Chart on Air Flow and Temperature Field within Equipment Cabinet

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Feature

Elegant structure and easy installation design

- Standard down pipeline connection, special design for up pipeline connection.
- Cabinet support foot for convenient installation adjustment.
- Dimension compatible with IT cabinet.

Fully cabinet evaporator

- Evaporator is fully deployed to cover all cabinet with a large heat-exchange area.
- Reasonable air flow distribution for high heat exchange efficiency.
- Separated condensate water collection design patent to avoid "water blowing".

Variable air flow mode

- Front air flow mode for cold-sealed aisle data center.
- Optional air flow grill for air flow direct adjustment.
- Flexible grill installation to achieve left, right or dual direct air flow.
- Multiple grill installation to achieve different air flow volume requirement.

Advanced Controller

- Heat load tracing technology, Flexible and smooth cooling capacity.
- 16 remote temperature sensors for accurate temperature control.
- RS485 intelligent communication interface, suitable to access on remote monitoring.
- External customized alarm interface for important alarms such as fire alarm, etc.

Large touch displayer

- 7-inch HD super-large touchscreen displayer.
- Exquisite pictures and texts for massive information, super-large information storage.
- Temperature & humidity curves.

Efficient inverter compressor

- R410A refrigerant with no harm to the ozonosphere.
- First-class brand scroll compressor for high reliability and EER.

Efficient EC fan

- Full-coverage fan layout ensures air flow covers entire evaporator surface.
- Air flow is even and omni-directional.
- Hot swapping design and easy maintenance.
- Fan teamwork works on high efficient status.

Efficient EEV

- High flow control precision.
- Optimal adjustment performance.
- High efficiency.

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Specification

CRxxxEA(-B)	012	025	035	035	045	060	070
Air flow mode	Back return, front horizontal flow.						
Air flow (m^3/h)	2500	5000	6000	8200	9500	10500	12500
Total cooling capacity (kW) ①	12.5	25.0	35.0	40.0	48.0	60.0	70.0
Sensible cooling capacity (kW) ①	12.5	25.0	35.0	40.0	48.0	60.0	70.0
Total cooling capacity (kW) ②	13.4	26.5	36.7	41.8	50.0	62.0	72.0
Sensible cooling capacity (kW) ②	13.4	26.5	36.7	41.8	50.0	62.0	72.0
Refrigerant type	R410A						
Compressor type	Inverter hermetic scroll compressor						
Expansion valve type	Electronic expansion valve						
Fan type	EC fan						
Filter	G4						
Main power input	380V/3N~/50Hz						
FLA (A) (No heater, No humidifier)	12.8	25.8	33.8	33.8	49.9	51.8	61.8
FLA(A) (Heater, Humidifier)	17.3	29.3	37.3	37.3	53.4	55.3	65.2
Heater capacity (kW)	3	3	3	6	6	6	6
Humidifier capacity (kg/h)	1	2	2	2	2	2	2
Inlet pipe of humidifier	DN15	DN15	DN15	DN15	DN15	DN15	DN15
Condensing water drain pipe (mm)	20	20	20	20	20	20	20
Refrigerant gas pipe (mm)	12.7	19	19	22	22	22	22
Refrigerant gas pipe (inch)	1/2	19	19	22	22	22	22
Refrigerant gas thickness (mm)	1.0	1.2	1.2	1.5	1.5	1.5	1.5
Refrigerant liquid pipe (mm)	9.52	16	16	19	19	19	19
Refrigerant liquid pipe (inch)	3/8	5/8	5/8	3/4	3/4	3/4	3/4
Refrigerant liquid thickness (mm)	0.8	1.0	1.0	1.2	1.2	1.2	1.2
Dimension Width (mm)	300	300	300	600	600	600	600
Dimension Depth (mm)	1000 / 1100 / 1200	1100 / 1200	1100 / 1200	1100 / 1200	1100 / 1200	1100 / 1200	1100 / 1200
Dimension Height (mm)	2000	2000 / 2200	2000 / 2200	2000 / 2200	2000 / 2200	2000 / 2200	2000 / 2200
Weight (kg)	190	195	230	280	295	300	300

Remark:

①Test condition 1: Indoor unit return air temperature 37℃; Outdoor temperature 35℃.

②Test condition 2: Indoor unit return air temperature 40℃; Outdoor temperature 35℃.

FLA: Summation maximum power consumption of components that could be operating at the same time.

Model: "-B" only for 35kW 300mm width type.

Contact iTeaQ for further information.

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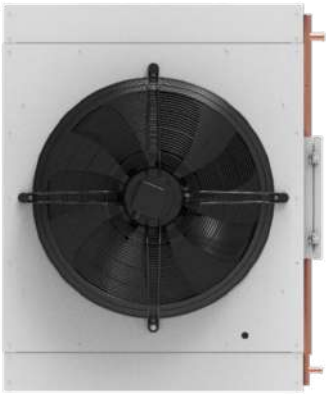
Outdoor solution 1: Plate condenser



Features

1. Designed as marine-grade inoxidizable aluminum-alloy structural with metal fan and stainless steel connection, features high adaptability, high reliability and long operating time.
2. Fan speed adjusted by Variable-frequency step-less speed control technology, features energy-saving and noise reduction.
3. Optional component 1: Owl wing fan, blades are designed from bionic technology based on owl wing to reduce energy consumption and noise.
4. Optional component 2: Noise reduction components, reduces condenser noise to achieve less impact on residents nearby.
5. Optional component 3: Outdoor unit noise reduction wall, customized outdoor unit noise reduction walls installed according to actual situation to reduce condenser noise on residents nearby.

Specification

Model	ASC16-A	ACS42-A	ACS50-A	ACS60-A	ACS72-A	ACS80-A	ACS86-A	ACS99-A	ACS106-A
Air flow (m^3/h)	8400	13000	13000	14000	22000	24000	24000	26000	29000
Fan quantity	2	1	1	1	2	2	2	2	2
FLA (A)	2.2	2.4	2.4	2.4	3.5	3.5	3.5	4.8	8.0
Power cable	/	2mm²x5			4mm²x3+2.5mm²x2				
Breaker (A)	/	16	16	16	16	16	16	16	16
Refrigerant gas pipe (mm)	12.7	25	25	25	25	25	25	25	25
Refrigerant gas pipe (inch)	1/2	1	1	1	1	1	1	1	1
Refrigerant liquid pipe (mm)	9.52	19	19	19	19	19	19	19	19
Refrigerant liquid pipe (inch)	3/8	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Dimension W (mm)	755	1045	1545	1545	1845	1845	1845	2345	2345
Dimension D (mm)	420	1273	1273	1273	1273	1273	1273	1273	1273
Dimension H (mm)	1198	661	661	661	661	661	661	661	661
Weight (kg)	65	115	136	152	168	168	195	245	250
Main power input	220V/50Hz ~	380V/50Hz 3~							

Remark:

1. Plate condenser supports vertical or horizontal installation. (except ASC16-A)
2. 450mm Supporter packaged as accessory for horizontal installation. (except ASC16-A)
3. Contact iTeaQ for further information.

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Outdoor solution 2: Array condenser

Features

1. Single unit: "V" type heat exchanger, save occupation area more than 50%. Array installation: save occupation area more than 70%.
2. Identical dimension for quick array installation of different model.
3. Step-less fan speed: adjusted by heat load to save energy.
4. Optional component 1: noise-drop kit, noise drops more than 7dB.
5. Optional component 2: Pump kit, with ability to use free-cooling resource to save entire energy cost.
6. Optional component 3: Wet film covered on heat-exchanger surface to improve heat exchange ability.

Specification

Model	ACS42-MA	ACS50-MA	ACS62-MA	ACS79-MA	ACS86-MA	ACS96-MA	ACS125-MA
Air flow(m^3/h)	12000	14000	15000	17800	20100	25000	30000
Fan quantity	1	1	1	1	1	1	2
Refrigerant circuit quantity	1	1	1	1	1	1	1
FLA (A)	2	2.6	2.6	4.5	4.4	5.2	5
Power cable	$4mm^2x3+2.5mm^2x2$						
Breaker (A)	16	16	16	16	16	16	16
Gas pipe (mm)	25	25	25	25	25	25	25
Gas pipe (inch)	1	1	1	1	1	1	1
Liquid pipe (mm)	19	19	19	19	19	19	19
Liquid pipe (inch)	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Dimension W (mm)	1080	1080	1080	1080	1080	1080	1080
Dimension D (mm)	1080	1080	1080	1080	1080	1080	2160
Dimension H (mm)	1800	1800	1800	1800	1900	1900	1800
Weight (kg)	140	145	155	170	185	190	310
Main power input	380V/50Hz 3~						

Remark: No array condenser for 12.5kW in-row air conditioner.