DATA CENTER

NRCD/NRCV

DIRECT EXPANSION AIR CONDITIONERS FOR HIGH DENSITY RACKS WITH MODULATING COMPRESSORS

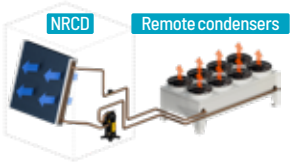
NRCD > 12–50 kW

NRCV > 13–37 kW

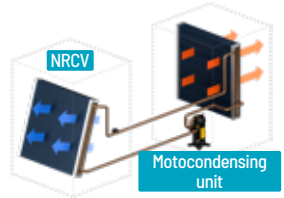
- MULTI-PROTOCOL COMMUNICATION INTERFACE
- EC RADIAL FANS
- MODBUS CONTROLLED FANS
- SCROLL COMPRESSORS
- INVERTER DRIVEN COMPRESSORS
- HOT SWAPPABLE FANS
- ON-BOARD HUMIDIFIER

The rack coolers in the NRCD range are an ideal solution for the cooling of small-to-medium size Data Center racks where **precision control of hygrothermal parameters is required 24/7**. They are particularly suitable for **small installations** where a chiller cannot be installed or where water in the Data Center is not allowed. Internal design and component selection focus on the achievement of **very high energy efficiency levels to minimise running costs of the entire system**. NRCD units also have an external remote condenser, which guarantees efficiency and reliability. Depending on how rack cooling is done - by creating hot and cold aisles in the Data Center via compartmentalisation and localised cooling - the NRCD range comes in two different configurations.

AIR CONDENSED



AIR CONDENSED WITH MOTOCONDENSING

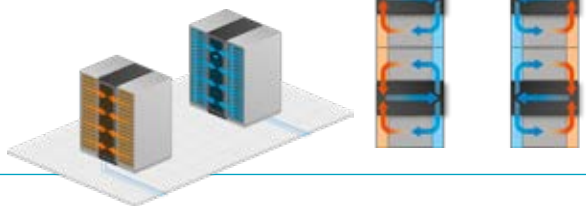


- Refrigerant R410A
- EC Fans
- Twin rotary and Scroll inverter compressors
- Electronic expansion valves (optional)
- Advanced programmable microprocessor control with LCD display
- Humidity control through dehumidification and humidification (optional)
- Air filter class G3 as standard. Air Filters G4, M5, F7 (optional)
- Double power supply with automatic switch (optional)
- Constant-flow (airflow control) or constant available overpressure (ΔP control) ventilation modulation (optional)
- Low temperature kits for optimal operation in the case of installation in particularly cold environments (on request)

In-Rack or In-Row configuration.

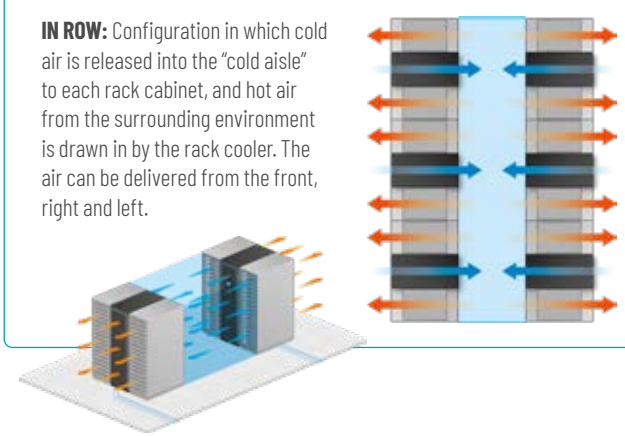
IN RACK

IN RACK: Configuration that generates a closed circuit between rack cooler and rack cabinet. The air can be drawn in and delivered from the right, left or both directions.



IN ROW

IN ROW: Configuration in which cold air is released into the "cold aisle" to each rack cabinet, and hot air from the surrounding environment is drawn in by the rack cooler. The air can be delivered from the front, right and left.

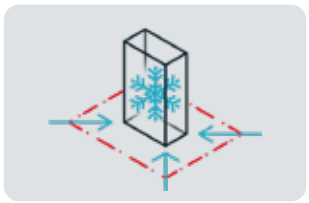


Hot swappable fans

In order to minimize machine shut-down, **a failed fan can be replaced without turning off the unit,** thanks to the use of the protective basket and connectors for the power and control section. Fan replacement thus becomes a routine maintenance operation.

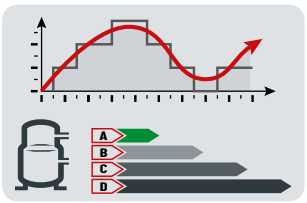
Safety in the server room

All models in the NRCD range feature heat exchange coils with hydrophilic coating. This special coating - together with adequate adjustment of air through-flow speeds - **helps condensate collection during the dehumidification process, preventing any dripping on the inside and outside of the unit.**



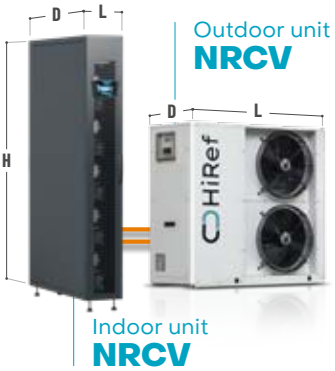
High power density

The internal design and the special component layout allows for an evaporating coil **with an extensive heat exchange surface area.** The unit footprint is still small, **ensuring optimal use of space in the server room.**



Power modulation

The units adapt quickly to the Data Center's cooling requests. Thanks to the inverter-controlled compressor, performance can be modulated to **up to 25%** of the rated value, **thus reducing consumption.** This ensures **continuous operation of the unit even at low loads,** without switching cycles on and off.



Ventilation EC

EC PLUG fans, standard throughout the range, are adjustable using different logics: flow rate, overpressure, constant ΔP and ΔT. Their accurate adjustment allows an efficient use of power for ventilation and a consequent **reduction of the system's PUE.** Extended range speed adjustment is carried out via Modbus protocol. The "emergency speed" function allows for fan operation **even in the event of microprocessor malfunctions.**

NRCD		0100	0200	0300	0260	0400	0450
R410A - Indoor air 30°C - 35% / Outdoor air 35°C							
Cooling capacity	kW	12.4	21.8	29.4	26.1	41.3	46.2
Total absorbed power	kW	3.4	8.2	12.4	8.1	13.1	16.1
EER		3.9	2.89	2.55	3.46	3.59	3.18
SHR		1	0.91	0.82	1	1	0.99
R410A - Indoor air 35°C - 30% / Outdoor air 35°C							
Cooling capacity	kW	13.1	23.6	31.6	28.6	45.5	50.1
Total absorbed power	kW	3.5	8.4	12.7	8.2	13.4	16.6
EER		4.04	3.07	2.67	3.75	3.85	3.33
SHR		1	0.95	0.85	1	1	1
Rated air flow	m^3/h	2700	4000	4250	5000	9000	
Power supply	V/ph/Hz	230/1/50	400/3+N/50				
Lp @ nominal rpm; dist.=2m Q=2	db(A)	64	66	67	60	73	73
Dimensions [LxHxD]	mm	300x2000x1200			600x2000x1200		

Performance data relating to units combined with standard HiRef remote condensers | Also available with 60 Hz power supply.

Sliding control panel

For 300 mm wide structures, the electrical panel is designed to take up **as little space as possible without interfering with air distribution over the whole working height of the unit.** A "sliding drawer" structure has been used, making access possible during commissioning and extraordinary maintenance operations. This configuration also prevents tangling of the wiring.

NRCV		0140	0240	0330
R410A - Indoor air 30°C - 35% / Outdoor air 35°C				
Cooling capacity	kW	13.3	24.6	34.6
Total absorbed power	kW	4.1	9.1	13.1
EER		4.06	3.17	3.1
SHR		1	1	0.88
R410A - Indoor air 35°C - 30% / Outdoor air 35°C				
Cooling capacity	kW	14.5	26.9	37.4
Total absorbed power	kW	4.1	9.3	13.3
EER		4.36	3.36	3.3
SHR		1	1	0.91
Rated air flow rate indoor unit	m^3/h	3100	5300	
Rated air flow rate outdoor unit	m^3/h	6400	9300	16300
Power supply indoor unit	V/ph/Hz	230/1/50	400/3+N/50	400/3+N/50
Power supply outdoor unit	V/ph/Hz	230/1/50	230/1/50	230/1/50
Dimensions indoor unit [LxHxD]	mm	300x2000x1200		
Dimensions outdoor unit [LxHxD]	mm	1250x460x882	1565x605x1275	1965x950x1322

Total absorbed power relating to indoor unit and motocondensing unit. | Also available with 60 Hz power supply.

HiRef S.p.A. · Viale Spagna 31/33 35020 Tribano (PD) – IT · Tel. +39 0499588511 · info@hiref.it
hiref@pec.it · CF/PIVA: 02191431200 · REA: PD – 327685