



## VARIABLE AIRFLOW RECTANGULAR REGULATORS

CL-VRR  
SERIES

### OVERVIEW

#### Overview :

The CL-VRR series regulators are terminal regulation units for the flow of air to be used in single duct systems with functional range between 20 and 1000 Pa. These regulators are used to control and maintain the quantity of air in variable air flow systems.

The auto-generated and irradiated noise tests have been carried out to UNI EN 25135 and ISO 3741 standards at the Giordano Institute (test report N. 153262 and 154143).

#### Technical Characteristics:

The CL-RPV regulators are assemble from:

- casing in galvanized steel in different dimension corresponding to the standard sizes of rectangular air ducts.
- Air flow regulation damper in galvanized steel with longitudinal and lateral holding gaskets.
- Dynamic  $\Delta p$  probe for the measure and maintenance of the flow of air in relation to that requested in the room.
- motor regulator in linear with the regulation and control of the flow.

#### Applications :

The CL-VRR series regulators are used to supply a variable flow of air to the room to be conditioned, in relation to the variation of its thermal loads so as to maintain the maximum thermal comfort conditions. The auto-generated and irradiated noise tests have been carried out to EN ISO 3741 standards.

#### Text for tender:

Rectangular variable air flow regulator for use in single duct systems, model CL-VRR manufactured by MP3 Srl, constructed in galvanized steel, complete of differential pressure detector, temperature probe, regulator and actuator.

#### Accessories :

- double casing
- additional silencer

#### Uses :

With motors:

- Siemens GDB 18L1/E3/MP;
- Belimo NMV-D3-MP;
- Belimo LMV-D3-MP;
- Belimo NM24AV + reg. VRD3;
- Other motor types to be agreed at quotation stage.

The regulators are supplied, as standard, complete with motors from our test benches according to customer request.

For requests without motor, that will in any case have to be calibrated and applied by the customer, MP3 can not in any way guarantee the correct functioning of the apparatus.



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### WORKING PRINCIPLE

#### WORKING PRINCIPLE “INDEPENDENT PRESSURE”

The regulation of the air flow is made by a dynamic pressure control system that can guaranty "the initial independence of the pressure". In so doing, all the requested air flow variations will not disturb the other air flows of other uses.

The control system is comprised of the following elements:

- Air flow measuring element
- Regulation element (the air flow regulator) that receives actual information relative to the measurement of the flow of air and to the request from the room.
- This regulator analyses the difference between the true measurement and that needed in the room so as to transmit a command to a specific motorised unit (the damper) that acts on the flow of air so as to obtain the final requested value by closing in the event of excess and opening in the event of lack of air.
- In the case of variable flow, the set point of the flow is variable from a maximum to a minimum value in relation to the regulation of the temperature;
- The system will always work so as to work the requested air flow in that moment to satisfy the room requirements.

#### COMMAND SIGNALS USED

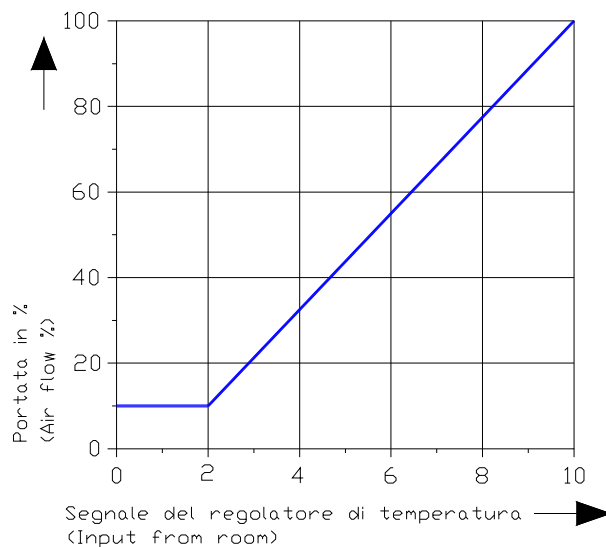
When ordering, is necessary to specify the type of signal that will be used for the adjustment.

The used signals are

- Signal 0V-10V;
- Signal 0V-10V with separate control of total closure;
- Signal 2V-10V;
- Signal 2V-10V with separate control of total closure;
- Signal 2V-10V with total closure to 0V.

#### ENVIRONMENTS IN PRESSURE OR DEPRESSION

In this type of environments it is possible to control the adjustment in recovery via a differential pressure sensor to ensure the overpressure or depression prescribed independently of the flow and the presence of other air outlet, for example in the presence of hoods or frequent opening of the door of access to the room.





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### WORKING PRINCIPLE

#### Regulator calibration

For the calibration of the regulator CL-VRR it will be necessary to indicate the maximum and minimum flows requested for the intended use.

The **maximum air flow** must be between the two values indicated in the table.

The **minimum air flow** must be greater or equal to the value indicated in the table

#### Installation arrangements

for a correct reading of the performances and for a air flow tolerance of 5%, it is necessary at the source to supply a straight section of duct of a length equal to three times the dimension of the larger size of the regulator. In the opposite case, the air flow may be affected a variation between 10% and 20% in comparison to the calibrated value.

#### Leakages with closed damper:

The gasket, fitted on the perimeter of the damper, maintains a level of leakages through the damper below 0,1% of the nominal flow, with a maximum pressure of 1000 Pa.

RANGE OF REGULATION OF THE AIR FLOW		
BxH (mm)	Q min (m <sup>3</sup> /h)	Q max (m <sup>3</sup> /h)
200x110	>75	150÷750*
400x110	>150	300÷1500*
600x110	>230	460÷2300*
400x210	>300	600÷3000*
600x210	>450	900÷4500*
800x210	>600	1200÷6000*
600x310	>660	1320÷6600*
800x310	>890	1780÷8900*
1000x310	>1100	2200÷11000*
600x410	>880	1760÷8800*
800x410	>1180	2360÷11800*
1000x410	>1450	2900÷14500*

\* Qmax calculated for 10m/s velocity



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### TECHNICAL DATA

#### AIR FLOW VALUE AND NOISE LOSS

The data for the generated and irradiated noise for the 600mm length, for various heights, are exposed for three values of static  $\Delta p$  of working. The irradiated noise has been measure with the simple casing regulator.

For the noise values of the regulators having a height different to 600mm, apply the correction values indicated at the bottom of the page.

GENERATED NOISE AND AIR FLOW LOSS						
BxH (mm)	Air flow (m <sup>3</sup> /h)	Speed (m/s)	dBa $\Delta P=200$ Pa	dBa $\Delta P=500$ Pa	dBa $\Delta P=1000$ Pa	$\Delta p_{min}$ (Pa)
600x110	460	2	57	62	69	20
	1380	6	59	68	75	25
	2300	10	61	72	78	35
600x210	900	2	54	63	69	20
	2700	6	60	69	76	25
	4500	10	63	71	79	35
600x310	1320	2	57	63	70	20
	3960	6	58	67	75	25
	6600	10	62	70	78	35
600x410	1760	2	55	66	74	20
	5280	6	62	69	77	25
	8800	10	64	72	79	35

IRRADIATED NOISE					
BxH (mm)	Air flow (m <sup>3</sup> /h)	Speed (m/s)	dBa $\Delta P=200$ Pa	dBa $\Delta P=500$ Pa	dBa $\Delta P=1000$ Pa
600x110	460	2	45	50	55
	1380	6	47	57	63
	2300	10	52	60	65
600x210	900	2	36	44	51
	2700	6	46	53	58
	4500	10	51	59	64
600x310	1320	2	49	58	66
	3960	6	47	58	66
	6600	10	53	60	67
600x410	1760	2	37	46	54
	5280	6	48	54	60
	8800	10	54	59	62

CORRECTIVE NOISE VALUES FOR BASES DIFFERENT TO 600mm						
Base (mm)	200	300	400	500	800	1000
dB	-4	-3	-2	-1	1	2

ROOM ABSORPTION: -8dB

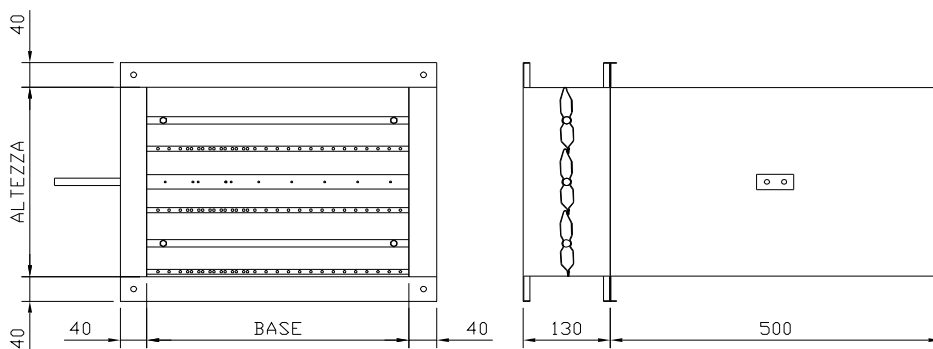


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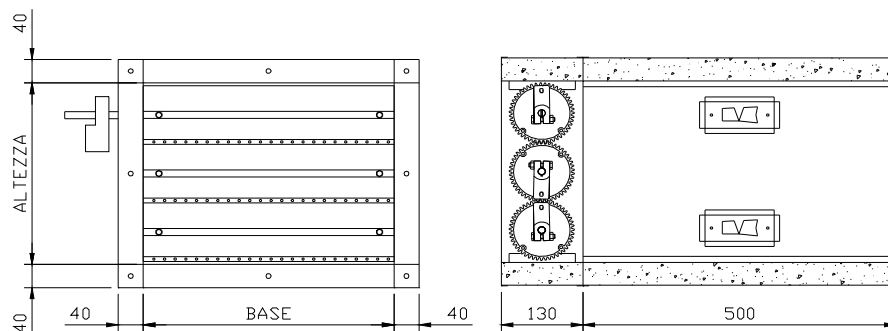
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STANDARD SIZES

### CL-VRR-N SERIES RECTANGULAR REGULATOR WITH SIMPLE CASING



### CL-VRR-I SERIES RECTANGULAR REGULATOR WITH DOUBLE CASING



STANDARD REGULATOR SIZES	
SERIE	BxH mm
CL-VRR	200x110
CL-VRR	400x110
CL-VRR	600x110
CL-VRR	400x210
CL-VRR	600x210
CL-VRR	800x210
CL-VRR	600x310
CL-VRR	800x310
CL-VRR	1000x310
CL-VRR	600x410
CL-VRR	800x410
CL-VRR	1000x410

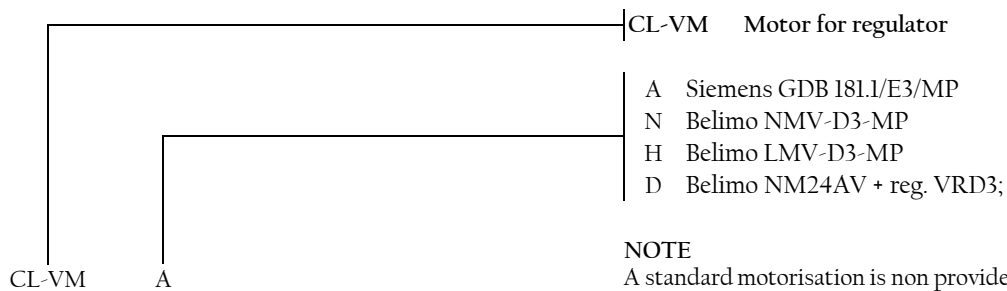
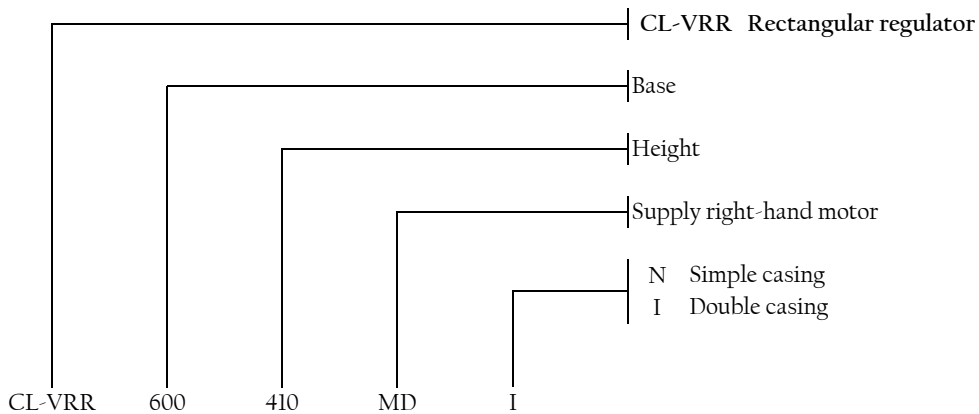
Other sizes on request



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### HOW TO ORDER



#### NOTE

A standard motorisation is non provided, it will be necessary to always indicated the requested motor.

For help in the choice of motors please contact our commercial office.

CL-VML Differential pressure sensor Belimo VFP 300

CL-VMG Belimo VRP M unit for data management differential pressure

CL-VMF Belimo motor LMQ24A-SRV-ST systems for air extraction

The use of CL-VML + CL-VMG + CL-VMF in equipment in extraction allows the management of environments with overpressure or depression with  $\Delta P$  up to 300 Pa