



Calculation based on ISO 15099

Product name: <b>Universal Inswing Tilt &amp; Turn Window</b>				Center-of-glass properties		
ASHRAE/IECC /DOE North American Climate Zone	North, East, South- facing West - facing			Cardinal E180/ Arg/ E180/ Arg/ i89(#6) (6mm) 44,0mm No Grids		
Climate specific recommendations:		Whole-window installed U-value		Ucog-Value		
		W/m2K	BTU/hr.ft2.F	SHGC	W/m2K	BTU/hr.ft2.F
8		0.88	0.16	0.487	0.653	0.115
7		0.87	0.15	0.487	0.642	0.113
6		0.87	0.15	0.487	0.635	0.112
5		0.87	0.15	0.487	0.634	0.112
4		0.87	0.15	0.487	0.632	0.111
Marine North		0.87	0.15	0.487	0.631	0.111
Marine South	✓	0.86	0.15	0.487	0.628	0.111
3	✓	0.87	0.15	0.487	0.630	0.111
2 West		0.84	0.15	0.487	0.589	0.104
2 East		0.84	0.15	0.487	0.589	0.104
Universal Inswing Tilt & Turn Cardinal Endur		FRAME		Psi-spacer		Psi-opaque
		Frame height		U-frame		Ψ
		mm	in	W/m2K	BTU/hr.ft2.F	W/mK
Head		105	4.12	1.12	0.20	0.007
Sill		105	4.12	1.12	0.20	0.004
left jamb		105	4.12	1.13	0.20	0.007
right jamb		105	4.12	1.13	0.20	0.004
						W/mK
						BTU/hr.ft.F
						0.135
						0.078
						Grade B


Valid through November 2022

Calculation based on ISO 15099

Product name: <b>Universal Inswing Tilt &amp; Turn Window</b>				Center-of-glass properties		
ASHRAE/IECC /DOE North American Climate Zone	North, East, South- facing West - facing			Cardinal E180/ Arg/ E180/ Arg/ i89(#6) (6mm) 44,0mm SDL/no Internal grids < 25.4mm		
Climate specific recommendations:		Whole-window installed U-value		Ucog-Value		
		W/m2K	BTU/hr.ft2.F	SHGC	W/m2K	BTU/hr.ft2.F
8		0.88	0.16	0.424	0.653	0.115
7		0.87	0.15	0.424	0.642	0.113
6		0.87	0.15	0.424	0.635	0.112
5		0.87	0.15	0.424	0.634	0.112
4		0.87	0.15	0.424	0.632	0.111
Marine North		0.87	0.15	0.424	0.631	0.111
Marine South	✓	0.86	0.15	0.424	0.628	0.111
3	✓	0.87	0.15	0.424	0.630	0.111
2 West		0.84	0.15	0.424	0.589	0.104
2 East		0.84	0.15	0.424	0.589	0.104
Universal Inswing Tilt & Turn		FRAME		Psi-spacer		Psi-opaque
Cardinal Endur		Frame height		Ψ		W/mK
		mm	in	W/m2K	BTU/hr.ft2.F	
Head		105	4.12	1.12	0.20	0.007
Sill		105	4.12	1.12	0.20	0.004
left jamb		105	4.12	1.13	0.20	0.007
right jamb		105	4.12	1.13	0.20	0.004


Valid through November 2022

Calculation based on ISO 15099


Product name: <b>Universal Inswing Tilt &amp; Turn Window</b>				Center-of-glass properties		
ASHRAE/IECC /DOE North American Climate Zone	North, East, South- facing West - facing			Cardinal E180/ Arg/ E180/ Arg/ i89(#6) (6mm) 44,0mm Internal grids And SDL with Internal grids < 25.4mm maintain 3mm clearance		
Climate specific recommendations:		Whole-window installed U-value		Ucog-Value		
		W/m2K	BTU/hr.ft2.F	SHGC	W/m2K	BTU/hr.ft2.F
8		0.88	0.16	0.424	0.653	0.115
7		0.87	0.15	0.424	0.642	0.113
6		0.87	0.15	0.424	0.635	0.112
5		0.87	0.15	0.424	0.634	0.112
4		0.87	0.15	0.424	0.632	0.111
Marine North		0.87	0.15	0.424	0.631	0.111
Marine South	✓	0.86	0.15	0.424	0.628	0.111
3	✓	0.87	0.15	0.424	0.630	0.111
2 West		0.84	0.15	0.424	0.589	0.104
2 East		0.84	0.15	0.424	0.589	0.104
Universal Inswing Tilt & Turn Cardinal Endur		FRAME		Psi-spacer		Psi-opaque
		Frame height		U-frame		W/mK
		mm	in	W/m2K	BTU/hr.ft2.F	
Head		105	4.12	1.12	0.20	0.135
Sill		105	4.12	1.12	0.20	BTU/hr.ft.F
left jamb		105	4.12	1.13	0.20	0.078
right jamb		105	4.12	1.13	0.20	Grade B

Valid through November 2022

Calculation based on ISO 15099


Product name: Universal Inswing Tilt & Turn Window				Center-of-glass properties				
ASHRAE/IECC /DOE North American Climate Zone	South-facing	North, East, West - facing	<div> Passive House Institute US</div>			Cardinal E180/ Arg/ E180/ Arg/ i89(#6) (6mm) 44,0mm Internal grids And SDL with Internal grids < 25.4mm		
Climate specific recommendations:		Whole-window installed U-value			Ucog-Value			
		W/m2K	BTU/hr.ft2.F	SHGC	W/m2K	BTU/hr.ft2.F		
		8	0.94	0.17	0.424	0.653	0.115	
		7	0.93	0.16	0.424	0.642	0.113	
		6	0.93	0.16	0.424	0.635	0.112	
		5	0.93	0.16	0.424	0.634	0.112	
		4	0.92	0.16	0.424	0.632	0.111	
		Marine North	0.92	0.16	0.424	0.631	0.111	
		Marine South	✓	0.92	0.16	0.424	0.628	0.111
		3	✓	0.92	0.16	0.424	0.630	0.111
2 West		0.89	0.16	0.424	0.589	0.104		
2 East		0.89	0.16	0.424	0.589	0.104		
Universal Inswing Tilt & Turn		FRAME			Psi-spacer		Psi-opaque	
Cardinal Endur		Frame height		U-frame		Ψ		W/mK
		mm	in	W/m2K	BTU/hr.ft2.F	W/mK	BTU/hr.ft.F	
Head		105	4.12	1.12	0.20	0.007	0.004	0.135
Sill		105	4.12	1.12	0.20	0.007	0.004	BTU/hr.ft.F
left jamb		105	4.12	1.13	0.20	0.007	0.004	0.078
right jamb		105	4.12	1.13	0.20	0.007	0.004	Grade B

Calculation based on ISO 15099

Product name: Universal Inswing Tilt & Turn Window				Center-of-glass properties				
ASHRAE/IECC /DOE North American Climate Zone	North, East, West - facing	South-facing	 Passive House Institute US		Cardinal E180/ Arg/ E180/ Arg/ i89(#6) (6mm) 44,0mm SDL/no Internal grids >= 25.4mm			
Climate specific recommendations:			Whole-window installed U-value		Ucog-Value			
			W/m2K	BTU/hr.ft2.F	SHGC	W/m2K BTU/hr.ft2.F		
8			0.88	0.16	0.365	0.653 0.115		
7			0.87	0.15	0.365	0.642 0.113		
6			0.87	0.15	0.365	0.635 0.112		
5			0.87	0.15	0.365	0.634 0.112		
4		✓	0.87	0.15	0.365	0.632 0.111		
Marine North		✓	0.87	0.15	0.365	0.631 0.111		
Marine South	✓		0.86	0.15	0.365	0.628 0.111		
3	✓		0.87	0.15	0.365	0.630 0.111		
2 West			0.84	0.15	0.365	0.589 0.104		
2 East			0.84	0.15	0.365	0.589 0.104		
Universal Inswing Tilt & Turn		FRAME			Psi-spacer		Psi-opaque	
Cardinal Endur		Frame height		U-frame		Ψ		W/mK
		mm	in	W/m2K	BTU/hr.ft2.F	W/mK	BTU/hr.ft.F	
Head		105	4.12	1.12	0.20	0.007	0.004	0.135
Sill		105	4.12	1.12	0.20	0.007	0.004	BTU/hr.ft.F
left jamb		105	4.12	1.13	0.20	0.007	0.004	0.078
right jamb		105	4.12	1.13	0.20	0.007	0.004	Grade B


Valid through November 2022

Calculation based on ISO 15099

Product name: <b>Universal Inswing Tilt &amp; Turn Window</b>		Center-of-glass properties			
ASHRAE/IECC /DOE North American Climate Zone	North, East, West - facing			Cardinal E180/ Arg/ E180/ Arg/ i89(#6) (6mm) 44,0mm Internal grids And SDL/Internal grids >= 25.4mm maintain 3mm clearance	
		Whole-window installed U-value		<b>Ucog-Value</b>	
<b>Climate specific recommendations:</b>		W/m2K	BTU/hr.ft2.F	<b>SHGC</b>	W/m2K BTU/hr.ft2.F
8		0.88	0.16	0.365	0.653 0.115
7		0.87	0.15	0.365	0.642 0.113
6		0.87	0.15	0.365	0.635 0.112
5		0.87	0.15	0.365	0.634 0.112
4	✓	0.87	0.15	0.365	0.632 0.111
Marine North	✓	0.87	0.15	0.365	0.631 0.111
Marine South	✓	0.86	0.15	0.365	0.628 0.111
3	✓	0.87	0.15	0.365	0.630 0.111
2 West		0.84	0.15	0.365	0.589 0.104
2 East		0.84	0.15	0.365	0.589 0.104
<b>Universal Inswing Tilt &amp; Turn</b>		<b>FRAME</b>		<b>Psi-spacer</b>	
<b>Cardinal Endur</b>		Frame height		Ψ	
		mm	in	W/m2K	BTU/hr.ft.F
Head		105	4.12	1.12	0.20
Sill		105	4.12	1.12	0.20
left jamb		105	4.12	1.13	0.20
right jamb		105	4.12	1.13	0.20
				W/mK	BTU/hr.ft.F
				0.007	0.004
				0.007	0.004
				0.007	0.004
				0.007	0.004
				W/mK	
				0.135	
				BTU/hr.ft.F	
				0.078	
				Grade B	

Valid through November 2022

Calculation based on ISO 15099

Product name: <b>Universal Inswing Tilt &amp; Turn Window</b>				Center-of-glass properties		
ASHRAE/IECC /DOE North American Climate Zone	North, East, South- facing West - facing			Cardinal E180/ Arg/ E180/ Arg/ i89(#6) (6mm) 44,0mm Internal grids And SDL/Internal grids >= 25.4mm		
Climate specific recommendations:		Whole-window installed U-value		Ucog-Value		
		W/m2K	BTU/hr.ft2.F	SHGC	W/m2K	BTU/hr.ft2.F
8		0.94	0.17	0.365	0.653	0.115
7		0.93	0.16	0.365	0.642	0.113
6		0.93	0.16	0.365	0.635	0.112
5		0.93	0.16	0.365	0.634	0.112
4		0.92	0.16	0.365	0.632	0.111
Marine North	✓	0.92	0.16	0.365	0.631	0.111
Marine South	✓	0.92	0.16	0.365	0.628	0.111
3	✓	0.92	0.16	0.365	0.630	0.111
2 West		0.89	0.16	0.365	0.589	0.104
2 East		0.89	0.16	0.365	0.589	0.104
Universal Inswing Tilt & Turn		FRAME		Psi-spacer		Psi-opaque
Cardinal Endur		Frame height		Ψ		
		mm	in	W/m2K	BTU/hr.ft2.F	W/mK
Head		105	4.12	1.12	0.20	0.135
Sill		105	4.12	1.12	0.20	BTU/hr.ft.F
left jamb		105	4.12	1.13	0.20	0.078
right jamb		105	4.12	1.13	0.20	Grade B

Valid through November 2022