

Reversible unit, air source for outdoor installation
48,0-151 kW

**Version**

B	Basic
LN	Low noise

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 units installation, keeping the efficiency at the maximum level. For this reason, NECS represents the best choice for all the hydronic application on the residential, commercial and industrial markets.

INTEGRATED HYDRONIC GROUP

The 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.

MAXIMUM RELIABILITY

Unit with two independent refrigerant circuit, designed to ensure maximum efficiency at full load, ensuring uninterrupted operation even in the event of temporary stop of one of the two circuits.

Accessory

- Set-up for remote connectivity with ModBus/Echelon protocol cards
- Remote control keyboard (distance to 200m and to 500m)
- Soft starters
- Rubber anti-vibration mounting kit
- Compact keyboard with LCD display and multi-language user interface (referred to the shown picture)

Outdoor reversible heat pump for the production of chilled/hot water with hermetic rotary Scroll compressors, axial-flow fans, shell and tubes heat exchanger and thermostatic expansion valve. External panels in Peraluman and structure in aluminium sections. The range is equipped with two compressors on two independent refrigerant circuits.

Controls**W3000 Base – W3000SE Compact**

The controller in two different versions according to the unit's type:

W3000 Base: electronic controller complete with keypad features an easy-to-use interface and a complete LCD display, allowing to consult and intervene on the unit by means of a menu up to three languages (Italian and English come standard, a further language can be chosen within French, Spanish, German, Russian and Swedish)

W3000SE Compact: electronic controller complete with 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-language menu, with selectable language setting on site. This controller also includes an internal clock.

All the W3000 electronic controllers offer 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 (available on W3000SE Compact only).

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.

The internal real time clock allows to manage a weekly schedule operating on 4-day profiles with 10 hour belts (available on W3000SE Compact only, optional on W3000 Base controller).

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		0202T	0252T	0302T	0352T	0412T	0452T	0512T	0552T	0612T	
Power supply		V/ph/Hz 400/3+N/50 400/3+N/50 400/3+N/50 400/3+N/50 400/3+N/50 400/3+N/50 400/3+N/50 400/3+N/50 400/3+N/50 400/3+N/50									
PERFORMANCE											
COOLING ONLY (GROSS VALUE)											
Cooling capacity	(1)	kW	50,3	57,5	72,0	82,5	93,9	107	120	138	151
Total power input	(1)	kW	18,4	20,4	28,0	32,0	36,0	39,8	44,0	50,4	58,9
EER	(1)	kW/kW	2,73	2,82	2,57	2,58	2,61	2,68	2,73	2,73	2,56
ESEER	(1)	kW/kW	3,52	3,59	3,31	3,30	3,31	3,39	3,45	3,46	3,26
COOLING ONLY (EN14511 VALUE)											
Cooling capacity	(1)(2)	kW	50,2	57,4	71,8	82,3	93,7	106	120	137	150
EER	(1)(2)	kW/kW	2,72	2,80	2,55	2,55	2,59	2,65	2,71	2,70	2,53
ESEER	(1)(2)	kW/kW	3,48	3,53	3,25	3,25	3,26	3,33	3,39	3,38	3,18
Cooling energy class			C	C	D	D	D	D	C	C	D
HEATING ONLY (GROSS VALUE)											
Total heating capacity	(3)	kW	55,1	65,2	81,0	93,5	105	121	136	157	173
Total power input	(3)	kW	18,5	21,2	26,1	29,8	33,9	37,9	42,3	48,4	54,4
COP	(3)	kW/kW	2,98	3,08	3,10	3,14	3,11	3,18	3,21	3,23	3,17
HEATING ONLY (EN14511 VALUE)											
Total heating capacity	(3)(2)	kW	55,2	65,3	81,2	93,8	106	121	136	157	173
COP	(3)(2)	kW/kW	2,97	3,06	3,09	3,12	3,09	3,16	3,19	3,21	3,15
Cooling energy class			C	B	B	B	B	B	B	A	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)											
PDesignn	(4)	kW	42,2	47,8	60,6	71,7	76,5	91,3	97,5	117	132
SCOP	(4)(13)		3,22	3,24	3,22	3,27	3,21	3,30	3,29	3,36	3,31
Performance ηs	(4)(14)	%	126	127	126	128	125	129	129	131	129
Seasonal efficiency class	(4)		A+	A+	A+	-	-	-	-	-	-
EXCHANGERS											
HEAT EXCHANGER USER SIDE IN REFRIGERATION											
Water flow	(1)	l/s	2,40	2,75	3,45	3,94	4,49	5,10	5,74	6,58	7,20
Pressure drop	(1)	kPa	5,60	7,29	11,6	15,1	11,9	15,4	14,1	19,6	23,4
HEAT EXCHANGER USER SIDE IN HEATING											
Water flow	(3)	l/s	2,66	3,15	3,91	4,51	5,09	5,82	6,55	7,56	8,33
Pressure drop	(3)	kPa	6,86	9,54	14,9	19,8	15,3	20,0	18,4	25,8	31,4
REFRIGERANT CIRCUIT											
Compressors nr.		N°	2	2	2	2	2	2	2	2	2
No. Circuits		N°	2	2	2	2	2	2	2	2	2
Refrigerant charge		kg	19,0	22,0	22,0	23,0	27,0	30,0	36,0	41,0	46,0
NOISE LEVEL											
Sound Pressure	(5)	dB(A)	68	68	68	69	69	69	69	69	69
Sound power level in cooling	(6)(7)	dB(A)	85	85	85	86	86	86	87	87	87
Sound power level in heating	(6)(8)	dB(A)	85	85	85	86	86	86	87	87	87
SIZE AND WEIGHT											
Operating weight	(9)	kg	645	670	710	800	985	1030	1175	1220	1265
A	(9)	mm	2195	2195	2195	2195	2745	2745	3245	3245	3245
B	(9)	mm	1120	1120	1120	1120	1120	1120	1120	1120	1120
H	(9)	mm	1465	1465	1465	1465	1465	1465	1665	1665	1665

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

NECS-N / LN		0202T	0252T	0302T	0352T	0412T	0452T	0512T	0552T	0612T	
Power supply		V/ph/Hz 400/3+N/50 400/3+N/50 400/3+N/50 400/3+N/50 400/3+N/50 400/3+N/50 400/3+N/50 400/3+N/50 400/3+N/50 400/3+N/50									
PERFORMANCE											
COOLING ONLY (GROSS VALUE)											
Cooling capacity	(1)	kW	48,0	54,6	73,2	83,5	93,9	103	119	132	143
Total power input	(1)	kW	19,0	21,3	27,2	31,9	36,0	41,6	44,6	53,3	62,7
EER	(1)	kW/kW	2,53	2,56	2,69	2,62	2,61	2,48	2,67	2,47	2,28
ESEER	(1)	kW/kW	3,52	3,31	3,46	3,33	3,33	3,17	3,38	3,16	2,93
COOLING ONLY (EN14511 VALUE)											
Cooling capacity	(1)(2)	kW	47,9	54,5	73,0	83,3	93,7	103	119	131	143
EER	(1)(2)	kW/kW	2,51	2,55	2,67	2,59	2,59	2,46	2,64	2,45	2,26
ESEER	(1)(2)	kW/kW	3,26	3,26	3,39	3,27	3,27	3,11	3,32	3,11	2,88
Cooling energy class			D	D	D	D	D	E	D	E	F
HEATING ONLY (GROSS VALUE)											
Total heating capacity	(3)	kW	54,1	63,6	84,1	96,2	109	121	137	154	169
Total power input	(3)	kW	18,1	20,6	26,1	30,4	34,1	37,9	42,4	48,3	54,3
COP	(3)	kW/kW	2,99	3,09	3,22	3,16	3,19	3,18	3,24	3,19	3,12
HEATING ONLY (EN14511 VALUE)											
Total heating capacity	(3)(2)	kW	54,2	63,7	84,3	96,5	109	121	138	154	170
COP	(3)(2)	kW/kW	2,98	3,07	3,20	3,14	3,18	3,16	3,22	3,16	3,10
Cooling energy class			C	B	A	B	B	B	A	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)											
PDesignn	(4)	kW	38,3	45,3	59,2	66,7	79,5	90,6	103	116	130
SCOP	(4)(13)		3,32	3,37	3,44	3,33	3,47	3,45	3,51	3,32	3,27
Performance ηs	(4)(14)	%	130	132	135	130	136	135	138	130	128
Seasonal efficiency class	(4)		A+	A+	A+	A+	-	-	-	-	-
EXCHANGERS											
HEAT EXCHANGER USER SIDE IN REFRIGERATION											
Water flow	(1)	l/s	2,30	2,61	3,50	3,99	4,49	4,94	5,69	6,30	6,84
Pressure drop	(1)	kPa	5,11	6,58	11,9	15,5	11,9	14,4	13,8	17,9	21,2
HEAT EXCHANGER USER SIDE IN HEATING											
Water flow	(3)	l/s	2,61	3,07	4,06	4,64	5,26	5,82	6,64	7,43	8,18
Pressure drop	(3)	kPa	6,60	9,09	16,1	20,9	16,4	20,0	18,8	25,0	30,2
REFRIGERANT CIRCUIT											
Compressors nr.		N°	2	2	2	2	2	2	2	2	2
No. Circuits		N°	2	2	2	2	2	2	2	2	2
Refrigerant charge		kg	19,0	22,0	25,0	35,0	38,0	34,0	49,0	41,0	46,0
NOISE LEVEL											
Sound Pressure	(5)	dB(A)	63	63	64	65	65	65	66	66	66
Sound power level in cooling	(6)(7)	dB(A)	80	80	81	83	83	83	84	84	84
Sound power level in heating	(6)(8)	dB(A)	81	81	82	84	84	84	85	85	85
SIZE AND WEIGHT											
Operating weight	(9)	kg	645	670	795	935	1060	1065	1230	1220	1265
A	(9)	mm	2195	2195	2745	2745	2745	2745	3245	3245	3245
B	(9)	mm	1120	1120	1120	1120	1120	1120	1120	1120	1120
H	(9)	mm	1465	1465	1465	1665	1665	1665	1665	1665	1665

Notes:

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