MITSUBISHI ELECTRIC
Changes for the Better

for a greener tomorrow eco Changes

IT COOLING

CHILLERS

r R410A

NR²Z

GO2

Air source chillers with multiple scroll compressors

249 - 1267 kW (28/20°C air 35°C)

MITSUBISHI ELECTRIC HYDRONICS & IT COOLING SYSTEMS S.p.A.

COOLING
R HFC R410A
SCROLL

NR²Z

GO2

249 - 1267 kW
(28/20 °C air 35°C)

Air source chillers with scroll compressors

Family overview
Technical insight
Controls
Performance
Operating limits
Equipment for mission critical systems
Heat recovery
Hydronic modules
Further options
Selling points

COOLING
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NR²Z

G02

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NR2-G02-Z - Family overview

The range

COOLING | SCROLL | R HFC R410A | P PLATES | T SHELL&T. | AXIAL

ErP 2021 COMPLIANT

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

NR²Z G02 0184P[T] – 0374P[T]

- 7 sizes, **249 – 504 kW** (28/20°C air 35°C)
- All sizes with 4 compressors
- Single efficiency version
- Evaporator choice: S&T or Plates

Structure with separate compressors and refrigerant circuits compartment

NR²Z G02 0404 – 0928

- 14 sizes, **545 – 1267 kW** (28/20°C air 35°C)
- Sizes with 4, 5, 6 and 8 compressors
- Two efficiency versions (K and A)
- Shell&tubes evaporator

The compressors and the refrigerant circuits are below the V-block coils. Compressor enclosures are provided upon selection of opt. 2312 Acoustical enclosure or opt. 2282 NR kit

NR2-G02-Z - Family overview

Nomenclature

1	2 3 4	5	6	7	8	9	10 11
NR2-	-G02-	Z	/ D /				0585

Code	Descriptions	Extension	Descriptions
1	Inverter Driven Tech	-	NOT
		i	Inverter
2	Compressor Type	N	Scroll
		F	Screw
		T	Centrifugal Oil Free
3	Brand	X	Climaveneta
		R	RC
4	Product Generation	-	
		2	New Product Generation
5	Unit Type	-	Air source chiller
		W	Water source chiller
6	Refrigerant	G01	R134a
		G02	R410A
		G03	R407C
		G04	HFO1234ze
		G05	R513A
		G06	R454B

Code	Descriptions	Extension	Descriptions
7	Application segment	-	Comfort
		Y	Process
		Z	IT Cooling
8	Function	-	Without heat recovery
		D	Partial heat recovery
9	Version	-	Unique single version
		K	Key efficiency
		A	High efficiency
		E	Enhanced efficiency
		SL-K	Key efficiency + Super Low Noise
		…	*other*
10	Size	4 digit code	first 3 digits: cooling capacity*0.1 [kW]
			last digit: compressors number
11	Evaporator type	-	one evaporator type (plate or S&T)
		T	Shell&Tube
		P	Plate

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NR2-G02-Z - Technical insight

Main components

PATENT PENDING

Patent-pending solution for the **optimization** of the thermodynamic cycle

Variable-speed AC axial fans. EC fans as option for unbeatable seasonal efficiency.

Full Aluminium microchannel coils for high efficiency and low refrigerant charge. E-coating available as option. Side metal panels for covering the V-block modules as standard

Electrical panel with power circuit components and **W3000+** control

Scroll compressor tandem/trio in multiple refrigerant circuits, with **electronic expansion valve** as standard

Evaporator:

<u>from 249 kW to 504 kW:</u>

Dry shell and tubes evaporator, fully developed in-house

<u>from 545 kW to 1267 kW:</u>

Brazed-plate evaporator

On-board factory-installed pumps (with VPF options) and **buffer tank** for the minimum installation time and cost (optional).

NR2-G02-Z - Technical insight

The compressors

Scroll compressor tandem R410A

- New generation scroll compressors, developed for the use of high density refrigerants
- **Tandem and trio configuration** to capitalize on the whole heat exchange surface at part loads and reach **higher seasonal efficiency**
- Further **safety** threshold with **thermostats** on each compressor discharge
- **Specific oil management solution**

High seasonal efficiency

Complete reliability

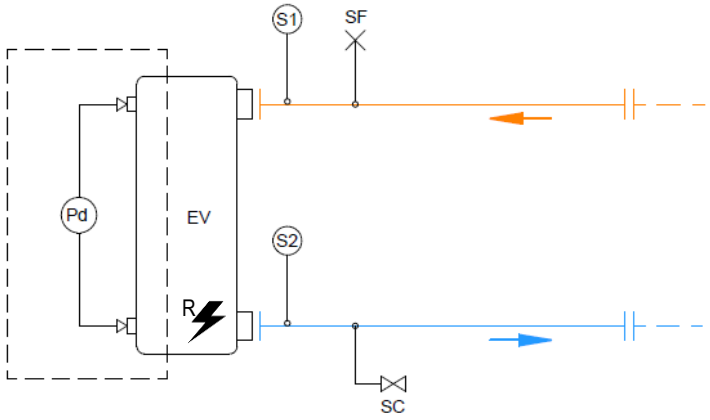
Oil management proven effectiveness

NR2-G02-Z - Technical insight

The user side heat exchanger

Plate heat exchanger (249 - 545 kW)

- **Available for the 4-compressor range from 249 to 504 kW** (28/20, air 35°C)
- **Braze welded AISI 316 steel plate** heat exchanger
- Fully **protected** against ice formation (electric heater and ΔP switch)
- Low pressure drops and optimal heat transfer efficiency
- Heat exchanger and pipes with an **insulation lining** in closed-cell reticulated foam in PE (CFC and HCFC-free)



EV	Evaporator	**R**	Electrical heater
Pd	Differential pressure switch	**S1**	Water inlet probe
SC	Drain valve	**S2**	Water outlet probe
SF	Purge valve		

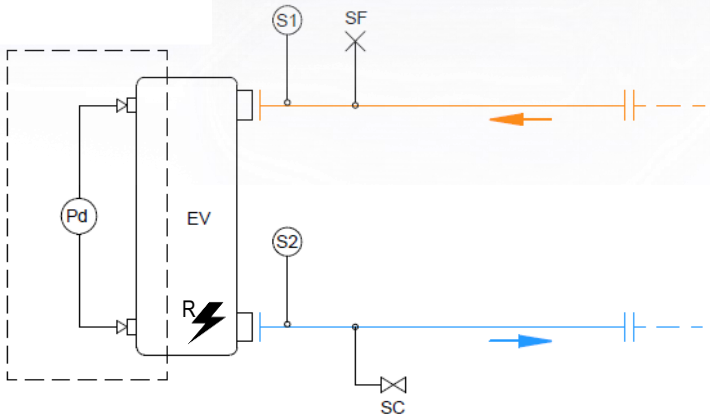
Hydraulic connections: the unit is provided with grooved coupling with male threaded counter-pipe user side

NR2-G02-Z - Technical insight

The user side heat exchanger

Shell & Tubes heat exchanger (249 - 1267 kW)

- **Available for the entire range, from 249 to 1267 kW** (28/20, air 35°C)
- **Dry shell and tubes evaporator**, fully developed by MEHITS
- Internally grooved copper tubes for enhanced heat exchange
- Insulated with a **foamed polyethylene mat of 9 mm thickness** (19mm available as opt.)
- Water flow is controlled by a differential pressure switch to avoid the risk of ice generation



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NR2-G02-Z - Technical insight

The coils

MCHX

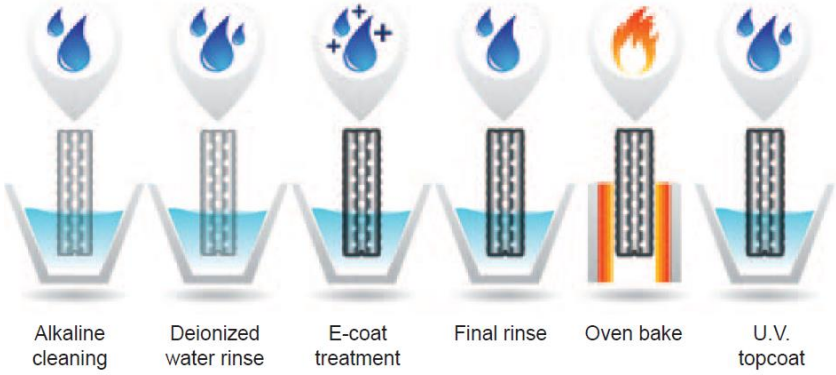
All-Aluminium coils, with primary header, fins and tubes joined by furnace brazed microchannels

- **Long Life Alloy** for higher corrosion resistance and longer life expectancy
- **-30% refrigerant charge reduction** vs. traditional solutions
- **Lower weight** vs. traditional solutions

e-coated MCHX **E-coating** treatment for harsh environments (opt. 876)

The e-coating treatment creates a protective layer of epoxy polymer on the surface of the coils, with the following characteristics:

- **over 3120 h** resistance as per **ASTM G85-02 A3** (SWAAT)
- **over 6000 h** resistance as per **ASTM B117**
- **over 1000 h** of surface protection against UV rays as per **ASTM G155-05a**



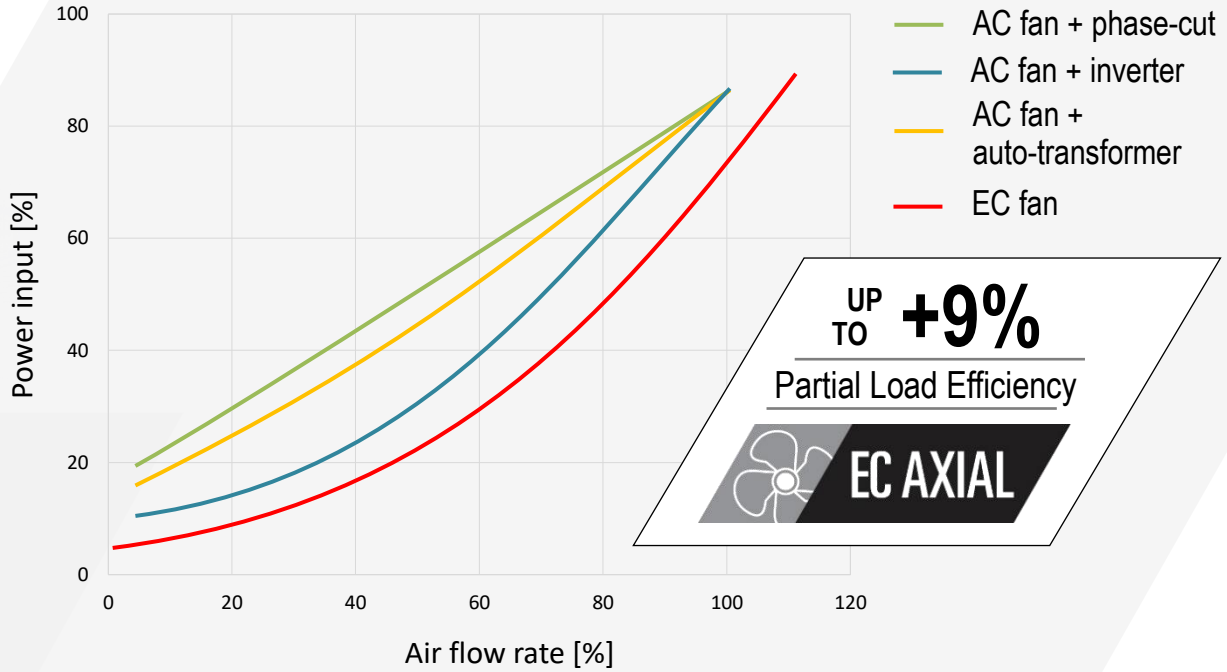
NR2-G02-Z - Technical insight

The fans

Axial fans

- High performing, 800mm-diameter **axial fans**
- **External bell mouth** for the highest efficiency and best-in-class sound power levels
- **Variable Speed control** with auto-transformer and single-fractioning as standard (DVVF), for large operating limits
- **EC fans** are available as an option

Fan speed control



HIGH ESP. EC FANS (opt. 818)

- Ideal for installations featuring a short ducting of the fan discharge
- **Up to 150 Pa** of available static pressure
- **No compromise on cooling capacity or efficiency** up to 100 Pa

NR2-G02-Z - Technical insight

The electrical panel

Electrical wirings

- General door lock isolator
- Automatic circuit breakers (opt.)
- Terminals for cumulative alarm
- Remote on/off terminals

Set-point control

- **Pump control relay + 0-10V modulating signal** for external VSD pump control
- **4-20 mA** (analog input)
- **Set point compensation for outdoor temperature**

Other functions (opt.)

- **Demand limit**
- **Night mode**
- **Energy meter**
- **Remote probe for buffer tank / decoupler**
- **User limit control**
- **VPF and VPF.D variable flow control**

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NR2-G02-Z - Controls

The unit's control

W3000+ control software

Proprietary settings for faster adaptive responses to different dynamics, in all operating conditions.

Fully in-house developed

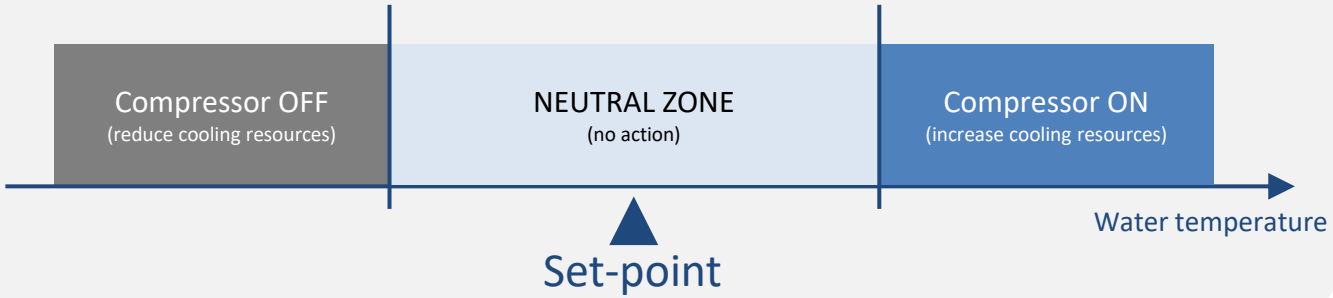
- **Thermoregulation**
  Based on dynamic dead band on the outlet water temperature.
- **Monitoring**
  Complete visualization of the operation status. User-friendly navigation.
- **Diagnostics**
  Complete alarm management, with "black-box" and alarm history.
- **Security**
  3 levels of password: user, service, manufacturer.
- **Connectivity**
  BMS: Modbus, LonWorks, BACnet MS/TP, BACnet-over-IP, Konnex, Modbus over IP, SNMP. Proprietary: Manager3000, ClimaPRO, M-net network.

NR2-G02-Z - Controls

Thermoregulation

Water temperature control

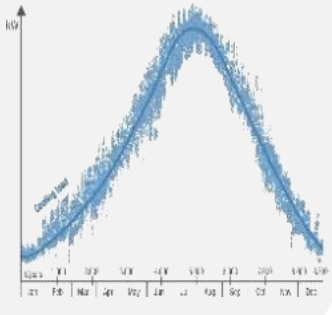
QUICK MIND



The width of the neutral zone is **dynamic** and automatically calculated on the basis of:

Maximum allowed number of start-ups per hour

Water content of the plant



Load requested by the plant

NR2-G02-Z - Controls

The user interface

Compact keyboard

Standard interface. It features a complete LCD display and ergonomic keys for viewing data and navigating the multilevel menu.

KIPlink: the Keyboard is In your Pocket (opt.)

KIP LINK
Keyboard In your Pocket

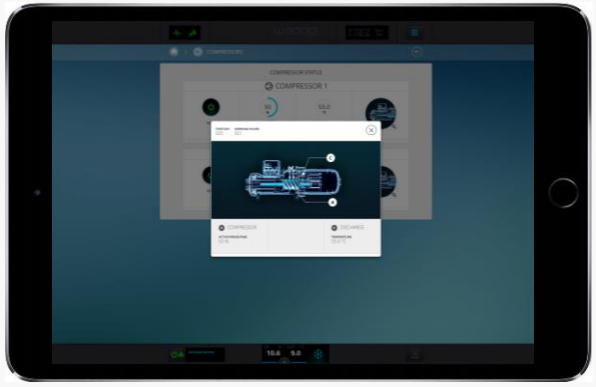
Based on the **Wi-Fi technology**, KIPlink gets rid of the standard keyboard and allows one to operate on the unit directly from his **mobile device** (smartphone, tablet, notebook).

NR2-G02-Z - Controls

The user interface

KIP LINK
Keyboard In your Pocket

KIPlink: the Keyboard is In your Pocket (opt.)

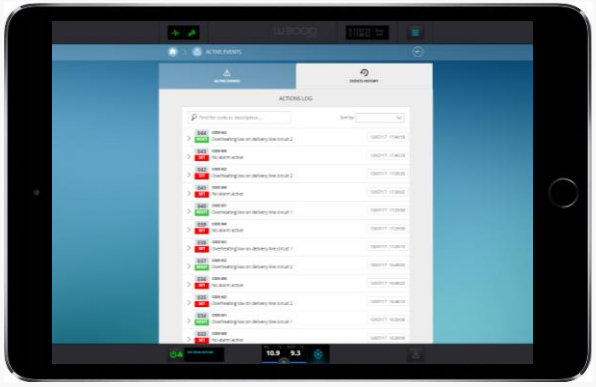


Easier on-site operation

- **Monitor** each component **while moving** around the unit for maintenance.
- View and change all parameters with **easy-to-understand screenshots** and dedicated tooltips.
- Get devoted “help” message for alarm reset and trouble shooting.

Real-time graphs and trends

- Monitor the **immediate labor status** of the compressors, heat exchangers, cooling circuits and pumps.
- View the real-time graphs of the key **operating variable trends**.



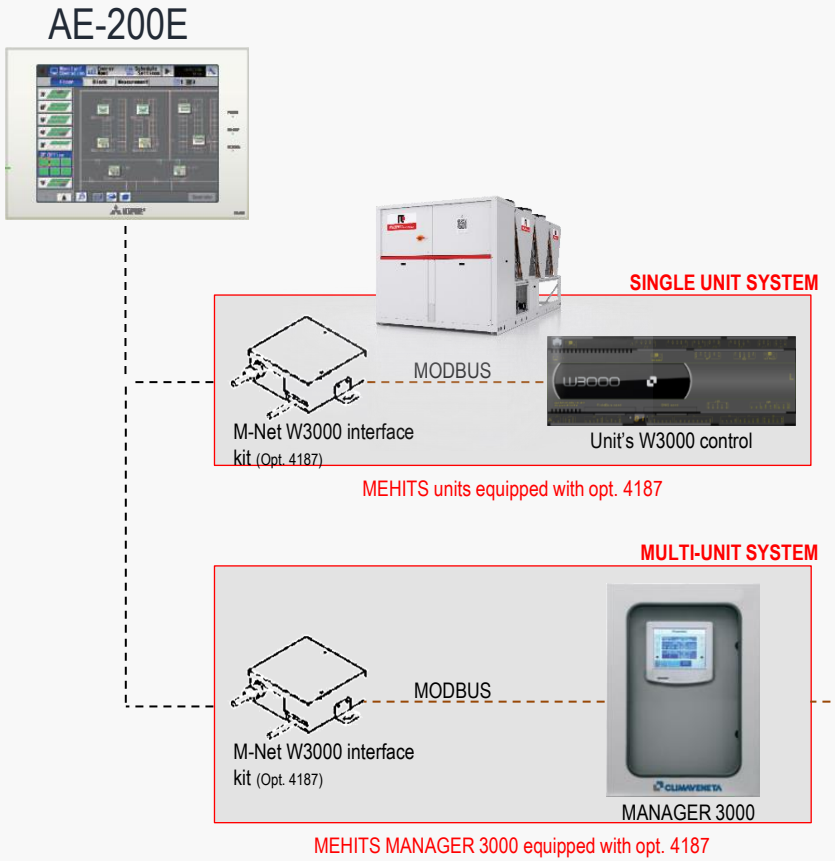
Data logger function

- View history of events and use the **filter for a simple search**.
- Enhance diagnostics with data and graphs of **10 minutes before and after** each alarm.
- **Download** all the data for detailed analysis.

NR2-G02-Z - Controls

Multi-unit system control

M-Net: connect to the Mitsubishi Electric network



- View the units and their working **status**
- **Alarm** display
- Control groups of units: **on/off**, **cooling/heating**, **set point**
- Set an **operating schedule** for each group of units
- **Web app**
- Compatible with Mitsubishi Electric:
  AE-200E, AE-50, EW-50 (Ver. 7.68 or later)

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NR2-G02-Z - Family overview

Efficiency versions

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NR²Z G02

0184P[T] – 0374P[T] **249 – 504 kW** (28/20°C air 35°C)

<std>

Single efficiency version that grants the best cooling capacity, footprint and efficiency values

<std>

+NR kit

Super low noise units, with soundproofing insulation and calibrated fan speed for best-in class sound power and efficiency levels

NR2-G02-Z - Family overview

Efficiency versions

COOLING | SCROLL | R HFC R410A
P PLATES | T SHELL&T. | AXIAL

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NR²Z G02

0184P[T] – 0374P[T] **249 – 504 kW** (28/20°C air 35°C)

	EER	SEPR-HT	SEPR-HT with opt. EC fans
<std>	4,17	5,86	6,23
<std> +NR kit	4,04	5,81	6,29

Net values - EN14511, EN14825
EER: 28/20°C, air 35°C
SEPR-HT – Regulation (EU) N.2281/2016

Average values valid for both Plates and S&T evaporator versions

NR2-G02-Z - Family overview

Efficiency versions

COOLING | SCROLL | R HFC R410A
P PLATES | T SHELL&T. | AXIAL

ErP 2021 COMPLIANT

NR²Z G02

0184P[T] – 0374P[T] **249 – 504 kW** (28/20°C air 35°C)

	COPr	IPLV	IPLV with opt. EC fans
<std>	3,24	5,13	5,40
<std> +NR kit	3,12	5,20	5,45

Values in accordance with AHRI standard 550/590 (IP)

Average values valid for both Plates and S&T evaporator versions

NR2-G02-Z - Family overview

Efficiency versions

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NR²Z G02

0404 – 0928

545 – 1267 kW (28/20, air 35°C)

K — **Key efficiency**, compact units that grant the best cooling capacity/footprint ratio

A — **High efficiency** units, with larger heat exchange surfaces for top-class efficiency levels

A +NR kit — **Super low noise, high efficiency** units, with larger heat exchange surfaces and calibrated fan speed for best-in class sound power and efficiency levels

NR2-G02-Z - Family overview

Efficiency versions

COOLING | SCROLL | R HFC R410A | T SHELL&T. | AXIAL

ErP 2021 COMPLIANT

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NR²Z G02

0404 – 0928

545 – 1267 kW (28/20, air 35°C)

	EER	SEPR HT	SEPR HT with opt. EC fans
K	3,81	5,55	5,65
A	4,17	5,71	5,90
A +NR kit	3,93	5,74	5,95

Net values - EN14511, EN14825
EER: 28/20°C, air 35°C
SEPR-HT – Regulation (EU) N.2281/2016

Average values

NR2-G02-Z - Family overview

Efficiency versions

COOLING | SCROLL | R HFC R410A | T SHELL&T. | AXIAL

ErP 2021 COMPLIANT

NR²Z G02

0404 – 0928

545 – 1267 kW (28/20, air 35°C)

	COPr	IPLV	IPLV with opt. EC fans
K	3,06	4,86	5,05
A	3,25	4,89	5,19
A +NR kit	3,14	4,88	5,19

Values in accordance with AHRI standard 550/590 (IP)

Average values

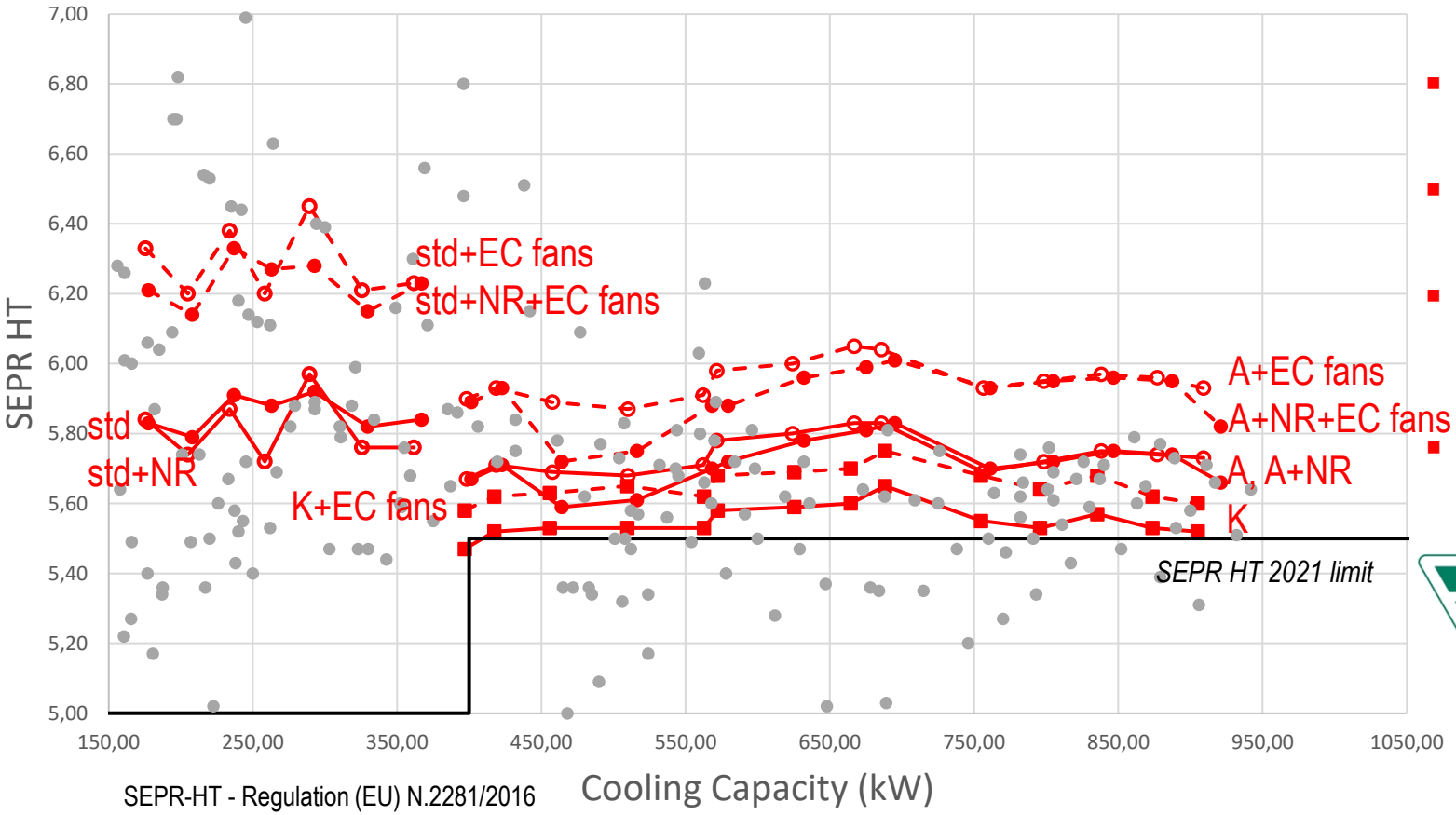
NR2-G02-Z - Performance

Part load efficiency vs main competitors (R410A)

Part load efficiency: SEPR HT

No compromise on efficiency!

NR KIT



SEPR-HT - Regulation (EU) N.2281/2016

- **High part load efficiency**
  already for the base versions
- **ErP2021 fully compliant**
  all models exceed the strictest ErP limit
- **Eurovent Certification**
  all models are Eurovent certified
- **Opt. 808 EC fans**
  available for all versions to boost even more the efficiency
- **Opt. VPF hydronic modules**
  leads to further increase the SEER

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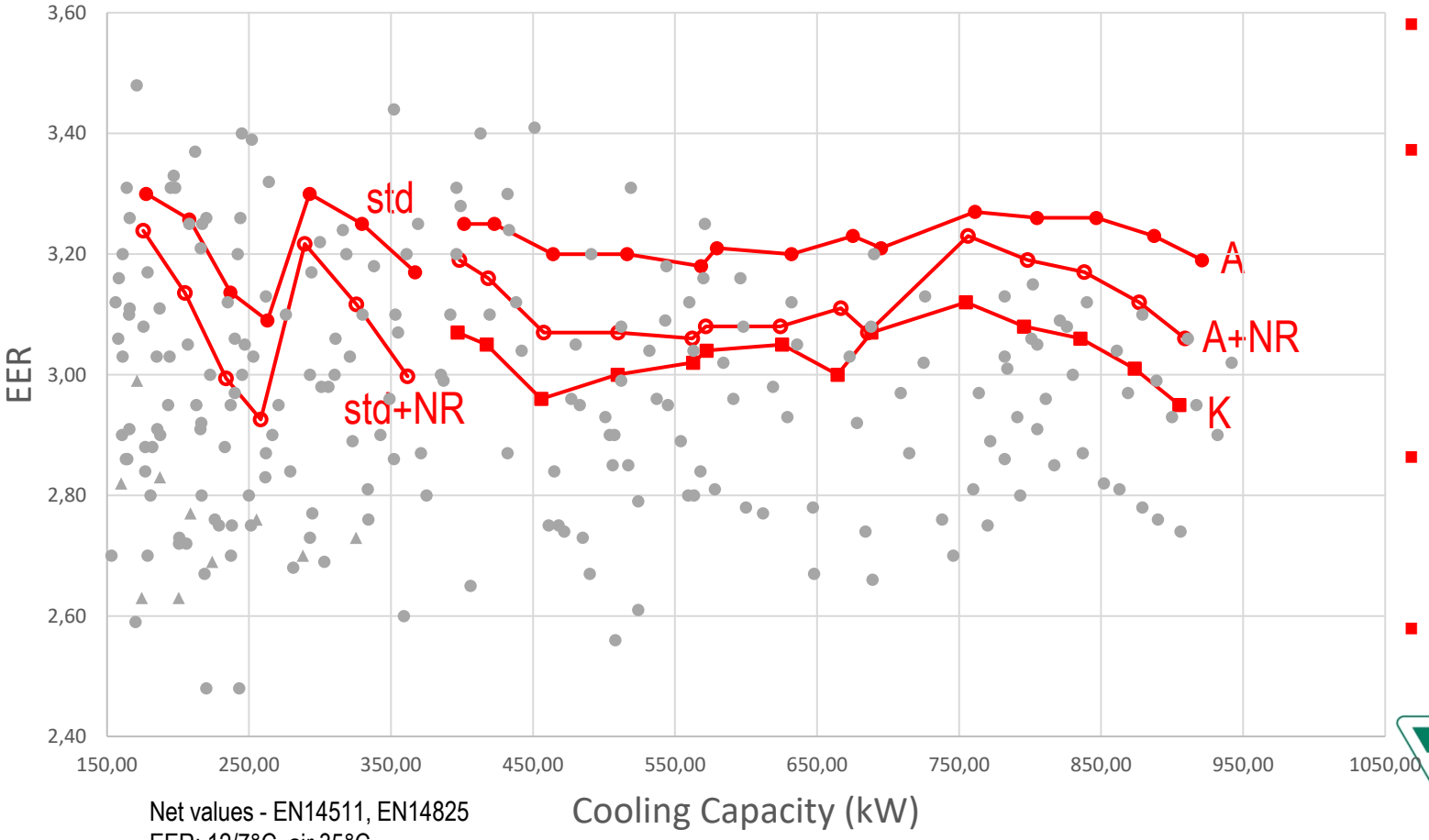
NR2-G02-Z - Performance

Full load efficiency vs main competitors (R410A)

Full load efficiency: EER

No compromise on efficiency!

NR KIT



Net values - EN14511, EN14825
EER: 12/7°C, air 35°C

- **High full load efficiency**
  already for the standard versions
- **Higher full load efficiency**
  The dedicated high efficiency versions, thanks to their design, achieve very high full load efficiency values. With the optional NR kit (opt. 2282), the units still maintain very high full load efficiency values
- **Opt. 808 EC fans**
  available for all versions to boost even more the efficiency
- **Eurovent Certification**
  all models are Eurovent certified

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NR2-G02-Z - Performance

Acoustic options – 249 - 504 kW

No compromise on efficiency!

NR KIT

3 sound configurations:

-	**Standard** Very low sound power levels already in the standard form, thanks to the dedicated compressors compartment	Baseline
Opt. 2591	**Compr. Soundproofing insulation** Additional soundproofing insulation in the compressors compartment, for even lower sound power levels	-1 dB(A)
Opt. 2282	**NR kit** (Noise Reducer kit) Soundproofing insulation, compressor sound jackets and calibrated fan speed for best-in-class sound power levels and efficiency.	-4 dB(A)

NR2-G02-Z - Performance

Acoustic options – 545 - 1267 kW

No compromise on efficiency!

NR KIT

3 sound configurations:

-	**Standard** Low sound power levels already in the standard form	Baseline
Opt. 2312	**Acoustical enclosure** Additional compressor enclosures with sound-absorbing material, for even lower sound power levels	-2 dB(A)
Opt. 2282	**NR kit** (Noise Reducer kit) Compressor enclosures with sound-absorbing material and calibrated fan speed, for best-in-class sound power levels and efficiency. Available for /A versions.	-8 dB(A)

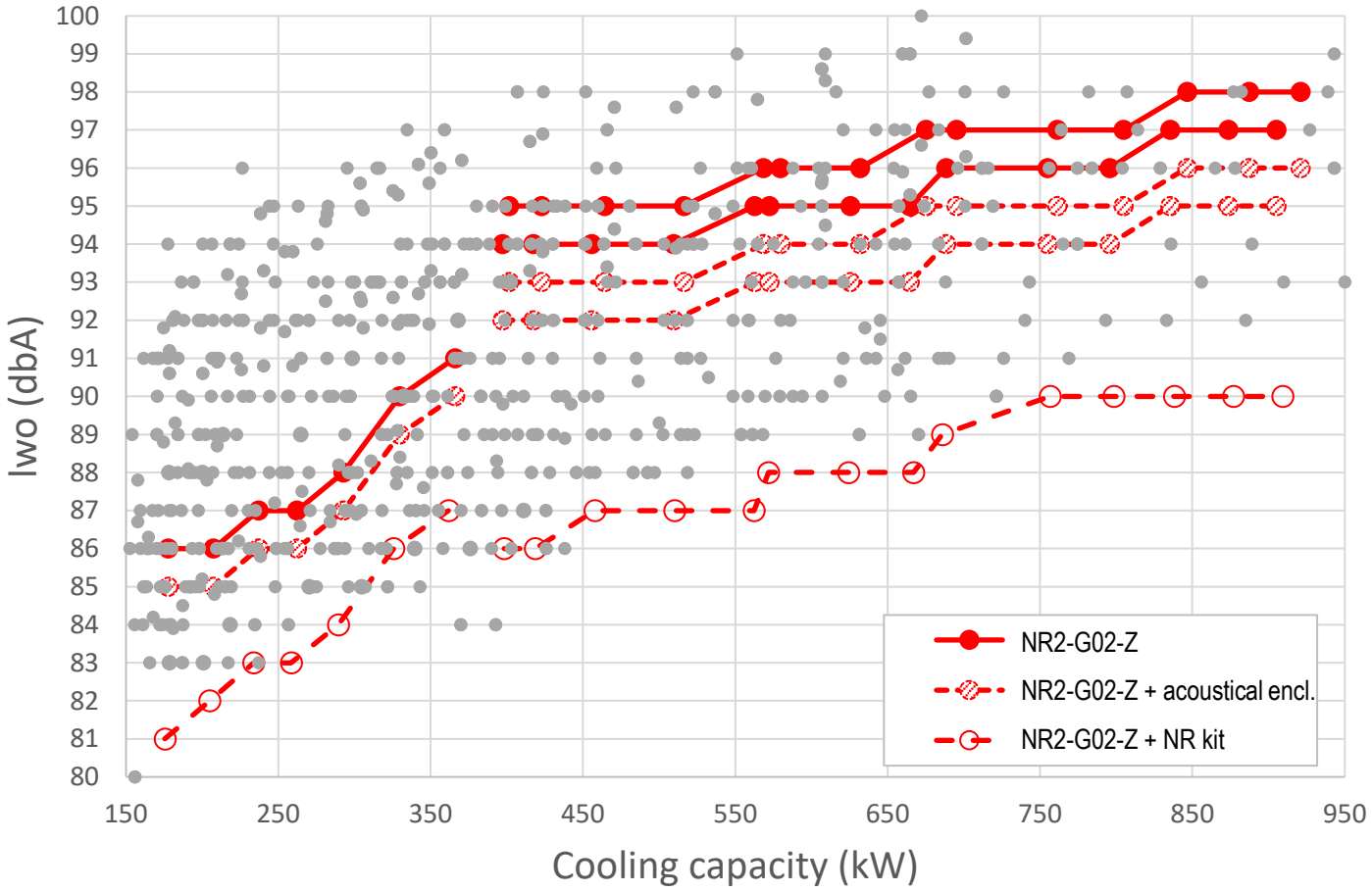
NR2-G02-Z - Performance

Acoustic options vs main competitors

SOUND POWER

No compromise on efficiency!

NR KIT



- **Low sound power**
  already in standard configuration
- **Opt. 2591 Compr. Soundproofing insulation (176-367 kW) or Opt. 2312 Acoustical enclosure (398-921 kW)**
  These options lower the sound power without compromizing cooling capacity, efficiencies and footprint
- **Opt. 2282 NR kit**
  This kit meets the most demanding requests in terms of sound power. With this kit, the units result the best-in-class when it comes to noise levels, while maintaining the same footprint and part-load efficiencies of the std version

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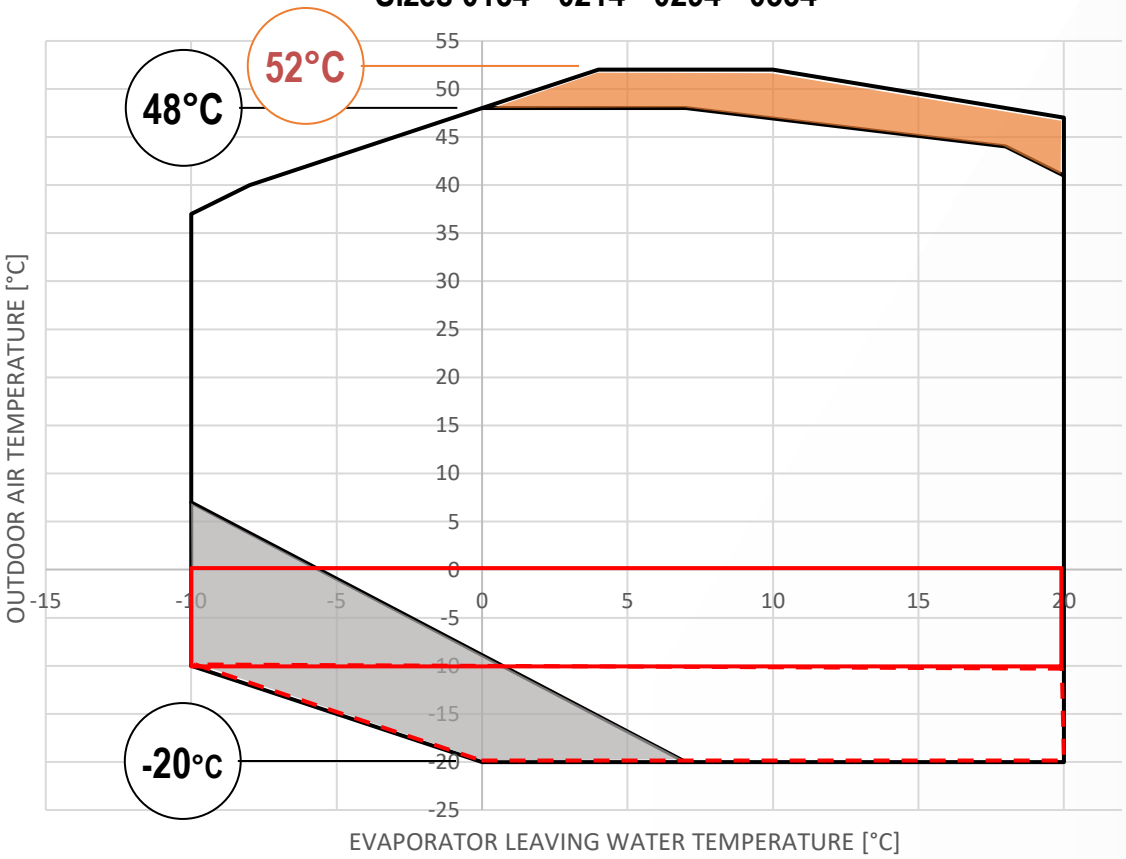
NR2-G02-Z - Operating limits

Cooling

Version <std>, <std>+NR kit
Sizes 0184 - 0214 - 0294 - 0334



249 – 504 kW
(28/20°C air 35°C)

COOLING

STD

EC fans (opt. 808)

Part load operation

Antifreeze heaters on pipes, pumps, and buffer tank

Extra insulation on heat exchangers
Extra antifreeze heaters on heat exchangers
Operation allowed for wind protected installations (wind speed lower than 2 m/s)

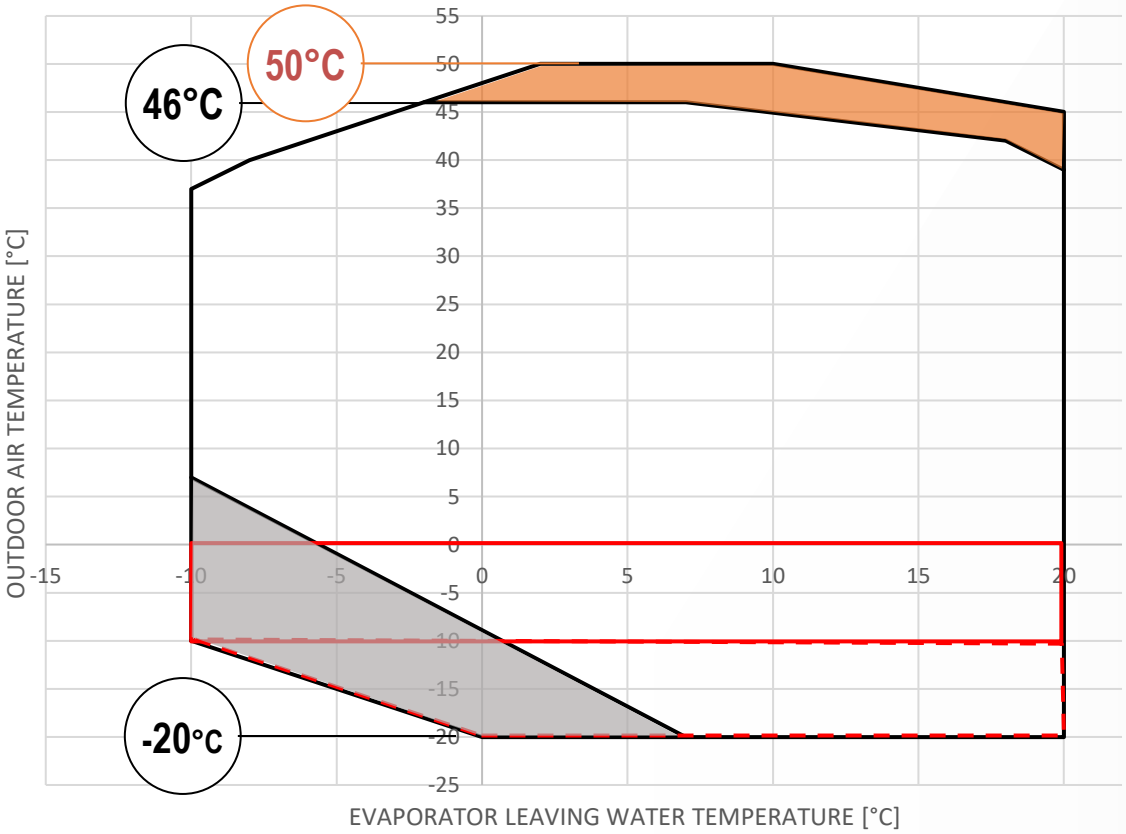
50°C max. air temperature for stock and stand-by .

* Request for quotation

NR2-G02-Z - Operating limits

Cooling

Version <std>, <std>+NR kit
Sizes 0244 - 0264 - 0374



249 – 504 kW
(28/20°C air 35°C)

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STD

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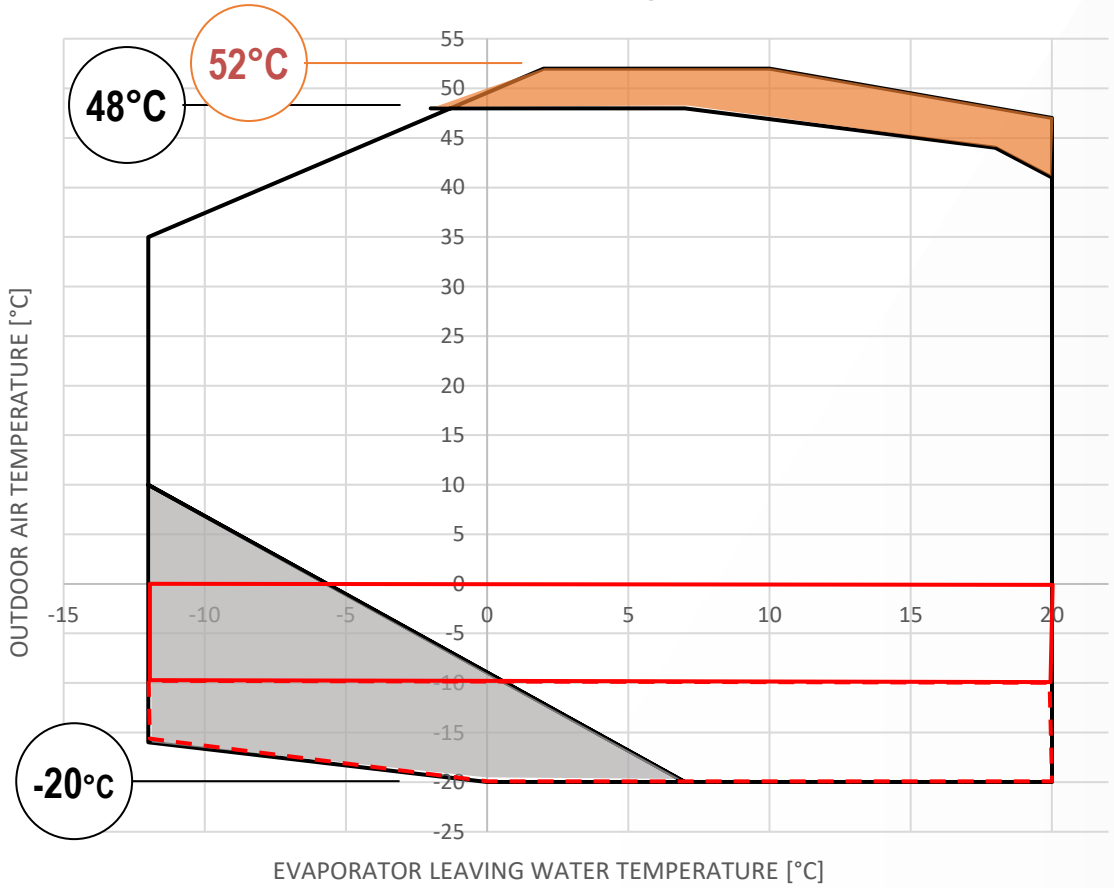
NR2-G02-Z - Operating limits

545 – 1267 kW
(28/20°C air 35°C)

COOLING

Cooling

A version operating limits



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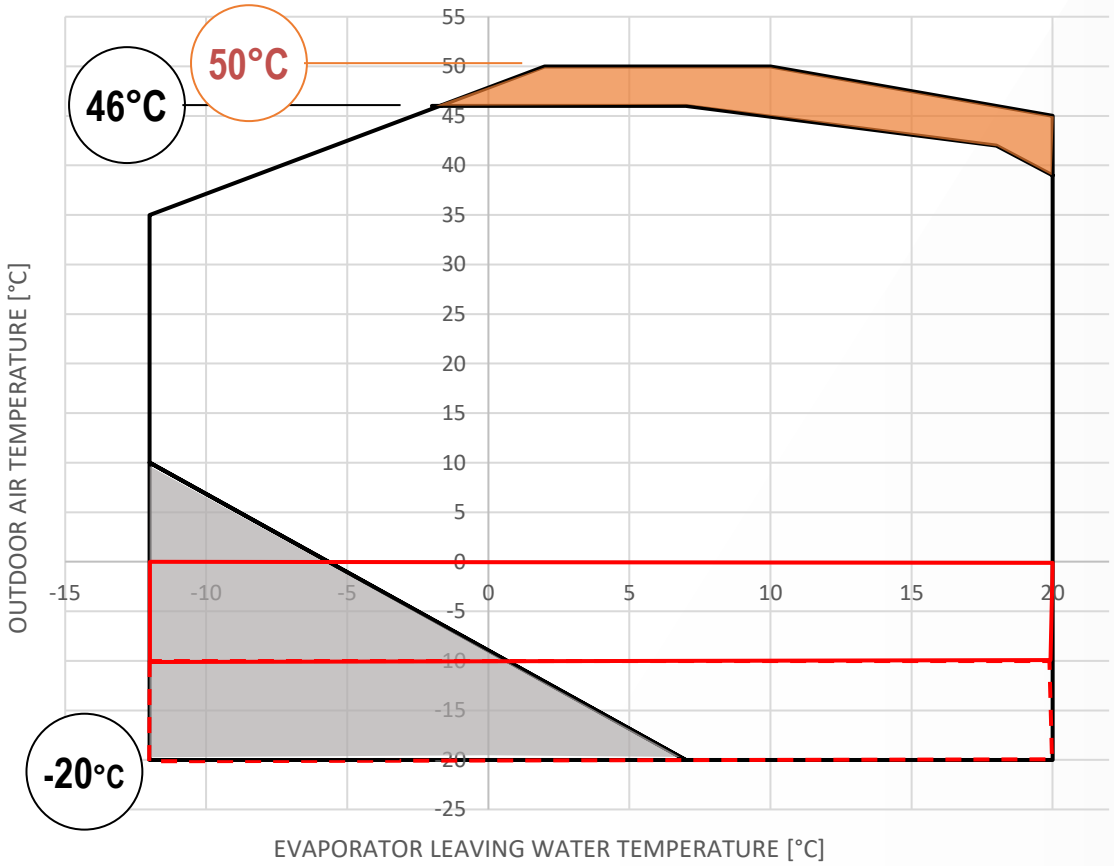
* Request for quotation

NR2-G02-Z - Operating limits

Cooling

K and A+NR kit operating limits



545 – 1267 kW
(28/20°C air 35°C)

COOLING

STD

EC fans (opt. 808)

Part load operation

Antifreeze heaters on pipes, pumps, and buffer tank

Extra insulation on heat exchangers
Extra antifreeze heaters on heat exchangers
Operation allowed for wind protected installations (wind speed lower than 2 m/s)

50°C max. air temperature for stock and stand-by .

* Request for quotation

COOLING
R HFC R410A
SCROLL

NR²Z

G02

249 - 1267 kW
(28/20 °C air 35°C)

Air source chillers with scroll compressors

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NR2-G02-Z - Equipment for mission critical systems

Increasing uptime

NR2-G02-Z ensures full cooling dependability thanks to devoted devices and functions that maximize unit's **uptime in case of emergency circumstances** such as power supply outage.

Ensure operational continuity

Minimise downtime costs

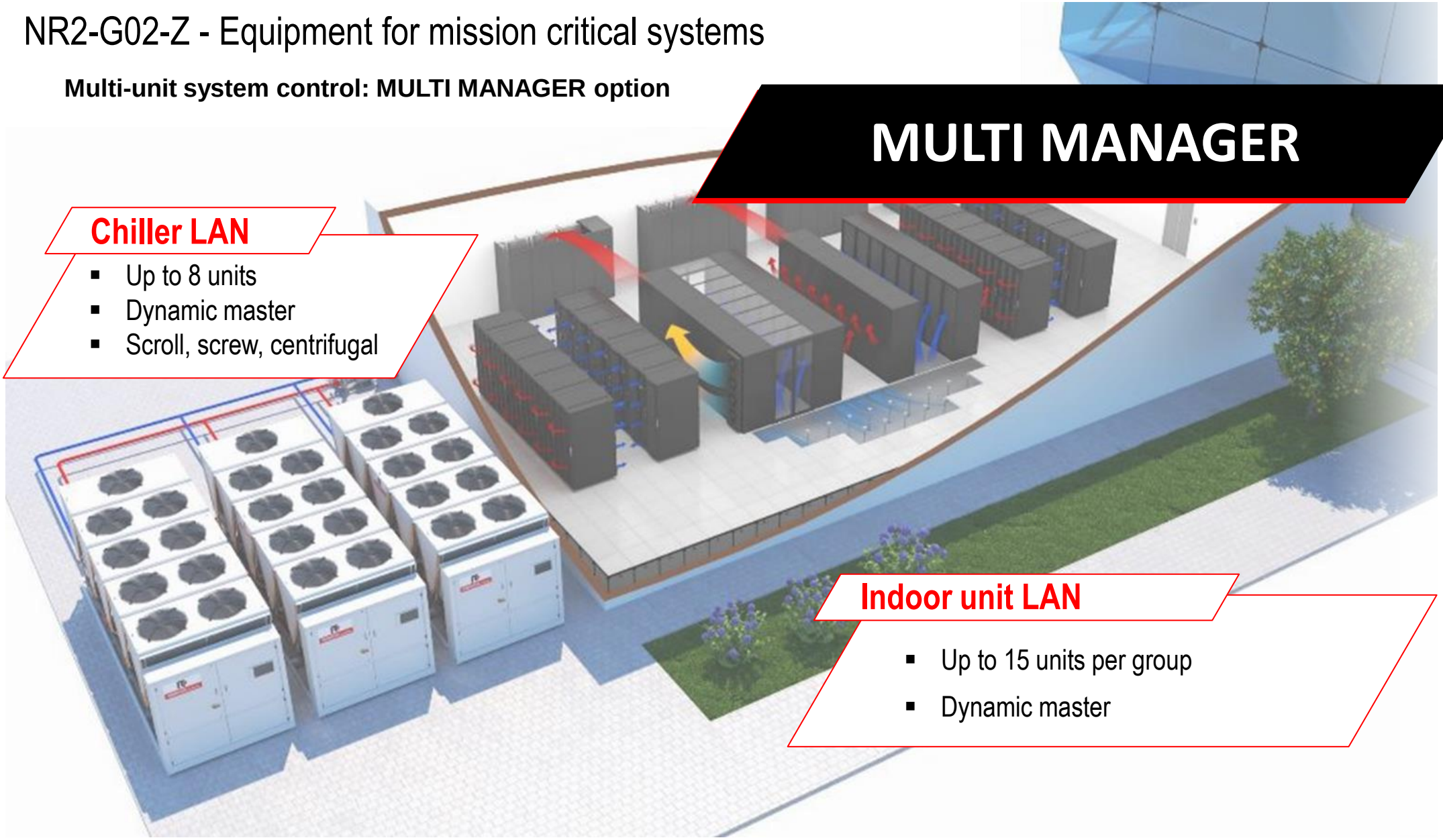
MULTI MANAGER

FAST RESTART

DOUBLE POWER SUPPLY

NR2-G02-Z - Equipment for mission critical systems

Multi-unit system control: MULTI MANAGER option



NR2-G02-Z - Equipment for mission critical systems

Multi Manager

MULTI MANAGER

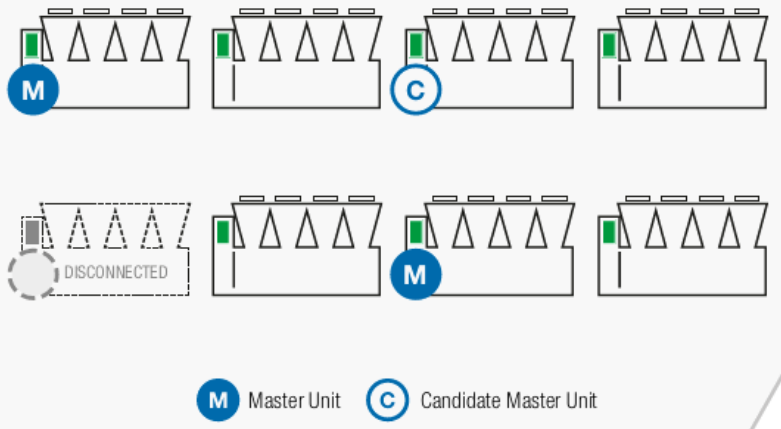
SMART LAN FUNCTIONS

The NR2-Z ranges feature embedded LAN logics for an easy connection between a group of chillers.

- **Up to 8 chillers connected to the same group.**
- **Load sharing and Sequencing.**
  Logics for the smart distribution of cooling loads among the units.
- **Selectable units' start-up sequence and group Fast Restart (with Fast Restart option).**
  To avoid simultaneous start-ups of different unit's compressors in case of dangerous current peaks.
- **Stand by unit management with automatic unit rotation.**
- **Dynamic master with succession priority.**
  One master unit is elected to coordinate the group and if it becomes disconnected the candidate unit takes full control.
- **Resource priority management.**
  For a group of chillers, with different technologies, it is possible to set the usage priority of each unit, making the most of the available cooling resources.

The entire cooling equipment works as one, with one master chiller that coordinates and optimizes the operation of the group.

MASTER SUCCESSION PRIORITY



NR2-G02-Z - Equipment for mission critical systems

Fast restart

FAST RESTART

Sometimes **few seconds** can determine the shutdown of the entire facility. **After a power failure**, the cooling must be ensured as soon as possible.

The fast restart option ensures a **faster return to the necessary cooling** levels in the shortest time possible, while maintaining the **reliability** of the chiller.

Ensure immediate cooling start-up within 22”

Have the unit running at full load in a shorter time

For instance, 4 compressors units in standard working conditions delivers 100% of cooling capacity within 52” after power is restored.

NR2-G02-Z - Equipment for mission critical systems

Fast restart

FAST RESTART

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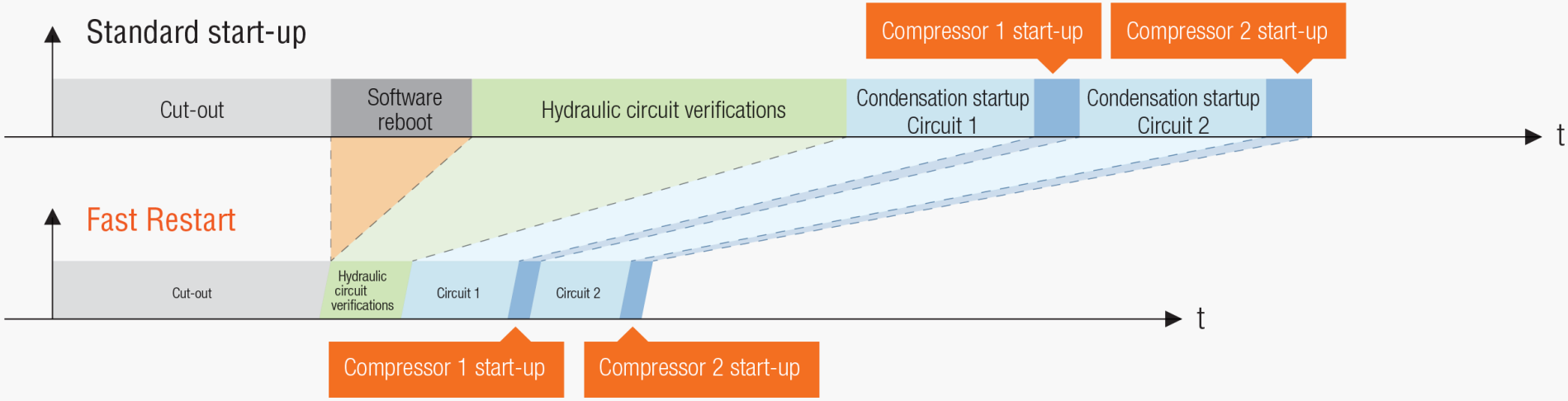


For instance, 4 compressors units in standard working conditions delivers 100% of cooling capacity within 52” after power is restored.

NR2-G02-Z - Equipment for mission critical systems

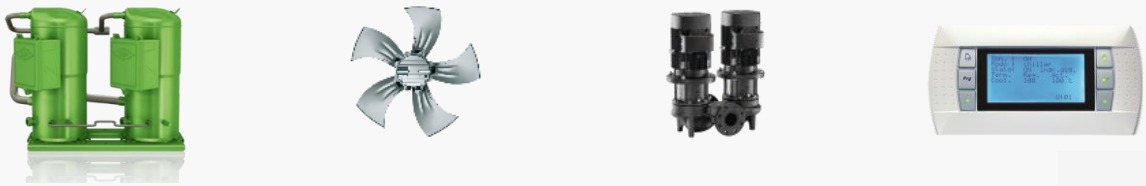
Fast restart

FAST RESTART

Ordinary power supply

Main supply

Main switch

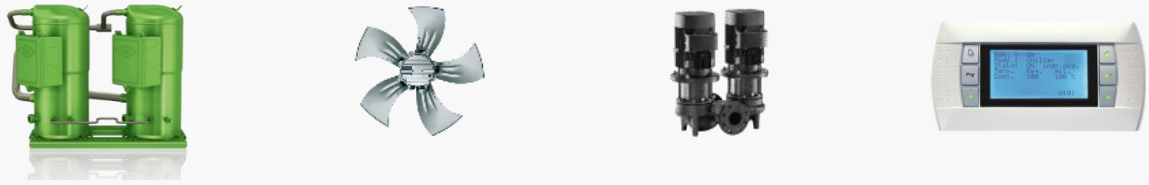


FAST RESTART

230V UPS

Main supply

Main switch



NR2-G02-Z - Equipment for mission critical systems

Fast restart

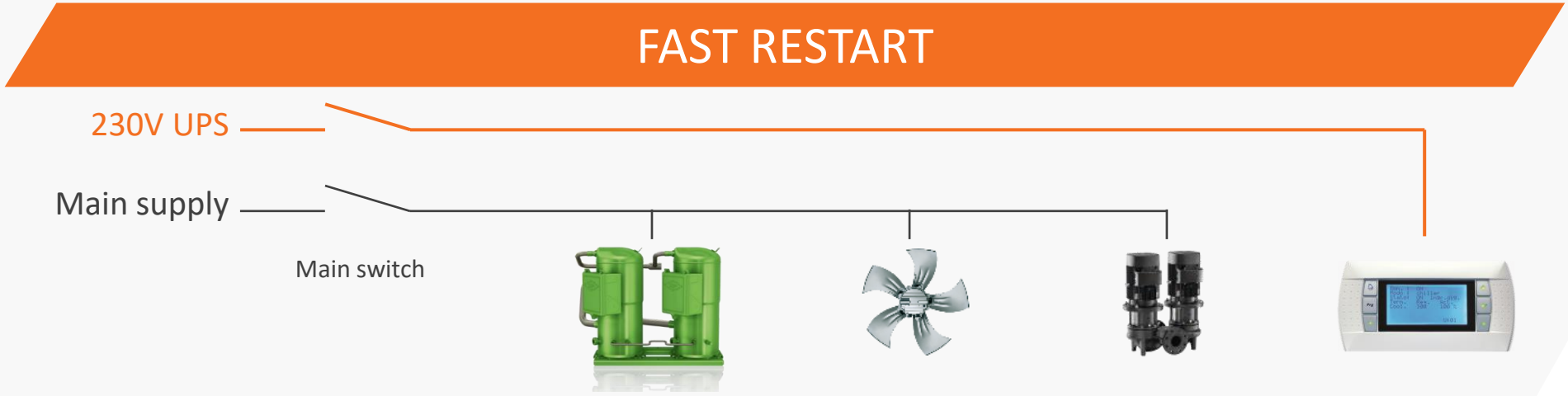
FAST RESTART

4501 - Fast restart (UPS excluded)

This option requires an **external 230V AC UPS, not supplied with the unit**, to keep the on-board controller functional and ensure fast restart after a power outage.

4502 - Fast restart (UPS included)

This option **includes an electric device** capable of keeping the controller **power supply uninterrupted** during a power failure. The capacity of this device is selected on the basis of a project's specific needs. This option requires opt. 808 EC fans.



NR2-G02-Z - Equipment for mission critical systems

Fast restart

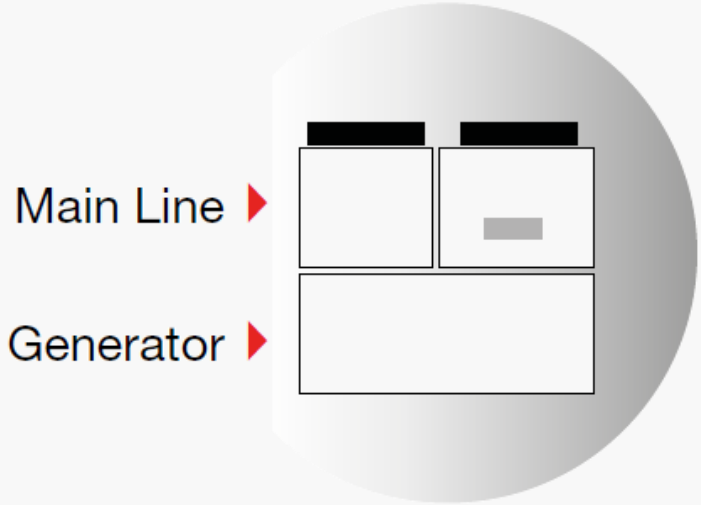
DOUBLE POWER SUPPLY

Redundancy increases uptime. With the aim of enhancing cooling dependability, NR2-G02-Z extends this concept also to the electrical supply.

The unit, **equipped with an ATS***, can be connected to two separate power lines, to **enhance the system's dependability**.

In case of a **main line power outage**, the ATS* automatically **switches over to the backup line**, granting uninterrupted power supply to the unit.

The double power supply makes NR2-G02-Z suitable for **Uptime Institute's TIER III** and **TIER IV**** design topologies, the highest standards of reliability.



* ATS: Automatic Transfer Switch

** The Tier Classification System provides the data center industry with a consistent method to compare typically unique facilities based on expected site infrastructure performance, or uptime.

NR2-G02-Z - Equipment for mission critical systems

Fast restart

DOUBLE POWER SUPPLY

Redundancy increases uptime. With the aim of enhancing cooling dependability, NR2-G02-Z extends this concept also to the electrical supply.

The unit, **equipped with an ATS**, can be connected to two separate power lines, to **enhance the system's dependability**.

1561 - Double power supply (ATS)

In NR2-Z 4C the selection of opt. 1561 ATS excludes the possibility of selecting pumps

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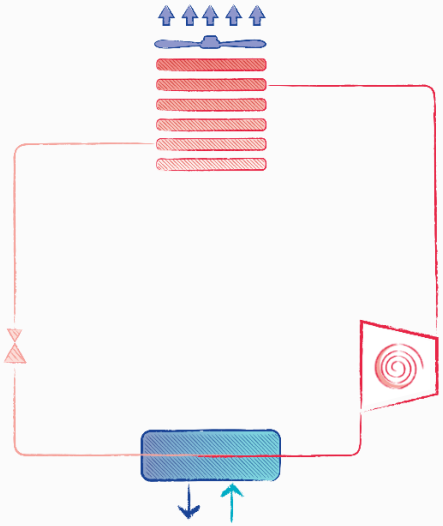
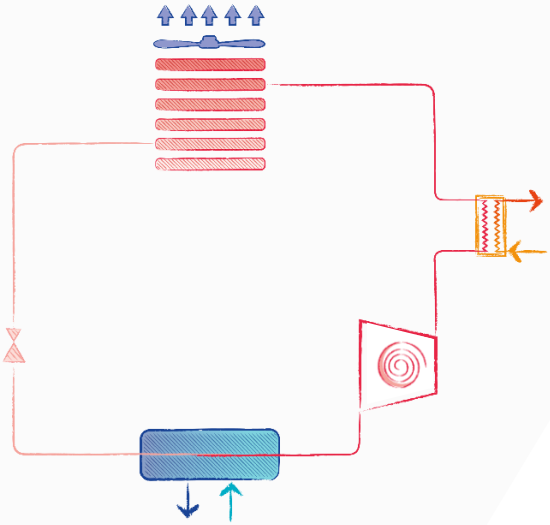
NR2-G02-Z - Heat recovery

Configuration overview

Standard



Partial heat recovery

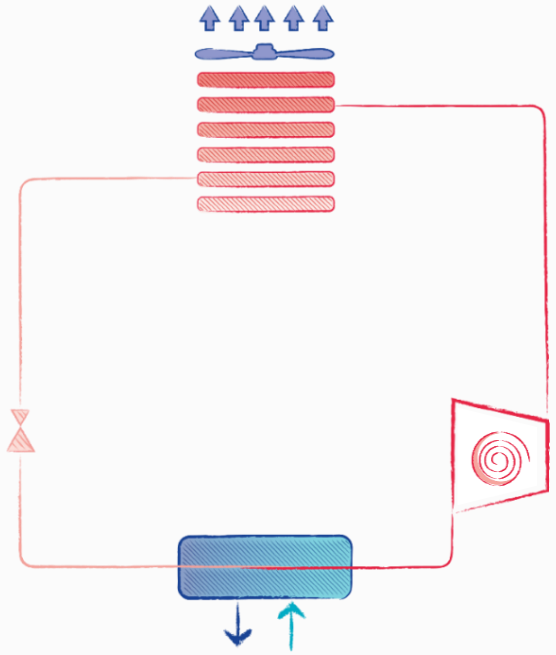


The heat recovery provides heating capacity for free.
Suitable for **DHW** production, **integration of a boiler**, air treatment in **AHU**.

NR2-G02-Z - Heat recovery

Standard configuration

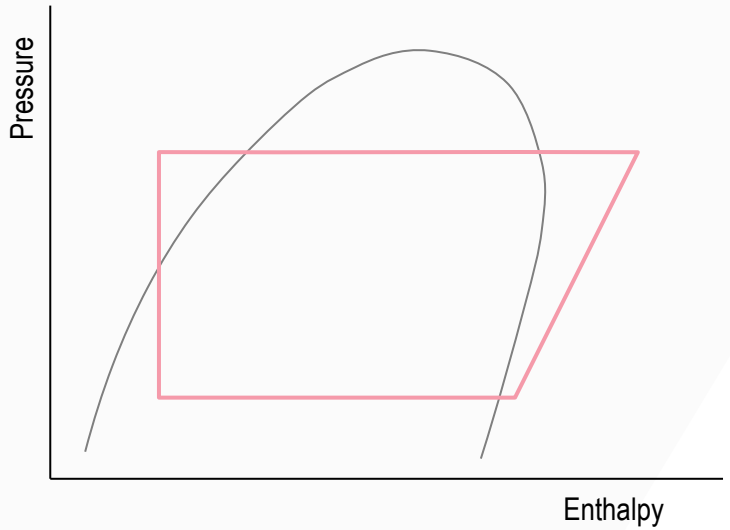
Standard



Standard refrigerant circuit.

No heat recovery

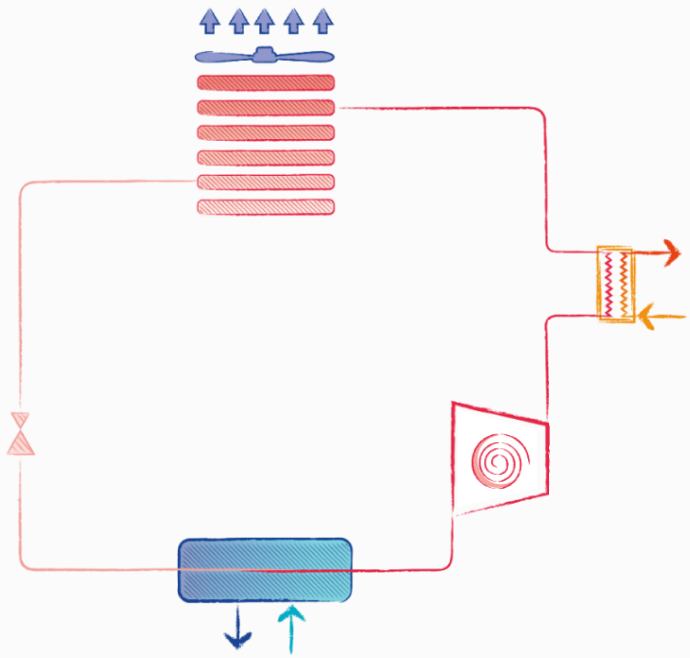
All the condensation heat is dispersed in the air.



NR2-G02-Z - Heat recovery

/D - Partial heat recovery configuration

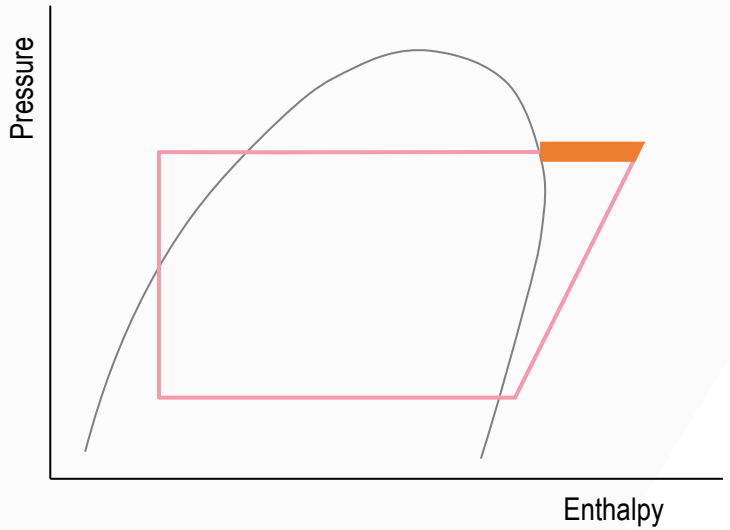
Partial heat recovery



The refrigerant circuit is fitted with a **desuperheater** in series with the condenser coils.

Approximately **20%** of the chiller's capacity (*)

Up to **60°C** of outlet temperature



(*) The heat recovery and its amount depend on the unit's operating conditions, in particular the outdoor air temperature and the load percentage.

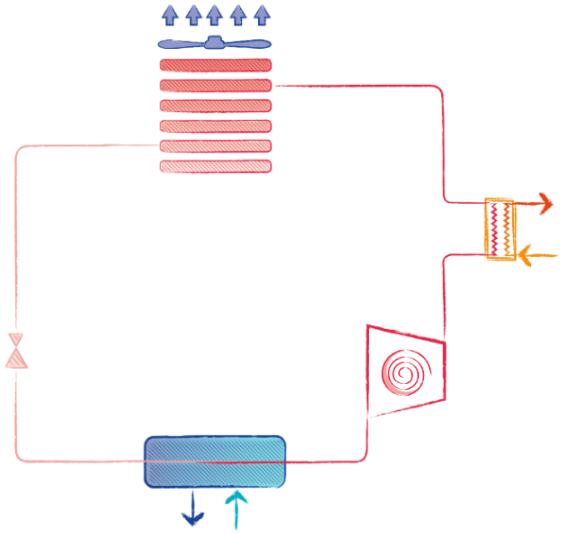
NR2-G02-Z - Heat recovery

/D - Partial heat recovery configuration

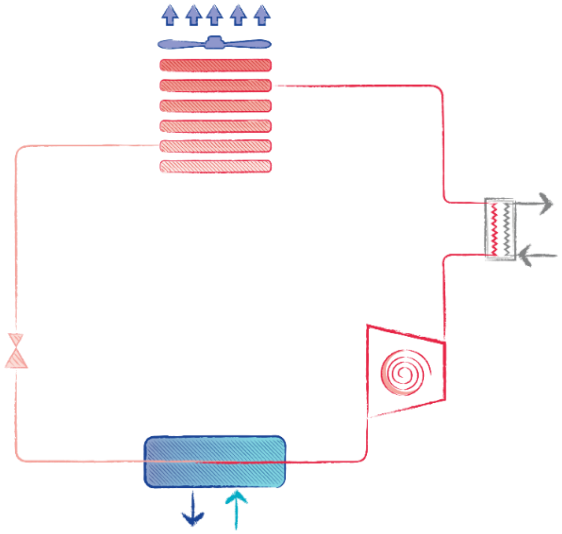
The desuperheater can recover the heat only when the temperature of the hot water circuit is lower than the **compressor discharge temperature**.

It is advised to **interrupt the water flow** to the desuperheater when the conditions for an actual heat recovery are not met.

Heat recovery: **ON**



Heat recovery: **OFF** water flow stopped



COOLING
R HFC R410A
SCROLL

NR²Z

G02

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Air source chillers with scroll compressors

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NR2-G02-Z - Hydronic

Hydronic modules

Hydronic modules

The **fully integrated hydronic module** (opt.) includes the pumps, the buffer tank, and all the main hydraulic components, for the best **optimization of the installation space, time and costs**.

Standard configuration

- Terminals for external pump control (fixed speed or 0-10V signal for VFD pump)
- VPF.E flow control logic (For systems with only the primary circuit and terminals with bypass)

Pumps

- In-line configuration
- 2-pole motor
- Single or twin pumps
- Low or high head (approx. 100 or 200 kPa).

Pumps + Inverter

- External inverter to adjust the waterflow
- Reduced energy consumption
- VPF and VPF.D variable flow control logics
- Constant flow parameter-set logic

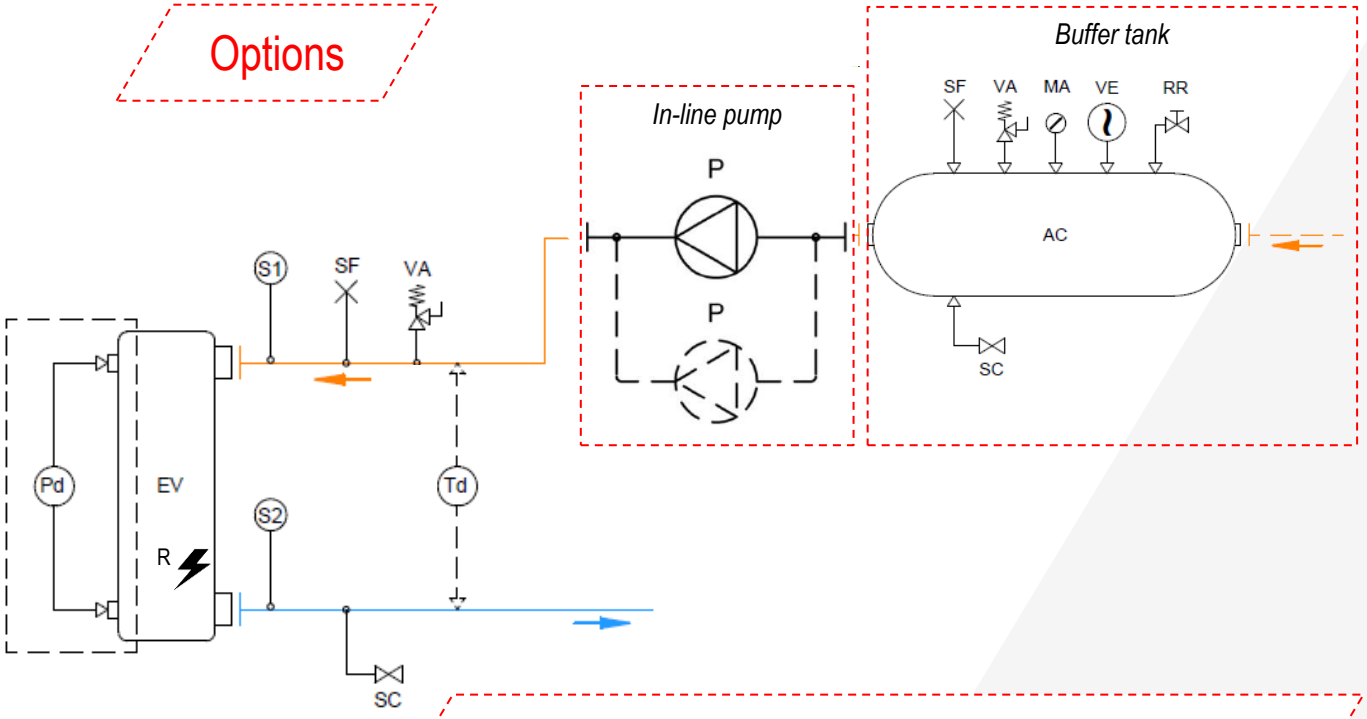
Pumps + Buffer tank

- Up to 700 liters buffer tank
- 20 mm insulation lining
- Including: expansion vessel, safety valve, manometer.

Sniffer function: When there is no request for cooling production, the primary pumps (built-in or external) are switched off and activated periodically only to let the unit read the water temperature and sense the cooling request inception.

NR2-G02-Z - Hydronic

Hydronic modules



Piping Kit antifreeze heater (Option)

- Antifreeze heaters on pump/s and piping (Opt. 2432)
- Antifreeze heaters on pump/s, piping and tank (Opt. 2433)

Hydraulic components

EV	Evaporator
AC	Water tank
MA	Water pressure gauge
P	Water Pump
Pd	Water Diff. Pressure Switch
Td	Diff. pres. transducer (VPF only)
RR	Filling valve
SC	Drain valve
SF	Purge Valve
VA	Safety valve
VE	Expansion tank
R	Electric Heater
S1	Exchanger water inlet probe
S2	Exchanger water outlet probe
SC	Drain valve

NR2-G02-Z - Hydronic

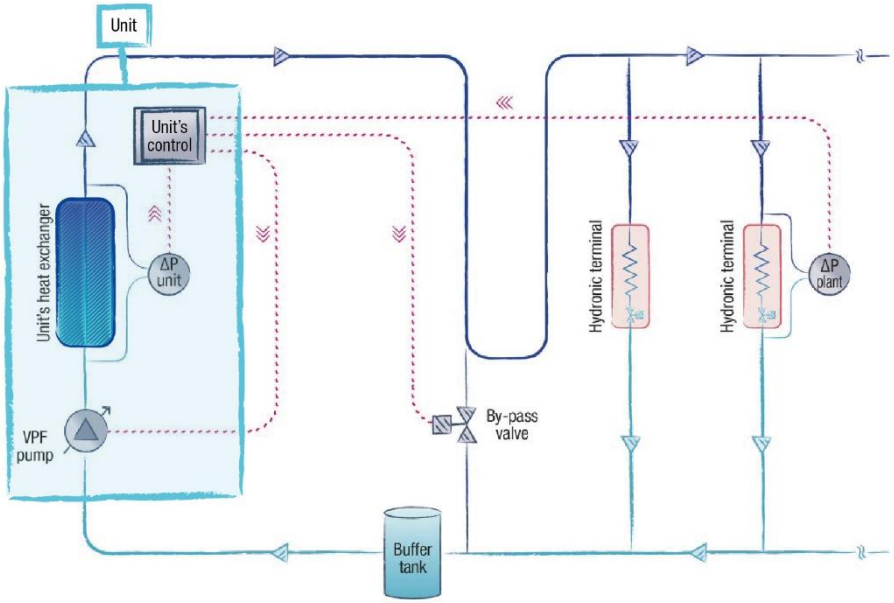
Variable Primary Flow – single-unit plants

VPF
Variable Primary Flow

The VPF control series (Variable Primary Flow) doesn't only **adjust the pump speeds** on the basis of the **plant's thermal load**, but also **dynamically optimizes the unit's thermoregulation** for variable flow operation, thus ensuring both the highest pump energy savings and chiller stable operation.

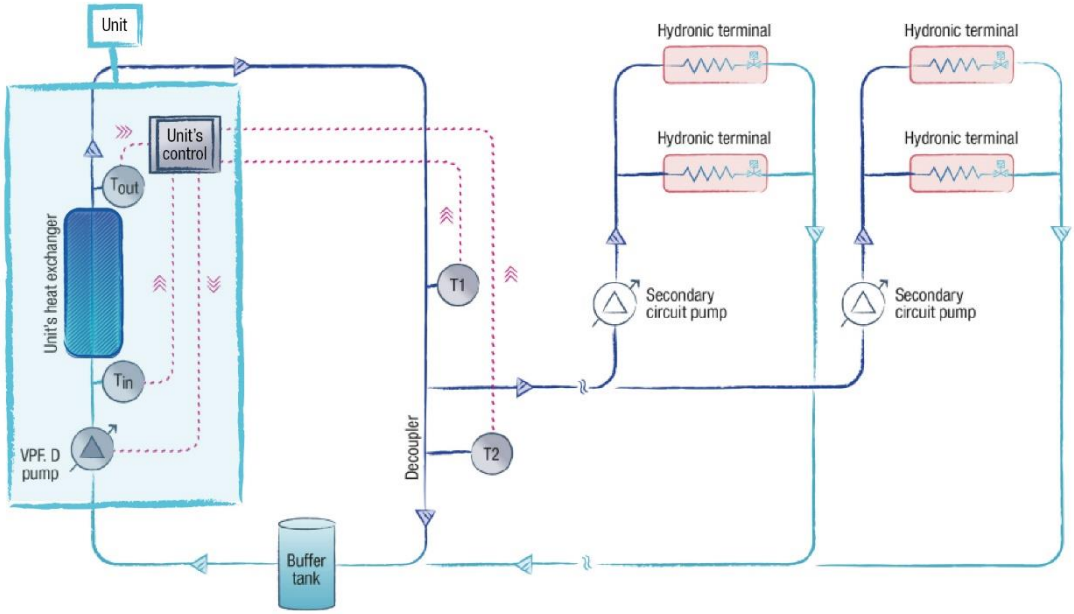
VPF: constant ΔP

Systems with only the primary circuit.



VPF.D: constant ΔT

Systems with primary and secondary circuits separated by a hydraulic decoupler.



With the VPF system, the water flow can be reduced to 50% of the unit nominal water flow, with regards to the selection conditions, provided that the minimum water flow required by the unit's heat exchanger is respected.

NR2-G02-Z - Hydronic

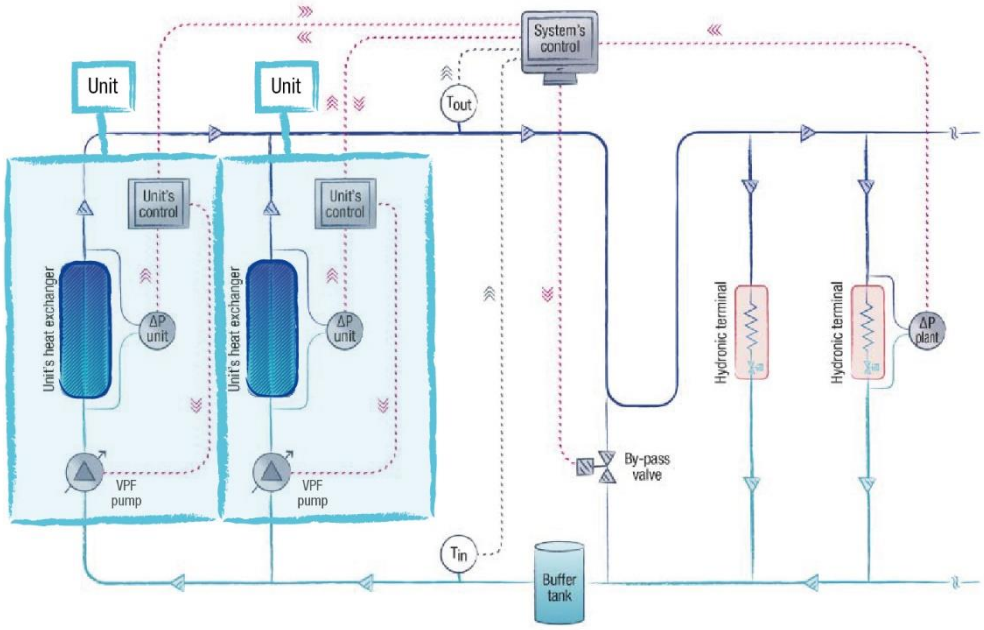
Variable Primary Flow – multiple-unit plants with EXTERNAL GROUP CONTROL (Manager3000+ or ClimaPRO+)

VPF Variable Primary Flow

The VPF control series (Variable Primary Flow) doesn't only **adjust the pump speeds** on the basis of the **plant's thermal load**, but also **dynamically optimizes the unit's thermoregulation** for variable flow operation, thus ensuring both the highest pump energy savings and chiller stable operation.

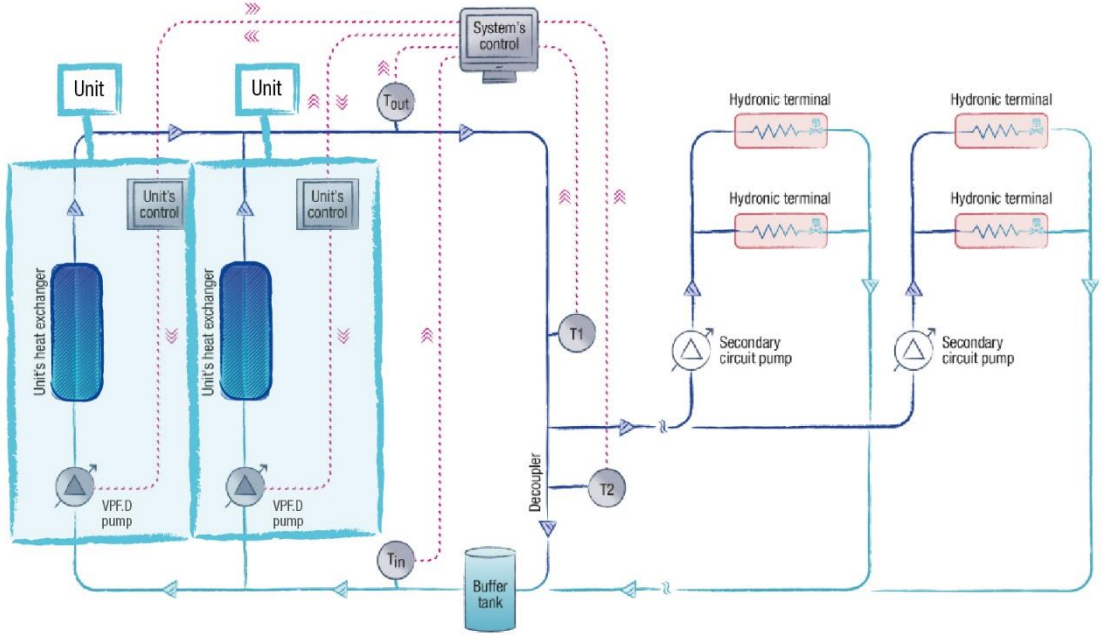
VPF: constant ΔP

Systems with only the primary circuit.



VPF.D: constant ΔT

Systems with primary and secondary circuits separated by a hydraulic decoupler.



With the VPF system, the water flow can be reduced to 50% of the unit nominal water flow, with regards to the selection conditions, provided that the minimum water flow required by the unit's heat exchanger is respected.

NR2-G02-Z - Hydronic

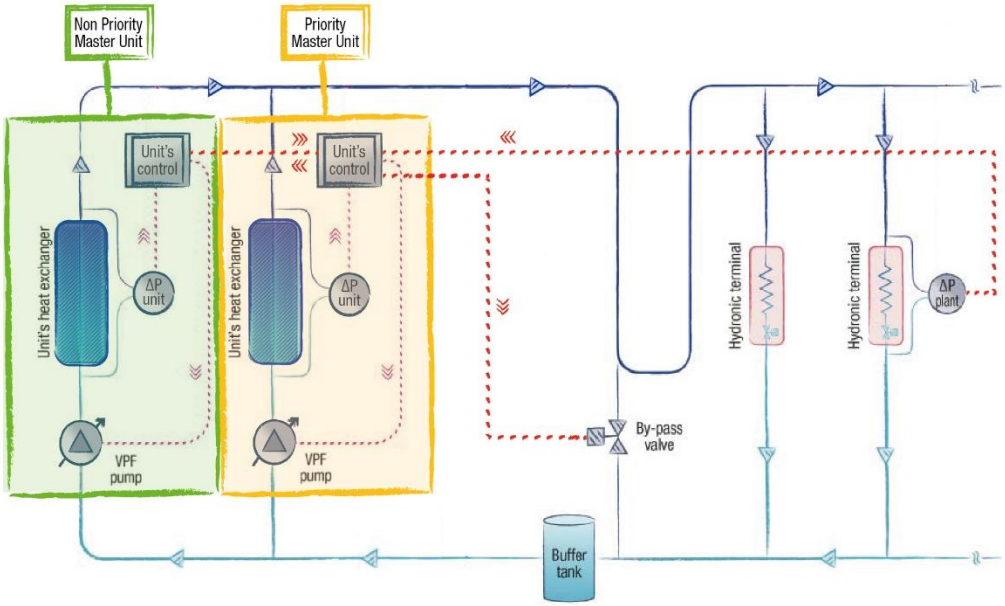
Variable Primary Flow – multiple-unit plants with MULTI MANAGER group control option

VPF Variable Primary Flow

The VPF control series (Variable Primary Flow) doesn't only **adjust the pump speeds** on the basis of the **plant's thermal load**, but also **dynamically optimizes the unit's thermoregulation** for variable flow operation, thus ensuring both the highest pump energy savings and chiller stable operation.

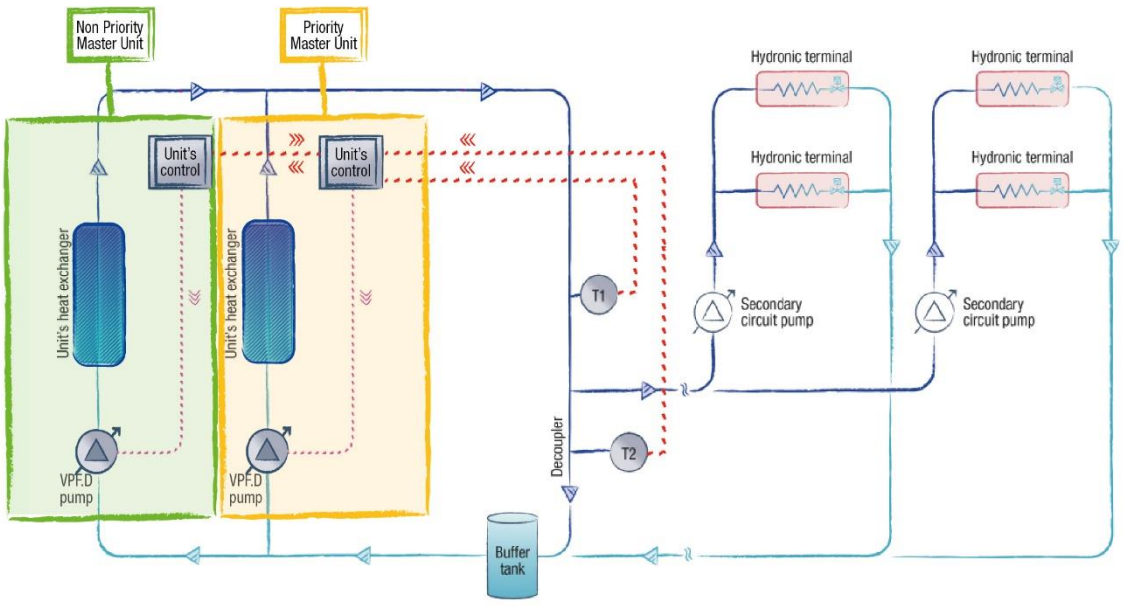
VPF: constant ΔP

Systems with only the primary circuit.



VPF.D: constant ΔT

Systems with primary and secondary circuits separated by a hydraulic decoupler.



With the VPF system, the water flow can be reduced to 50% of the unit nominal water flow, with regards to the selection conditions, provided that the minimum water flow required by the unit's heat exchanger is respected.

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SCROLL

NR²Z

GO2

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NR2-G02-Z - Further options

Electrical and mechanical accessories

Compressor power factor correction (Opt. 3301)
The capacitors on the compressor line increase the unit's power factor.

Soft-starter (Opt. 1511)
Lowers the motor windings' mechanical wear and avoids mains voltage fluctuations during start-up.

Energy meter for BMS (Opt. 5924)
Acquires the unit's power consumption data and sends them to the BMS for energy metering (Modbus RS485).

Anti-intrusion grilles (Opt. 2021)
Perimeter metal grilles to protect against the intrusion of solid bodies into the unit structure.

Rubber anti-vibration mountings (supplied loose)
Reduce vibrations, keeping noise transmission to a minimum.

Refrigerant leak detector (Opt. 3431-3433)
Factory installed device. In case of a gas leak detection it raises an alarm and stops the units.

Dual pressure relief valves (Opt. 1961)
The periodic safety valve maintenance can be done, without removing the refrigerant from the circuit.

Compr. suction and discharge valves (Opt. 5042)
Simplify maintenance activity.

Spring anti-vibration mountings (supplied loose)
Reduce vibrations, keeping noise transmission to a minimum.

Water flow switch (supplied loose)
Stops and protects the unit in case the water flow is not sufficient.

NR2-G02-Z - Further options

Packing options

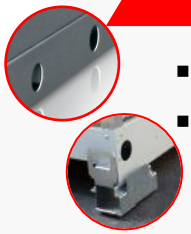
Standard

- Plastic supports
- Lifting bars

Supports and Nylon (Opt. 9999)

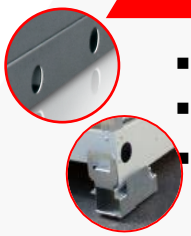
- Protective nylon layer
- Plastic supports
- Lifting bars

Container slides* (Opt. 9996)

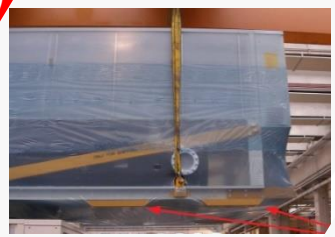


- Metal slides
- Lifting bars

Container packing* (Opt. 9979)



- Metal slides
- Protective nylon layer
- Lifting bars



Nylon+Wooden crate (Opt. 9969)

- Protective nylon layer
- Wooden crate
- Lifting bars

** In range 0404-0928, these options provide low-profiled fans which can reduce the height of the units and permit the transport via container. The selection of these options increases the sound power level of the units of 1 dB(A).*

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249 - 1267 kW
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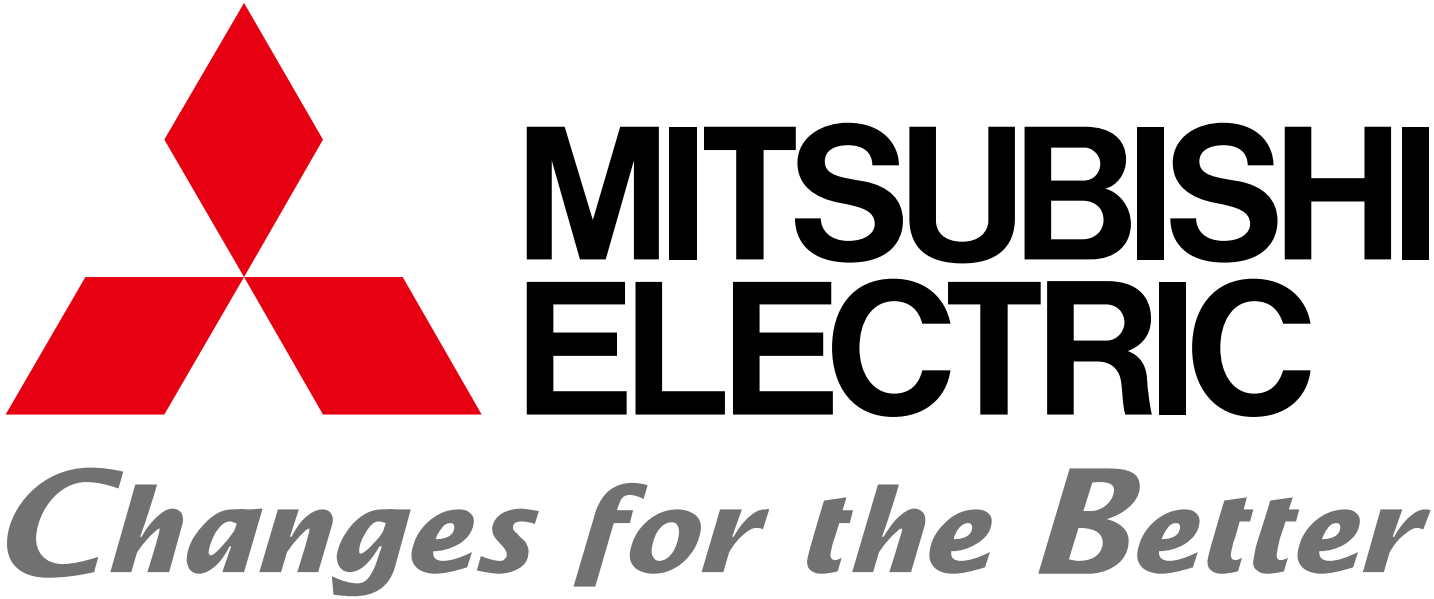
Air source chillers with scroll compressors

SELLING POINTS

- Large capacity range (249 - 1267 kW (28/20, air 35°C))
- High-end standard configuration with electronic expansion valve, variable speed fan control, metal panels on the side of the coils
- Very high efficiencies for the entire range (both full and part loads)
- Large operating envelope: from -20°C to +52°C of outdoor air temperature, from -12°C to +20°C of evap. Leaving water temperature
- Very silent operation, already in standard form
- Opt. kit NR is ideal for specifications: best-in-class sound power and top-level efficiencies
- Huge list of options available (EC fans, VFD pumps, Multi-manager, High-esp fans, ATS, Fast Restart..)
- Water side ΔT up to 11°C directly available for selection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ELECTRIC
Changes for the Better