



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 E366/ 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			0.86	0.15	0.230	0.625	0.110	
7			0.85	0.15	0.230	0.612	0.108	
6			0.84	0.15	0.230	0.601	0.106	
5			0.84	0.15	0.230	0.600	0.106	
4		✓	0.84	0.15	0.230	0.597	0.105	
Marine North		✓	0.84	0.15	0.230	0.595	0.105	
Marine South	✓	✓	0.84	0.15	0.230	0.592	0.104	
3	✓	✓	0.84	0.15	0.230	0.594	0.105	
2 West	✓	✓	0.81	0.14	0.230	0.555	0.098	
2 East	✓	✓	0.81	0.14	0.230	0.555	0.098	
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	1.11	0.20	0.007	0.004	0.135
Sill		105	4.12	1.11	0.20	0.007	0.004	BTU/hr.ft.F
left jamb		105	4.12	1.12	0.20	0.008	0.004	0.078
right jamb		105	4.12	1.12	0.20	0.008	0.004	Grade B


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ASHRAE/IECC /DOE North American Climate Zone	South-facing	North, East, West - facing			Cardinal E366/ 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			0.86	0.15	0.201	0.625	0.110	
7			0.85	0.15	0.201	0.612	0.108	
6			0.84	0.15	0.201	0.601	0.106	
5			0.84	0.15	0.201	0.600	0.106	
4		✓	0.84	0.15	0.201	0.597	0.105	
Marine North		✓	0.84	0.15	0.201	0.595	0.105	
Marine South	✓	✓	0.84	0.15	0.201	0.592	0.104	
3	✓	✓	0.84	0.15	0.201	0.594	0.105	
2 West	✓	✓	0.81	0.14	0.201	0.555	0.098	
2 East	✓	✓	0.81	0.14	0.201	0.555	0.098	
Universal Inswing Tilt & Turn Cardinal Endur		FRAME				Psi-spacer		Psi-opaque
		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	1.11	0.20	0.007	0.004	0.135	
Sill	105	4.12	1.11	0.20	0.007	0.004	BTU/hr.ft.F	
left jamb	105	4.12	1.12	0.20	0.008	0.004	0.078	
right jamb	105	4.12	1.12	0.20	0.008	0.004	Grade B	


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Climate specific recommendations:		Whole-window installed U-value		Ucog-Value		
		W/m2K	BTU/hr.ft2.F	SHGC	W/m2K	BTU/hr.ft2.F
8		0.86	0.15	0.201	0.625	0.110
7		0.85	0.15	0.201	0.612	0.108
6		0.84	0.15	0.201	0.601	0.106
5		0.84	0.15	0.201	0.600	0.106
4		0.84	0.15	0.201	0.597	0.105
Marine North		0.84	0.15	0.201	0.595	0.105
Marine South	✓	0.84	0.15	0.201	0.592	0.104
3	✓	0.84	0.15	0.201	0.594	0.105
2 West	✓	0.81	0.14	0.201	0.555	0.098
2 East	✓	0.81	0.14	0.201	0.555	0.098
Universal Inswing Tilt & Turn		FRAME		Psi-spacer		Psi-opaque
Cardinal Endur		Frame height		U-frame		Ψ
		mm	in	W/m2K	BTU/hr.ft2.F	
Head		105	4.12	1.11	0.20	0.007
Sill		105	4.12	1.11	0.20	0.004
left jamb		105	4.12	1.12	0.20	0.008
right jamb		105	4.12	1.12	0.20	0.004
						W/mK
						BTU/hr.ft.F
						Grade B


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Climate specific recommendations:			Whole-window installed U-value		Ucog-Value			
			W/m2K	BTU/hr.ft2.F	SHGC	W/m2K	BTU/hr.ft2.F	
8			0.92	0.16	0.201	0.625	0.110	
7			0.91	0.16	0.201	0.612	0.108	
6			0.90	0.16	0.201	0.601	0.106	
5			0.90	0.16	0.201	0.600	0.106	
4			0.90	0.16	0.201	0.597	0.105	
Marine North		✓	0.90	0.16	0.201	0.595	0.105	
Marine South	✓	✓	0.89	0.16	0.201	0.592	0.104	
3	✓	✓	0.90	0.16	0.201	0.594	0.105	
2 West	✓	✓	0.87	0.15	0.201	0.555	0.098	
2 East	✓	✓	0.87	0.15	0.201	0.555	0.098	
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	1.11	0.20	0.007	0.004	0.135
Sill		105	4.12	1.11	0.20	0.007	0.004	BTU/hr.ft.F
left jamb		105	4.12	1.12	0.20	0.008	0.004	0.078
right jamb		105	4.12	1.12	0.20	0.008	0.004	Grade B


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Climate specific recommendations:			Whole-window installed U-value		Ucog-Value			
			W/m2K	BTU/hr.ft2.F	SHGC	W/m2K	BTU/hr.ft2.F	
8			0.86	0.15	0.173	0.625	0.110	
7			0.85	0.15	0.173	0.612	0.108	
6			0.84	0.15	0.173	0.601	0.106	
5			0.84	0.15	0.173	0.600	0.106	
4		✓	0.84	0.15	0.173	0.597	0.105	
Marine North		✓	0.84	0.15	0.173	0.595	0.105	
Marine South	✓	✓	0.84	0.15	0.173	0.592	0.104	
3	✓	✓	0.84	0.15	0.173	0.594	0.105	
2 West	✓	✓	0.81	0.14	0.173	0.555	0.098	
2 East	✓	✓	0.81	0.14	0.173	0.555	0.098	
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	1.11	0.20	0.007	0.004	0.135
Sill		105	4.12	1.11	0.20	0.007	0.004	BTU/hr.ft.F
left jamb		105	4.12	1.12	0.20	0.008	0.004	0.078
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5		0.84	0.15	0.173	0.600 0.106
4	✓	0.84	0.15	0.173	0.597 0.105
Marine North	✓	0.84	0.15	0.173	0.595 0.105
Marine South	✓	0.84	0.15	0.173	0.592 0.104
3	✓	0.84	0.15	0.173	0.594 0.105
2 West	✓	0.81	0.14	0.173	0.555 0.098
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Universal Inswing Tilt & Turn		FRAME		Psi-spacer	
Cardinal Endur	Frame height		U-frame		Psi-opaque
	mm	in	W/m2K	BTU/hr.ft2.F	
Head	105	4.12	1.11	0.20	0.007 0.004 0.135
Sill	105	4.12	1.11	0.20	0.007 0.004 BTU/hr.ft.F
left jamb	105	4.12	1.12	0.20	0.008 0.004 0.078
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Sill		105	4.12	1.11	0.20	BTU/hr.ft.F
left jamb		105	4.12	1.12	0.20	0.078
right jamb		105	4.12	1.12	0.20	Grade B

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