

Reversible unit, air source for outdoor installation
320-833 kW

**Version**

B	Basic
SL	Super-low noise version
CA	High efficiency version

Configurations

-	Basic function
D	Partial condensing heat recovery function

Features**REFRIGERANT GAS R410A**

The use of R410A allowed to achieve better energy efficiencies with environment full respect (ODP = 0)

EXCHANGER

The shell and tube exchanger allows to achieve the highest flexibility on the unit's installation, keeping the efficiency at the maximum level. For this reason, NECS-N represents the best choice for all the hydronic application on the residential, commercial and industrial markets.

ELECTRONIC EXPANSION VALVE SUPPLIED STANDARD

The use of the electronic expansion valve generates considerable benefits, especially in cases of variable demand and different external conditions. It was introduced into these units as a result of accurate design choices concerning the cooling circuit and the optimisation of operation in various different working conditions

INTEGRATED HYDRONIC GROUP

The optional built-in hydronic module already contains the main water circuit components; it is available with single or twin in-line, for achieving both low or high head.

Accessory

- Soft starters
- Set-up for remote connectivity with ModBus, Echelon LonTalk, Bacnet protocol board
- Remote control keyboard (distance to 200m and to 500m)
- LT kit for extending the operating limits in heat pump mode down to -10 °C (/SL-CA versions) and -12 °C (/CA versions)

Outdoor heat pump for the production of chilled/hot water with hermetic rotary Scroll compressors, ozone-friendly refrigerant R410A, axial-flow fans, shell and tubes exchanger and electronic expansion valve. The range is composed by units equipped with four, six and eight compressors in multi-circuit configuration.

Controls**W3000SE Compact**

The W3000SE Compact controller offers advanced functions and algorithms.

The keypad features an easy-to-use interface and a complete LCD display, allowing to consult and intervene on the unit by means of a multi-level menu, with selectable language setting.

The regulation is based on the exclusive QuickMind algorithm, including self-adaptive control logics, beneficial in low water content systems. As alternatives the proportional- or proportional-integral regulations are also available.

The diagnostics includes a complete alarm management, with the "black-box" and alarm logging functions for enhanced analysis of the unit operation.

For multiple units' systems, the regulation of the resources, via optional proprietary devices, can be implemented. Energy metering, for both consumption and capacity, can also be developed. Supervision can be easily developed via proprietary devices or the integration in third party systems by means of the most common protocols as ModBus, Bacnet, Bacnet-over-IP, Echelon LonWorks. Compatibility with the remote keyboard managing up to 10 units.

Availability of an internal real time clock for operation scheduling (4-day profiles with 10 hour belts).

The defrost adopts a proprietary self-adaptive logic, which features the monitoring of numerous operational parameters. This allows to reduce the number and duration of the defrost cycles, with a benefit for the overall energy efficiency.



NECS-N / B		1314	1414	1614	1716	1816
Power supply	V/ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
PERFORMANCE						
COOLING ONLY (GROSS VALUE)						
Cooling capacity	(1) kW	339	363	396	435	478
Total power input	(1) kW	126	132	151	165	178
EER	(1) kW/kW	2,69	2,75	2,62	2,64	2,69
ESEER	(1) kW/kW	3,80	3,88	3,79	3,88	3,78
COOLING ONLY (EN14511 VALUE)						
Cooling capacity	(1)(2) kW	338	362	395	434	476
EER	(1)(2) kW/kW	2,64	2,72	2,58	2,61	2,65
ESEER	(1)(2) kW/kW	3,64	3,73	3,64	3,74	3,64
Cooling energy class		D	C	D	D	D
HEATING ONLY (GROSS VALUE)						
Total heating capacity	(3) kW	371	398	436	473	515
Total power input	(3) kW	122	130	143	157	171
COP	(3) kW/kW	3,03	3,07	3,05	3,01	3,02
HEATING ONLY (EN14511 VALUE)						
Total heating capacity	(3)(2) kW	373	400	438	474	517
COP	(3)(2) kW/kW	3,00	3,04	3,02	2,99	2,99
Cooling energy class		B	B	B	C	C
ENERGY EFFICIENCY						
SEASONAL EFFICIENCY IN COOLING (Reg. EU 2016/2281)						
Ambient refrigeration						
Prated,c	(10) kW	-	-	-	-	-
SEER	(10)(11)	-	-	-	-	-
Performance ηs	(10)(12) %	-	-	-	-	-
SEASONAL EFFICIENCY IN HEATING (Reg. EU 813/2013)						
PDesign	(4) kW	274	311	358	373	387
SCOP	(4)(13)	3,47	3,54	3,44	3,59	3,49
Performance ηs	(4)(14) %	136	139	134	141	137
Seasonal efficiency class	(4)	-	-	-	-	-
EXCHANGERS						
HEAT EXCHANGER USER SIDE IN REFRIGERATION						
Water flow	(1) l/s	16,23	17,38	18,95	20,80	22,85
Pressure drop	(1) kPa	49,5	43,4	51,7	35,3	42,6
HEAT EXCHANGER USER SIDE IN HEATING						
Water flow	(3) l/s	17,91	19,21	21,03	22,83	24,84
Pressure drop	(3) kPa	60,3	53,1	63,6	42,5	50,4
REFRIGERANT CIRCUIT						
Compressors nr.	N°	4	4	4	6	6
No. Circuits	N°	2	2	2	3	3
Refrigerant charge	kg	78,0	84,0	84,0	96,0	108
NOISE LEVEL						
Sound Pressure	(5) dB(A)	76	76	76	76	76
Sound power level in cooling	(6)(7) dB(A)	96	96	96	96	97
Sound power level in heating	(6)(8) dB(A)	96	96	96	96	97
SIZE AND WEIGHT						
Operating weight	(9) kg	3170	3250	3280	4220	4610
A	(9) mm	3905	3905	3905	4515	5690
B	(9) mm	2260	2260	2260	2260	2260
H	(9) mm	2450	2450	2450	2450	2450

Notes:

- Plant (side) cooling exchanger water (in/out) 12°C/7°C; Source (side) heat exchanger air (in) 35°C.
 - Values in compliance with EN14511-3:2013.
 - Plant (side) heat exchanger water (in/out) 40°C/45°C; Source (side) heat exchanger air (in) 7°C - 87% R.H.
 - Seasonal space heating energy efficiency class LOW TEMPERATURE in AVERAGE climate conditions [REGULATION (EU) N. 813/2013]
 - Average sound pressure level at 1m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.
 - Sound power on the basis of measurements made in compliance with ISO 9614.
 - Sound power level in cooling, outdoors.
 - Sound power level in heating, outdoors.
 - Unit in standard configuration/execution, without optional accessories.
 - Seasonal energy efficiency of the cooling environment [REGULATION (EU) N. 2016/2281]
 - Seasonal space heating energy index
 - Seasonal energy efficiency of the space cooling
 - Seasonal performance coefficient
 - Seasonal space heating energy efficiency
- The units highlighted in this publication contain HFC R410A [GWP₁₀₀ 2088] fluorinated greenhouse gases.
 Certified data in EUROVENT

NECS-N / SL			1314	1414	1614	1716	1816	2016	2116
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
PERFORMANCE									
COOLING ONLY (GROSS VALUE)									
Cooling capacity	(1)	kW	320	343	383	413	445	493	516
Total power input	(1)	kW	131	138	154	170	185	200	207
EER	(1)	kW/kW	2,44	2,49	2,48	2,42	2,40	2,47	2,49
ESEER	(1)	kW/kW	3,99	4,00	3,97	4,05	3,99	4,07	4,06
COOLING ONLY (EN14511 VALUE)									
Cooling capacity	(1)(2)	kW	318	342	381	412	443	492	514
EER	(1)(2)	kW/kW	2,40	2,46	2,44	2,40	2,38	2,45	2,46
ESEER	(1)(2)	kW/kW	3,83	3,87	3,81	3,92	3,84	3,93	3,91
Cooling energy class			E	E	E	E	E	E	E
HEATING ONLY (GROSS VALUE)									
Total heating capacity	(3)	kW	368	390	442	474	513	564	586
Total power input	(3)	kW	117	125	139	152	164	180	188
COP	(3)	kW/kW	3,14	3,12	3,18	3,11	3,12	3,14	3,12
HEATING ONLY (EN14511 VALUE)									
Total heating capacity	(3)(2)	kW	370	392	444	476	515	566	588
COP	(3)(2)	kW/kW	3,11	3,09	3,14	3,09	3,09	3,11	3,10
Cooling energy class			B	B	B	B	B	B	B
ENERGY EFFICIENCY									
SEASONAL EFFICIENCY IN COOLING (Reg. EU 2016/2281)									
Ambient refrigeration									
Prated,c	(10)	kW	-	-	-	-	-	-	-
SEER	(10)(11)		-	-	-	-	-	-	-
Performance ηs	(10)(12)	%	-	-	-	-	-	-	-
SEASONAL EFFICIENCY IN HEATING (Reg. EU 813/2013)									
PDesign	(4)	kW	221	254	350	282	390	352	380
SCOP	(4)(13)		3,54	3,58	3,65	3,55	3,77	3,61	3,59
Performance ηs	(4)(14)	%	139	140	143	139	148	141	140
Seasonal efficiency class	(4)		-	-	-	-	-	-	-
EXCHANGERS									
HEAT EXCHANGER USER SIDE IN REFRIGERATION									
Water flow	(1)	l/s	15,28	16,41	18,31	19,73	21,26	23,58	24,66
Pressure drop	(1)	kPa	43,9	38,7	48,2	31,8	36,9	34,6	37,8
HEAT EXCHANGER USER SIDE IN HEATING									
Water flow	(3)	l/s	17,78	18,85	21,33	22,90	24,76	27,23	28,28
Pressure drop	(3)	kPa	59,4	51,1	65,4	42,8	50,0	46,1	49,8
REFRIGERANT CIRCUIT									
Compressors nr.		N°	4	4	4	6	6	6	6
No. Circuits		N°	2	2	2	3	3	3	3
Refrigerant charge		kg	84,0	84,0	96,0	114	126	126	126
NOISE LEVEL									
Sound Pressure	(5)	dB(A)	68	68	68	68	68	69	69
Sound power level in cooling	(6)(7)	dB(A)	88	88	88	89	89	90	90
Sound power level in heating	(6)(8)	dB(A)	89	89	89	90	90	91	91
SIZE AND WEIGHT									
Operating weight	(9)	kg	3400	3530	3680	4720	4860	5160	5270
A	(9)	mm	4515	5080	5080	5690	5690	6865	7430
B	(9)	mm	2260	2260	2260	2260	2260	2260	2260
H	(9)	mm	2450	2450	2450	2450	2450	2450	2450

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 EN14511-3:2013.
 - 3 Plant (side) heat exchanger water (in/out) 40°C/45°C; Source (side) heat exchanger air (in) 7°C - 87% R.H.
 - 4 Seasonal space heating energy efficiency class LOW TEMPERATURE in AVERAGE climate conditions [REGULATION (EU) N. 813/2013]
 - 5 Average sound pressure level at 1m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.
 - 6 Sound power on the basis of measurements made in compliance with ISO 9614.
 - 7 Sound power level in cooling, outdoors.
 - 8 Sound power level in heating, outdoors.
 - 9 Unit in standard configuration/execution, without optional accessories.
 - 10 Seasonal energy efficiency of the cooling environment [REGULATION (EU) N. 2016/2281]
 - 11 Seasonal space heating energy index
 - 12 Seasonal energy efficiency of the space cooling
 - 13 Seasonal performance coefficient
 - 14 Seasonal space heating energy efficiency
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NECS-N / CA		1314	1414	1614	1716	1816	2016	2116
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
PERFORMANCE								
COOLING ONLY (GROSS VALUE)								
Cooling capacity	(1) kW	352	372	417	453	504	538	559
Total power input	(1) kW	121	128	143	155	173	185	192
EER	(1) kW/kW	2,90	2,91	2,91	2,91	2,92	2,91	2,92
ESEER	(1) kW/kW	4,12	4,20	4,07	4,19	4,08	4,18	4,17
COOLING ONLY (EN14511 VALUE)								
Cooling capacity	(1)(2) kW	350	370	415	452	502	536	557
EER	(1)(2) kW/kW	2,85	2,87	2,86	2,88	2,88	2,87	2,88
ESEER	(1)(2) kW/kW	3,93	4,02	3,87	4,03	3,90	4,01	4,00
Cooling energy class		C	C	C	C	C	C	C
HEATING ONLY (GROSS VALUE)								
Total heating capacity	(3) kW	383	409	449	497	533	586	614
Total power input	(3) kW	120	128	140	155	166	183	191
COP	(3) kW/kW	3,21	3,20	3,21	3,21	3,21	3,21	3,21
HEATING ONLY (EN14511 VALUE)								
Total heating capacity	(3)(2) kW	385	411	452	499	535	589	617
COP	(3)(2) kW/kW	3,17	3,17	3,18	3,18	3,18	3,19	3,18
Cooling energy class		B	B	B	B	B	B	B
ENERGY EFFICIENCY								
SEASONAL EFFICIENCY IN COOLING (Reg. EU 2016/2281)								
Ambient refrigeration								
Prated,c	(10) kW	-	-	-	-	-	536	557
SEER	(10)(11)	-	-	-	-	-	4,18	4,17
Performance ηs	(10)(12) %	-	-	-	-	-	164	164
SEASONAL EFFICIENCY IN HEATING (Reg. EU 813/2013)								
PDesign	(4) kW	275	309	353	368	381	-	-
SCOP	(4)(13)	3,65	3,73	3,63	3,78	3,68	-	-
Performance ηs	(4)(14) %	143	146	142	148	144	-	-
Seasonal efficiency class	(4)	-	-	-	-	-	-	-
EXCHANGERS								
HEAT EXCHANGER USER SIDE IN REFRIGERATION								
Water flow	(1) l/s	16,82	17,78	19,93	21,67	24,12	25,71	26,73
Pressure drop	(1) kPa	53,2	45,5	57,1	38,4	47,5	41,1	44,4
HEAT EXCHANGER USER SIDE IN HEATING								
Water flow	(3) l/s	18,50	19,76	21,68	23,98	25,74	28,31	29,64
Pressure drop	(3) kPa	64,3	56,2	67,6	46,9	54,1	49,9	54,7
REFRIGERANT CIRCUIT								
Compressors nr.	N°	4	4	4	6	6	6	6
No. Circuits	N°	2	2	2	3	3	3	3
Refrigerant charge	kg	90,0	96,0	96,0	126	126	138	144
NOISE LEVEL								
Sound Pressure	(5) dB(A)	77	77	77	76	77	77	77
Sound power level in cooling	(6)(7) dB(A)	97	97	97	97	98	98	98
Sound power level in heating	(6)(8) dB(A)	97	97	97	97	98	0	0
SIZE AND WEIGHT								
Operating weight	(9) kg	3490	3580	3610	4840	5120	5270	5350
A	(9) mm	5080	5080	5080	6255	7430	7430	7430
B	(9) mm	2260	2260	2260	2260	2260	2260	2260
H	(9) mm	2450	2450	2450	2450	2450	2450	2450

Notes:

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 - 2 Values in compliance with EN14511-3:2013.
 - 3 Plant (side) heat exchanger water (in/out) 40°C/45°C; Source (side) heat exchanger air (in) 7°C - 87% R.H.
 - 4 Seasonal space heating energy efficiency class LOW TEMPERATURE in AVERAGE climate conditions [REGULATION (EU) N. 813/2013]
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 - 8 Sound power level in heating, outdoors.
 - 9 Unit in standard configuration/execution, without optional accessories.
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NECS-N / CA			2416	2418	2618	2818	3018	3218
Power supply		V/ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
PERFORMANCE								
COOLING ONLY (GROSS VALUE)								
Cooling capacity	(1)	kW	625	667	710	745	789	833
Total power input	(1)	kW	215	228	242	256	270	287
EER	(1)	kW/kW	2,91	2,92	2,93	2,92	2,92	2,91
ESEER	(1)	kW/kW	4,09	4,09	4,14	4,18	4,17	4,09
COOLING ONLY (EN14511 VALUE)								
Cooling capacity	(1)(2)	kW	622	664	707	743	787	830
EER	(1)(2)	kW/kW	2,87	2,88	2,88	2,88	2,89	2,86
ESEER	(1)(2)	kW/kW	3,92	3,92	3,94	4,02	4,00	3,91
Cooling energy class			C	C	C	C	C	C
HEATING ONLY (GROSS VALUE)								
Total heating capacity	(3)	kW	674	708	766	819	860	898
Total power input	(3)	kW	210	221	239	255	269	280
COP	(3)	kW/kW	3,21	3,20	3,20	3,21	3,20	3,21
HEATING ONLY (EN14511 VALUE)								
Total heating capacity	(3)(2)	kW	676	711	770	822	863	902
COP	(3)(2)	kW/kW	3,18	3,17	3,17	3,19	3,17	3,18
Cooling energy class			B	B	B	B	B	B
ENERGY EFFICIENCY								
SEASONAL EFFICIENCY IN COOLING (Reg. EU 2016/2281)								
Ambient refrigeration								
Prated,c	(10)	kW	622	664	707	743	787	830
SEER	(10)(11)		4,11	4,10	4,11	4,17	4,18	4,11
Performance η_s	(10)(12)	%	161	161	162	164	164	161
SEASONAL EFFICIENCY IN HEATING (Reg. EU 813/2013)								
PDesign	(4)	kW	-	-	-	-	-	-
SCOP	(4)(13)		-	-	-	-	-	-
Performance η_s	(4)(14)	%	-	-	-	-	-	-
Seasonal efficiency class	(4)		-	-	-	-	-	-
EXCHANGERS								
HEAT EXCHANGER USER SIDE IN REFRIGERATION								
Water flow	(1)	l/s	29,88	31,88	33,93	35,65	37,75	39,84
Pressure drop	(1)	kPa	47,4	48,7	55,2	41,2	46,2	51,4
HEAT EXCHANGER USER SIDE IN HEATING								
Water flow	(3)	l/s	32,52	34,20	36,99	39,53	41,51	43,36
Pressure drop	(3)	kPa	56,2	56,1	65,6	50,6	55,8	60,9
REFRIGERANT CIRCUIT								
Compressors nr.		N°	6	8	8	8	8	8
No. Circuits		N°	3	4	4	4	4	4
Refrigerant charge		kg	144	168	180	192	192	192
NOISE LEVEL								
Sound Pressure	(5)	dB(A)	78	77	77	78	78	78
Sound power level in cooling	(6)(7)	dB(A)	99	99	99	100	100	100
Sound power level in heating	(6)(8)	dB(A)	0	0	0	0	0	0
SIZE AND WEIGHT								
Operating weight	(9)	kg	5400	6610	6760	6940	6970	7000
A	(9)	mm	7430	9780	9780	9780	9780	9780
B	(9)	mm	2260	2260	2260	2260	2260	2260
H	(9)	mm	2450	2450	2450	2450	2450	2450

Notes:

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 - 2 Values in compliance with EN14511-3:2013.
 - 3 Plant (side) heat exchanger water (in/out) 40°C/45°C; Source (side) heat exchanger air (in) 7°C - 87% R.H.
 - 4 Seasonal space heating energy efficiency class LOW TEMPERATURE in AVERAGE climate conditions [REGULATION (EU) N. 813/2013]
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