



## INSTALLATION, OPERATION AND MAINTENANCE MANUAL



**Air curtains MAXWELL**

*Please, read these instructions carefully before attempting installation*

### SECURITY ADVISE SYMBOLS



*Attention, Danger, Safety Advice!*



*Danger from electric current or high voltage!*



*Injuries risk!*



*Danger! Do not stay underneath: Heavy load.*



*Important information.*



**Energi & Klimateknikk AS**

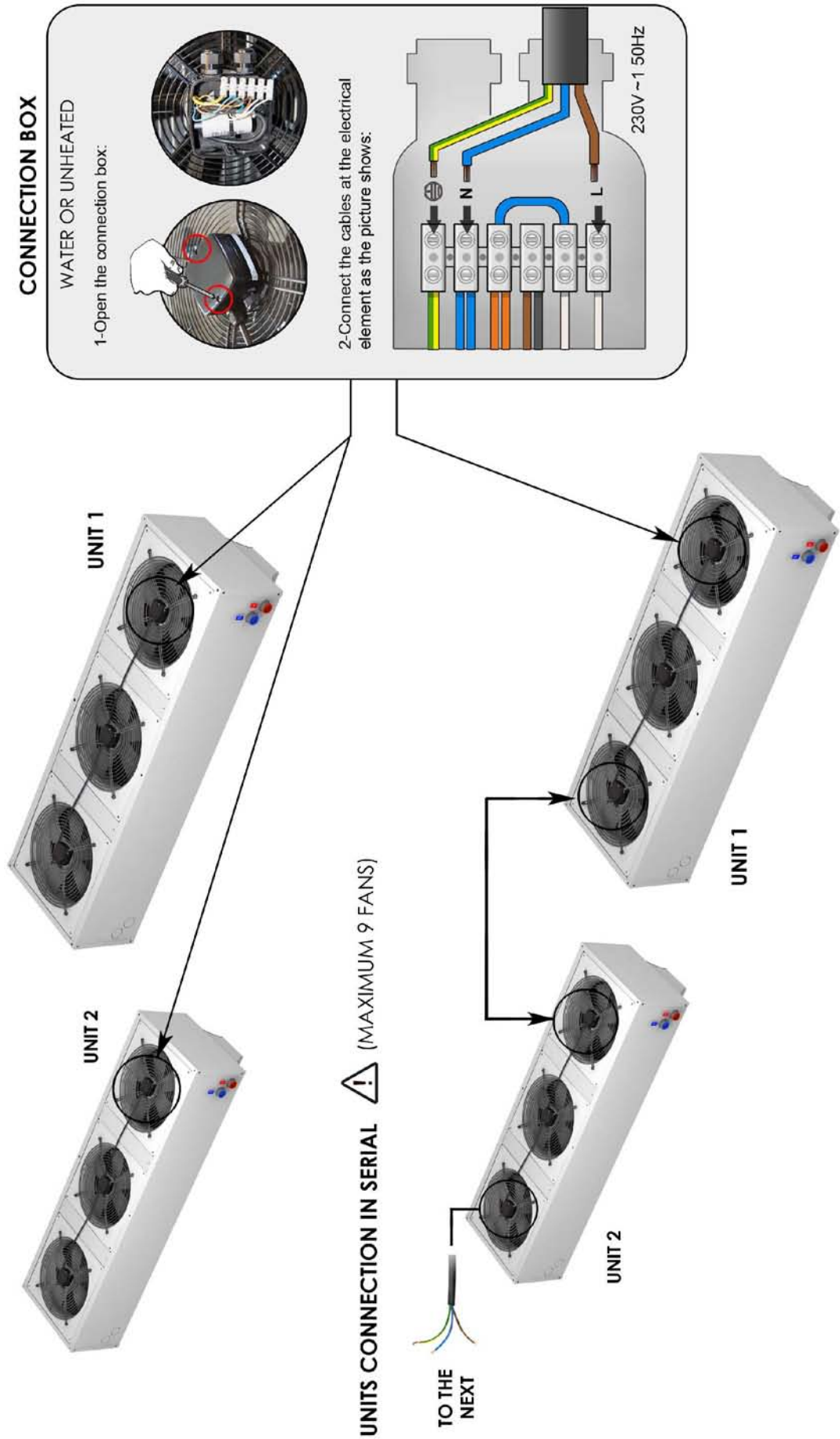
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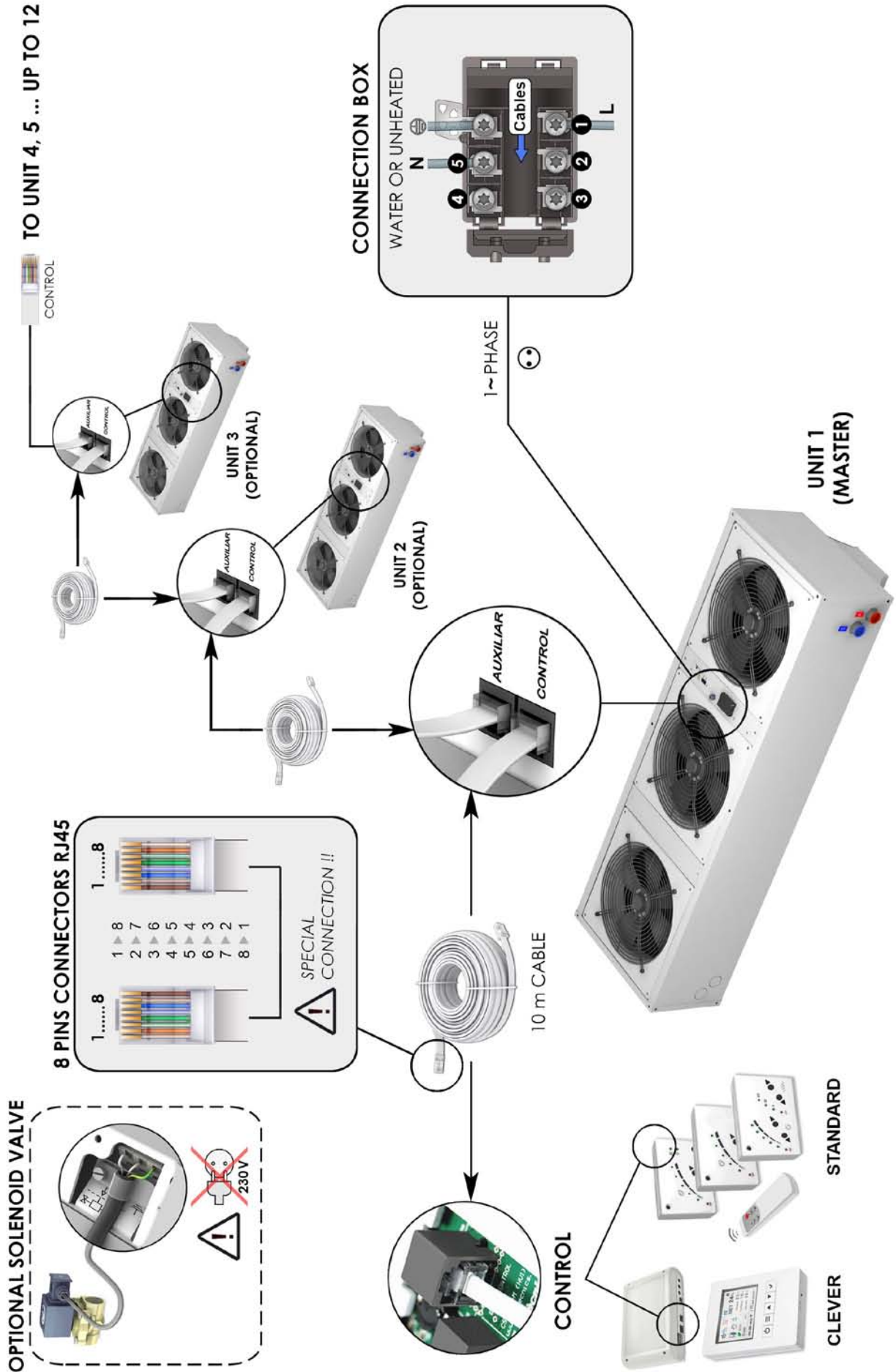
# CONNECTION DIAGRAM (WITHOUT REGULATION 230Vx1)

UNITS CONNECTION IN PARALLEL ⚠ (NO UNITS LIMIT)

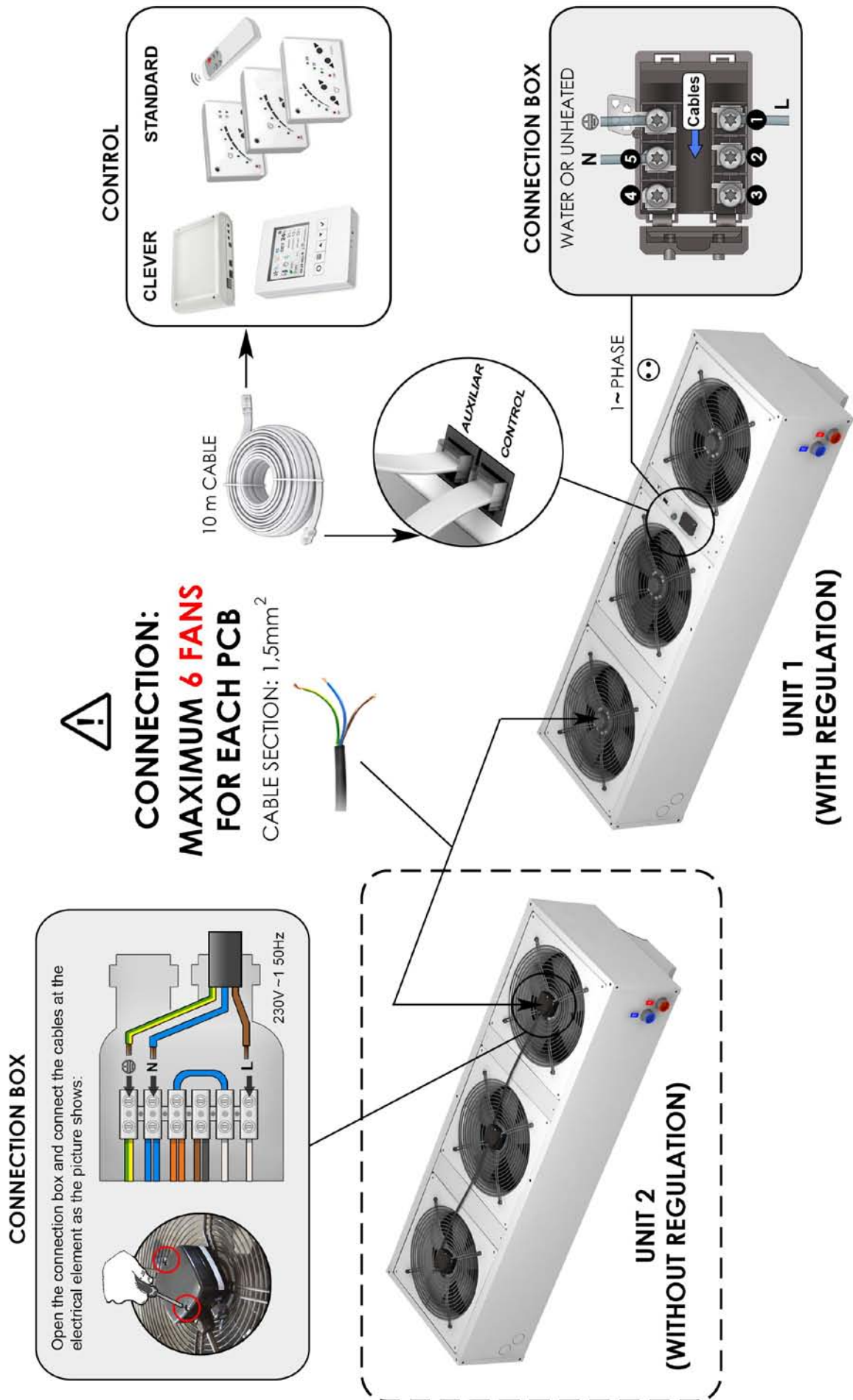


UNITS CONNECTION IN SERIAL ⚠ (MAXIMUM 9 FANS)

# CONNECTION DIAGRAM (WITH REGULATION 230Vx1)



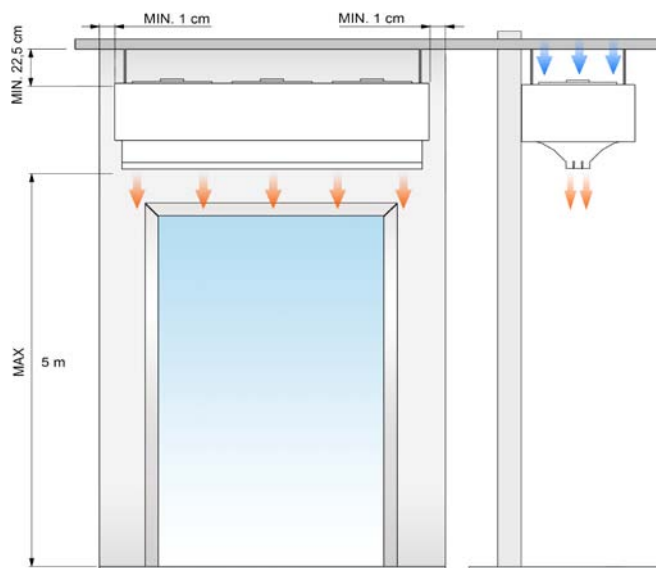
**CONNECTION DIAGRAM (WITHOUT REGULATION CONNECTED TO A UNIT WITH REGULATION)**



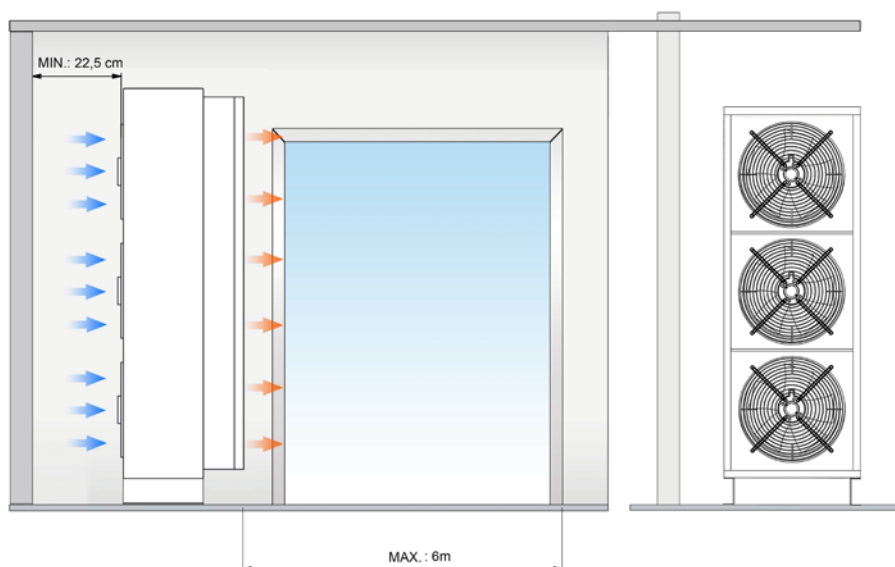
## INSTALLATION

Valid for models: **Maxwell**

### HORIZONTAL



### VERTICAL



MAX. Maximum recommended height, MIN. Minimum recommended distance  
Minimum recommended distance between the inlet grille and any obstacle is of 225mm.

	<p><b>Installation work, connection, disconnection, electrical wiring, mechanical maintenance and service must be done by qualified people observing these instructions and in accordance with all applicable norms and standards.</b></p> <p><b>If the unit is operated with additional controller, please consider its specific instructions.</b></p>
	<p><b>There is no need to open the service door to connect the air curtain. All connections (power supply, control, water pipes when existing) and fixations are external. They are placed on top or lateral of the units. See how to open service door at repairs section.</b></p>
	<p><b>For safety, the air curtains never have to be stopped by disconnecting them from the main supply, always through the controller and waiting 10 minutes at least to disconnect the main supply. In case of not follow these instructions, the internal parts of the air curtain can be damaged.</b></p>



## Power Supply

To connect the power supply there is a black connection box in each fan of the air curtain (on the back). Connection should be done directly in any black connection box at the ends of the air curtain.

For an ambient air or water heated air curtain just connect the single phase 230Vx1.

## PCBoard and control (optional in air curtains with regulation)

To connect the controller there is a PCBoard (printed circuit) located outside the air curtain (located on top). There is no need to open the unit to connect it.

Use the 10 meters RJ45 cable supplied with the equipment. The communication between the controller and the PCB is digital and low-voltage.

Optionally, there are different accessories and controllers available, to meet every customer needs (Clever Control, thermostats, hand-auto, door contacts, anti-freezing sensor, supports, valves, etc.).

The new total control for ventilation technology is advanced *Clever* regulation. Leading the new generation of air curtains management with maximum control providing maximum energy saving. Clever automatically adapts the functioning of the air curtain to the entrance climatic conditions in order to keep the comfort and energy saving. For more information ask for *Clever Control* manual.

## Fixing

Units are provided of several external suspension points, depending on the weight and length of each model (see exact situation of the points at the air curtains characteristics page).

Generally air curtains work horizontally but also can be installed vertically using feet supports (*Accessories* section).

The fixing of the air curtain should be managed according to the weights of each unit shown on the technical data page. The installation can be made through threaded rods, cable tensors or other supports. See available supports in the accessories section.

## Water coils

**Water heated air curtains have a PCBoard with an output of 230Vx1 to install an electro valve (open/close water entrance) or any other device.**

It is recommended:

- Close the hot water circulation (by turning the electrovalve OFF) to avoid fan overheating while the unit is OFF. Electrovalve is optional.
- Install 2 cutoff water valves (supply and return) in order to disassemble the equipment easily.
- Install a bleeding valve at the highest part of the water heating circuit.

The ambient temperature should be always over +4°C, otherwise it will be necessary to provide an anti-frost protection device.

Water coils have a drainage point placed at the end part of the intake manifolds area.

## STORAGE AND TRANSPORT



**Attention! Heavy load.  
Do not step underneath hanging load during the transport or assembly.**

Store in a dry place and weather protected in its original packaging. In case the packing is opened, cover the air curtain to protect it from dust. Do not step or put heavy load over the package to avoid damages to the material. Store temperatures are between -20°C and +40°C.

When carrying material, make sure it is not damaged by the forklift (fork penetration in the packaging). Please see the *Packaging* instructions.

## WORKING INSTRUCTIONS



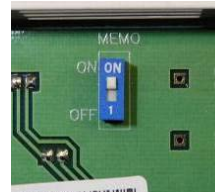
**For safety, the air curtains never have to be stopped by disconnecting them from the main supply, always through the controller and wait for 10 minutes at least to disconnect the main supply. In case to not follow these instructions, the internal parts of the air curtain can be damaged.**

### Control PCBoard characteristics

Fan speed is regulated through the input voltage variation of the fans set. The transformer has 5 output voltages: 120, 140, 170, 200 and 230 Volts.

### Controller's common characteristics

- **Controllers:** There are several models depending on the customer's needs (timers, anti-freezing detectors, thermostats, etc.).
- **5 ventilation speed.**
- **Memory:** When a power shortage happens, it guarantees that the selected speed will be maintained when the service is re-established. This function can be connected or disconnected through the switch ON/OFF placed inside the controller.
- **RJ45 cable and digital communication:** "Plug and Play" easy and fast connection through RJ45 cable and digital communication between the controller and the air curtain. This kind of communication is more reliable even at long distances.
- **External ON/OFF:** Inside the controller we can connect a normally open contact (1, 2) that controls the ON/OFF of the equipment through any external device, the contact is potential-free. When the contact is Open, the air curtain is ON. When the contact is closed the air curtain is OFF. It has a 30 seconds delay. It can be used with programmable timer, temperature sensors, fire alarms, PLC, etc.
- **Remote control:** All the standard controllers have an IR receiver that works by infrared.



### Common characteristics to all controllers for water heated air curtains



Unheated air curtain controller



Warm water heated air curtain controller

- **Heating ON/OFF:** It is possible to activate/deactivate the current of 230Vx1 to the electrovalve to open/close the water entrance to the coil. This 230Vx1 output connector is placed on top of the equipment, besides the telephone cable connection of the controller.
- **How to control an electro-valve with an external thermostat:** To control the inlet water to the battery through a thermostat, we must install it in series with the electro-valve. Thus, when it reaches the selected temperature, the electro-valve will close.
- **Safety thermostat:** If the internal temperature increases to 60°C and the first speed being selected, it automatically turns to the second ventilation speed. It will continue to the maximum speed till the internal temperature is lower than 50°C. The emergency operating is indicated by a flashing LED. If the safety activates too often the cause must be determined. The most probable is that we have to increase the cleaning of the inlet grill with more regular recurrence.  
For example, an obstruction in the inlet grill, the inactive motor or a too high ambient temperature in an installation with no ambient thermostat or a water temperature of the water coil over 80°C would increase automatically the speed fan.  
It also avoids that the expelled air by the air curtain is over 60°C (too high temperature sensation for people).



Auxiliary functions of the controllers with electrical heating:

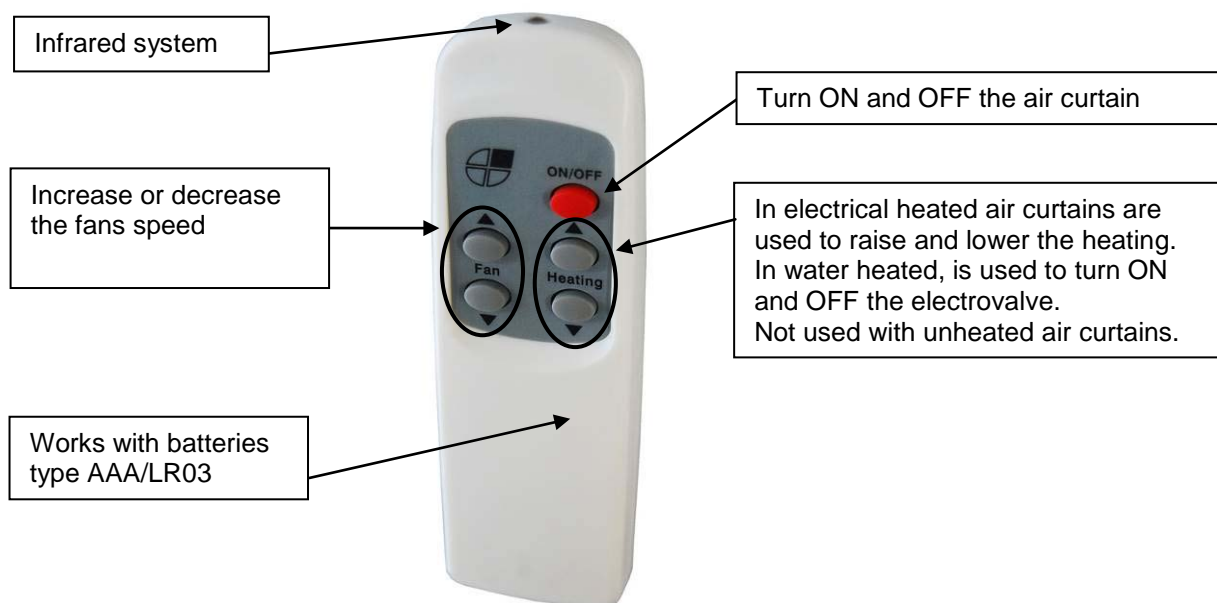
- **Ambient thermostat (digital o analogue):** with an ambient thermostat we can turn on and off the heating when reaching a programmed temperature.  
Its use is specially recommended in closed areas of little dimensions because otherwise the temperature would increase too much. In case on installing the ambient thermostat, remove the bridge of the controller between terminal 4 and 5.

### ***Special controllers***

If there is a will to control more parameters, there are two controllers that allow a lot more possibilities in comparison with the standard control, especially *Clever*. The following controllers have specific user manuals:

- Hand Auto
- Clever Control

### ***Remote control characteristics***

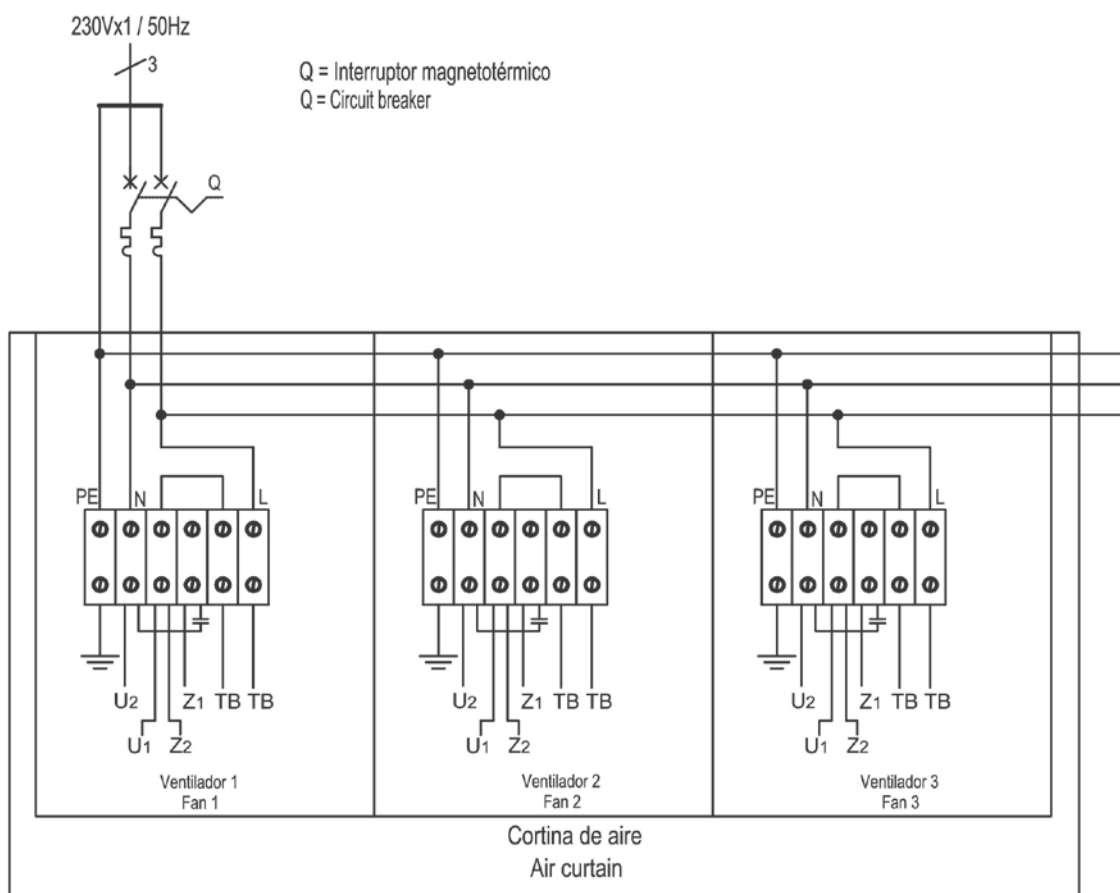


### ***WIRING DIAGRAMS***

Following wiring diagrams are enclosed:

- Warm water heated or only air without regulation. Diagram: AIRDOE11700
- Warm water heated or only air with regulation. Diagram: AIRDOE11716
- Warm water heated or only air with Hand Auto regulation. Diagram: AIRDOE11725

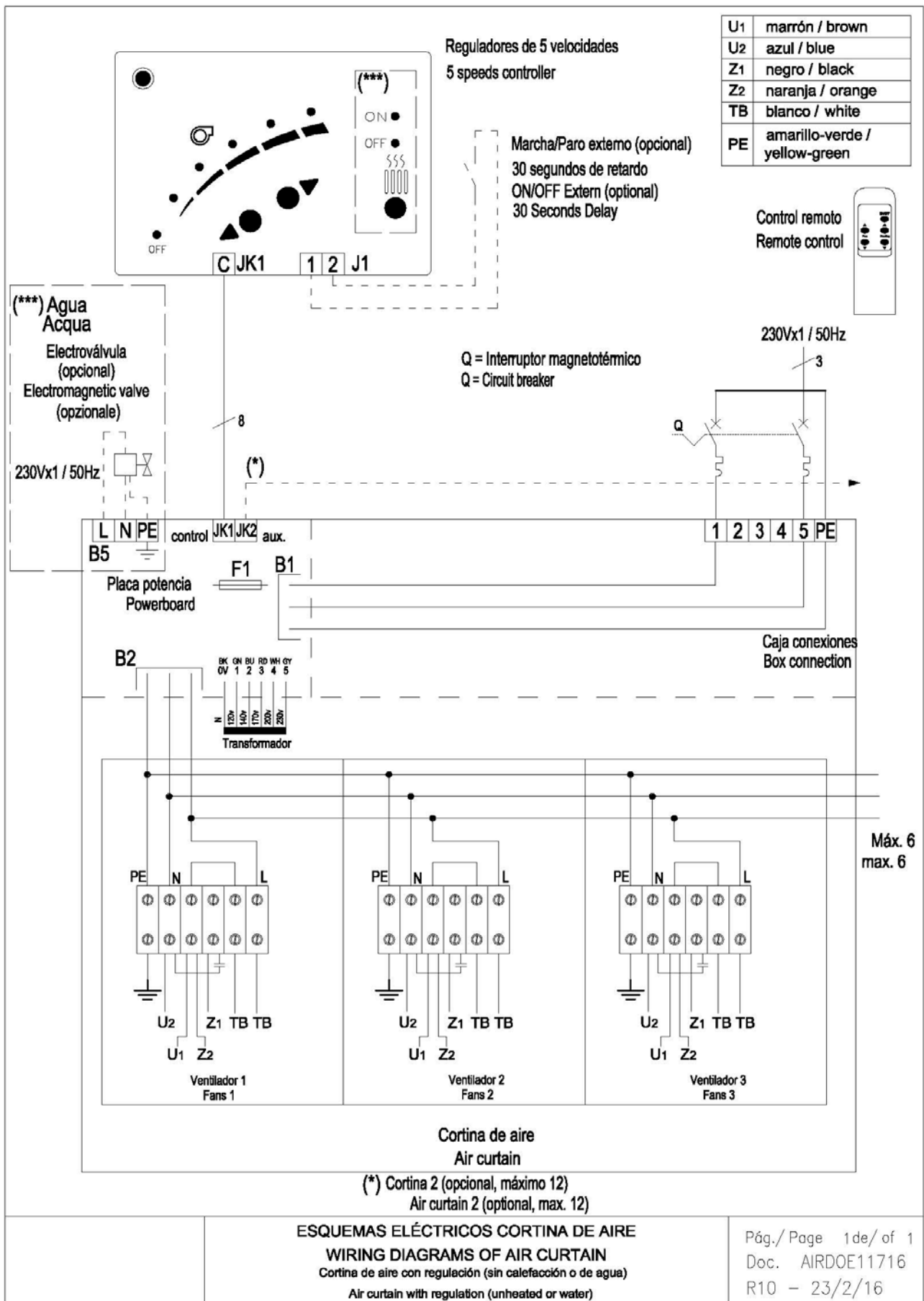
In case you need to connect the equipment to a PLC, the corresponding wiring diagrams will be supplied.

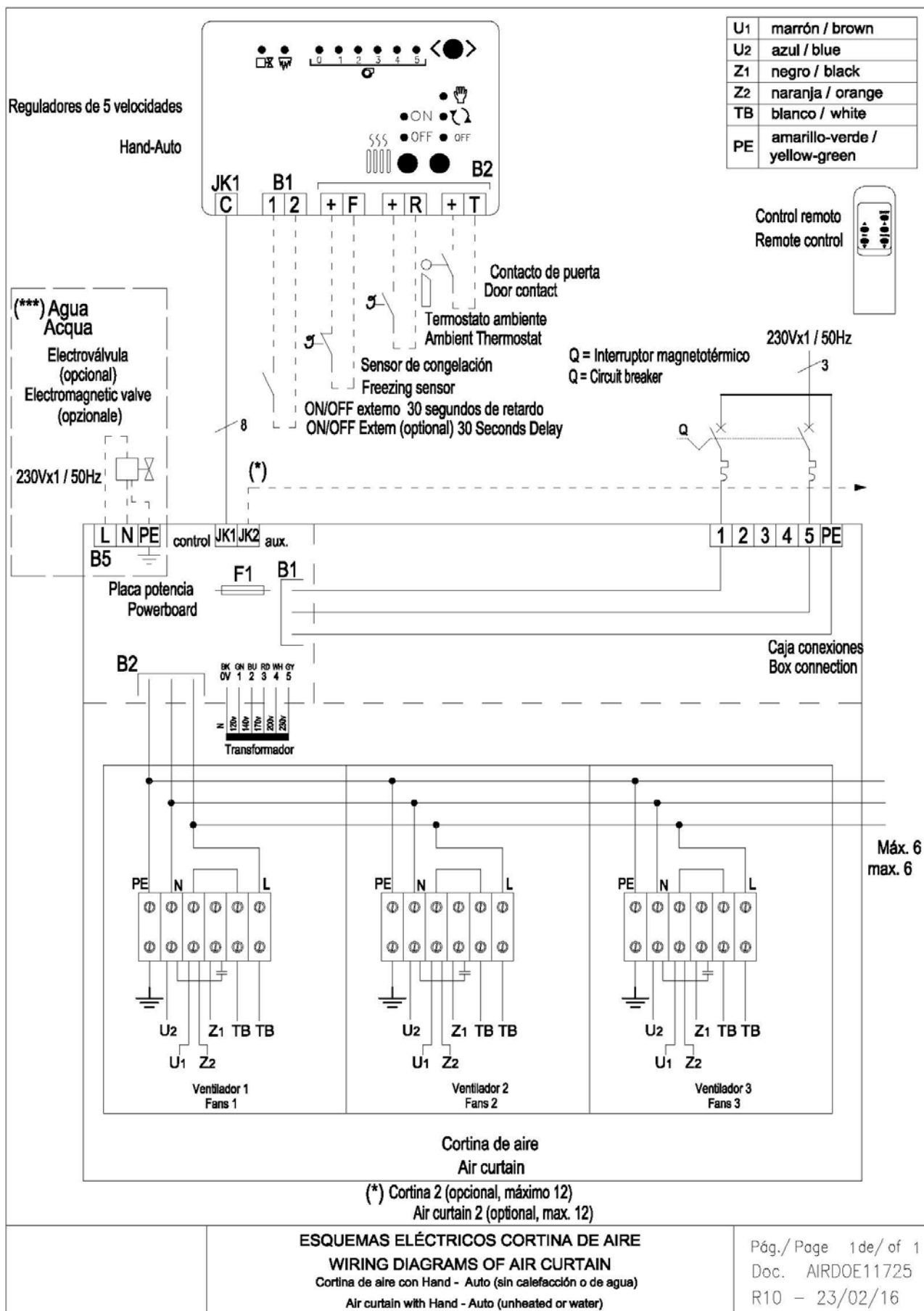


U1	marrón / brown
U2	azul / blue
Z1	negro / black
Z2	naranja / orange
TB	blanco / white
PE	amarillo-verde / yellow-green

ESQUEMAS ELÉCTRICOS CORTINA DE AIRE  
WIRING DIAGRAMS OF AIR CURTAIN  
Cortina de aire sin regulación (sin calefacción o de agua)  
Air curtain without regulation (unheated or water)

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Doc. AIRDOE11700  
R10 - 23/02/16





# MAXWELL | Air Curtains For Industrial Doors



## Characteristics



- High performance industrial air curtains for vertical or horizontal installations for large industrial doors. Available in 1.5, 2.0 and 2.5 meters length. Easy dockable modules to reach large dimensions.
- Heavy self-supporting casing construction made of galvanized steel plate, finished in structural epoxy-polyester painting white colour RAL9016 as standard. Other colours are available on request.
- Double outlet with Coanda effect to achieve larger and efficient air jet. Anodized aluminium outlet vanes, airfoil shaped, adjustable from 0 to 15° each side.
- High efficiency and low noise axial fans, driven with external rotor motor single phase 230V. Optionally three phase 400V. Provided with 5-speed selection. Maintenance free.
- "P" type with water heated coil. "A" type without heating, air only.
- Regulation not included. Optional:  
Basic regulation with Plug&Play control panel, 10m RJ45 cable and remote control.  
Advanced regulation with Clever (automatic, intelligent, energy saving, Modbus RTU for BMS...).

## Specifications

### AIR ONLY

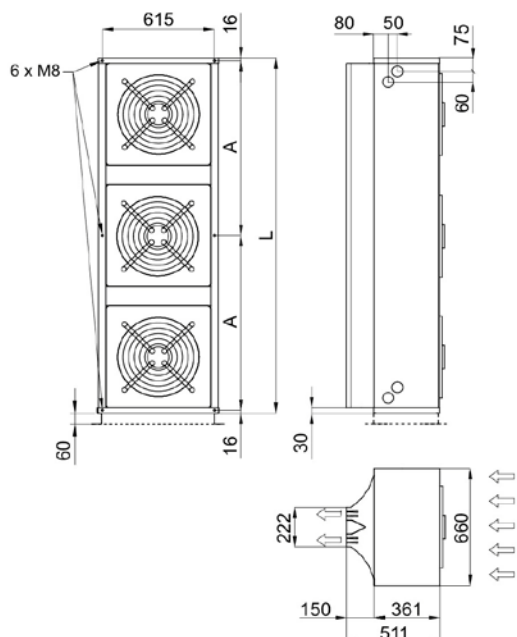
Model	Airflow m³/h	Fans Power 230V-50Hz kW	Fans Current 230V-50Hz A	Noise Level (5 m) dB(A)	Weight kg
MXW 1500 A	7000	0,68	2,96	60	79
MXW 2000 A	10500	1,02	4,44	61	103
MXW 2500 A	14000	1,36	5,92	62	126

### WATER HEATED

Model	Airflow m³/h	P86			P64			Fans Power 230V-50Hz kW	Fans Current 230V-50Hz A	Noise Level (5 m) dB(A)	Weight kg
		Water Heating Capacity 80/60°C kW	Water Drop Pressure 80/60°C Pa	Water Connections 80/60°C	Water Heating Capacity 60/40°C kW	Water Drop Pressure 60/40°C Pa	Water Connections 60/40°C				
MXW 1500 P	6800	41,39	12040	2x1½"	34,09	12620	2x1½"	0,68	2,96	59	95
MXW 2000 P	10200	61,25	16920	2x1½"	50,16	13660	2x1½"	1,02	4,44	60	126
MXW 2500 P	13600	80,05	13940	2x1½"	66,19	14600	2x1½"	1,36	5,92	61	158




Water heated: P86 2 rows coil, P64 3 rows coil. Electrical heated models available on customer request. Let us know your needs.

## Dimensions



	L	A
MXW 1500	1500	734
MXW 2000	2000	984
MXW 2500	2500	1234

## MAINTENANCE INSTRUCTIONS

	<b><i>For safety, before any cleaning, disconnect power supply using the controller.</i></b>
	<b><i>It is forbidden to open the service door (risk of electrical discharge and being trapped in fans). Service and maintenance should be done only by introduced and qualified workers.</i></b>
	<b><i>Do not use water or steam for cleaning the internal parts and components of the air curtain.</i></b>

### ***External cleaning***

Air curtains don't need any kind of maintenance except from the cleaning of the casing and the inlet grille.

It is recommended to weekly clean the inlet grille. It's important to make sure that the air curtain is OFF, otherwise the dust mixed with a wet cloth would create a kind of paste that will damage the fan rotor when it sucks the air.

Annual cleaning of the discharge area (outlet).

The casing of the air curtain should be cleaned with a wet cloth and non-aggressive detergent. Do not use caustic soap or acids.

The inlet grille prevents the settling of dust and strange objects in the internal elements. It is recommended to check periodically that the inlet grille is free of any object that could interfere the air entrance (plastic bags, papers, etc.).



### ***Internal cleaning***

In models without micro drilled inlet grille and water coil is recommended to clean the inside of the unit with a vacuum at least once a year (\*), best before the winter season, with qualified staff.

(\*) These periods are indicative, depending on the ambient conditions of every installation.

In places with a high number of particles in suspension is desirable to increase the frequency of the internal cleaning (including the city centers, near construction sites, etc.).



## REPAIRS AND REPLACEMENTS



**Installation and electrical connections must be done by qualified workers and following these instructions.**



**Before any repairs are undertaken, please:**



- **Inform people that there is work in progress.**
- **Disconnect the power supply and protect the thermal magnet (so nobody can restart it accidentally).**
- **Make sure there is no tension in the air curtain.**
- **Make sure the fans are stopped.**
- **Use only original spare parts.**

To open **any panel** follow these steps:

1.- We will only replace the motor with blades. To do so we will remove first the grille with the motor and the blades, by unscrewing the 4 external screws from the grille.

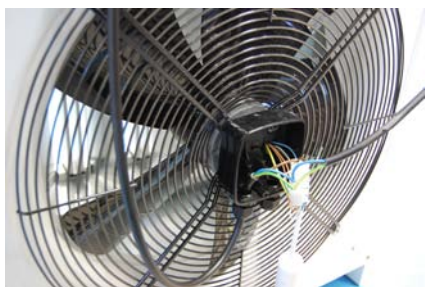


2.- If the unit is regulated, you can remove the 2 screws that fix the regulation panel, extract it and do the repair.



### **Fan replacement**

Before replacing the fan, inform people that there is work in progress, stop the air curtain through the controller and disconnect main supply. Make sure that the unit is without tension and the fans are stationary.



#### **Before dismantling the fan we must unplug the fan.**

Open the connection box of the fan, identify the colours with the corresponding terminal (to avoid connection mistakes of the new fan) and loosen the connection cables from the fan.

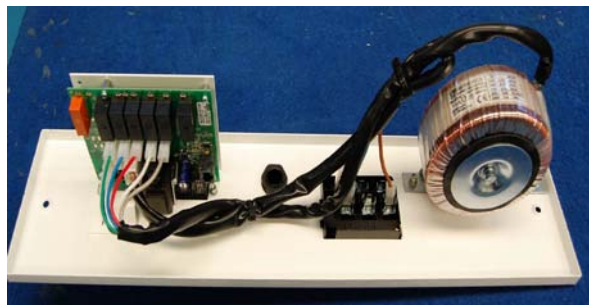
We will replace the motor and the grille together. To do so we will remove the 4 screws of the grille. Once done, we will be able to remove the fan with the grille. To assemble the new fan with the grille we will follow the process in reverse order.



### ***Fuse replacement***

Before the replacement, inform people that there is work in progress, disconnect main supply, make sure that the unit is without tension and that the fans are stationary.

If the air curtain is regulated extract the regulation panel and remove the fuse of the fuse holder by hand or pulling with the help of a screwdriver and replace.



### ***PCB replacement***

Once the regulation panel is unscrewed. There is access to unscrew the power plate.

### ***Heater replacement***

Before the replacement, inform people that there is work in progress, disconnect main supply, make sure that the unit is without tension and that the fans are stopped. Before proceeding to unfasten the heater fixing screws, we must:

**Water Coils:** Close the shut-off water valves of the building water circuit to the air curtain (supply and return). Open the service door and empty the water from the coil simply removing the draining screw placed in the bottom of the entrance manifold as shown in the photograph.



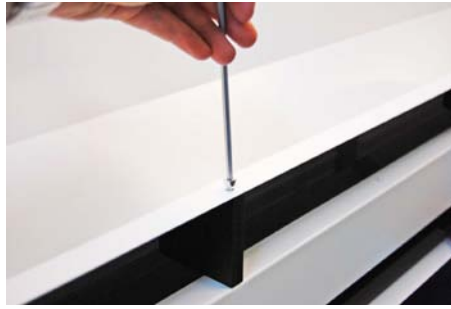
Remove the screws of the outlet (only one side).



Remove all the lamellas of the outlet and also its supports.



Unfix the outlet (be careful when unfixing the outlet if the installation is horizontal, need to hold the outlet). The screws are inside of the outlet (you need to unfix the central support of outlet).



Remove the screws that fix the water coil to the air curtain.



Tilt the water coil as shown in the picture, in order to extract the connection pipes of its holes and pull out the water coil for the front part of the air curtain.



We do the same process in reverse in order to fix the new water coil

## FAILURES AND SOLUTIONS

**More than 95%** of the complaints are submitted during the start of operation of the equipment and are due to installations errors.

More than 90% of the failures are solved only by **checking the connections**. Following the three following points, we can make sure that the installation is correct:

**A) RJ45 cable manipulated:** The cable that connects the controller to the air curtains is an 8 lines crossed RJ45 cable. **If manipulated (cut or removed the connector) and incorrectly joined (reverse way) the air curtain will not work well.** Moreover it can damage the electronics. To solve the problem just turn the connector of the cable (see connection diagram in the first page).

**B) Wrong connection of the RJ45 cable.** Verify whether the connector position is the correct, between the “control” and “auxiliary”, according to the installation diagram (particularly if there are several air curtains with a single controller).

**C) Wrong current supply/input.** The air curtain input depends on the type of current available and also on the heating type of the unit. Connect the unit according to the connection diagrams of the first page.

More common failures and solutions		
Effect	Problems	Solutions
<b>All lights of the controller are OFF</b>	Is the RJ45 cable the original (not manipulated), with no enlargements either shortenings?	Change the cable or connect it again correctly.
	Does the current reaches the connection box?	Connect correctly the terminals of the junction box: Between L and N there must be 230V and if the air curtain goes with three-phase electrical element, there must be 400V among terminals L1, L2 and L3.
	Is the controller connected to the air curtain, to the connector “Control” of the PCBoard?	Connect the cable from the controller to the “Control”, never to the “Aux”.
	Is the fuse of the PCBoard in good conditions?	Check the fuse and replace it in case it is necessary (type T, slow action).
<b>Some lights of the controller are Flashing.</b>	The green LED of the maximum speed flashes when we stop the air curtain after having been operating with heating.	It is not a failure, but a safety mechanism. The air curtain turns on by itself to the maximum speed to get cold and protect its components. When it decreases from the safety temperature, it will stop.
	Some speed or heating lights are flashing when the air curtain is working.	It is a protection mechanism of the air curtain so that the internal parts of the air curtain do not suffer damages. Situations on which the problem continuously recurs and the way to solve it: 1. Inlet grille blocked (objects, dirtiness...) the ambient temperature inside the equipment can increase a lot if the air cannot circulate. Clean the grille. 2. Small room: we recommend installing a thermostat to control the heating power so the protection device do not activates. 3. In case that the ambient temperature is already high, we recommend to lower the power heating or install a thermostat. 4. Inlet air already warm, that comes from another heating equipment beyond the air curtain. Move the air curtain away, place a thermostat in the inlet part of the curtain or lower the heating power. 5. Any motor does not work: call the technical service.
<b>The heating does not work</b>	Does the three-phase current reach the connections box?	Check installation.
<b>The speed and/or the heat changes continuously with no apparent reason but the lights of the controller are not flashing.</b>	Probably the RJ45 cable is near interference sources, transmitters, cable plates, particularly those that supply current to Motors, etc.	Pass the cable the furthest possible away from interference sources, particularly when long distances or use a screened table.

## ACCESSORIES



### Clever Control

Intelligent proactive regulation, advanced functions, Automatic/manual working, door delay, timer, save energy program, multi equipment management, BMS Modbus connection, etc.



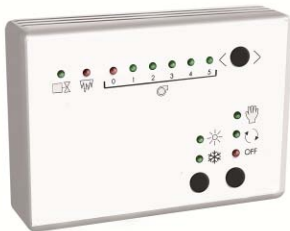
### External temperature Sensor

It permits to take the temperature from a place different to the control.



### Interface II

Allows the connection to a centralized management system (BMS, PLC, etc.).



### Hand Auto 5 Speed (water heated)

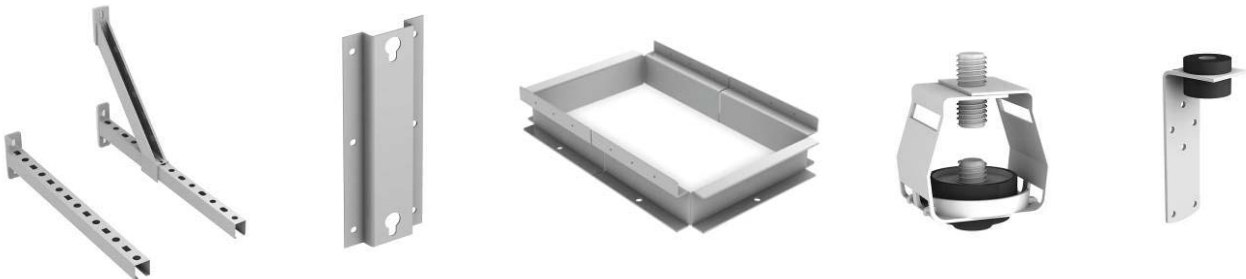
It permits to connect anti-freezing sensors, door contact, ambient thermostat, etc.



### Ambient Thermostat

It limits the operating of the heating to the selected one.

Supports, feet, vibration dampers, etc. depending on the model.



Door contact, thermostatic valve, solenoid valve, antifreezing sensor, etc.



RJ45 Cable 20m and 50m



Plenum and/or inlet/outlet kit (depending on the model)





## DECLARATION OF CONFORMITY



### Declaration (CE) of conformity / Declaración (CE) de conformidad

Manufacturer **Motors i Ventiladors S.L. (AIRTÈCNICS)**  
Fabricante **Conca de Barberà 6, Pol. Ind. Pla de la Bruguera**  
**08211 Castellar del Vallès (Barcelona) Spain**

We declare, under our sole responsibility, that the product(s)  
*Declaramos, bajo nuestra única responsabilidad, que el/los producto(s)*

**Air Curtains**  
***Cortinas de aire***

with models  
*con los modelos*

**Minibel, Optima, Recessed Optima, Windbox, Recessed Windbox, Smart, Dam, Deco, Kool, Variwind, Rotowind, Invisair, Rund, Zen, Duojet, Triojet, Max, Recessed Dam, Recessed Compact, Maxwell**

is/are developed, designed and manufactured in accordance with the following directive(s)  
*ha(n) sido desarrollado(s), diseñado(s) y fabricado(s) de acuerdo con la(s) siguiente(s) directiva(s)*

**Low Voltage Directive 2014/35/UE**  
***Directiva Baja Tensión 2014/35/UE***

**Electromagnetic Compatibility Directive 2014/30/UE**  
***Directiva Compatibilidad Electromagnética 2014/30/UE***

**Restriction Certain Hazardous Substances Directive 2011/65/EU (RoHS)**  
***Directiva Restricción Substancias Peligrosas 2011/65/EU***

**Eco-design Energy-related Products Directive 2009/125/EC**  
***Directiva Diseño Ecológico Productos Con Energía 2009/125/CE***

applying the following harmonized standards in particular  
*aplicando las siguientes normas armonizadas en particular*

**LVD: EN 60335-1:2012 + AC:2014 + A11:2014**  
**EN 60335-2-30:2010 + A11:2012**

**EMC: EN 61000-6-2:2006**  
**EN 61000-6-3:2007 + A1:2012**  
**EN 55014-1:2008 + A1:2009 + A2:2012**  
**EN 55014-2:2015**

**RoHS: EN 50581:2012**

Date / Fecha  
Name / Nombre  
Position / Cargo

**03/05/2016**  
**Jordi Oltra Orta**  
**General Manager / Director General**







<b>Model</b> Modelo	WINDBOX M 2000 E				
<b>Airflow</b> Caudal	3600	m3/h			
<b>Blowers</b> Ventiladores	1,88	A	0,424	kW	230 V/50Hz
<b>Heating capacity</b> Calefacción	80/60 °C		60/40 °C		
<b>Water Coil</b> Agua		kW		kW	
<b>Electric Coil</b> Batería Eléctrica	6/12/18	kW	400V~3 50Hz		
<b>Serial Number</b> Número de Serie	2015-07-06 / 61.990				

### Air curtain identification

Each air curtain is identified by a unique serial number printed in a label located inside the door service. There is also indicated the model and their technical characteristics (flow, fans technical characteristics and power heating).

It is indispensable to have this number to facilitate possible replacements or technical information of the air curtain in question.

If you detect some error in this manual, we'll be pleased to receive your *feedback*, it helps us to improve even more.

Airtècnics reserves the right to modify some of the specifications in this manual.

## GUARANTEE

Your air curtain is guaranteed for a period of one year from the date of purchase. We will adjust, repair or replace at our discretion from our warehouse any defect, system failure or part found to be defective. The assembly cost out of our warehouse is at buyer expense. The products that, in our eyes, have been inadequately used, incorrectly manipulated, improperly installed, connected to different nominal tensions, modified, repaired by non-authorized workers or that have suffered damages during transport are totally excluded from the guarantee.

*To validate the guarantee it should be correctly filled and enclosed with the invoice that vouches for the buying date. If it is manipulated, it will lose all validity.*

*It is the buyer's responsibility to take the necessary safety measures because in case of a failure or mistake in one of our products, no damages to third parties, sets or installations will occur.*

✂

### Guarantee draft

#### Air curtains data:

Model: .....

Series number: .....

Invoice date: .....

Invoice number: .....

#### Buyer data:

Name: .....

Address: .....

Country: ..... Phone: ..... Fax: .....

#### Seller data:

Name: .....

Address: .....

Country: ..... Phone: ..... Fax: .....

#### Buyer signature and stamp

#### Seller signature and stamp



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