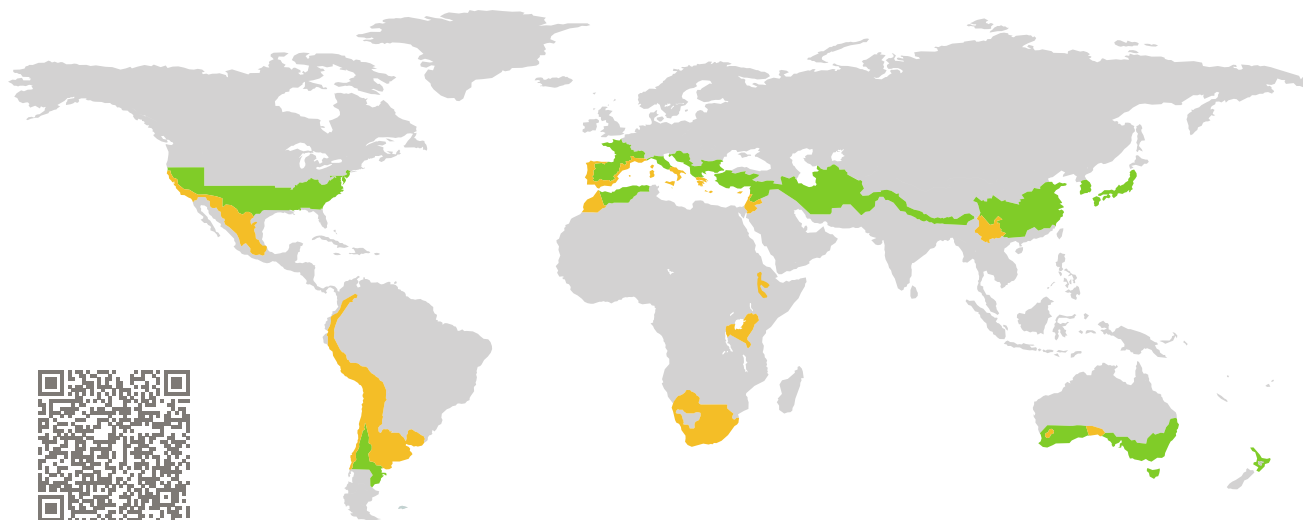


# CERTIFICATE

Certified Passive House Component

Component-ID 1394ws04 valid until 31st December 2019

Passive House Institute  
Dr. Wolfgang Feist  
64283 Darmstadt  
Germany



Category: **Window system**  
Manufacturer: **Piva Group S.p.A.,  
Roncanova di Gazzo Veronese (VR),  
Italy**  
Product name: **PVC Piva Serie MD**

**This certificate was awarded based on the following  
criteria for the warm, temperate climate zone**

Comfort  $U_W = 1.00 \leq 1.00 \text{ W}/(\text{m}^2 \text{ K})$   
 $U_{W,\text{installed}}$   $\leq 1.05 \text{ W}/(\text{m}^2 \text{ K})$   
with  $U_g$   $= 0.90 \text{ W}/(\text{m}^2 \text{ K})$

Hygiene  $f_{Rsi=0.25} \geq 0.65$   
Airtightness  $Q_{100} = 0.25 \leq 0.25 \text{ m}^3/(\text{h m})$



warm, temperate climate



**CERTIFIED  
COMPONENT**

Passive House Institute

Passive House  
efficiency class

phE

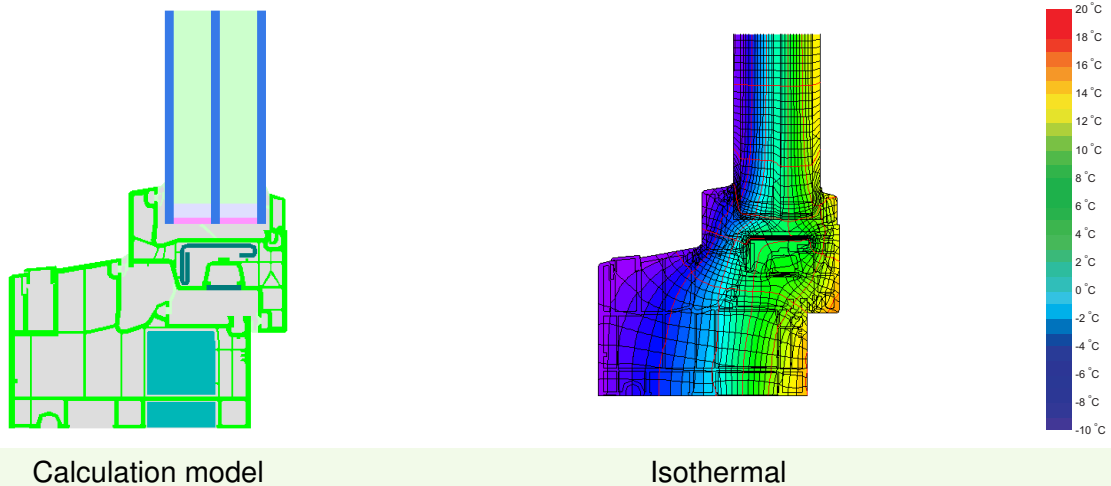
phD

phC

phB

phA

[www.passivehouse.com](http://www.passivehouse.com)



Calculation model Isothermal

**Description**

PVC-windowframe with steel-reinforcements inside the bottom and lateral sash. Insulation fillings (0.035 W/(mK)) inside the bottom blind frame. The temperature factor is not achieved at the flying mullion. Pane thickness: 48 mm (4/18/4/18/4), spacer: Multitech. The airtightness was tested at a single-sash tilt-and turn-window. Pane thickness: 48 mm (4/18/4/18/4), rebate depth: 18 mm. Spacer: Multitech.

**Explanation**

The window U-values were calculated for the test window size of 2.46 m × 1.48 m with  $U_g = 0.90 \text{ W}/(\text{m}^2 \text{ K})$ . If a higher quality glazing is used, the window U-values will improve as follows:


Glazing	$U_g =$	0.90	0.70	0.61	0.52	W/(m <sup>2</sup> K)
		↓	↓	↓	↓	
Window	$U_w =$	1.00	0.86	0.79	0.73	W/(m <sup>2</sup> K)

Transparent building components are classified into efficiency classes depending on the heat losses through the opaque part. The frame U-Values, frame widths, thermal bridges at the glazing edge, and the glazing edge lengths are included in these heat losses. A more detailed report of the calculations performed in the context of certification is available from the manufacturer.

The Passive House Institute has defined international component criteria for seven climate zones. In principle, components which have been certified for climate zones with higher requirements may also be used in climates with less stringent requirements. In a particular climate zone it may make sense to use a component of a higher thermal quality which has been certified for a climate zone with more stringent requirements.

Further information relating to certification can be found on [www.passivehouse.com](http://www.passivehouse.com) and [passipedia.org](http://passipedia.org).

Frame values			Frame width $b_f$ mm	$U$ -value frame $U_f$ W/(m <sup>2</sup> K)	$\Psi$ -panel edge $\Psi_g$ W/(m K)	Temp. Factor $f_{Rsi=0.25}$ [-]
Top	(to)		116	0.96	0.024	0.73
Side	(s)		116	1.04	0.024	0.73
Bottom	(bo)		116	0.94	0.024	0.71
Top fixed	(tof)		82	0.87	0.024	0.72
Side fixed	(sf)		82	0.87	0.024	0.72
Bottom fixed	(bof)		82	0.87	0.024	0.72
Mullion flying	(fm)		146	1.29	0.023	0.62
Mullion fixed	(m)		98	1.24	0.023	0.69
Mullion 1 casement	(m1)		132	1.24	0.023	0.67
Transom fixed	(tf)		98	1.24	0.023	0.69
Transom 1 casement	(t1)		132	1.24	0.023	0.67
Spacer: MULTITECH				Secondary seal: Polysulfide		



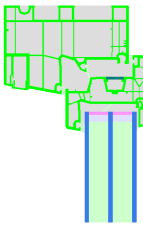
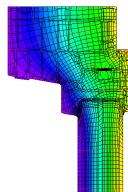
**Top**


$b_f = 116.00$  mm

$U_f = 0.96$  W/(m<sup>2</sup> K)

$\Psi_g = 0.024$  W/(m K)

$f_{Rsi} = 0.73$



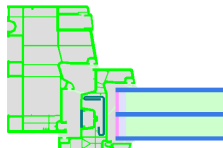
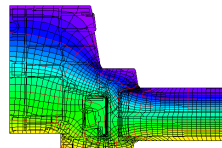
**Side**

$b_f = 116.00$  mm

$U_f = 1.04$  W/(m<sup>2</sup> K)

$\Psi_g = 0.024$  W/(m K)

$f_{Rsi} = 0.73$



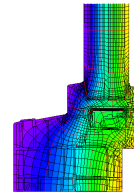
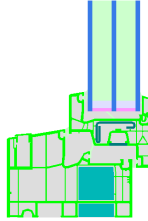
### Bottom

$$b_f = 116.00 \text{ mm}$$

$$U_f = 0.94 \text{ W}/(\text{m}^2 \text{ K})$$

$$\Psi_g = 0.024 \text{ W}/(\text{m K})$$

$$f_{Rsi} = 0.71$$



### Top

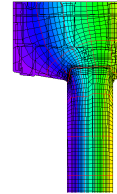
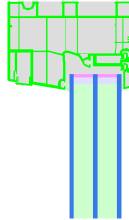
fixed

$$b_f = 82.00 \text{ mm}$$

$$U_f = 0.87 \text{ W}/(\text{m}^2 \text{ K})$$

$$\Psi_g = 0.024 \text{ W}/(\text{m K})$$

$$f_{Rsi} = 0.72$$



### Side

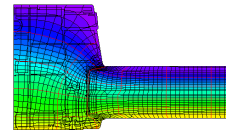
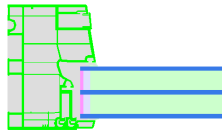
fixed

$$b_f = 82.00 \text{ mm}$$

$$U_f = 0.87 \text{ W}/(\text{m}^2 \text{ K})$$

$$\Psi_g = 0.024 \text{ W}/(\text{m K})$$

$$f_{Rsi} = 0.72$$



### Bottom

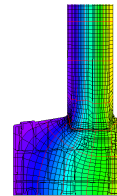
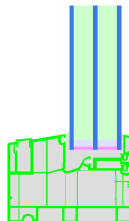
fixed

$$b_f = 82.00 \text{ mm}$$

$$U_f = 0.87 \text{ W}/(\text{m}^2 \text{ K})$$

$$\Psi_g = 0.024 \text{ W}/(\text{m K})$$

$$f_{Rsi} = 0.72$$



### Mullion

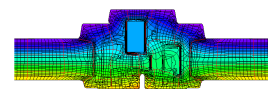
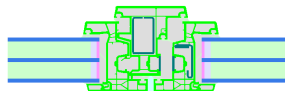
flying

$$b_f = 146.00 \text{ mm}$$

$$U_f = 1.29 \text{ W}/(\text{m}^2 \text{ K})$$

$$\Psi_g = 0.023 \text{ W}/(\text{m K})$$

$$f_{Rsi} = 0.62$$





### Mullion

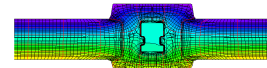
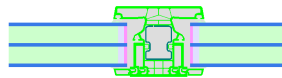
fixed

$$b_f = 98.00 \text{ mm}$$

$$U_f = 1.24 \text{ W}/(\text{m}^2 \text{ K})$$

$$\Psi_g = 0.023 \text{ W}/(\text{m K})$$

$$f_{Rsi} = 0.69$$



### Mullion

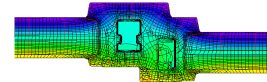
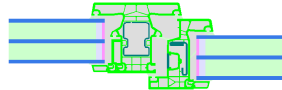
1 casement

$$b_f = 132.00 \text{ mm}$$

$$U_f = 1.24 \text{ W}/(\text{m}^2 \text{ K})$$

$$\Psi_g = 0.023 \text{ W}/(\text{m K})$$

$$f_{Rsi} = 0.67$$



### Transom

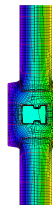
fixed

$$b_f = 98.00 \text{ mm}$$

$$U_f = 1.24 \text{ W}/(\text{m}^2 \text{ K})$$

$$\Psi_g = 0.023 \text{ W}/(\text{m K})$$

$$f_{Rsi} = 0.69$$



### Transom

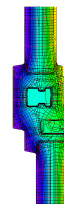
1 casement

$$b_f = 132.00 \text{ mm}$$

$$U_f = 1.24 \text{ W}/(\text{m}^2 \text{ K})$$

$$\Psi_g = 0.023 \text{ W}/(\text{m K})$$

$$f_{Rsi} = 0.67$$



## Validated installations

