

NEBIS INV HE FL

Packaged air cooled liquid chillers in A class energy efficiency for outdoor installation.
Cooling Capacity: 425 ÷ 1300 kW



New green-screw on-off + inverter compressors
Flooded evaporator
Microchannel condensing coils
Single refrigerant circuit
EER up to 3,30
ESEER up to 5,74

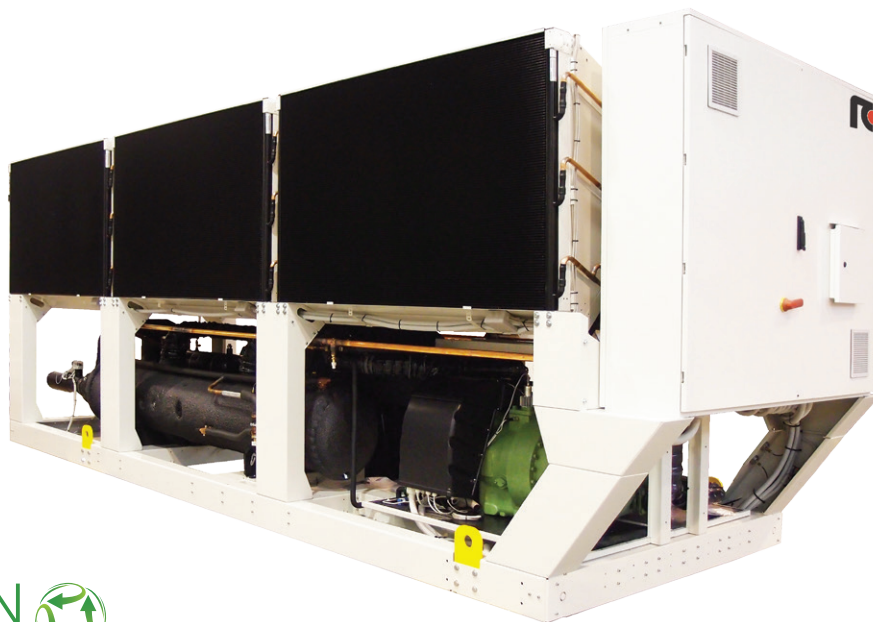
NEBIS INV HE FL: Packaged air cooled liquid chillers in “A” class energy efficiency for outdoor installation, equipped with on-off + inverter screw compressors, flooded evaporator and microchannel condensing coils.

Cooling Capacity: **425 ÷ 1300 kW**

HIGH EFFICIENCY
RC Hi-Tech

A CLASS
RC Hi-Tech

INVERTER
RC Hi-Tech



GO GREEN
innovative solutions

NEBIS INV HE FL



MAIN FEATURES

- Air cooled liquid chiller.
- High energy efficiency.
- 18 models available, for a wide selection opportunity.
- EER up to 3,30.
- ESEER up to 5,74.
- Green-Screw high efficiency on-off and inverter compressors.
- R134a Refrigerant charge.
- Single refrigerant circuit.
- Flooded evaporator..
- AC Axial fans.
- Single air circuit.
- Electronic expansion valve.
- Suitable for outdoor installation.

MAIN BENEFITS

- High EER, A class energy efficiency.
- Very high ESEER.
- Availability of kit for the reduction and the extreme reduction of the noise.
- Availability of pumping groups.
- Availability of total or partial heat recovery system.
- Availability of EC fans for a higher efficiency.
- Components dedicated to the safety of the unity.
- Eurovent Certification.

NEW GREEN SCREW COMPRESSORS

New Green Screw compressors: on-off and inverter high efficiency screw compressors, RC branded. The parallel installation of 1x INVERTER + 1x ON/OFF screw compressors on the same refrigerant circuit grants high SEER.

MICROCHANNEL CONDENSING COILS

The use of aluminium for the micro-channel condensers manufacture is able to offer the possibility for very light machinery: the coil weight is only 50% compared to traditional copper pipes and aluminium fins of the same capacity.

The reduced air resistance of the micro-channel coils allows to drastically reduce the fans motors electric energy consumption. At the same performances conditions, the micro-channels condensers require up-to less than 75% refrigerant when compared to the traditional heat exchangers.

A CLASS ENERGY EFFICIENCY

The best and most accurate components applied to the chillers.

WORKING LIMITS IN COOLING MODE

Chilled water outlet temperature: -10÷13°C

Ambient temperature: -20÷55°C

MAIN COMPONENTS**FRAMEWORK**

- Base, self supporting frame and panelling in steel plate with protective surfaces treatment in compliance with UNI ISO 9227/ASTMB117 and ISO 7253, and painted with epoxy powders.
- Colour: RAL 9002.

COMPRESSORS

- Two Twin screw semi-hermetic compressors with highly efficient screw profile and high peripheral speed, optimized for R134a refrigerant:
 - One compressor with built-in inverter:
 - o Modulating cooling capacity control from 20Hz to 70Hz;
 - o Availability of automatic "VI" compression ratio change system directly controlled by the compressor (optional accessory)
 - One on/off compressor with:
 - o Electronic protection device that includes:
 - Electric motor thermal protection via internal winding temperature sensors.
 - Phase sequence electronic relay.
 - Sensor on refrigerant discharge for temperature monitoring,
 - o No partialization system;
 - o 2-pole 3-phase electric motor with Part-Winding starting from model 430 V2 F10 to model 800 V2 F16 included.
 - o 2-pole 3-phase electric motor with Star / Delta starting from model 850 V2 F16 to model 1220 V2 F24 included.
- Integrated discharge check valve.
- Integrated safety relief valve (overpressure inner valve).
- Replaceable cartridge oil filter.
- Oil flow switch.
- Valves for oil filling and discharge.
- Terminal box with IP54 enclosure class.
- Rubber supports.

EVAPORATOR

- Flooded shell and tube evaporator, optimized for R134a refrigerant.
- Version two passes, characterized by low pressure losses on the water side.
- Water tubes with a helical rifled internal surface.
- Integrated liquid drop separator.
- Shell, header, tube sheets made of carbon steel, tubes in Cu.
- Anticondensate insulation made of polyurethane.
- Large liquid level indicator.
- Temperature sensors on water inlet and outlet.
- Water flow switch for water flow control on water outlet towards the plant, not installed but supplied in kit.
- Large liquid level indicator
- Antifreeze heater.
- Jet pump for oil drainage.
- Hydraulic connections with grooved end supplied as standard with flexible joint and adapter pipe to be welded.

CONDENSING COIL

- Microchannel condensing coil in aluminium, perfectly suitable for the civil and industrial applications cooling, while the protection function of the oxide layer allows an optimum resistance to corrosion also in case of aggressive ambient conditions.
- Extremely light construction. The coil weight is only 50% compared to traditional copper pipes and aluminium fins of the same capacity.
- Low air side pressure drop and consequentially drastic reduction of the fans motors electric energy consumption.
- High heat exchange efficiency.
- Reduced internal volume capable of reducing the total refrigerant charge. At the same performances conditions, the micro-channels condensers require up-to less than 75% refrigerant when compared to the traditional heat exchangers.
- Single air circuit.

FANS SECTION

- Axial fans with sickle-shaped blades, fan guard and optimized for low noise levels.
- External rotor AC type electric motor with stepless variable speed for condensing pressure control, with phase-cut electronic controller.
- IP54 enclosure class.

REFRIGERANT CIRCUIT

Components for each refrigerant circuit:

- Capacitive level sensor connected to the driver of the expansion valve.
- Electronic expansion valve that allows high performance and system efficiency thanks to a timely and accurate response to changes in temperature and pressure.
- Energy reserve module for the electronic expansion valve to allow the closure of the valve in the event of lack of power supply.
- Oil separator on gas discharge, one oil separator for both compressors, supplied with heater cable and oil sight glass
- Liquid receiver with safety valve and service valve.
- Sight glass.
- Filter dryer on liquid line.
- Service valves on liquid line.
- Service valves on compressor gas discharge.
- Safety valves on high and low pressure side.
- Pressure transducers with indication, control and protection functions, on low and high refrigerant pressure.
- High pressure safety switch with manual reset.
- Pressure gauge on high and low pressure.
- Refrigerant circuit with copper tubing with anticondensate insulation of the suction line.
- Plastic capillary hoses for pressure sensors connection.
- R134a refrigerant charge.

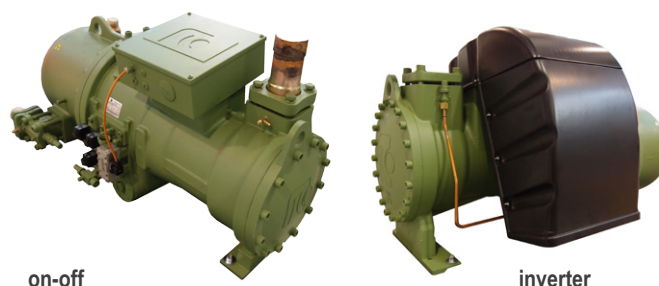
ELECTRICAL PANEL

In accordance with EN60204-1 norms, suitable for outdoor installation, complete with:

- Main switch with door lock safety.
- Fuses for each compressor.
- Magnetothermic switches for fans or water pumps (if scheduled).
- Contactors for each load.
- On/off compressor Part-Winding starting system from model 430 V2 F10 to model 800 V2 F16 included.
- On/off compressor Star / Delta starting system from model 850 V2 F16 to model 1220 V2 F24 included.
- Transformer for auxiliary circuit and microprocessor supply.
- Panel with machine controls.
- Power supply 400/3/50.

CONTROL SYSTEM

- Microprocessor control system with graphic display for control and monitor of operating and alarms status. 6 keys terminal. The system includes:
 - Clock card for alarms date and time displaying and storing;
 - Predisposition for the memorization of the intervened alarms;
 - Predisposition for connectivity board housing (RCom MBUS/JBUS, LON, BACnet for Ethernet (SNMP- TCP/IP), BACnet for MS/TP). The electronic cards are optional accessories;
 - Main components hour-meter;
- Non-volatile "Flash" memory for data storage in case of power supply faulty;
 - Analogue set point compensation (0÷10 Vdc) according to an external analogue signal at Customer care;
 - Menu with protection password;
 - LAN connection.

**GREEN SCREW**

OPTIONAL ACCESSORIES

NEBIS INV HE FL SIZE	F10	F12	F14	F16	F18	F20	F22	F24
450 - Partial heat recovery system	•	•	•	•	•	•	•	•
451 - 100% heat reclaim	•	•	•	•	•	•	•	•
449 - Voltage free contact for partial heat recovery water pump	•	•	•	•	•	•	•	•
739 - Pumping group (1 pump)	•	•	-	-	-	-	-	-
740 - Pumping group (2 pumps)	-	-	•	•	•	•	•	•
769 - Pumping group (1+1stby)	•	•	-	-	-	-	-	-
770 - Pumping group (2+1stby)	-	-	•	•	•	•	•	•
960 - Free contact enable indoor pump	•	•	•	•	•	•	•	•
150 - LNO kit	•	•	•	•	•	•	•	•
151 - Kit ELN	•	•	•	•	•	•	•	•
1040-Kit Extreme ELN	•	•	•	•	•	•	•	•
118 - Kit brine A (for glycol solution production up to -6°C)	•	•	•	•	•	•	•	•
119 - Kit brine B (for glycol solution production up to -12°C)	•	•	•	•	•	•	•	•
101 - EC fan	•	•	•	•	•	•	•	•
1002- Soft Starter for on-off compressor	•	•	•	•	•	•	•	•
170 - Spring antivibration holders (kit)	•	•	•	•	•	•	•	•
171 - Rubber antivibration holders (kit)	•	•	•	•	•	•	•	•
Diffusor for EC fans	•	•	•	•	•	•	•	•
1019- Kit CONTAINER	•	•	•	•	•	•	•	•
217 - Double safety valve	•	•	•	•	•	•	•	•
Stop valves for safety valves	•	•	•	•	•	•	•	•
350 -Kit TK PRO corrosion resistant painting treatment	•	•	•	•	•	•	•	•
251 - Coils protection nets	•	•	•	•	•	•	•	•
1033-Coils anti-hailstorm protection net	•	•	•	•	•	•	•	•
Service valve on compressor group suction	•	•	•	•	•	•	•	•
Thermal protection relay for on/off compressors	•	•	•	•	•	•	•	•
Power factor capacitors for on/off motor compressors	•	•	•	•	•	•	•	•
Variable compression ratio V.I. for inverter compressor	•	•	•	•	•	•	•	•
Variable compression ratio V.I. for on-off compressor	•	•	•	•	•	•	•	•
79 - Electrical panel heating system	•	•	•	•	•	•	•	•
1004 - Antifreezing heater for pumping group	•	•	•	•	•	•	•	•
Majored insulation for evaporator	•	•	•	•	•	•	•	•
731 - Safety water flow switch	•	•	•	•	•	•	•	•
Oil pump for operation at low condensing temperatures	•	•	•	•	•	•	•	•
Oil cooling kit with plate type heat exchanger	•	•	•	•	•	•	•	•
88 - Analog set point compensation	•	•	•	•	•	•	•	•
85 - Demand limit	•	•	•	•	•	•	•	•
1003 - Analog flowmeter	•	•	•	•	•	•	•	•
1005 - Power supply analyzer	•	•	•	•	•	•	•	•
1009 - Kit Multimeter	•	•	•	•	•	•	•	•
Double power supply with ATS system	•	•	•	•	•	•	•	•
Free contact for general alarm	•	•	•	•	•	•	•	•
83 - Compressor operation indicator	•	•	•	•	•	•	•	•
Data logger	•	•	•	•	•	•	•	•
Touch screen graphic display	•	•	•	•	•	•	•	•
930 - Remote graphic terminal kit	•	•	•	•	•	•	•	•
962 - Kit modem GSM	•	•	•	•	•	•	•	•
923 - RC-Com MBUS/JBUS Serial board	•	•	•	•	•	•	•	•
926 - LON Serial board	•	•	•	•	•	•	•	•
931 - BACnet Ethernet - SNMP - TCP/IP Serial board	•	•	•	•	•	•	•	•
932 - BACnet MS/TP Serial board	•	•	•	•	•	•	•	•
WPC - Inverter pumps and controls	•	•	•	•	•	•	•	•
889 - Master plant SEQUENCER	•	•	•	•	•	•	•	•
RC CLOUD PLATFORM	•	•	•	•	•	•	•	•

• available accessory; - not available accessory

TECHNICAL DATA NEBIS HE FL

NEBIS INV HE FL		430 V2	430 V2	450 V2	450 V2	480 V2	480 V2	510 V2	510 V2	
SIZE		F10	F10	F10	F10	F10	F10	F12	F12	
WORKING MODE		Nom	Max	Nom	Max	Nom	Max	Nom	Max	
STANDARD	Cooling capacity (1)	kW	425	454	444	475	479	513	507	542
	Unit power input	kW	130,0	150,3	137,0	157,3	150,2	173,3	156,0	179,5
	Evaporator water flow rate	m³/h	73	78	76	82	82	88	87	93
	Evaporator pressure drop	kPa	44	50	43	49	43	49	42	48
	Compressors		screw INV+ON/OFF		screw INV+ON/OFF		screw INV+ON/OFF		screw INV+ON/OFF	
	Quantity	n.	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1
	Capacity control	%	mod.20%...110%		mod.20%...110%		mod.20%...110%		mod.20%...110%	
	Axial fans	n.	10	10	10	10	10	10	12	12
	Total air flow	m³/h	240000	240000	240000	240000	240000	240000	288000	288000
	Air circuits	n.	1	1	1	1	1	1	1	1
	Refrigerant		R134a	R134a	R134a	R134a	R134a	R134a	R134a	R134a
	Total refrigerant charge (optional excluded)	kg	244	244	313	313	310	310	313	313
	Gas circuits	n.	1	1	1	1	1	1	1	1
	Power supply	V/Ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
	Max operating current (MOC)	A	304	304	322	322	356	356	361	361
	Max unit operating current (FLA)	A	379	379	394	394	428	428	422	422
	Unit starting current (LRA)	A	605	605	637	637	671	671	764	764
	EER (1)	kW/kW	3,27	3,02	3,24	3,02	3,19	2,96	3,25	3,02
	ESEER		5,44	5,44	5,47	5,47	5,57	5,57	5,42	5,42
	Sound power level [Lw] (2)	dB(A)	96,2	97,1	97,2	98,2	98,4	99,3	98,7	99,6
	Average sound pressure level [Lpm] (3)	dB(A)	75,5	76,4	76,5	77,5	77,7	78,7	77,5	78,5
	Net weight	kg	4419	4419	4591	4591	4593	4593	5085	5085
	Hydraulic connections									
	Evaporator IN/OUT - OD (4)	Ø mm	139,7	139,7	139,7	139,7	139,7	139,7	139,7	139,7
OPTIONAL	Partial heat recovery (5)									
	Heating capacity	kW	84,5	90,4	88,3	94,5	95,4	102	101	108
	Total heat recovery (6)									
	Heating capacity	kW	526	526	552	552	604	604	627	627
Pumping group - Power input	kW	4	4	4	4	4	4	5,5	5,5	
LNO KIT 100%	Cooling capacity (1)	kW	425	454	444	475	479	513	507	542
	Unit power input	kW	130,0	150,3	137,0	157,3	150,2	173,3	156,0	179,5
	Total air flow	m³/h	240000	240000	240000	240000	240000	240000	288000	288000
	EER (1)	kW/kW	3,27	3,02	3,24	3,02	3,19	2,96	3,25	3,02
Sound power level [Lw] (2)	dB(A)	94,1	95,1	95,2	96,2	96,4	97,3	96,7	97,6	
Average sound pressure level [Lpm] (3)	dB(A)	73,5	74,4	74,5	75,5	75,7	76,7	75,5	76,5	
LNO KIT 85%	Cooling capacity (1)	kW	419	448	438	468	472	505	500	535
	Unit power input	kW	128,1	148,8	134,4	155,5	148,4	172,9	152,4	176,6
	Total air flow	m³/h	204000	204000	204000	204000	204000	204000	244800	244800
	EER (1)	kW/kW	3,27	3,01	3,26	3,01	3,18	2,92	3,28	3,03
Sound power level [Lw] (2)	dB(A)	93,1	94,1	94,2	95,2	95,4	96,3	95,7	96,6	
Average sound pressure level [Lpm] (3)	dB(A)	72,5	73,4	73,5	74,5	74,7	75,7	74,5	75,5	
LNO KIT 70%	Cooling capacity (1)	kW	410	439	429	459	462	494	491	525
	Unit power input	kW	125,8	146,3	132,8	155,1	147,1	172,1	149,7	175,0
	Total air flow	m³/h	168000	168000	168000	168000	168000	168000	201600	201600
	EER (1)	kW/kW	3,26	3,00	3,23	2,96	3,14	2,87	3,28	3,00
Sound power level [Lw] (2)	dB(A)	90,1	91,1	91,2	92,2	92,4	93,3	92,7	93,6	
Average sound pressure level [Lpm] (3)	dB(A)	69,5	70,4	70,5	71,5	71,7	72,7	71,5	72,5	
ELN KIT	Cooling capacity (1)	kW	410	439	429	459	462	494	491	525
	Unit power input	kW	125,8	146,3	132,8	155,1	147,1	172,1	149,7	175,0
	Total air flow	m³/h	168000	168000	168000	168000	168000	168000	201600	201600
	EER (1)	kW/kW	3,26	3,00	3,23	2,96	3,14	2,87	3,28	3,00
Sound power level [Lw] (2)	dB(A)	87,1	88,1	88,2	89,2	89,4	90,3	89,7	90,6	
Average sound pressure level [Lpm] (3)	dB(A)	66,5	67,4	67,5	68,5	68,7	69,7	68,5	69,5	
EXTREME ELN	Cooling capacity (1)	kW	410	439	429	459	462	494	491	525
	Unit power input	kW	125,8	146,3	132,8	155,1	147,1	172,1	149,7	175,0
	Total air flow	m³/h	168000	168000	168000	168000	168000	168000	201600	201600
	EER (1)	kW/kW	3,26	3,00	3,23	2,96	3,14	2,87	3,28	3,00
Sound power level [Lw] (2)	dB(A)	84,1	85,1	85,2	86,2	86,4	87,3	86,7	87,6	
Average sound pressure level [Lpm] (3)	dB(A)	63,5	64,4	64,5	65,5	65,7	66,7	65,5	66,5	

1. Referred to chilled water temperature 12/7°C – 0% glycol solution; air temperature to the condenser 35°C. Fouling factor of the exchangers 0,043 m²K/kW.
2. Sound power level [Lw] according to ISO EN 9614 – 2.
3. Average sound pressure level [Lp_m] 1m far according to ISO EN 3744.
4. Hydraulic connection with grooved end complete with flexible joint and adapter pipe for solder connection.
5. Referred to chilled water temperature 12/7°C – 0% glycol solution; air temperature to the condenser 35°C; water temperature heat recovery 40/45°C – 0% glycol solution. Fouling factor of the exchangers 0,043 m²K/kW.
6. Referred to chilled water temperature 12/7°C – 0% glycol solution; water temperature heat recovery 40/45°C – 0% glycol solution; Fouling factor of the exchangers 0,043 m²K/kW.

TECHNICAL DATA NEBIS HE FL

NEBIS INV HE FL		560 V2	560 V2	590 V2	590 V2	610 V2	610 V2	640 V2	640 V2	
SIZE		F12	F12	F12	F12	F12	F12	F12	F12	
WORKING MODE		Nom	Max	Nom	Max	Nom	Max	Nom	Max	
STANDARD	Cooling capacity (1)	kW	552	590	582	623	608	651	639	684
	Unit power input	kW	170,9	198,0	177,4	205,6	187,1	217,0	199,7	231,1
	Evaporator water flow rate	m³/h	95	101	100	107	104	112	110	117
	Evaporator pressure drop	kPa	43	49	43	49	41	47	45	52
	Compressors		screw INV+ON/OFF		screw INV+ON/OFF		screw INV+ON/OFF		screw INV+ON/OFF	
	Quantity	n.	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1
	Capacity control	%	mod.20%...110%		mod.20%...110%		mod.20%...110%		mod.20%...110%	
	Axial fans	n.	12	12	12	12	12	12	12	12
	Total air flow	m³/h	288000	288000	288000	288000	288000	288000	288000	288000
	Air circuits	n.	1	1	1	1	1	1	1	1
	Refrigerant		R134a	R134a	R134a	R134a	R134a	R134a	R134a	R134a
	Total refrigerant charge (optional excluded)	kg	309	309	304	304	382	382	382	382
	Gas circuits	n.	1	1	1	1	1	1	1	1
	Power supply	V/Ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
	Max operating current (MOC)	A	378	378	392	392	439	439	462	462
	Max unit operating current (FLA)	A	439	439	474	474	521	521	539	539
	Unit starting current (LRA)	A	780,6	780,6	726,6	726,6	773,6	773,6	869,6	869,6
	EER (1)	kW/kW	3,23	2,98	3,28	3,03	3,25	3,00	3,20	2,96
	ESEER		5,52	5,52	5,60	5,60	5,66	5,66	5,74	5,74
	Sound power level [Lw] (2)	dB(A)	99,1	100,1	99,8	100,7	100,6	101,5	100,6	101,6
	Average sound pressure level [Lpm] (3)	dB(A)	78,0	79,0	78,6	79,6	79,4	80,4	79,5	80,4
	Net weight	kg	5096	5096	5426	5426	5606	5606	5611	5611
	Hydraulic connections									
	Evaporator IN/OUT - OD (4)	Ø mm	139,7	139,7	139,7	139,7	139,7	139,7	139,7	139,7
OPTIONAL	Partial heat recovery (5)									
	Heating capacity	kW	110	117	116	124	121	130	127	136
	Total heat recovery (6)									
	Heating capacity	kW	691	691	728	728	766	766	813	813
Pumping group - Power input	kW	5,5	5,5	5,5	5,5	5,5	5,5	5,5	5,5	
LNO KIT 100%	Cooling capacity (1)	kW	552	590	582	623	608	651	639	684
	Unit power input	kW	170,9	197,3	177,4	205,6	187,1	217,0	199,7	231,1
	Total air flow	m³/h	288000	288000	288000	288000	288000	288000	288000	288000
	EER (1)	kW/kW	3,23	2,99	3,28	3,03	3,25	3,00	3,20	2,96
Sound power level [Lw] (2)	dB(A)	97,1	98,1	97,8	98,7	98,5	99,5	98,6	99,6	
Average sound pressure level [Lpm] (3)	dB(A)	76,0	76,9	76,6	77,6	77,4	78,4	77,5	78,4	
LNO KIT 85%	Cooling capacity (1)	kW	544	582	574	614	599	640	628	672
	Unit power input	kW	168,4	196,0	175,5	204,0	185,4	216,2	198,1	230,9
	Total air flow	m³/h	244800	244800	244800	244800	244800	244800	244800	244800
	EER (1)	kW/kW	3,23	2,97	3,27	3,01	3,23	2,96	3,17	2,91
Sound power level [Lw] (2)	dB(A)	96,1	97,1	96,8	97,7	97,5	98,5	97,6	98,6	
Average sound pressure level [Lpm] (3)	dB(A)	75,0	75,9	75,6	76,6	76,4	77,4	76,5	77,4	
LNO KIT 70%	Cooling capacity (1)	kW	533	570	561	600	585	626	613	655
	Unit power input	kW	167,1	194,5	174,2	203,4	184,0	215,9	197,1	230,6
	Total air flow	m³/h	201600	201600	201600	201600	201600	201600	201600	201600
	EER (1)	kW/kW	3,19	2,93	3,22	2,95	3,18	2,90	3,11	2,84
Sound power level [Lw] (2)	dB(A)	93,1	94,1	93,8	94,7	94,5	95,5	94,6	95,6	
Average sound pressure level [Lpm] (3)	dB(A)	72,0	72,9	72,6	73,6	73,4	74,4	73,5	74,4	
ELN KIT	Cooling capacity (1)	kW	533	570	561	600	585	626	613	655
	Unit power input	kW	167,1	194,5	174,2	203,4	184,0	215,9	197,1	230,6
	Total air flow	m³/h	201600	201600	201600	201600	201600	201600	201600	201600
	EER (1)	kW/kW	3,19	2,93	3,22	2,95	3,18	2,90	3,11	2,84
Sound power level [Lw] (2)	dB(A)	90,1	91,1	90,8	91,7	91,5	92,5	91,6	92,6	
Average sound pressure level [Lpm] (3)	dB(A)	69,0	69,9	69,6	70,6	70,4	71,4	70,5	71,4	
EXTREME ELN	Cooling capacity (1)	kW	533	570	561	600	585	626	613	655
	Unit power input	kW	167,1	194,5	174,2	203,4	184,0	215,9	197,1	230,6
	Total air flow	m³/h	201600	201600	201600	201600	201600	201600	201600	201600
	EER (1)	kW/kW	3,19	2,93	3,22	2,95	3,18	2,90	3,11	2,84
Sound power level [Lw] (2)	dB(A)	87,1	88,1	87,8	88,7	88,5	89,5	88,6	89,6	
Average sound pressure level [Lpm] (3)	dB(A)	66,0	66,9	66,6	67,6	67,4	68,4	67,5	68,4	

1. Referred to chilled water temperature 12/7°C – 0% glycol solution; air temperature to the condenser 35°C. Fouling factor of the exchangers 0,043 m²K/kW.
2. Sound power level [Lw] according to ISO EN 9614 – 2.
3. Average sound pressure level [Lpm] 1m far according to ISO EN 3744.
4. Hydraulic connection with grooved end complete with flexible joint and adapter pipe for solder connection.
5. Referred to chilled water temperature 12/7°C – 0% glycol solution; air temperature to the condenser 35°C; water temperature heat recovery 40/45°C – 0% glycol solution. Fouling factor of the exchangers 0,043 m²K/kW.
6. Referred to chilled water temperature 12/7°C – 0% glycol solution; water temperature heat recovery 40/45°C – 0% glycol solution; Fouling factor of the exchangers 0,043 m²K/kW.

TECHNICAL DATA NEBIS HE FL

NEBIS INV HE FL		710 V2	710 V2	740 V2	740 V2	800 V2	800 V2	850 V2	850 V2	
SIZE		F14	F14	F14	F14	F16	F16	F16	F16	
WORKING MODE		Nom	Max	Nom	Max	Nom	Max	Nom	Max	
STANDARD	Cooling capacity (1)	kW	701	750	737	789	799	855	846	905
	Unit power input	kW	213,7	247,5	227,5	264,8	245,8	284,1	261,1	301,7
	Evaporator water flow rate	m³/h	120	129	127	135	137	147	145	155
	Evaporator pressure drop	kPa	45	52	41	47	44	50	44	50
	Compressors		screw INV+ON/OFF		screw INV+ON/OFF		screw INV+ON/OFF		screw INV+ON/OFF	
	Quantity	n.	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1
	Capacity control	%	mod.20%...110%		mod.20%...110%		mod.20%...110%		mod.20%...110%	
	Axial fans	n.	14	14	14	14	16	16	16	16
	Total air flow	m³/h	336000	336000	336000	336000	384000	384000	384000	384000
	Air circuits	n.	1	1	1	1	1	1	1	1
	Refrigerant		R134a	R134a	R134a	R134a	R134a	R134a	R134a	R134a
	Total refrigerant charge (optional excluded)	kg	381	381	460	460	462	462	456	456
	Gas circuits	n.	1	1	1	1	1	1	1	1
	Power supply	V/Ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
	Max operating current (MOC)	A	512	512	546	546	589	589	616	616
	Max unit operating current (FLA)	A	599	599	622	622	674	674	736	736
	Unit starting current (LRA)	A	929,2	929,2	986,2	986,2	1038,8	1038,8	887,8	887,8
	EER (1)	kW/kW	3,28	3,03	3,24	2,98	3,25	3,01	3,24	3,00
	ESEER		5,63	5,63	5,72	5,72	5,63	5,63	5,72	5,72
	Sound power level [Lw] (2)	dB(A)	100,9	101,8	101,0	101,9	101,2	102,2	101,2	102,2
	Average sound pressure level [Lpm] (3)	dB(A)	79,4	80,4	79,5	80,4	79,4	80,3	79,3	80,3
	Net weight	kg	6605	6605	6798	6798	7427	7427	8023	8023
	Hydraulic connections									
	Evaporator IN/OUT - OD (4)	Ø mm	139,7	139,7	168,3	168,3	219,1	219,1	219,1	219,1
OPTIONAL	Partial heat recovery (5)									
	Heating capacity	kW	140	149	147	157	159	170	168	180
	Total heat recovery (6)									
	Heating capacity	kW	879	879	935	935	1004	1004	1072	1072
Pumping group - Power input	kW	8	8	8	8	8	8	8	8	
LNO KIT 100%	Cooling capacity (1)	kW	701	750	737	789	799	855	846	905
	Unit power input	kW	213,7	247,5	227,5	263,9	245,8	284,1	261,1	302,7
	Total air flow	m³/h	336000	336000	336000	336000	384000	384000	384000	384000
	EER (1)	kW/kW	3,28	3,03	3,24	2,99	3,25	3,01	3,24	2,99
	Sound power level [Lw] (2)	dB(A)	98,9	99,8	99,0	99,9	99,2	100,2	99,2	100,2
	Average sound pressure level [Lpm] (3)	dB(A)	77,4	78,4	77,5	78,4	77,4	78,3	77,3	78,3
LNO KIT 85%	Cooling capacity (1)	kW	690	738	725	775	787	842	832	890
	Unit power input	kW	211,0	246,0	225,9	263,6	242,2	281,6	258,4	300,7
	Total air flow	m³/h	285600	285600	285600	285600	326400	326400	326400	326400
	EER (1)	kW/kW	3,27	3,00	3,21	2,94	3,25	2,99	3,22	2,96
	Sound power level [Lw] (2)	dB(A)	97,9	98,8	98,0	98,9	98,2	99,2	98,2	99,2
	Average sound pressure level [Lpm] (3)	dB(A)	76,4	77,4	76,5	77,4	76,4	77,3	76,3	77,3
LNO KIT 70%	Cooling capacity (1)	kW	674	720	708	757	770	824	811	868
	Unit power input	kW	210,6	244,9	226,2	263,8	240,6	281,2	257,5	300,3
	Total air flow	m³/h	235200	235200	235200	235200	268800	268800	268800	268800
	EER (1)	kW/kW	3,20	2,94	3,13	2,87	3,20	2,93	3,15	2,89
	Sound power level [Lw] (2)	dB(A)	94,9	95,8	95,0	95,9	95,2	96,2	95,2	96,2
	Average sound pressure level [Lpm] (3)	dB(A)	73,4	74,4	73,5	74,4	73,4	74,3	73,3	74,3
ELN KIT	Cooling capacity (1)	kW	674	720	708	757	770	824	811	868
	Unit power input	kW	210,6	244,9	226,2	263,8	240,6	281,2	257,5	300,3
	Total air flow	m³/h	235200	235200	235200	235200	268800	268800	268800	268800
	EER (1)	kW/kW	3,20	2,94	3,13	2,87	3,20	2,93	3,15	2,89
	Sound power level [Lw] (2)	dB(A)	91,9	92,8	92,0	92,9	92,2	93,2	92,2	93,2
	Average sound pressure level [Lpm] (3)	dB(A)	70,4	71,4	70,5	71,4	70,4	71,3	70,3	71,3
EXTREME ELN	Cooling capacity (1)	kW	674	720	708	757	770	824	811	868
	Unit power input	kW	210,6	244,9	226,2	263,8	240,6	281,2	257,5	300,3
	Total air flow	m³/h	235200	235200	235200	235200	268800	268800	268800	268800
	EER (1)	kW/kW	3,20	2,94	3,13	2,87	3,20	2,93	3,15	2,89
	Sound power level [Lw] (2)	dB(A)	88,9	89,8	89,0	89,9	89,2	90,2	89,2	90,2
	Average sound pressure level [Lpm] (3)	dB(A)	67,4	68,4	67,5	68,4	67,4	68,3	67,3	68,3

1. Referred to chilled water temperature 12/7°C – 0% glycol solution; air temperature to the condenser 35°C. Fouling factor of the exchangers 0,043 m²K/kW.
2. Sound power level [Lw] according to ISO EN 9614 – 2.
3. Average sound pressure level [Lp_m] 1m far according to ISO EN 3744.
4. Hydraulic connection with grooved end complete with flexible joint and adapter pipe for solder connection.
5. Referred to chilled water temperature 12/7°C – 0% glycol solution; air temperature to the condenser 35°C; water temperature heat recovery 40/45°C – 0% glycol solution. Fouling factor of the exchangers 0,043 m²K/kW.
6. Referred to chilled water temperature 12/7°C – 0% glycol solution; water temperature heat recovery 40/45°C – 0% glycol solution; Fouling factor of the exchangers 0,043 m²K/kW.

TECHNICAL DATA NEBIS HE FL

NEBIS INV HE FL		930 V2	930 V2	990 V2	990 V2	1040 V2	1040 V2	1110 V2	1110 V2	
SIZE		F18	F18	F20	F20	F20	F20	F22	F22	
WORKING MODE		Nom	Max	Nom	Max	Nom	Max	Nom	Max	
STANDARD	Cooling capacity (1)	kW	923	988	990	1059	1038	1111	1102	1179
	Unit power input	kW	283,1	327,2	300,0	347,2	324,4	375,3	344,4	398,3
	Evaporator water flow rate	m³/h	158	170	170	182	178	191	189	202
	Evaporator pressure drop	kPa	44	50	45	52	43	49	44	50
	Compressors		screw INV+ON/OFF		screw INV+ON/OFF		screw INV+ON/OFF		screw INV+ON/OFF	
	Quantity	n.	1+1	1+1	1+1	1+1	1+1	1+1	1+1	1+1
	Capacity control	%	mod.20%...110%		mod.20%...110%		mod.20%...110%		mod.20%...110%	
	Axial fans	n.	18	18	20	20	20	20	22	22
	Total air flow	m³/h	432000	432000	480000	480000	480000	480000	528000	528000
	Air circuits	n.	1	1	1	1	1	1	1	1
	Refrigerant		R134a	R134a	R134a	R134a	R134a	R134a	R134a	R134a
	Total refrigerant charge (optional excluded)	kg	462	462	460	460	538	538	533	533
	Gas circuits	n.	1	1	1	1	1	1	1	1
	Power supply	V/Ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
	Max operating current (MOC)	A	668	668	700	700	728	728	772	772
	Max unit operating current (FLA)	A	798	798	870	870	898	898	918	918
	Unit starting current (LRA)	A	949,4	949,4	988	988	1016	1016	1146,6	1146,6
	EER (1)	kW/kW	3,26	3,02	3,30	3,05	3,20	2,96	3,20	2,96
	ESEER		5,67	5,67	5,62	5,62	5,69	5,69	5,64	5,64
	Sound power level [Lw] (2)	dB(A)	101,4	102,3	102,5	103,5	102,7	103,7	103,0	103,9
	Average sound pressure level [Lpm] (3)	dB(A)	79,2	80,2	80,1	81,0	80,2	81,2	80,2	81,2
	Net weight	kg	8654	8654	8998	8998	9201	9201	9429	9429
	Hydraulic connections									
	Evaporator IN/OUT - OD (4)	Ø mm	168,3	168,3	168,3	168,3	168,3	168,3	168,3	168,3
OPTIONAL	Partial heat recovery (5)									
	Heating capacity	kW	184	197	197	211	207	221	219	235
	Total heat recovery (6)									
	Heating capacity	kW	1165	1165	1240	1240	1318	1318	1393	1393
Pumping group - Power input	kW	11	11	11	11	11	11	11	11	
LNO KIT 100%	Cooling capacity (1)	kW	923	988	990	1059	1038	1111	1102	1179
	Unit power input	kW	283,1	327,2	300,0	347,2	324,4	375,3	344,4	398,3
	Total air flow	m³/h	432000	432000	480000	480000	480000	480000	528000	528000
	EER (1)	kW/kW	3,26	3,02	3,30	3,05	3,20	2,96	3,20	2,96
	Sound power level [Lw] (2)	dB(A)	99,4	100,3	100,5	101,5	100,7	101,7	101,0	101,9
Average sound pressure level [Lpm] (3)	dB(A)	77,2	78,2	78,1	79,0	78,2	79,2	78,2	79,2	
LNO KIT 85%	Cooling capacity (1)	kW	908	972	975	1043	1022	1094	1086	1162
	Unit power input	kW	280,2	326,2	297,3	345,4	321,4	374,7	341,5	395,2
	Total air flow	m³/h	367200	367200	408000	408000	408000	408000	448800	448800
	EER (1)	kW/kW	3,24	2,98	3,28	3,02	3,18	2,92	3,18	2,94
	Sound power level [Lw] (2)	dB(A)	98,4	99,3	99,5	100,5	99,7	100,7	100,0	100,9
Average sound pressure level [Lpm] (3)	dB(A)	76,2	77,2	77,1	78,0	77,2	78,2	77,2	78,2	
LNO KIT 70%	Cooling capacity (1)	kW	887	949	955	1022	1000	1070	1063	1136
	Unit power input	kW	279,8	326,1	295,7	344,1	320,5	374,1	337,5	394,4
	Total air flow	m³/h	302400	302400	336000	336000	336000	336000	369600	369600
	EER (1)	kW/kW	3,17	2,91	3,23	2,97	3,12	2,86	3,15	2,88
	Sound power level [Lw] (2)	dB(A)	95,4	96,3	96,5	97,5	96,7	97,7	97,0	97,9
Average sound pressure level [Lpm] (3)	dB(A)	73,2	74,2	74,1	75,0	74,2	75,2	74,2	75,2	
ELN KIT	Cooling capacity (1)	kW	887	949	955	1022	1000	1070	1063	1136
	Unit power input	kW	279,8	326,1	295,7	344,1	320,5	374,1	337,5	394,4
	Total air flow	m³/h	302400	302400	336000	336000	336000	336000	369600	369600
	EER (1)	kW/kW	3,17	2,91	3,23	2,97	3,12	2,86	3,15	2,88
	Sound power level [Lw] (2)	dB(A)	92,4	93,3	93,5	94,5	93,7	94,7	94,0	94,9
Average sound pressure level [Lpm] (3)	dB(A)	70,2	71,2	71,1	72,0	71,2	72,2	71,2	72,2	
EXTREME ELN	Cooling capacity (1)	kW	887	949	955	1022	1000	1070	1063	1136
	Unit power input	kW	279,8	326,1	295,7	344,1	320,5	374,1	337,5	394,4
	Total air flow	m³/h	302400	302400	336000	336000	336000	336000	369600	369600
	EER (1)	kW/kW	3,17	2,91	3,23	2,97	3,12	2,86	3,15	2,88
	Sound power level [Lw] (2)	dB(A)	89,4	90,3	90,5	91,5	90,7	91,7	91,0	91,9
Average sound pressure level [Lpm] (3)	dB(A)	67,2	68,2	68,1	69,0	68,2	69,2	68,2	69,2	

1. Referred to chilled water temperature 12/7°C – 0% glycol solution; air temperature to the condenser 35°C. Fouling factor of the exchangers 0,043 m²K/kW.
2. Sound power level [Lw] according to ISO EN 9614 – 2.
3. Average sound pressure level [Lpm] 1m far according to ISO EN 3744.
4. Hydraulic connection with grooved end complete with flexible joint and adapter pipe for solder connection.
5. Referred to chilled water temperature 12/7°C – 0% glycol solution; air temperature to the condenser 35°C; water temperature heat recovery 40/45°C – 0% glycol solution. Fouling factor of the exchangers 0,043 m²K/kW.
6. Referred to chilled water temperature 12/7°C – 0% glycol solution; water temperature heat recovery 40/45°C – 0% glycol solution; Fouling factor of the exchangers 0,043 m²K/kW.

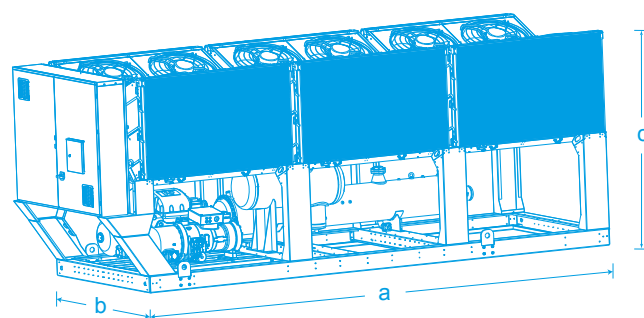
TECHNICAL DATA NEBIS HE FL

NEBIS INV HE FL		1160 V2	1160 V2	1220 V2	1220 V2	
SIZE		F22	F22	F24	F24	
WORKING MODE		Nom	Max	Nom	Max	
STANDARD	Cooling capacity (1)	kW	1160	1242	1218	1303
	Unit power input	kW	363,6	421,0	375,9	437,2
	Evaporator water flow rate	m³/h	199	213	209	224
	Evaporator pressure drop	kPa	45	52	46	53
	Compressors		screw INV+ON/OFF		screw INV+ON/OFF	
	Quantity	n.	1+1	1+1	1+1	1+1
	Capacity control	%	mod.20%...110%		mod.20%...110%	
	Axial fans	n.	22	22	24	24
	Total air flow	m³/h	528000	528000	576000	576000
	Air circuits	n.	1	1	1	1
	Refrigerant		R134a	R134a	R134a	R134a
	Total refrigerant charge (optional excluded)	kg	529	529	527	527
	Gas circuits	n.	1	1	1	1
	Power supply	V/Ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50
	Max operating current (MOC)	A	791	791	819	819
	Max unit operating current (FLA)	A	937	937	1018	1018
	Unit starting current (LRA)	A	1165,6	1165,6	1239,2	1239,2
	EER (1)	kW/kW	3,19	2,95	3,24	2,98
	ESEER		5,73	5,73	5,66	5,66
	Sound power level [Lw] (2)	dB(A)	103,3	104,3	103,5	104,5
	Average sound pressure level [Lpm] (3)	dB(A)	80,6	81,5	80,5	81,4
	Net weight	kg	9431	9431	9764	9764
	Hydraulic connections					
	Evaporator IN/OUT - OD (4)	Ø mm	168,3	168,3	168,3	168,3
OPTIONAL	Partial heat recovery (5)					
	Heating capacity	kW	231	247	242	259
	Total heat recovery (6)					
	Heating capacity	kW	1477	1477	1537	1537
Pumping group - Power input	kW	15	15	15	15	
LNO KIT 100%	Cooling capacity (1)	kW	1160	1242	1218	1303
	Unit power input	kW	363,6	421,0	375,9	437,2
	Total air flow	m³/h	528000	528000	576000	576000
	EER (1)	kW/kW	3,19	2,95	3,24	2,98
	Sound power level [Lw] (2)	dB(A)	101,3	102,3	101,5	102,4
	Average sound pressure level [Lpm] (3)	dB(A)	78,5	79,5	78,4	79,4
LNO KIT 85%	Cooling capacity (1)	kW	1142	1222	1200	1284
	Unit power input	kW	361,4	419,9	373,8	433,8
	Total air flow	m³/h	448800	448800	489600	489600
	EER (1)	kW/kW	3,16	2,91	3,21	2,96
	Sound power level [Lw] (2)	dB(A)	100,3	101,3	100,5	101,4
	Average sound pressure level [Lpm] (3)	dB(A)	77,5	78,5	77,4	78,4
LNO KIT 70%	Cooling capacity (1)	kW	1116	1194	1175	1257
	Unit power input	kW	360,0	420,4	370,7	432,0
	Total air flow	m³/h	369600	369600	403200	403200
	EER (1)	kW/kW	3,10	2,84	3,17	2,91
	Sound power level [Lw] (2)	dB(A)	97,3	98,3	97,5	98,4
	Average sound pressure level [Lpm] (3)	dB(A)	74,5	75,5	74,4	75,4
ELN KIT	Cooling capacity (1)	kW	1116	1194	1175	1257
	Unit power input	kW	360,0	420,4	370,7	432,0
	Total air flow	m³/h	369600	369600	403200	403200
	EER (1)	kW/kW	3,10	2,84	3,17	2,91
	Sound power level [Lw] (2)	dB(A)	94,3	95,3	94,5	95,4
	Average sound pressure level [Lpm] (3)	dB(A)	71,5	72,5	71,4	72,4
EXTREME ELN	Cooling capacity (1)	kW	1116	1194	1175	1257
	Unit power input	kW	360,0	420,4	370,7	432,0
	Total air flow	m³/h	369600	369600	403200	403200
	EER (1)	kW/kW	3,10	2,84	3,17	2,91
	Sound power level [Lw] (2)	dB(A)	91,3	92,3	91,5	92,4
	Average sound pressure level [Lpm] (3)	dB(A)	68,5	69,5	68,4	69,4

DIMENSIONS (mm)

SIZE F			
	a	b	c
F10	5650	2260	2540
F12	6820	2260	2540
F14	7735	2260	2540
F16	8906	2260	2540
F18	9820	2260	2540
F20	10990	2260	2540
F22	11905	2260	2540
F24	13075	2260	2540

1. Referred to chilled water temperature 12/7°C – 0% glycol solution; air temperature to the condenser 35°C. Fouling factor of the exchangers 0,043 m²K/kW.
2. Sound power level [Lw] according to ISO EN 9614 – 2.
3. Average sound pressure level [Lpm] 1m far according to ISO EN 3744.
4. Hydraulic connection with grooved end complete with flexible joint and adapter pipe for solder connection.
5. Referred to chilled water temperature 12/7°C – 0% glycol solution; air temperature to the condenser 35°C; water temperature heat recovery 40/45°C – 0% glycol solution. Fouling factor of the exchangers 0,043 m²K/kW.
6. Referred to chilled water temperature 12/7°C – 0% glycol solution; water temperature heat recovery 40/45°C – 0% glycol solution; Fouling factor of the exchangers 0,043 m²K/kW.





for a greener tomorrow

Eco-Changes is the Mitsubishi Electric Group's environmental statement, and expresses the Group's stance on environmental management. Through a wide range of businesses, we are helping contribute to the realization of a sustainable society.



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