

NECS-C / NECS-CN

Air cooled liquid chillers and heat pumps with scroll compressors
for indoor installation from 37 to 325 kW



- ✓ High energy efficiency at partial loads
- ✓ Integrated pump kit
- ✓ High performance centrifugal fans



NECS-C / NECS-CN

The NECS-C units

NECS-C is the new range of chillers and heat pumps with scroll compressors and R-410A refrigerant. Available in two versions both with two compressors in one circuit and four compressors in two circuits, the key drivers of NECS-C are maximum energy efficiency and minimum noise emissions.

R-410A, why?

Although R-410A is a blend, it behaves just like a pure gas and features a negligible temperature glide. Thanks to its outstanding heat conductivity, R-410A contributes towards achieving elevated system efficiency. R-410A is also an ecological gas because its elevated efficiency reduces electricity consumption and consequently CO₂ emissions and because it does not damage the ozone layer (ODP = 0). The scroll compressor has been redesigned for use with the new gas and is now even more compact and silent than before.



Complete versatility

NECS-C and NECS-CN units are designed to fully satisfy any application need thanks to a complete range of models, versions and configurations.

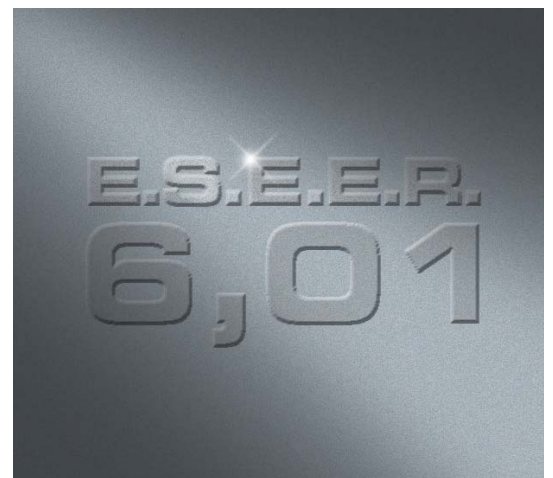
NECS-C is available in partial (D) and total (R) recovery and in B (base) HT (high temperature / high efficiency). Moreover, a low temperature accessory that permits heating down to -10°C outdoor temperature is available.



High efficiency at part loads

NECS-C units have been designed with the goal of guaranteeing high efficiency at part load.

The result achieved in the single-circuit dual-compressor is an ESEER > 4.1, equivalent to a 38% saving in seasonal energy consumption compared to the previous R-407C version.



Advantages

The technological choices aimed to provide the maximum overall quality and the use of the most innovative technologies make NECS-C a unit able to ensure maximum energy efficiency, easy installation thanks to its compact size, versatility and settings for integration in the Idrorelax centralized hydronic system.

Heat pumps with SMART DEFROST

All NECS-C units are available as NECS-CN heat pump model. Innovating the control of traditional heat pump units, NECS-C and NECS-CN feature the innovative SMART DEFROST function: a defrost control logic that reduces both unit downtime and defrost energy consumption.

High performance centrifugal fans

The NECS-C units are equipped with dual suction fans, statically and dynamically balanced and coupled by belts and pulleys adjustable to their relevant three-phase motors assembled on turnbuckle runners.

Working static head up to 180Pa is available, upon request, at nominal capacity.

Integrated pump unit

NECS-C was designed to minimize installation work. The integrated pump unit is an option that incorporates all the hydraulic components, thus optimizing installation space, time and costs.

The choice of either a single or dual high or low head pump makes NECS-C units plug & play.

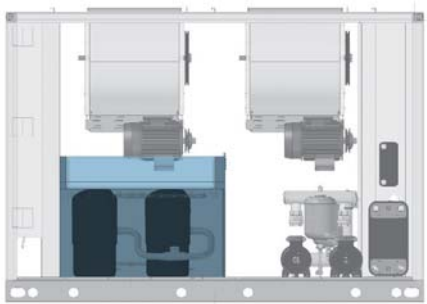


NECS-C / NECS-CN

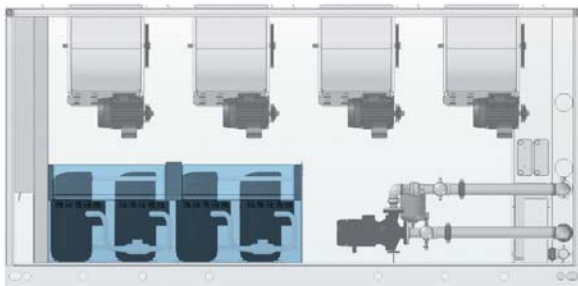


Technological choices

Consistent with corporate culture, the NECS-C series has been designed to offer extremely high quality products with cutting-edge technology focusing on maximum energy efficiency, versatility and flexibility.



Pump and buffer tank configuration (NECS-C 2 compressors)



2 Pumps configuration (NECS-C 4 compressors)



The new NECS-C units can be equipped with the hydronic kit that incorporates the main hydraulic components thus optimizing hydraulic and electrical installation space, time and costs.

The innovative QuickMind regulation featured on NECS-C units was designed to operate in low water content systems thus providing highly professional alternatives to the installation of units with accumulation groups.

The hydronic kit can be requested with the following configurations for all versions:

- 2-pole single low static head single pump hydronic kit
- 2-pole single high static head single pump hydronic kit
- 2-pole dual low static head pump hydronic kit
- 2-pole dual high static head pump hydronic kit

2-pole low static head pump

Monobloc centrifugal horizontal electrical pump with axial suction and radial exhaust, fit for continual service.

2-pole high static head pump

Available for all versions.

Second pump

Stand-by low or high static pump with programmed hourly rotation; automatic start in the event of working pump fault.

Horizontal or vertical air supply

The design for the 4 compressor unit includes the possibility of selecting the unit with air supply best suited to specific installation needs (vertical / horizontal), thus reducing time and costs.

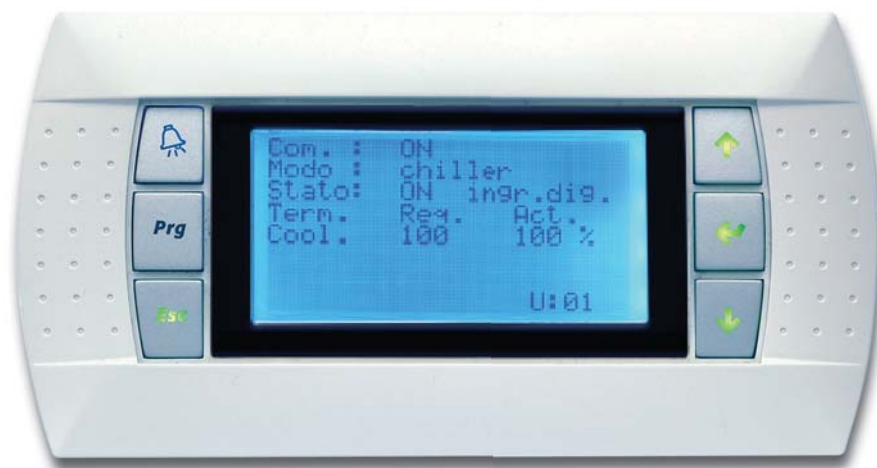
The horizontal air supply kit is available for 2 compressor versions.

The horizontal supply solution is especially efficient in installations that do not permit traditional vertical supply.



Precision and reliability

NECS-C units have been designed to ensure the highest efficiency and reliability in all the working conditions. All the components have been carefully selected and the algorithms have been specifically developed for these units.



Advanced control system

The W3000 Compact control with LCD display is available for all the units (optional for some models). The controller features an easy-to-use interface with seven selectable languages: Italian, English, French, German, Spanish, Swedish and Russian. This ensures to have a dedicated version for each country or a general and independent English version for all the countries.

Remote keypad

The controller is available with remote keypad that can be connected to the unit at a distance of 200m thanks to the remote connection without power supply (in this case it is supplied by the unit) or up to 500m with local dedicated power supply.

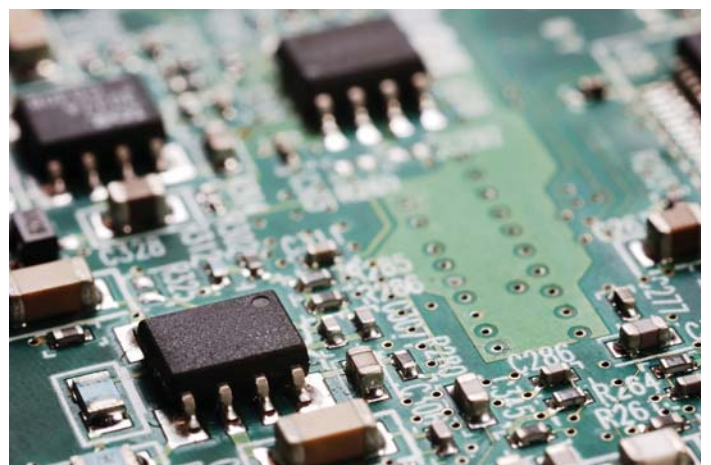
Compatibility with BMS systems

The compatibility with BMS systems thanks to the protocols BACnet, OverIP, ModBUS and LonWorks. The Black Box saves up to 200 alarm events that can be easily printed.

Internal Clock

The Internal Clock manages a weekly schedule organized into time bands in order to optimise unit performance by minimising power consumption during periods of inactivity, such as during the night. Up to 10 daily time bands can be associated with different operating set points.

Energy production is therefore optimized during daily peaks, reducing the consumption when the unit is off. If there isn't request of hot and cold water, it is possible to manage the switching off of the unit, planning the following operation.





Technical data

The NECS-C series includes a wide range of models and versions to fully meet any application need always ensuring the highest reliability, and design flexibility.

NECS-C / B			0152	0182	0202	0252	0302	0352	0412	0452	0512	0552	0612	0604	0704	0804	0904	1004	1104	1204
Power supply	V/ph/Hz		400/3/50																	
PERFORMANCE																				
COOLING ONLY (GROSS VALUE)																				
Cooling capacity	(1) kW		37,1	43,0	50,5	57,0	74,8	86,4	97,9	109	121	138	159	152	172	195	222	244	281	312
Total power input	(1) kW		15,7	18,3	20,6	23,2	30,4	36,8	40,7	46,8	51,5	58,3	67,2	62,5	73,1	83,5	89,6	102	115	133
EER	(1)		2,36	2,35	2,45	2,46	2,46	2,35	2,41	2,32	2,35	2,36	2,36	2,43	2,35	2,33	2,47	2,40	2,45	2,34
ESEER	(1)		4,70	4,30	4,46	4,35	4,18	3,86	3,88	3,73	3,74	4,17	3,94	3,70	3,58	3,53	3,90	3,77	3,84	3,63
COOLING ONLY (EN14511 VALUE)																				
Cooling capacity	(1)(2) kW		36,8	42,6	50,1	56,6	74,3	86,0	97,4	108	120	137	158	151	171	194	221	243	280	311
EER	(1)(2)		2,60	2,56	2,64	2,62	2,59	2,56	2,59	2,49	2,49	2,48	2,54	2,61	2,51	2,52	2,64	2,55	2,58	2,49
ESEER	(1)(2)		4,39	3,96	4,20	4,12	3,97	3,74	3,71	3,63	3,61	3,80	3,61	3,68	3,56	3,47	3,80	3,62	3,73	3,60
Cooling energy class			B	B	B	B	B	B	B	C	C	C	B	B	B	B	B	B	B	C
COMPRESSORS																				
Compressors nr.	N		2	2	2	2	2	2	2	2	2	2	2	4	4	4	4	4	4	4
No. Circuits	N		1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2
FANS																				
Air flow	m ³ /s		4,44	5,00	5,00	5,00	5,56	8,89	8,89	9,44	9,44	9,44	14,2	13,3	14,2	18,9	17,8	18,9	18,9	23,6
Available static pressure	Pa		120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
NOISE LEVEL																				
Noise Power	(4) dB(A)		85	88	88	88	90	95	95	96	96	96	98	97	98	99	98	99	99	100
SIZE AND WEIGHT																				
A	(5) mm		2200	2200	2200	2200	2200	2602	2602	2602	2602	3602	3602	3602	3602	4602	4602	4602	4602	5602
B	(5) mm		920	920	920	920	920	1104	1104	1104	1104	1104	1104	1277	1277	1277	1277	1277	1277	1277
H	(5) mm		1642	1642	1642	1642	1642	1927	1927	1927	1927	1927	1927	1900	1900	2235	2235	2235	2235	2235
Operating weight	(5) kg		670	670	700	720	880	1120	1170	1210	1260	1450	1550	1845	1940	2310	2445	2515	2695	2885

NECS-C / HT			0152	0182	0202	0252	0302	0352	0412	0452	0512	0552	0612	0604	0704	0804	0904	1004	1104	1204
Power supply	V/ph/Hz		400/3/50																	
PERFORMANCE																				
COOLING ONLY (GROSS VALUE)																				
Cooling capacity	(1) kW		39,0	45,5	52,7	59,4	80,0	91,5	103	114	130	148	165	158	183	203	228	257	296	325
Total power input	(1) kW		14,9	17,4	20,0	22,4	30,6	34,6	39,8	44,1	50,8	57,8	64,6	61,2	69,0	79,9	89,1	99,3	112	128
EER	(1)		2,62	2,61	2,64	2,65	2,61	2,64	2,58	2,58	2,56	2,55	2,56	2,58	2,65	2,54	2,55	2,59	2,64	2,53
ESEER	(1)		4,83	4,48	4,51	4,42	3,93	4,01	3,81	4,03	3,78	3,97	3,94	3,54	3,94	3,67	3,77	3,71	3,84	3,75
COOLING ONLY (EN14511 VALUE)																				
Cooling capacity	(1)(2) kW		38,7	45,1	52,3	59,0	79,4	91,0	102	113	129	147	164	157	182	202	227	256	294	323
EER	(1)(2)		2,89	2,87	2,86	2,85	2,87	2,89	2,79	2,77	2,82	2,77	2,75	2,80	2,89	2,75	2,74	2,81	2,83	2,69
ESEER	(1)(2)		4,50	4,11	4,24	4,18	3,71	3,84	3,67	3,84	3,63	3,68	3,70	3,54	3,78	3,58	3,65	3,62	3,70	3,67
Cooling energy class			A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B
COMPRESSORS																				
Compressors nr.	N		2	2	2	2	2	2	2	2	2	2	2	4	4	4	4	4	4	4
No. Circuits	N		1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2
FANS																				
Air flow	m ³ /s		4,44	5,28	5,28	5,28	8,89	8,89	9,44	9,44	14,2	14,2	14,2	14,2	17,8	18,9	18,9	23,6	23,6	23,6
Available static pressure	Pa		120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
NOISE LEVEL																				
Noise Power	(4) dB(A)		85	89	89	89	95	95	96	96	98	98	98	98	99	99	99	100	100	100
SIZE AND WEIGHT																				
A	(5) mm		2200	2200	2200	2200	2602	2602	2602	3602	3602	3602	3602	3602	4602	4602	4602	5602	5602	5602
B	(5) mm		920	920	920	920	1104	1104	1104	1104	1104	1104	1104	1277	1277	1277	1277	1277	1277	1277
H	(5) mm		1642	1642	1642	1642	1927	1927	1927	1927	1927	1927	1927	1900	2235	2235	2235	2235	2235	2235
Operating weight	(5) kg		690	710	730	760	1090	1120	1230	1400	1490	1560	1630	1920	2320	2380	2580	2845	3055	3115

NECS-CN / B		0152	0182	0202	0252	0302	0352	0412	0452	0512	0552	0612	0604	0704	0804	0904	1004	1104	1204
Power supply	V/ph/Hz	400/3/50																	
PERFORMANCE																			
COOLING ONLY (GROSS VALUE)																			
Cooling capacity	(1)	36,4	42,3	49,0	55,3	73,0	84,1	94,9	107	119	137	154	146	164	187	213	237	274	303
Total power input	(1)	14,9	17,1	19,7	22,4	31,2	35,0	39,0	43,8	49,5	57,9	64,4	60,3	71,6	79,0	87,2	99,8	113	131
EER	(1)	2,44	2,47	2,49	2,47	2,34	2,40	2,43	2,45	2,41	2,36	2,39	2,42	2,29	2,37	2,44	2,37	2,43	2,32
ESEER	(1)	4,65	4,48	4,48	4,36	3,85	3,95	3,92	3,98	3,74	3,81	3,76	3,74	3,58	3,80	3,93	3,55	3,61	3,52
COOLING ONLY (EN14511 VALUE)																			
Cooling capacity	(1)(2) kW	36,1	42,0	48,7	54,9	72,5	83,7	94,4	107	119	136	154	146	163	186	212	236	273	302
EER	(1)(2)	2,68	2,70	2,68	2,63	2,55	2,61	2,61	2,62	2,57	2,56	2,57	2,60	2,43	2,55	2,60	2,53	2,60	2,47
ESEER	(1)(2)	4,44	4,17	4,29	4,07	3,66	3,79	3,75	3,81	3,62	3,65	3,61	3,75	3,55	3,71	3,83	3,49	3,57	3,47
Cooling energy class		B	A	B	B	B	B	B	B	B	B	B	B	C	B	B	B	B	C
HEATING ONLY (GROSS VALUE)																			
Total heating capacity	(3) kW	42,4	48,0	56,1	63,7	81,6	94,6	107	122	135	153	173	165	185	208	235	261	302	336
Total power input	(3) kW	14,8	16,8	19,4	22,1	29,8	33,7	37,6	42,2	47,4	55,3	61,8	57,8	66,3	74,4	82,6	94,3	108	122
COP	(3)	2,86	2,86	2,89	2,88	2,74	2,81	2,84	2,90	2,85	2,76	2,80	2,85	2,78	2,79	2,84	2,77	2,80	2,74
HEATING ONLY (EN14511 VALUE)																			
Total heating capacity	(3)(2) kW	42,8	48,5	56,6	64,2	82,3	95,1	107	123	136	154	174	166	185	209	236	262	304	337
COP	(3)(2)	3,17	3,15	3,15	3,10	3,03	3,08	3,08	3,13	3,07	3,02	3,03	3,09	3,00	3,03	3,06	2,98	3,03	2,94
Cooling energy class		A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	B	A	B
COMPRESSORS																			
Compressors nr.	N	2	2	2	2	2	2	2	2	2	2	2	4	4	4	4	4	4	4
No. Circuits	N	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2
FANS																			
Air flow	m³/s	4,17	4,72	4,72	4,72	8,33	8,33	8,33	8,89	9,72	13,3	13,3	12,5	13,3	16,7	16,7	18,9	22,2	23,6
Available static pressure	Pa	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
NOISE LEVEL																			
Noise Power	(4) dB(A)	84	86	86	86	93	93	93	95	97	97	97	95	97	97	97	99	99	100
SIZE AND WEIGHT																			
A	(5) mm	2200	2200	2200	2200	2602	2602	2602	3602	3602	3602	3602	3602	3602	4602	4602	4602	5602	5602
B	(5) mm	920	920	920	920	1104	1104	1104	1104	1104	1104	1104	1277	1277	1277	1277	1277	1277	1277
H	(5) mm	1642	1642	1642	1642	1927	1927	1927	1927	1927	1927	1927	1900	1900	2235	2235	2235	2235	2235
Operating weight	(5) kg	720	730	750	790	1080	1170	1230	1470	1490	1600	1660	1980	2055	2475	2630	2725	3145	3205

Notes:

- 1) Plant (side) cooling exchanger water (in/out) 12°C/7°C; Source (side) heat exchanger air (in) 35°C
- 2) Values in compliance with EN14511-3:2011
- 3) Plant (side) heat exchanger water (in/out) 40°C/45°C; Source (side) heat exchanger air (in) 7°C - 87% R.H.
- 4) Total sound power of fans, as declared by the maker, at the rated speed of rotation and a useful static head of 120 Pa on the delivery side.
- 5) Unit in standard configuration/execution, without optional accessories.

The units highlighted in this publication contain HFC R410A [GWP₁₀₀ 2088] fluorinated greenhouse gases.

Versions

NECS-C/B, NECS-CN/B
Standard unit version

NECS-C/HT (High Temperature or High Efficiency)
Version suited for operations in high air temperature climates.
This version includes the use of an increased condensation section to guarantee operations even in severe weather conditions.

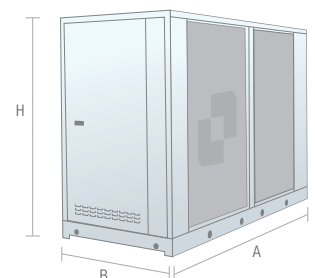
Thus, the benefit of increased cooling power is obtained at nominal air temperature with a reduction in absorbed power and therefore improved cooling efficiency (EER).

Configurations

NECS-C, NECS-CN
cooling only or heat pump standard unit

NECS-CD, NECS-CND
cooling only or heat pump unit complete with partial heat recovery section

NECS-CR
cooling only unit complete with full heat recovery section (model available for 4-compressor units only)





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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