Serie M_TR



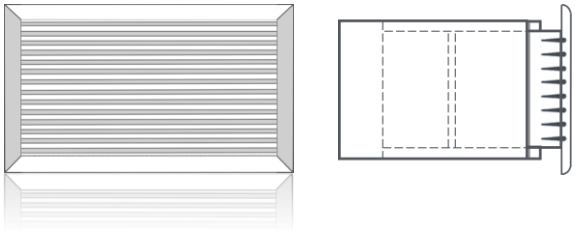
MOTORIZED GRILLES WITH MOVABLE BLADES

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(+34) 91 3235703
www.difair.es
info@difair.es
Avd. del Cno de lo Cortao, 28A, Nave 1
28703 San Sebastián de los Reyes, Madrid.

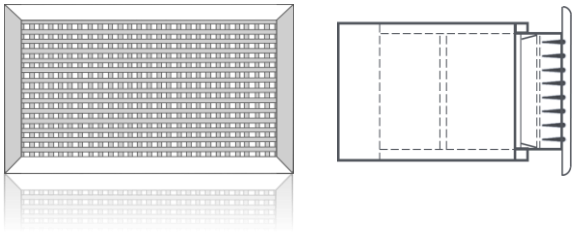
MOTORIZED GRILLES WITH MOVABLE BLADES
SERIES M_TR



MODELS



M10TR
Motorized grille with movable blades, single-direction operation. Horizontal blades.



M20TR
Motorized grille with movable blades, double-direction operation. Horizontal and vertical blades.

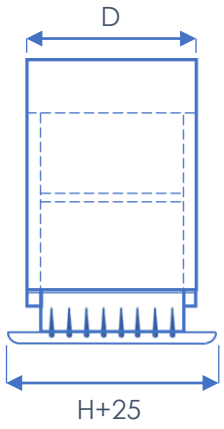
DESCRIPTION

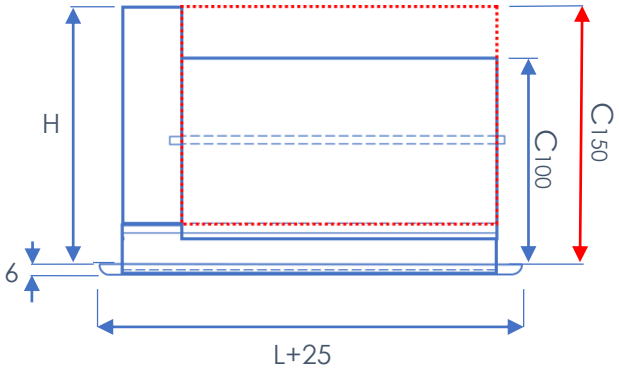
The new zone control and home automation systems allow for individualized temperature control of different zones using a single **HVAC** unit, thereby increasing comfort in each room. These systems reduce the unit's operating time, extending its service life and providing energy savings. The motor operates completely silently, promoting rest and comfort when the vents are installed in bedrooms or offices.

DIFAIR's exclusive **M10TR** and **M20TR** grilles can be integrated into any existing control system on the market, since all they require to operate is a **220 V** or **24 V** power supply to open them. This system can range from a simple switch to the most complex home automation system on the market.

DIMENSIONS

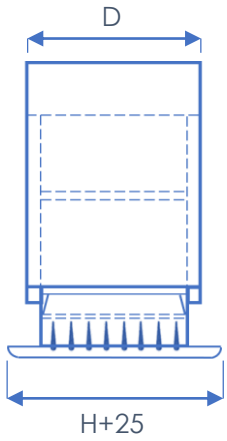
M10TR

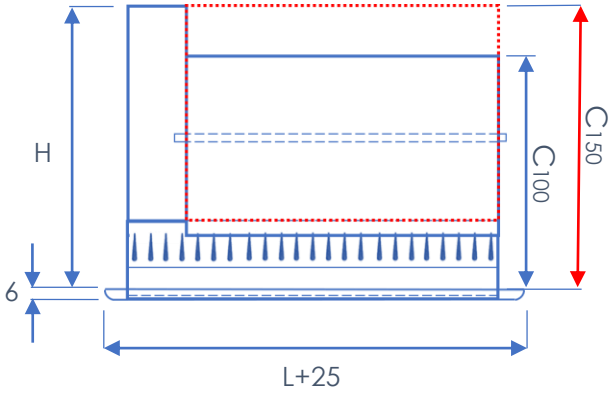




	Size	H (mm)	C (mm)	D (mm)
M10TR	L x 100 L x 200	134	C100 = 106	C100 = 87
M10TR	L x 150 L x 250 L x 300	154	C150 = 154	C150 = 135

M20TR





	Size	H (mm)	C (mm)	D (mm)
M20TR	L x 100 L x 200	156	C100 = 126	C100 = 87
M20TR	L x 150 L x 250 L x 300	176	C150 = 176	C150 = 135

L X H → Nominal Size = Hole Size

Dimensions may be specified as L x H, with a maximum of 1,000 x 300 and a minimum of 200 x 100 (including the mounting frame).

CONSTRUCTION FEATURES

Single- or double-deflection movable-blade grille made of anodized or painted aluminum, with motorized adjustment (damper) consisting of a frame made of aluminum or steel sheet painted with black epoxy paint. A single natural aluminum blade with built-in rubber gaskets to ensure optimal airtightness in this type of installation. Highly durable brass bushings.

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).

CONSIDERATIONS:
To achieve zone-by-zone temperature control, any supply grille in an HVAC system may be replaced with one from this series (M_TR), provided that, if the grilles being replaced account for more than 60% of the system's total airflow, a weighted overpressure damper (RCSLP SERIES) must be installed to divert the excess airflow back to the unit's return duct, thereby preventing noise and/or potential duct damage caused by excess pressure.

ACCESSORIES

- **PLENUM BOX** (View the **PLENUM SERIES** technical data sheet).

FINISH

- Grille made of **ANODIZED ALUMINUM**.
- Grille made of **WHITE-PAINTED** aluminum **(RAL 9016).**
- On request, it can be manufactured in lacquered aluminum according to the **RAL** color chart.

TECH. SPECIFICATIONS OF THE THERMOACTUATOR MOTOR

Unless otherwise specified, the following characteristics must be verified at room temperature = **25 ± 5°C** and relative humidity = **45–75%**.

- **CORROSION RESISTANCE OF METAL PARTS**
  According to **UNE-EN-60335-1**, section **31**.

- **HUMIDITY RESISTANCE**
  Degree of protection against water ingress: **IP 00** (unprotected, per **IEC 60529**). Resistance to humid conditions: per **UNE-EN 60730-2-14**, Section **12.2** (Part **2-14** – Section **12.2**). Although the "silicone-molded" actuator does not have a higher IP rating, it can operate under severe environmental and relative humidity conditions (see **2.2** Operating Conditions).

- **HEAT AND FIRE RESISTANCE**
  According to **UNE-EN-60730-2-14**, Section **21** (Part **2-14** – Section **21**). The plastic materials of the thermoactuator that come into contact with the active parts are classified as **V0** self-extinguishing (**0.8 mm**) according to **UL94**. The thermoactuator also successfully passes the **140°C** ball test, **ref. UNE-EN-60335-1**, section **30.1** (Part **1** – Section **30.1**).

- **RESISTANCE TO SURFACE CURRENTS**
  According to **UNE-EN 60730-2-14**, section **21** (Part **2-14** – section **21**), the plastic materials of the thermoactuator that come into contact with live parts are guaranteed to have a **PTI 250** resistance to surface currents, in accordance with **IEC 60112**.

ELECTRICAL CHARACTERISTICS

- **POWER SUPPLY VOLTAGE**
  Available power ranges:
  -110/240 VAC a 50/60 Hz.
  -12/24 VAC a 50/60 Hz.
  -12/24 VDC.

- **ENERGY ABSORPTION:**
  Power absorption under steady-state conditions after 300 seconds of operation.

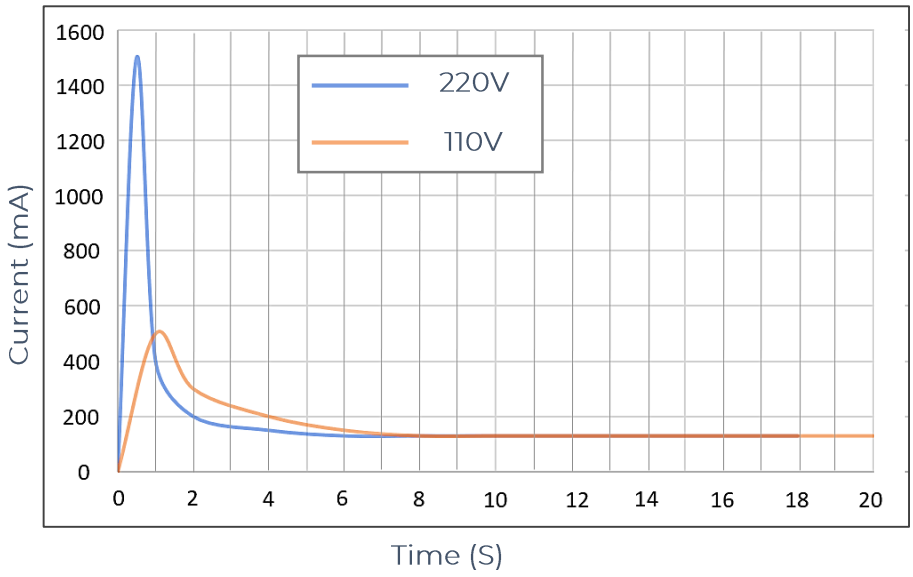
12/24 V	110V	220V
2.8 ± 1W	5.8 ± 1W	5.5 ± 1W

- **INTENSITY-TIME CURVE CHARACTERISTICS**

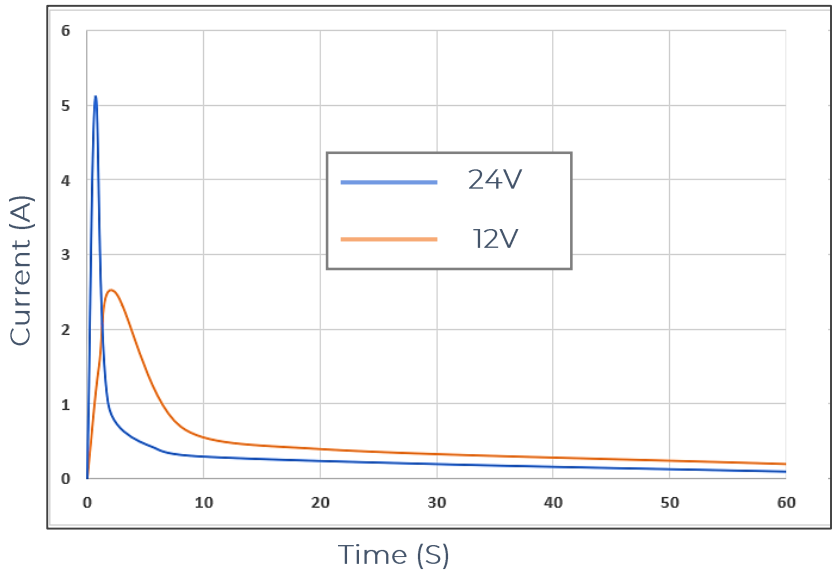
  A diagram illustrating the variation in current absorption over time. The curves are categorized by thermoactuator type and voltage.

  The diagram was obtained under the following conditions:
  - thermoactuators energized for more than 5 minutes;
  - no counteracting load;
  - ambient temperature of 25°C.

CURRENT ABSORPTION FOR 110-220V MOTOR



CURRENT ABSORPTION FOR 12-24 Vdc MOTOR



ENERGY CONSUMPTION PER MOTOR

MODEL	Consumption:			
	Peak consumption up to 120 s		Stable consumption starting at 120 s	
M10TR/M20TR : 220V	110 V	0,5 A	110 V	0,05 A
	220 V	1,5 A	230 V	0,03 A
M10TR/M20TR : 24V	12 VDC	2,4 A	12 VDC	0,25A
	24 VDC	5 A	24 VDC	0,15 A

MODEL	Available voltage supply range:
M10TR/M20TR : 220V	110 ÷240 VAC a 50 ÷ 60 Hz.
M10TR/M20TR : 24V	- 12 ÷ 24 VAC a 50 ÷ 60 Hz - 12 ÷ 24 VDC

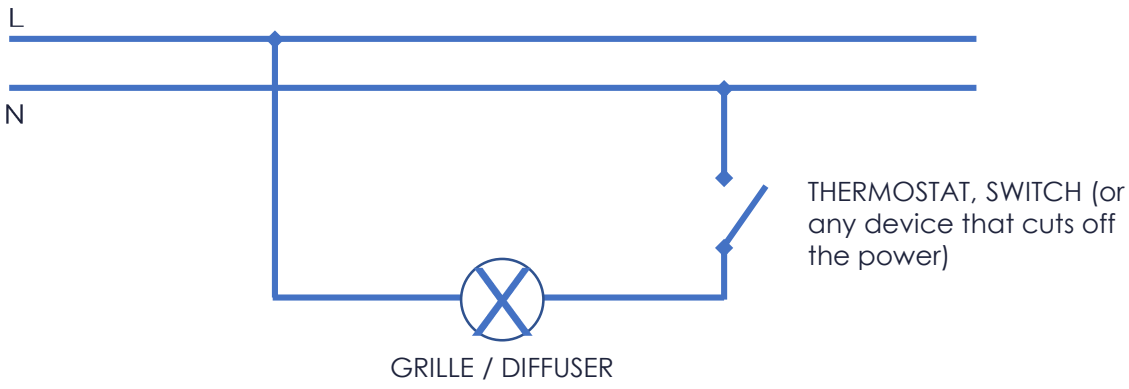
Note: The M10TR SERIES motorized grilles are manufactured in a standard 220V configuration; therefore, unless otherwise specified at the time of ordering, they will be supplied at this voltage.

NUMBER OF MOTORS PER GRILLE BASED ON SIZE

	200	250	300	350	400	450	500	600	700	800	900	1000
100	1	1	1	1	1	1	1	2	2	2	2	2
150	1	1	1	1	1	1	1	2	2	2	2	2
200	2	2	2	2	2	2	2	4	4	4	4	4
250	2	2	2	2	2	2	2	4	4	4	4	4
300	2	2	2	2	2	2	2	4	4	4	4	4

Note: When calculating electricity consumption, take into account the number of motors per grille

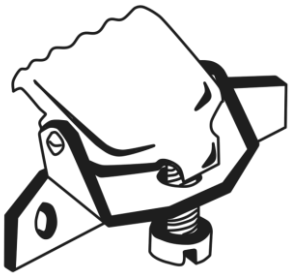
CONNECTION DIAGRAM

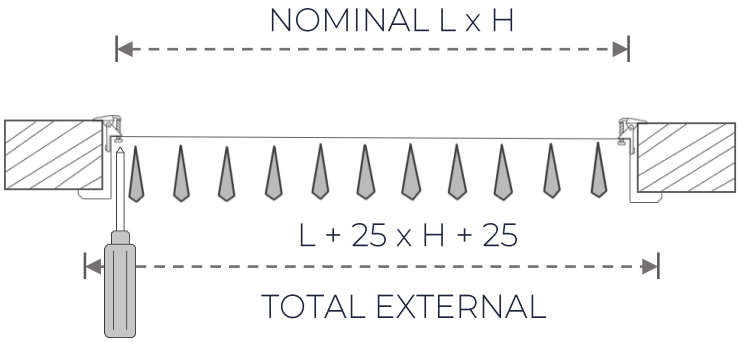


FIXING SYSTEM

GRILLE ASSEMBLY WITH CONCEALED FIXING (Compatible only with double deflection: M20TR)

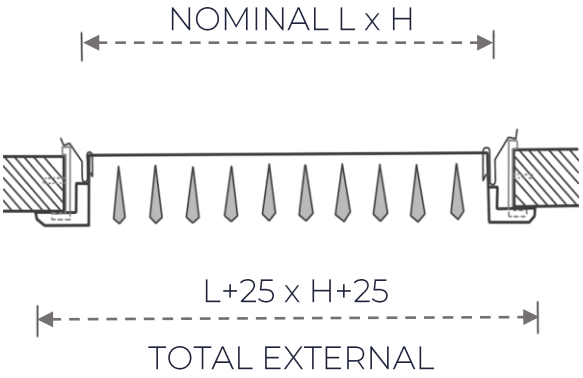
This type of fixing is the standard system for this series. Using a screwdriver to drive the indicated screw, the tongue is pressed onto the mounting frame, thus holding the grille firmly in place. To remove the grille, simply loosen the screw and the steel spring returns the claw to its horizontal position.

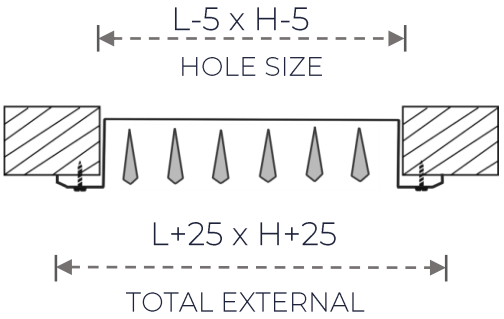




FIXING BY MEANS OF PRESSURE CLIPS

Once the mounting frame has been received, place the grille in the resulting recess and press until the grille is attached to the wall. The pressure that the clips exert on the mounting frame prevents the grille from slipping out of the mounting frame.





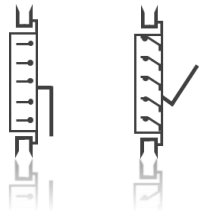
SCREWS FIXING

The grille is supplied with countersunk holes. Screws not included.

NOMINAL= L X H

FLOW MEASUREMENT

$m^3/h = m/s \times m^2 \times 3.600$



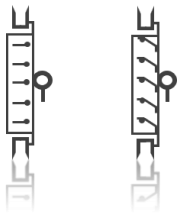
By Pitot tube:

Measurements must be taken at several points on the grille, the arithmetic measurement of all of them allows us to determine the effective suction velocity.

By anemometer:

The entire surface of the grille must be traversed with it to obtain the suction velocity.

$m^3/h = m/s \times m^2 \times 3.600$



EFFECTIVE SECTION (m^2)

MOD. M10TR

H \ L	200	250	300	350	400	450	500	600	700	800	900	1.000
100	0.00695	0.00940	0.01185	0.01430	0.01675	0.01920	0.02165	0.02493	0.02983	0.03473	0.03963	0.04453
150	0.01430	0.01885	0.02340	0.02795	0.03250	0.03705	0.04160	0.04908	0.05818	0.06728	0.07638	0.08548
200	0.01933	0.02578	0.03223	0.03868	0.04513	0.05158	0.05803	0.06768	0.08058	0.09348	0.10638	0.11928
250	0.02668	0.03523	0.04378	0.05233	0.06088	0.06943	0.07798	0.09183	0.10893	0.12603	0.14313	0.16023
300	0.03333	0.04378	0.05423	0.06468	0.07513	0.08558	0.09603	0.11368	0.13458	0.15548	0.17638	0.19728

MOD. M20TR

H \ L	200	250	300	350	400	450	500	600	700	800	900	1.000
100	0.00506	0.00680	0.00878	0.01052	0.01250	0.01424	0.01622	0.01832	0.02204	0.02576	0.02971	0.03320
150	0.01107	0.01441	0.01815	0.02149	0.02523	0.02857	0.03231	0.03776	0.04484	0.05192	0.05941	0.06608
200	0.01488	0.01966	0.02500	0.02978	0.03512	0.03990	0.04524	0.05211	0.06223	0.07235	0.08302	0.09259
250	0.02088	0.02726	0.03436	0.04074	0.04784	0.05422	0.06132	0.07155	0.08503	0.09851	0.11272	0.12547
300	0.02632	0.03414	0.04284	0.05066	0.05936	0.06718	0.07588	0.08915	0.10567	0.12219	0.13958	0.15523

QUICK SELECTION TABLE

HEIGHT		LENGTH													
300									300	400	550	650	800	1000	
250							250	300	400	500	650	800	950		
200					200	250	300	400	500	600	800	1000	1200		
150			150	200	300	350	450	550	650	800	1000				
100		100	200	300	400	500	600	800	1000	1200					
m³/h															
100	Alc dB(A) Δ P		3 9 0,3												
200	Alc DB(A) Δ P		6 10 1,2	5 12 0,6	4,5 8 0,3										
300	Alc dB(A) Δ P		9,5 32 2,8	8 21 1,3	6,5 15 0,7	5,5 11 0,5	5 8 0,3								
400	Alc dB(A) Δ P		12 39 5	10 30 2,1	9 25 1,2	7,2 16 0,7	7 12 0,6	6,2 11 0,5							
500	Alc dB(A) Δ P			13 37 3,6	11 29 1,9	10 25 1,1	8 20 0,9	7,6 15 0,5	7 6 0,4	6,5 5 0,3					
600	Alc dB(A) Δ P			15 40 5	14 36 2,9	12 30 1,7	11 25 1,1	9,5 20 0,6	7,8 8 0,5	7,6 7 0,3	6,6 4 0,2				
700	Alc dB(A) Δ P				15 38 2,3	14 33 2,1	13 30 1,8	11 26 0,9	9,5 17 0,65	8 14 0,4	7,2 9 0,2				
800	Alc dB(A) Δ P				17 43 4,9	16 37 2,9	14 33 2	13 28 1,1	12 19 0,8	10 15 0,6	9,3 10 0,3	8 7 0,17			
900	Alc dB(A) Δ P					17 40 3,7	16 37 3,3	14 29 1,4	13 23 0,9	12 19 07	10 12 0,4	9 9 0,25			
1.000	Alc dB(A) Δ P					20 43 5	18 38 3,4	16 32 1,9	14 27 1,3	13 21 0,8	12 15 0,25	10 12 0,30			
1.200	Alc dB(A) Δ P						21 44 5	19 37 3	17 31 1,7	15 28 1,2	13 22 0,7	12 14 0,45	11 9 0,3		
1.400	Alc dB(A) Δ P							21 41 4	20 34 2,2	18 33 1,8	15 26 0,9	14 18 0,6	13 12 0,4	11 10 0,2	
1.600	Alc dB(A) Δ P							29 45 5	23 40 3,2	20 35 2	18 29 1,2	16 21 0,8	14 17 0,5	13 12 0,3	
1.800	Alc dB(A) Δ P								28 42 3,9	23 39 3	20 30 1,5	18 25 0,9	16 20 0,7	15 16 0,4	
2.000	Alc dB(A) Δ P								34 43 4,8	28 42 3,7	22 36 3	20 29 1,2	18 25 0,9	16 18 0,5	
2.200	Alc dB(A) Δ P									33 44 4	28 38 2,1	22 31 1,5	20 26 1	18 22 0,6	
2.400	Alc dB(A) Δ P									35 45 4,2	30 39 2,6	25 32 1,6	21 27 1,3	18 23 0,7	
2.600	Alc dB(A) Δ P										35 41 3,4	30 36 2,2	25 31 1,4	21 26 1	
2.800	Alc DB(A) Δ P										40 44 4	33 38 2,7	30 34 1,9	25 28 1,2	
3.000	Alc dB(A) Δ P											35 40 3	32 35 2	29 26 1,3	
3.500	Alc dB(A) Δ P											45 44 4	40 38 26	35 34 1,8	

CORRECTION FACTORS		
Angle of divergence	*45º*	*90º*
Δ P = Tables x	1,1	1,5
dB(A) = Tables +	2	3
Alc = Tables x	0,7	0,5

Alc = For a residual velocity of 0.5 m/s.

dB(A) = Noise level of open blades without flow regulation.

Δ P = Static pressure drop mm c.a.

GRAPHIC DESCRIPTION

Series	Model	Size
M_TR	10	
M_TR 24V	20	L x H

-

Finish
ALU
LB
RAL

+

Accessories	Fixing system
PLENUM	FO
	MM
	Drill



SERIES

- M_TR: Motorized grille with movable blades.

MODEL

- M20TR: Motorized grille with movable blades, double deflection.

SIZE (mm)

- LxH: 300 x 200 mm.

FINISH

- Alu: Anodized aluminum.

FIXING SYSTEM (optional)

- MM: 300 x 200 mm Mounting frame with pressure clips.

Order example: M20TR 300x200 ALU + MM

- To order a 300x200 mm double-deflection motorized grille (200v) in anodized aluminum with a mounting frame, you should request:

Order	Description
1 Grille M20TR 300x200 - anodized aluminum	300x200 mm double-deflection motorized grille (200V) in anodized aluminum.
1 Mounting frame MM 300x200	300 x 200 mm Mounting frame.

Order example: M10TR 500x100 - 24V +LB + DRILL

- To order a 500x100 mm single-deflection motorized grille (24V) with horizontal moving blades, painted white, for installation with exposed screws, you should request:

Order	Description
1 Grille M10TR 500x100 – 24V – Laquered white	500x100 mm single-deflection motorized grille (24V) with horizontal moving blades, painted white.
Fixing System "DRILL"	Drills for installation with exposed screws (screws not included)



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