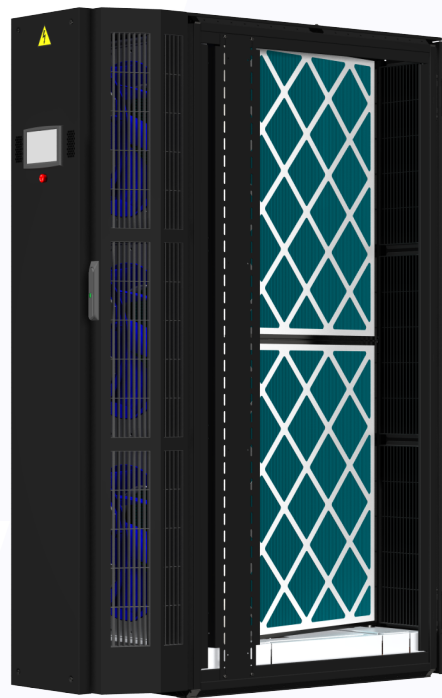


# Lambda In-Row

STATE OF THE ART ROW LEVEL COOLING SOLUTION  
FOR DATA CENTERS

- ▶ BASED ON MICROCHANNEL EVAPORATORS
- ▶ EXCEPTIONAL CAPACITY
- ▶ SUPERIOR EFFICIENCY

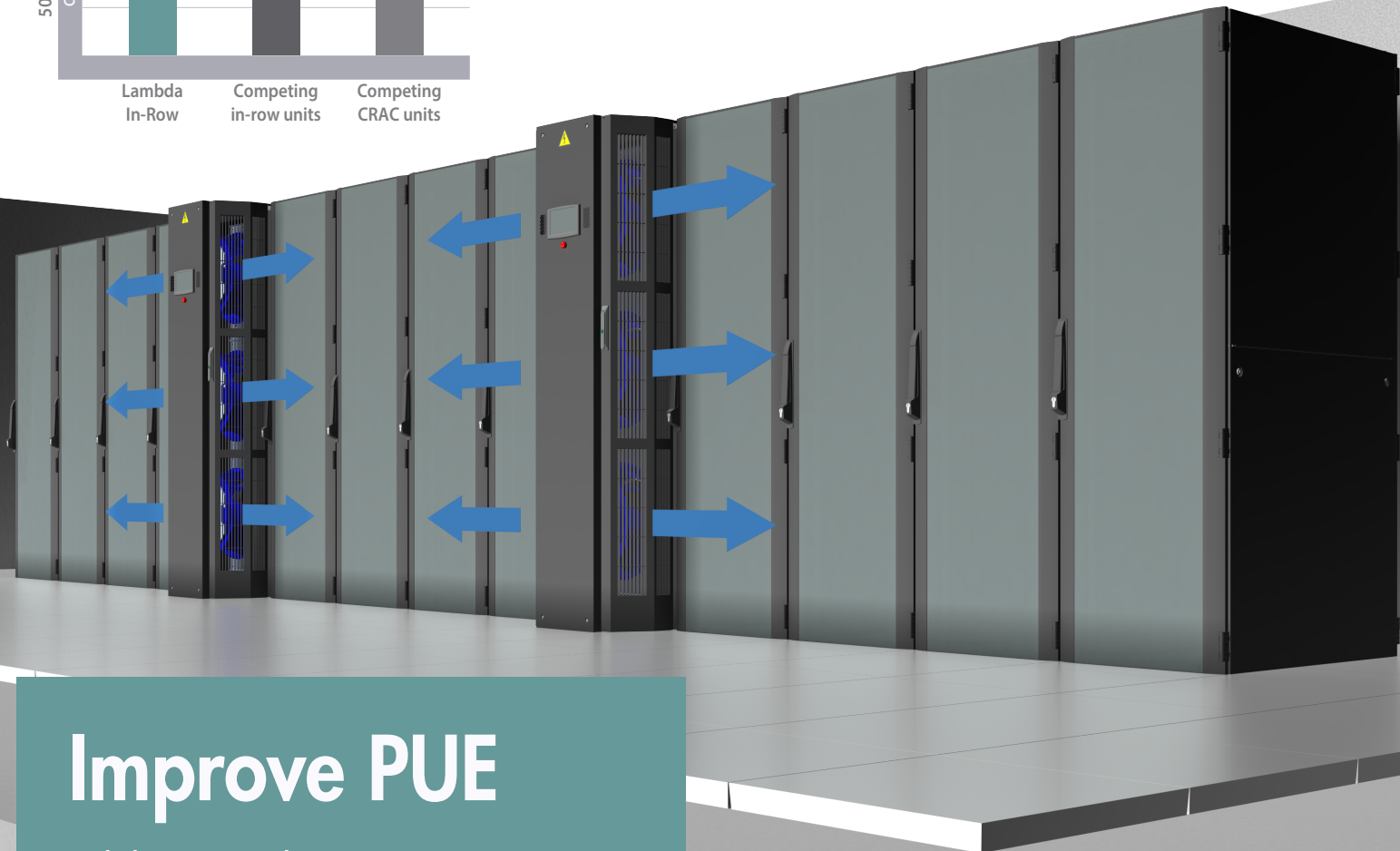
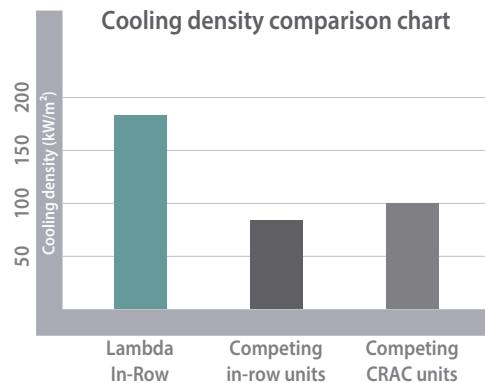


# 140kW CHILLED WATER



# Small unit that outperforms big CRACs

WITH THE RAPID DEVELOPMENT OF CLOUD COMPUTING AND MOBILE INTERNET, THE GROWTH OF COMPUTING POWER AND ENERGY CONSUMPTION SIGNIFICANTLY INCREASES THE HEAT LOAD DENSITY IN DATA CENTERS, AND THIS TREND WILL BE OBSERVED IN THE FORESEEABLE FUTURE. TODAY'S DATA CENTERS REQUIRE AN EFFECTIVE COOLING SYSTEMS IN ORDER TO FUNCTION WHILE ALLOWING FOR GROWTH, AND LAMBDA IN-ROW IS THE SOLUTION.



## Improve PUE

While saving data center space

Separating hot and cold air flows, as well as placing the cooling system closer to the heat source, leads to improved power usage effectiveness (PUE), and we designed Lambda In-Row to fit any existing aisle containment solution.

In data centers, every centimeter counts. Its whitespace is highly expensive, and with the new high-capacity Lambda In-Row system it is possible to reduce the number of installed cooling units by more than fourfold compared to the range of similar solutions.

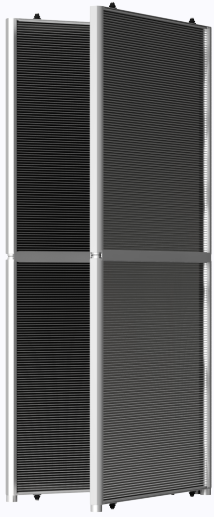
# 180

 kW/m<sup>2</sup> cooling density\*

Compared to its competitors, Lambda In-Row offers extremely high cooling capacity and aims for savings in many ways, including those from improved energy efficiency, simplifying the chilled water pipework and power distribution network and related installation investments, reduced number of units and data center footprint needed to meet the same cooling demand.

Lambda In-Row delivers optimum air distribution across rack installations thanks to its Air Management System (AMS) with regulated airfoil baffles incorporated in the front door. Excellent level of air distribution has been proven as a result of extensive laboratory study and field tests.

\* referring to chilled water of 15/21°C and inlet air of 40°C/25%RH



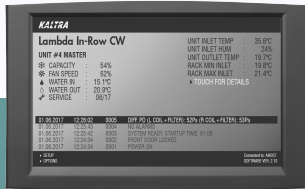
# Microchannel evaporators

## Better heat transfer, lower air resistance

New Lambda In-Row features microchannel cooling coils with remarkable better heat transfer performance and significantly lower air resistance.

Microchannel tubes brazed together with louvered fins using a controlled atmosphere brazing furnace have a perfect and permanent contact between tubes and fins, assuring an efficient heat transfer. Small hydraulic diameter of the microchannel tubes and high efficiency of louvered fins further improves heat transfer performance. The flat geometry of microchannel tubes results in reduced aerodynamic drag while minimizing the air shadow on the back side of the tube. The end effect is reduced air side pressure drop.

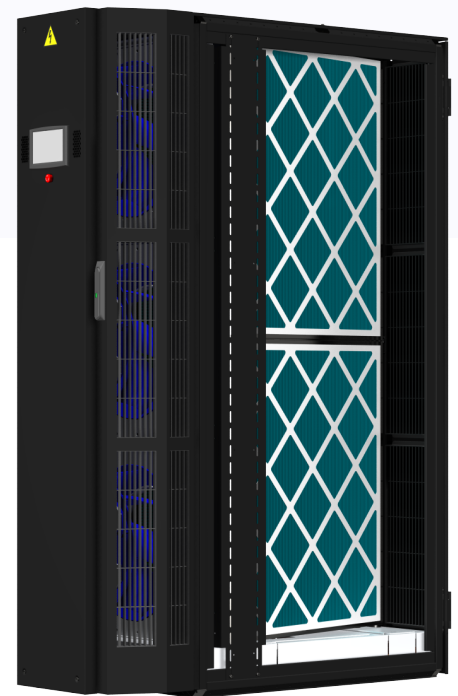
Aluminium microchannel coils are lightweight, robust and have significantly lower internal volume, resulting in lower unit weight and simplified design.



## Easy startup

The unit terminal with a large touch screen display provides advanced control and detailed run statistics and analysis for the operator. The new Android-based software allows configuring multiple Lambda In-Row simultaneously by replicating the configuration and parameters onto a group of networked units thus reducing the commissioning time.

With the smart balancing system which includes automated 2-way bypass valve, Lambda In-Row unit adjusts the water flow thru the cooling coils, thus performing an automatic balancing previously completed by a commissioning engineers.

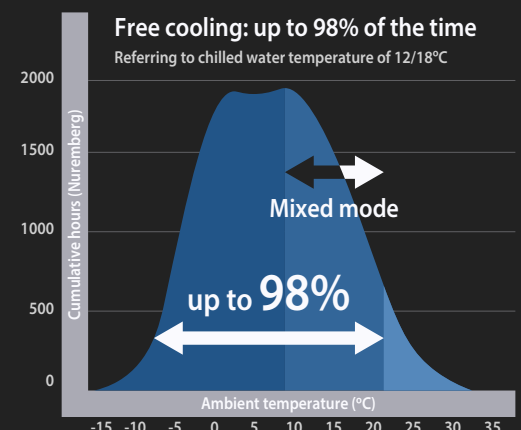


# Freecooling operation

When coupled to chiller system with a freecooling circuit, Lambda In-Row system able to run up to 98% of the time in freecooling mode, thus saving a large amount of energy.

In data center applications cooling air temperature can be elevated up to 27°C without negative impacts on electronic equipment. In connection with the increase in cooling air temperature, chilled water temperature can also be increased, thus generating more free cooling opportunities.

For further power savings, we recommend using Lambda In-Row units with air-cooled Lightstream Freecool chillers for large deployments and water-cooled Easystream chillers which can be installed indoor or outdoor for small to medium applications.



# Controls

The control hub of Lambda In-Row is a sophisticated microprocessor with control logic specially developed for row-based cooling units. The customer can manage and optimize the unit's performance either locally or remotely.

Users can deploy various control strategies based on either continuous temperature control, or on-demand airflow control (optional), or continuous pressure control by maintaining a pressure differential between the cold and hot aisles (optional).



# Air distribution

Lambda In-Row delivers optimum, CFD modeled air distribution across rack installations thanks Air Management System (AMS) with regulated airfoil baffles incorporated in the front door.

# EC fans

New generation of EC fans reduces power consumption by up to 20% while easily managing the high volume flows – it also works at the much reduced operating noise.

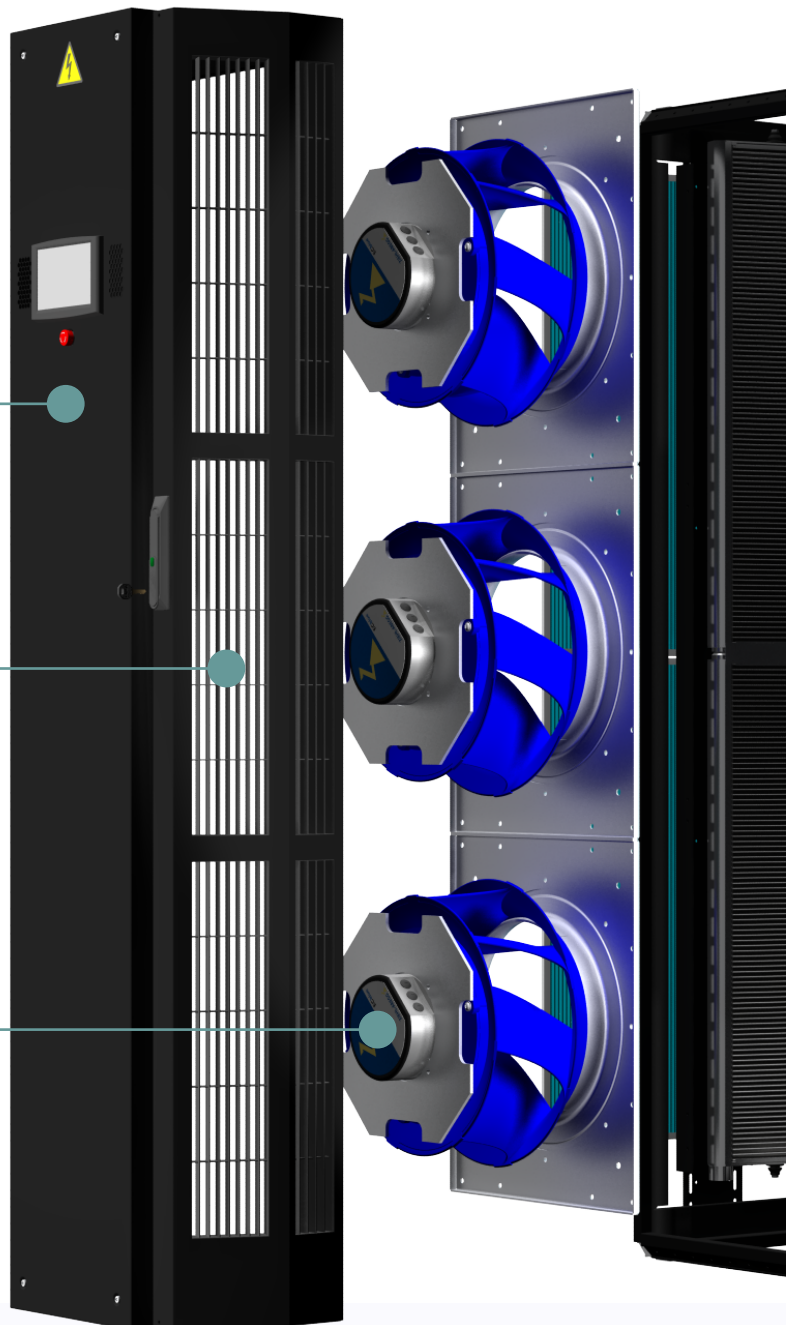
# Rack monitoring

Lambda In-Row unit able to constantly monitor thermal parameters of up to 16 racks by reading from temperature sensors installed on air inlets and outlets. When the temperature inside the controlled server racks rises above the set point, the control system issues an alert via the local area network to which the cooling unit is connected, as well as via Android-based software for remote control.

# Dew point control

## Leakage and condensate build-up prevention

The control system of Lambda In-Row cooling unit constantly monitors the air temperature and humidity to minimize condensate build-up by regulating water flow thru the evaporator coils. The system fully eliminates the possibility of leakages by means of dew point control and automatic condensate discharge system.

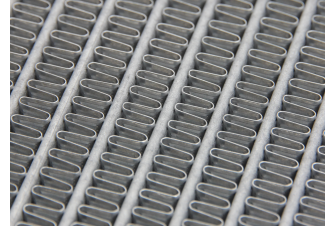




# Cooling coils

Lambda In-Row adopted the new generation microchannel technology for the cooling coils. To enlarge the heat exchanging surface, the coils are combined in a single, air-tight V-shaped bank. The geometry of V-bank has been optimized with CFD simulations to achieve an optimum air flow and minimum air resistance.

Cooling coils can be easily cleaned with compressed air without stopping the unit.



# Air filtration

Ultra-thin G2 grade air filters have been engineered for high-velocity applications and deliver excellent air quality and extremely low air resistance throughout the life of the filter. The filter panels feature fibers which do not absorb moisture and will not support microbial growth.

# Water circuit

Water circuit of Lambda In-Row unit equipped with a smart balancing system based on continuous pressure drop measurements on return and bypass lines. Depending on these measurements, the unit control system adjusts two-way valves and maintains necessary water flow thru the cooling coils in variable-flow chilled water systems.

# Remote control

The software for remote control based on Android allows the customers to configure and monitor the cooling units anytime and anywhere. In the case of alarm, the software notifies the system operator of any encountered failure and allow to perform remote diagnostics on a malfunctioning cooling unit.

# Networked operation

Up to 16 units connected for coordinated work

Local area network (LAN) can be used to connect up to 16 Lambda In-Row units for synchronized operation and run/standby control. With networked operation, various scenarios can be deployed depending on operational requirements, including unit rotation, load distribution, energy use minimization, etc.

# Technical Specifications

Model	Width	Depth	Height	Cooling capacity	Energy efficiency	Fans	Airflow	ESP	Engaged power	Pressure drop
	mm	mm	mm	kW	(EER) kW/kW	(main+standby)	m³/h	Pa	kW	(waterside) kPa
Water inlet/outlet: 15°C/21°C; 100% water; Inlet air temperature/humidity: 40°C/25%										
In-Row CW Gen.II	600	1295	2000	141.1	41.3	3+0	24000	20	3.42	10.5
In-Row CW Gen.II N+1	600	1295	2000	100.3	50.9	2+1	16000	20	1.97	7.5
Water inlet/outlet: 12°C/18°C; 100% water; Inlet air temperature/humidity: 35°C/25%										
In-Row CW Gen.II	600	1295	2000	129.2	37.8	3+0	24000	20	3.42	10.7
In-Row CW Gen.II N+1	600	1295	2000	93.6	47.5	2+1	16000	20	1.97	7.6

# Package, options and accessories

Description			
General			
Steam humidification system	<input type="checkbox"/>	Condensate discharge system	<input checked="" type="checkbox"/>
Dehumidification system	<input type="checkbox"/>	Thermal/noise reduction insulation	<input checked="" type="checkbox"/>
Multi-stage electric heater w/ thyristor control	<input type="checkbox"/>	IP55 rated enclosure	<input type="checkbox"/>
Water side			
2-way regulating valve + 2-way balancing valve on bypass	<input checked="" type="checkbox"/>	Dew point control	<input checked="" type="checkbox"/>
3-way regulating valve + manual balancing valve on bypass	<input type="checkbox"/>	Drain valves on water inlet/outlet	<input type="checkbox"/>
2-way regulating valve + no bypass	<input type="checkbox"/>	Pressure transducers on water inlet/outlet	<input checked="" type="checkbox"/>
Leak detection	<input type="checkbox"/>	Temperature probes on water inlet/outlet	<input type="checkbox"/>
Y-strainer w/ sieve size .25mm (loose)	<input type="checkbox"/>	Test connections on water inlet/outlet	<input checked="" type="checkbox"/>
Air side			
EC fans w/ Modbus control	<input checked="" type="checkbox"/>	Continuous temperature control	<input checked="" type="checkbox"/>
Temperature probes on air intake/discharge	<input checked="" type="checkbox"/>	Continuous air pressure control	<input type="checkbox"/>
Temperature probes for rack monitoring (2/4/8/16-set)	<input type="checkbox"/>	Aisle pressure control	<input type="checkbox"/>
Electric and controls			
Dual power supply changeover switch	<input type="checkbox"/>	Phase monitoring relay	<input type="checkbox"/>
Controller backup power supply	<input type="checkbox"/>	Energy management	<input type="checkbox"/>
HMI touch screen	<input checked="" type="checkbox"/>	Android-based remote monitoring	<input checked="" type="checkbox"/>

- ☒ Standard feature
- ☐ Optional feature

# Hot-swappable fans

Redundant solution for high-tiered data centers

For cooling equipment used in mission-critical or 24/7 environments, redundant and hot-swappable components are essential. Lambda In-Row features hot swap fan assemblies that facilitate fan replacement on running units without disrupting the service. When the fan goes offline, remaining fans will compensate the lack of airflow by increasing rotation speed.

