

InRow[®] Direct Expansion

Close-coupled, air, water, and glycol cooling for closets, server rooms, and data centers

Up to 42kW



Row-Based Cooling

The InRow Direct Expansion product design closely couples the cooling with the IT heat load. This design prevents hot air recirculation, while improving cooling predictability and allowing for a pay as you grow environment. IT operators looking to improve efficiency or deploy higher density equipment will benefit from the modular design of the InRow Direct Expansion products. The intelligent controls of the InRow Direct Expansion products actively adjust fan speed and refrigerant flow to match the IT heat load to maximize efficiency and address the dynamic demands of today's IT environments.

To meet the diverse requirements of IT environments, the InRow Direct Expansion products are available in a wide range of sizes and heat rejection methods. The InRow SC is a self-contained unit in a 300 mm wide cabinet. The InRow RD 300mm units are available in air cooled and fluid cooled models. The 600mm units are air cooled only and have a precision cooling versions with humidifiers and reheat.



InRow SC, 300mm



InRow RD, 300mm



InRow RD, 600mm

Features/Benefits

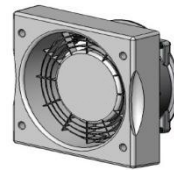
Availability

- > Active Response Controls monitor and actively adjust cooling capacity to ensure proper server inlet temperatures
- > Variable Speed Compressors or Hot Gas Bypass allows for low load handling capabilities
- > Placing the unit in the row of racks moves the source of cooling closer to the heat load. This eliminates air mixing and provides a predictable cooling architecture



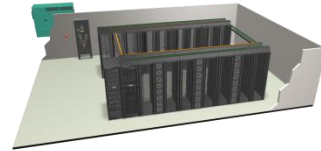
Total Cost of Ownership

- > Close Coupled Cooling improves operational efficiency 30%-50% over traditional data center cooling approaches
- > Variable Speed Fans reduce energy consumption during off-peak cooling periods and adapt to unpredictable power densities



Flexibility

- > Adapts to work in both new and existing data center environments
- > Multiple Heat Rejection Methods – Flexibility to deploy in a variety of configurations including air and fluid based designs



Serviceability

- > Modular components simplify replacement and reduce mean time to repair
- > System remains operational during fan replacement (300mm only)
- > Row based equipment allows for all serviceable components to be replaced/maintained in the hot or cold aisles
- > Retractable electronics module for easy service (RD 300mm only)
- > Easy to maintain, cleanable, deep loading mesh filter removes particles from the return air stream



Manageability

- > Real time display of current and available cooling
- > StruXureware DCIM compatible
- > Microprocessor controller – color touch screen display
- > Building management system integration



InRow[®] SC

Air cooled, self-contained row-based cooling for closets and server rooms.

Up to 7kW



1

PowerView for real time capacity monitoring and easy operation. User interface is network manageable.

2

High Head Pressure Protection – modulates fans to prevent unit from shutting down when condenser airflow is restricted or very high temperature.

3

Coil Freeze Protection – hot gas bypass prevents evaporator coil from freezing during light load conditions.

4

Remote probe guarantees inlet temperature to IT equipment.

5

Variable speed, hot-swappable fans reduce energy consumption during off-peak hours and allow system to remain operational if a replacement is required.

6

Condensate management – factory installed pump removes water from the unit, ensuring continuous operation.

7

Casters allow for easy movement

Performance Specifications

Net Cooling Capacity			
Return Air Temperature	SKU	Total Capacity kW (BTU/hr)	Sensible Capacity kW (BTU/hr)
70°F DB, 58.5°F WB (21.1°C DB, 14.7°C WB)	ACSC100	4.77 (16300)	4.44 (15100)
	ACSC101	4.41 (15100)	4.20 (14300)
72°F DB, 60.0°F WB (22.2°C DB, 15.6°C WB)	ACSC100	4.98 (17000)	4.53 (15500)
	ACSC101	4.51 (15400)	4.23 (14400)
75°F DB, 61.0°F WB (23.9°C DB, 16.1°C WB)	ACSC100	4.89 (16700)	4.74 (16200)
	ACSC101	4.74 (162040)	4.65 (15900)
80°F DB, 67.0°F WB (26.7°C DB, 19.4°C WB)	ACSC100	5.31 (18100)	4.56 (15500)
	ACSC101	5.25 (18000)	4.68 (16000)
80°F DB, 67.0°F WB (26.7°C DB, 19.4°C WB)	ACSC100	5.04 (17200)	5.04 (17200)
	ACSC101	4.89 (16700)	4.89 (16700)
85°F DB, 65.0°F WB (29.4°C DB, 18.3°C WB) ¹	ACSC100	5.25 (18000)	5.25 (18000)
	ACSC101	4.89 (16700)	4.89 (16700)
95°F DB, 82.7°F WB (35.0°C DB, 28.2°C WB) ²	ACSC100	6.45 (22000)	3.30 (11300)
	ACSC101	6.24 (21300)	3.30 (11300)
96°F DB, 68.0°F WB (35.5°C DB, 20.0°C WB) ³	ACSC100	6.50 (22200)	6.50 (22200)
	ACSC101	5.80 (19800)	5.80 (19800)

Note: All values are accurate to +/- 5% and based on full fan speed with standard filters and 95F (35C) Condenser entering air. Net cooling data is published above

All tests were performed at 100% evaporator fan speed except as noted

1 Airflow reduced to 1000 CFM (1700 m3/hr) at this condition to maintain appropriate suction temperature

2 Airflow reduced to 600 CFM (1020 m3/hr) at this condition to maintain appropriate suction temperature

3 Airflow reduced to 850 CFM (1440 m3/hr) to maintain appropriate suction temperature. Represents conditions with front and rear containment

Note: Minimum recommended heat load is 3kW per InRow SC unit, depending on room conditions

InRow[®] RD 300mm

Air, water, and glycol cooled row-based cooling for closets, server rooms, and data centers.

Up to 10kW



- 1 Variable speed, hot-swappable fans reduce energy consumption during off-peak hours and allow system to remain operational if a replacement is required.
- 2 Rear retractable electronics module allows for easy service access.
- 3 Intelligent control offer network manageability, real time capacity monitoring, predictive failure notification, and rack inlet temperature control.
- 4 Top or bottom piping connections
- 5 Remote probe guarantees inlet temperature to IT equipment.
- 6 Capacity Regulation prevents compressor cycling through the use of hot gas bypass
- 7 Scroll compressor
- 8 Condensate management – factory installed dual pumps remove water from the unit, ensuring continuous operation.
- 9 Casters allow for easy movement

Performance Specifications

Net Cooling Capacity (Air and Glycol Cooled)			
Return Air Temperature	SKU	Total Capacity kW (BTU/hr)	Sensible Capacity kW (BTU/hr)
72°F DB, 60°F WB (22.2°C DB, 15.5°C WB)	ACRD100/200	8.22 (28000)	8.04 (27400)
	ACRD101/201	8.01 (27200)	7.71 (26400)
75°F DB, 61.1°F WB (23.9°C DB, 16.2°C WB)	ACRD100/200	8.52 (29000)	8.52 (29000)
	ACRD101/201	8.16 (27900)	8.16 (27900)
80°F DB, 67.0°F WB (26.7°C DB, 19.4°C WB)	ACRD100/200	10.02 (34000)	9.12 (31000)
	ACRD101/201	9.72 (33200)	8.85 (30200)
85°F DB, 64.6°F WB (29.4°C DB, 18.1°C WB)	ACRD100/200	9.90 (33800)	9.90 (33800)
	ACRD101/201	9.69 (33100)	9.69 (33100)
90°F DB, 66.2°F WB (32.2°C DB, 19.0°C WB) ¹	ACRD100/200	10.44 (35600)	10.44 (35600)
	ACRD101/201	10.29 (35200)	10.29 (35200)
95°F DB, 67.8°F WB (35.0°C DB, 19.9°C WB) ²	ACRD100/200	10.62 (36200)	10.62 (36200)
	ACRD101/201	10.51 (35900)	10.51 (35900)
100°F DB, 69.3°F WB (37.8°C DB, 20.7°C WB) ³	ACRD100/200	10.62 (36200)	10.62 (36200)
	ACRD101/201	10.51 (35900)	10.51 (35900)
105°F DB, 70.8°F WB (40.6°C DB, 21.6°C WB) ⁴	ACRD100/200	10.56 (36000)	10.56 (36000)
	ACRD101/201	10.51 (35,900)	10.51 (35,900)
110°F DB, 72°F WB (43.3°C DB, 22.2°C WB) ⁵	ACRD100/200	10.6 (36000)	10.6 (36000)
	ACRD101/201	10.5 (35900)	10.5 (35900)

Airflow is 1081 l/s (2290 SCFM) at full evaporating fan speed

1 Airflow is reduced to 887 l/s (1880 SCFM) at this condition to maintain adequate evaporating temperature

2 Airflow is reduced to 717 l/s (1520 SCFM) at this condition to maintain adequate evaporating temperature

3 Airflow is reduced to 599 l/s (1270 SCFM) at this condition to maintain adequate evaporating temperature

4 Airflow is reduced to 510 l/s (1080 SCFM) at this condition to maintain adequate evaporating temperature

5 Airflow is reduced to 448 l/s (950 SCFM) at this condition to maintain adequate evaporating temperature

Note: Minimum recommended heat load is 2kW (6,831 BTU)

Note: For ACRD100 series the outdoor air temperature is 35° C (95° F)

Note: For ACRD200 series, a 40% at 0.64 l/s (10gpm), the entering glycol mixture temperature is 40.6° C (105° F)

Performance Specifications

Net Cooling Capacity (Water Cooled)			
Return Air Temperature	SKU	Total Capacity kW (BTU/hr)	Sensible Capacity kW (BTU/hr)
72°F DB, 60°F WB (22.2°C DB, 15.5°C WB)	ACRD200	9.72 (33200)	8.94 (30500)
	ACRD201	9.57 (32700)	8.79 (30100)
75°F DB, 61.1°F WB (23.9°C DB, 16.2°C WB)	ACRD200	8.43 (32200)	8.43 (32200)
	ACRD201	9.30 (31800)	9.30 (31800)
80°F DB, 67°F WB (26.7°C DB, 19.4°C WB)	ACRD200	11.52 (39300)	9.90 (33800)
	ACRD201	11.64 (39800)	9.99 (34200)
80°F DB, 62.8°F WB (26.7°C DB, 17.1°C WB)	ACRD200	10.38 (35400)	10.38 (35400)
	ACRD201	10.11 (34500)	10.11 (34500)
85°F DB, 64.6°F WB (29.4°C DB, 18.1°C WB)	ACRD200	10.92 (37300)	10.92 (37300)
	ACRD201	10.98 (37500)	10.98 (37500)
90°F DB, 66.2°F WB (32.2°C DB, 19.0°C WB) ¹	ACRD200	11.64 (39700)	11.64 (39700)
	ACRD201	11.76 (40200)	11.76 (40200)
95°F DB, 67.8°F WB (35.0°C DB, 19.9°C WB) ²	ACRD200	11.98 (40900)	11.98 (40900)
	ACRD201	12.00 (41000)	12.00 (41000)
100°F DB, 69.3°F WB (37.8°C DB, 20.7°C WB) ³	ACRD200	12.06 (41150)	12.06 (41150)
	ACRD201	12.00 (41000)	12.00 (41000)
105°F DB, 70.8°F WB (40.6°C DB, 21.6°C WB) ⁴	ACRD200	12.06 (41150)	12.06 (41150)
	ACRD201	12.00 (41000)	12.00 (41000)
110°F DB, 72°F WB (43.3°C DB, 22.2°C WB) ⁵	ACRD200	12.06 (41200)	12.06 (41200)
	ACRD201	12.06 (41200)	12.06 (41200)

Airflow is 1081 l/s (2290 SCFM) at full evaporating fan speed

1 Airflow is reduced to 887 l/s (1880 SCFM) at this condition to maintain adequate evaporating temperature

2 Airflow is reduced to 717 l/s (1520 SCFM) at this condition to maintain adequate evaporating temperature

3 Airflow is reduced to 599 l/s (1270 SCFM) at this condition to maintain adequate evaporating temperature

4 Airflow is reduced to 510 l/s (1080 SCFM) at this condition to maintain adequate evaporating temperature

5 Airflow is reduced to 448 l/s (950 SCFM) at this condition to maintain adequate evaporating temperature

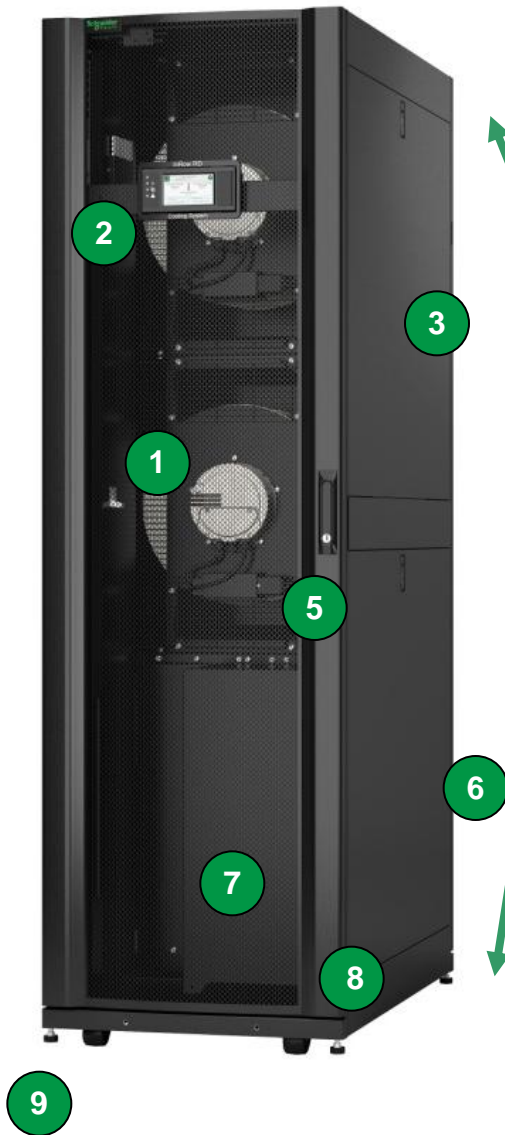
Note: Minimum recommended heat load is 2kW (6,831 BTU)

Note: A 0.64 l/s (10gpm) entering water temperature is 29.4°C (85°F)

InRow[®] RD 600mm

Air cooled, row-based cooling for small to medium data centers.

Up to 42kW



- 1 Variable speed fans reduce energy consumption during off-peak hours
- 2 Intelligent control offer network manageability, real time capacity monitoring, predictive failure notification, and rack inlet temperature control.
- 3 Electric reheat controls temperature during dehumidification **(RD60xP only)**
- 4 Top or bottom piping connections
- 5 Remote probe guarantees inlet temperature to IT equipment.
- 6 Humidifier maintains moisture level **(RD60xP only)**
- 7 Variable speed scroll compressor using VFD control
- 8 Condensate management – factory installed pump removes water from the unit, ensuring continuous operation.
- 9 Casters allow for easy movement

Performance Specifications

Net Cooling Capacity			
Return Air Temperature	SKU	Total Capacity kW (BTU/hr)	Sensible Capacity kW (BTU/hr)
72°F DB, 60.0°F WB (22.2°C DB, 15.5°C WB)	ACRD60x	26.9 (92000)	21.0 (72000)
	ACRD60xP	26.9 (92000)	21.0 (72000)
75°F DB, 61.1°F WB (23.9°C DB, 16.2°C WB)	ACRD60x	27.8 (95000)	23.0 (79000)
	ACRD60xP	27.8 (95000)	23.0 (79000)
80°F DB, 62.8°F WB (26.7°C DB, 17.1°C WB)	ACRD60x	28.9 (99000)	26.6 (92000)
	ACRD60xP	28.9 (99000)	26.6 (92000)
85°F DB, 64.6°F WB (29.4°C DB, 18.1°C WB)	ACRD60x	30.2 (103000)	29.7 (101000)
	ACRD60xP	30.2 (103000)	29.7 (101000)
90°F DB, 66.2°F WB (32.2°C DB, 19.0°C WB)	ACRD60x	32.0 (109000)	32.0 (109000)
	ACRD60xP	32.0 (109000)	32.0 (109000)
95°F DB, 67.8°F WB (35.0°C DB, 19.9°C WB)	ACRD60x	34.0 (116000)	34.0 (116000)
	ACRD60xP	34.0 (116000)	34.0 (116000)
100°F DB, 69.3°F WB (37.8°C DB, 20.7°C WB)	ACRD60x	35.9 (123000)	35.9 (123000)
	ACRD60xP	35.9 (123000)	35.9 (123000)
105°F DB, 70.8°F WB (40.6°C DB, 21.6°C WB) ¹	ACRD60x	35.6 (121000)	35.6 (121000)
	ACRD60xP	35.6 (121000)	35.6 (121000)
105°F DB, 70.8°F WB (40.6°C DB, 21.6°C WB) ^{1,2}	ACRD60x	41.9 (143000)	41.9 (143000)
	ACRD60xP	41.9 (143000)	41.9 (143000)

Airflow for the ACRD600 series is 1900 l/s (4000 SCFM) at full evaporating fan speed

Note: Minimum recommended heat load is 8kW (27300 BTU/hr)

Note: For ACRD600 series the outdoor air temperature is 35° C (95° F)

1 Airflow reduced to 3300 SCFM at this condition to maintain adequate return gas temperature

2 Compressor speed at 78Hz, all other conditions rated at 65Hz