

JD series – Double-flow evaporating units



Double-flow evaporating units, in a low-profile design, with built-in control valves and built-in aluminium with polyester paint.

Features

- ▶ 230V 50Hz power supply. Available in 60Hz. Other voltages on request.
- ▶ High efficiency coils, in copper pipes and aluminium fins, with 4 or 6 mm fin spacing.
- ▶ Built-in solenoid valve in liquid line and built-in adjustable thermostatic expansion valve.
- ▶ Ready-to-solder cooling connections, with built-in suction trap.
- ▶ Air defrost.

Options

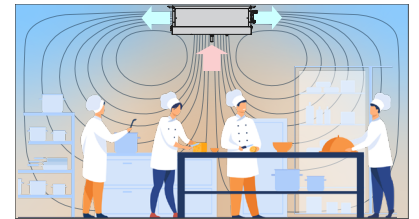
- ▶ Electrical heater defrost.
- ▶ Electronic expansion valve.
- ▶ Electronic controller with fan control relays, solenoid coil, resistors, cold room and defrost temperature probes, with 5 m of electrical interconnections and 3 m supply cable.
- ▶ EC fans.
- ▶ Anti-corrosion coil coating.
- ▶ Built-in condensate pump.
- ▶ G3 filters on fans.
- ▶ Humidification / dehumidification / heating kit.



- ❄ High-efficiency batteries.
- ❄ Expansion and solenoid valves.
- ❄ 100 % factory tested and adjusted units for the highest performance.
- ❄ Prewired electronic control (optional).

Maximum comfort in the workplace

The configuration of the motor fans in the evaporator, together with the double air supply through the coils, creates a smooth laminar air flow in the cold room with a reduced level of turbulence.



Electronic control optional (JD 1 and 2)

JD 1 and 2 evaporator units can be controlled by a compact microcontroller that integrates all the command and control elements without the need for an electrical panel:

- 3 control relays for: liquid solenoid valve, motor fan and defrost (16A).
- Thermostatic temperature probe and defrost probe.
- Configurable digital input.



Electronic control optional (JD 3, 4 and 5)

JD 3, 4 and 5 evaporator units can be combined with an advanced multi-function control, consisting of an electronic board integrated in the electrical cabinet and digital control unit.



230V 50Hz | High temperature - quasi-static | R-134a

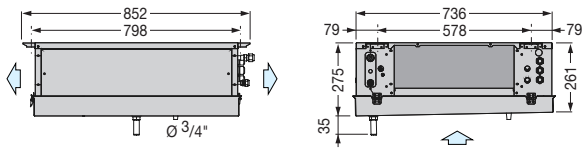
Refrigerant Application	Series / Model	Cooling capacity (W) according to cold room temperature ⁽¹⁾		Coil			Fans				Electrical defrost		Liq-Gas Cooling Connection	Weight (kg)	SPL dB(A) ⁽²⁾	
		SC1 10 °C 85 % RH DT1 = 10 K	SC2 0 °C 85 % RH DT1 = 8 K	Fin spacing (mm)	Area (m ²)	Vol. (litres)	Air flow (m ³ /h)	Nx Ø (mm)	Power (W)	I max. (A)	Air Range (m)	Power (W)				Intensity (A)
R-134a High	AJD-NY-1 136	3 620	2 470	4	10.4	2.4	1 100	1x Ø 360	85	0.4	2x 4	2x 450	3.9	1/4"-5/8"	30	33
	AJD-NY-2 236	5 930	4 040	4	18.5	3.8	1 800	2x Ø 360	170	0.8	2x 4	2x 700	6.1	3/8"-7/8"	55	36
	AJD-NY-3 336	10 630	7 250	4	34.8	6.9	3 150	3x Ø 360	255	1.1	2x 4	6x 800*	6.9	3/8"-1 1/8"	68	38
	AJD-NY-4 245	14 190	9 670	4	53.7	11.0	4 000	2x Ø 450	290	1.3	2x 6	6x 1 000*	8.7	1/2"-1 3/8"	85	42
	AJD-NY-5 345	18 310	12 480	4	53.7	11.0	5 700	3x Ø 450	435	2.0	2x 6	6x 1 000*	8.7	1/2"-1 3/8"	94	44
R-134a Quasi-static	AJD-UY-1 136	2 130	1 450	6	7.0	2.4	600	1x Ø 360	85	0.4	-	2x 450	3.9	1/4"-5/8"	30	20
	AJD-UY-2 136	3 320	2 260	6	12.5	3.8	1 000	1x Ø 360	85	0.4	-	2x 700	6.1	3/8"-7/8"	55	23
	AJD-UY-3 236	6 030	4 110	6	23.4	6.9	1 800	2x Ø 360	170	0.8	-	6x 800*	6.9	3/8"-1 1/8"	68	26
	AJD-UY-4 245	9 680	6 600	6	36.1	11.0	2 900	2x Ø 450	290	1.3	-	6x 1 000*	8.7	1/2"-1 3/8"	85	31

230V 50Hz | High temperature - quasi-static | R-449A

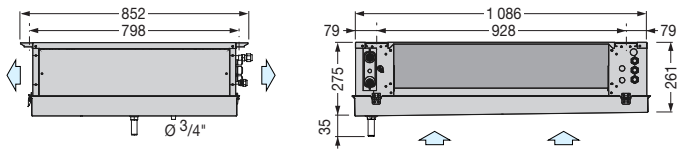
R-449A High	AJD-NG-1 136	3 890	2 650	4	10.4	2.4	1 100	1x Ø 360	85	0.4	2x 4	2x 450	3.9	1/4"-1/2"	30	33
	AJD-NG-2 236	6 410	4 370	4	18.5	3.8	1 800	2x Ø 360	170	0.8	2x 4	2x 700	6.1	3/8"-5/8"	55	36
	AJD-NG-3 336	11 430	7 790	4	34.8	6.9	3 150	3x Ø 360	255	1.1	2x 4	6x 800*	6.9	1/2"-7/8"	68	38
	AJD-NG-4 245	15 490	10 560	4	53.7	11.0	4 000	2x Ø 450	290	1.3	2x 6	6x 1 000*	8.7	5/8"-1 1/8"	85	42
	AJD-NG-5 345	19 990	13 620	4	53.7	11.0	5 700	3x Ø 450	435	2.0	2x 6	6x 1 000*	8.7	5/8"-1 1/8"	94	44
R-449A Quasi-static	AJD-UG-1 136	2 290	1 560	6	7.00	2.4	600	1x Ø 360	85	0.4	-	2x 450	3.9	1/4"-1/2"	30	20
	AJD-UG-2 136	3 520	2 400	6	12.5	3.8	1 000	1x Ø 360	85	0.4	-	2x 700	6.1	3/8"-5/8"	55	23
	AJD-UG-3 236	6 370	4 340	6	23.4	6.9	1 800	2x Ø 360	170	0.8	-	6x 800*	6.9	1/2"-7/8"	68	26
	AJD-UG-4 245	10 320	7 030	6	36.1	11.0	2 900	2x Ø 450	290	1.3	-	6x 1 000*	8.7	1/2"-7/8"	85	31

Dimensions

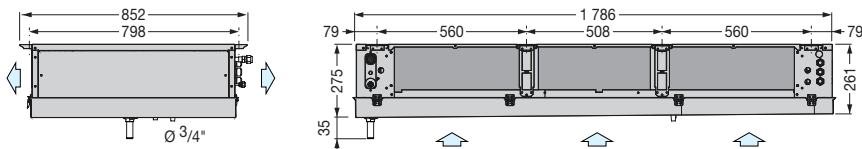
1 series



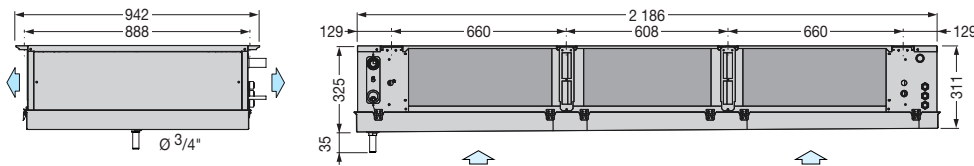
2 series



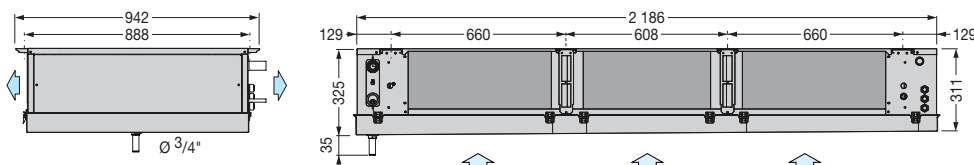
3 series



4 series



5 series



Dimensions in mm.

⁽¹⁾ Cooling capacity at room temperature and relative humidity, calculated from dry cooling capacity according to EN 328 standard, applying the following empirical factors:

Conditions	Reference	Rate
10 °C 85 % RH	EN 328 SC1	1.35
0 °C 85 % RH	EN 328 SC2	1.15

To take into account the slip in R-449A, the average evaporating temperature has been considered.

⁽²⁾ Sound pressure level, with directivity 1, measured at 10 m from the unit (non-binding value calculated from sound power).

*Electrical heater defrost (as an option)

AJD series are also available featuring electrical heater defrost as an option, for operation at cold room temperature between -5 °C and 5 °C.

AJD models of series 3 to 5, with electrical heater defrost, unlike the others models require 400V 3N power supply.

Control and power panel

Microcontroller

Compact control board to control evaporating units up to 3600 W defrost power. Optional for JB, JD and JC series.

- ▶ Electronic microprocessor control unit with digital display, with three control relays for solenoid valve, defrost and fans.
- ▶ Configurable digital input.
- ▶ Compact surface mounting.
- ▶ Supplied with 5 m electrical interconnections and 3 m power supply cable.

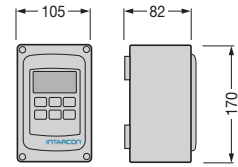
Features of the control panel

Control and power panel for evaporators in high, medium and low temperature applications, with electronic controller and digital display. Optional for JD (3 to 5), KD, KC, KH and KV series.

- ▶ White painted galvanised sheet steel cabinet with key.
- ▶ Electronic control microprocessor with digital display, with six control relays for solenoid, defrost, fans, light, alarm, and configurable auxiliary relay; temperature and defrost probes,
- ▶ General cut-off switch, differential switch, three-pole contactors and magnetothermic switches for heating elements and fans.
- ▶ Operation indicator lights.
- ▶ Connection terminal block.
- ▶ Independent control for 1 or 2 evaporator units.
- ▶ Electronics with LAN BUS communication for synchronisation of up to 8 devices (except ATM-N-01031 and MTM-N-01161).

Microcontroller dimensions

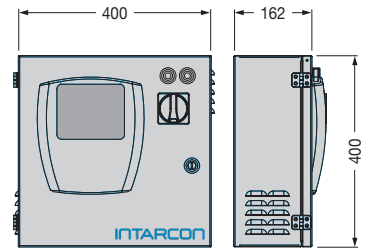
0 series



Dimensions in mm.

Control panel dimensions

1 series



Dimensions (mm)	A	B	C
size 1	400	162	400
size 2	600	162	400
size 3	650	162	550
size 4	650	162	750

Dimensions in mm.

Table of features for temperature control panel

	Model	Power supply	Max. defrost power (kW)	Max. defrost intensity (A)	Max. fans intensity (A)	VEE ⁽¹⁾	Application to evaporators	Control panel size ⁽²⁾
For temperature control 1 evaporating unit	ATM-N-01031	230V	ventilated	--	3	-	JB, JD, JC	0
	ATM-N-11031	230V	ventilated	--	3	•	KC, JD 3-5	1
	ATM-N-13101	400V 3N	ventilated	--	10	•	KD, KH, KV 31,41,32,42	1
	ATM-N-13161	400V 3N	ventilated	--	16	•	KV 43,33,44	1
	MTM-N-01161	230V	3,6	16	3	-	JB, JD 1-2, JC	0
	MTM-N-11161	230V	3,6	16	3	•	JB, JD 1-2, JC	1
	MTM-N-13161	400V 3N	10	16	10	•	JD 3-5, KD 12, KC, KH 11-21-12, KV 31	1
	MTM-N-13201	400V 3N	12	20	10	•	KH 22, KV 41	1
	MTM-N-13321	400V 3N	20	32	10	•	KD 22-33, KH 13-23-14, KV 3256	1
	MTM-N-13401	400V 3N	25	40	10	•	KV 3263-4263, KH 24	1
For temperature control 2 evaporating units	MTM-N-13641	400V 3N	2x 20	64	16	•	KV 43,33,44	2
	ATM-N-11122	230V	ventilated	--	2x 6	•	JB, JD, JC, KC, KD 12	1
	ATM-N-13202	400V 3N	ventilated	--	2x 10	•	KH, KV 31-41-32	2
	ATM-N-13322	400V 3N	ventilated	--	2x 16	•	KV 43-33-44	2
	MTM-N-11322	230V	2x 3,6	2x 16	2x 6	•	JB, JD 1-2, JC	2
	MTM-N-13322	400V 3N	2x 10	2x 16	2x 10	•	KC, JD 3-5, KD 12, KH 11-21-12, KV 31	3
	MTM-N-13402	400V 3N	2x 12	2x 20	2x 10	•	KH 22, KV 41	3
	MTM-N-13642	400V 3N	2x 20	2x 32	2x 10	•	KD 22-33, KH 13-23-14-24, KV 3256-4263	3
	MTM-N-13802	400V 3N	2x 25	2x 40	2x 16	•	KV 3263	3

Options

- ▶ Control panel available in 60Hz.

⁽¹⁾ Optional electronic expansion valve.

⁽²⁾ Optionals, such as electronic expansion valve, may modify the control panel size.

Temperature and humidity control panel (AHM models)

Cuadro de control y potencia para controlar temperatura y humedad, con controlador electrónico y display digital.

- ▶ White painted galvanised sheet steel cabinet with key.
- ▶ Electronic control microprocessor with digital display, with six control relays for solenoid, defrost, fans, light, alarm, and configurable auxiliary relay; temperature and defrost and humidity probes.
- ▶ General cut-off switch.
- ▶ Operation indicator lights.
- ▶ Connection terminal block.
- ▶ Configurable digital input.

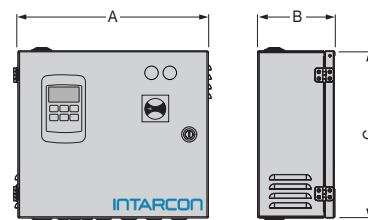
Features of humidity control panel (MHM models)

Control and power panel for evaporators in high, medium and low temperature applications, with electronic controller and digital display.

- ▶ White painted galvanised sheet steel cabinet with key.
- ▶ Electronic control microprocessor with digital display, with six control relays for solenoid, defrost, fans, light, alarm, and configurable auxiliary relay; temperature and defrost probes, and humidity
- ▶ General cut-off switch, differential switch, three-pole contactors and magnetothermic switches for heating elements and fans.
- ▶ Operation indicator lights.
- ▶ Connection terminal block.
- ▶ Configurable digital input and digital input for door microswitch.

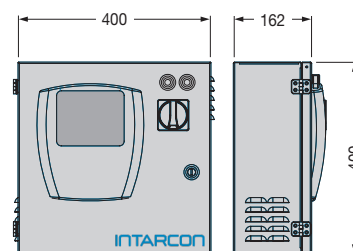
Control panel dimensions for AHM models

1 series



Control panel dimensions for MHM models

1 series



Dimensions (mm)	A	B	C
size 1	400	162	400
size 2	600	162	400
size 3	650	162	550
size 4	650	162	750

Dimensions in mm.

Table of features for para de humidity control panel

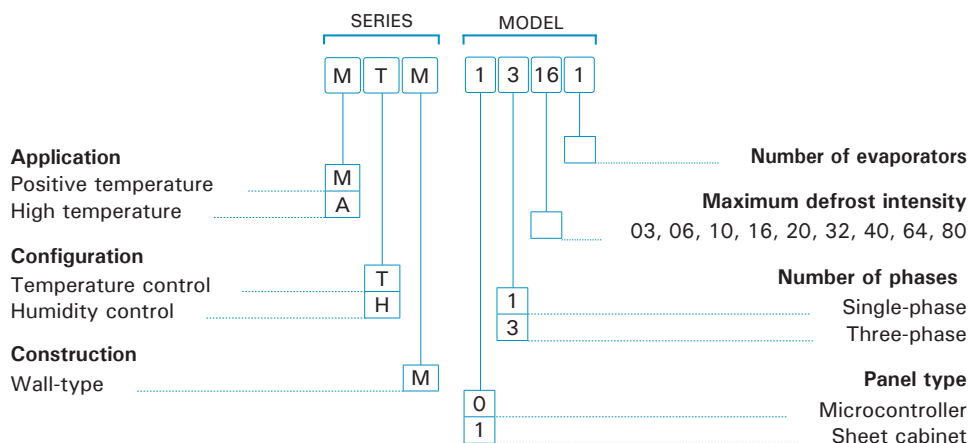
	Model	Power supply	Max. defrost power (kW)	Max. defrost intensity (A)	Max. fans intensity (A)	VEE ⁽¹⁾	Application to evaporators	Control panel size ⁽²⁾
For humidity control 1 evaporating unit	AHM-E-11031	230V	ventilated	--	3	•	JB, JD, JC, KC	1
	AHM-E-13101	400V 3N	ventilated	--	10	•	KD, KH, KV 31,41,32,42	1
	MHM-N-11161	230V	3,6	16	3	•	JB, JD 1-2, JC	1
	MHM-N-13161	400V 3N	10	16	10	•	JD 3-5, KD 12, KC, KH 11-21-12, KV 31	1
	MHM-N-13201	400V 3N	12	20	10	•	KH 22, KV 41	1
	MHM-N-13321	400V 3N	20	32	10	•	KD 22-33, KH 13-23-14, KV 3256	1
	MHM-N-13401	400V 3N	25	40	10	•	KV 3263-4263, KH 24	1

Options

- ▶ Control panel available in 60Hz.
- ▶ Control for heating resistances, or dehumidification and heating, only HM models (3 kW, 9 kW, 12 kW, 18 kW, 24 kW and 30 kW).

⁽¹⁾ Optional electronic expansion valve.
⁽²⁾ Optionals, such as electronic expansion valve, may modify the control panel size.

Nomenclature of temperature and humidity control panels



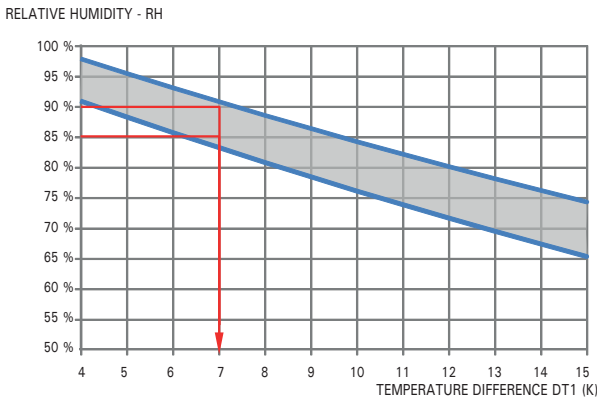
Method of calculation of evaporating units

Condiciones estándares de cálculo

Condition	Cool room temperature	Relative humidity	DT1	Superheating	Liquid temperature
SC1	10 °C	85 %	10 K	6,5 K	30 °C
SC2	0 °C	85 %	8 K	5,2 K	30 °C
SC3	-18 °C	95 %	7 K	4,5 K	20 °C
SC4	-25 °C	95 %	6 K	3,9 K	20 °C
SC5	-34 °C	95 %	6 K	3,9 K	20 °C

The cooling capacities have been calculated using standard conditions according to standard EN 328.

Choice of Temperature Difference (DT1)



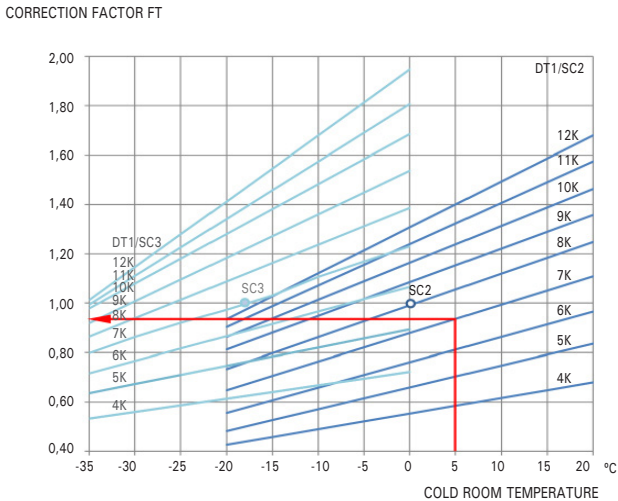
The Temperature Difference DT1 is defined as the difference between the temperature of the air entering the evaporator and the evaporating temperature of the refrigerant.

In positive temperature conservation cold rooms, the Temperature Difference in the evaporator has a great influence on the degree of humidity in the environment, in addition to other factors such as the design of the cold room, the rate of ventilation and the transpiration of the stored product.

In negative temperature cold rooms, the DT1 has little influence on the relative humidity, while an excessive DT1 will imply a lower evaporation temperature and lower performance of the compressors.

The attached graphic will allow you to choose the most suitable DT1 for sizing of the evaporator. Depending on the desired relative humidity, we look for the intersection point with the curve, obtaining the value of the new thermal jump:

Correction factor for calculation condition (FT)



To obtain the cooling capacity at another cold rooms temperatures and thermal jump, you must use the correction factor FT.

The attached graph will allow you to obtain, based on the ambient temperature and the Temperature Difference DT1, said factor, taking as reference the standard power level SC2 or SC3:

Calculation example: it is desirable to store vegetables at temperature of 5 °C and relative humidity between 85 and 90 %, with estimated refrigeration needs of 38 kW and using refrigerant R-449A in direct expansion.

To obtain the degree of relative humidity, we choose a Temperature Difference 7 K the cold room, and we can see that this calculation condition corresponds to a correction factor FT = 0.94.

We can calculate the corrected cooling capacity:

We choose the evaporating unit MKH-NG-2350 with a cooling capacity SC2 = 45.2 kW

$$Q_c = \frac{38 \text{ kW}}{0,94} = 40,42 \text{ kW}$$

Evaporator selection

To select an evaporator, you must calculate the corrected refrigeration capacity using the following formula:

$$Q_c = \frac{Q_o}{FT}$$

Online selection and calculation of evaporators with the Calcooling software

The cooling calculator includes an advanced calculation method for refrigeration systems, based on calculation rules suggested by ASHRAE, refrigerant properties by REFPROP from the NIST and updated thermodynamic correlations for the calculation of heat transfer coefficient.



<https://intarcon.calcooling.com/>