

▶ HEAT PUMPS

# NRCS-N AIR SOURCE HEAT PUMPS





**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.**

### Control



#### W3000SE Compact

W3000SE Compact offers advanced functions and algorithms. The keypad features an easy-to-use interface and a LCD display, allowing to consult and intervene on the unit by means of a multi-level menu, with selectable language setting. Regulation 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.
- Internal real time clock available 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.

### Refrigerant

### Versions

B Basic	CA High efficiency version
SL Super-low noise 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, NRCS-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.

### Accessories

- 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)

NRCS-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
<b>PERFORMANCE</b>						
<b>COOLING ONLY (GROSS VALUE)</b>						
Cooling capacity	(1) kW	339,4	363,4	396,4	434,9	477,8
Total power input	(1) kW	126,4	132,0	151,4	164,6	177,8
EER	(1) kW/kW	2,685	2,753	2,618	2,642	2,687
ESEER	(1) kW/kW	3,800	3,880	3,790	3,880	3,780
<b>COOLING ONLY (EN14511 VALUE)</b>						
Cooling capacity	(1)(2) kW	338,0	362,1	394,7	433,6	476,2
EER	(1)(2) kW/kW	2,640	2,720	2,580	2,610	2,650
ESEER	(1)(2) kW/kW	3,640	3,730	3,640	3,740	3,640
Cooling energy class		D	C	D	D	D
<b>HEATING ONLY (GROSS VALUE)</b>						
Total heating capacity	(3) kW	371,0	398,0	435,7	472,9	514,6
Total power input	(3) kW	122,4	129,7	142,7	157,2	170,6
COP	(3) kW/kW	3,031	3,069	3,053	3,008	3,016
<b>HEATING ONLY (EN14511 VALUE)</b>						
Total heating capacity	(3)(2) kW	372,8	399,7	437,9	474,5	516,6
COP	(3)(2) kW/kW	3,000	3,040	3,020	2,990	2,990
Cooling energy class		B	B	B	C	C
<b>ENERGY EFFICIENCY</b>						
<b>SEASONAL EFFICIENCY IN COOLING (Reg. EU 2016/2281)</b>						
<b>Ambient refrigeration</b>						
Prated,c	(10) kW	-	-	-	-	-
SEER	(10)(11)	-	-	-	-	-
Performance ηs	(10)(12) %	-	-	-	-	-
<b>SEASONAL EFFICIENCY IN HEATING (Reg. EU 813/2013)</b>						
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	(15)	-	-	-	-	-
<b>EXCHANGERS</b>						
<b>HEAT EXCHANGER USER SIDE IN REFRIGERATION</b>						
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
<b>HEAT EXCHANGER USER SIDE IN HEATING</b>						
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
<b>REFRIGERANT CIRCUIT</b>						
Compressors nr.	N°	4	4	4	6	6
No. Circuits	N°	2	2	2	3	3
Refrigerant charge	kg	72,0	76,0	76,0	93,0	97,0
<b>NOISE LEVEL</b>						
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
<b>SIZE AND WEIGHT</b>						
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
- Plant (side) heat exchanger water (in/out) 40°C/45°C; Source (side) heat exchanger air (in) 7°C - 87% R.H.
- Parameter calculated for LOW-TEMPERATURE application in AVERAGE climate conditions according to [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.
- Parameter calculated according to [REGULATION (EU) N. 2016/2281]
- Seasonal energy efficiency ratio
- Seasonal space cooling energy efficiency
- Seasonal coefficient of performance
- Seasonal space heating energy efficiency
- Energy efficiency class referred to LOW-TEMPERATURE application in AVERAGE climate conditions according to [REGULATION (EU) N. 811/2013]

The units highlighted in this publication contain HFC R410A [GWP<sub>100</sub> 2088] fluorinated greenhouse gases.  
Certified data in EUROVENT

NRCS-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
<b>PERFORMANCE</b>								
<b>COOLING ONLY (GROSS VALUE)</b>								
Cooling capacity	(1) kW	319,6	343,2	382,8	412,6	444,5	493,1	515,8
Total power input	(1) kW	131,2	138,1	154,5	170,4	185,0	199,5	207,3
EER	(1) kW/kW	2,436	2,485	2,478	2,421	2,403	2,472	2,488
ESEER	(1) kW/kW	3,990	4,000	3,970	4,050	3,990	4,070	4,060
<b>COOLING ONLY (EN14511 VALUE)</b>								
Cooling capacity	(1)(2) kW	318,4	342,1	381,3	411,5	443,1	491,7	514,2
EER	(1)(2) kW/kW	2,400	2,460	2,440	2,400	2,380	2,450	2,460
ESEER	(1)(2) kW/kW	3,830	3,870	3,810	3,920	3,840	3,930	3,910
Cooling energy class		E	E	E	E	E	E	E
<b>HEATING ONLY (GROSS VALUE)</b>								
Total heating capacity	(3) kW	368,3	390,5	441,8	474,3	512,9	564,1	585,9
Total power input	(3) kW	117,3	125,3	139,1	152,3	164,5	179,8	187,5
COP	(3) kW/kW	3,140	3,117	3,176	3,114	3,118	3,137	3,125
<b>HEATING ONLY (EN14511 VALUE)</b>								
Total heating capacity	(3)(2) kW	370,1	392,1	444,0	476,0	514,9	566,1	588,1
COP	(3)(2) kW/kW	3,110	3,090	3,140	3,090	3,090	3,110	3,100
Cooling energy class		B	B	B	B	B	B	B
<b>ENERGY EFFICIENCY</b>								
<b>SEASONAL EFFICIENCY IN COOLING (Reg. EU 2016/2281)</b>								
<b>Ambient refrigeration</b>								
Prated,c	(10) kW	-	-	-	-	-	-	-
SEER	(10)(11)	-	-	-	-	-	-	-
Performance ηs	(10)(12) %	-	-	-	-	-	-	-
<b>SEASONAL EFFICIENCY IN HEATING (Reg. EU 813/2013)</b>								
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	(15)	-	-	-	-	-	-	-
<b>EXCHANGERS</b>								
<b>HEAT EXCHANGER USER SIDE IN REFRIGERATION</b>								
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
<b>HEAT EXCHANGER USER SIDE IN HEATING</b>								
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
<b>REFRIGERANT CIRCUIT</b>								
Compressors nr.	N°	4	4	4	6	6	6	6
No. Circuits	N°	2	2	2	3	3	3	3
Refrigerant charge	kg	79,9	82,3	94,7	107	118	125	126
<b>NOISE LEVEL</b>								
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
<b>SIZE AND WEIGHT</b>								
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**

- Plant (side) cooling exchanger water (in/out) 12°C/7°C; Source (side) heat exchanger air (in) 35°C.
- Values in compliance with EN14511
- Plant (side) heat exchanger water (in/out) 40°C/45°C; Source (side) heat exchanger air (in) 7°C - 87% R.H.
- Parameter calculated for LOW-TEMPERATURE application in AVERAGE climate conditions according to [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.
- Parameter calculated according to [REGULATION (EU) N. 2016/2281]
- Seasonal energy efficiency ratio
- Seasonal space cooling energy efficiency
- Seasonal coefficient of performance
- Seasonal space heating energy efficiency
- Energy efficiency class referred to LOW-TEMPERATURE application in AVERAGE climate conditions according to [REGULATION (EU) N. 811/2013]

The units highlighted in this publication contain HFC R410A [GWP<sub>100</sub> 2088] fluorinated greenhouse gases.  
 Certified data in EUROVENT

NRCS-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
<b>PERFORMANCE</b>								
<b>COOLING ONLY (GROSS VALUE)</b>								
Cooling capacity	(1) kW	351,7	371,8	416,8	453,2	504,4	537,6	559,0
Total power input	(1) kW	121,2	127,8	143,4	155,5	172,6	184,7	191,7
EER	(1) kW/kW	2,902	2,909	2,907	2,914	2,922	2,911	2,916
ESEER	(1) kW/kW	4,120	4,200	4,070	4,190	4,080	4,180	4,170
<b>COOLING ONLY (EN14511 VALUE)</b>								
Cooling capacity	(1)(2) kW	350,2	370,4	414,9	451,8	502,5	535,8	557,1
EER	(1)(2) kW/kW	2,850	2,870	2,860	2,880	2,880	2,870	2,880
ESEER	(1)(2) kW/kW	3,930	4,020	3,870	4,030	3,900	4,010	4,000
Cooling energy class		C	C	C	C	C	C	C
<b>HEATING ONLY (GROSS VALUE)</b>								
Total heating capacity	(3) kW	383,2	409,4	449,2	496,7	533,2	586,5	614,1
Total power input	(3) kW	119,5	127,8	139,8	154,8	166,2	182,6	191,2
COP	(3) kW/kW	3,207	3,203	3,213	3,209	3,208	3,212	3,212
<b>HEATING ONLY (EN14511 VALUE)</b>								
Total heating capacity	(3)(2) kW	385,1	411,2	451,5	498,6	535,4	588,8	616,6
COP	(3)(2) kW/kW	3,170	3,170	3,180	3,180	3,180	3,180	3,180
Cooling energy class		B	B	B	B	B	B	B
<b>ENERGY EFFICIENCY</b>								
<b>SEASONAL EFFICIENCY IN COOLING (Reg. EU 2016/2281)</b>								
<b>Ambient refrigeration</b>								
Prated,c	(10) kW	-	-	-	-	-	536	557
SEER	(10)(11)	-	-	-	-	-	4,18	4,17
Performance ηs	(10)(12) %	-	-	-	-	-	164	164
<b>SEASONAL EFFICIENCY IN HEATING (Reg. EU 813/2013)</b>								
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	(15)	-	-	-	-	-	-	-
<b>EXCHANGERS</b>								
<b>HEAT EXCHANGER USER SIDE IN REFRIGERATION</b>								
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
<b>HEAT EXCHANGER USER SIDE IN HEATING</b>								
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
<b>REFRIGERANT CIRCUIT</b>								
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	96,5	121	125	138	148
<b>NOISE LEVEL</b>								
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
<b>SIZE AND WEIGHT</b>								
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

- Plant (side) cooling exchanger water (in/out) 12°C/7°C; Source (side) heat exchanger air (in) 35°C.
- Values in compliance with EN14511
- Plant (side) heat exchanger water (in/out) 40°C/45°C; Source (side) heat exchanger air (in) 7°C - 87% R.H.
- Parameter calculated for LOW-TEMPERATURE application in AVERAGE climate conditions according to [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.
- Parameter calculated according to [REGULATION (EU) N. 2016/2281]
- Seasonal energy efficiency ratio
- Seasonal space cooling energy efficiency
- Seasonal coefficient of performance
- Seasonal space heating energy efficiency
- Energy efficiency class referred to LOW-TEMPERATURE application in AVERAGE climate conditions according to [REGULATION (EU) N. 811/2013]

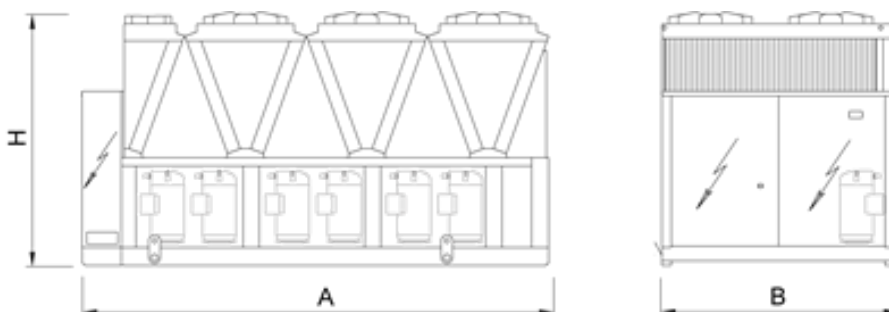
The units highlighted in this publication contain HFC R410A [GWP<sub>100</sub> 2088] fluorinated greenhouse gases.  
Certified data in EUROVENT

NRCS-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
<b>PERFORMANCE</b>							
<b>COOLING ONLY (GROSS VALUE)</b>							
Cooling capacity	(1) kW	624,8	666,7	709,6	745,4	789,3	833,2
Total power input	(1) kW	215,0	228,2	242,3	255,7	269,9	286,7
EER	(1) kW/kW	2,906	2,922	2,929	2,915	2,924	2,906
ESEER	(1) kW/kW	4,090	4,090	4,140	4,180	4,170	4,090
<b>COOLING ONLY (EN14511 VALUE)</b>							
Cooling capacity	(1)(2) kW	622,5	664,3	706,7	743,1	786,6	830,1
EER	(1)(2) kW/kW	2,860	2,880	2,880	2,880	2,890	2,860
ESEER	(1)(2) kW/kW	3,920	3,920	3,940	4,020	4,000	3,910
Cooling energy class		C	C	C	C	C	C
<b>HEATING ONLY (GROSS VALUE)</b>							
Total heating capacity	(3) kW	673,6	708,5	766,4	818,9	860,0	898,4
Total power input	(3) kW	209,9	221,3	239,4	254,9	268,7	279,8
COP	(3) kW/kW	3,209	3,202	3,201	3,213	3,201	3,211
<b>HEATING ONLY (EN14511 VALUE)</b>							
Total heating capacity	(3)(2) kW	676,4	711,4	770,0	821,9	863,4	902,3
COP	(3)(2) kW/kW	3,180	3,170	3,170	3,190	3,170	3,180
Cooling energy class		B	B	B	B	B	B
<b>ENERGY EFFICIENCY</b>							
<b>SEASONAL EFFICIENCY IN COOLING (Reg. EU 2016/2281)</b>							
<b>Ambient refrigeration</b>							
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 ηs	(10)(12) %	161	161	162	164	164	161
<b>SEASONAL EFFICIENCY IN HEATING (Reg. EU 813/2013)</b>							
PDesign	(4) kW	-	-	-	-	-	-
SCOP	(4)(13)	-	-	-	-	-	-
Performance ηs	(4)(14) %	-	-	-	-	-	-
Seasonal efficiency class	(15)	-	-	-	-	-	-
<b>EXCHANGERS</b>							
<b>HEAT EXCHANGER USER SIDE IN REFRIGERATION</b>							
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
<b>HEAT EXCHANGER USER SIDE IN HEATING</b>							
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
<b>REFRIGERANT CIRCUIT</b>							
Compressors nr.	N°	6	8	8	8	8	8
No. Circuits	N°	3	4	4	4	4	4
Refrigerant charge	kg	148	168	180	192	193	195
<b>NOISE LEVEL</b>							
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
<b>SIZE AND WEIGHT</b>							
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**

- 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 Plant (side) heat exchanger water (in/out) 40°C/45°C; Source (side) heat exchanger air (in) 7°C - 87% R.H.
  - 4 Parameter calculated for LOW-TEMPERATURE application in AVERAGE climate conditions according to [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 Parameter calculated according to [REGULATION (EU) N. 2016/2281]
  - 11 Seasonal energy efficiency ratio
  - 12 Seasonal space cooling energy efficiency
  - 13 Seasonal coefficient of performance
  - 14 Seasonal space heating energy efficiency
  - 15 Energy efficiency class referred to LOW-TEMPERATURE application in AVERAGE climate conditions according to [REGULATION (EU) N. 811/2013]
- The units highlighted in this publication contain HFC R410A [GWP<sub>100</sub> 2088] fluorinated greenhouse gases.  
 Certified data in EUROVENT

**Dimensional drawing**





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

[www.metis-coolingheating.nl](http://www.metis-coolingheating.nl)