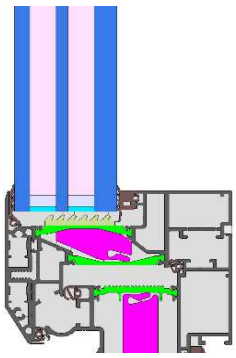
Certificate

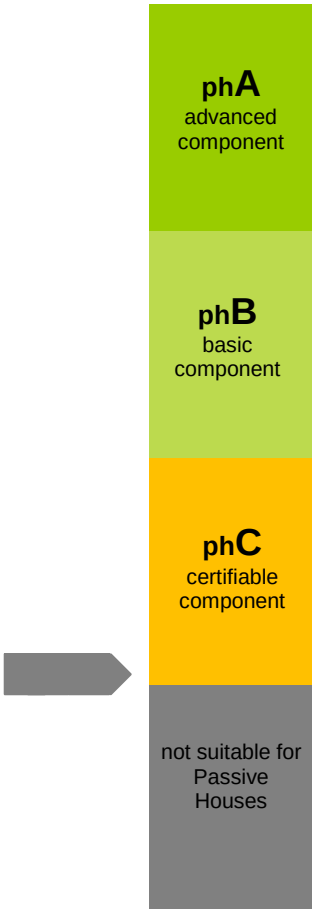
Certified Passive House Component
for cool, temperate climates; valid until 31.12.2025

Passive House Institute
Dr. Wolfgang Feist
64283 Darmstadt
GERMANY

Category: **Openable element in glass roof**
Manufacturer: **RAICO Bautechnik GmbH**
87772 Pfaffenhausen, GERMANY
Product name: **FRAME^{+} 120 RI**



Passive House Efficiency Class



This certificate was awarded based on the following criteria:

Given a Ug value of 0.720 W/(m²K) and a component size of 1.20 m by 2.50 m

$U_{ocw,i}$ = 1.00 W/(m²K) ≤ 1.00 W/(m²K)

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.

$U_{ocw,i,installed}$ ≤ 1.00 W/(m²K)

Thermal data

	U_f-value [W/(m²K)]	Width [mm]	Ψ_g [W/(mK)]	$f_{Rsi=0.25}$ [-]
Spacer			SWISSP. Ultimate PU*	
Bottom	1.65	94	0.035	0.73
Side/top	1.65	94	0.035	

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

For further information, please see the data sheet

Pilote certificate

Data Sheet RAICO Bautechnik GmbH, FRAME+ 120 RI

Manufacturer RAICO Bautechnik GmbH
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Tel.: +49 8265 911 0
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Bottom section Isothermal

Description

Thermal seperated aluminium roof-light system with insulation of expanded polystyrene (λ = 0.031 W/(mK)) inside the profile and polyethylene-foam (λ = 0.038 W/(mK)) inside the rebate, element of a glass roof system
Pane thickness: 54.76 mm (8/14/6/14/12), rebate depth: 12 mm, spacer: SWISSPACER Ultimate with polyurethane as secondary seal

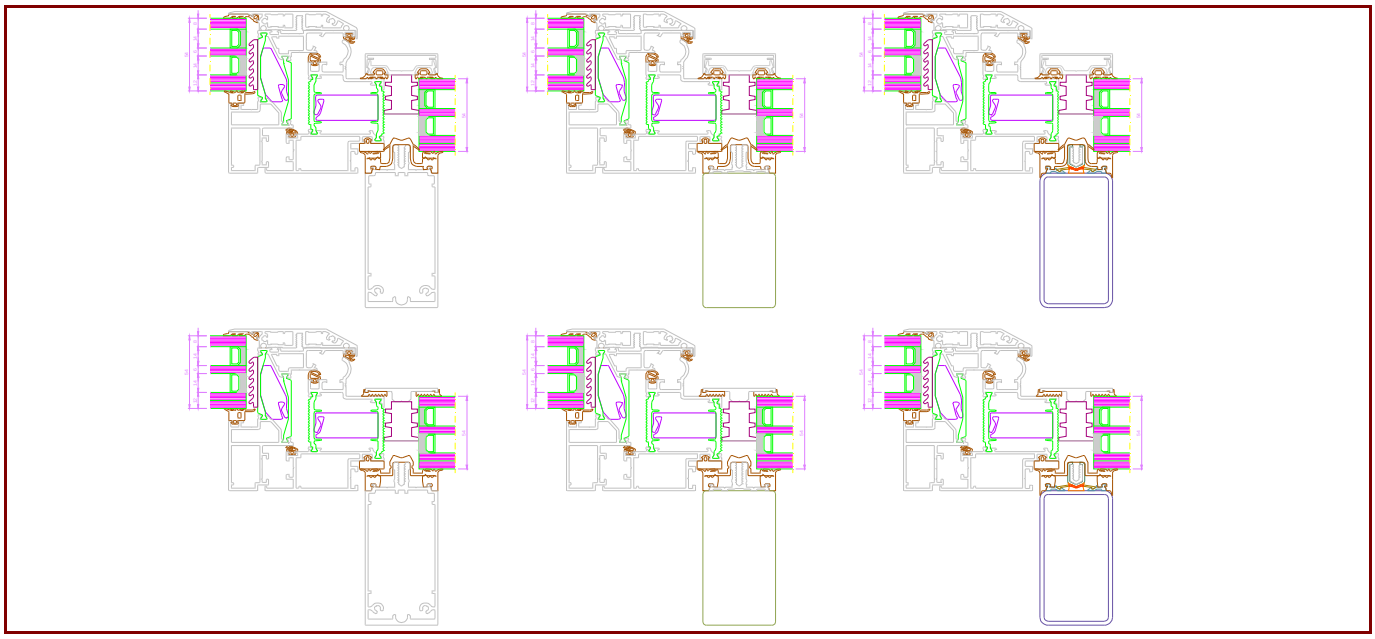
Thermal data for the window frame

	U_f-value [W/(m²K)]	Width [mm]	Ψ_g [W/(mK)]	$f_{Rsi=0.25}$ [-]
Spacer			SWISSP. Ultimate PU*	
Bottom	1.65	94	0.035	0.73
Side/Top	1.65	94	0.035	

* Spacers of lower thermal quality lead to higher thermal losses and lower glass edge temperatures.

Data Sheet RAICO Bautechnik GmbH, FRAME+ 120 RI

Installation



Installation based thermal bridge $\Psi_{instal.}$ in Passive House suitable facades

Position		THERM+ 50 A-I	THERM+ 50 H-I	THERM+ 50 S-I
Bottom/Top	[W/(mK)]	0.000	0.001	-0.001
Side	[W/(mK)]	-0.015	-0.002	-0.005
$U_{OCW,,i,instal.}$	[W/(m²K)]	0.98	1.00	1.00

Explanatory notes

The element U-values were calculated based on a 1.20 m by 2.50 m element U_g = 0.72 W/(m²K).
If better glazing is used, the opening U-values decrease as follows:

U Glazing	U_g [W/(m²K)]	0.64	0.58	0.52
U-Value	$U_{ocw,i}$ [W/(m²K)]	0.94	0.89	0.85

Depending on the thermal losses through opaque elements, transparent components are categorised according to efficency classes. These thermal losses include the losses through the frame, the frame width, the thermal bridge at the glass edge as well as the length of the glass edge. Certificates for arctic regions are too valid vor cold, certificates for cold regions are too valid for cool, temperate zones.
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.