

COMFORT

CHILLERS

HEAT PUMPS



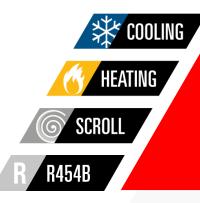


NX-G06 NX-N-G06

Air source chillers and heat pumps with low GWP refrigerant

49,6 - 388 kW





NX-G06 NX-N-G06



Family overview

Technical insight

Controls

Performance

Operating limits

Heat recovery

Hydronic modules

Coils & coatings

Further options









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Key features







NX-G06 NX-N-G06



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49,6 - 388 kW







Nomenclature

 $\frac{1}{1} - \frac{2}{1} \frac{3}{1} \frac{4}{1} \frac{5}{1} \frac{5}{1} \frac{6}{1} \frac{7}{1} \frac{8}{1} \frac{9}{10} \frac{10}{10}$

Code	Descriptions	Extension	Descriptions	
1	Inverter Technology	_	NOT	
		i	Inverter	
2	Compressor Type	N	Scroll	
		F	Screw	
		Т	Centrifugal Oil Free	
3	Brand	Х	Climaveneta	
		R	RC	
4	Unit type	_	Air source chiller	
		N	Air source heat pump	
		FC	Free-cooling chiller	
5	Refrigerant	_	R410A	
		G06	R454B	

Code	Descriptions	Extension	Descriptions	
6	Application Segment	_	Comfort	
		Υ	Process	
		Z	IT Cooling	
7	Function	_	Without heat recovery	
		D	Partial heat recovery	
		R	Total heat recovery	
8	Version	K	Key Efficiency	
		SL-K	Key Efficiency + Super Low Noise	
		CA	High Efficiency	
		SL-CA	High Efficiency + Super Low Noise	
			others	
9	Size			
10	Heat exchanger	Р	Plates	
		Т	Shell & Tube	



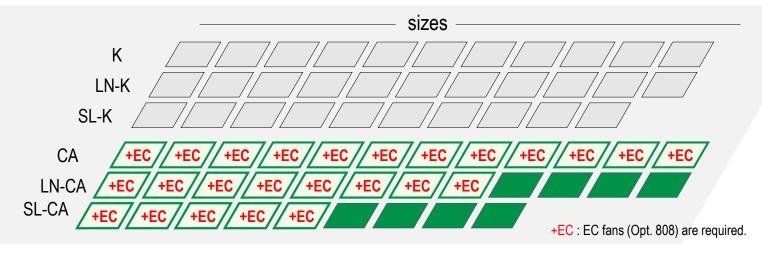




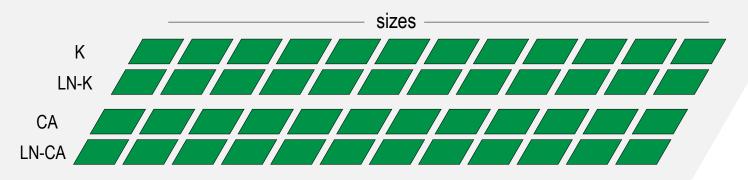
ErP compliancy: 2 compressors units











The tables refer to: Tier II of SEER (Jan. 2021) for chillers; Tier II of SCOP (Sep. 2017) for heat pumps.







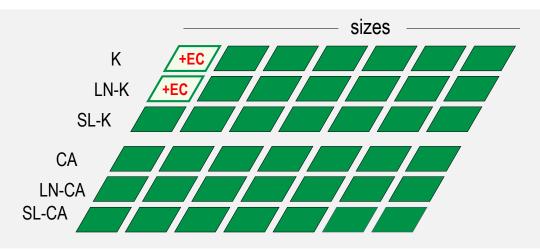
ErP compliancy: 4 compressors units with S&T evaporator

NON ErP 2021

ErP 2021

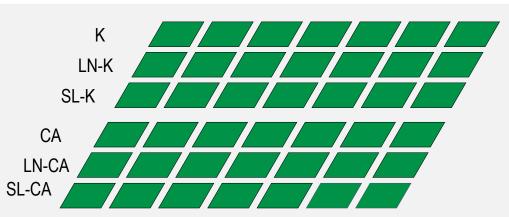






+EC: EC fans (Opt. 808) are required.





The tables refer to: Tier II of SEER (Jan. 2021) for chillers; Tier II of SCOP (Sep. 2017) for heat pumps.





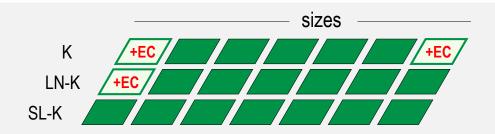
ErP compliancy: 4 compressors units with plate evaporator



ErP 2021

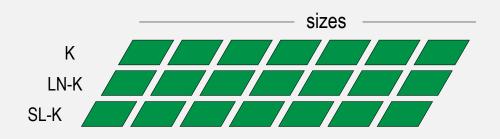






+EC: EC fans (Opt. 808) are required.



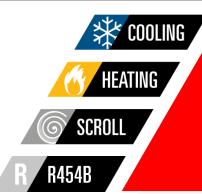


The tables refer to: Tier II of SEER (Jan. 2021) for chillers; Tier II of SCOP (Sep. 2017) for heat pumps.









NX-G06 NX-N-G06



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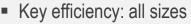
Further options







Structures and layouts



High efficiency: smaller sizes

High efficiency: larger sizes





Full aluminum MCHX coils as per standard. Traditional Cu/Al tube & fin coils as option.









Traditional Cu/Al tube & fin coils as per standard. Full aluminum MCHX coils NOT available.













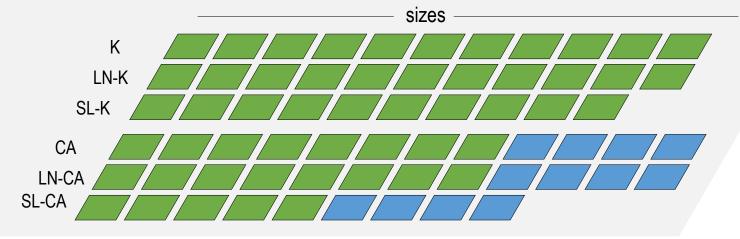


Structures and layouts

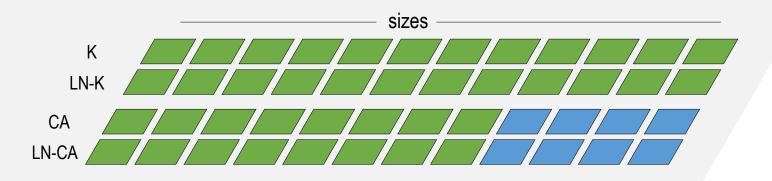














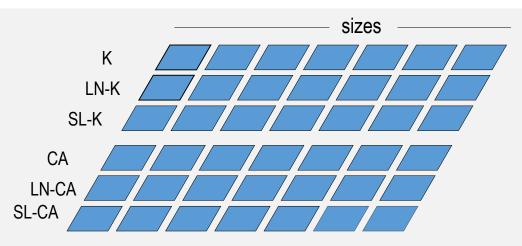


NX-G06 & NX-N-G06 - Technical insight: 4 compressors units

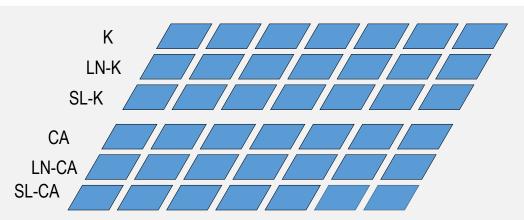
Structures and layouts













CLIMAVENETA

Main components

Electrical panel

with power circuit components and

W3000+ or W3000

base control.

AC axial fans.

EC fans as option for high efficiency versions.



Air side heat exchanger:

- MCHX for chillers
- Cu/Al for heat pumps



R454B





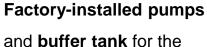


Plate heat exchange: Dry shell

compact, efficient,
with low pressure drops
(2 and 4 cmpr units)

Dry shell and tubes

evaporator, fully developed in-house (4 cmpr units)



minimum installation time

and cost (optional).

Scroll compressor tandem

in one single refrigerant circuit, optimized for R454B.



The refrigerant

R454B refrigerant

High density, low GWP refrigerant.

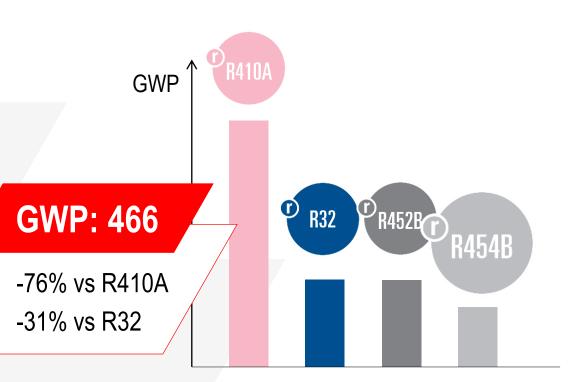
Its physical properties are **similar to R410A**, so the same type of equipment / component can be used.

Reliability

- Use of well-known components
- Refrigerant circuit reliability is kept

Performance & envelope

- Same operating limits of R410A in cooling, better in heating
- Higher efficiency (full load +3,5%, seasonal +2%)
- Slightly lower capacity (-3,5%)



- Composition: 69% R32 + 31% R1234yf
- Global Warming Potential: 466 (IPCC AR5)
- Safety classification:
 A2L mildly flammable (ISO 817)
 Fluid Group 1 (PED)



The compressors



High seasonal efficiency

Complete reliability

Scroll compressor tandem



- New generation scroll compressors, developed for the use of high density A2L refrigerants (Fluid Group 1 of PED directive)
- Tandem 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 for even and uneven compressor tandem

Oil management proven effectiveness



NX-G06 & NX-N-G06 - Technical insight: 2 and 4 compressors units

The user side heat exchanger

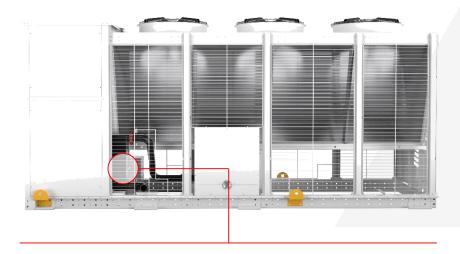
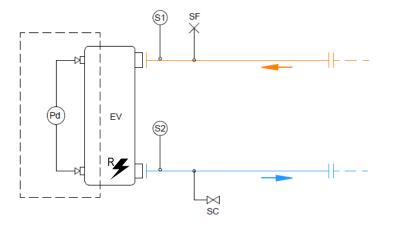


Plate heat exchanger

- 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		



Hydronic Connections Type = F
Grooved coupling with male threaded counter-pipe.

 ${\bf MITSUBISHI\; ELECTRIC\; HYDRONICS\;\&\; IT\; COOLING\; SYSTEMS\; S.p.A.}$



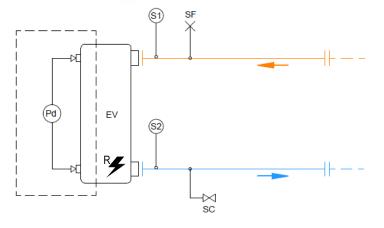
NX-G06 & NX-N-G06 - Technical insight: 4 compressors units

The user side heat exchanger



Shell & Tubes exchanger

- 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



EV Evaporator R Electrical heater

Pd Differential pressure switch S1 Water inlet probe

SC Drain valve S2 Water outlet probe

SF Purge valve



Hydronic Connections Type = A Grooved pipe.

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







The coils

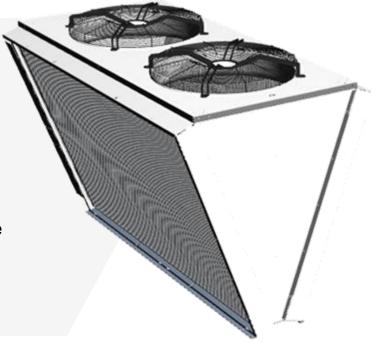


Full **aluminum** coils for cooling only **chillers**



Cu/Al coils for reversible heat pumps

- MCHX: -30% refrigerant charge reduction Vs. traditional solutions.
- MCHX: Long Life Alloy for higher corrosion resistance and longer life expectancy.
- Cu/AI: ideally desined to optimize airflow and heat transfer.
- Protective coating available for harsh industrial and marine environments (Opt.)





The fans



Axial fans

High performing, axial fans:

K version:

DVV with phase-cut for smaller sizes (450 mm fans)

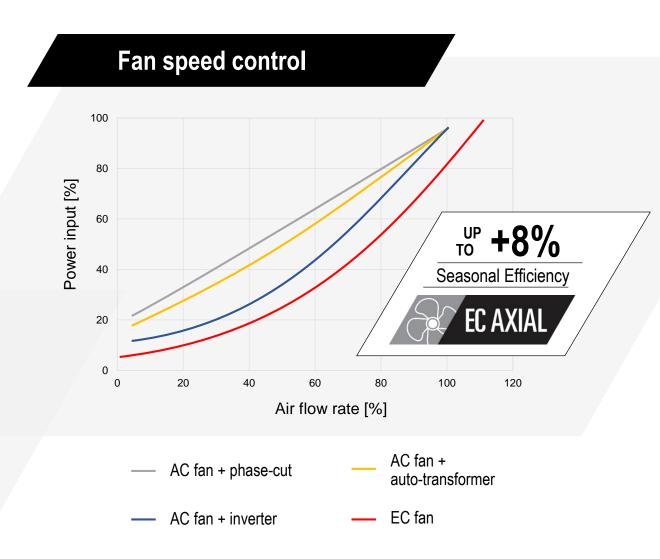
DP for larger sizes (800-910 mm fans)

CA and silenced versions:

DVV with phase-cut for smaller sizes (450 mm fans)

DVV with auto-transformer for larger sizes (800-910 mm fans)

- Speed control (DVV) based on refrigerant pressure.
- EC fans (opt)









NX-G06 & NX-N-G06 - Technical insight: 2 compressors units

The fans

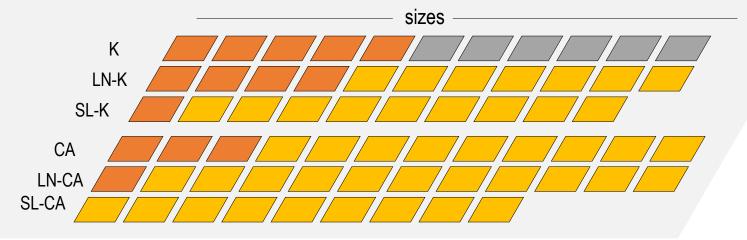
DVV: phase-cut

DP: pressostatic ctrl Ø 800 or 910 mm **DVV**: autotrasformer Ø 800 or 910 mm

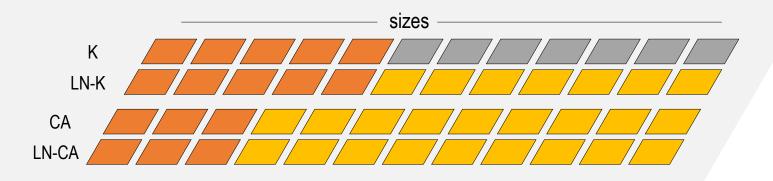


















NX-G06 & NX-N-G06 - Technical insight: 4 compressors units

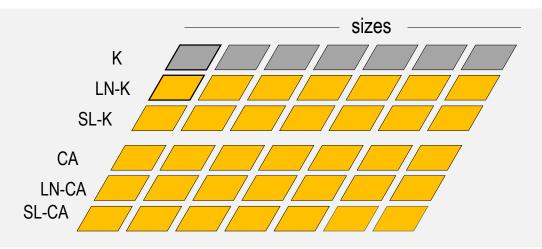
The fans

DP: pressostatic ctrl

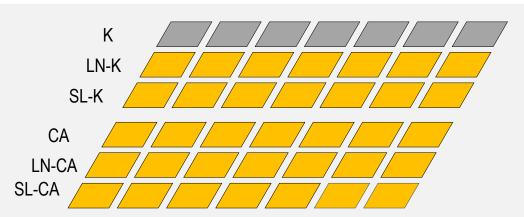
DVV: autotrasformer













The electrical panel



Electrical wirings

General door lock isolator

- Numbered cables (std for 2 cmpr)
- Automatic circuit breakers (std for 2 cmpr)
- Terminals for cumulative alarm

Set-point control

- Double set-point (digital input)
- 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







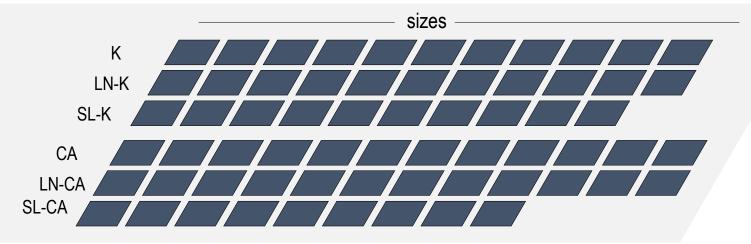
NX-G06 & NX-N-G06 - Technical insight: 2 compressors units

The control

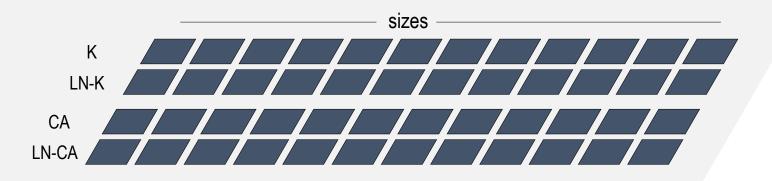
















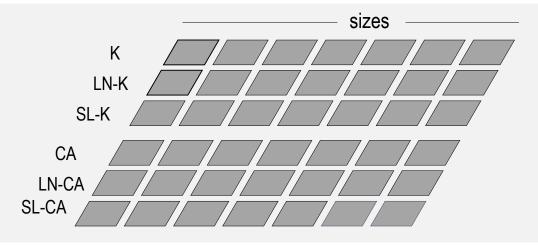
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The control

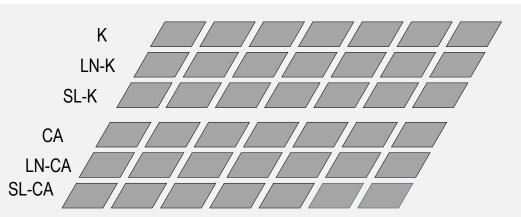






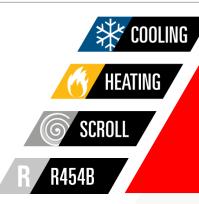












NX-G06 NX-N-G06



Family overview Technical insight

Controls

Performance

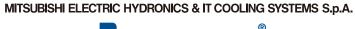
Operating limits

Heat recovery

Hydronic modules

Coils & coatings

Further options





The unit's control

W3000+/ W3000TE 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.

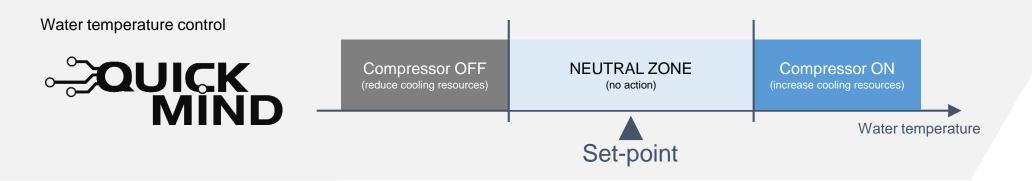
Connectivity

BMS: Modbus, LonWorks, BACnet MS/TP, BACnet-over-IP, Konnex, Modbus over IP, SNMP. Proprietary: Manager3000, ClimaPRO, M-net network.





Thermoregulation



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





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 *

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).



* Only units with W3000+ control software.







The user interface

KIPlink: the Keyboard is In your Pocket



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.





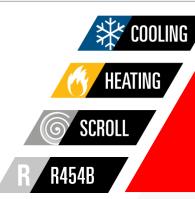
Multi-unit system control

M-Net: connect to the Mitsubishi Electric network









NX-G06 NX-N-G06



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NX-G06 & NX-N-G06 - Performance: 2 compressors units

Efficiency level



Net values - EN14511, EN14825 SEER (FW/VO) - Regulation (EU) N.2281/2016 SCOP (FW/VO) - Regulation (EU) N.813/2013

Average values







NX-G06 & NX-N-G06 - Performance: 4 compressors units

Efficiency level



Net values - EN14511, EN14825 SEER (FW/VO) - Regulation (EU) N.2281/2016 SCOP (FW/VO) - Regulation (EU) N.813/2013

Average values







NX-G06 & NX-N-G06 - Performance

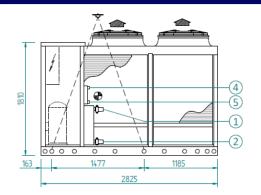
Efficiency versions

How to increase the efficiency?

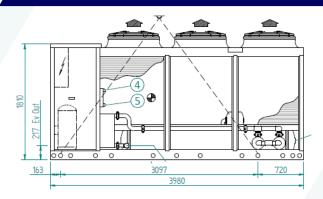
Larger heat exchange surface

It lowers the compressors' discharge pressure, increases the evaporating temperature and reduces the compressors' work

NX-G06 /K 0502P Length = 2825 mm



NX-G06 /CA 0502P Length = 3980 mm

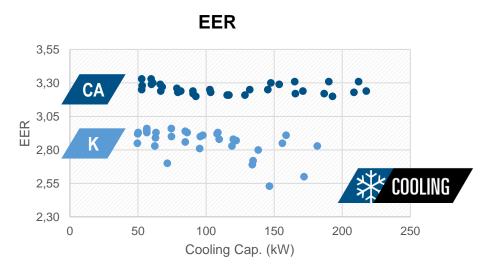


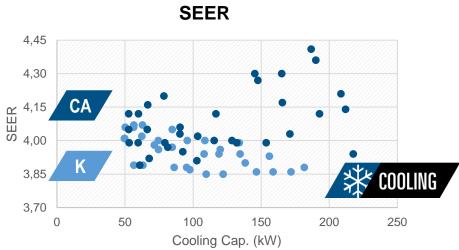


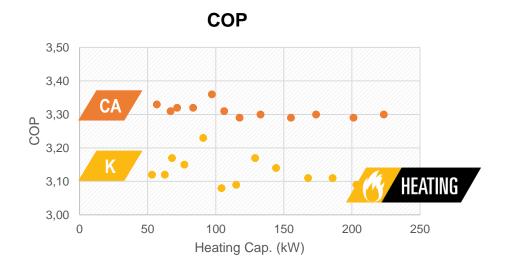


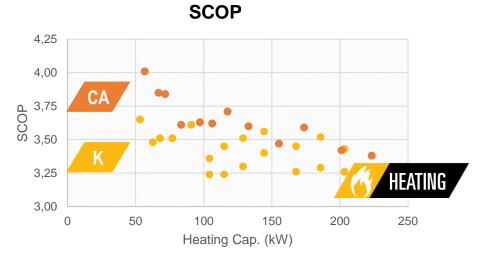
NX-G06 & NX-N-G06 - Performance

Efficiency versions















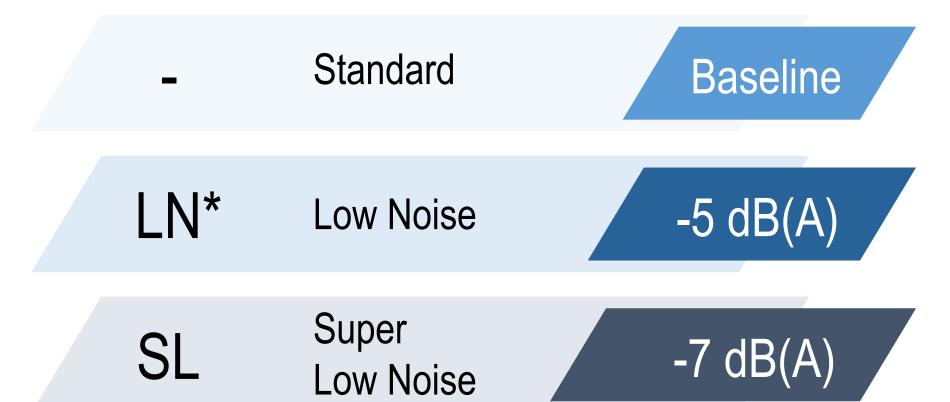


NX-G06 & NX-N-G06 - Performance

Sound level

3 sound configurations:

No compromise on efficiency!



* Only for cooling only units



NX-G06 & NX-N-G06 - Performance

Acoustic versions

How to reduce the noise emissions?

Soundproofing insulation

Fan speed reduction

Larger condenser surface

Compressor and refrigerant circuit acoustical enclosure.

Ø 450 : from 1350 to 600 rpm

Ø 800 : from 900 to 500 rpm

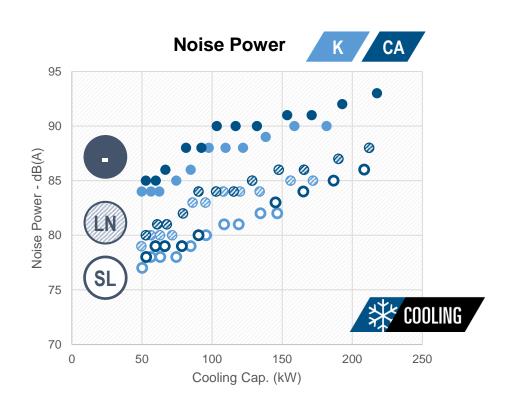
It lowers the compressor discharge pressure and its noise emission

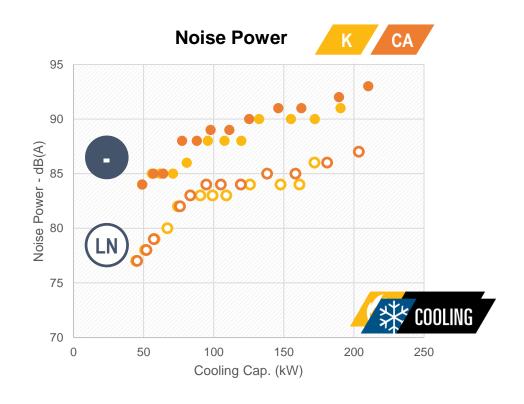


NX-G06 & NX-N-G06 - Performance

Acoustic versions

No compromise on efficiency!



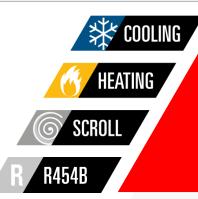


^{*} Reversible heat pumps operate in silent mode only in cooling mode.











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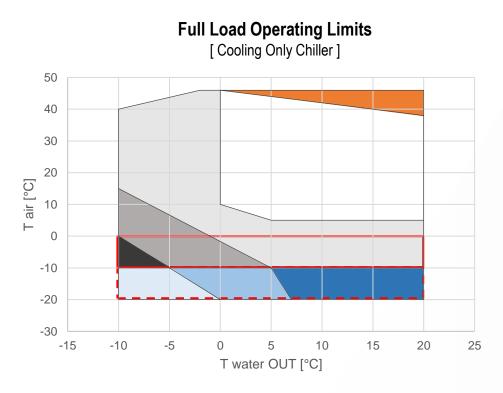






NX-G06 & NX-N-G06 - Operating limits

Cooling



For the reversible heat pump, the cooling mode operating limits are reduced to: AIR from -10°C to 46°C; WATER from -8°C to 20°C

For the temperature limits of each size please refer to the selection software (the diagram over 38°C could vary according to the size and the version of the selected unit).

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



	1	
DP - fan pressostatic control (STD for K (402 - 802))		
DVV – fan speed adjustment (STD for: K (202 – 352); LN-K; SL-K; CA; LN-CA; SL-CA) or EC FANS		
DVVF – fan speed adjustment + single fractionation or EC FANS		
DVV2F – fan speed adjustment + souble fractionation or inverter or EC FANS		
WIND PROTECTED: WIND EXPOSED:	DVVF (or EC FANS) + EEV + Solo DBA + DVVF (or EC FANS) + EEV	
WIND PROTECTED: WIND EXPOSED:	DVV2F (or EC FANS) + EEV + So DBA + DVVF (or EC FANS) + EEV	
DBA + DVVF (or EC F	FANS) + EEV + Solenoid valve *	
Antifreeze heaters on pip	pes, pumps, and buffer tank	
Extra insulation on heat exchangers, pipes, pumps and buffer tank * Extra antifreeze heaters on heat exchangers, pipes, pumps and buffer tank *		

NON silenced mode operation

* Request for quotation



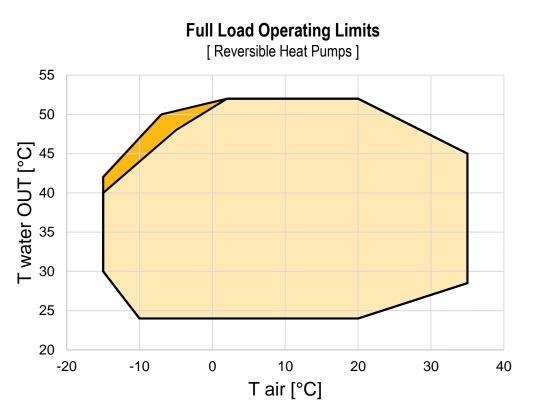




NX-G06 & NX-N-G06 - Operating limits: 2 compressors units

HEATING

Heating



K version

CA version

For the temperature limits of each size please refer to the selection software (the diagram over 38°C could vary according to the size and the version of the selected unit).

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



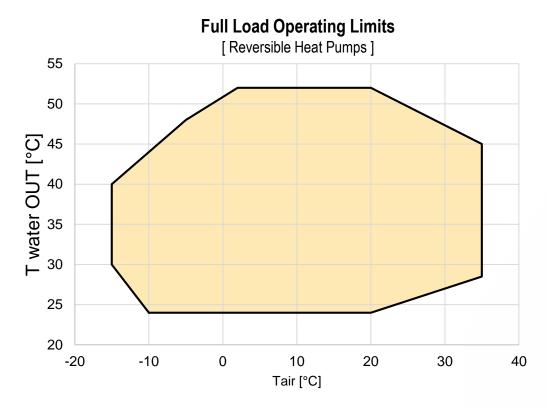




NX-G06 & NX-N-G06 - Operating limits: 4 compr + plate evaporator

HEATING

Heating



K version

For the temperature limits of each size please refer to the selection software (the diagram over 38°C could vary according to the size and the version of the selected unit).

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



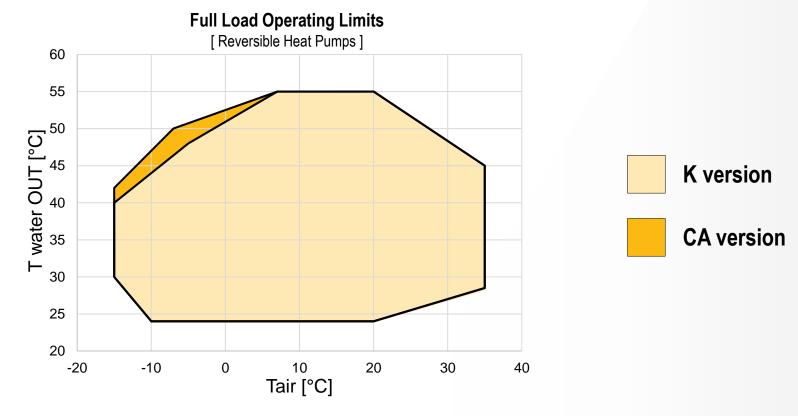




NX-G06 & NX-N-G06 - Operating limits: 4 compr + S&T evaporator

HEATING

Heating



For the temperature limits of each size please refer to the selection software (the diagram over 38°C could vary according to the size and the version of the selected unit).

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









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Heat recovery

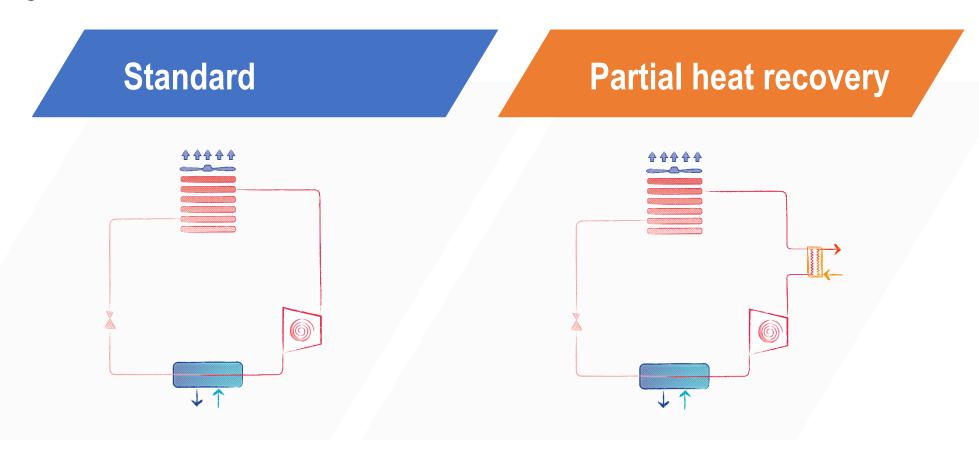
Hydronic modules

Coils & coatings





Configuration overview



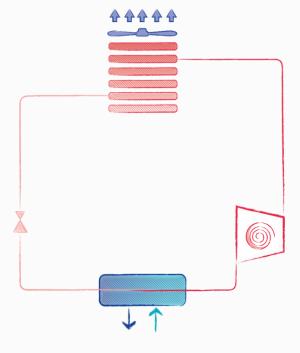
The heat recovery provides heating capacity for free.

Suitable for **DHW** production, **integration of a boiler**, air treatment in **AHU**.



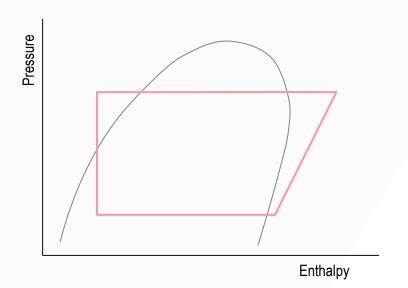
Standard configuration

Standard



No heat recovery

All the condensation heat is dispersed in the air.



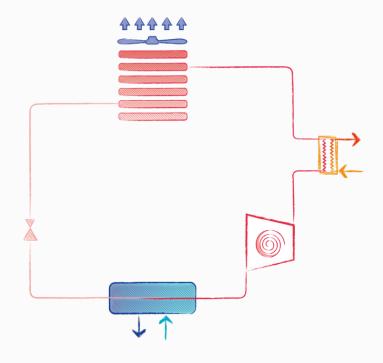
Standard refrigerant circuit.



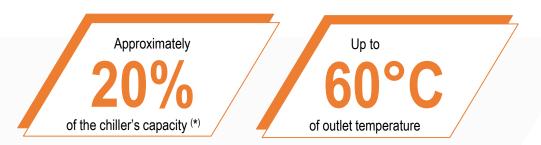


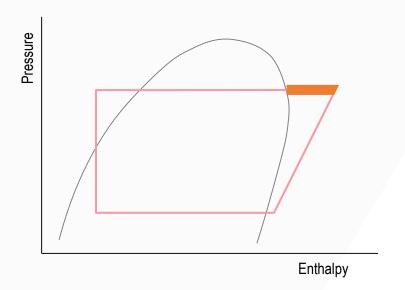
/D - Partial heat recovery configuration

Partial heat recovery



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





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

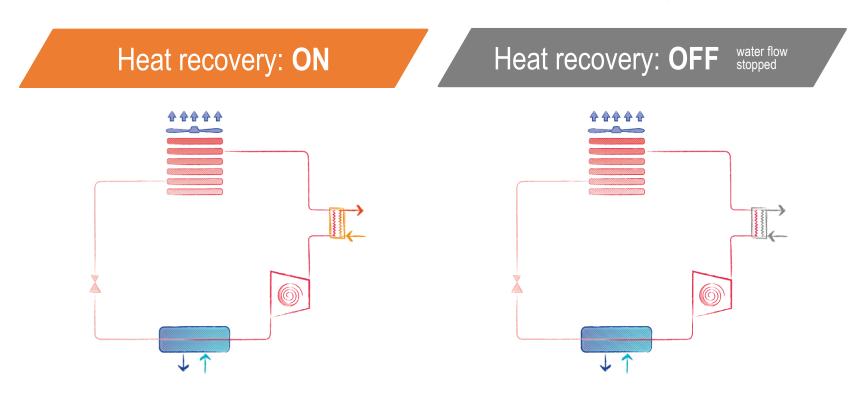




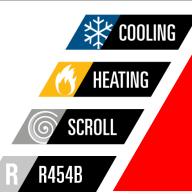
/D - Partial heat recovery configuration

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.









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Heat recovery



Hydronic modules

Coils & coatings



NX-G06 & NX-N-G06 - 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**.

Pumps

- End-suction 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 through speed regulation
 (Available for 4 cmpr. units)

Pumps + Buffer tank

- Up to 500 liter buffer tank
- 20 mm insulation lining
- Including: expansion vessel, safety valve, manometer.

Only terminals

- On/off control or 0-10V signal
- 1 or 2 external pumps



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.





NX-G06 & NX-N-G06 - Hydronic

Hydronic modules

Buffer tank **Options** Single end-suction pump AC EV Piping Kit antifreeze heater (Option) Antifreeze heaters on pump/s and piping (Opt. 2432)

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

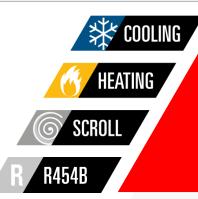
SC Drain valve



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









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Coils & coatings









The environments



Different environments need for different solutions









Technologies and treatments

MICROCHANNEL COILS

- Al Regular (std for Cooling Only Chillers)
- Al E-coating (Opt. 876)





TUBE & FIN COILS

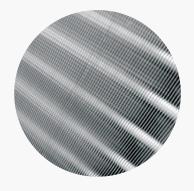
Cu/Al - Regular (Opt. 879 / std for Rev. Heat Pumps)

Cu/Al - Pre-painted fins (Opt. 894)

Cu/Al - Spray coating (Opt. 895 / RFQ)

Cu/Cu - Tube & fin coil (Opt. 881)









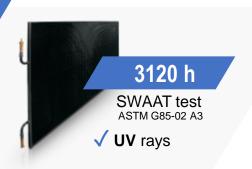


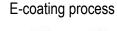
Technologies and treatments

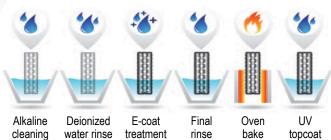
MICROCHANNEL COILS

Al - Regular (std for Cooling Only Chillers)

Al - E-coating (Opt. 876)







TUBE & FIN COILS

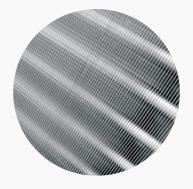
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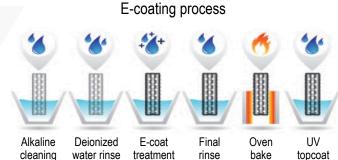
Technologies and treatments

MICROCHANNEL COILS

Al - Regular (std for Cooling Only Chillers)

Al - E-coating (Opt. 876)





TUBE & FIN COILS

Pre-painted fins

Polyester resin

√ **1000 h** ASTM B117

√ UV rays

Cu/Al - Regular (Opt. 879 / std for Rev. Heat Pumps)

Cu/Al - Pre-painted fins (Opt. 894)

Cu/Al - Spray coating (Opt. 895 / RFQ)

Cu/Cu - Tube & fin coil (Opt. 881)

Fin Guard Silver SB
Thermoguard

}

Polyurethane resin

√ **3000 h** ASTM B117

√ UV rays

Polyurethane resin

√ 4000 h ASTM B117

√ UV rays

RFQ

Opt. 894

Opt. 895

Heresite P-413C

Heresite Protective Coating, LLC

Phenolic resin

√ 6000 h ASTM B117

UV rays

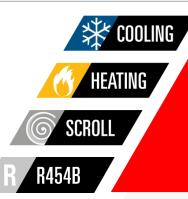
RFQ



PoluAl XT

Blygold







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NX-G06 & NX-N-G06 - Further options

Electrical and mechanical accessories

Compressor rephasing (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.

Water flow switch (supplied loose)

Stops and protects the unit in case the water flow is not sufficient.

Water filter (supplied loose)

Filters the water before the unit's inlet.



NX-G06 & NX-N-G06 - Further options

Packing options

