

NRV

MODULAR CHILLERS FEATURING
INTEGRATED FREE COOLING OPERATION



The most compact free cooling chiller
Modular design
High efficiency and redundancy levels



The compact modular free cooler

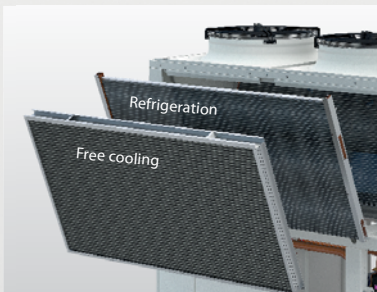
A fast changing world is asking for new and intelligent solutions. An increased need for lower energy consumptions and reduced carbon footprints comes hand in hand with a search for solutions which adapt to Users' continuously changing needs. All this with a desire for guaranteed performance at all times without downtimes, mated with simple and quick maintenance.

NRV offers all these benefits, thanks to unique design solutions and a modular configuration allowing multiple NRV modules to be effortlessly interconnected.



Efficient & ecological

NRV features twin scroll compressors within a single refrigeration circuit, optimizing efficiency especially at partial loads. The microchannel condensers allow a 40% lower charge of zero ODP R410A refrigerant. A free source of hot water is available using the desuperheater option.



Integral free cooling coils

Guaranteed peace of mind

Every module, prior to leaving the factory, goes through a functionality and a performance test at AERMEC's certified climatic test chamber. AERMEC's unmatched dedication to quality ensures that every unit leaves the factory ready for use. Factory witness tests are available upon request.



Aermec's advanced test facilities

Easy to install, easy to use

NRV easily fits through doors and into elevators. Quick connect couplings between the onboard headers allow for quick and easy installation. With a standard ambient operating range of -10°C (-20°C for freecooling version) to 46°C, NRV can be applied to nearly any application.



Fits through doors and into elevators

Quick and easy servicing

NRV service access is from the ends of the unit, allowing in-row servicing of a module without interrupting adjacent modules. Each unit features chilled water and refrigeration circuit isolation valves for ease of service. Condenser filters keep coils clean and operating efficiently.



Hinged electrical panel

Advanced user friendly control

The Multichiller microprocessor controller optimizes the operation of mechanical cooling and free cooling to ensure lowest overall energy consumptions. NRV allows Bacnet, ModBus and LON serial connection, as well as Double set point programming.



User friendly microprocessor

Lowest noise levels

NRV provides a solution to noise sensitive applications. Extensive acoustical testing has allowed sound level reductions through compressor enclosures and specially designed low noise inverter driven fans. The Night Mode program offers significant noise reductions during crucial night hours.



Enclosed compressor compartment

Multiply your benefit

NRV allows you to multiply your benefits when applying multiple modules together. All the notable advantages of the single NRV module are retained and transformed into a unique solution which perfectly combines the plus points of both a single large free cooling chiller and multiple smaller units.

Highest safety and redundancy, excellent energy efficiency and an extremely flexible solution truly meet any and all User needs. Furthermore multiple NRV modules retain a 100% free cooling capacity, and add no added dimensions despite the modular concept.





All the benefits of a single large chiller

When interconnecting multiple NRV modules you obtain all the benefits of a single large chiller of up to 970 kW. As many as 9 modules can be interconnected to a single microprocessor controller, transforming NRV into a single unit with 18 compressors within 9 refrigeration circuits, plus 9 independent free cooling circuits. The microprocessor manages and optimizes these to perfectly achieve the desired temperatures whilst modulating partial load savings across the multiple cooling steps. Quick and easy hydraulic interconnection using quick connect couplings offer fast installation. The single modules can be placed against each other thereby taking up no more space than a single larger chiller.

All the benefits of multiple smaller chillers

Each NRV module within a multiple connection is still able to act fully independently. Each module features its own electrical connection and main switch, in the unlikely event of any malfunction within a single module it can be easily isolated from the others, which can then continue to operate as the faulty module is repaired. NRV also offers scalability, further modules can be simply added at a later date as and when capacity requirements increase.

Highest redundancy offers even greater peace of mind

Multiple NRV modules offer total peace of mind. Beyond the safety of multiple compressors, refrigeration circuits, free cooling circuits and electrical panels, if desired it is even possible to add a further module to act as a safety back-up; in this case full performance is guaranteed even if a single module fails, which can be repaired whilst the unit is running.

Even higher energy efficiency

NRV's leading energy efficiency characteristics are fully exploited in modular configurations. As each module features its own integrated free cooling section so multi-module units maintain a 100% free cooling capacity. And thanks to multiple compressors (2 per module, so 18 for a 9 module configuration offering 5,5% cooling steps) NRV can perfectly partialize its performance, including free cooling, with a single advanced microprocessor managing the process with optimal precision.

Features

NRV is made of independent 108kW, modules which can be connected together up to 970kW cooling capacity. Every single module is an external chiller producing chilled water with high efficiency scroll compressors, axial fans, microchannel coils, system side plate heat exchanger. Units with the desuperheater option can also produce hot water for free. The base, the structure and the panels are made of treated galvanised steel with rustproof polyester paint. With NRV it is possible to couple up to 9 chillers designed to reduce overall unit dimensions to a minimum. This modularity adapts the installation to actual system development requirements. This way, the cooling capacity can be increased over time in a simple and economic manner. To respond to multiple system requirements, a Free cooling version is also available, particularly indicated if the requirement for chilled water is significant even during the winter period. In fact, the greater the difference between the outside air and requested water temperature, the greater the economical advantage of using freecooling.

Versions

NRV_° Cooling Only

NRV_F Free cooling

Operating range:

Operation at up to 46°C outdoor air temperature at full load.

- NRV is made of 1 chiller circuits. The careful choice of components, the particular configuration and the option of connecting multiple independent modules and managing them as if they were a single unit, allows maximum yield at full load, but also with partial loads thanks to the partialisation steps that increase as the connected modules increases, ensuring continual adaptation to actual system requests.
- The electrical control panel, present in every unit, together with the control logic implemented, allows each module to operate in synergy with the others, whilst ensuring continued operation if one or more modules fail. Modularity is essential for component redundancy, as it allows a safer system design and increased reliability.
- The modules are easy to install and can be connected together, both from the hydraulic and the electrical point of view, making it possible to fine tune the system. Hydraulic connections are facilitated by quick connect couplings, while electrical connections are simplified by the presence of a hinged electrical control panel on

each unit.

- The chiller module uses aluminium microchannel coils, ensuring very high levels of efficiency. These coils use less refrigerant compared to traditional copper/aluminium coils.
 - The NRV module is already supplied with a water filter and interception valves to facilitate cleaning and maintenance. As an accessory, an air filter protecting the coil facilitates cleaning and guarantees a good heat exchange.
 - The microprocessor, with keyboard and LCD display, allows easy consultation and intervention on the unit via a menu, available in several languages. Adjustment includes complete management of the alarms and their log.
 - The presence of a programmable timer allows operation time bands setting and programming of a possible second set-point.
 - The temperature control takes place with the integral proportional logic, based on the water outlet temperature.
 - With night Mode it is possible to set a silent mode profile. Perfect for night operation, it guarantees greater acoustic comfort, nonetheless offering, a high efficiency in the time of greater load.
- Night Mode is standard on all freecooling versions. For all other versions either the DCPX accessory or "J" inverter fan must be specified to allow Night Mode to operate."

Technical data

PERFORMANCE

NRV standard model		0550
Cooling capacity	kW	108,1
Input power	kW	34,9
EER	W/W	3,10
ESEER	W/W	4,10
Water flow rate	l/h	18626
Pressure drop	kPa	21
NRV free cooling model		
Cooling capacity	kW	105,4
Input power	kW	36,6
EER	W/W	2,88
Water flow rate	l/h	18104
Pressure drop	kPa	23
Cooling capacity	kW	91,2
Input power	kW	3,7
EER	W/W	24,3
Water flow rate	l/h	18104
Pressure drop	kPa	56

GENERAL DATA

Electrical data			
Total absorbed current (Standard)	400V/3/50Hz	A	61
Total absorbed current (Free cooling chiller)	400V/3/50Hz	A	65
Compressors		type	scroll
no. Compressors		no.	2
no. Circuits		no.	1
Refrigerant		type	R410A
System heat exchanger		type	plate
no. Heat exchangers		no.	1
Standard fans		type	axial
no. Fans		no.	2
Air flow rate (Chiller)		m ³ /h	32000
Air flow rate (Free cooling)		m ³ /h	29000
Dimensions and Weight			
Sound data			
Sound power level (Chiller)		dB(A)	87
Sound power level (Freecooling)		dB(A)	88
Height	A	mm	2450
Width	B	mm	2200
Depth	C	mm	1190
Weight		kg	1020

NRV standard model

■ Cooling mode (14511:2013)

Evaporator water temperature (in/out) 12°C/7°C; Outdoor air temperature 35°C;

NRV free cooling model

■ Cooling mode

Evaporator water temperature (in/out) 12°C/7°C;
Outdoor air temperature 35°C;

■ Cooling mode - free cooling (100%)

Evaporator water temperature (in) 15°C;
Outdoor air temperature 2°C

Sound power

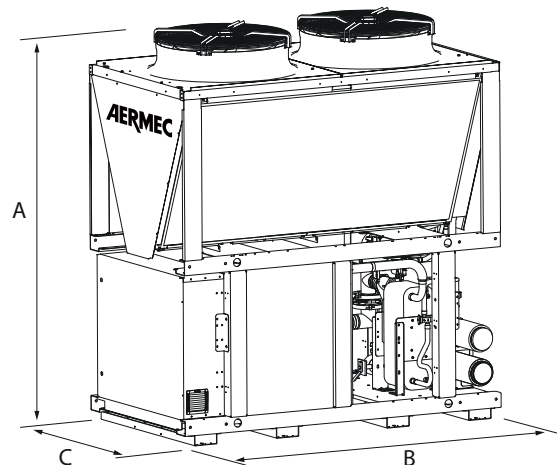
Aermec determines sound power values on the basis of measurements made in accordance with UNI EN ISO 9614-2, as required for Eurovent certification.

Select your NRV unit

By appropriately combining the variety of options available, every model can be configured in order to meet all specific system requirements.

Field	Description
1, 2, 3	NRV
4, 5, 6, 7	Size
	0550
8	Scope of application
	• Standard (produced water down to +4°C)
9	Model
	• Cooling Only
	F Free cooling
10	Heat recovery
	• Without heat recovery
	D With desuperheater
11	Version
	A High efficiency
12	Coils
	• Aluminium microchannel
	O Painted aluminium microchannel
	R Copper - Copper
	S Copper - Tinned
13	Fans
	• Standard
	J Inverter (1)
14	Power supply
	6 400V/3/50Hz with magnetic circuit breakers
15-16	Integrated hydronic kit
	00 Without hydronic kit

(1) Standard version: with Inverter fan "J" is not necessary DCPX



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