Applicable for product codes:
1I

ND NTech Villa Balcony door, inward opening

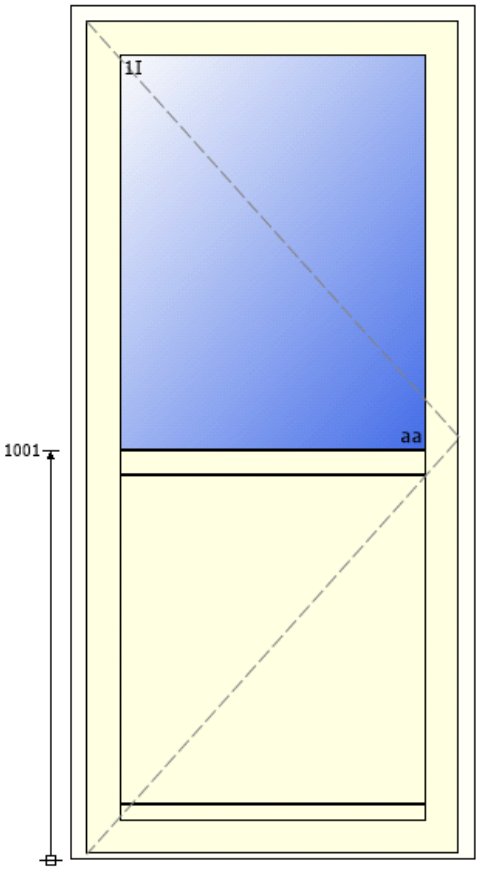
Calculation of U-value in avordance to NS-EN ISO 10077-1, 10077-2 and the programme “Therm”.
Centre U-value of glass is calculated in accordance to NS-EN 673.
Head Office: NorDan AS, Stasjonsveien 46. 4460 Moi, Norway. Web: www.nordan.uk

Report of standard model

Date: 29.10.2021
Version: 1I 105
Type: Inward opening sash
Model: ND NTech Villa 105
Glass configuration: 4E+18G+4+18G+4E Planitherm Ultra N*, TGI*, Argon

Main results and dimensions

U-value: 0,81W/m²K
Width: 988mm
Height: 2088mm
Area: 2,063m²
Percent glass: 35,10%
Percent panel: 30,43%
g-value: 0,53
LT-value: 0,74
Ug-value: 0,53W/m²K
Up-value: 0,63W/m²K



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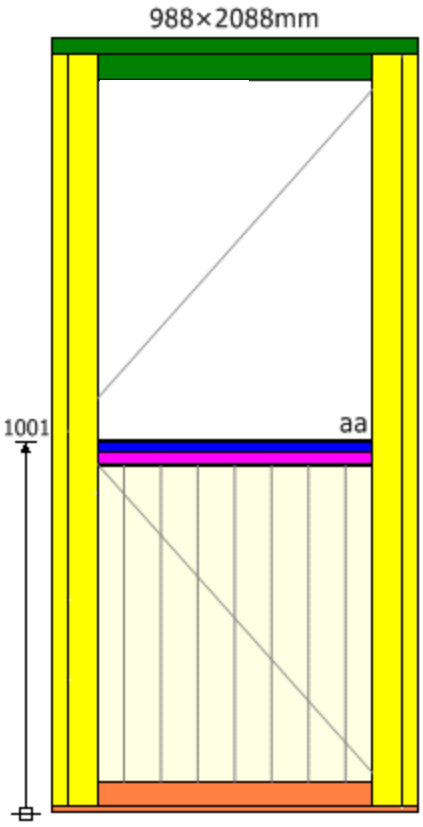
1|



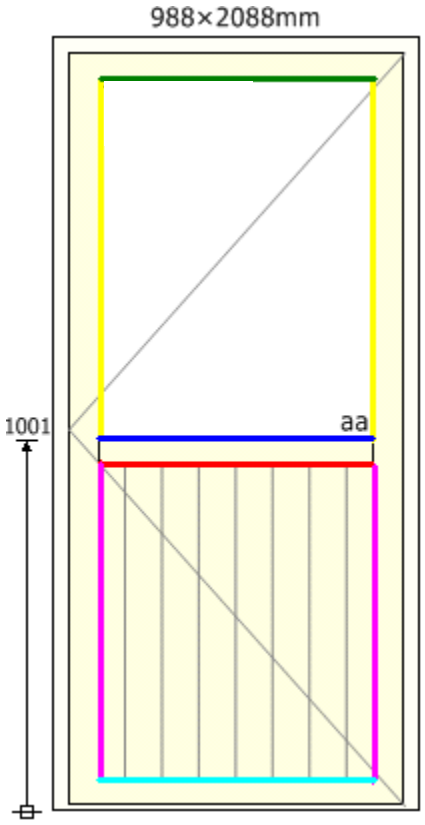
Colour	Uf (W/m²K)	Width (m)	Name
	1,17	0,120	Jamb profile
	1,19	0,120	Head profile
	1,73	0,031	Midtrail profile
	0,92	0,031	Midtrail profile
	1,46	0,096	Sill profile

Color	Uf (W/m²K)	Element area (m²)	*Percent element (%)
	1,17	0,238	11,54
	1,19	0,104	5,04
	1,17	0,238	11,54
	1,73	0,023	1,15
	0,92	0,023	1,15
	1,46	0,083	4,00
Sum		0,709	34,42

*: Figure in relation to the whole window

Applicable for product codes:

1|



Colour	PSI	Length (m)	Name
	0,038	1,934	TGI Jamb
	0,038	0,748	TGI Head
	0,038	0,748	TGI Sill
	0,000		Ins.Panel

Color	Spacer length (m)	L Psi spacer (W/K)	*L Psi spacer (%)
	0,967	0,037	28,5
	0,748	0,028	21,5
	0,967	0,037	28,5
	0,748	0,028	21,5
Sum	3,430	0,130	100

*: Figure in relation to the spacer

U-Value window frame (Uf) Calculation according to EN ISO 10077-2

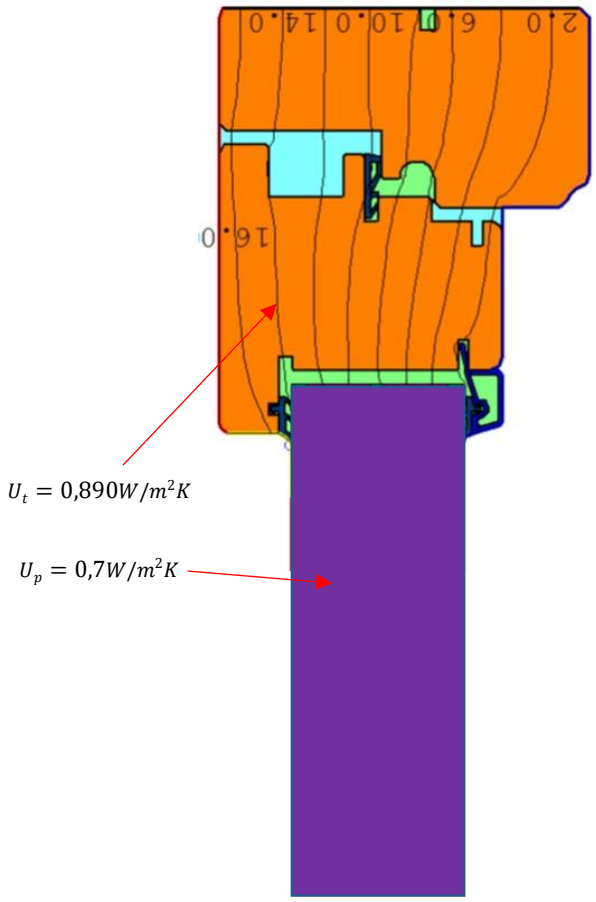
ND NTech Villa Balcony door, inward opening
Head

This example shows glas thicknes 39 - 51mm:

$U_t = 0{,}890\ W/m^2K$
$B_f = 120\ mm$

$$U_f = \frac{L_f^{2D} - U_p * b_p}{b_f}$$
$$L_f^{2D} = U_t * L$$

$$L_f^{2D} = 0{,}890 * (0{,}12 + 0{,}19) = 0{,}276\ W/mK$$
$$U_f = \frac{0{,}276 - (0{,}7 * 0{,}19)}{0{,}12} = 1{,}19\ W/m^2K$$



Boundary Conditions	Temp: °C	Hc: W/m²K
Exterior	0	25
Interior	20	7,69

Material:	λ(W/mK)	ϱ
Pine	0,12	0,9
Aluminium	160	0,9
Panel	0,035	0,9
Gasket EPDM	0,25	0,9
Brush gasket DX1466	0,15	0,9
Gasket QL	0,03	0,9
Frame cavity- Cen slightly ventilated		
Frame cavity-Cen Simplified		

U_t	U_p	L_f^{2D}	U_f
Glas thicknes 20-32mm			
Glas thicknes 33-38mm			
Glas thicknes 39-51mm			
0,890	0,70	0,276	1,19

Applicable for product codes:
1l

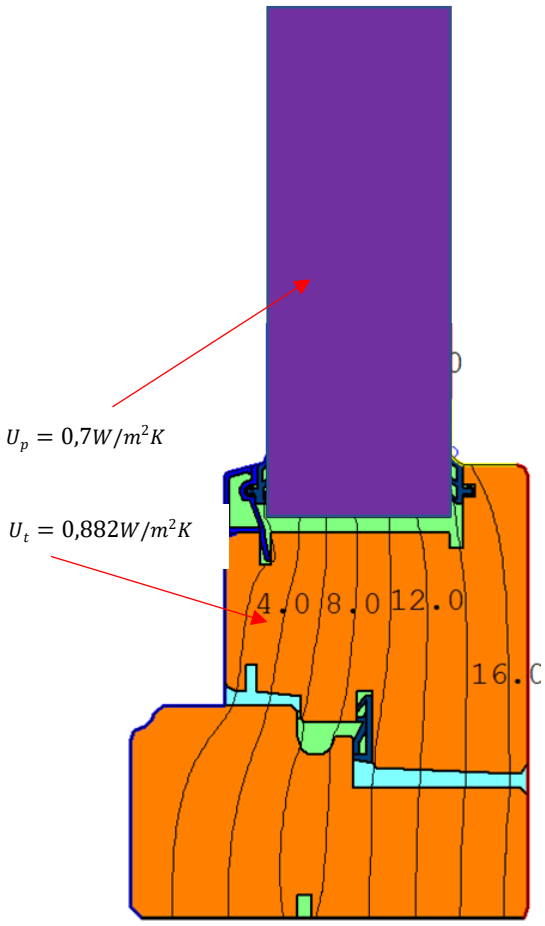
ND NTech Villa Balcony door, inward opening
Jamb by glass

This example shows glas thicknes 39 - 51mm:

$U_t = 0{,}882\ W/m^2K$
$B_f = 120\ mm$

$$U_f = \frac{L_f^{2D} - U_p * b_p}{b_f}$$
$$L_f^{2D} = U_t * L$$

$$L_f^{2D} = 0{,}882 * (0{,}12 + 0{,}19) = 0{,}273\ W/mK$$
$$U_f = \frac{0{,}273 - (0{,}7 * 0{,}19)}{0{,}12} = 1{,}17\ W/m^2K$$



Boundary Conditions	Temp: °C	Hc: W/m²K
Exterior	0	25
Interior	20	7,69

Material:	λ(W/mK)	ϱ
Pine	0,12	0,9
Aluminium	160	0,9
Panel	0,035	0,9
Gasket EPDM	0,25	0,9
Gasket QL	0,03	0,9
Frame cavity- Cen slightly ventilated		
Frame cavity-Cen Simplified		

U_t	U_p	L_f^{2D}	U_f
Glas thicknes 20-32mm			
Glas thicknes 33-38mm			
Glas thicknes 39-51mm			
0,882	0,70	0,273	1,17

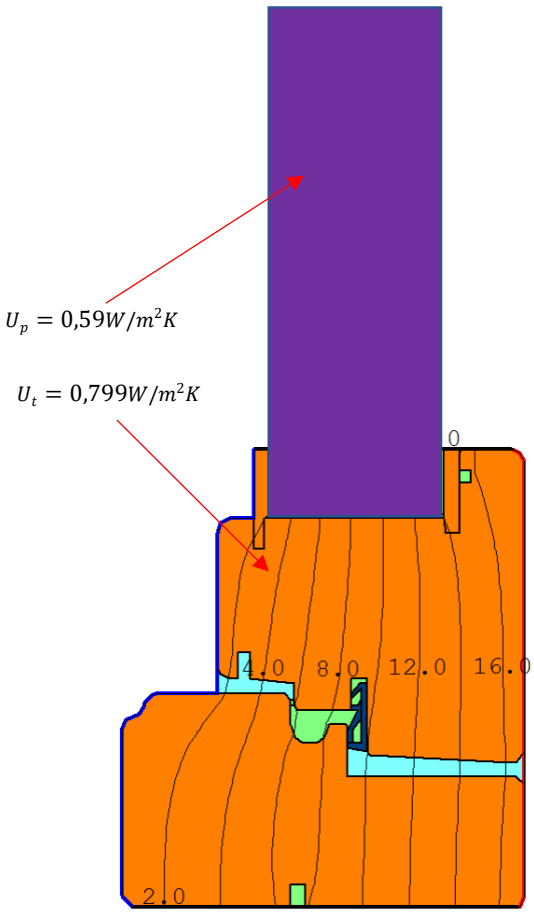
ND NTech Villa Balcony door, inward opening
Jamb by panel

This example shows glas thicknes 39 - 51mm:

$U_t = 0{,}799\ W/m^2K$
$B_f = 120\ mm$

$$U_f = \frac{L_f^{2D} - U_p * b_p}{b_f}$$
$$L_f^{2D} = U_t * L$$

$$L_f^{2D} = 0{,}799 * (0{,}12 + 0{,}19) = 0{,}248\ W/mK$$
$$U_f = \frac{0{,}248 - (0{,}59 * 0{,}19)}{0{,}12} = 1{,}13\ W/m^2K$$



Boundary Conditions	Temp: °C	Hc: W/m²K
Exterior	0	25
Interior	20	7,69

Material:	λ(W/mK)	ρ
Pine	0,12	0,9
Aluminium	160	0,9
Panel	0,035	0,9
Gasket EPDM	0,25	0,9
Gasket QL	0,03	0,9
Frame cavity- Cen slightly ventilated		
Frame cavity-Cen Simplified		

U_t	U_p	L_f^{2D}	U_f
Glas thicknes 20-32mm			
Glas thicknes 33-38mm			
Glas thicknes 39-51mm			
0,799	0,70	0,248	1,13

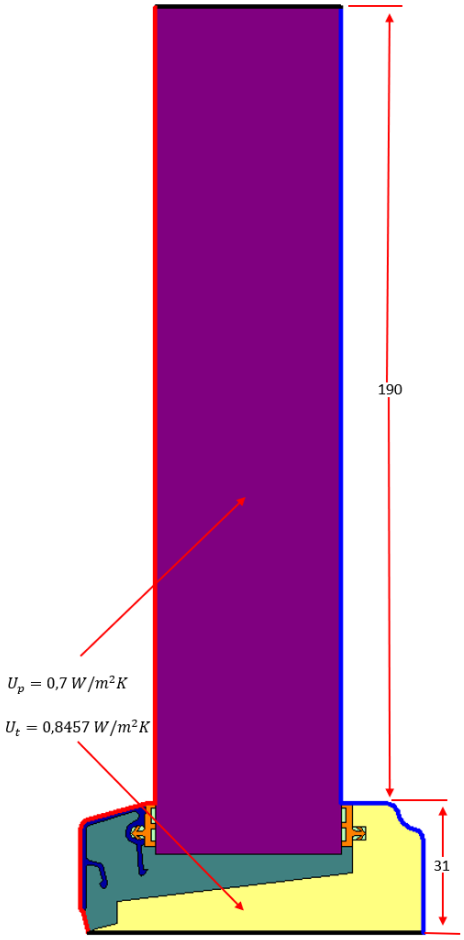
ND NTech Villa Balcony door, inward opening
OVer panel

This example shows glas thicknes 39 - 51mm:

$U_t = 0{,}8457\ W/m^2K$
$B_f = 31\ mm$

$$U_f = \frac{L_f^{2D} - U_p * b_p}{b_f}$$
$$L_f^{2D} = U_t * L$$

$$L_f^{2D} = 0{,}8457 * (0{,}031 + 0{,}19) = 0{,}187\ W/mK$$
$$U_f = \frac{0{,}187 - (0{,}7 * 0{,}19)}{0{,}031} = 1{,}74\ W/m^2K$$



Boundary Conditions	Temp: °C	Hc: W/m²K
Exterior	0	25
Interior	20	7,69

Material:	λ(W/mK)	ϱ
Pine	0,12	0,9
Aluminium	160	0,9
Panel	0,035	0,9
Gasket EPDM	0,25	0,9
Frame cavity- Cen slightly ventilated		
Frame cavity-Cen Simplified		

U_t	U_p	L_f^{2D}	U_f
Glas thicknes 20-32mm			
Glas thicknes 33-38mm			
Glas thicknes 39-51mm			
0,8457	0,70	0,187	1,74

ND NTech Villa Balcony door, inward opening
Under panel

This example shows glas thicknes 39 - 51mm:

$U_t = 0{,}6330\ W/m^2K$
$B_f = 31\ mm$

$$U_f = \frac{L_f^{2D} - U_p * b_p}{b_f}$$
$$L_f^{2D} = U_t * L$$

$$L_f^{2D} = 0{,}6330 * (0{,}031 + 0{,}19) = 0{,}14\ W/mK$$
$$U_f = \frac{0{,}14 - (0{,}59 * 0{,}19)}{0{,}031} = 0{,}9\ W/m^2K$$

Boundary Conditions	Temp: °C	Hc: W/m²K
Exterior	0	25
Interior	20	7,69

Material:	λ(W/mK)	ϱ
Pine	0,12	0,9
Aluminium	160	0,9
Panel	0,035	0,9
Gasket EPDM	0,25	0,9
Frame cavity- Cen slightly ventilated		
Frame cavity-Cen Simplified		

U_t	U_p	L_f^{2D}	U_f
Glas thicknes 20-32mm			
Glas thicknes 33-38mm			
Glas thicknes 39-51mm			
0,6330	0,70	0,14	1,9

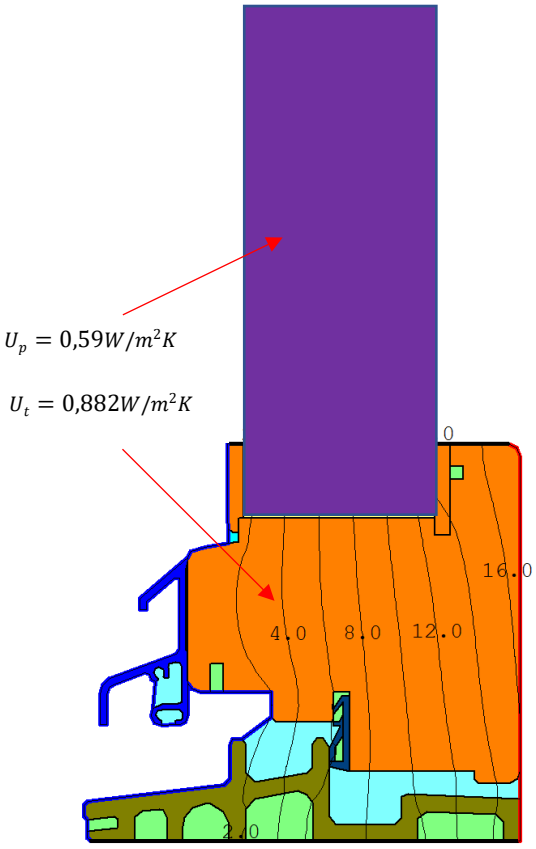
ND NTech Villa Balcony door, inward opening
Cill panel

This example shows glas thicknes 39 - 51mm:

$U_t = 0{,}882\ W/m^2K$
$B_f = 96\ mm$

$$U_f = \frac{L_f^{2D} - U_p * b_p}{b_f}$$
$$L_f^{2D} = U_t * L$$

$$L_f^{2D} = 0{,}882 * (0{,}096 + 0{,}19) = 0{,}252\ W/mK$$
$$U_f = \frac{0{,}252 - (0{,}59 * 0{,}19)}{0{,}096} = 1{,}46\ W/m^2K$$



Boundary Conditions	Temp: °C	Hc: W/m²K
Exterior	0	25
Interior	20	7,69

Material:	λ(W/mK)	ϱ
Pine	0,12	0,9
Aluminium	160	0,9
Panel	0,035	0,9
Gasket EPDM	0,25	0,9
Gasket QL	0,03	0,9
Climate gasket DX1466	0,15	
Frame cavity- Cen slightly ventilated		
Frame cavity-Cen Simplified		

U_t	U_p	L_f^{2D}	U_f
Glas thicknes 20-32mm			
Glas thicknes 33-38mm			
Glas thicknes 39-51mm			
0,882	0,70	0,252	1,46

Applicable for product codes:
1l

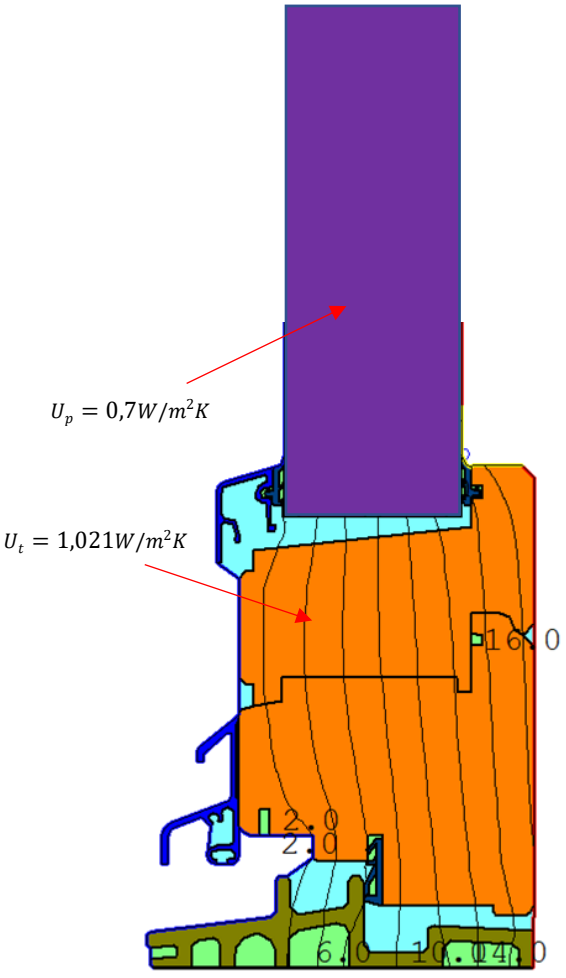
ND NTech Villa Balcony door, inward opening
Cill Minimum Panel

This example shows glas thicknes 39 - 51mm:

$U_t = 1{,}021\ W/m^2K$
$B_f = 136\ mm$

$$U_f = \frac{L_f^{2D} - U_p * b_p}{b_f}$$
$$L_f^{2D} = U_t * L$$

$$L_f^{2D} = 1{,}021 * (0{,}136 + 0{,}19) = 0{,}333\ W/mK$$
$$U_f = \frac{0{,}333 - (0{,}7 * 0{,}19)}{0{,}136} = 1{,}47\ W/m^2K$$



Boundary Conditions	Temp: °C	Hc: W/m²K
Exterior	0	25
Interior	20	7,69

Material:	λ(W/mK)	ϱ
Pine	0,12	0,9
Aluminium	160	0,9
Panel	0,035	0,9
Gasket EPDM	0,25	0,9
Gasket QL	0,03	0,9
Climate gasket DX1466	0,15	0,9
Frame cavity- Cen slightly ventilated		
Frame cavity-Cen Simplified		

U_t	U_p	L_f^{2D}	U_f
Glas thicknes 20-32mm			
Glas thicknes 33-38mm			
Glas thicknes 39-51mm			
1,021	0,70	0,333	1,47