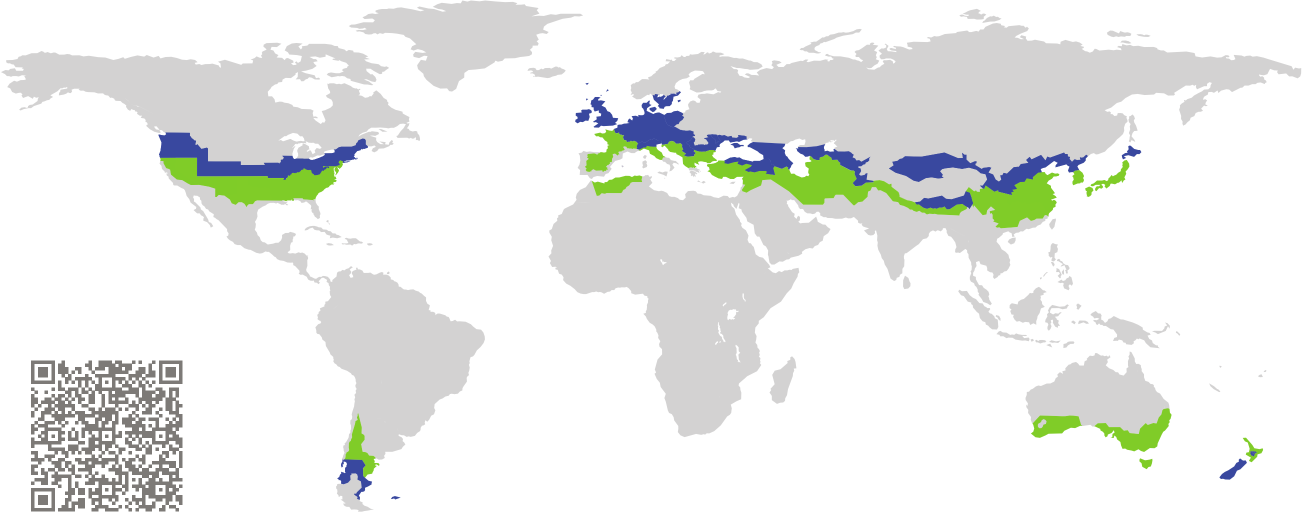
CERTIFICATE

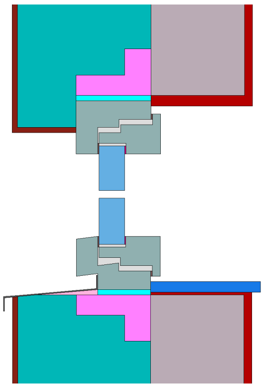
Certified Passive House Component

Component-ID 0893wc03 valid until 31st December 2025

Passive House Institute
Dr. Wolfgang Feist
64283 Darmstadt
Germany



Category:	**Window mounting system**
Manufacturer:	**Hanno Werk GmbH & Co. KG, Laatzen, Germany**
Product name:	**Hanno®-Vorwandmontagewinkel**



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

Comfort $U_{W,\text{installed}} \leq 0.85\,\text{W}/(\text{m}^2 \cdot \text{K})$

with $U_g = 0.70\,\text{W}/(\text{m}^2 \cdot \text{K})$

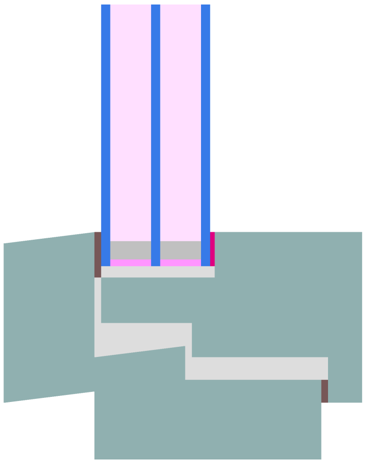
Hygiene $f_{Rsi=0.25} \geq 0.70$

cool, temperate climate

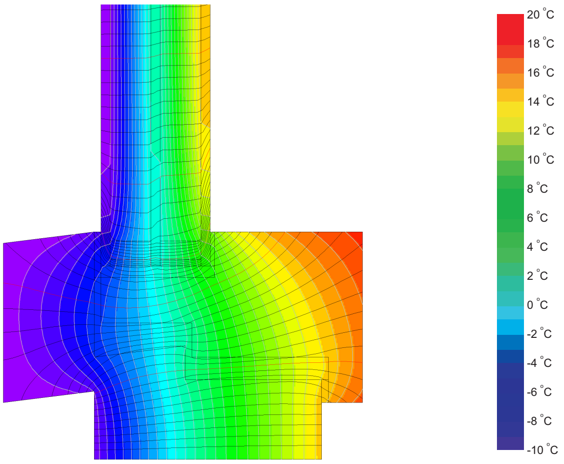
CERTIFIED COMPONENT

Passive House Institute

www.passivehouse.com



Calculation model



Isothermal

Description

Front Wall Installation Angles made of polyurethane hard foam (0.086 W/(mK)) in combination with PHI standard timber frame, glazing: 48 mm, spacer: 'ULTIMATE Swisspacer'.

Explanation

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

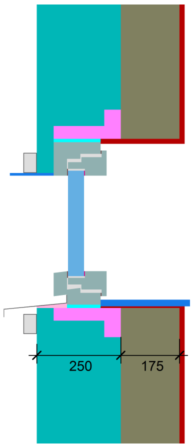
Glazing	$U_g =$	0.70	0.64	0.58	0.52	$\mathrm{W/(m^2 \cdot K)}$
		↓	↓	↓	↓	
Window	$U_W =$	0.79	0.75	0.71	0.66	$\mathrm{W/(m^2 \cdot K)}$

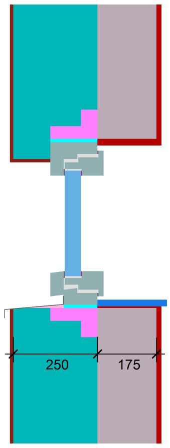
Transparent building components are classified into efficiency classes depending on the heat losses through the opaque part. The frame U-Values, frame widths, thermal bridges at the glazing edge, and the glazing edge lengths are included in these heat losses. A more detailed report of the calculations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

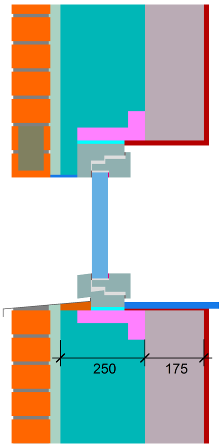
The Passive House Institute has defined international component criteria for seven climate zones. In principle, components which have been certified for climate zones with higher requirements may also be used in climates with less stringent requirements. In a particular climate zone it may make sense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

Validated installations

Ventilated facade (fixed glazing)	
$U_{\mathrm{Wall}} = 0.13\,\mathrm{W/(m^2 \cdot K)}$	
	
Ψ_{install}	W/(m · K)
Top	–0.002
Side	–0.002
Bottom	0.025
$U_{W,\mathrm{installed}} = 0.81\,\mathrm{W/(m^2 \cdot K)}$	

Exterior insulation and finishing system (EIFS) (operable)	
$U_{\mathrm{Wall}} = 0.13\,\mathrm{W/(m^2 \cdot K)}$	
	
Ψ_{install}	W/(m · K)
Top	0.006
Side	0.006
Bottom	0.035
$U_{W,\mathrm{installed}} = 0.83\,\mathrm{W/(m^2 \cdot K)}$	

Cavity wall	
$U_{\mathrm{Wall}} = 0.13\,\mathrm{W/(m^2 \cdot K)}$	
	
Ψ_{install}	W/(m · K)
Top	–0.002
Side	–0.002
Bottom	0.021
$U_{W,\mathrm{installed}} = 0.80\,\mathrm{W/(m^2 \cdot K)}$	

Frame values		Frame width b_f mm	U-value frame U_f $\mathrm{W/(m^2 \cdot K)}$	Ψ-glazing edge Ψ_g W/(m · K)	Temp. Factor $f_{Rsi=0.25}$ [-]
Bottom	(OB1)	100	0.97	0.020	0.69
Top	(OH1)	100	0.82	0.020	0.71
Lateral	(OJ1)	100	0.82	0.020	0.71
Spacer: SWISSPACER Ultimate			Secondary seal: Polyurethan		