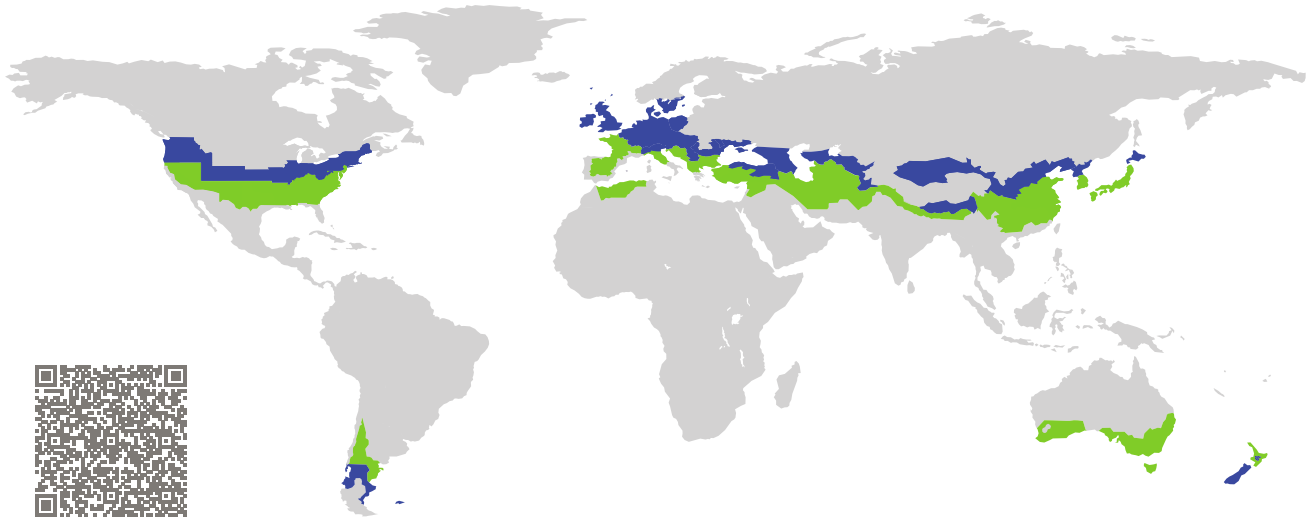


# CERTIFICATE

Certified Passive House Component

Component-ID 2472wi03 valid until 31st December 2026

Passive House Institute  
Dr. Wolfgang Feist  
64283 Darmstadt  
Germany

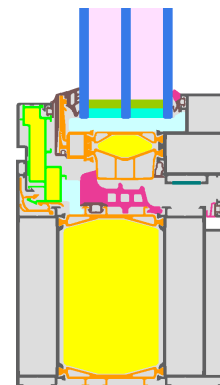


Category: **Window Frame**  
Manufacturer: **WANDAO RIVER Technology  
(Shenyang) Co., Ltd.,  
Shenyang,  
China**  
Product name: **Wandaoriver 110 TOP**

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

Comfort  $U_W = 0.80 \leq 0.80 \text{ W}/(\text{m}^2 \text{ K})$   
 $U_{W, \text{installed}} \leq 0.85 \text{ W}/(\text{m}^2 \text{ K})$   
with  $U_g = 0.70 \text{ W}/(\text{m}^2 \text{ K})$

Hygiene  $f_{Rsi=0.25} \geq 0.70$



Passive House  
efficiency class

phE

phD

phC

phB

phA

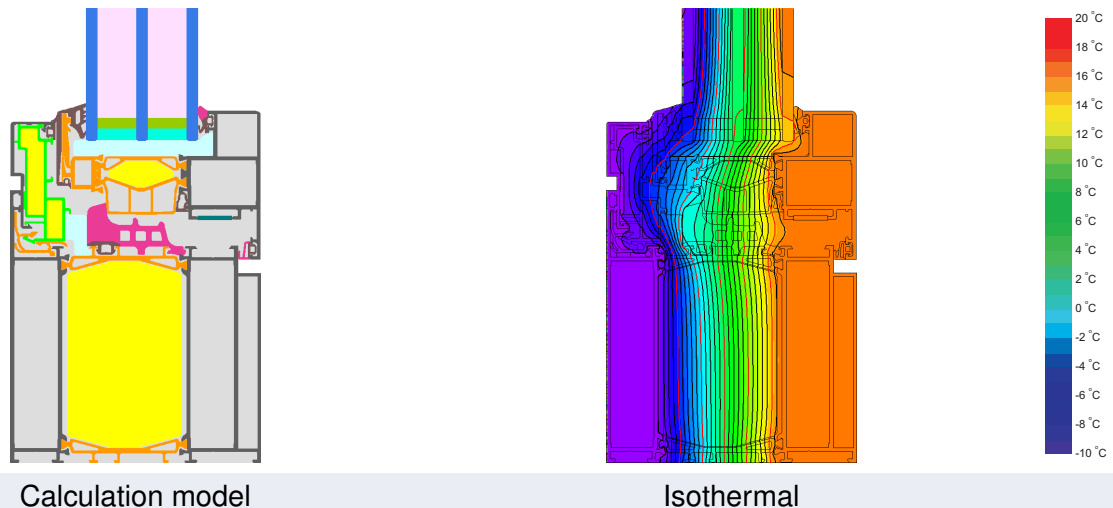
[www.passivehouse.com](http://www.passivehouse.com)

cool, temperate climate



**CERTIFIED  
COMPONENT**

Passive House Institute



## Description

Aluminum window frame with bars made of low lambda PA (0.21 W/(mK), polyurethane rigid foam insulation (0.024 W/(mK) and polyethylene foam in the glazing rebate. Pane thickness: 49 mm (5/17/5/17/5), rebate depth: 12 mm.

## Explanation

The window U-values were calculated for the test window size of 1.23 m × 1.48 m with  $U_g = 0.70 \text{ W}/(\text{m}^2 \text{ K})$ . If a higher quality glazing is used, the window U-values will improve as follows:

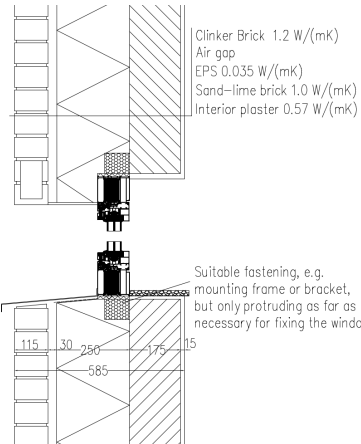
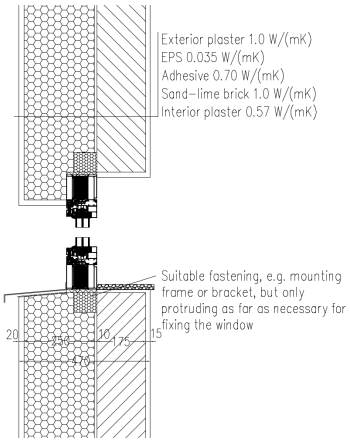
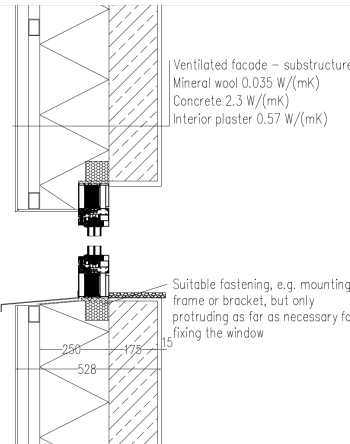
Glazing	$U_g =$	0.70	0.64	0.58	0.54	W/(m <sup>2</sup> K)
		↓	↓	↓	↓	
Window	$U_w =$	0.80	0.77	0.73	0.71	W/(m <sup>2</sup> K)





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).

## Validated installations

Cavity wall (operable)	Exterior insulation and finishing system (EIFS) (operable)	Ventilated facade (operable)
$U_{\text{Wall}} = 0.13 \text{ W}/(\text{m}^2 \text{ K})$	$U_{\text{Wall}} = 0.13 \text{ W}/(\text{m}^2 \text{ K})$	$U_{\text{Wall}} = 0.13 \text{ W}/(\text{m}^2 \text{ K})$
 <p>Clinker Brick 1.2 W/(mK) Air gap EPS 0.035 W/(mK) Sand-lime brick 1.0 W/(mK) Interior plaster 0.57 W/(mK)</p> <p>Suitable fastening, e.g. mounting frame or bracket, but only protruding as far as necessary for fixing the window</p> <p>115 30 250 175 15 585</p>	 <p>Exterior plaster 1.0 W/(mK) EPS 0.035 W/(mK) Adhesive 0.70 W/(mK) Sand-lime brick 1.0 W/(mK) Interior plaster 0.57 W/(mK)</p> <p>Suitable fastening, e.g. mounting frame or bracket, but only protruding as far as necessary for fixing the window</p> <p>20 20 175 15</p>	 <p>Ventilated facade – substructure Mineral wool 0.035 W/(mK) Concrete 2.3 W/(mK) Interior plaster 0.57 W/(mK)</p> <p>Suitable fastening, e.g. mounting frame or bracket, but only protruding as far as necessary for fixing the window</p> <p>250 175 15 528</p>
$\Psi_{\text{install}}$ W/(m K)	$\Psi_{\text{install}}$ W/(m K)	$\Psi_{\text{install}}$ W/(m K)
Top 0.014	Top 0.014	Top 0.015
Side 0.014	Side 0.014	Side 0.015
Bottom 0.023	Bottom 0.024	Bottom 0.023
$U_{W, \text{installed}} = 0.85 \text{ W}/(\text{m}^2 \text{ K})$	$U_{W, \text{installed}} = 0.85 \text{ W}/(\text{m}^2 \text{ K})$	$U_{W, \text{installed}} = 0.85 \text{ W}/(\text{m}^2 \text{ K})$

Frame values			Frame width $b_f$ mm	$U$ -value frame $U_f$ W/(m <sup>2</sup> K)	$\Psi$ -glazing edge $\Psi_g$ W/(m K)	Temp. Factor $f_{Rsi=0.25}$ [-]
Flying Mullion	(FM1)		112	1.03	0.028	0.75
Bottom	(OB1)		155	0.80	0.028	0.79
Head	(OH1)		155	0.80	0.028	0.79
Jamb	(OJ1)		155	0.80	0.028	0.79
Spacer: Super Spacer Premium			Secondary seal: Butyl			

