

Certificate

Passive House suitable component

for cool, temperate climate, valid until 31.12.2014

Passive House Institute
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GERMANY

Category: **Roof Window**
 Manufacturer: **FAKRO PP sp. z o.o.**
33-300 Nowy Sącz, POLAND
 Product name: **FTT U8 Thermo 2012**

The following comfort criteria were used in awarding this certificate:

Given a U_g value of $0.41 \text{ W}/(\text{m}^2\text{K})$ in 45° inclination and a window size of 1.14 m by 1.40 m ,

$$U_{RW} = 0.70 \text{ W}/(\text{m}^2\text{K}) \leq 1.00 \text{ W}/(\text{m}^2\text{K})$$

Taking into account the installation based thermal bridges, and provided that the installation is, with regard to the thermal bridges, equal or better than shown in the data sheet, the roof window meets the following criterion.

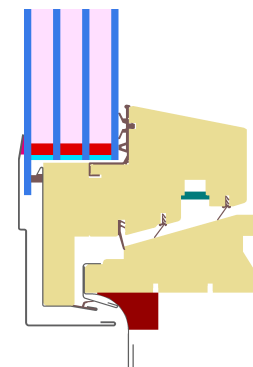
$$U_{RW, \text{installed}} \leq 1.00 \text{ W}/(\text{m}^2\text{K})$$

Thermal data

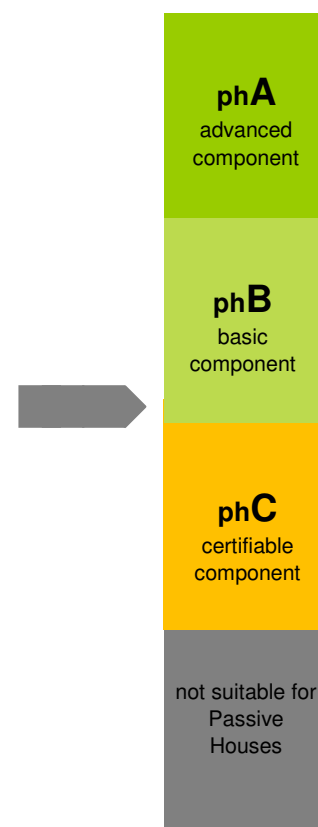
	U_f -value [W/(m ² K)]	Width [mm]	Ψ_g [W/(mK)]	$f_{Rsi=0.25}$ [-]
Spacer	TGI*			
Bottom	1.10	112	0.034	0.70
Top	1.08	95.4	0.034	0.70
Side	1.11	92	0.037	0.70

*Spacers of lower thermal quality, especially those made of aluminium, lead to significantly higher thermal losses and lower temperature factors.

Further information see data sheet



Passive House Efficiency Class

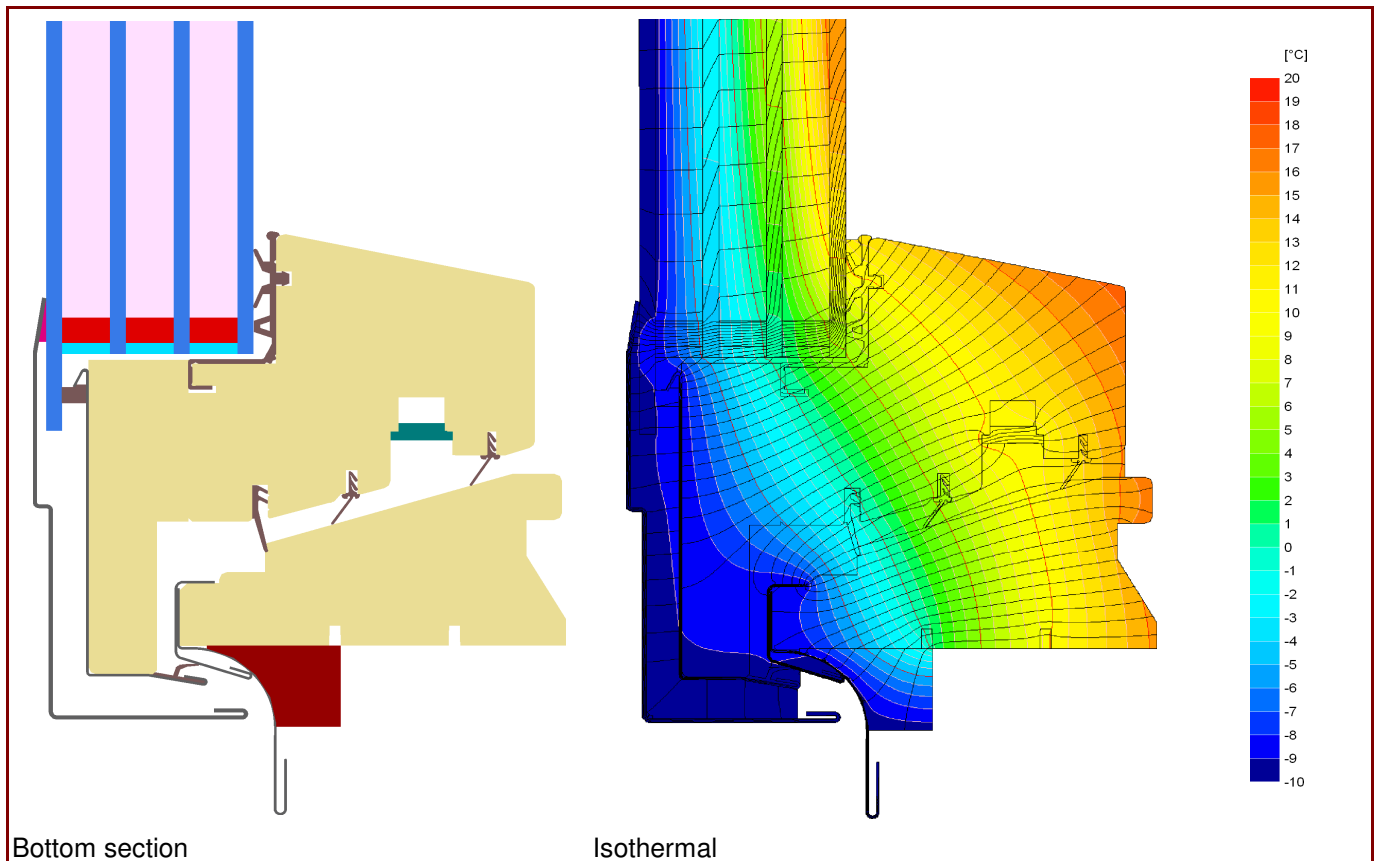


CERTIFIED COMPONENT

Passive House Institute

Data Sheet FAKRO PP sp. z o.o., FTT U8 Thermo 2012

Manufacturer FAKRO PP sp. z o.o.
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 Tel.: +48 18 414 0 132
 www.fakro.pl



Bottom section

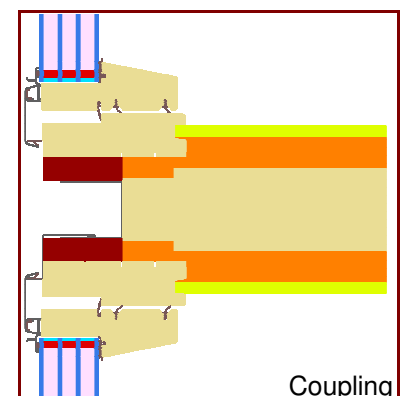
Isothermal

Description

Timber roof window frame (0,115 W/(mK)), insulated on the outside (0,042 W/(mK)), clad by aluminium. A quadrouple glazing is used. . Used Pane: 52 mm (4/12/4/12/4/12/4), intersection of the Glass: 20 mm.

Thermal data for the roof window frame

	U_f-value [W/(m²K)]	Width [mm]	Ψ_g [W/(mK)]	f_{Rsi=0.25} [-]
Spacer	TGI*			
Bottom	1.10	112	0.034	0.70
Top	1.08	95	0.034	0.70
Side	1.11	92	0.037	0.69

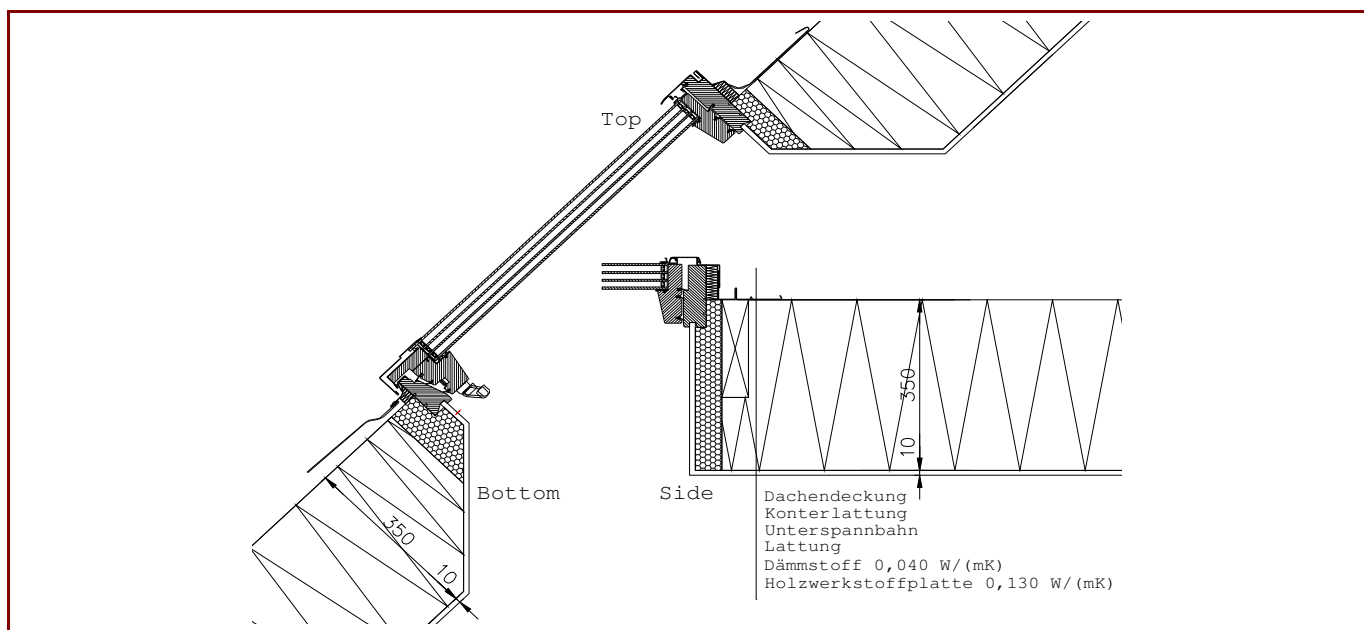


Coupling

* Spacers of lower thermal quality leading to higher thermal losses and lower temperatures.

Data Sheet FAKRO PP sp. z o.o., FTT U8 Thermo 2012

Installation



Installation based thermal bridge Ψ_{instal} in Passive House suitable roof constructions

		Timber roof construction
Position		
Bottom	[W/(mK)]	0.040
Side	[W/(mK)]	0.050
Top	[W/(mK)]	0.044
$U_{W,\text{instal}}$	[W/(m ² K)]	0.85

Explanatory notes

The window U-values were calculated based on a 1.14 m by 1.40 m window $U_g = 0.41 \text{ W}/(\text{m}^2\text{K})$ in 45° inclination. If other glazing is used, the window U-value alter as follow:

U Glazing	U_g [W/(m²K)]	0.60	0.80	1.00
U Window	U_w [W/(m²K)]	0.84	0.98	1.12

Depending on the thermal losses through opaque elements, transparent components are categorised according to efficiency classes. These thermal losses include the losses through the frame, multiplied by its width, the thermal bridge at the edge bond as well as the length of the edge bond.

Please ask the manufacturer for a detailed report containing all calculations and results.

For further information, please visit www.passivehouse.com or www.passipedia.org.