COOLROW PRECISION

AIR CONDITIONER

Precise and Reliable Cooling

ACSON® International
Air Conditioners

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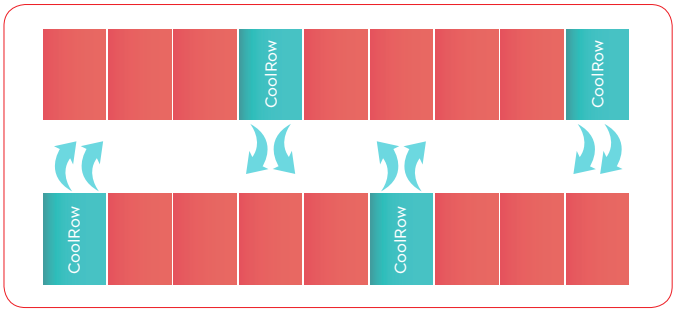
Acson CoolRow is a compact design precision air conditioner designed to couple with multiple air flow (hot or cold air) in order to improve air circulation and efficiency. CoolRow are integrated in the rows of server racks that greatly enhance air distribution and taking cooling directly to the heat load.

Application

- High density data center
- Computer room or single cabinet which thermal load is more than 5kW
- Container data center
- Modular data center
- Low Power Usage Effectiveness (PUE) data center

Typical Applicable Scenes and Illustrations for CoolRow

Example 1



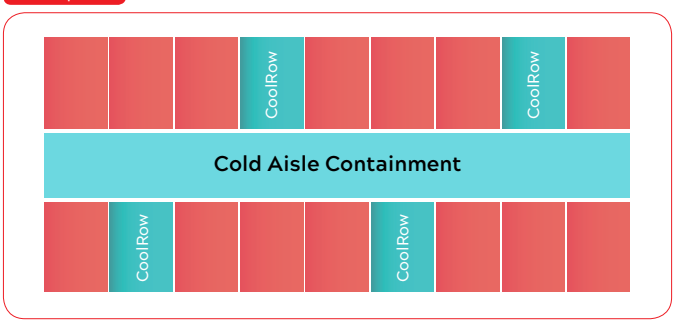
Example 1: Data center with cabinets face-to-face and back-to-back layout

Face-to-face and back-to-back cabinets formed hot and cold aisles, CoolRow can evenly distributed at each row of server cabinets. Hot air is absorbed from hot aisle; cold air will be released to the cold aisle after modulation. An "air barrier" is formed when CoolRow is arranged at the beginning of each row that can lower the streaming of hot or cold air. This application is relatively simple and easy for implementation.

Example 2: Self-contained cold aisle data center (confined space)

As CoolRow installed in each row of racks that arranged in face-to-face and back-to-back, it seal the front cabinet's space (air inlet side). Therefore, CoolRow absorb the hot air from hot aisle and release the cold air to the closed space to form a cold aisle containment.

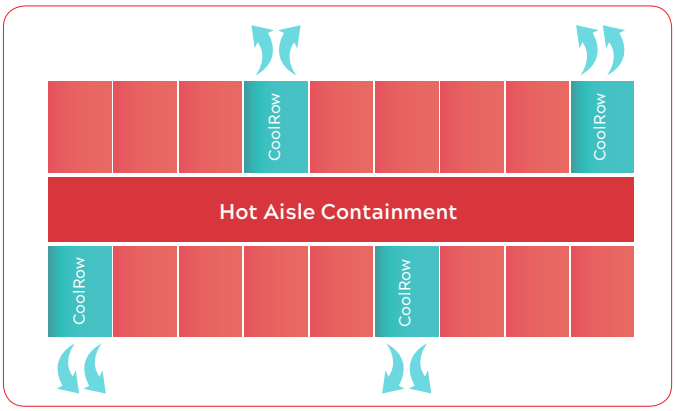
Example 2



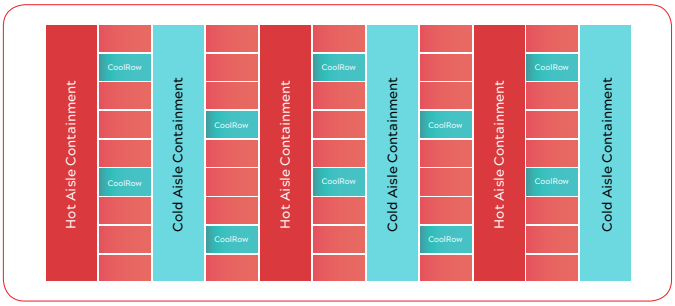
Example 3:
Self-contained hot aisle data center (confined space)

This Example work in the similar way as Example 2 with the opposite way of arrangement where the Cool Row absorb hot air from the hot aisle containment and release cold air outward.

Example 3



Example 4



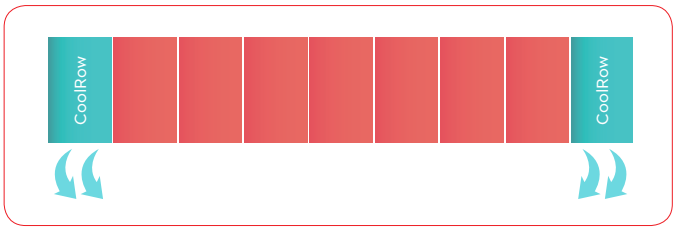
Example 4:
Self-contained hot and cold aisle data center (confined space)

This Example combined the features of Example 2 and Example 3 that seal the front and back of cabinet's space in order to form cold and hot aisle containment. Therefore, a totally enclosed data center is formed that enable the cooling capacity to be fully utilized.

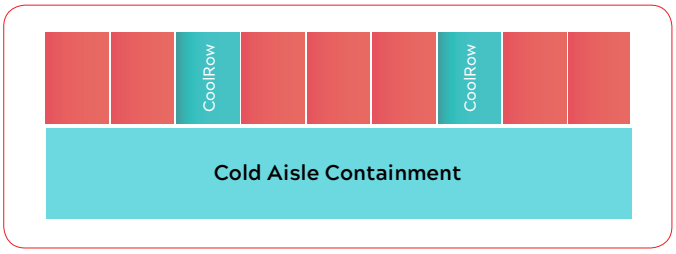
Example 5:
Single row cabinet data center

It is preferably to arrange CoolRow at the beginning of the row for data center with one single row of cabinet only. This arrangement is good for "air barrier" formation that could lower down the hot and cold air streaming which is relatively simple and easy to be implemented. At the same time, it is suitable for operating data center that require capacity expansion and hot spot transformation.

Example 5



Example 6



Example 6: Single cabinet and Cold Aisle containment data center (confined space)

On the basis of Example 5, it seal the cabinet's front space in order to form a cold aisle containment to isolate the cool aisle from hot aisle that could maximize the utilization of cooling capacity. It could evenly distributed at the highly heated cabinet that beneficial for return air flow. This Example making full use of cooling capacity that is relatively energy-efficient.

*All pictures shown are for illustrative purposes only and may differ from actual product.
The above scenarios are typical scenarios for CoolRow, other scenarios are not listed due to limited space.

Features

Diversified

- Cooling capacity: Air-cooled/Water-cooled 12.5kW-60kW; chilled water 30kW-70kW.
- Functions: Cooling only, Cooling + electric heating type, Constant temperature and constant humidity.
- Cooling method: Air-cooled, water cooled* and chilled water.

*There are 2 types of water cooled condensing heat exchangers (shell and tube heat exchanger & plate heat exchanger) that can be installed outside of data center to prevent direct contact of cooling water with data center. The specification of CoolRow air-cooled and water-cooled indoor units are similar.

High-efficient and full coverage of fan system

- Uniform air flow with multiple fans distributed.
- Hot-swappable design, easy maintenance.
- Fans operate at the optimum efficiency instead of maximum rotating speed.
- Energy efficiency and redundancy can be achieved at the same time.

Elegant outlook and easy to be install

- Two sets of connectors are reserved for top and bottom piping (piping can be select at the job site).
- Depth of cabinet body is consistent with the common cabinet (1100mm).

Flexible air supply

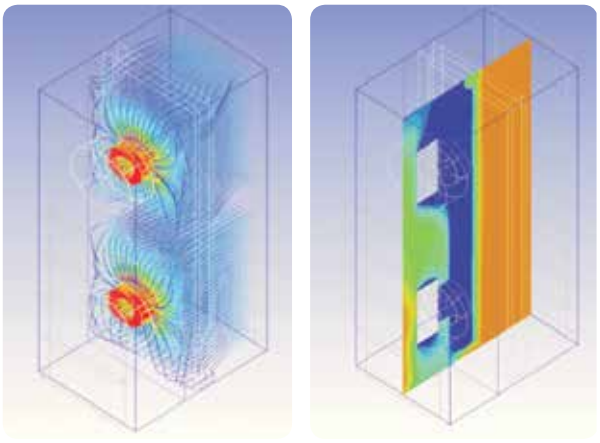
- Standard configure model implements forward air supply mode which is suitable for cold aisle containment application.
- Guide grille can be configured at the job site to adjust the air supply direction.

Efficient

- High performance: able to handle high temperature return air.
- High efficiency: short air circulation path.
- High sensible heat ratio: sensible heat ratio could achieved 100% which matches with the equipment in fully sensible heat state.

Advanced and reliable control system

- Up to 16 temperature sensors can be connected (temperature data of cabinet can be collected to calculate the cooling capacity requirement).
- Automatic diagnosis function.
- Standard configure RS485 communication interface and remote monitoring access.
- Configured with external custom alarm interface (e.g: fire alarm).
- 7-inch HD touchscreen display; 3-inch button-operated LCD (optional).
- Historical temperature and humidity curve display
- Optional: Electric heater, electrode humidifier, condensate pump, dual power input component.



CFD visualization illustrates the airflow and temperature field within the equipment cabinet.

Specifications

CoolRow Air Cooled and Water Cooled type

Model			Indoor	A5PCR012	A5PCR25		A5PCR035		A5PCR060
Air Discharge Direction				REAR AIR RETURN AND FRONT AIR SUPPLY (DEFAULT MODE). A DIRECTION ADJUSTABLE GUIDING PLATE CAN BE CONFIGURED ON SITE TO IMPLEMENT FRONT, LEFTWARD, RIGHTWARD AND BILATERAL AIR SUPPLY MODES.					
Nominal Cooling Capacity			BTU/hr	42,700	85,400		130,100		204,800
			kW	12.5	25.0		38.1		60.0
Sensible Cooling Capacity			BTU/hr	42,700	85,400		130,100		204,800
			kW	12.5	25.0		38.1		60.0
Power Source			V/Ph/Hz	380 ~ 415 / 3 / 50					
FLA (For Cooling Only)			A	12.8	23.8		27.9		36.7
FLA (For Constant Temperature & Humidity Unit)			A	17.3	28.3		37.0		45.8
Refrigerant Type				R410A					
Fan Type				ELECTRONICALLY COMMUTATED FAN (EC FAN)					
Air Filter				G4 FILTER					
Compressor Type				TOTALLY ENCLOSED SCROLL EC COMPRESSOR		HERMETIC SCROLL FIXED SPEED COMPRESSOR		TOTALLY ENCLOSED SCROLL EC COMPRESSOR	
Expansion Valve Type				EXV	EXV	MECHANICAL TXV	EXV	MECHANICAL TXV	EXV
Indoor Unit	Air Flow	High	m^3/h/CFM	2500 / 1471	5000 / 2943		8200 / 4826		11000 / 6474
	Heating Capacity (Optional)		kW	3	3		6		6
	Humidifying Capacity (Optional)		kg/h	1	2		2		2
	Unit Dimension	Height	mm/in	2000 / 78.74	2000 / 78.74		2000 / 78.74		2200 / 86.61
		Width	mm/in	300 / 11.81	300 / 11.81		600 / 23.62		600 / 23.62
		Depth	mm/in	1000 / 39.37	1100 / 43.31		1100 / 43.31		1100 / 43.31
	Humidifier Pipe (Only For Humidification Unit)		mm/in	G1/2"					
	Condensate Drain Pipe	Size	mm/in	20 / 0.79"					
	Unit Weight		kg/lb	190 / 419	290 / 639	310 / 683	380 / 838	400 / 882	450 / 992

Notes:

1. All specification are subjected to change by the manufacturer without prior notice.
2. Nominal cooling capacity are based on the condition below:
   Return air temperature 37°C , condensing temperature (air-cooled, water cooled, glycol cooled) 45°C/RH:24%.
3. FLA indicates maximum current of standard unit configuration, current of air-cooled ODU is not included.
4. For requirement of customised model, please contact Acson Malaysia for further information.

Specifications

CoolRow Chilled Water Cool Type

Model		Indoor	APCR025C	APCR045C	APCR060C	APCR025C (HEIGHTEN TYPE I)	APCR025C (HEIGHTEN TYPE II)
Air Discharge Direction			REAR AIR RETURN AND FRONT AIR SUPPLY. A DIRECTION ADJUSTABLE GUIDING PLATE CAN BE CONFIGURED TO IMPLEMENT MULTIPLE AIR SUPPLY AND RETURN MODES.				
Cooling Capacity When Water Inlet Is 7°C; Outlet Is 12°C		BTU/hr	132,800	172,000	239,200	N/A	N/A
		kW	38.9	50.4	70.1	N/A	N/A
Cooling Capacity When Water Inlet Is 10°C; Outlet Is 15°C		BTU/hr	118,100	151,500	213,000	129,000	137,600
		kW	34.6	44.4	62.4	37.8	40.3
Cooling Capacity When Water Inlet Is 13°C; Outlet Is 18°C		BTU/hr	103,400	132,400	186,000	111,300	118,100
		kW	30.3	38.8	54.5	32.6	34.6
Power Source		V/Ph/Hz	220 ~ 240 / 1 / 50	380 ~ 415 / 3 / 50		220 ~ 240 / 1 / 50	
Air Circulation Volume		m^3/h/CFM	5,000 / 2,943	7,000 / 4,120	11,000 / 6474	5,200 / 3061	5400 / 3178
FLA (For Cooling Only)		A	6.1	3.4	5.1	6.1	
FLA (For Constant Temperature & Humidity Unit)		A	19.7	12.5	14.2	19.7	
Water Valve Type			STANDARD CONFIGURATION: TWO-WAY VALVE; THREE-WAY VALVE (OPTIONAL)				
Fan Type			ELECTRONICALLY COMMUTATED FAN (EC FAN)				
Air Filter			G4 FILTER				
Heating Capacity (Optional)		kW	3	6	6	3	3
Humidifying Capacity (Optional)		kg/h	2				
Humidifier Water Inlet			G1/2"				
Condensate Drain Pipe	Size	mm/in	20 / 0.79"				
Chilled Water Inlet and Outlet		mm/in	31.75 / 1-1/4"		38.1 / 1-1/2"	31.75 / 1-1/4"	
Unit Dimension	Height	mm/in	2000 / 78.74	2000 / 78.74	2000 / 78.74	2200 / 86.61	2500 / 98.43
	Width	mm/in	300 / 11.81	600 / 23.62	600 / 23.62	300 / 11.81	300 / 11.81
	Depth	mm/in	1100 / 43.31	1100 / 43.31	1100 / 43.31	1200 / 47.24	1200 / 47.24

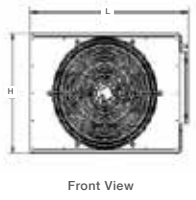
Notes:
1. All specification are subjected to change by the manufacturer without prior notice.
2. Nominal cooling capacity are based on the condition below:
   Return air temperature 37°C /RH:24%
3. Chilled water access must be supply from the front-end to ensure normal operation.
4. For requirement of customised model, please contact Acson Malaysia for further information.

Specifications

Air Cooled Outdoor Condenser

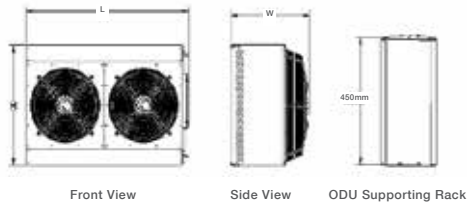
Model				A5OPC16S	A5OPC32S	A5OPC42S	A5OPC50S	A5OPC60S
Fan Quantity				2	1			
Power Source				220 ~ 240 / 1 / 50	380 ~ 415 / 3 / 50			
Unit Dimension		Height	mm/in	1198 / 47.17	968 / 38.11		1273 / 50.12	
		Width	mm/in	420 / 16.54	655 / 25.79	661 / 26.02		
		Depth	mm/in	755 / 29.72	1360 / 53.54		1560 / 61.42	
Unit Weight			kg/lb	65 / 143	120 / 265	128 / 282	136 / 300	152 / 335
Refrigerant Pipe	Size	Liquid	mm/in	9.52 / 0.37"	16 / 0.63"		22 / 0.87"	
		Gas	mm/in	12.7 / 0.5"	22 / 0.87"		28 / 1.10"	

Model				A5OPC72S	A5OPC80S	A5OPC90S	A5OPC99S
Fan Quantity				2			
Power Source				380 ~ 415 / 3 / 50			
Unit Dimension		Height	mm/in	1273 / 50.12			
		Width	mm/in	655 / 25.79		661 / 26.02	
		Depth	mm/in	1860 / 73.23		2360 / 92.91	
Unit Weight			kg/lb	168 / 370		226 / 498	245 / 540
Refrigerant Pipe	Size	Liquid	mm/in	22 / 0.87"			
		Gas	mm/in	28 / 1.10"			



Front View Side View ODU Supporting Rack

Structural Diagram (Single fan)



Front View Side View ODU Supporting Rack

Structural Diagram (Dual fans)

Notes:
1. Outdoor condenser can be installed horizontally or vertically.
2. A 450 mm supporting rack is attached with the condenser for horizontal installation.

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