Difair

Serie DR10IR



iZONE FIXED-CONES CIRCULAR DIFFUSER

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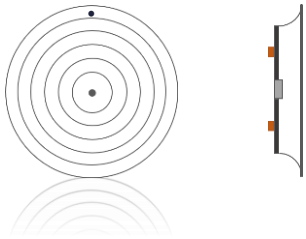
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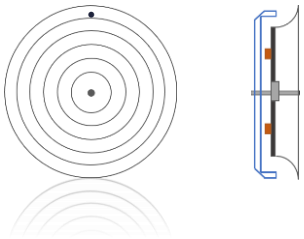
Calle Molina, 5 – 28029 Madrid



MODELS



DR10IR
Fixed-cone diffuser for HVAC systems with motorized control damper and black butterfly slats.



DR10IR+PM
Fixed-cone diffuser for HVAC systems with motorized control damper, black butterfly slats and mounting crossbar.

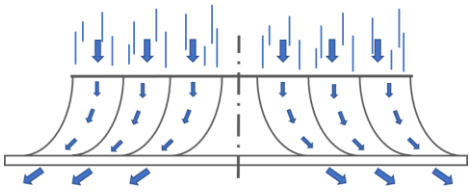
DR10TRPL
Fixed-cone diffuser mounted on a plate for HVAC systems with motorized control damper and black butterfly slats.

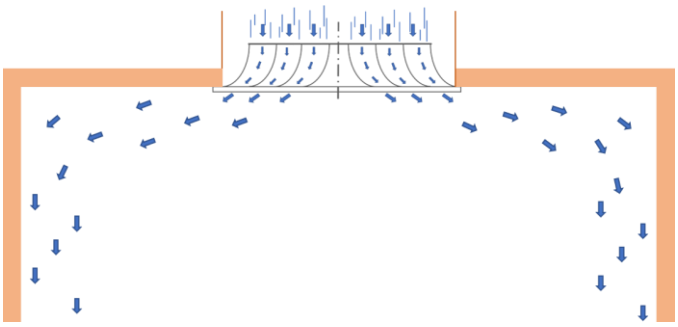


DESCRIPTION

DIFAIR's exclusive **DR_IR** diffuser can be integrated into any existing control system on the market, since all it requires to operate is a **230 V** power supply to open it. This system can range from a simple switch to the most complex home automation system on the market.

It incorporates a low-power, thermosilicon-coated electrical device. This valve control mechanism is an exclusive DIFAIR design that makes no noise when activated (only the sound of air flowing through it can be heard).





iZONE SINGLE-ZONE AIR CONDITIONING

The new **iZONE** single-zone smart climate control system is the ideal product for climate control in a single room (bedroom, office, living room, etc.) when the air conditioning system is ducted, optimizing climate control and significantly increasing comfort in that controlled room.



The **iZONE** control system is a very simple product, as it consists only of a wireless remote control and a smart speaker, with both components communicating via wireless technology.

The **iZONE** control is essentially a standalone smart diffusion element.

APPLICATIONS

In ducted HVAC systems, in most cases, there is a room where temperature control is essential. Furthermore, the ideal temperature for each room is determined independently of the others based on its geographic orientation, its intended use, and, of course, whether it is occupied at any given time. For this reason, iZONE allows for independent temperature control in different rooms within the same home, retail space, or office.

In summary, the iZONE smart control system allows you to adjust the temperature of a specific room independently of the others, or simply shut off the heating element, without the other rooms having to sacrifice the comfort of climate control.

This control does not affect the air conditioner.

OPERATION

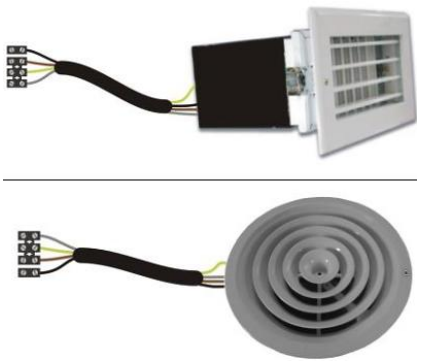
The operation of the smart diffusion element is based on maintaining the user-selected setpoint temperature in the conditioned room.

Important: The air conditioning unit's control panel acts as the master control; you must use it to select the system's operating mode.

DIFFUSION ELEMENTS: SMART AND SLAVE

The distribution elements can consist of several DR_IR diffusers (one master and several slaves) or a single DR_IR diffuser combined with other compatible models (one master and several slaves). The system offers a wide range of motorized air distribution options. The grilles and diffusers are standard sizes, and both components can be supplied in different sizes depending on the installation requirements.

To facilitate installation, the smart diffusion elements are supplied with 30 centimeters of hose, and the connection terminals are accessible at one end so that the smart diffusion element does not need to be handled.



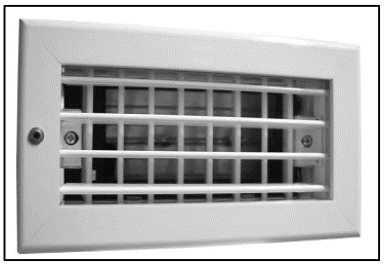
Grille types:
- Double deflection movable blade grilles(Serie M).
- 0º fixed-blade linear grilles (Serie L).
- Curved movable blade grilles(Serie C).

Diffuser types:
Not all diffusers may include smart controls.
- Circular diffusers (Serie DR).



The motor built into the diffusion elements is unique and operates silently.

The diffusers are equipped with an infrared receiver to receive data transmitted by the remote control, as well as a temperature sensor to measure the ambient temperature of the zone to be heated or cooled. This feature means that the zone system does not require any additional installation of a wall-mounted thermostat or similar device, since the diffuser unit itself acts as a thermostat and can thus be controlled using a remote control that requires no installation whatsoever.





A green LED indicator is incorporated into each light-emitting element to indicate whether the unit is on or off.

MULTI-PULSE ZONE. MASTER SMART DIFFUSION ELEMENTS AND SLAVE DIFFUSION ELEMENTS. GRILLES AND DIFFUSERS

In multi-outlet zones—that is, zones with more than one air outlet—it is possible to install a master smart diffuser in one of the air outlets and connect slave diffusers to it.

The slave diffusion elements do not include electronic controls or a temperature sensor (nor do they include an LED indicator), since they are controlled by the smart diffusion elements to which they are connected, meaning that the opening or closing of the slave diffuser's motorized damper occurs in tandem with the opening or closing of the motorized damper of the smart diffuser to which it is connected.

The multi-pulse zone consists of:

- Master smart duffusion element.
- Slave diffusion element.

ZONE TEMPERATURE CONTROL

Smart diffusers are the ones that determine the temperature of the zone thanks to the unique sensor built into them.

REMOTE CONTROL

In multi-outlet zones—that is, zones with more than one air outlet—it is possible to install a master smart diffuser in one of the air outlets and connect slave diffusers to it.

WIRELESS REMOTE CONTROL

The slave diffuser elements do not include electronic controls or a temperature sensor (nor do they include an LED indicator), since they are controlled by the smart diffuser elements to which they are connected, meaning that the opening or closing of the slave diffuser's motorized damper occurs in tandem with the opening or closing of the motorized damper of the smart diffuser to which it is connected.

Each motorized diffusion element is controlled by a wireless remote control, allowing the user to select individual settings for each zone. The following options are available:

- on/off status
- cool/heat operating mode
- setpoint temperature, selectable from 10°C to 30°C

The remote control is powered by two 1.5V **AAA** batteries.

Important: The air conditioning unit's control panel acts as the master control; you must use it to select the system's operating mode.

Every time the smart diffuser receives a signal, the built-in buzzer emits 1 or 2 beeps, depending on whether the command is to start or stop, respectively.

In the event of a temperature sensor failure, the diffusion element closes, and an alarm is signaled by the LED indicator and four beeps from the horn whenever a command is sent from the remote control.

Since the remote control is not the device responsible for measuring the ambient temperature in the area, it can be placed anywhere.



SCHEDULE FOR EACH ZONE

The remote control allows you to set 24-hour start and stop schedules for each zone.

Scheduled Start: If the timers are enabled, the motorized diffuser in the programmed zone begins operating according to the data transmitted from the remote control starting at the time set as the scheduled start time.

Scheduled Start: If the timers are enabled, the motorized diffuser in the programmed zone begins operating according to the data transmitted from the remote control starting at the time set as the scheduled start time.

BYPASS GATE/DAMPER. PRESSURE IN THE DUCT

To maintain constant pressure inside the air duct, it is necessary to install an overpressure damper—provided that one is not already installed—so that when a motorized diffuser closes or opens, and a pressure change occurs in the duct, this damper self-regulates, readjusting the pressure inside the duct and thereby preventing overpressure in the duct and any resulting noise that could become bothersome.



A zone-based HVAC system must be equipped with a pressure compensator. Physically, this compensator is a single-blade bypass damper.

When a damper is closed, the dynamic pressure in the duct increases, and this pressure is converted into static pressure on the duct walls. This increase in static pressure is compensated for by opening the bypass damper, which reduces the static pressure and, consequently, the dynamic pressure. In this way, the air velocity inside the duct is controlled.





IN THE EVENT OF A POWER OUTAGE

If power is lost, the diffuser starts up in “off” mode, requiring you to reselect both the operating mode and the setpoint temperature, as well as the schedule, if one is active.

RELAY CONTACT OUTPUT

The smart diffusion element includes a relay contact output that signals whether the motorized damper is open or closed.

OPERATING VOLTAGE

The iZONE smart diffuser must be connected to a 230 VAC, 50/60 Hz power supply to operate properly using only three wires.

NOTE: The grounding terminal is included in the diffuser to provide, when connected, greater safety for the installation.

INSTALLATION

This control is very easy to install, greatly reducing installation and commissioning time; it is also a fully automatic, self-installing device, as it does not require any configuration by the user.

Installation is very simple—all you have to do is run the power cord to the smart diffuser.

To use the iZONE single-zone climate control system, all you need is a ducted HVAC system; simply remove the air diffuser in the selected room and replace it with the iZONE smart motorized diffuser. Once installed, you're all set to control the temperature in that room.

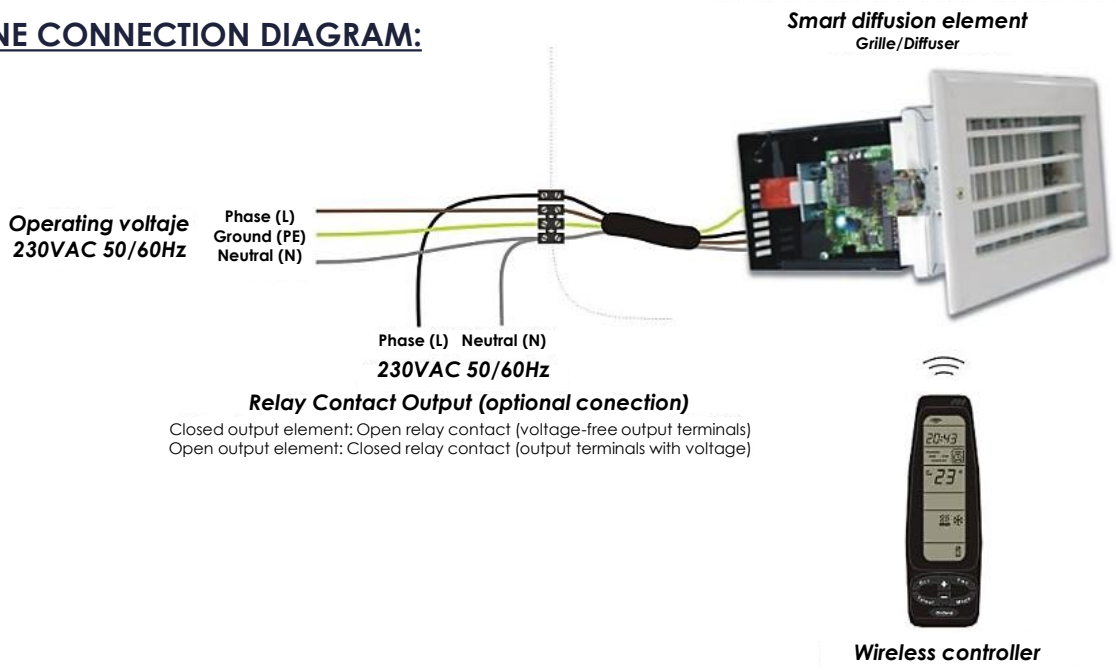
OPERATING VOLTAGE

IMPORTANT: Using more than one iZONE control in the same installation without the necessary preparation could cause problems or even malfunctions in the installation. Consult an authorized installer.

iZONE TECHNICAL SPECIFICATIONS

Power Supply Voltage	230 VAC 50/60 Hz
Output	Via a voltage-activated relay contact max. voltage 250VAC max. Intensity 3ª
Operating temperature	0ºC to 50ºC
Operating humidity	max. 95% h.r. no condensation

iZONE CONNECTION DIAGRAM:



NOTE: The wire colors shown in this wiring diagram follow a standard color code, but may vary depending on the hose used.

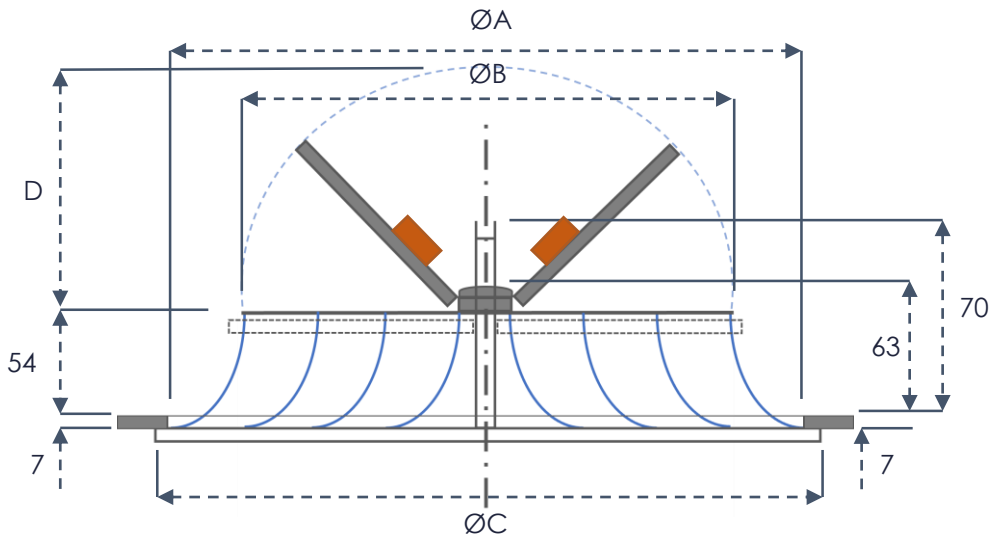
ACCESSORIES

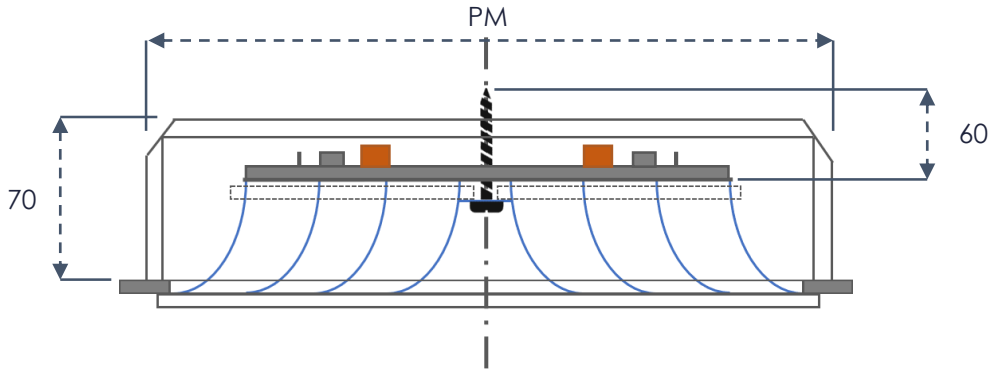
- **Mounting crossbar (PM_CF).**
- **Flexible Duct Collar (CF).**
- Insulated sheet metal **plenum (PADR10)** and uninsulated sheet metal **plenum (PDR10).**

FINISH

- **White-Lacquered** Diffuser.
- **ANODIZED ALUMINUM** Diffuser.
- On request, it can be manufactured in other colors from the **RAL** color chart.

DIMENSIONS

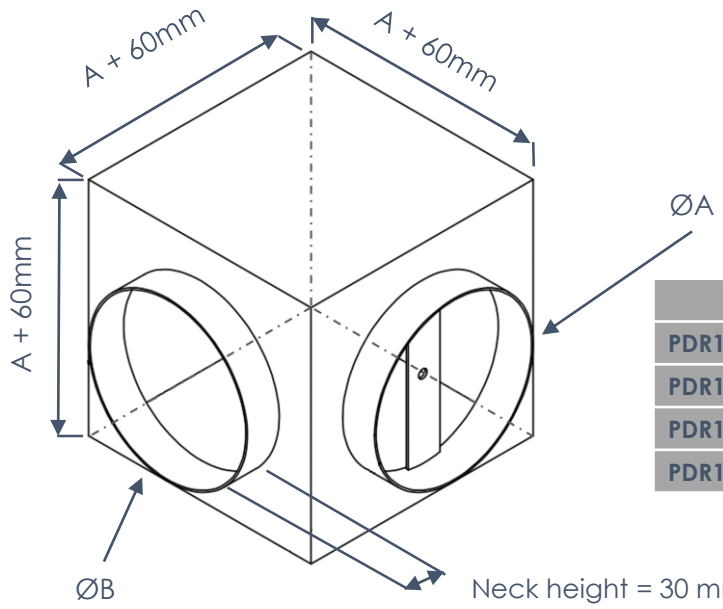




Dimensions Table (mm)					
NOMINAL	ØA HOLE	ØB NECK	ØC EXTERNAL	CROSSBAR (PM)	D (H COMP.)
6”	195	142	238	225	68
8”	250	198	300	275	96
10”	305	248	356	335	121
12”	365	300	414	385	147

Usable area m²		
SIZE	Ø mm	m²
6”	150	0,0085
8”	200	0,0157
10”	250	0,0257
12”	300	0,0381

PLENUM BOX



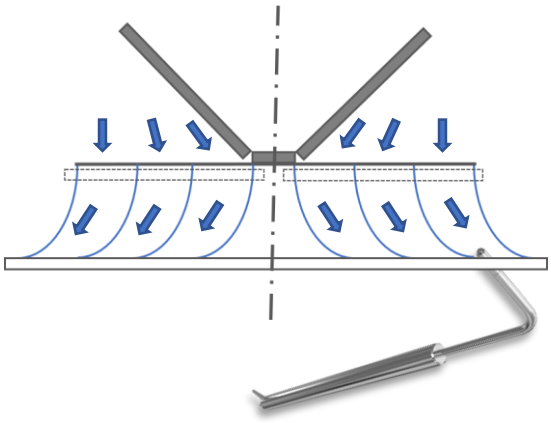
Model	ØA (mm)	ØB (mm)
PDR10 / PADR10 6"	170	148
PDR10 / PADR10 8"	230	198
PDR10 / PADR10 10"	280	248
PDR10 / PADR10 12"	330	313

AIR FLOW MEASUREMEN

There are two ways to do this:

1- Measuring air velocity at the neck.

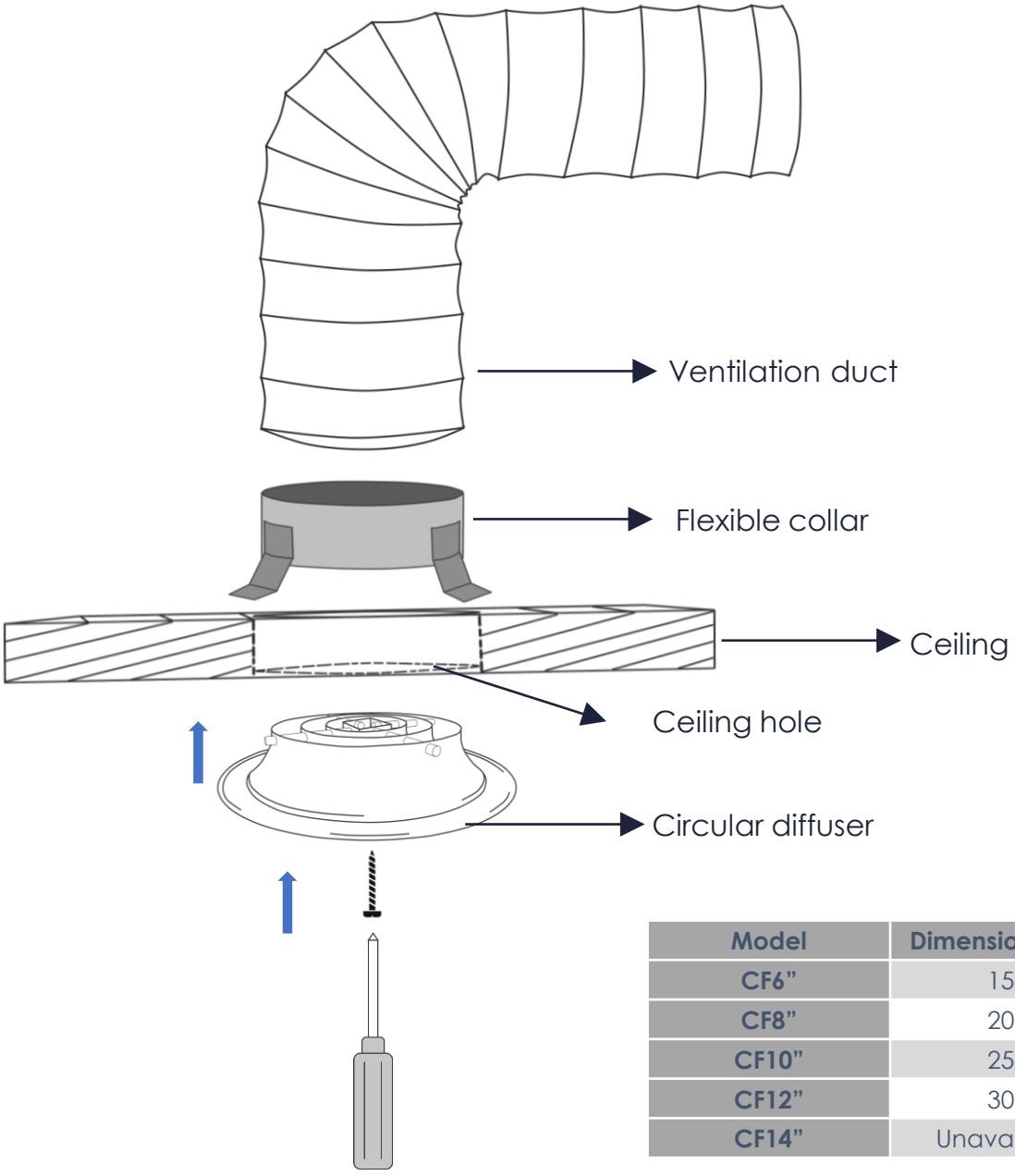
2- Measuring the effective propulsion velocity using a Pitot tube at various points.
$m^2/h = Va \times m^2 \times 3.600$



FLEXIBLE DUCT COLLAR

The **CF** collar is made of galvanized steel sheet and allows for the installation of **DR10TR SERIES** fixed-cone diffusers by connecting them directly to the duct, without the need for a plenum.





Model	Dimension (mm)
CF6"	150
CF8"	203
CF10"	253
CF12"	303
CF14"	Unavailable

QUICK SELECTION TABLE

Size		6"	8"	10"	12"	14"
m³/h	Ø cuello	140	196	252	308	364
100	Ve Δ P dB(A) L	3,3 0,65 15 0,5-0,8	1,8 0,1 5 0,2-0,6			
150	Ve Δ P dB(A) L	5 1,6 28 0,5-1	2,7 0,4 9 0,4-0,8			
200	Ve Δ P dB(A) L	6,6 2,6 36 0,8-1,4	3,6 0,9 20 0,7-,1,1	2,2 0,2 7 0,5-0,8		
250	Ve Δ P dB(A) L	8,2 4,2 43 0,9-1,6	4,5 1,3 25 0,8-1,4	2,8 0,4 10 0,6-1,1	1,9 0,1 9 0,6-0,9	
300	Ve Δ P dB(A) L		5,3 1,8 30 0,9-1,5	3,3 0,65 16 0,9-1,4	2,2 0,2 8 0,7-1,1	
350	Ve Δ P dB(A) L		6,2 2,5 34 1,1-1,8	3,9 1 23 0,9-1,4	2,6 0,4 9 0,8-1,3	1,9 0,1 11 0,7-1,1
400	Ve Δ P dB(A) L		7,1 4 42 1,3-2	4,4 1,2 25 1-1,6	3 0,5 13 0,9-1,4	2,1 0,1 10 0,8-1,3
450	Ve Δ P dB(A) L		8 4 42 1,4-2,1	5 1,5 29 1,2-1,9	3,4 0,7 20 1-1,6	2,4 0,2 12 0,9-1,4
500	Ve Δ P dB(A) L		9 5 46 1,5-2,3	5,5 1,9 32 1,3-2	3,7 0,9 23 1,2-1,8	2,6 0,3 11 1-1,5
550	Ve Δ P dB(A) L			6 2,3 34 1,4-2,1	4,1 1 24 1,2-1,9	3 0,5 15 1,1-1,7
600	Ve Δ P dB(A) L			6,6 2,7 37 1,5-2,3	4,5 1,3 27 1,3-2	3,1 0,5 16 1,2-1,9
650	Ve Δ P dB(A) L			7 3 36 1,5-2,4	4,9 1,5 29 1,4-2,1	3,5 0,8 22 1,3-1,9
700	Ve Δ P dB(A) L			7,8 3,8 43 1,6-2,6	5,2 1,7 31 1,5-2,3	3,7 0,9 24 1,4-2

Size		10"	12"	14"
m³/h	Ø cuello	252	308	364
750	Ve Δ P dB(A) L	8,2 4,2 44 1,8-2,8	5,7 1,9 34 1,5-2,4	4 1 26 1,4-2,1
800	Ve Δ P dB(A) L	8,6 4,9 46 1,9-2,9	6 2,2 35 1,7-2,5	4,2 1,1 27 1,4-2,3
850	Ve Δ P dB(A) L	9 5 47 1,9-3	6,4 2,4 36 1,8-2,7	4,5 1,3 31 1,5-24
900	Ve Δ P dB(A) L		6,8 2,5 37 1,8-2,9	4,6 1,4 29 1,6-2,5
950	Ve Δ P dB(A) L		7 3 40 1,9-2,9	5 1,5 32 1,7-2,6
1.000	Ve Δ P dB(A) L		7,3 3,4 41 2,3	5,2 1,7 33 1,8-2,8
1.100	Ve Δ P dB(A) L		8 4 45 2,1-3,3	5,8 2 36 1,9-3
1.200	Ve Δ P dB(A) L		8,7 5 48 2,3-3,6	6,2 2,5 38 2-3,2
1.300	Ve Δ P dB(A) L		9,5 5,8 50 2,5-3,8	6,7 2,7 41 2,2-3,4
1.400	Ve Δ P dB(A) L			7,3 3,4 43 2,4-3,6
1.500	Ve Δ P dB(A) L			8 4 46 2,5-3,9
1.600	Ve Δ P dB(A) L			8,5 4,5 48 2,6-4
1.700	Ve Δ P dB(A) L			9 5 50 2,8-4,3

Ve = Speed at the neck.

dB(A) = Sound level.

Δ P = Pressure drop in mm c.a.

L = Range in m for final speed 0,2-0,5 m/s.

iZONE FIXED-CONES CIRCULAR DIFFUSER
SERIE DR_IR

Series	Model	Size
	10	
DR_IR	10_PL	Ø"

Finish
LB
ALU
RAL

Accessories
PM_CF
CF
PADR10
PDR10

DR10IR – 10" – LB + PM_CF

DESCRIPTION

SERIES

- DR_IR: Circular Fixed-Cone Air Diffuser for HVAC Systems.

MODEL

- DR10IR: Circular fixed-cone diffuser for HVAC systems with motorized damper.

SIZE

- Diameter: Ø 10".

FINISH

- LB: White lacquer finish.

ACCESSORIES (optional)

- PM_CF: Mounting crossbar for a circular diffuser with a fixed cone.

Order example: DR10IR-10"-LB+PM_CF

- To order a 10" white-lacquered iZONE circular fixed-cone HVAC diffuser with motorized airflow damper and a mounting crossbar, you should request:

Order	Description
1 Diffuser DR10IR 10"-LB	10" iZONE circular HVAC diffuser with a fixed cone, 10" in diameter, white lacquer finish, with motorized airflow control.
1 Crossbar PM 10" CF	Mounting crossbar for a 10" circular fixed-cone diffuser.

Order example: DR10IR-8"-ALU

- To order an 8" iZONE circular HVAC diffuser with a fixed cone, made of anodized aluminum, and motorized airflow damper, you should request:

Order	Description
1 Diffuser DR10IR 8"-Alu	8" iZONE circular HVAC diffuser with a fixed cone, made of anodized aluminum, and motorized airflow damper.



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