



INSTALLATION, OPERATION AND MAINTENANCE MANUAL



Air curtains with Slave DX control and heat pump Toshiba 1:1&VRF system

With HEATING and COOLING:

Windbox, Recessed Windbox, Smart, Dam and Recessed Dam with Toshiba Pump and Kit (*)

Only HEATING:

Invisair, Rotowind, Rund (M,G) and Zen with Toshiba Pump (*)

Please, read these instructions carefully before attempting installation

SECURITY ADVISE SIMBOLS



Attention, Danger, Safety Advice!



Danger from electric current or high voltage!



Injuries risk!



Danger! Do not stay underneath: Heavy load.



Important information.

(*) This manual complements with the Toshiba's Kit RAV-DXC010 (1:1) or MM-DXC010 (VRF)



**This manual indicates how to connect the air curtains with the heat pump external unit.
It is necessary to complement this information with the heat pump manufacturer manual for a correct installation and maintenance of the set.**

AIR CURTAINS WORKING MODE



Air curtains which are not prepared to work with cool **CANNOT NEVER** enter in cooling mode. In case they started to work in cooling mode, the coil condensation could reach the electronic components and also cause water to flow out of the outlet and the service door of the air curtain, loosing all guarantee.

If the air curtain is ONLY HEATING, it cannot be integrated into a centralized control if the mode change cannot be locked.

Airtècnics does not recommend air curtains to work with cool, because the air speed must be limited to try to avoid the dragging condensates. Due to this limitation, the air curtain doesn't perform the air barrier function as it should be.

WIRING DIAGRAMS

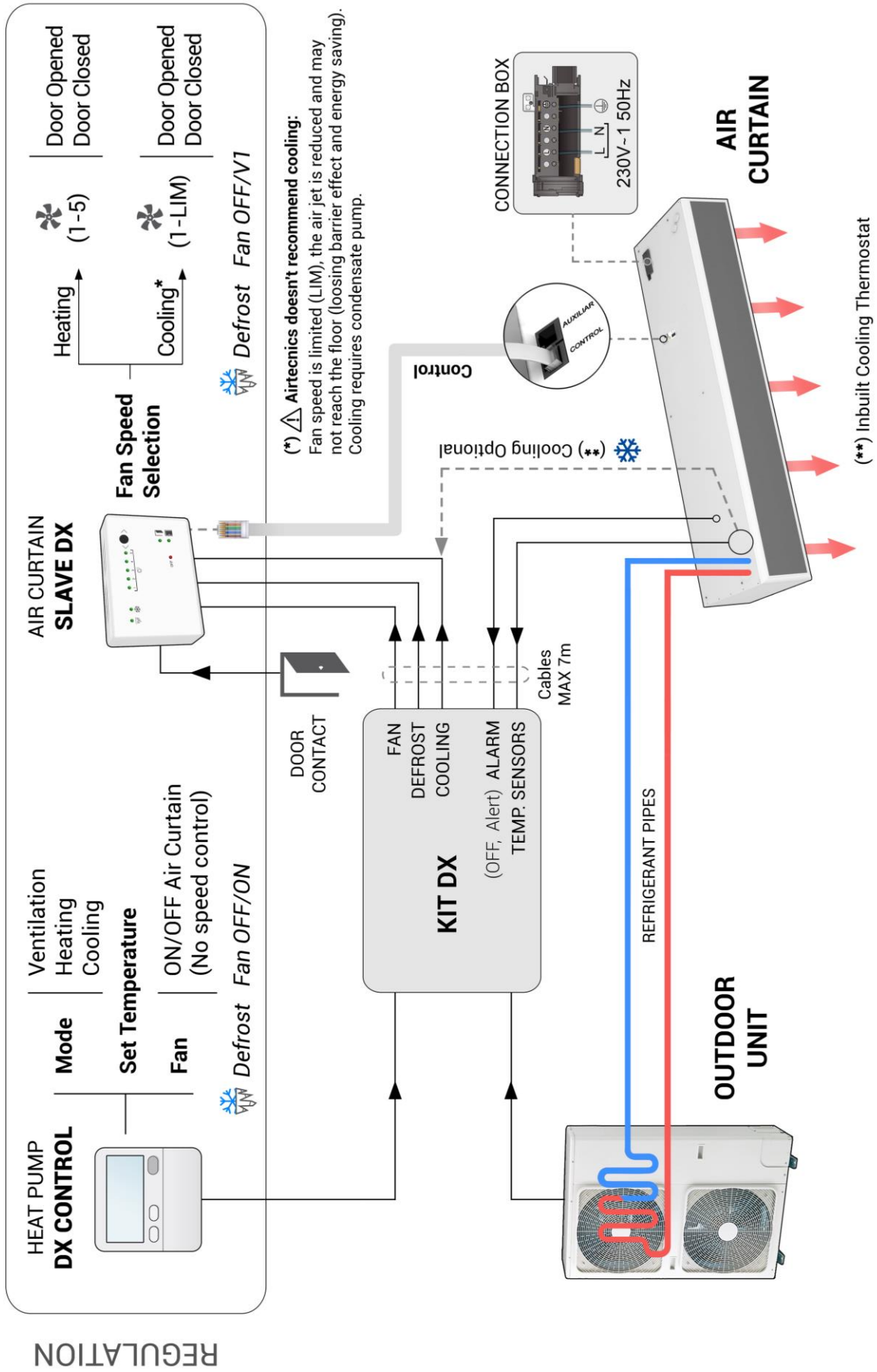
This manual complements with the air curtain's wiring diagram:

- Air curtain with heat pump DX 1:1 only heating with Slave DX - AIRDOE99880
- Air curtain with heat pump DX 1:1 heating/cooling with Slave DX - AIRDOE99881
- Air curtain with heat pump DX VRF only heating with Slave DX - AIRDOE99105
- Air curtain with heat pump DX VRF heating/cooling with Slave DX - AIRDOE99106

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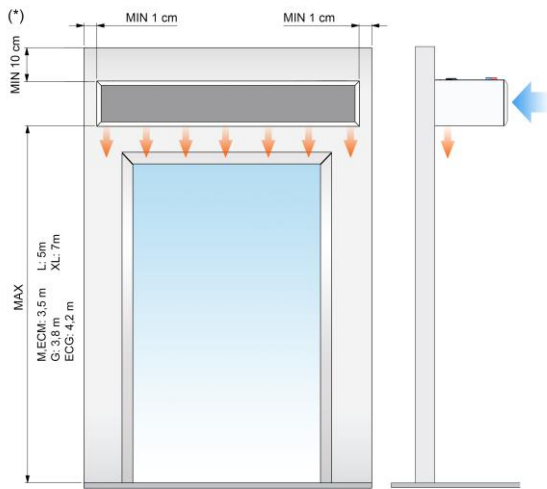
CONNECTION DIAGRAM – SLAVE DX CONTROL



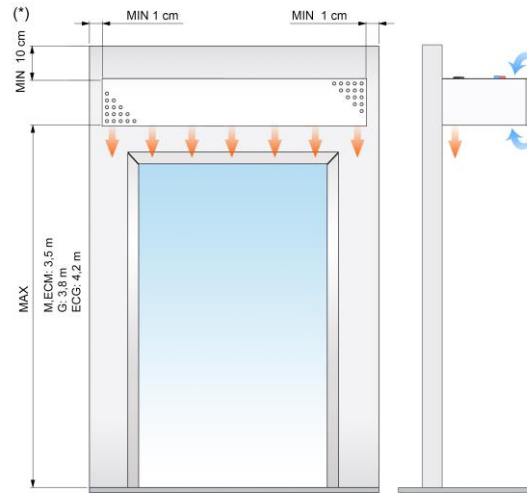
INSTALLATION

Valid for models:

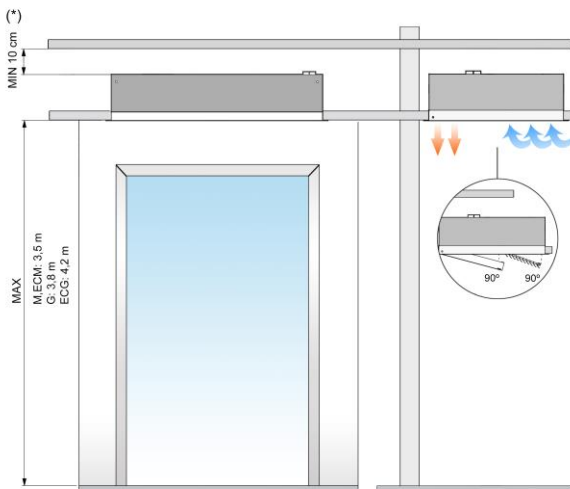
Windbox, Variwind, Rotowind, Invisair



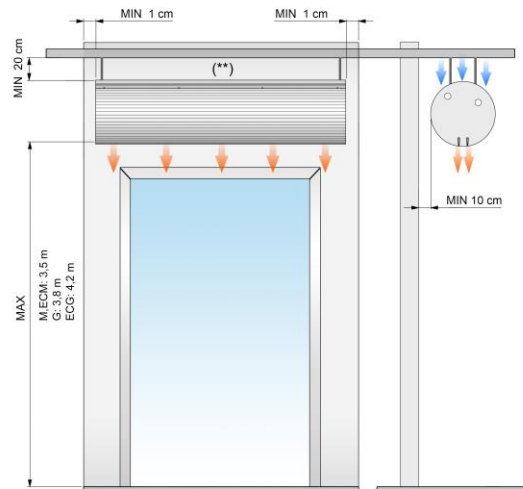
Dam



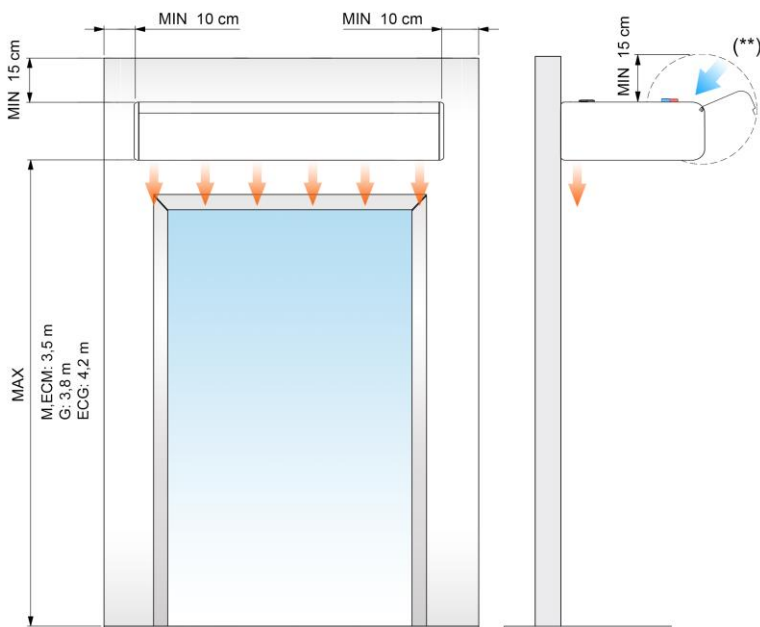
Recessed Windbox, Recessed Dam



Rund, Zen






Smart



MAX. Maximum recommended height, MIN. Minimum recommended distance

(*) Standard units. Under request this distance can be reduced up to 1 cm when connections are placed inside and when lateral water pipes.

Minimum recommended distance between the inlet grille and any obstacle is of 200mm.

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

In the following air curtain models, it is not possible to use the cooling system: Rotowind, Invisair, Rund, Zen, and in any curtain installed in vertical form.

Connection

1. Power supply

- **Air curtain:** To connect the power supply there is a black connection box outside the air curtain, except for Rund and Zen models, that is placed inside the air curtain. The standard voltage is single phase 230Vx1.
- **Kit DX.** Follow the Toshiba's instructions to connect it.
- **Outdoor unit (condenser):** Follow the instructions of each condenser unit to connect the power supply. The voltage can be of 230Vx1 or 400Vx3 depending on the model.
- **Condensate pump** (applicable only in models with cool): It is the pump to empty the condensate tray and must be connected to 230Vx1. Moreover, it has two connections for water pipe. The inlet is connected to the condensate tray and the outlet to the waste pipe. It is optional but highly recommended for cold working models.



2. Controller

- **Airtècnics air curtain:** Connect the Slave DX to the connector "control" placed in the curtain using the RJ45 cable (included).
- **Airtècnics Slave DX controller:**
All contacts must be free voltage.
 - Door contact: Connect the door contact to + and T of the Slave DX. If not installed, it works as open door.
 - ON/OFF contact: Connect the output 8 and 9 of the Toshiba kit to the terminals 1 and 2 of the Slave DX. When the contact is closed, the fans of the curtain turn on.
 - Defrost contact (optional):
 - Connected to the Slave DX, it will indicate with a LED when Defrost is active.
 - Connectors F and + from Toshiba's kit to connectors + and F of the Slave DX.
 - Cooling contact (only for curtains with cooling and heating): Connect the cooling signal outputs R and + from Toshiba's kit to the inputs + and R of the Slave DX as the wiring diagram shows. The air curtain speed will be limited to avoid dragging condensate water. If it is not done, the water can cause several damages which guarantee does not cover. The air curtain speed should be limited to avoid higher speeds than 2,5m/s at the air curtain inlet (done at factory).

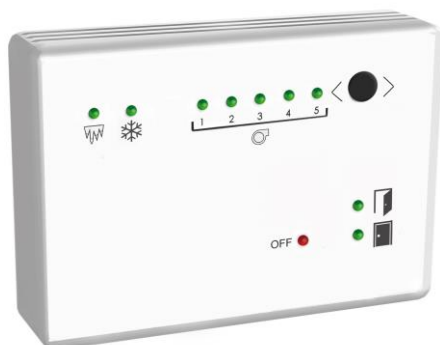
- **Kit DX Toshiba:** Controls the functioning of the external heat pump unit and it should be installed close to the air curtain. It sends orders and communicates with the air curtain Slave DX. For kits 1:1, it is necessary to configure the capacity as the following table shows:

Capacity adjustment		
Air Curtain	Outdoor Unit	DN11 Configuration
DX10-11	RAV-SM1104ATP-E / RAV-SP1104AT8-E	0015
DX13	RAV-SM1404ATP-E / RAV-SP1404AT8-E	0017
DX15-16	RAV-SM1603AT-E / RAV-SP1604AT8-E	0018
DX19-21-22	RAV-SM2244AT8-E	0021
DX24-26-27	RAV-SM2804AT8-E	0023

- **Direct expansion valve:** Should be connected at connectors from 81 to 86 of the Toshiba kit. For kits VRF, there are two kind of valves depending on outdoor unit's capacity:

Air Curtain	Expansion valve
VRF10-12-13-15-16	MM-DXV140
VRF19-20-21-24-25-26-29	MM-DXV280

- **Toshiba control:** Connect to DX kit. The Toshiba control decides the mode (air, heating and, in curtains prepared for that, in cooling) and the Set temperature. In only heating curtains, the option mode in the control should be removed (only heating DN2d in 09, heating/cooling DN2d in 11).
For the curtain to work, the Toshiba control must be on.
- **Toshiba's outdoor unit:** Connect it with the kit DX according with the schema.
- **Condensate water pump:** Mandatory on cooling models. If not installed, it may result in water damage to the unit (not covered by the guarantee) or to the premise. Airtècnics, in option, provides a condensate pump with a hose cable and 4 pins connector with the temperature sensors (included). The red sensor is installed on the return (ambient temperature) and the blue one in the high-pressure pipe (small pipe, liquid). The pump activates when cold is detected in the pipe.



Controller Slave DX (CS-5DX-NE) is specially designed for air curtains with direct expansion valve.

This controller works in slave mode. When the control of heat pump is ON (ventilation, heating or cooling), it turns on the air curtain ventilation.

The customer can choose a different speed for each of the following conditions:

- Heating/Ventilation mode and door open
- Heating/Ventilation mode and door closed
- Cold/Ventilation mode and door open
- Cold/Ventilation mode and door closed

In each of these conditions, the desired speed can be programmed by pressing the button.

When cold mode starts, maximum speed is limited according to the configuration of the switches 8 and 9.

If the outdoor unit starts defrost, the curtain will stop or go to the minimum speed according to switch 7.

External ON/OFF (1, 2): When the control of the heat pump turns on in any mode (ventilation, heating or cooling), the air curtain also turns on by this contact.

In case of not turning on the ventilation when the heat pump starts to run, the external unit could be damaged.

Red LED in OFF indicates that the curtain and the heat pump are in OFF. When the heat pump turns on, the red LED turns OFF and a green or orange LED turns on indicating the speed.

Door contact (+, T): If optional door contact is installed, it permits to choose a speed when the door is open and other when the door is closed.

Air curtain changes door open speed (orange LED) to the door closed speed (green LED) after a delay time, configurable according to switches 5 and 6.

All kind of detectors can be used (movement sensors, infrared, etc.).

Programming by speed button:

- With the door open we choose the speed which air curtain will work when the door is open
- With the door closed we choose the speed which air curtain will work when the door is closed

If door contact is not installed, it will always work as open door if switch 2 is in OFF.

The door state is indicated by 2 green LED.

Cold signal (+, R): Only for curtains with cold mode. When it is working in cold (active signal) the maximum speed is limited, configurable by switches 8 and 9.

The aim is that the suction speed does not exceed 2.5 m/s to prevent the arresting droplet.

If the heat pump works in cold mode and this signal is not connected, the air curtain may be damaged (out of warranty) and/or water will fall out.

In curtains with only heating it is not necessary to limit the speed, so it's not necessary to connect it.

A green LED indicates if cold mode is working.

Defrost signal (+, F): In winter, depending on the weather, the equipment can enter in defrost mode and impels cold air for a few minutes.

When defrost is ON, we can choose one of 2 working modes:

- Curtain stops. SW7 in OFF
- Curtain works in minimum speed. SW7 in ON

To minimize the effects of defrost, it is possible to:

- Use units that does not defrost against internal unit, continuous heating systems or similar
- Use 2 external units in one curtain
- Use electrical resistors to help

If we use one of these systems, it is better not to reduce the ventilation speed so as not to interrupt the barrier effect. In this case, cold signal should not be connected.

A blue LED indicates if defrost is ON.

DIP programming (Slave DX):

Inside of control box, there's a little battery of micro switches (by default all in OFF) numbered from 1 to 9 that permits:

1: Contact inverter ON/OFF (1, 2).

- Switch 1 in OFF: Closed contact = Curtain ON, Open contact = Curtain OFF
- Switch 1 in ON: Closed contact = Curtain OFF, Open contact = Curtain ON

2: Door contact inverter (+T).

- Switch 2 in OFF: Closed contact = Door closed, Open contact = Open door
- Switch 2 in ON: Closed contact = Open door, Open contact = Door closed

3: Cold signal contact inverter (+R).

- Switch 3 in OFF: Closed contact = Cold ON, Open contact = Cold OFF
- Switch 3 in ON: Closed contact = Cold OFF, Open contact = Cold ON

4: Defrost contact inverter (+F).

- Switch 4 in OFF: Closed contact = Defrost ON, Open contact = Defrost OFF
- Switch 4 in ON: Closed contact = Defrost OFF, Open contact = Defrost ON

5 y 6: With the combination of these two switches it is possible to modify the delay time from the closing of the door until the equipment operates with closed door speed.

Switch 5	Switch 6	Delay time
OFF	OFF	0 sec
ON	OFF	10 sec
OFF	ON	60 sec
ON	ON	120 sec

7: Defrost:

Switch 7	Speed during defrost
OFF	V0
ON	V1

8 y 9: Maximum speed with cold in ON (by default V3 OFF-OFF). It is the maximum working speed when the curtain is in cold mode.

Switch 8	Switch 9	Maximum speed in cold mode
ON	OFF	V1
ON	ON	V2
OFF	OFF	V3
OFF	ON	V4

Strips



Regulator serigraphy:

- (1, 2) Fan
- (+, T) Door contact
- (+, R) Cool
- (+, F) Defrost

Pipes installation and refrigerant charge

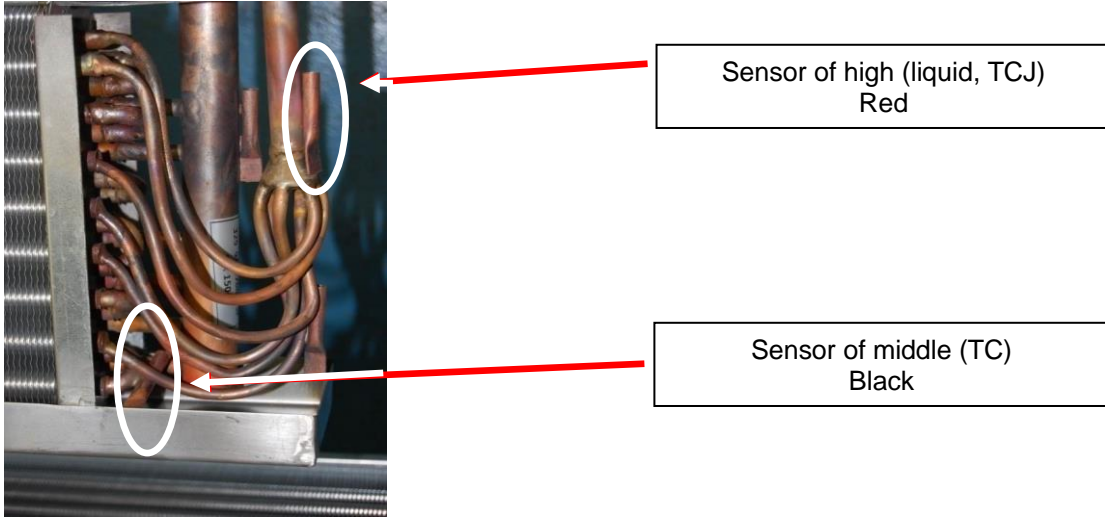
Consult the Toshiba's manual.

Temperature sensors in the air curtain

	<p><i>If some welding is made in the pipes of the air curtains coil, the sensors can be damaged, causing operating errors. If some welding must be done, avoid that the heat reaches the air curtain sensors.</i></p>
	<p><i>All consequential damages, direct and indirect, due to wrong installation of the air curtain are excluded from the guarantee.</i></p>

Toshiba 1:1.

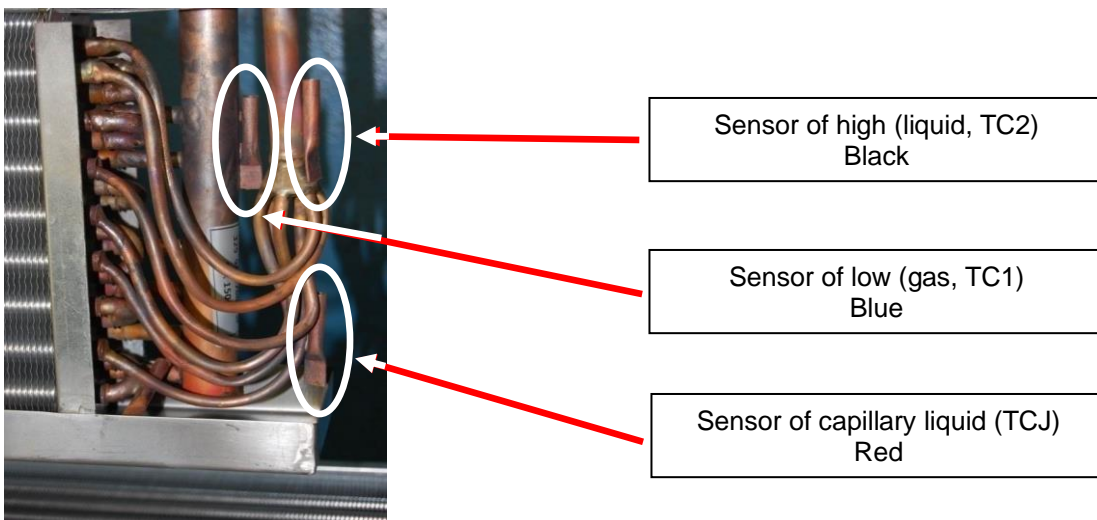
- **Sensor of high (liquid) and middle**



The sensors liquid and middle will be placed on the supports shown on the previous image.

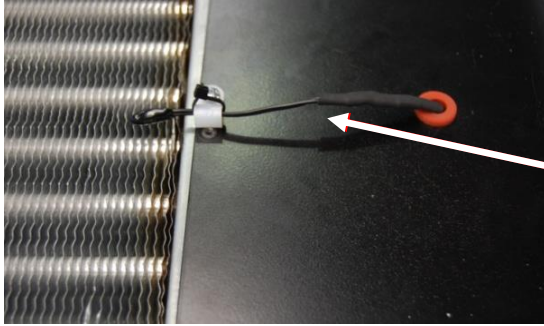
Toshiba VRF.

- **Sensor of low (gas) and high (liquid and capillary liquid)**



The sensors gas, liquid and capillary liquid will be placed on the supports shown on the previous image.

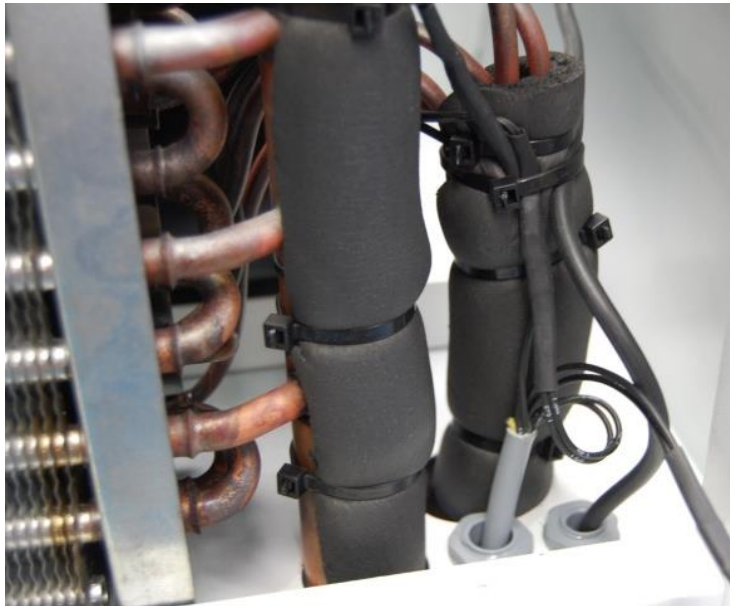
- Room sensor for both Toshiba 1:1 and VRF



Room sensor (TA)
Yellow

The flange and cable hole are installed in the inlet air curtain zone. If we want to access to the sensor, we should remove the inlet grill (see repairs section of this manual).

Once all sensors are installed, we will proceed with the insulation to avoid the sensors contact with the air. To make the insulation we will use thermal insulating foam, insulating tape, etc. We show an example of how to insulate the sensors:



DATASHEET

WINDBOX M,G DX-TO | Heat Pump Energy Saving Air Curtains For TOSHIBA Outdoor Units (1:1)



Characteristics



- Energy saving heat pump air curtains: Up to 70% reduction in costs and CO₂ emissions (heating mode).
- Self-supporting casing construction made of galvanized steel plate, finished in structural epoxy-polyester painting white colour RAL9016 as standard. Other colours or stainless steel are available on request.
- Micro-perforated inlet grille with filter functions and easy service. Internal prefilter included.
- Anodized aluminium outlet vanes, airfoil shaped, adjustable from 0 to 15° each side.
- EC Double-inlet centrifugal fans driven by an external rotor motor and low noise level, with very low consumption efficient fans.
- Includes direct expansion coil with sensors. Optional condensate water pump.
- CS-5DX-NE Plug&Play control with 5 speeds and telephone cable 7m included.
- Requires TOSHIBA DX Interface KIT adapted for air curtain and programmable control, please consult.
- Ready to connect to TOSHIBA Inverter outdoor heat pump unit (R32) with expansion valve, not included, the customer should purchase it.

Specifications

Model	Airflow m ³ /h	Outdoor Unit (*) 230Vx1	Outdoor Unit (*) 400Vx3	Power Fan 230V-50Hz kW	Current Fan 230V-50Hz A	Noise Level (5 m) dB(A)	Weight kg
ECM 1500 DX11-TO	2460	RAV-GM1101ATJP-E	RAV-GM1101AT8JP-E	0.213	1,86	57	53
ECM 2000 DX16-TO	3280	RAV-GM1601ATP-E	RAV-GM1601AT8JP-E	0.284	2,48	58	69
ECM 2000 DX19-TO	3280	-	RAV-GM2201AT8-E	0.284	2,48	58	69
ECM 2500 DX21-TO	4100	-	RAV-GM2201AT8-E	0.355	3,10	59	86
ECM 2500 DX24-TO	4100	-	RAV-GM2801AT8-E	0.355	3,10	59	86
ECM 3000 DX26-TO	4920	-	RAV-GM2801AT8-E	0.426	3,72	60	103
ECG 1000 DX10-TO	2190	RAV-GM1101ATJP-E	RAV-GM1101AT8JP-E	0.213	1,86	61	50
ECG 1500 DX13-TO	2920	RAV-GM1401ATJP-E	RAV-GM1401AT8JP-E	0.284	2,48	62	59
ECG 1500 DX15-TO	2920	RAV-GM1601ATP-E	RAV-GM1601AT8JP-E	0.284	2,48	62	59
ECG 2000 DX22-TO	4380	-	RAV-GM2201AT8-E	0.426	3,72	63	92
ECG 2000 DX24-TO	4380	-	RAV-GM2801AT8-E	0.426	3,72	63	92
ECG 2500 DX22-TO	5110	-	RAV-GM2201AT8-E	0.497	4,34	64	96
ECG 2500 DX27-TO	5110	-	RAV-GM2801AT8-E	0.497	4,34	64	96
ECG 3000 DX27-TO	5840	-	RAV-GM2801AT8-E	0.568	5,96	65	109

(*) Includes direct expansion valve.

TOSHIBA Inverter Outdoor Units	Heating Capacity kW	Heating Power kW	SCOP or COP	Cooling Capacity kW	Cooling Power kW	SEER or EER	Power Supply	Pipes Gas inch	Pipes Liquid inch	Pipes Minimum Length m	Pipes Maximum Length m	Pipes Maximum Height m
R32												
RAV-GM1101ATJP-E	11,2	2,99	4,19	9,5	2,99	5,28	230Vx1	5/8"	3/8"	5	50	30
RAV-GM1101AT8JP-E	11,2	2,99	4,19	9,5	2,99	5,28	400Vx3	5/8"	3/8"	5	50	30
RAV-GM1401ATP-E	13,0	3,60	3,61	12,1	4,42	2,74	230Vx1	5/8"	3/8"	5	50	30
RAV-GM1401AT8JP-E	13,0	3,60	3,61	12,1	4,42	2,74	400Vx3	5/8"	3/8"	5	50	30
RAV-GM1601ATP-E	16,0	4,57	3,50	14,0	4,49	3,12	230Vx1	5/8"	3/8"	5	50	30
RAV-GM1601AT8JP-E	16,0	4,57	3,50	14,0	4,49	3,12	400Vx3	5/8"	3/8"	5	50	30
RAV-GM2201AT8-E	22,4	5,71	3,92	19,0	5,86	3,24	400Vx3	1 1/8"	1/2"	5	60	30
RAV-GM2801AT8-E	27,0	7,52	3,59	22,5	7,98	2,82	400Vx3	1 1/8"	1/2"	5	60	30

Energy efficiency: SCOP/SEER seasonal ≤12kW, COP/EER >12kW.

Outdoor unit capacities depending on standard conditions: heating 20°CDB indoor / 7°CDB and 6°CWB outdoor, cooling 27°CDB and 19°CWB indoor / 35°CDB outdoor.

When adverse weather conditions, the outdoor unit capacity can decrease. It is recommendable to oversize the units.

WINDBOX M,G VRF-TO | Heat Pump Energy Saving Air Curtains For TOSHIBA Outdoor Units (VRF)



Characteristics



- Energy saving heat pump air curtains: Up to 70% reduction in costs and CO₂ emissions (heating mode).
- Self-supporting casing construction made of galvanized steel plate, finished in structural epoxy-polyester painting white colour RAL9016 as standard. Other colours or stainless steel are available on request.
- Micro-perforated inlet grille with filter functions and easy service. Internal prefilter included.
- Anodized aluminium outlet vanes, airfoil shaped, adjustable from 0 to 15° each side.
- EC Double-inlet centrifugal fans driven by an external rotor motor and low noise level, with very low consumption efficient fans.
- Includes direct expansion coil with sensors. Optional condensate water pump.
- CS-5DX-NE Plug&Play control with 5 speeds and telephone cable 7m included.
- Requires TOSHIBA VRF Interface KIT adapted for air curtain, programmable control and expansion valve, please consult.
- Ready to connect to TOSHIBA VRF outdoor heat pump unit (R410A), not included, the customer should purchase it.

Specifications

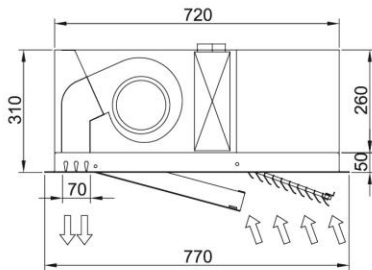
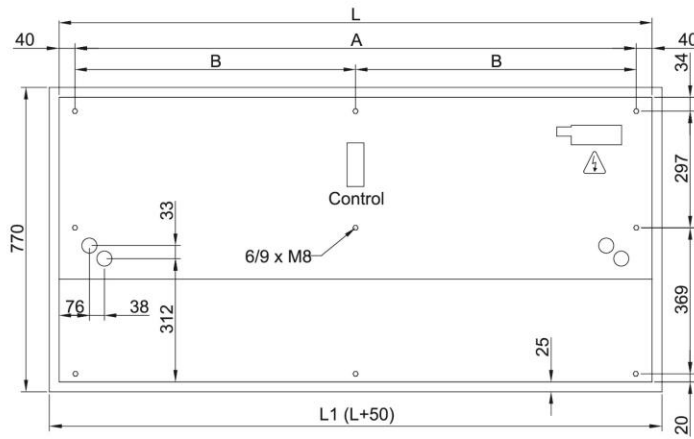
Model	Airflow m ³ /h	Toshiba Direct Expansion Valve	Power Fan 230V-50Hz kW	Current Fan 230V-50Hz A	Noise Level (5 m) dB(A)	Weight kg
ECM 1500 VRF12-TO	2460	MMDXV140	0,213	1,86	57	53
ECM 2000 VRF16-TO	3280	MMDXV140	0,284	2,48	58	69
ECM 2000 VRF19-TO	3280	MMDXV280	0,284	2,48	58	69
ECM 2500 VRF21-TO	4100	MMDXV280	0,355	3,10	59	86
ECM 2500 VRF24-TO	4100	MMDXV280	0,355	3,10	59	86
ECM 3000 VRF26-TO	4920	MMDXV280	0,426	3,72	60	103
ECG 1000 VRF10-TO	2190	MMDXV140	0,213	1,86	61	50
ECG 1500 VRF13-TO	2920	MMDXV140	0,284	2,48	62	59
ECG 1500 VRF15-TO	2920	MMDXV140	0,284	2,48	62	59
ECG 2000 VRF20-TO	4380	MMDXV280	0,426	3,72	63	92
ECG 2000 VRF24-TO	4380	MMDXV280	0,426	3,72	63	92
ECG 2500 VRF25-TO	5110	MMDXV280	0,497	4,34	64	96
ECG 2500 VRF29-TO	5110	MMDXV280	0,497	4,34	64	96
ECG 3000 VRF29-TO	5840	MMDXV280	0,568	5,96	65	109



When adverse weather conditions, the outdoor unit capacity can decrease. It is recommendable to oversize the units.



Dimensions



	L	L1	A	B
RWIN 1000	1000	1050	920	-
RWIN 1500	1500	1550	1420	710
RWIN 2000	2000	2050	1920	960
RWIN 2500	2500	2550	2420	1210

Finishes and details

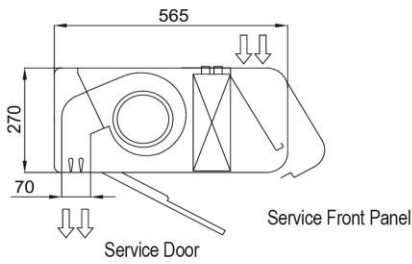
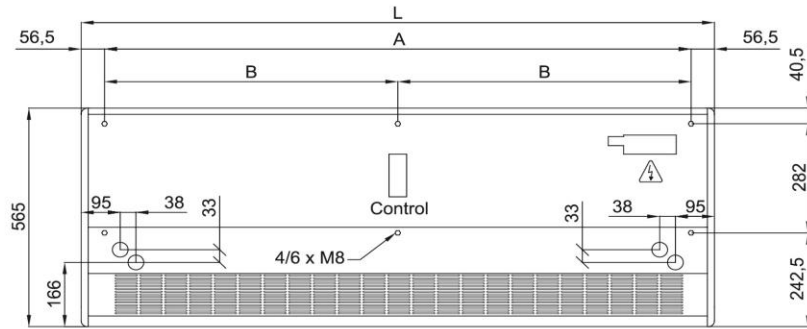
Designed to be integrated in a false ceiling or in a bulkhead at the entrance of a local



Customizable inlet grille in RAL color optionally



Dimensions



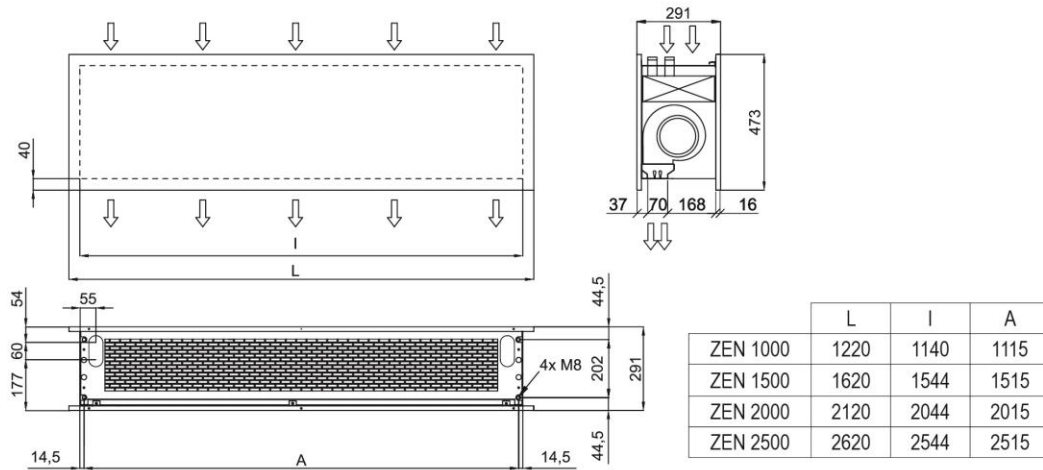
	L	A	B
SMART 1000	1034	920	-
SMART 1500	1534	1420	710
SMART 2000	2034	1920	960
SMART 2500	2534	2420	1210
SMART 3000	3034	2920	1460

Finishes and Details





Dimensions



Finishes

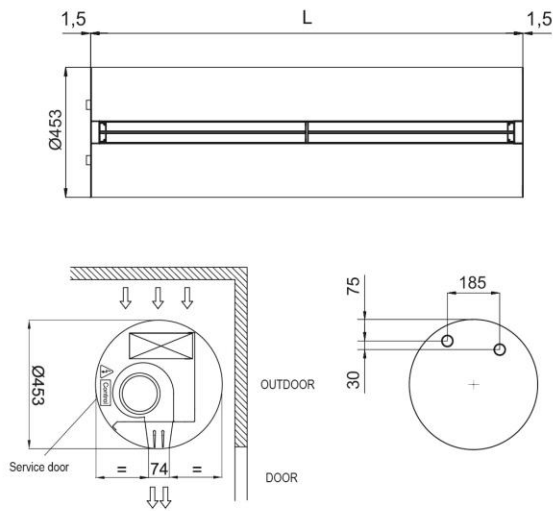


- Painted any RAL colour or metal
- Different materials: aluminium, stainless steel AISI 304 (brushed or polished), wood, glass, PVC/PES, etc.
- Logos, lights, clocks, signs, vinyls, patterns, etc.





Layouts and dimensions



	L
RUND 1000	1025
RUND 1500	1525
RUND 2000	2030
RUND 2500	2530
RUND 3000	2980

Horizontal installation



Ceiling fixation through threaded rods



Wall/ceiling fixation through arms



Wall/ceiling fixation through angle supports



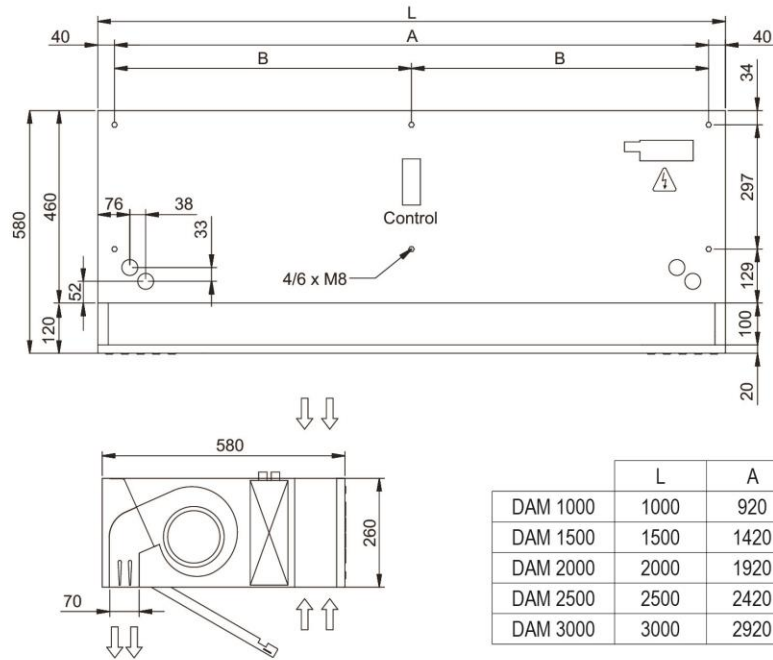
Wall fixation through lateral arms



Floor fixation (goalpost)



Dimensions



Finishes and details

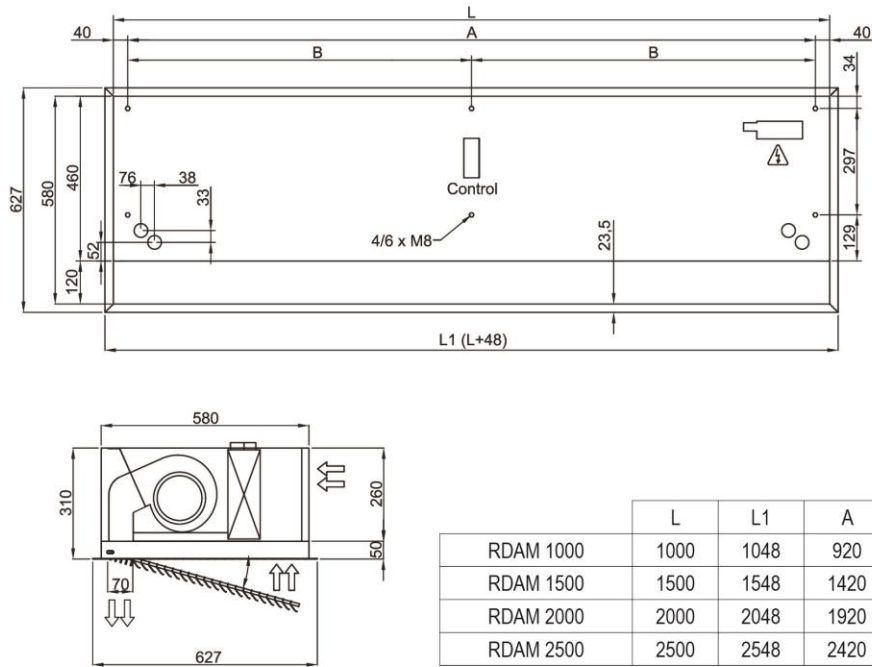


- Painted any RAL colour
- Available in stainless steel AISI 304 (brushed)
- Customizable with logos, signs, vinyls, etc.

RECESSED DAM | Compact Recessed High Pressure Air Curtains For Commercial And Industrial Doors



Dimensions



Finishes and details



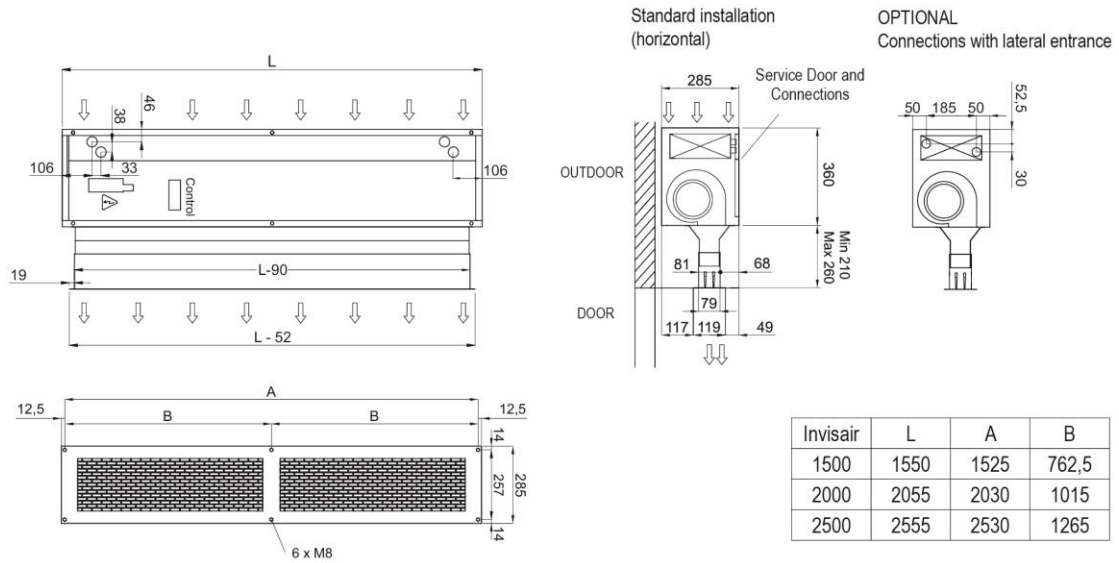
Detail of exposed inlet grille



Customizable inlet grille in RAL color optionally



Layouts and dimensions



Installation example



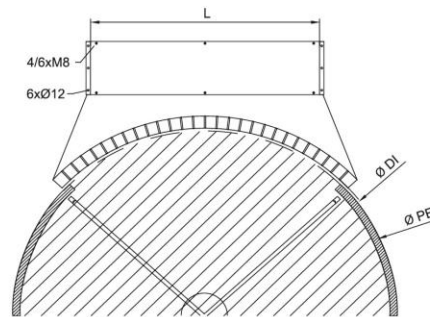
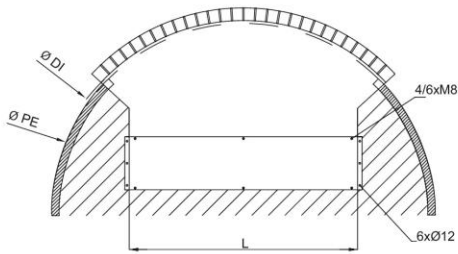
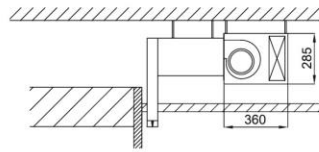
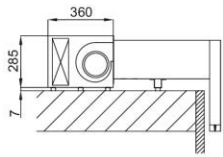


Layouts and dimensions

Rotowind air curtains are tailor-made for any kind of revolving door according to the following layouts:

Standard: On top mounting

Inverted: False ceiling mounting



Fixation system

Optional decorative front cover






Fixed onto the door

Hanging from the ceiling

- RAL 9016 (standard), optional:
- Colour from RAL palette
 - Stainless steel AISI 304

MAINTENANCE INSTRUCTIONS

	<i>For safety, before any cleaning, disconnect power supply using the controller</i>
	<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>
	<i>Do not use water or steam for cleaning the internal parts and components of the air curtain.</i>

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

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

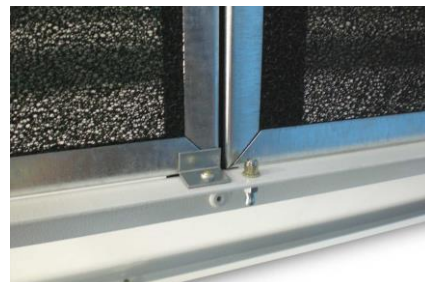
The inlet grille prevents the settling of dust and strange objects in the internal elements. It is recommended to check periodically that the inlet grille is free of any object that could interfere the air entrance (plastic bags, papers, etc.).

In case of a micro drilled inlet grille (it has filter functions to prevent the entrance of dust to the internal elements) use a vacuum cleaner with a soft brush in order to avoid any damages in the micro drilled grille. We recommend cleaning the grille every two weeks (depending on the amount of the incoming air dust).



The air curtain **particle filter** protects the coil from dirty and stranger elements which can block the coil, reducing its efficiency (this is an additional filter in models with micro drilled inlet grille). In the next pages you can find attached the instructions to remove the filter to do its maintenance, depending on the standard model (Windbox) or Windbox with plenum, Recessed Windbox model, Zen model, Dam model and Smart model.

In case of the **Windbox** model, to do the maintenance, first of all we have to open the inlet grille to have access to the filter. Then, we have to unscrew the filter angle brackets which subject the filter. We have to clean the filter using a brush vacuum in order to do not damage the filter. We recommend make this maintenance periodically, so you can get the best efficiency of the equipment.

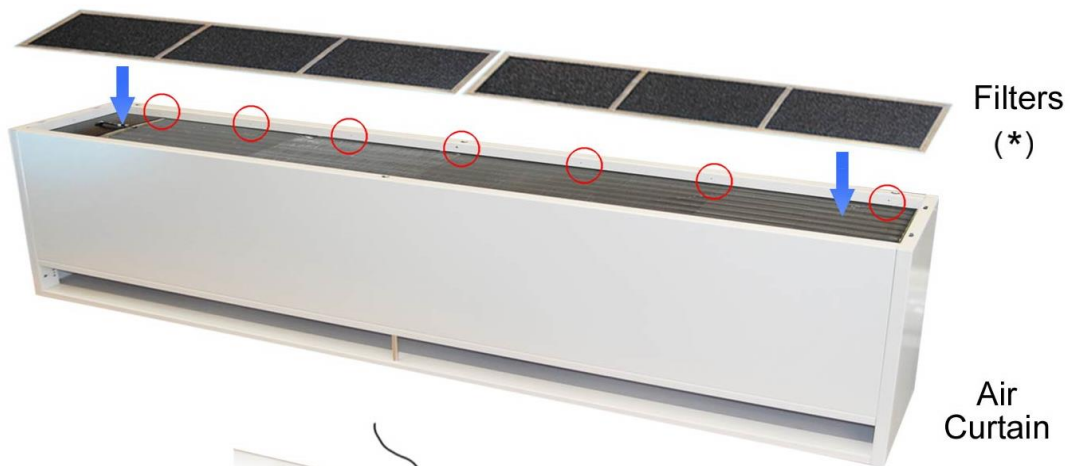


Filter installation

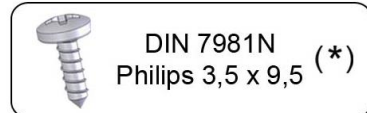
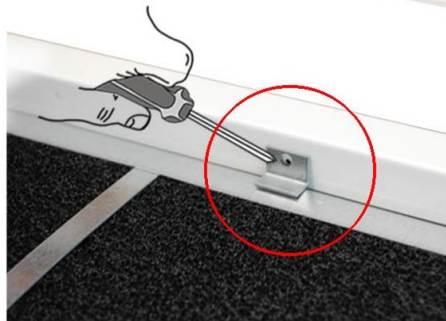
In the next 3 pages you can find the maintenance instructions of the filter, depending on each curtain model:

STANDARD AIR CURTAIN - Filter Installation

1 - Place and fasten the filters to the air curtain, using angle brackets:



Use
safety gloves



(*) In the case of air curtains without inlet duct plenum, the filters come already pre-installed inside the air curtain

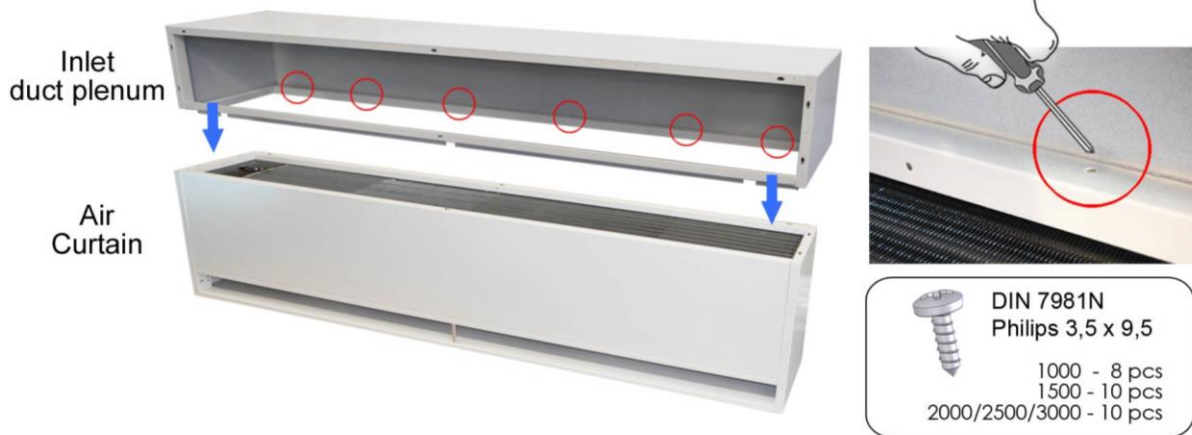
2 - Inlet grille fixing, inserting their pivots inside the air curtain clip holes.



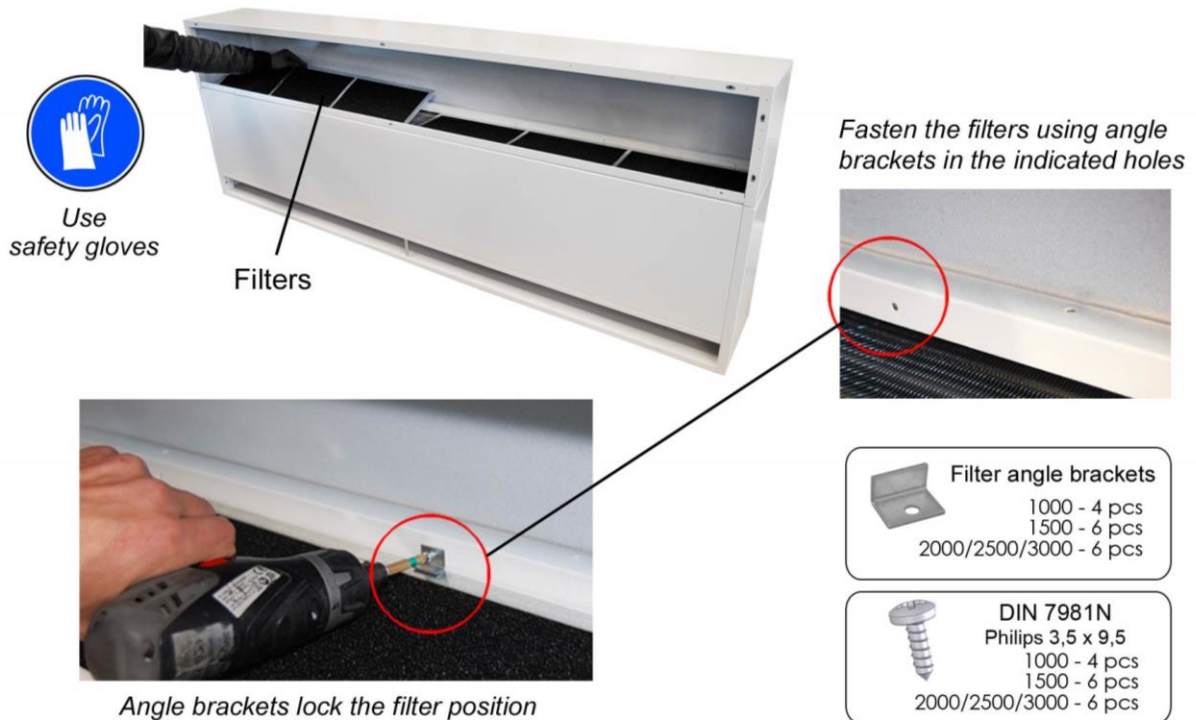
After placing the
inlet grille, fasten
the security cable to the
air curtain

AIR CURTAIN WITH INLET PLENUM - Plenum and filter assembly process

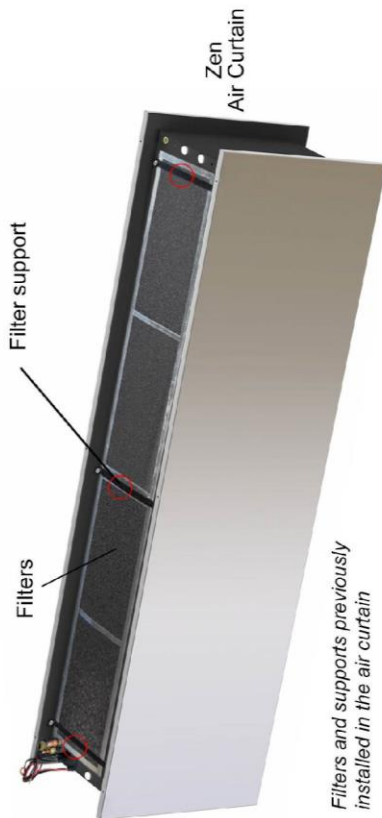
1 - Assemble the plenum in the air curtain, using the indicated holes:



2 - Place and fasten the filters to the air curtain through the inlet plenum, using the indicated holes:



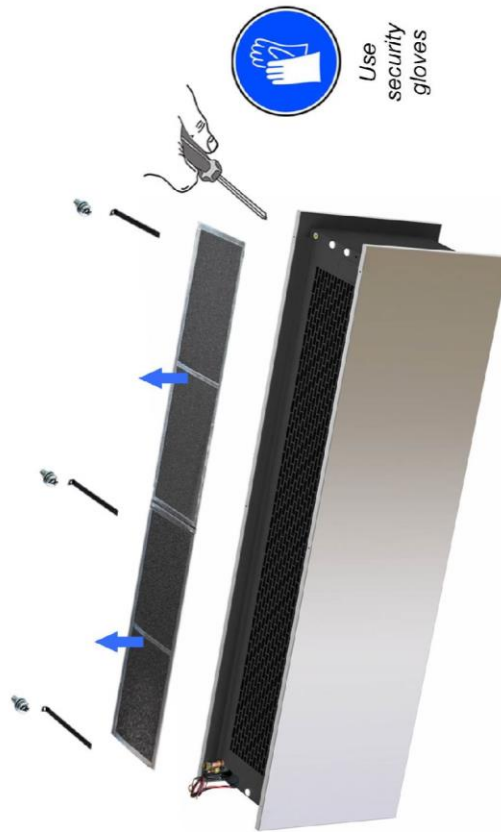
In case of the Zen model, we can access to the filter from the upper part of the air curtain, from the inlet zone. To make the maintenance, we have to remove the filter angle brackets which subject the filter. After that, we clean the filter using a brush hoover in order to do not damage the filter. We recommend make this maintenance periodically, then you can get the best efficiency of the equipment.



Filters and supports previously installed in the air curtain

1 - FILTER MAINTENANCE AND EXTRACTION:

Unscrew the brackets and remove the air curtain filters. Clean the filters.



Filter angle bracket

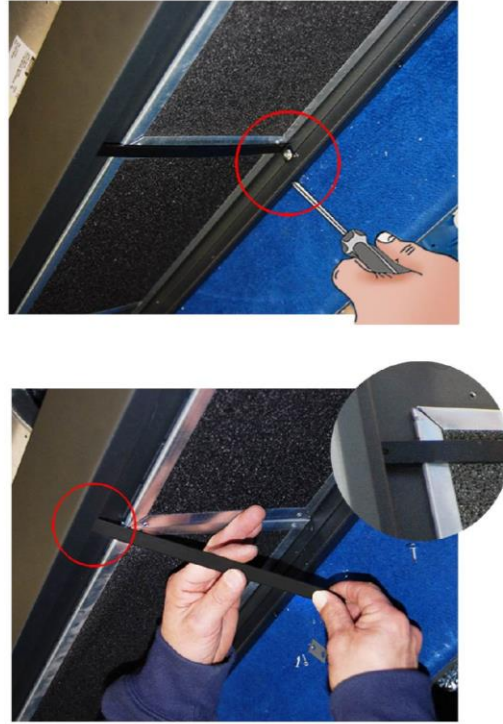
Zen 1000 - 2 uts
Zen 1500 - 3 uts
Zen 2000 - 3 uts
Zen 2500 - 4 uts

Screw DIN 75HA
Self-drilling 4,2 x 16

Zen 1000 - 2 uts
Zen 1500 - 3 uts
Zen 2000 - 3 uts
Zen 2500 - 4 uts

2 - REINSTALLATION OF THE FILTERS IN THE AIR CURTAIN:

Replace the filters over the inlet grille and fix the brackets as seen in the images (1 self-drilling screw by bracket):



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 not even the heat pump.**
- **Make sure the fans are stopped.**
- **Use only original spare parts.**



Windbox: To open the service door, follow these steps:



1.- Insert a flat screwdriver between the casing and the grille and push the grill out. The grille is closed by pressure through pivots. It has a safety cable to avoid accidental falls.



2.- **OPTIONAL:** Remove the security screw of the service door.

3.- Insert a screwdriver and press down next to the pivots to open the service door.

In case of an air curtain with **plenum or inlet/outlet kits** the lever must be done from the side of the door where there is an oblong hole, to make it easier the entrance of a flat screwdriver.



Dam: Follow the same instructions than Windbox with **plenum or inlet/outlet Kit**.

Recessed Windbox: To open the service door, follow these steps:

1.- With a screwdriver remove the safety screw.



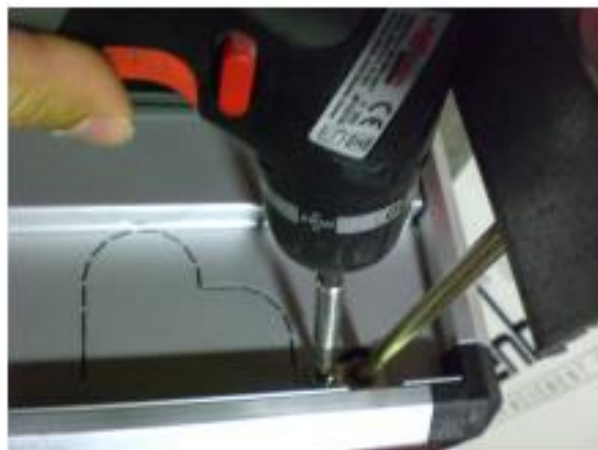
2.- Open the service door with both hands as indicated. The grille is closed by pressure through springs. The door is also closed by pressure through pivots. Both are pivoting, there is the possibility to open the big door first or open the other one with the help of the door with blades.



Rotowind: To open any panel follow these steps:

1.- With a screwdriver and holding the panel, remove all the screws that fix the panel.

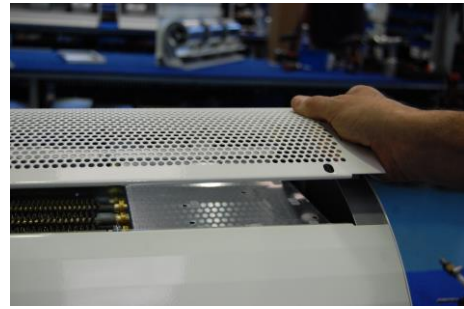
2.- Remove the panel carefully. If available, use a sucker, if not a screwdriver will do.



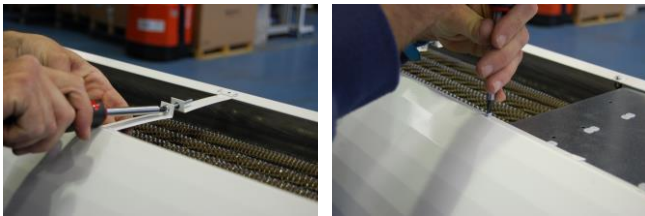
Rund: To open the air curtain, follow these steps:



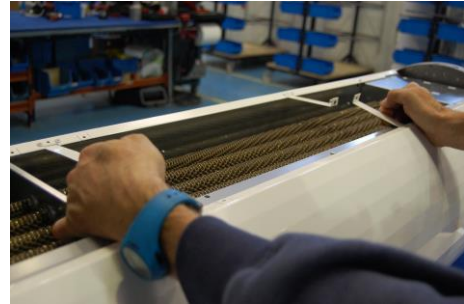
1.- With a screwdriver, remove the screws from the grille.



2.- Pull the grille gently since removing it.



3.- Remove the screws that unite the two parts of the external casing and also the safety screws of each casing.



4.- Separate the casings 10 cm by pulling from the inlet part and then pull up as done with the grille. Connections, technical data, motors, etc. are now visible and accessible.

Zen: To open the service door, follow these steps:



1.- With a screwdriver and holding the service panel, remove the screws that fix it, placed on the top of the air curtain.



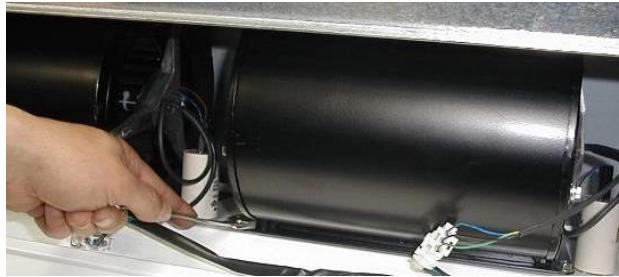
2.- Open the door carefully, in case you need to dismantle it, remove the safety cables and move the door to one side to make it come out of position.

Some finishes can be fragile, manipulate the door gently and project it.

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.

Unplug the fan from the cable tree. Remove the fan by loosening the fixing screws and assemble the new fan following the process in reverse order.



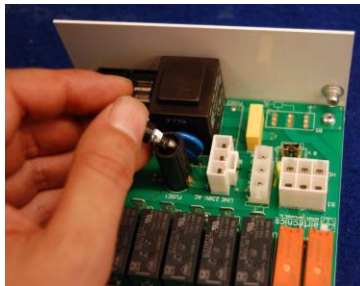
Fuse and PCB replacement

Before replacing the PCB or the fuse, 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.

PCB replacement: Open the service door (service panel) and simply unscrew the power plate from the inside of the air curtain to remove it and make the necessary repairs.



Fuse replacement: Open the service door and remove the fuse of the fuse holder by hand or pulling with the help of a screwdriver pressing to the plate and turning in under clockwise, then replace it.



Heater replacement

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

Collect the refrigerant gas following the instructions of the outdoor unit manufacturer.

Separate the heater from the cooling circuit.

Loosen the side screws of the heater and those of the interior angles.

For the assembly of the new heater follow the instructions in reverse order.



FAILURES AND SOLUTIONS

More than 95% of the claims are produced during the start-up of the unit and are due to installation errors. More than 90% of the incidences can be solved reviewing the following points:

A) RJ45 telephone cable manipulated: The cable that connects the Slave DX with the air curtain is an 8 pins crossed telephone cable. **If manipulated (connector cut o removed) and joined incorrectly, curtain will not work properly** and also it can damage the electronics. If the connector is joined in the correct form, the problem will be solved (see connection diagram on fourth page).

B) Wrong connection of the telephone cable. The Slave DX has to be connected to the connector “control” of the air curtain. If we connect slave curtains, we should connect a RJ45 from connector “auxiliar” of the curtain 1 to the connector “control” of the curtain 2 and so on.

C) Wrong power supply. The air curtain power supply depends on the type of available current and the heating type of the unit. Connect following the scheme in page 4.

More common problems and solutions in the air curtain		
Sign	Problem	Solution
No LED lights up on the Slave DX.	¿Is the RJ45 telephone cable original, without joints or shortenings?	Change the cable or reconnect it correctly.
	¿Does power supply reach the air curtain?	Check the power supply of the air curtain. Between L and N must be 230V.
	Check the fuse.	The fuse of the curtain’s electronic plate must be OK.
	No part of the curtain electronic plate should be damaged.	Check especially the area near the transformer.
Slave DX control indicates speed, but the curtain does not work.	¿The RJ45 cable between the Slave DX and the connector “control” of the curtain is original?	<ul style="list-style-type: none"> • The RJ45 cable is in bad state or has been tailor-made incorrectly. Check. • If it runs in parallel with power cables, it must be shielded. • It’s not inserted well in the female connector. • Has been damaged. • The cable has more than 10mts of length and it’s not braided and shielded. • The shield of the RJ45 cable has not been connected to earth.
	RJ45 wrong connected.	The cable is inserted in the connector “auxiliar” of the curtain instead in the connector “control”. Inside of the connector “control” must not have little objects (bits of cable, remains of work, etc.) because they avoid the connector from entering completely. The connector is not well inserted.
The heat pump does not work.	Toshiba’s screen does not turn on.	<ol style="list-style-type: none"> 1. In order to make the Toshiba kit work, the curtain must have tension and the Slave DX controller must be connected. If the curtain has no tension, a relay cuts the tension of the kit to avoid the curtain to work without ventilation. 2. Check the tension in the kit DX. 3. Check the cable between the kit and the screen.
	The screen turns on, but the hot air (or cold air if configured) does not work.	The interior temperature is high (or too low, in cooling mode).
	There’s an error message on the Toshiba’s screen.	Consult Toshiba’s manual.
	The condenser does not start.	Check the tension of the outdoor unit. Check the cable of the kit to the outdoor unit. The curtain should have tension. Check the fuse of the curtain. Go to the question if telephone cable is original.

More common problems and solutions in the air curtain		
Sign	Problem	Solution
The heat pump is working, but the performance is abnormally low.	In heating mode, the outlet temperature of the unit's refrigerant is of 85-100°C, but it reaches the curtain at a very low temperature.	The refrigerant tube is clogged, chamfered or lacks thermal insulation. A clean sweep must be made. It must be visually checked that there are no dents and the condition of the insulator.
	Some sensor is not placed on its right place or its thermal isolation is wrong fixed or inexistent.	Check the installation and the isolation of the temperature sensors.
	The curtain is at more meters from the outdoor unit, as it should not be, or extra gas charge has not been added.	Consult Toshiba's manual.
	The height or maximum distance of the outdoor unit from the indoor one has been exceeded.	The maximum height between units must not exceed that stipulated by Toshiba for your unit. The linear distance must not exceed the meters stipulated by Toshiba. One possible solution is to change the unit for a Toshiba VRF. Consult.
	The refrigerant circuit may leak.	Check.
	The outdoor unit has a breakdown.	Consult the troubleshooting of the outdoor unit on the Toshiba's manual.
	In VRF, the power of the outdoor units has been exceeded (simultaneity).	Turn off some indoor units or install more outdoor units.

ACCESSORIES



Clever Control

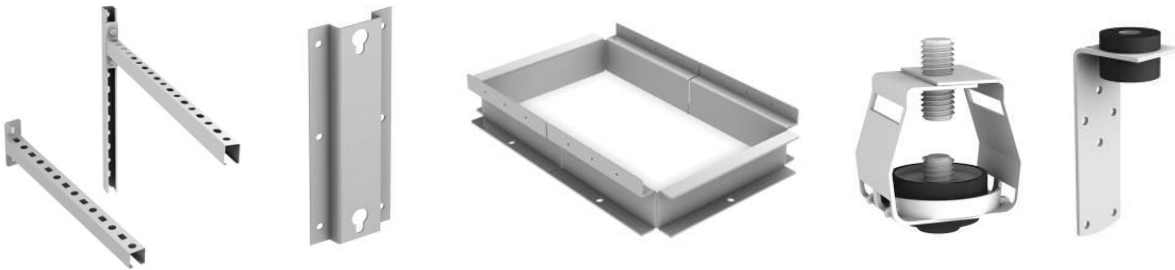
Intelligent proactive regulation, advanced functions, Automatic/manual working, door delay, timer, save energy program, multi equipment management, BMS Modbus connection, etc.



Condensate pump

Allows to drain the condensed water from the curtain when working in cool mode.

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



Door contact



RJ45 Cable 20m and 50m



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



DECLARATION OF CONFORMITY



Declaration  of conformity / Declaración  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

Air curtains DX / Cortinas de aire DX

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

Remark: *The installer is responsible for making the whole heating system comply with the PED directive.*

Mención: *El instalador es el responsable de hacer que todo el sistema de calefacción cumpla con la directiva PED.*

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 **03/05/2016**
Name / Nombre **Jordi Oltra Orta**
Position / Cargo **General Manager / Director General**





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