Wind fact sheet – Italy
Window shutters

Pantograph shutter | Sliding bi-fold shutter | Sliding shutter | Wing shutter

Product	Sash width max.	Sash hight max.	Shading width max.	Permissible wind resistance classes (WRC) limit values[1]
Pantograph shutter	550	2600	3300	6 [8][2]
Sliding bi-fold shutter	600	3000	3600	6 [8][3]
Sliding shutter	2000	3000	4000	6 [8][4, 5]
Wing shutter	800	2500	3200	6

[1] Tests in accordance with product standard EN 13659. Product size limitations according to technical data sheet.
[] Class [8] corresponds to an internal standard. That corresponds to a safety test pressure of 800 Pa.
The tests are carried out and evaluated in accordance with the provisions of EN 1932.

[2] The specified wind resistance class applies for pantograph shutters with installation type S1 (bottom wall mounting).
Pantograph shutters with the installation type S2 (bottom floor mounting) achieve in their maximal sizes the WRC 5.

[3] The specified wind resistance class applies for sliding bi-fold shutters with installation type S2 (bottom floor mounting). Sliding bi-fold shutters with the installation type S1 (bottom wall mounting) achieve in their maximal sizes the WRC 6.

[4] In the case of sliding shutters in installation situations bottom S2/S4/S6 and with the maximum dimensions, the specified wind resistance class applies. In installation situations S1/S3, the following restrictions apply with regard to the wind resistance classes:
- WRC 6 for a surface area of between 2 m^2 and 2.5 m^2
- WRC 5 for a surface area of between 2.5 m^2 and 3.5 m^2
- WRC 4 for a surface area larger than 3.5 m^2

In multi-rail systems with installation situations S5, the following restrictions apply with regard to the wind resistance classes:
- WRC 6 for a surface area of between 3.3 m^2 and 4.5 m^2
- WRC 5 for a surface area larger than 4.5 m^2

[5] In the case of sliding shutters Vento in models A with vertical frieze, S and SL with the maximum dimensions, the specified wind resistance class applies.
For sliding shutters Vento model A without vertical frieze, the following restrictions apply with regard to the wind resistance classes:
- WRC 6 [8] for the maximum dimensions 1600 x 3300 or 1350 x 3500 (width x height)
- WRC 6 [7] up to the maximum dimensions

For sliding shutters Vento model H timber and H aluminium, the following restrictions apply with regard to the wind resistance classes:
- WRC 6 [8] for the maximum dimensions of 1100 x 3500 or 1350 x 3300 or 1600 x 3100 (width x height)
- WRC 6 [7] for the maximum dimensions of 1250 x 3500 or 1550 x 3300 (width x height)
- All WRC up to the maximum dimensions on request

The values shown in the table apply with the following qualifications:

- Product dimensions and use comply with the Griesser technical data sheet.
- Installation, fastening and operation are carried out in accordance with installation and operating instructions.
- The products should be installed in the soffit / directly on the facade, with the sashes < 100 mm away from the facade.
- If the distance from the facade is between 100 and 300 mm, the value in the table must be reduced by 1 class.
- If the distance from the facade is between 300 and 500 mm, the value in the table must be reduced by 2 classes.
- In the event of a facade offset > 500 mm (e.g.for use on balconies and loggias), the system must be structurally inspected and tested in situ. Please contact us for further information.

⚠ Pantograph shutters, sliding bi-fold shutters, sliding shutters

In the event of approaching bad weather, these window shutters must be fully retracted if the wind speed corresponds to the wind resistance class. The retracted position corresponds to the parked position (the product does not shade the window area).

⚠ Wing shutters

In the event of approaching bad weather, wing shutters must be closed and locked if the wind speed corresponds to the wind resistance class.

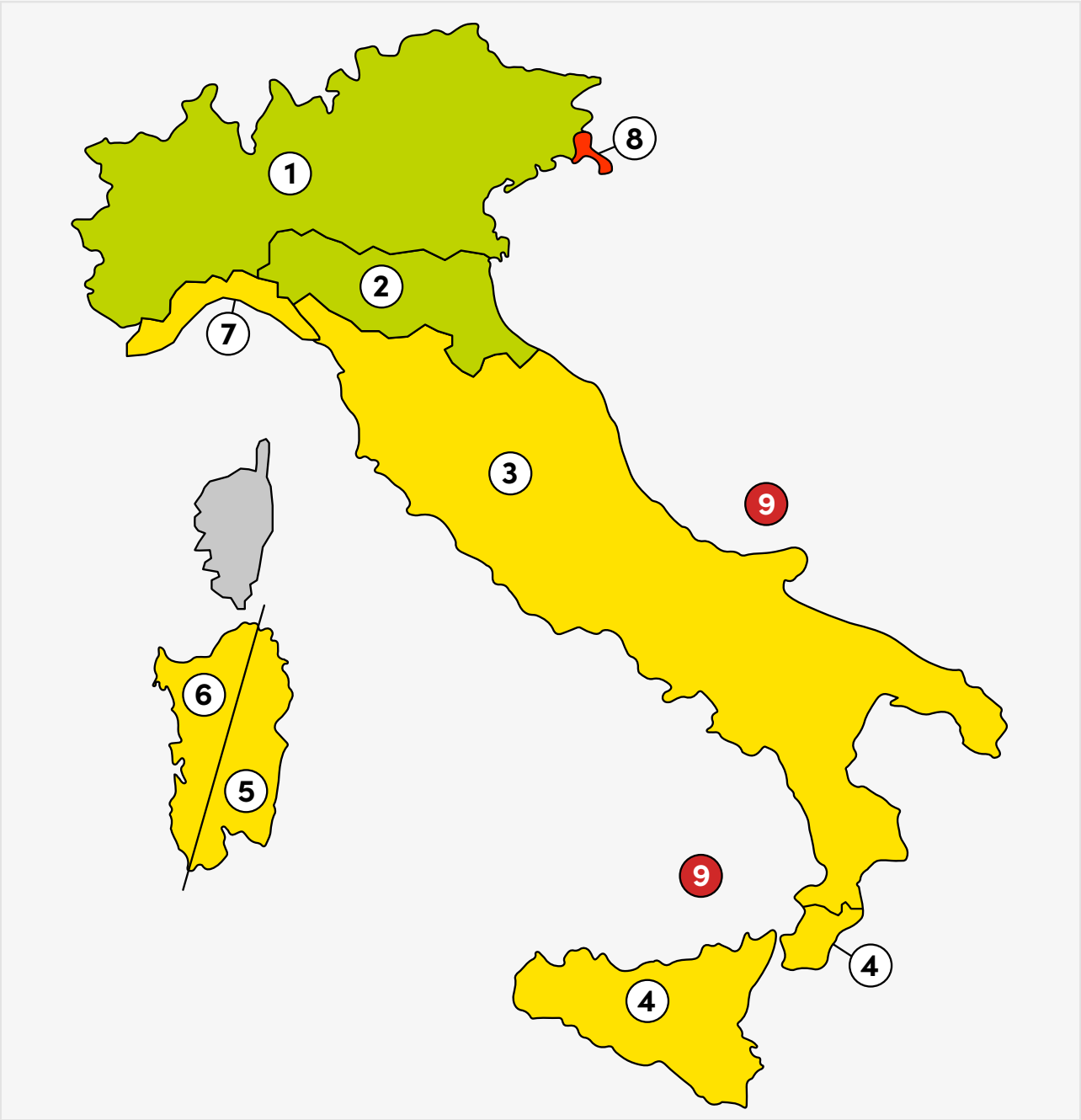
Setting values for sensors according to producer

Sensors fitted next to product.

Class 0	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8
< 9,0 m/s	9,0 m/s	10,7 m/s	12,8 m/s	16,7 m/s	21,0 m/s	25,6 m/s	29,2 m/s	33,3 m/s
< 32,5 km/h	32,5 km/h	38,5 km/h	46 km/h	60 km/h	76 km/h	92 km/h	105 km/h	120 km/h

Planning Notes

Wind load zones



Wind load zones 1 | 2

Wind load zones 3

Wind load zones 4 | 5 | 6 | 7

Wind load zones 8

Wind load zones 9

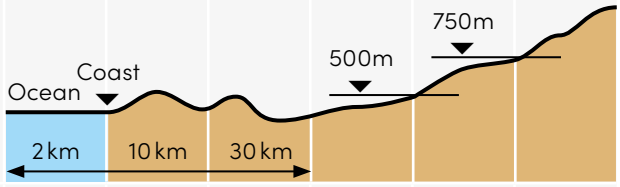
Planning Notes

Terrain roughness class	Description
A	Urban areas where at least 15% of the area is covered by buildings with an average height of more than 15m.
B	Urban areas (not class A), suburban, industrial and wooded areas.
C	Areas with widespread obstacles (trees, houses, walls, fences, ...). Areas with roughness not attributable to classes A, B, D.
D	a) Sea and its coastline (within 2 km of the coast). b) Lake (with a maximum width of at least 1 km and its coastline (within 2 km of the coast). c) Areas free of obstacles or with at most rare obstacles (open country, airports, agricultural areas, pastures, swampy or sandy areas, snowy or icy surfaces).

- The assignment of the roughness class does not depend on the orographic and topographic conformation of the ground.
- It can be assumed that the site belongs to Class A or B, as long as the construction is in the relative area for not less than 1 km and in any case for not less than 20 times the height of the building, for all sectors of origin of the wind wide at least 30°.
- It must be assumed that the site belongs to Class D, if the construction rises in the areas indicated with letters a) or b), or within the areas indicated with letter c).
- Where there are doubts as to the choice of the roughness class, the most unfavourable class must be assigned (the action of the wind is generally minimum in Class A and maximum in Class D).

Category of areas

Wind load zone 1, 2, 3, 4, 5

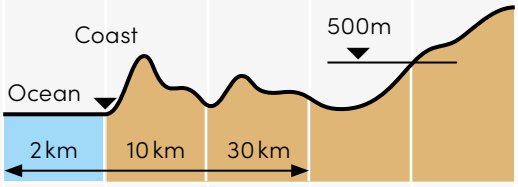


A	--	IV	IV	V	V	V
B	--	III	III	IV	IV	IV
C	--	*	III	III	IV	IV
D	I	II	II	II	III	**

* Category II in wind load zone 1, 2, 3, 4
Category III in wind load zone 5

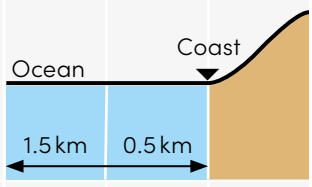
** Category III in wind load zone 2, 3, 4, 5
Category IV in wind load zone 1

Wind load zone 6



A	--	III	IV	V	V
B	--	II	III	IV	IV
C	--	II	III	III	IV
D	I	I	II	II	III

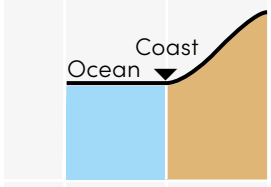
Wind load zone 7, 8



A	--	--	IV
B	--	--	IV
C	--	--	III
D	I	II	*

* Category II in wind load zone 8
Category III in wind load zone 7

Wind load zone 9



A	--	I
B	--	I
C	--	I
D	I	I

Planning Notes

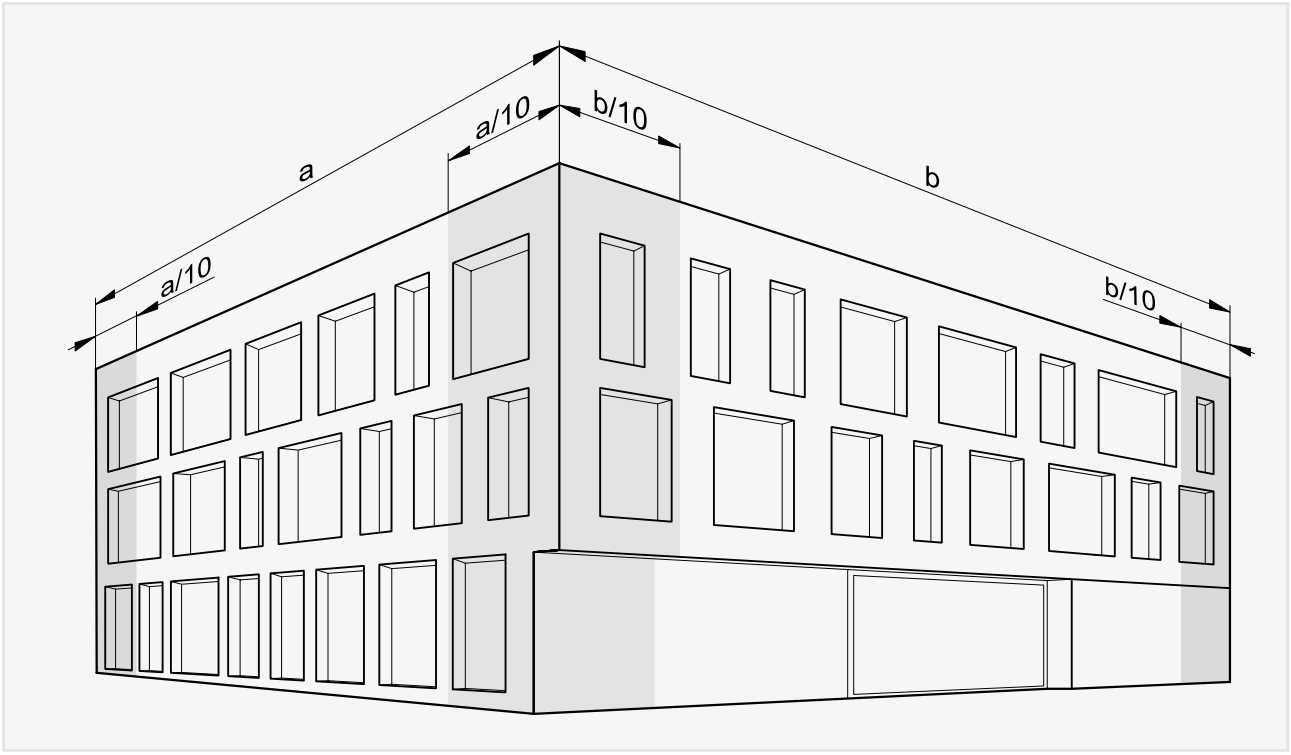
Wind resistance classes depending on the terrain category and the installation height

Wind load zone	Terrain category	Installation height [m]				
		≤9	≤18	≤28	≤50	≤100
1 | 2	I	4	4	4	4	5
	II	3	4	4	4	5
	III	3	4	4	4	4
	IV	3	3	4	4	4
	V	2	3	3	4	4
3	I	4	4	5	5	5
	II	4	4	4	5	5
	III	4	4	4	4	5
	IV	3	4	4	4	5
	V	3	3	4	4	4

Wind load zone	Terrain category	Installation height [m]				
		≤9	≤18	≤28	≤50	≤100
4 | 5 | 6 | 7	I	4	4	5	5	5
	II	4	4	4	5	5
	III	4	4	4	5	5
	IV	3	4	4	4	5
	V	3	3	4	4	4
8	I	4	5	5	5	5
	II	4	4	5	5	5
	III	4	4	5	5	5
	IV	4	4	4	5	5
9	I	5	5	5	5	6

Higher wind resistance class

Wind speeds can be considerably higher at building corners and should be taken into consideration. Separate proof must be submitted for buildings without a square floor plan or buildings above 1100 m ground level.



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