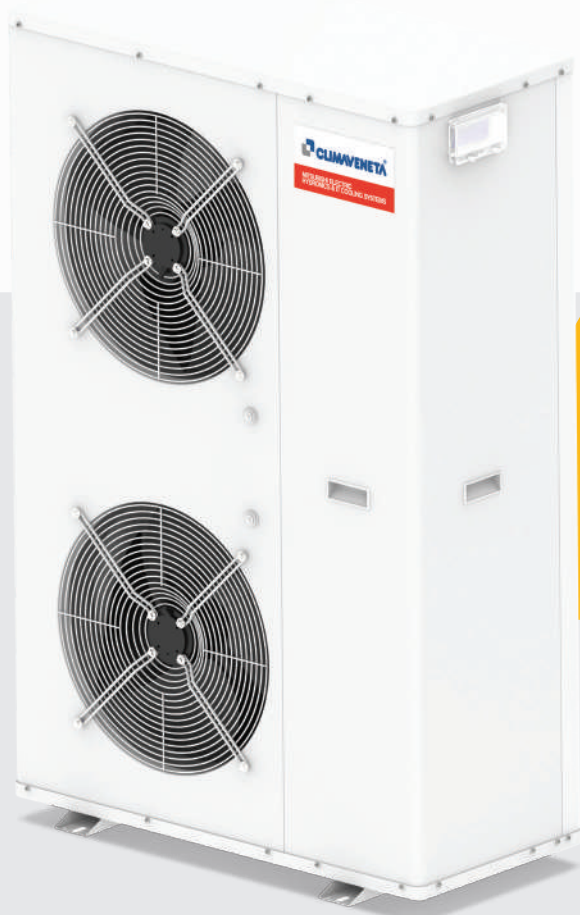


PROCESS

HEAT PUMPS

i-BX-N-Y

**AIR COOLED HEAT
PUMP FOR OUTDOOR
INSTALLATION
FROM 4,2 TO 35,1 kW**



i-BX-N-Y

MAXIMUM EFFICIENCY FOR PROCESS APPLICATIONS



Air to water heat pump for outdoor installation, from 4,2 to 35,1 kW

Outdoor unit for cold and hot water production, with hermetic rotary compressors with variable speed (Inverter Driven) in a single-circuit configuration using R410A refrigerant, air side heat exchanger with copper tubes and aluminum fins, water side steel brazed plate heat exchanger.

The unit is equipped with electronic expansion valve and integrated hydraulic module as standard.

i-BX-N-Y adapts to the actual load conditions thanks to the accurate temperature control combined with the use of inverter technology. The precise design and the use of innovative variable speed motors (inverters) ensures a high level of energy efficiency both at full and partial loads.



THE HEAT PUMP FOR EVERY NEED

System efficiency

The unit is designed with a system approach: all components are set in synergy according to a proprietary logic to maximise the efficiency of the unit.

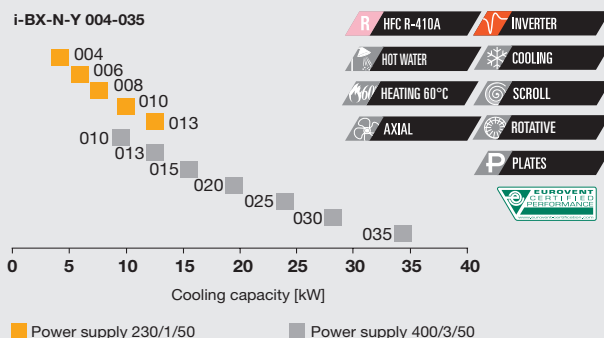
High efficiency at partial loads

High values of seasonal efficiency thanks to the modulation of the compressor with DC inverter technology so that the unit provides the exact thermal power in correspondence with the actual needs of the building. High efficiency which translates into reduced energy consumption throughout the unit's working period.

PROCESS APPLICATIONS

- ✓ **Food industry**, where special attention is paid to safeguarding all the organoleptic properties of the products.
- ✓ **Chemical and Pharmaceutical**, during crystallization at low temperature or liquid cooling after sterilization.
- ✓ **Printing industry**, removing the heat generated by the friction of the printing rollers and cooling down the paper after it comes out of the ink drying ovens.
- ✓ **Plastics**, controlling the temperature of the molding process.
- ✓ **Winery**, keeping cooling in the fermentation stage.

TARGETING EVERY NEED



ErP READY



i-BX-N-Y, thanks to the inverter technology, complies with the ErP directive, exceeding the minimum seasonal energy efficiency requirements in heating SCOP.

SCOP 3,80*

The i-BX-N-Y is suitable for process applications in cooling, providing high values for both high temperature and medium temperature processes, becoming the best solution for all applications in the industrial sector.

*Average values

REDUCED MAINTENANCE COSTS

The compact design and the selected components ensure low operating and maintenance costs as well as maximum operating reliability.

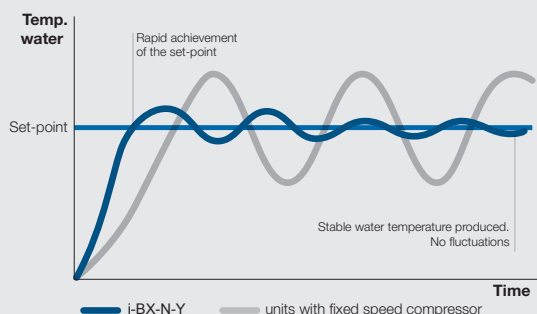
TOTAL RELIABILITY

The unit is specifically designed for continuous and long-lasting operation. The high-quality components and the dedicated functions ensure the operation of the heat pump under any unexpected circumstance.

QUICK START-UP AND UNIFORM WATER TEMPERATURE

Thanks to the accurate temperature control combined with the use of inverter technology and the electronic expansion valve, we obtain:

- quick start-up of the unit, which is crucial in process applications to achieve the required water temperature within a short time.
- stable water temperature, essential to guarantee the quality of the product resulting from the production process.



EASY INSTALLATION

The i-BX-N-Y are packaged mono-block heat pumps that are particularly easy to install.

The hydraulic components are all contained inside the unit and the pipe connections are hydraulic, therefore it is not necessary to carry out the typical procedures of direct expansion air-conditioning systems (vacuum, refrigerant topping up, etc.).



INTELLIGENT MANAGEMENT OF YOUR PLANT

Nadisystem guarantees a centralized regulation of the plant ensuring:

- ✓ Easy communication between the different components
- ✓ Simplified installation
- ✓ Reduced number of checks

nadisystem

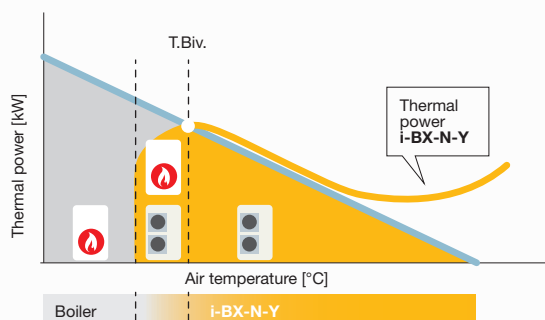
HOT WATER

SOLAR PANN. INTEGRATION

AUXILIARY SOURCE

INTEGRATION AMONG DIFFERENT SOURCES

Nadisystem integrates different energy sources based on availability and costs of their use, always favoring renewable sources.

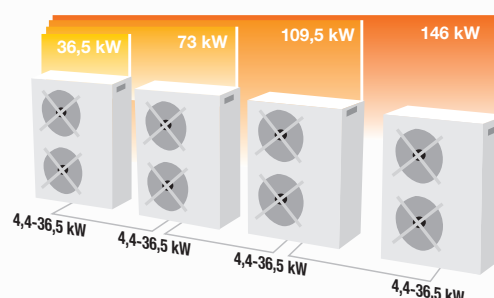


The auxiliary sources are used to meet the energy demand at low outdoor temperatures by integrating the heating capacity of the heat pump.

CASCADE SYSTEM MANAGEMENT

Up to 4 units with the same power can be connected in cascade to cover high thermal requirements (optional configuration).

- Units are managed in master slave mode, with the master unit that takes care of processing the information and then transmitting it to the slave units.
- Accurate sizing of the system and precise modulation of the power supplied maintaining high performance.



TECHNOLOGICAL CHOICES

Structure

Structure consisting of a base and self-supporting hot galvanized steel panels, painted with RAL 7035 polyester powders.

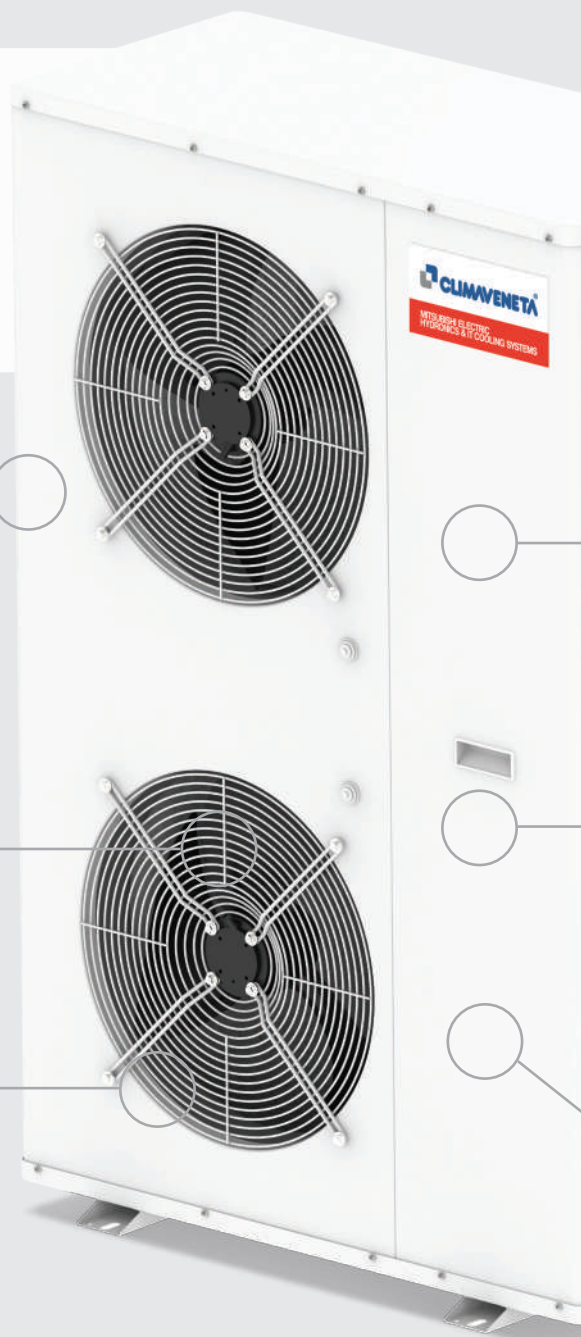
- ▶ Solidity and robustness.
- ▶ Maximum accessibility for service and maintenance operations.

Fans

Axial fans with continuous regulation of the speed optimise the air flow obtaining low consumption and minimizing the sound level.

Coil

- ▶ Condenser with copper pipes and aluminum fins.
- ▶ For aggressive industrial environments, protective coil treatments are available as an accessory:
 - Cu/Al - Epoxy painting;
 - Cu/Cu - Tube & fin coil.
- ▶ Coil protection grids as standard up to size 015.



nadisystem



NADICompact

Graphic display with intuitive icons to allow quick-and-easy intervention on the unit by means of a multi-level menu.

NADISYSTEM control

- ▶ Setting the water set point with fixed or dynamic value with the Climatic curve.
- ▶ Antifreeze protection depending on the water temperature and outside air temperature.
- ▶ Production of hot water.
- ▶ Management of external auxiliary sources.
- ▶ Two zones with different water temperature distribution
- ▶ Weekly programming up to 6 timeslots.
- ▶ Digital input for night function (Night mode).
- ▶ Remote connectivity to BMS systems via serial card (accessory).

INTEGRATED HYDRONIC UNIT



EC PUMP

All the hydraulic components for the installation of the unit are already included without increasing its size.

- ▶ EC pump, brushless motor with electronic switching to guarantee low consumption and high system efficiency.
- ▶ Water flow switch, to protect the exchanger for low water flows.
- ▶ Safety valve.
- ▶ Expansion vessel.
- ▶ Air release valve.
- ▶ Net type filter, not mounted but supplied with the unit.

Evaporator

- ▶ Brazed plate heat exchanger made of AISI 316 stainless steel, externally coated with an anti-condensation mat in closed cell neoprene (CFC and HCFC-free).
- ▶ Thermostatic electric heater to protect against ice formation.
- ▶ Low pressure drops and optimized heat transfer.

Refrigerant circuit

- ▶ **Electronic expansion valve as standard:**
 - optimized refrigerant flow;
 - effective temperature control;
 - fast regulation and high efficiency.



Compressor

Mitsubishi Electric compressors, synonymous with quality, reliability and high performance at partial loads.

The compressor is installed on rubber anti-vibration mounts and soundproofed by special sound-absorbing material.

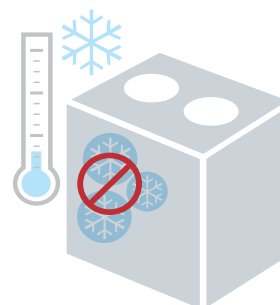


SPECIAL ANTIFREEZE FUNCTION

Dedicated algorithms prevent the formation of ice by managing the operation of:

- ▶ electric heater on the plate heat exchanger.
- ▶ the pump according to the outdoor air temperature.
- ▶ the pressure switch due to lack of flow.

The unit is also designed to work with brine-free mixtures up to a leaving temperature of -8°C.



**i-BX-N-Y**

Air to water heat pump for outdoor installation
4,2 - 35,1 kW

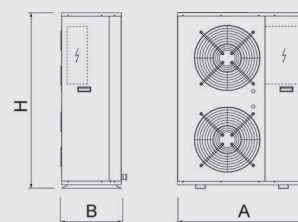


i-BX-N-Y			004	006	008	010	013
Power supply		V/ph/Hz					
COOLING ONLY (GROSS VALUE)			230/1/50	230/1/50	230/1/50	230/1/50	230/1/50
Cooling capacity	(1)	kW	4,2	5,9	7,5	9,9	12,4
Total power input	(1)	kW	1,55	2,08	2,72	3,64	4,54
EER	(1)	kW/kW	2,71	2,84	2,76	2,72	2,73
ESEER	(1)	kW/kW	4,24	4,32	4,45	4,21	4,24
COOLING ONLY (EN14511 VALUE)							
Cooling capacity	(1)(2)	kW	4,2	5,9	7,51	9,91	12,4
EER	(1)(2)	kW/kW	2,76	2,88	2,81	2,73	2,75
ESEER	(1)(2)	kW/kW	4,61	4,56	4,83	4,26	4,37
Cooling energy class			C	C	C	C	C
HEATING ONLY (GROSS VALUE)							
Total heating capacity	(3)	kW	4,63	6,36	8,51	11	14,3
Total power input	(3)	kW	1,51	2,03	2,65	3,65	4,53
COP	(3)	kW/kW	3,07	3,13	3,21	3,01	3,16
HEATING ONLY (EN14511 VALUE)							
Total heating capacity	(3)(2)	kW	4,62	6,37	8,5	11	14,3
COP	(3)(2)	kW/kW	3,12	3,19	3,26	3,02	3,19
Cooling energy class			B	B	A	B	B
ENERGY EFFICIENCY							
SEASONAL EFFICIENCY IN HEATING (Reg. EU 813/2013)							
PDesign	(7)	kW	3,4	4,8	6,02	8,18	10,4
SCOP	(7)(8)		3,59	3,89	4,15	3,54	3,81
Performance ns	(7)(9)	%	140	153	163	139	149
Seasonal efficiency class	(7)		A+	A++	A++	A+	A+
EXCHANGERS							
HEAT EXCHANGER USER SIDE IN REFRIGERATION							
Water flow	(1)	l/s	0,2	0,28	0,36	0,47	0,59
Available unit's head	(1)	kPa	51,4	39,8	66,5	57,7	56,6
HEAT EXCHANGER USER SIDE IN HEATING			0,22	0,31	0,41	0,53	0,69
Water flow	(3)	l/s	47,9	35,4	57,9	54,1	51,1
Available unit's head	(3)	kPa					
REFRIGERANT CIRCUIT							
Compressors nr.	N°		1	1	1	1	1
No. Circuits	N°		1	1	1	1	1
Refrigerant charge	kg		1,47	2,2	3,7	3,95	4,45
NOISE LEVEL							
Sound power level in cooling	(10)(11)	dB(A)	64	65	66	69	70
Sound power level in heating	(10)(12)	dB(A)	64	65	66	69	70
Sound Pressure	(13)	dB(A)	50	51	51	54	55
SIZE AND WEIGHT							
A	(14)	mm	900	900	900	900	900
B	(14)	mm	370	370	420	420	420
H	(14)	mm	940	940	1240	1240	1390
Operating weight	(14)	kg	80	85	100	115	135

Accessory:

- Remote keyboard
- Wired room terminal with backlit display, and with temperature and humidity probe
- Cascade management kit
- DHW temperature probe and Buffer temperature probe
- Copper-Aluminum heat exchanger coils with epoxy treatment

- Copper-Copper heat exchanger coils
- Buffer tank
- Domestic hot water storage tank
- Electric heater for the base and for condensate collecting tray to avoid freezing
- Serial card RS485 for ModBus
- Rubber anti-vibration mounting kit

**EXTENDED OPERATING LIMITS**

The i-BX-N-Y heat pumps can operate with external air temperature up to -20°C. The production of hot water at 60°C is guaranteed up to -5°C to satisfy the several process applications all year round without the need of external auxiliary sources.

During the summer season, full load operation is guaranteed up to 45°C of outside air temperature. The unit can also produce cold water up to -8°C up to 5°C.

Full load operating limits ►



i-BX-N-Y			10	13	15	20	25	30	35
Power supply			V/ph/Hz						
COOLING ONLY (GROSS VALUE)			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
Cooling capacity	(1)	kW	10,5	12,8	14,7	18,7	24,7	29,4	35,1
Total power input	(1)	kW	3,64	4,54	5,24	7	8,99	10,5	12,7
EER	(1)	kW/kW	2,88	2,82	2,81	2,67	2,75	2,8	2,76
ESEER	(1)	kW/kW	4,24	4,49	4,31	3,88	3,93	3,89	3,93
COOLING ONLY (EN14511 VALUE)									
Cooling capacity	(1)(2)	kW	10,5	12,8	14,7	18,7	24,7	29,5	35,2
EER	(1)(2)	kW/kW	2,89	2,84	2,82	2,7	2,77	2,83	2,78
ESEER	(1)(2)	kW/kW	4,29	4,58	4,38	3,99	4,03	4	4,01
Cooling energy class			C	C	C	C	C	C	C
HEATING ONLY (GROSS VALUE)									
Total heating capacity	(3)	kW	11,4	14,7	17,2	21,7	26,1	32,3	38,1
Total power input	(3)	kW	3,66	4,55	5,15	6,9	8,31	10,3	12
COP	(3)	kW/kW	3,11	3,23	3,34	3,14	3,14	3,14	3,17
HEATING ONLY (EN14511 VALUE)									
Total heating capacity	(3)(2)	kW	11,4	14,7	17,2	21,7	26,1	32,2	38
COP	(3)(2)	kW/kW	3,12	3,24	3,36	3,16	3,16	3,13	3,19
Cooling energy class			B	A	A	B	B	B	B
ENERGY EFFICIENCY									
SEASONAL EFFICIENCY IN HEATING (Reg. EU 813/2013)									
PDesign	(7)	kW	8,48	10,9	12,3	16,5	21,9	24,7	28,1
SCOP	(7)(8)		3,64	3,99	3,67	3,56	3,77	3,8	3,7
Performance ns	(7)(9)	%	142	157	144	139	148	149	145
Seasonal efficiency class			A+	A++	A+	A+	A+	A+	A+
EXCHANGERS									
HEAT EXCHANGER USER SIDE IN REFRIGERATION									
Water flow	(1)	l/s	0,5	0,61	0,7	0,89	1,18	1,41	1,68
Available unit's head	(1)	kPa	53,3	53	78,7	74,6	61,5	91,3	73,5
HEAT EXCHANGER USER SIDE IN HEATING									
Water flow	(3)	l/s	0,55	0,71	0,83	1,05	1,26	1,56	1,84
Available unit's head	(3)	kPa	50,2	47,1	71,5	60,3	55	80,5	61,8
REFRIGERANT CIRCUIT									
Compressors nr.		N°	1	1	1	1	1	1	1
No. Circuits		N°	1	1	1	1	1	1	1
Refrigerant charge		kg	3,95	4,45	5,1	7,3	7,55	8,5	9,1
NOISE LEVEL									
Sound power level in cooling	(10)(11)	dB(A)	69	70	74	74	75	76	77
Sound power level in heating	(10)(12)	dB(A)	69	70	74	74	75	76	77
Sound Pressure	(13)	dB(A)	54	55	59	59	59	60	61
SIZE AND WEIGHT									
A	(14)	mm	900	900	1450	1450	1450	1450	1700
B	(14)	mm	420	420	550	550	550	550	650
H	(14)	mm	1240	1390	1200	1200	1700	1700	1700
Operating weight	(14)	kg	115	135	180	205	265	290	325

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 energy efficiency of high temperature process cooling [REGULATION (EU) N. 2016/2281]
- 5 Seasonal Energy Efficiency of Process Cooling at Medium Temperature [REGULATION (EU) N. 2015/1095]
- 6 Seasonal space heating energy index
- 7 Seasonal space heating energy efficiency class LOW TEMPERATURE in AVERAGE climate conditions [REGULATION (EU) N. 813/2013]
- 8 Seasonal performance coefficient

9 Seasonal space heating energy efficiency

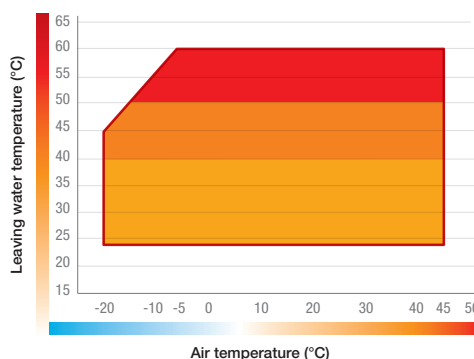
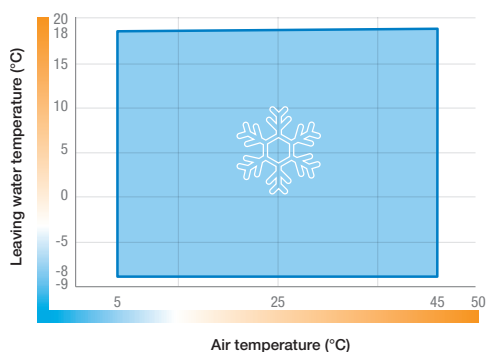
10 Sound power on the basis of measurements made in compliance with ISO 9614.

11 Sound power level in cooling, outdoors.

12 Sound power level in heating, outdoors.

13 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.

14 Unit in standard configuration/execution, without optional accessories.

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



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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