

PROCESS

CHILLERS

i-BX-Y

**AIR COOLED CHILLER
FOR OUTDOOR
INSTALLATION
FROM 4,3 TO 35,1 kW**



i-BX-Y

MAXIMUM EFFICIENCY IN EVERY TYPE OF PROCESS APPLICATION



Air cooled liquid chiller for outdoor installation,
from 4,3 to 35,1 kW



Outdoor unit for cold 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.

A flexible and reliable unit that 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 CHILLER 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.

The ideal solution for process applications

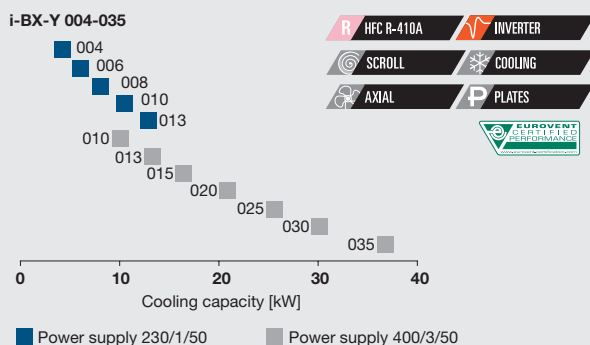
In industrial processes a certain amount of heat is generated due to the friction of moving parts in machinery, as a result of thermal processes or molding processes.

i-BX-Y chillers remove the excess heat and, through extremely reliable components, maintain temperatures at optimum values, not compromising the machines' operation.

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.
- ✓ **Mechanical processing**, fluids cooling of machines suitable for the processing of metal, wood and glass.

TARGETING EVERY NEED



ErP READY



The ErP directive includes seasonal energy efficiency indices, the Seasonal Energy Performance Ratio (SEPR), dedicated to process applications.

Thanks to the inverter technology, i-BX-Y complies with the ErP directive, exceeding the minimum requirements of SEPR HT for high temperature processes and SEPR MT for medium temperature processes, becoming the best solution for all applications in the industrial sector.

*average values

SEPR HT 5,7*

SEPR MT 3,2*

QUICK & EASY INSTALLATION

i-BX-Y units are packaged mono-block chillers that are particularly easy to install. The hydraulic components are all contained inside the unit: circulator with EC motor, expansion tank, safety valve, relief valve, flow switch and net type filter (not installed).



REDUCED MAINTENANCE COSTS

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

TOTAL RELIABILITY

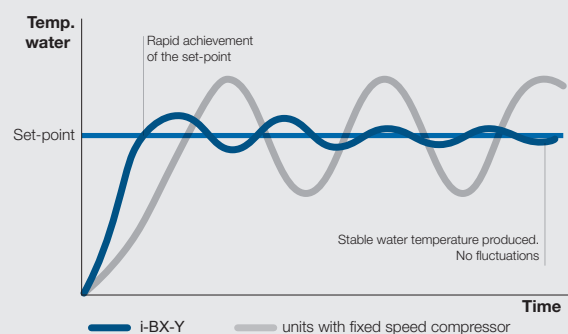
The unit is specifically designed for continuous and long-lasting operation.

The high-quality components and the dedicated functions ensure the operation of the chiller under any unexpected circumstance.

QUICK START-UP AND UNIFORM WATER TEMPERATURE

Thanks to the accurate temperature control combined with the use of the 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.



SPECIAL ANTI-FREEZE FUNCTION



Dedicated algorithms prevent the formation of ice by:

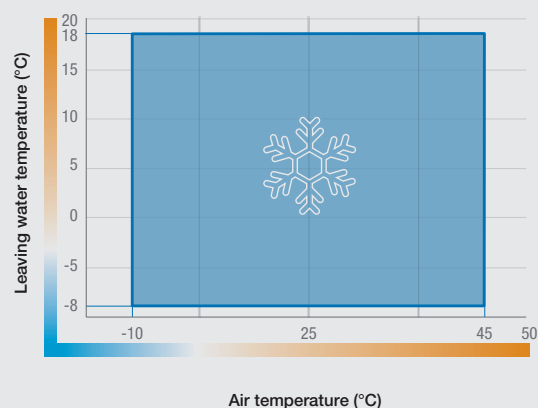
- ▶ activating the electrical resistance on the plate heat exchanger.
- ▶ activating the pump according to the outdoor air temperature.
- ▶ enabling the inside of the flow switch due to lack of flow.

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

EXTENDED OPERATING LIMITS

Full load operation is guaranteed up to 45°C outside air temperature during the summer season, and up to -10°C outside air temperature during the winter season. The unit is able to produce chilled water with evaporator outlet temperatures from -8°C to 18°C .

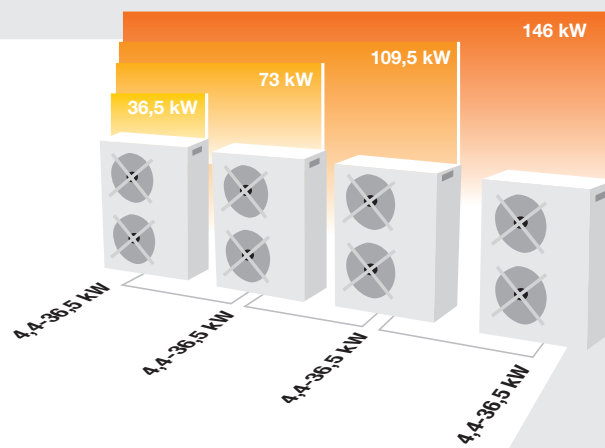
Full load operating limits



CASCADE SYSTEMS MANAGEMENT

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

- ▶ System management 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 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 speed regulation which optimise the air flow, thus reducing both energy consumption and the sound level.

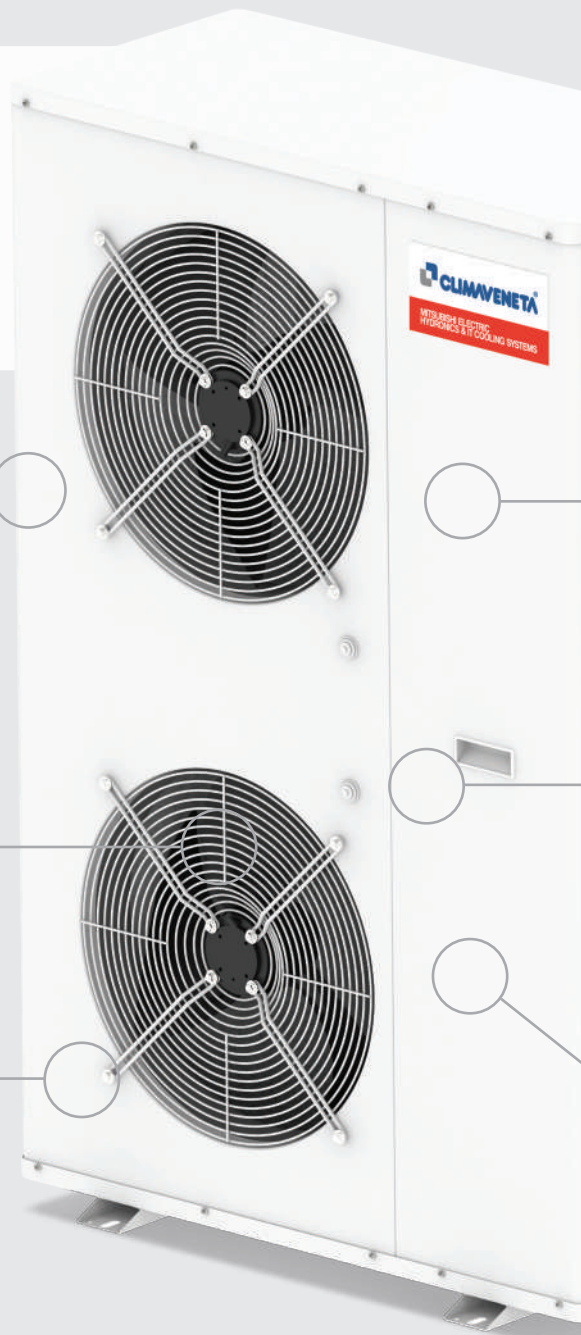
Coil

Condenser with copper pipes and aluminum fins.

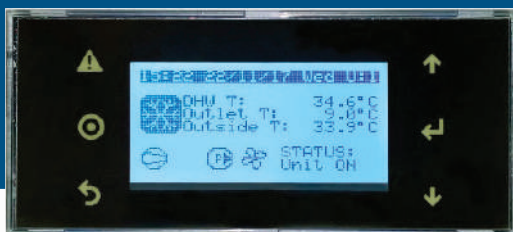
For aggressive industrial environments, protective coil treatments are available as an accessory:

- ▶ 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 the outdoor air temperature.
- ▶ Weekly programming up to 6 time slots.
- ▶ 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.

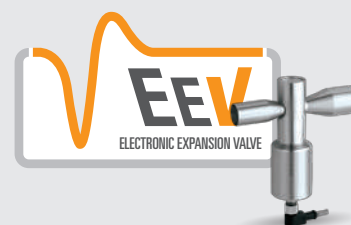
- ▶ EC pump, brushless motor with electronic switching to guarantee low consumption and high system efficiency.
- ▶ Water flow switch, to protect the exchanger for low water flows.
- ▶ Safety valve.
- ▶ Expansion vessel.
- ▶ Air release valve.
- ▶ Net type filter, not mounted but supplied with the unit.

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.

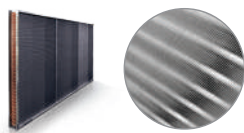
The compressor is installed on rubber anti-vibration mounts and soundproofed by special sound-absorbing material.



ADDITIONAL ACCESSORIES

Coils and Treatments

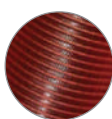
Cu/Al - Epoxy painting Opt.



Cu/Al - Epoxy painting Opt.

- 3000h Resistance to corrosion in salt fog according to ASTM B117;
- Resistance to UV rays.

Cu/Cu - Tube & fin coil (Opt. 881).



Remote Keypad and Cascade Drive Management Kit.

Rubber anti-vibration mounts.

Hydronic group

Configuration without the hydronic group is available. The hydronic group consists of the following components:

Safety valve, air vent valve, antifreeze electric heater, water flow switch, and net type filter (not installed).

Remote connectivity

Serial card for ModBus protocol.

Buffer tank

Buffer tank to be installed under the unit and dedicated piping connections:

- ▶ BTB 30: 30-liter storage tank (size 004-015);
- ▶ BTB 60: 60-liter storage tank (size 020-030).

Buffer insulated tanks to be installed in the technical room:

- ▶ BT 35: 35-liter storage tank (wall installation);
- ▶ BT100: 100-liter tank;
- ▶ BT200: 200-liter tank.



i-BX-Y

Air-cooled liquid chiller
for outdoor installation
4,3 - 35,1 kW



| i-BX-Y | | | 04 | 06 | 08 | 10 | 13 |
|---|---------|-------|----------|----------|----------|----------|----------|
| Power supply | V/ph/Hz | | 230/1/50 | 230/1/50 | 230/1/50 | 230/1/50 | 230/1/50 |
| PERFORMANCE | | | | | | | |
| COOLING ONLY (GROSS VALUE) | | | | | | | |
| Cooling capacity | (1) | kW | 4,3 | 6,11 | 8,1 | 10,6 | 12,9 |
| Total power input | (1) | kW | 1,55 | 2,12 | 2,82 | 3,64 | 4,74 |
| EER | (1) | kW/kW | 2,77 | 2,88 | 2,87 | 2,91 | 2,72 |
| ESEER | (1) | kW/kW | 4,2 | 4,36 | 4,7 | 4,29 | 4,55 |
| COOLING ONLY (EN14511 VALUE) | | | | | | | |
| Cooling capacity | (1)(2) | kW | 4,3 | 6,11 | 8,11 | 10,6 | 12,9 |
| EER | (1)(2) | kW/kW | 2,82 | 2,92 | 2,92 | 2,92 | 2,74 |
| ESEER | (1)(2) | kW/kW | 4,53 | 4,6 | 5,08 | 4,34 | 4,69 |
| Cooling energy class | | | C | B | B | B | C |
| ENERGY EFFICIENCY | | | | | | | |
| SEASONAL EFFICIENCY IN COOLING (Reg. EU 2016/2281) | | | | | | | |
| Process cooling at high temperature | | | | | | | |
| Prated,c | (7) | kW | 4,3 | 6,11 | 8,11 | 10,6 | 12,9 |
| SEPR HT | (7)(9) | | 5,97 | 6,32 | 6,68 | 5,44 | 5,43 |
| SEASONAL EFFICIENCY IN COOLING (Reg. UE 2015/1095) | | | | | | | |
| Process cooling at medium temperature | | | | | | | |
| Prated,c | (8) | kW | 2,57 | 3,74 | 4,84 | 6,46 | 7,58 |
| SEPR MT | (8)(9) | | 3,39 | 3,84 | 3,82 | 2,95 | 2,93 |
| EXCHANGERS | | | | | | | |
| HEAT EXCHANGER USER SIDE IN REFRIGERATION | | | | | | | |
| Water flow | l/s | | 0,21 | 0,29 | 0,39 | 0,51 | 0,62 |
| Available unit's head | (1) | kPa | 50,7 | 38,1 | 61,8 | 55,6 | 55,3 |
| REFRIGERANT CIRCUIT | | | | | | | |
| Compressors nr. | N° | | 1 | 1 | 1 | 1 | 1 |
| No. Circuits | N° | | 1 | 1 | 1 | 1 | 1 |
| Refrigerant charge | kg | | 1,45 | 2,1 | 3,55 | 3,6 | 3,65 |
| NOISE LEVEL | | | | | | | |
| Sound Pressure | (3) | dB(A) | 33 | 34 | 35 | 38 | 39 |
| Sound power level in cooling(4)(5) | dB(A) | | 64 | 65 | 66 | 69 | 70 |
| SIZE AND WEIGHT | | | | | | | |
| A | (6) | mm | 900 | 900 | 900 | 900 | 900 |
| B | (6) | mm | 370 | 370 | 420 | 420 | 420 |
| H | (6) | mm | 940 | 940 | 1240 | 1240 | 1240 |
| Operating weight | (6) | kg | 75 | 80 | 95 | 110 | 125 |

Note

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 Average sound pressure level at 10m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.

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

5 Sound power level in cooling, outdoors.

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

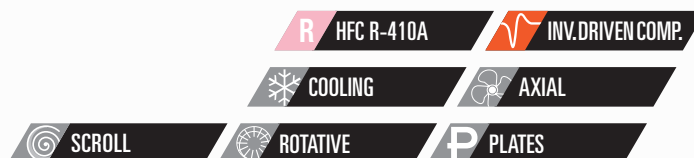
7 Seasonal energy efficiency of the process cooling [REGULATION (EU) N. 2016/2281]

8 Seasonal space heating energy index

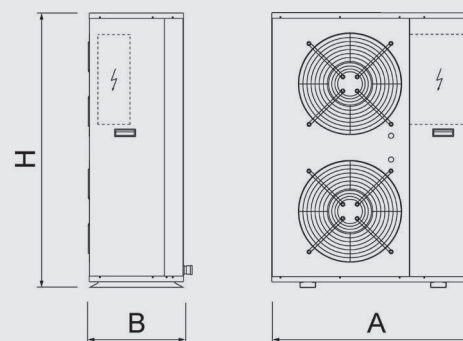
9 Seasonal energy efficiency of the space cooling

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

Certified data in EUROVENT



| i-BX-Y | | | 10 | 13 | 15 | 20 | 25 | 30 | 35 |
|---|--------|---------|------------|------------|------------|------------|------------|------------|------------|
| 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 |
| PERFORMANCE | | | | | | | | | |
| COOLING ONLY (GROSS VALUE) | | | | | | | | | |
| Cooling capacity | (1) | kW | 10,7 | 13,3 | 15,5 | 20,6 | 25 | 29,8 | 35,1 |
| Total power input | (1) | kW | 3,64 | 4,74 | 5,44 | 7,2 | 8,69 | 10 | 11,8 |
| EER | (1) | kW/kW | 2,94 | 2,81 | 2,85 | 2,86 | 2,88 | 2,98 | 2,97 |
| ESEER | (1) | kW/kW | 4,36 | 4,57 | 4,14 | 4,12 | 4,26 | 4,15 | 4,29 |
| COOLING ONLY (EN14511 VALUE) | | | | | | | | | |
| Cooling capacity | (1)(2) | kW | 10,7 | 13,3 | 15,5 | 20,6 | 25 | 29,9 | 35,2 |
| EER | (1)(2) | kW/kW | 2,95 | 2,82 | 2,87 | 2,88 | 2,9 | 3,01 | 3 |
| ESEER | (1)(2) | kW/kW | 4,42 | 4,69 | 4,2 | 4,2 | 4,36 | 4,27 | 4,39 |
| Cooling energy class | | | B | C | C | C | B | B | B |
| ENERGY EFFICIENCY | | | | | | | | | |
| SEASONAL EFFICIENCY IN COOLING (Reg. EU 2016/2281) | | | | | | | | | |
| Process cooling at high temperature | | | | | | | | | |
| Prated,c | (7) | kW | 10,7 | 13,3 | 15,5 | 20,6 | 25 | 29,9 | 35,2 |
| SEPR HT | (7)(9) | | 5,65 | 5,61 | 5,18 | 5,01 | 5,56 | 5,67 | 6 |
| SEASONAL EFFICIENCY IN COOLING (Reg. UE 2015/1095) | | | | | | | | | |
| Process cooling at medium temperature | | | | | | | | | |
| Prated,c | (8) | kW | 6,63 | 8,1 | 9,57 | 12,7 | 15,6 | 18,2 | 21,6 |
| SEPR MT | (8)(9) | | 3,09 | 2,98 | 2,67 | 2,79 | 2,99 | 3,30 | 3,33 |
| EXCHANGERS | | | | | | | | | |
| HEAT EXCHANGER USER SIDE IN REFRIGERATION | | | | | | | | | |
| Water flow | | l/s | 0,51 | 0,64 | 0,74 | 0,99 | 1,2 | 1,43 | 1,68 |
| Available unit's head | (1) | kPa | 52,7 | 51,7 | 76,7 | 66,3 | 60,3 | 90 | 73,5 |
| 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 | 3,6 | 3,65 | 4,7 | 6,8 | 7 | 7,9 | 8,4 |
| NOISE LEVEL | | | | | | | | | |
| Sound Pressure | (3) | dB(A) | 38 | 39 | 43 | 43 | 43 | 44 | 45 |
| Sound power level in cooling(4)(5) | | dB(A) | 69 | 70 | 74 | 74 | 75 | 76 | 77 |
| SIZE AND WEIGHT | | | | | | | | | |
| A | (6) | mm | 900 | 900 | 900 | 1450 | 1450 | 1450 | 1700 |
| B | (6) | mm | 420 | 420 | 420 | 550 | 550 | 550 | 650 |
| H | (6) | mm | 1240 | 1240 | 1390 | 1200 | 1700 | 1700 | 1700 |
| Operating weight | (6) | kg | 110 | 125 | 135 | 190 | 250 | 270 | 305 |





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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