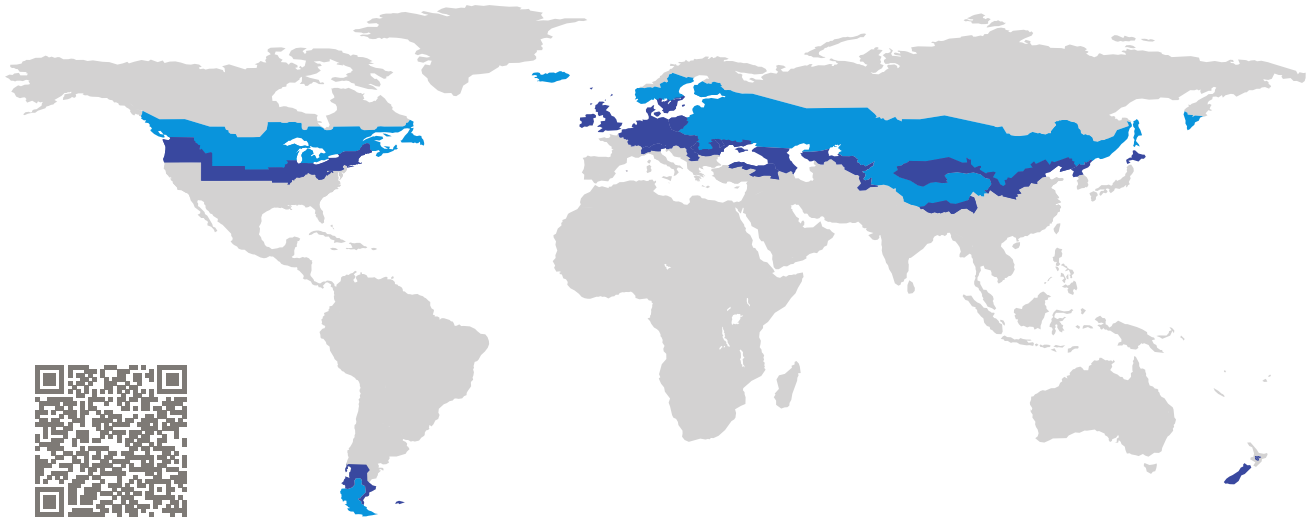


CERTIFICATE

Certified Passive House Component

Component-ID 0640wi02 valid until 31st December 2016

Passive House Institute
Dr. Wolfgang Feist
64283 Darmstadt
Germany

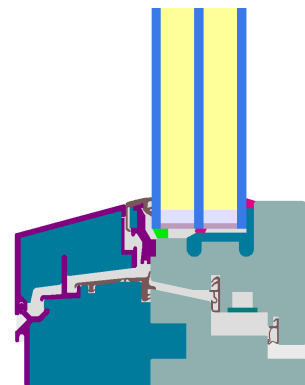


Category: **Window frame**
Manufacturer: **dPHt, deutsche PASSIVHAUS transfer, Konken, Germany**
Product name: **Delta plus cold climate**

This certificate was awarded based on the following criteria for the cold climate zone

Comfort $U_W = 0.59 \leq 0.60 \text{ W}/(\text{m}^2 \text{ K})$
 $U_{W, \text{ installed mit } U_g} \leq 0.65 \text{ W}/(\text{m}^2 \text{ K})$
 $= 0.52 \text{ W}/(\text{m}^2 \text{ K})$

Hygiene $f_{Rsi=0.25} \geq 0.75$



Passive House
efficiency class

phE

phD

phC

phB

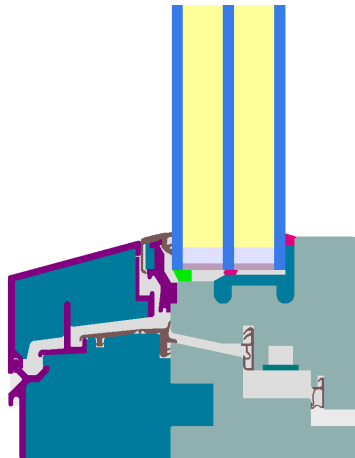
phA

cold climate

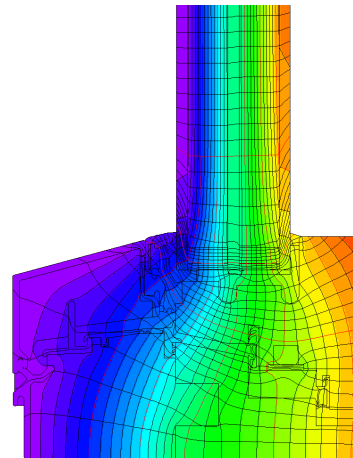


**CERTIFIED
COMPONENT**

Passive House Institute



Calculation model



Isothermal

Description

Timber window frame (0,11 W/(mK)) wit GRP cladding, insulated by EPS (0,031 W/(mK)). Glazing: 5/18/5/18/5, Glass intersection: 15 mm. Pane thickness: 51 mm (5/18/5/18/5), Rebate depth: 15 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	$U_g =$	0.52	0.70	0.64	0.58	W/(m ² K)
		↓	↓	↓	↓	
Window	$U_W =$	0.59	0.72	0.68	0.64	W/(m ² K)

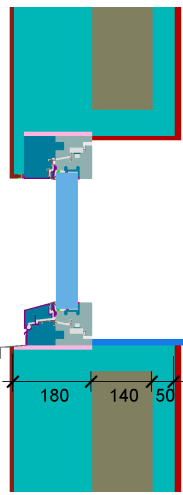
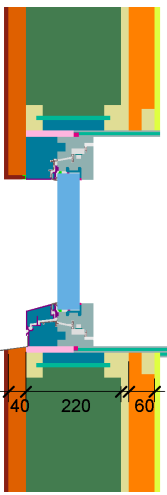
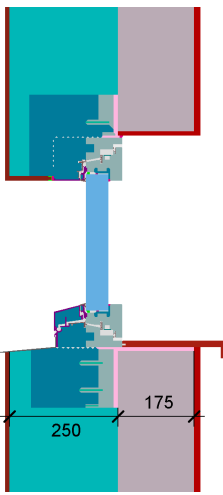
Transparent building components are classified into efficiency classes depending on the heat losses through the opaque part. The frame U-Values, frame widths, thermal bridges at the glazing edge, and the glazing edge lengths are included in these heat losses. A more detailed report of the calculations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

Frame values		Frame width b_f mm	U-value frame U_f W/(m K)	Ψ -glass edge Ψ_g W/(m ² K)	Temp. Factor $f_{Rsi=0.25}$ [-]
Top		100	0.55	0.025	0.77
Left		100	0.55	0.025	0.77
Right		100	0.55	0.025	0.77
Bottom		100	0.58	0.025	0.77
Flying mullion		120	0.68	0.023	0.77
Spacer: SWISSPACER Ultimate			Secondary seal: Polyurethane		

Validated installations

Insulated formwork blocks		Timber frame		EIFS	
					
$\Psi_{install}$	W/(m K)	$\Psi_{install}$	W/(m K)	$\Psi_{install}$	W/(m K)
Top	0.007	Top	0.016	Top	0.005
Left	0.007	Left	0.016	Left	0.005
Right	0.007	Right	0.016	Right	0.005
Bottom	0.009	Bottom	0.019	Bottom	0.014
$U_{W,installed} = 0.61 \text{ W/(m}^2 \text{ K)}$		$U_{W,installed} = 0.64 \text{ W/(m}^2 \text{ K)}$		$U_{W,installed} = 0.61 \text{ W/(m}^2 \text{ K)}$	

