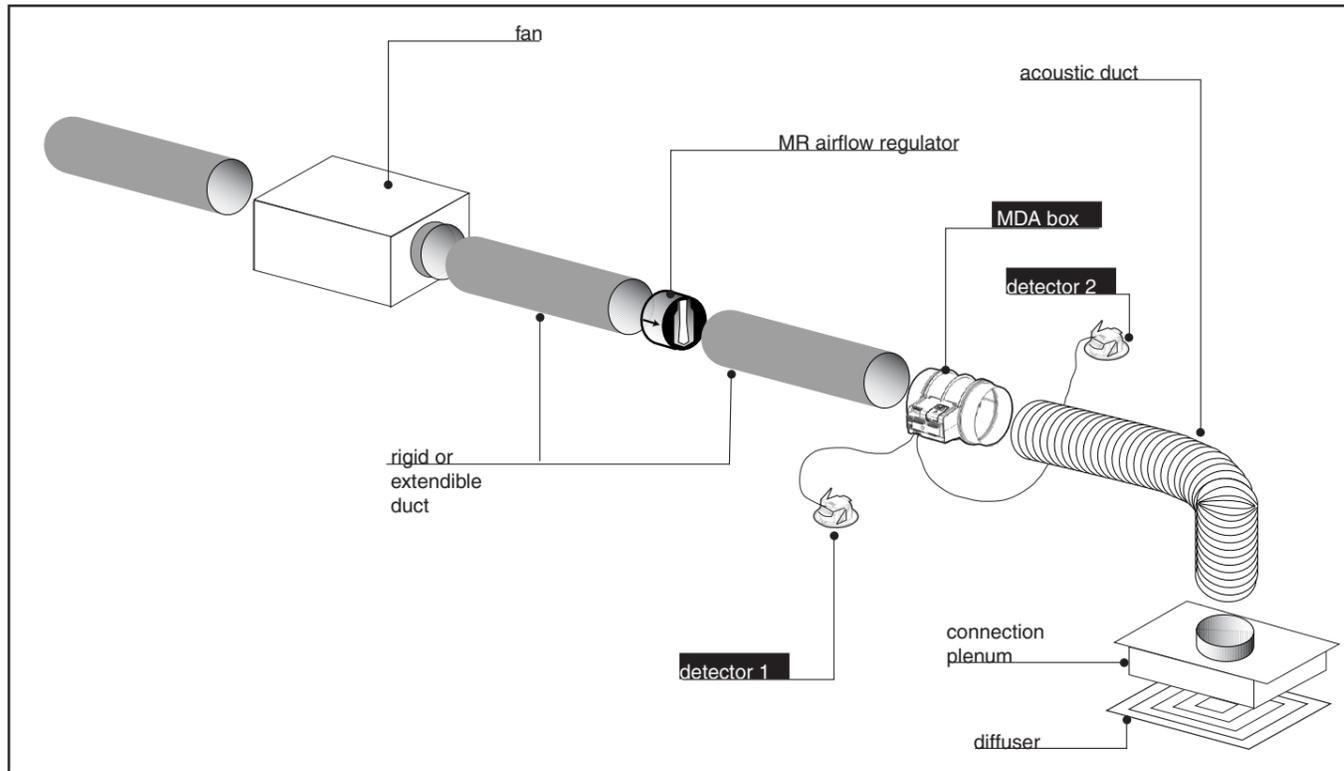


## Network components to be installed



## General characteristics of the MDA box

### operation:

The detectors produce an electric signal by emitting a beep each time a movement is detected.

The management card included in the box analyzes the number of movements perceived. A value called "modulo", which is included between 1 and 10, is extracted from this analysis every 10 minutes. The greater the agitation, the higher the modulo value is.

At the beginning of each 10 minute period, the box's shutter opens letting a 300 m<sup>3</sup>/h flow rate pass through the airflow regulator. The shutter closes after an opening time (in minutes) equal to the modulo. The result of this cyclical ventilation is a medium flow rate included between 30 and 300 m<sup>3</sup>/h:

The modulo is	The valve opens:	Then it closes::	The obtained medium flow rate is:
1	1 minute	9 minutes	30m <sup>3</sup> /h
2	2 minutes	8 minutes	60m <sup>3</sup> /h
3	3 minutes	7 minutes	90m <sup>3</sup> /h
4	4 minutes	6 minutes	120m <sup>3</sup> /h
5	5 minutes	5 minutes	150m <sup>3</sup> /h
6	6 minutes	4 minutes	180m <sup>3</sup> /h
7	7 minutes	3 minutes	210m <sup>3</sup> /h
8	8 minutes	2 minutes	240m <sup>3</sup> /h
9	9 minutes	1 minute	270m <sup>3</sup> /h
10	10 minutes	0 minute	300m <sup>3</sup> /h

The ceiling diffuser is used in the 2 most interesting configurations for occupant comfort: nul flow rate or nominal flow rate. In nominal flow rate, the air blown in, whose temperature can be different from that of the ambient air, circulates at the ceiling, which ensures good distribution on the surface of the room and progressive dilution. **This prevents unpleasant feelings of falling cold air that typically appear in the case of low insufflation flow rates.**

Product manufactured in France by:

AERECO - 9, allée du clos des charmes - Collegien -  
77615 Marne la Vallée cedex 3  
France



aereco

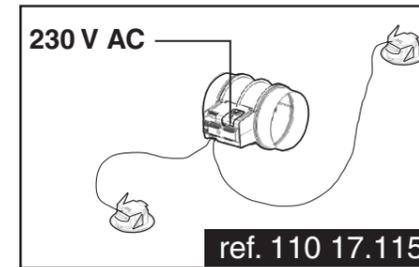
TF3229

# MDA MODULATED VENTILATION FOR OFFICES

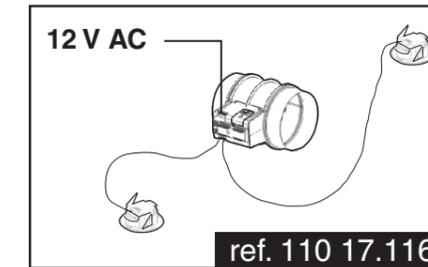


installation manual

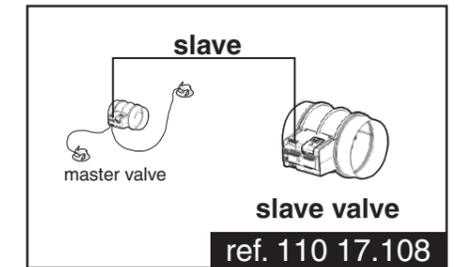
## Versions - composition of kits



- 1 MDA var. air volume box, 230 V AC  
- 2 detectors



- 1 MDA var. air volume box, 12 V AC  
- 2 detectors



- 1 MDA var. air volume box  
without detectors



- This product must be installed by a qualified technician.  
- The manufacturer and the distributor refuse all responsibility if the case any non conforming use of the product.  
- In the case of any use that is not specifically indicated by the present document, product protection could be jeopardized.

## Installation and use characteristics

### Brief product description:

Variable air volume box for regulating air flow rate blown into or extracted from a service sector type room as a function of the agitation measured by 2 movement detectors.

### Field of application:

*Type of room:*  
Meeting rooms, offices, classrooms, changing-rooms or any other service sector type room with variable occupation (please consult us with regard to any other applications).  
*In the new or in refurbishment.*

### Installation location:

*Detectors:* at false ceiling  
*MDA box:* between false ceiling and ceiling.

### Operating conditions:

*Operating temperature:* from + 5°C to + 40°C.  
*Operating relative humidity:* maximum 80% RH at 31°C, with linear decrease to 50% RH at 40°C.  
*Degree of pollution:* 2



Device entirely protected by double insulation.



## Electrical characteristics

	supply voltage	frequency	power	maximum altitude	application
110 17.115	230 V AC +/- 10%	50 Hz	10 VA	2000 m	use in interior
110 17.116	12 V AC +/- 10%	50 Hz	12 VA		

## Installation steps

An MDA kit (ref. 110 17.115 or ref.110 17.116) is installed by performing the following 3 steps:

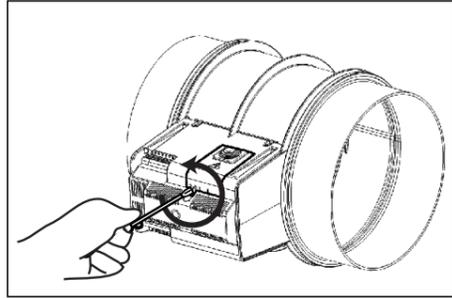
- Determine the quantity and type of MDA kits needed
- Choose and dimension the components of the complete network
- Install the MDA kit components\*

\* The installation of network components not included in the MDA kits are not dealt with in this manual

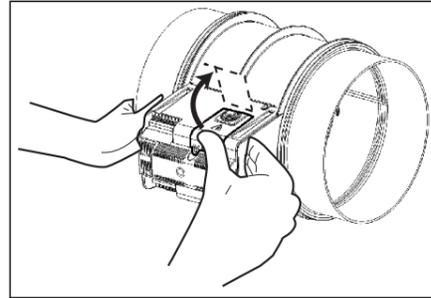


ref. 110 17.115 230 V AC version

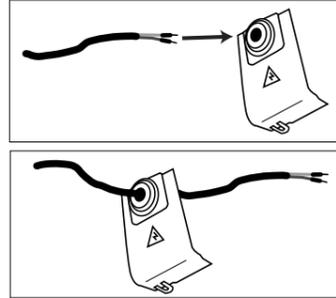
**Protection version 230 V AC:**  
Position a fuse [1A - 250 V]  
on the power supply line.



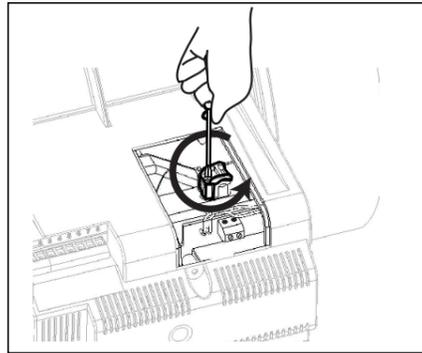
1 - Unscrew the connection hatch.



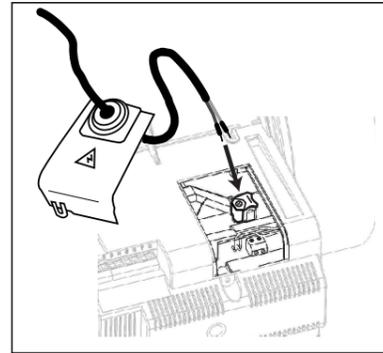
2 - Unclip the connection hatch by pressing it in the middle.



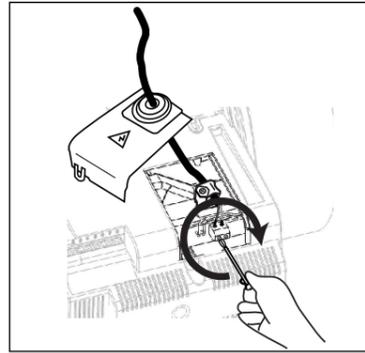
3 - Insert the 230 V AC power supply cord into it.



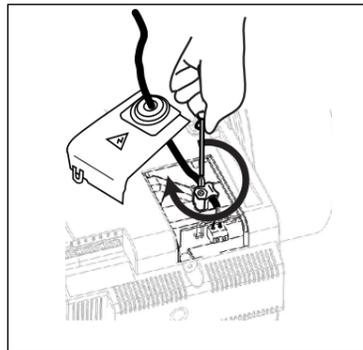
4 - Unscrew the cord fixation.



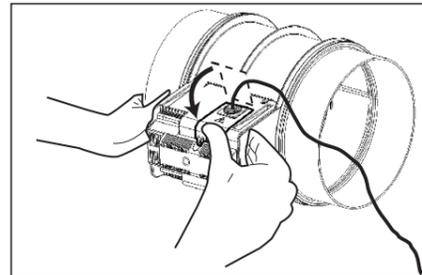
5 - Slip and attach the cord into its fixation.



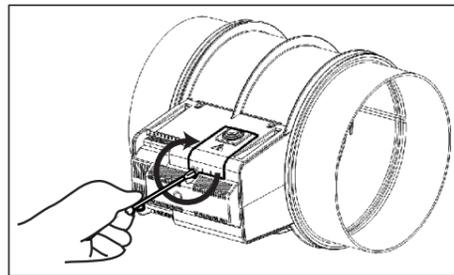
6 - Slip on and attach the cord lugs, then screw in order to secure.



7 - Secure the cord in its fixation.

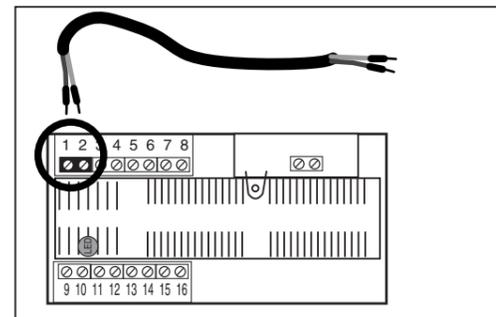


8 - Clip the connection hatch back on.

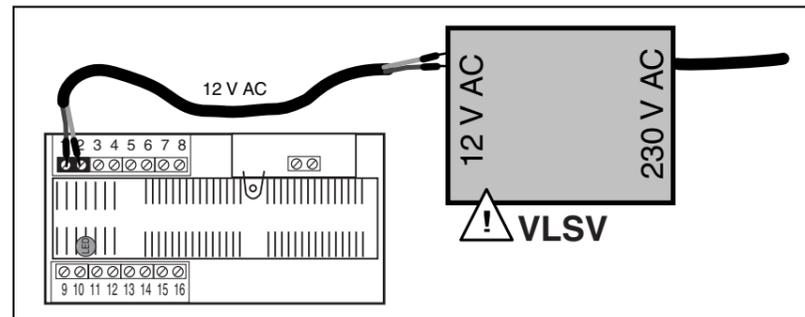


9 - Screw on the hatch, and then perform the diverse connections (detectors, etc.) – refer to page 4.

ref. 110 17.116 12 V AC version



1 - Connect the 2 wires of the power supply cord to terminals 1 and 2 of the 12 V AC MDA box.

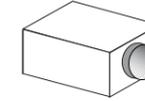


2 - Connect the free end of the cord to a Very Low Safety Voltage transformer (VLSV) with **double insulation**, and then perform the diverse connections (detectors, etc.) – refer to page 4.

Choice and dimensioning of complete network

2 fan characteristics

Pressure:



The fan must be dimensioned so that with the network pressure drops being taken into consideration, the MR airflow regulator is subjected to a pressure P, such that

$$50 \text{ Pa} < P < 250 \text{ Pa}$$

Flow rate:

The fan must be able to supply a flow rate Q in the pressure range, such that:

$$Q \text{ (m3/h)} = 300 \times \text{number of MDA connected}$$

Note: the fan must be connected to a clock that ensures that it is turned off and de-energized at night.

3 air duct characteristics

Between the fan and the MDA box:



- rigid stainless steel or aluminum duct, dia. 200 mm
- semi-rigid aluminum duct, dia. 200 mm.

This must have a minimum classification of M1 (fire class).

Between the MDA box and the diffuser:



- acoustic shaft (indispensable) with length greater than or equal to 1.5 meters.

Its role is to soften the proper noise that may be produced by the MR airflow regulator and the MDA valve.

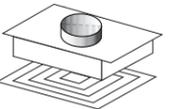
4 MR airflow regulator characteristics



Its role is to set the flow rate at 300 m3/hour when the MDA shutter is open, and when pressure is included between 50 and 250 Pa. The module used is specific, dimensioned in coherence with the MDA box. The module must be inserted in a rigid or semi-rigid duct.

Choice of the **MR300** module **dia. 200 mm**, provided by AERECO is particularly recommended.

5 diffuser characteristics



Its role is to homogeneously diffuse the air blown into the room, in order to:

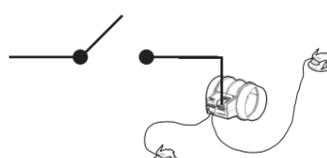
- Avoid bothersome cold air currents
- Optimize air quality throughout all of the room
- Limit the noise linked to the passage of the air

The square ceiling diffuser provided by AERECO (see catalogue) is particularly recommended for the quality of its thermal and acoustic comfort.

It is important to choose a diffuser having a "comfort flow rate" provided at around 300 -350 m3/h. A round diffuser with the same comfort flow rate can also be used.

# Requirements relative to wiring and power supply

**Note**



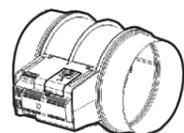
A clearly indicated and accessible **cut off system** must be positioned near the valve. Each valve must be connected to the clock of the room ventilation system so that it is turned off and de-energized at least during the night.

**6** Identify and mark, and make the connections on the terminal boxes of the variable air volume box and the detectors as a function of the connections of the chosen version:

**IMPORTANT**

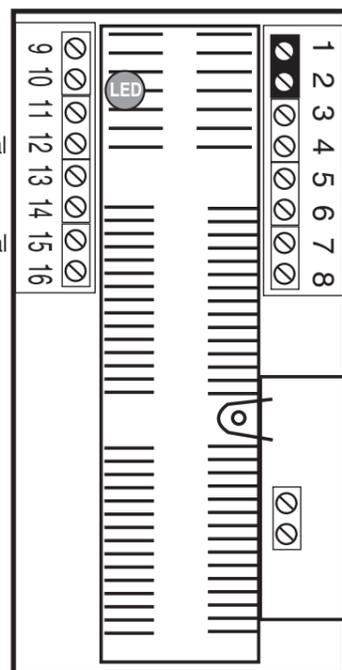


Any incorrect connection can lead to destruction of the management card and/or the detectors. All of the wires used for the wiring, including the power supply of the 12 V AC and 230 V AC versions must be normalized and have a section of from 0.75 mm<sup>2</sup> to 1.5 mm<sup>2</sup>.



## "master" MDA box connections:

- switch forced opening
- switch forced opening
- detector 1 - terminal A:
- detector 1 - terminal B: signal
- detector 1 - terminal C:
- detector 2 - terminal A:
- detector 2 - terminal B: signal
- detector 2 - terminal C:



- 1 12V AC power supply (for MDA 12V AC)
- 2 12V AC power supply (for MDA 12V AC)
- 3 6 V 100 mA max. box state relay
- 4 6 V 100 mA max. box state relay
- 5 6 V 100 mA max. presence state relay
- 6 6 V 100 mA max. presence state relay
- 7 slave box terminal 7
- 8 slave box terminal 8

- 9 230 V AC power supply (for MDA 230 V AC)
- 10 230 V AC power supply (for MDA 230 V AC)

**LED**

The box LED makes it possible to check that the MDA is turned on and energized: the power supply must be verified if the LED is not lit.

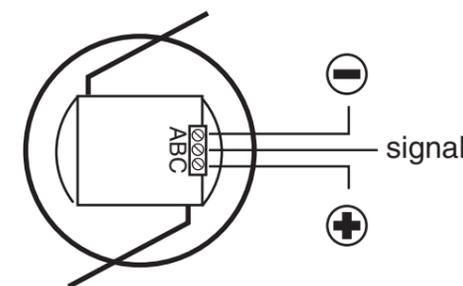
MDA terminal	Description	Characteristics	Action
3	+ valve state relay	Output voltage 6 V DC, 100 mA minimum	Relay activated when the shutter is open.
4	- valve state relay		
5	+ presence relay	Output voltage 6 V DC, 100 mA minimum	Relay activated when a movement is detected. The action is maintained for 5 to 6 min after the last detection.
6	- presence relay		
9	Forced opening	Input to be short-circuited by a switch.	The shutter opens when terminals 9 and 10 are short-circuited. The shutter / box returns to automatic operation when the circuit is opened.
10	Forced opening		



## detector connections:

**Detector LED**

The LED visible under the lens lights up each time that a movement is detected.

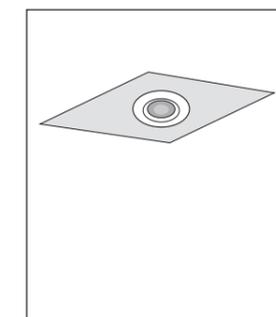
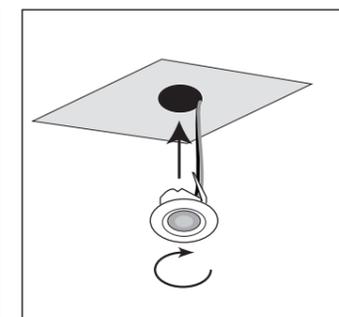
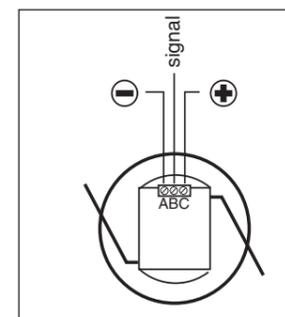
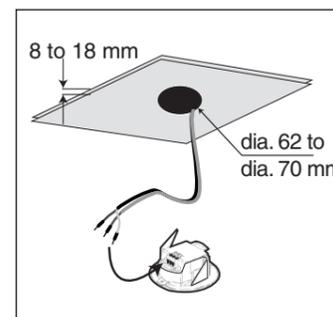


## Installation of MDA kit components

**7** Installing the detectors

Respect the locations determined in step 1.

**!** The diffuser must be located in an area near to the 2 associated detectors.



When the hole has been drilled, pass the 2 power supply wires and the signal wire through it, and connect them to the detector.

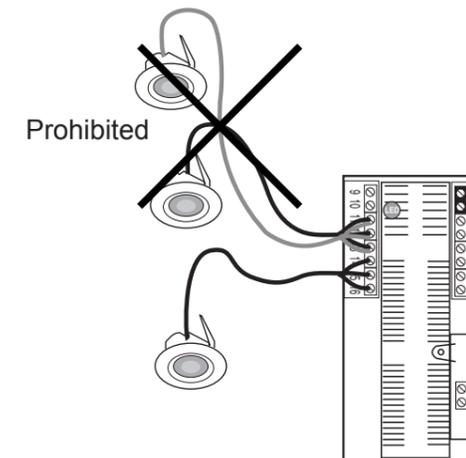
Push the detector into the false ceiling by "screwing" it in. Be careful to not push the lens all the way into the false ceiling lentille.

Check that the detector is correctly in place.



### Detector connection:

**Never connect 2 detectors on the same terminals.** This will irreversibly deteriorate the electric components.



**8** Installing the MDA box

**Positioning the MDA valve:**  
To prevent any acoustic discomfort, the box should be installed as far as possible from the diffuser, or even, if possible, outside of the room. (shutter bearing noise: approximately 31 dB(A)).