

TECHNICAL CATALOGUE



n° 1370
according to
97/23/EC (P.E.D.)



BUREAU
VERITAS



**AIRCOOLED CONDENSING
UNITS AND REVERSIBLE
CONDENSING UNITS WITH AXIAL
FANS AND SCROLL COMPRESSORS**
FROM 50 kW TO 190 kW

GENERAL DESCRIPTION

Condensing units and reversible aircooled condensing units with axial fans for outdoor installation. The range consists of 10 models covering a cooling capacity from 50 to 190 kW.

VERSIONS:

IKM MHA/K - cooling only

IKM MHA/K/SSL - super silenced cooling only

IKM MHA/K/WP - reversible heat pump

IKM MHA/K/WP/SSL - super silenced reversible heat pump

TECHNICAL FEATURES:

Frame. Self-supporting galvanized steel frame further protected with polyester powder painting. Easy to remove, panels allow access to the inside of the unit for maintenance and other necessary operations.

Compressors. Scroll with oil sight glass. They are furnished with an internal overheat protection and crankcase, installed on rubber shock absorbers.

Fans. Axial fans directly coupled to a three-phase electric motor with external rotor. A safety fan guard is fitted on the air flow discharge. On the super silenced units there are fans with a low rpm therefore some models have more fans.

Condenser Made up of a finned coil with copper pipes and aluminum fins. Circuits on the refrigerant side are made to create one circuit in models 50kW to 134kW and two independent circuits in models 155kW to 190kW.

Electrical board. Includes: main switch with door safety interlock, fuses, overload protection for compressors and thermocontacts for fans, interface relays, electrical terminals for external connections

Microprocessor. For automatic control of the unit allowing continuous display of the operational status of the unit, control set and real water temperature and,

in case of partial or total block of the unit, indication of security device that intervened.

Refrigerant circuit versions IKM MHA/K and IKM MHA/K/SSL. Produced in copper tubing, all models have the following components: high and low pressure switches (with fixed setting).

Refrigerant circuit versions IKM MHA/K/WP and IKM MHA/K/WP/SSL. The unit in heat pump version, in addition to the components of the cooling only unit, includes for each circuit: 4-ways reverse valve; liquid separator on the suction line; liquid receiver; checkvalves; thermostatic expansion valve with external equalisation; dehydrator filter; level and humidity indicator

FACTORY FITTED ACCESSORIES:

IM - Magnetothermic switches. Alternative to fuses and thermal relays.

SL - Unit silencing. The compressors are equipped with sound-absorbing covering.

CT - Condensation control. To outside air temperatures of 0 °C obtained by means of stopping some fans.

CC - Condensation control. Obtained by means of continuous adjustment of the fan rotation speed up to outside air temperatures of -20° C.

RL - Liquid receiver to guarantee the liquid phase of the cooling fluid (included in WP).

VS - Solenoid valve on the liquid side to avoid liquid reflux (excluded WP).

BP - Gas by-pass with hot injection to prevent frosting on internal unit (excluded WP).

FF - Filter drier and flow sight glass as a further warranty of the perfect working of the machine (included in WP).

CP - Potential free contacts for remote alarm and control

LOOSE ACCESSORIES:

- MN - High and low pressure gauges.** One for each refrigerant circuit.
- CR - Remote control panel. To be installed** in the room for remote control of the unit, with the same functions as that inserted in the machine.
- IS - RS 485 serial interface.** For connection to centralized control and supervision systems.
- RP - Coil protection guards.** In steel with cathaphoresis treatment and painting.
- AG - Rubber vibration dampers.** To be inserted at the bottom of the unit to dampen possible vibrations due to the type of floor where the machine is installed.

REFERENCE CONDITIONS:

All technical data, indicated on pages 8 and 9, refer to the following

Unit operating conditions:

Cooling:

- Evaporating temperature 5 °C.
- Ambient air temperature 35 °C.

Heating:

- Condensing temperature 40 °C.
- Ambient air temperature 7 °C d.b.; 6 °C w.b.

Sound Pressure Level (DIN 45635):

Measured in free field conditions at 1 m from the unit and at 1,5 m from the ground. According to DIN 45635.

Sound Pressure Level (ISO 3744):

Measured in free field conditions at 1 m. As defined by ISO 3744.

The power supply is 400V/3Ph/50Hz; auxiliary supply is 230V/1Ph/50Hz.

| OPERATING RANGE | COOLING | | HEATING | |
|--------------------------------|---------|-------|---------|-------|
| | min | max | min | max |
| Evaporating temperature | - 2 °C | 10 °C | --- | --- |
| Average condensing temperature | --- | --- | 35 °C | 60 °C |
| Ambient air temperature | 10* | 46** | -10 °C | 20 °C |

* This value can be reduced until -20 °C with an optional accessory supplied prefabricated

TECHNICAL DATA

| MODEL | | 50 | 60 | 65 | 75 | 90 |
|--|-------------------|----------------------|------|------|------|------|
| Cooling: | | | | | | |
| Cooling Capacity (1) | kW | 50,6 | 58,6 | 66,9 | 77,2 | 88,4 |
| Absorbed power (1) | kW | 17,4 | 19,7 | 22,5 | 25,8 | 29,5 |
| Heating: | | | | | | |
| Heating capacity (1) | kW | 55,5 | 63,5 | 73,6 | 83,9 | 94,5 |
| Absorbed power (1) | kW | 14,7 | 16,0 | 19,1 | 21,7 | 24,4 |
| Compressor: | | | | | | |
| | n° | 2 | 2 | 2 | 2 | 2 |
| Refrigerant Circuits | n° | 1 | 1 | 1 | 1 | 1 |
| Cooling Capacity split | % | 100 | 100 | 100 | 100 | 100 |
| Capacity steps | n° | 2 | 2 | 2 | 2 | 2 |
| Compressors: | | | | | | |
| Unitary absorbed power (1) | kW | 8,1 | 9,2 | 10,3 | 11,9 | 13,8 |
| Unitary absorbed current (1) | A | 15 | 16 | 18 | 20 | 26 |
| Oil charge | kg | 3,3 | 3,3 | 3,3 | 3,3 | 3,6 |
| Standard version and with SL accessory: | | | | | | |
| Airflow | m ³ /s | 4,8 | 4,7 | 7,1 | 7,1 | 7,3 |
| Fans | n° | 1 | 1 | 2 | 2 | 2 |
| Fans nominal power | kW | 1,3 | 1,3 | 2,0 | 2,0 | 2,0 |
| Fans nominal current | A | 2,5 | 2,5 | 5,0 | 5,0 | 5,0 |
| Sound pressure level - DIN (1) | dB(A) | 66 | 66 | 70 | 70 | 70 |
| Sound pressure level with SL accessory - DIN (1) | dB(A) | 64 | 64 | 68 | 68 | 68 |
| Sound pressure level - ISO (1) | dB(A) | 56 | 56 | 60 | 60 | 60 |
| Sound pressure level with SL accessory - ISO (1) | dB(A) | 54 | 54 | 58 | 58 | 58 |
| Lenght | mm | 2350 | 2350 | 2350 | 2350 | 2350 |
| Width | mm | 1100 | 1100 | 1100 | 1100 | 1100 |
| Height | mm | 1920 | 1920 | 1920 | 1920 | 2220 |
| Transport weight * | Kg | 550 | 575 | 615 | 625 | 670 |
| Transport weight with SL accessory * | kg | 560 | 585 | 625 | 635 | 680 |
| SSL Version: | | | | | | |
| Airflow | m ³ /s | 4,1 | 3,9 | 5,7 | 5,7 | 6,0 |
| Fans | n° | 2 | 2 | 2 | 2 | 2 |
| Fans nominal power | kW | 0,6 | 0,6 | 1,5 | 1,5 | 1,5 |
| Fans nominal current | A | 1,2 | 1,2 | 2,7 | 2,7 | 2,7 |
| Sound pressure level - DIN (1) | dB(A) | 62 | 62 | 66 | 66 | 66 |
| Sound pressure level - ISO (1) | dB(A) | 52 | 52 | 56 | 56 | 56 |
| Lenght | mm | 2350 | 2350 | 2350 | 2350 | 2350 |
| Width | mm | 1100 | 1100 | 1100 | 1100 | 1100 |
| Height | mm | 1920 | 1920 | 1920 | 1920 | 2220 |
| Transport weight * | Kg | 585 | 615 | 665 | 675 | 710 |
| Connections: | | | | | | |
| Suction line | Ø mm | ----- 1 x 35 -----> | | | | |
| Liquid line | Ø mm | ----- 1 x 22 -----> | | | | |
| Total electrical consumption: | | | | | | |
| Power supply | V/Ph/Hz | ----- 400/3/5 -----> | | | | |
| Max. current | A | 40 | 43 | 52 | 56 | 65 |
| Max. starting current | A | 163 | 165 | 175 | 188 | 232 |

(1) Referential conditions at page 3.

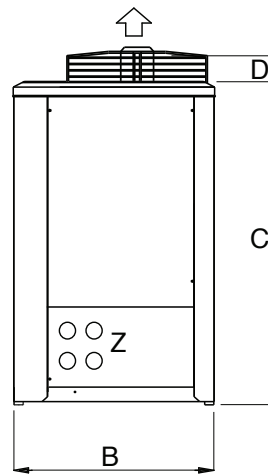
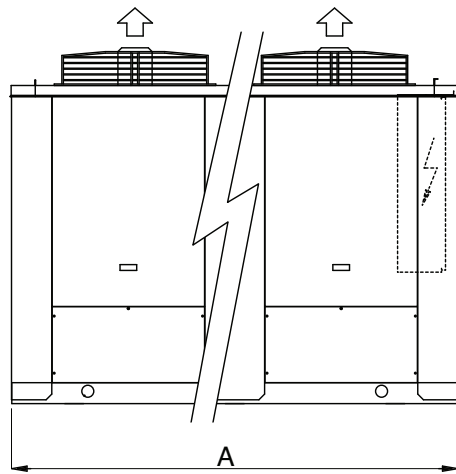
* For heat pump unit increase the weight 10%

TECHNICAL DATA

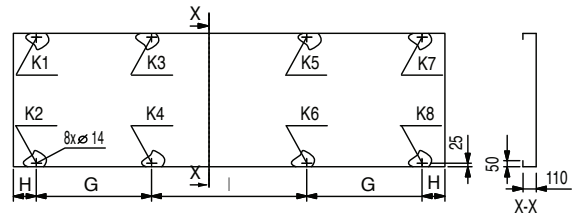
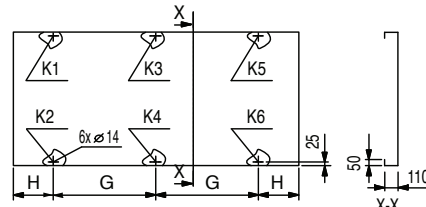
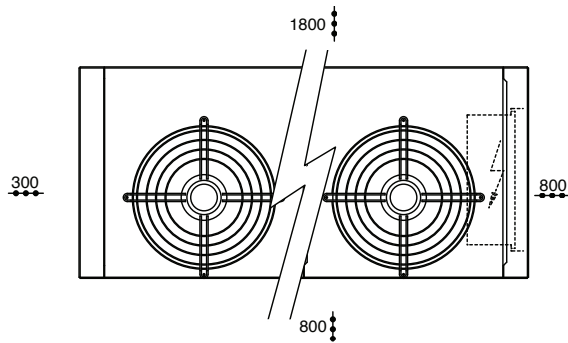
| MODEL | | 100 | 115 | 135 | 155 | 190 |
|--|-------------------|-----------------------|------|------|---------------------|-------|
| Cooling: | | | | | | |
| Cooling Capacity (1) | kW | 102 | 117 | 134 | 156 | 188 |
| Absorbed power (1) | kW | 34,2 | 39,1 | 45,6 | 53,2 | 63,2 |
| Heating: | | | | | | |
| Heating capacity (1) | kW | 109 | 125 | 142 | 162 | 193 |
| Absorbed power (1) | kW | 27,9 | 32,7 | 36,6 | 41,7 | 49,5 |
| Compressor: | | | | | | |
| | n° | 3 | 3 | 3 | 4 | 4 |
| Refrigerant Circuits | n° | 1 | 1 | 1 | 2 | 2 |
| Cooling Capacity split | % | 100 | 100 | 100 | 50/50 | 50/50 |
| Capacity steps | n° | 3 | 3 | 3 | 4 | 4 |
| Compressors: | | | | | | |
| Unitary absorbed power (1) | kW | 10,7 | 11,7 | 13,9 | 12,3 | 14,3 |
| Unitary absorbed current (1) | A | 19 | 20 | 26 | 21 | 27 |
| Oil charge | kg | 3,3 | 3,3 | 3,6 | 3,3 | 3,6 |
| Standard version and with SL accessory: | | | | | | |
| Airflow | m ³ /s | 7,1 | 9,7 | 9,7 | 11,4 | 15,0 |
| Fans | n° | 2 | 2 | 2 | 2 | 3 |
| Fans nominal power | kW | 2,0 | 4,0 | 4,0 | 4,0 | 6,0 |
| Fans nominal current | A | 5,0 | 8,6 | 8,6 | 8,6 | 12,9 |
| Sound pressure level - DIN (1) | dB(A) | 70 | 71 | 71 | 71 | 71 |
| Sound pressure level with SL accessory - DIN (1) | dB(A) | 68 | 69 | 69 | 69 | 69 |
| Sound pressure level - ISO (1) | dB(A) | 60 | 61 | 61 | 61 | 61 |
| Sound pressure level with SL accessory - ISO (1) | dB(A) | 58 | 59 | 59 | 59 | 59 |
| Lenght | mm | 2350 | 2350 | 2350 | 3550 | 3550 |
| Width | mm | 1100 | 1100 | 1100 | 1100 | 1100 |
| Height | mm | 2220 | 2220 | 2220 | 2220 | 2220 |
| Transport weight * | Kg | 770 | 800 | 830 | 980 | 1090 |
| Transport weight with SL accessory * | kg | 785 | 815 | 845 | 1000 | 1110 |
| SSL Version: | | | | | | |
| Airflow | m ³ /s | 7,7 | 9,2 | 8,9 | 11,8 | -- |
| Fans | n° | 2 | 2 | 2 | 3 | -- |
| Fans nominal power | kW | 2,5 | 2,5 | 2,5 | 2,5 | -- |
| Fans nominal current | A | 5,0 | 5,0 | 5,0 | 5,0 | -- |
| Sound pressure level - DIN (1) | dB(A) | 66 | 66 | 66 | 67 | -- |
| Sound pressure level - ISO (1) | dB(A) | 55 | 55 | 55 | 56 | -- |
| Lenght | mm | 2350 | 3550 | 3550 | 3550 | -- |
| Width | mm | 1100 | 1100 | 1100 | 1100 | -- |
| Height | mm | 2220 | 2220 | 2220 | 2220 | -- |
| Transport weight * | Kg | 840 | 930 | 1020 | 1130 | -- |
| Connections: | | | | | | |
| Suction line | ∅ mm | ----- 1 x 42 -----> | | | ----- 2 x 35 -----> | |
| Liquid line | ∅ mm | ----- 1 x 28 -----> | | | ----- 2 x 22 -----> | |
| Total electrical consumption: | | | | | | |
| Power supply | V/Ph/Hz | ----- 400/3/50 -----> | | | | |
| Max. current | A | 75 | 85 | 103 | 111 | 132 |
| Max. starting current | A | 199 | 218 | 265 | 243 | 299 |



**DIMENSIONS, CLEARANCES AND WEIGHTS
DISTRIBUTION**



Z - Gas connections



●●● Clearance area / Spazi di rispetto
Espacios de respeto / Espaces Techniques

DIMENSIONS

| MOD. | 50 | | | 60 | | | 65 | | | 75 | | | 90 | | | 100 | | | 115 | | | 135 | | | 155 | | | 190 | | |
|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----|
| | STD | SL | SSL | STD | SL | SSL | STD | SL | SSL | STD | SL | SSL | STD | SL | SSL | STD | SL | SSL | STD | SL | SSL | STD | SL | SSL | STD | SL | SSL | STD | SL | SSL |
| A mm | 2350 | 2350 | 2350 | 2350 | 2350 | 2350 | 2350 | 2350 | 2350 | 2350 | 2350 | 2350 | 2350 | 2350 | 2350 | 2350 | 2350 | 2350 | 2350 | 2350 | 3550 | 2350 | 2350 | 3550 | 3550 | 3550 | 3550 | 3550 | 3550 | -- |
| B mm | 1100 | 1100 | 1100 | 1100 | 1100 | 1100 | 1100 | 1100 | 1100 | 1100 | 1100 | 1100 | 1100 | 1100 | 1100 | 1100 | 1100 | 1100 | 1100 | 1100 | 1100 | 1100 | 1100 | 1100 | 1100 | 1100 | 1100 | 1100 | 1100 | -- |
| C mm | 1675 | 1675 | 1675 | 1675 | 1675 | 1675 | 1675 | 1675 | 1675 | 1675 | 1675 | 1675 | 1975 | 1975 | 1975 | 1975 | 1975 | 1975 | 1975 | 1975 | 1975 | 1975 | 1975 | 1975 | 1975 | 1975 | 1975 | 1975 | 1975 | -- |
| D mm | 245 | 245 | 245 | 245 | 245 | 245 | 245 | 245 | 245 | 245 | 245 | 245 | 245 | 245 | 245 | 245 | 245 | 245 | 245 | 245 | 245 | 245 | 245 | 245 | 245 | 245 | 245 | 245 | 245 | -- |
| G mm | 844 | 844 | 844 | 844 | 844 | 844 | 844 | 844 | 844 | 844 | 844 | 844 | 844 | 844 | 844 | 844 | 844 | 844 | 844 | 844 | 950 | 844 | 844 | 950 | 950 | 950 | 950 | 950 | 950 | -- |
| H mm | 331 | 331 | 331 | 331 | 331 | 331 | 331 | 331 | 331 | 331 | 331 | 331 | 331 | 331 | 331 | 331 | 331 | 331 | 331 | 331 | 191 | 331 | 331 | 191 | 191 | 191 | 191 | 191 | 191 | -- |
| I mm | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1268 | -- | -- | 1268 | 1268 | 1268 | 1268 | 1268 | 1268 | -- |

OPERATING WEIGHT

| MOD. | 50 | | | 60 | | | 65 | | | 75 | | | 90 | | | 100 | | | 115 | | | 135 | | | 155 | | | 190 | | |
|---------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|-----|
| | STD | SL | SSL | STD | SL | SSL | STD | SL | SSL | STD | SL | SSL | STD | SL | SSL | STD | SL | SSL | STD | SL | SSL | STD | SL | SSL | STD | SL | SSL | STD | SL | SSL |
| K1 Kg | 80 | 80 | 85 | 85 | 85 | 90 | 85 | 85 | 90 | 85 | 85 | 90 | 95 | 95 | 100 | 125 | 130 | 140 | 130 | 135 | 110 | 135 | 140 | 120 | 120 | 125 | 135 | 135 | 140 | -- |
| K2 Kg | 70 | 70 | 70 | 70 | 70 | 75 | 75 | 75 | 80 | 75 | 75 | 80 | 80 | 80 | 85 | 105 | 105 | 110 | 110 | 110 | 80 | 115 | 115 | 85 | 95 | 95 | 105 | 105 | 105 | -- |
| K3 Kg | 105 | 110 | 115 | 115 | 120 | 125 | 120 | 125 | 130 | 125 | 130 | 135 | 135 | 140 | 140 | 145 | 150 | 160 | 150 | 155 | 125 | 160 | 165 | 140 | 130 | 135 | 150 | 150 | 155 | -- |
| K4 Kg | 90 | 90 | 95 | 90 | 90 | 95 | 100 | 100 | 110 | 100 | 100 | 110 | 110 | 110 | 115 | 120 | 120 | 130 | 125 | 125 | 100 | 130 | 130 | 110 | 110 | 110 | 120 | 120 | 120 | -- |
| K5 Kg | 115 | 120 | 125 | 125 | 130 | 135 | 135 | 140 | 145 | 140 | 140 | 150 | 145 | 150 | 155 | 160 | 165 | 175 | 165 | 170 | 140 | 170 | 175 | 155 | 145 | 150 | 165 | 165 | 170 | -- |
| K6 Kg | 100 | 100 | 105 | 100 | 100 | 105 | 110 | 110 | 120 | 110 | 110 | 120 | 115 | 115 | 125 | 130 | 130 | 140 | 135 | 135 | 120 | 135 | 135 | 130 | 125 | 125 | 145 | 135 | 135 | -- |
| K7 Kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 145 | -- | -- | 160 | 150 | 155 | 180 | 170 | 175 | -- |
| K8 Kg | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 125 | -- | -- | 135 | 130 | 130 | 155 | 140 | 140 | -- |
| Tot. Kg | 560 | 570 | 595 | 585 | 595 | 625 | 625 | 635 | 675 | 635 | 640 | 685 | 680 | 690 | 720 | 785 | 800 | 855 | 815 | 830 | 945 | 845 | 860 | 1035 | 1005 | 1025 | 1155 | 1120 | 1140 | -- |

FANS

| MOD. | 50 | | | 60 | | | 65 | | | 75 | | | 90 | | | 100 | | | 115 | | | 135 | | | 155 | | | 190 | | | | | |
|------|-----|----|-----|-----|----|-----|-----|----|-----|-----|----|-----|-----|----|-----|-----|----|-----|-----|----|-----|-----|----|-----|-----|----|-----|-----|----|-----|---|---|----|
| N° | STD | SL | SSL | STD | SL | SSL | STD | SL | SSL | STD | SL | SSL | STD | SL | SSL | STD | SL | SSL | STD | SL | SSL | STD | SL | SSL | STD | SL | SSL | STD | SL | SSL | | | |
| N° | 1 | 1 | 2 | 1 | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | -- |

MICROPROCESSOR CONTROL SYSTEM

A microprocessor controls all the functions of the unit and allows any adjustments to be made. The set-points and operating parameters are set directly into the microprocessor. This type of microprocessor enables the adjustment of up to four compressors. It has a visual alarm signal, pushbuttons for the various functions, and offers a continuous control of the system as well as saving all the data in case of a cut in the power supply. Through the display, one can input and have an indication of set values.

Main functions:

Identification and display of blocks by means of alphanumerical code; prestarting of the fans; hour counter of compressors in operation; automatic changeover of compressor; compressors start individually and not together; remote On-Off; operation signalling; manual operation; manual reset.

Alarms:

High and low pressure and overload on each compressor; overload relay on fan; configuration error.

Accessories:

Electronic card for connection to management and service systems; remote display.