

Design Criteria for Span Tables:

Values in the maximum allowable rail span tables provided herein are subject to the following general criteria and additional criteria shown on individual span tables sheets. Values in span tables are based on the same engineering methodology and calculation algorithms used for U-Builder and are provided here for reference.

Building Assumptions

- Building Risk Category: II
- Mean Roof Height: 30 ft
- Roof Pitch: 0°-45°
- Site Elevation: 0 ft

Wind Design Assumptions

- Wind loads used are based on ASCE 7-16 Sec 29.4.4 with Provisions from SEAOC PV2-2017
- Exposure Category B, C, or D
- Basic Wind Speed = 90 – 180 mph
- Level terrain. Topographic factor, $k_{zt} = 1.0$
- $\gamma_E = 1.0$ for 'Interior' spans, $\gamma_E = 1.5$ for 'Exposed' spans (ASCE 7-16, Fig. 29.4-7)

Snow Design Assumptions

- Ground Snow Load = 0-100 psf
- Exposure Factor coefficients of Partially Exposed condition
- Thermal Factor = 1.0
- Results based on uniform snow load

Seismic Design Assumptions

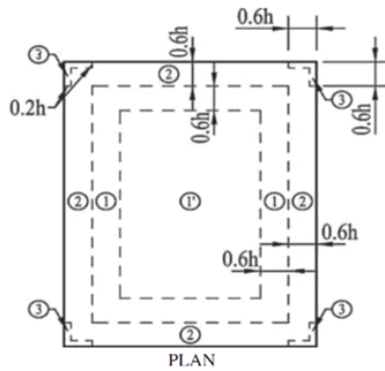
- 0.2-s Spectral Response Acceleration, $S_S \leq 3$
- $S_S = 1.25$ and 3 per criteria shown on individual span tables sheets.
- $S_1 = 0.5$
- Seismic site class D

Array Assumptions

- Module orientation and Rail direction per criteria shown on individual span tables sheets.
- Maximum module dimensions of 40.1" x 67" (~19 sq.ft, 47.65 lbs) and 41" x 80" (~23 sq.ft, 58.6 lbs) per criteria shown on individual span tables sheets.
- Minimum distance between modules and roof edge is at least twice the module height above roof surface.
- Modules are parallel to roof surface and maximum height above roof surface is 5" to 10" depending on attachment type.
- Gaps between module rows and columns is 0.25" in to 1" depending on clamp type.
- The most restrictive of all roof zone spans shall be used when any part of the module is attributed to that span.
- 'Exposed' spans as defined in ASCE 7-16 sec. 29.4.4 shall be used when any part of an exposed module or panel as is attributed to that span.

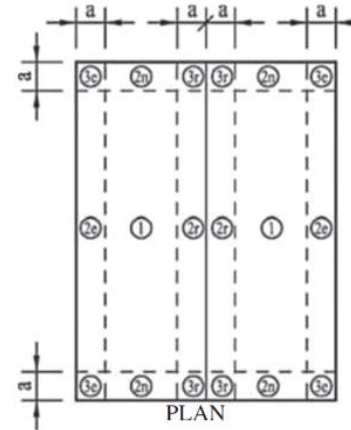
Span Tables

Zone should be considered as per ASCE 7-16, Fig. 30.3-2A to 30.3-2D



Gable Roofs $\theta \leq 7^\circ$

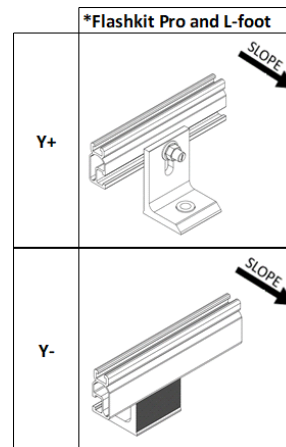
Rails can be installed in these possible orientations.



Gable Roofs $7^\circ < \theta \leq 45^\circ$

Grouping of ASCE 7-16 Roof Zones (Gable and Flat)

- **Roof Tilt 0° - 7°**
 - Roof Zone 1 = 1
 - Roof Zone 2 = 2
 - Roof Zone 3 = 3
- **Roof Tilt 7° - 27°**
 - Roof Zone 1 = 1, 2e
 - Roof Zone 2 = 2n, 2r, 3e
 - Roof Zone 3 = 3r
- **Roof Tilt 27° - 45°**
 - Roof Zone 1 = 1, 2e, 2r
 - Roof Zone 2 = 2n, 3r
 - Roof Zone 3 = 3e





ASCE 7-16
Design Standard

II
Risk Category

30 ft
Roof Height

Ss = 1.25
Seismic

19 sq.ft
Module Area

PORTRAIT
Orientation

CROSS-SLOPE
Rail Direction

SML
Rail Type

PRO SERIES
Clamp

L-Foot
Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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* Cells with an asterisk indicates that the L-root must be oriented in the Y- direction as indicated in the image.

Basic Wind Speed (mph)

10 Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

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10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

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[illegible]

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Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

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Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

[illegible]

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
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10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

[illegible]

* Cells with an asterisk indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

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[illegible]

* Cells with an asterisk indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
0	B	0-7	Interior	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	9

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

* Cells with an astrisks indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

[illegible]

Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																																																													
				90						95						100						105						110						115						120						130						140						150						160						170						180					
				Roof Wind Zone																																																																													
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3																																				
0	B	0-7	Interior	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83																																	
			Exposed	83	83	73	83	80	68	83	76	63	83	73	59	80	68	56	77	65	53	74	61	50	67	55	44	61	50	37	56	46	32	52	40	28	48	35	25	43	31	33	31	33	31	33	31	33	31	33																															
		7-20	Interior	83	83	83	83	83	81	83	83	77	83	80	74	83	77	69	83	73	65	80	69	61	75	62	55	69	56	50	63	51	44	59	47	38	55	41	34	51	36	30	34	51	36	30	34	51	36	30																															
			Exposed	83	77	69	82	72	64	79	67	59	76	63	56	72	59	52	68	55	49	65	52	47	59	47	39	54	40	33	50	35	29	46	30	25	41	27	33	36	36	30	36	30	36	30	36	30	36	30																															
		20-27	Interior	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	81	84	83	78	84	79	75	84	77	71	84	70	63	79	63	57	75	57	52	69	53	47	65	49	41	60	44	35																																		
			Exposed	84	82	78	84	79	74	84	75	69	84	71	64	82	66	60	79	62	56	76	59	53	70	53	48	64	48	40	59	42	33	55	36	28	51	32	24	48	29	31	32	24	48	29	31	32	24																																
	27-45	Interior	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84																																	
		Exposed	84	84	81	84	84	78	84	81	74	84	78	70	80	75	65	77	71	62	74	67	58	66	61	53	60	55	48	55	50	41	50	47	35	46	40	30	40	30	40	30	40	30	40	30	40																																		
	C	0-7	Interior	83	83	76	83	82	71	83	79	66	83	75	62	82	71	58	79	67	55	77	64	52	70	58	47	64	53	40	58	48	35	54	43	30	50	38	27	46	33	33	36	33	36	33	36	33	36																																
			Exposed	82	71	58	79	66	54	75	62	51	71	58	48	67	55	44	63	52	40	60	50	36	54	44	31	49	37	26	45	32	34	38	28	30	34	25	27	30	33	24	33	24	33	24	33																																		
		7-20	Interior	83	79	72	83	75	67	81	70	62	78	66	58	75	62	55	71	58	51	68	55	49	61	49	41	56	43	35	52	37	31	48	32	27	44	29	36	39	25	32	36	39	25	32	36	39	25	32																															
			Exposed	75	62	54	70	57	51	66	53	47	62	50	42	59	47	38	56	42	35	53	39	32	48	33	27	43	28	35	37	37	30	32	32	27	29	28	29	25	25	24	29	25	24	29	25	24																																	
20-27		Interior	84	84	80	84	81	76	84	77	72	84	74	67	84	69	63	81	65	59	78	62	56	73	55	50	67	50	44	61	46	36	57	39	30	53	34	26	50	31	22	36	50	31	22	36	50	31	22																																
		Exposed	84	69	63	80	64	58	77	60	54	74	56	51	70	53	48	66	50	43	63	47	38	57	40	31	52	34	25	48	29	32	44	26	27	38	34	23	34	30	24	34	30	24	34	30	24																																		
27-45	Interior	84	84	84	84	84	80	84	84	77	84	80	73	83	77	68	80	74	65	77	70	61	70	63	55	63	58	50	57	53	46	52	49	38	48	44	33	43	38	29	31	43	38	29	31	43	38	29																																	
	Exposed	83	77	68	79	73	64	75	68	59	71	64	56	66	60	53	62	57	50	59	54	47	53	49	39	48	42	32	41	37	27	36	32	23	28	30	28	25	26	32	28	25	26	32	28	25	26																																		
D	0-7	Interior	83	80	68	83	76	63	83	72	59	80	68	56	77	64	52	74	61	49	70	57	47	63	52	39	57	47	34	52	41	29	48	36	25	44	32	34	39	28	30	39	28	30	39	28	30																																		
		Exposed	77	64	52	73	60	49	68	56	45	64	53	40	60	50	36	57	47	33	54	43	30	49	37	26	43	31	33	37	27	29	32	36	25	28	31	22	25	28	26	29	25	28	26	29																																			
	7-20	Interior	82	73	64	79	67	59	76	63	55	72	59	52	68	55	49	64	52	46	61	49	41	56	42	35	51	36	40	47	31	26	41	27	34	37	36	30	32	32	32	32	32	32	32	32	32																																		
		Exposed	68	55	49	63	51	45	60	48	39	56	43	35	53	39	32	51	35	29	48	32	27	42	27	34	36	36	29	31	26	27	27	22	36	24	26	32	24	18	24	18	24	18																																					
	20-27	Interior	84	79	74	84	75	69	84	70	64	81	66	60	78	62	56	76	58	53	72	55	50	66	50	43	60	44	35	56	38	29	52	33	24	48	29	31	44	26	27	36	30	32	32	27	36	30	32																																
		Exposed	78	62	56	75	57	52	71	54	48	67	50	44	63	47	39	60	43	34	57	39	31	52	33	25	48	28	31	42	25	26	37	33	22	32	29	26	29	26	18	29	26	18																																					
27-45	Interior	84	84	78	84	81	74	84	78	69	80	75	65	77	71	61	74	67	58	69	63	55	62	57	49	56	52	44	51	47	36	47	41	31	40	36	27	36	32	23	36	32	23	36	32	23																																			
	Exposed	77	70	61	72	66	57	67	61	53	63	58	50	59	54	47	56	51	43	52	49	38	47	42	31	40	36	26	34	31	33	30	27	28	27	36	25	36	32	24	36	32	24	36	32																																				
10	B	0-7	Interior	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74																																	
			Exposed	74	74	73	74	74	68	74	74	63	74	73	59	74	68	56	74	65	53	74	61	50	67	55	44	61	50	37	56	46	32	52	40	28	48	35	25	43	31	33	31	33	31	33	31	33																																	
		7-20	Interior	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74																															
			Exposed	74	74	69	74	72	64	74	67	59	74	63	56	72	59	52	68	55	49	65	52	47	59	47	39	54	40	33	50	35	29	46	30	25	41	27	33	36	36	30	32	36	30	32	36	30	32																																
		20-27	Interior	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81																																	
			Exposed	81	81	78	81	79	74	81	75	69	81	71	64	81	66	60	79	62	56	76	59	53	70	53	48	64	48	40	59	42	33	55	36	28	51	32	24	48	29	31	32	24	48	29	31	32																																	
	27-45	Interior	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83																																	
		Exposed	83	83	81	83	83	78	83	81	74	83	78	70	80	75	65	77	71	62	74	67	58	66	61	53	60	55	48	55	50	41	50	47	35	46	40	30	40	30	40	30	40	30	40	30	40																																		
	C	0-7	Interior	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74																																
			Exposed	74	71	58	74	66	54	74	62	51	71	58	48	67	55	44	63	52	40	60	50	36	54	44	31	49	37	26	45	32	34	38	28	30	34	25	27	30	33	24	33	24	33	24	33																																		
		7-20	Interior	74	74	72	74	74	67	74	70	62	74	66	58	74	62	55	71	58	51	68	55	49	61	49	41	56	43	35	52	37	31	48	32	27	44	29	36	39	25	32	36	39	25	32	36	39	25	32																															
			Exposed	74	62	54	70	57	51	66	53	47	62	50	42	59	47	38																																																															

Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

* Cells with an asterisk indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																							
				90			95			100			105			110			115			120			130			140			150			160			170			180			
				Roof Wind Zone																																							
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3				
0	B	0-7	Interior	98	98	98	98	98	98	98	98	97	98	98	98	92	98	98	88	98	98	84	98	94	81	98	87	75	94	81	67	88	76	62	82	70	58	78	64	54	74	61	51
			Exposed	98	98	88	98	96	83	98	92	79	98	88	76	97	84	71	93	81	66	89	78	63	83	71	58	77	64	54	71	59	50	65	55	47	61	52	42	57	49	51	
		7-20	Interior	99	99	99	99	99	99	99	99	99	94	99	88	99	89	99	85	77	99	89	85	77	90	78	69	84	71	62	80	64	58	75	60	54	70	56	51	65	53	48	
			Exposed	99	93	85	99	88	80	96	83	76	90	79	70	87	75	65	84	70	62	81	65	59	76	60	55	69	55	50	64	52	47	60	48	42	56	45	51	53	52	48	
		20-27	Interior	99	99	99	99	99	99	99	99	99	99	99	99	99	99	95	99	97	91	99	93	86	99	85	79	95	79	72	90	73	64	85	66	59	81	62	55	77	58	51	
			Exposed	99	99	95	99	96	89	99	91	84	99	86	80	99	82	76	95	79	72	91	75	66	85	66	59	80	61	54	76	57	50	70	53	46	65	50	40	61	47	34	
	27-45	Interior	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	95	100	100	94	84	95	87	78	88	81	73	82	77	65	77	71	61	71	65	57			
		Exposed	100	100	100	100	100	94	100	100	89	100	95	85	99	90	81	94	87	78	90	83	75	82	77	66	76	70	60	68	63	55	63	59	51	59	56	48	55	53	44		
	C	0-7	Interior	98	98	91	98	98	86	98	95	82	98	90	78	98	87	75	96	83	70	92	80	65	85	74	60	80	66	56	75	61	52	68	57	48	63	54	45	60	51	53	
			Exposed	98	86	75	95	82	69	90	78	64	86	75	61	83	70	58	79	66	55	76	63	53	69	58	49	63	53	44	58	50	52	54	47	48	51	42	45	48	51	49	
		7-20	Interior	99	96	88	99	91	83	99	86	78	94	82	75	90	78	69	86	75	64	83	69	61	78	62	56	72	57	52	66	53	49	62	50	45	58	47	52	55	43	49	
			Exposed	89	78	68	85	73	63	82	67	60	79	63	57	76	60	54	72	57	52	68	55	50	62	50	46	57	47	52	53	41	48	50	50	45	47	47	46	43	42	35	
20-27		Interior	99	99	99	99	99	93	99	94	88	99	89	83	99	85	79	98	81	76	94	78	70	88	70	62	82	63	56	78	59	52	73	55	48	68	52	44	63	49	38		
		Exposed	99	85	79	97	80	75	92	76	68	88	72	63	85	66	59	82	63	56	79	60	53	74	55	48	67	51	43	62	48	36	58	43	47	54	51	40	51	48	35		
27-45	Interior	100	100	100	100	100	97	100	100	92	100	98	88	100	93	84	98	89	81	93	86	77	85	80	70	79	74	62	73	66	58	65	61	53	61	58	50	57	54	47			
	Exposed	100	93	84	96	88	80	91	84	76	86	80	71	82	77	66	79	63	62	75	68	59	65	62	54	60	57	49	56	53	46	53	50	39	49	47	49	47	43	45			
D	0-7	Interior	98	97	84	98	92	79	98	88	76	97	84	71	92	80	66	89	77	63	85	74	60	79	66	55	74	61	51	66	56	47	62	53	43	58	49	51	55	47	48		
		Exposed	92	80	66	88	76	62	84	72	59	80	67	56	77	63	53	73	60	51	68	58	48	62	53	43	57	49	51	53	45	47	50	52	43	47	49	48	43	46	39		
	7-20	Interior	99	88	80	96	83	76	90	79	70	87	75	65	83	69	62	80	65	59	78	62	56	72	57	52	65	53	48	61	49	43	57	46	51	53	40	48	50	50	45		
		Exposed	83	69	61	80	64	58	76	61	55	73	58	52	68	55	50	65	52	48	62	50	45	57	46	51	53	48	49	49	43	46	46	38	53	49	38	50	36	39			
	20-27	Interior	99	96	90	99	91	85	99	86	80	99	82	76	94	78	71	90	75	65	87	70	61	82	62	56	77	58	51	71	54	47	66	50	41	62	47	35	58	43	47		
		Exposed	94	78	71	90	74	64	86	67	60	82	63	56	79	60	53	76	57	51	73	55	48	66	51	42	61	47	34	57	42	44	53	50	38	50	47	33	47	43	39		
27-45	Interior	100	100	94	100	100	89	100	95	85	99	90	81	93	86	78	89	82	74	85	79	69	78	73	62	71	65	57	64	60	52	59	56	49	56	53	45	53	50	39			
	Exposed	93	86	77	88	82	73	83	78	67	79	74	63	75	69	59	70	64	56	65	62	54	60	57	49	55	52	44	52	49	37	48	46	48	45	53	42	52	50	36			
10	B	0-7	Interior	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	84	88	88	81	88	87	75	88	81	67	88	76	62	82	70	58	78	64	54	74	61	51	
			Exposed	88	88	88	88	88	83	88	88	79	88	88	76	88	84	71	88	81	66	88	78	63	83	71	58	77	64	54	71	59	50	65	55	47	61	52	42	57	49	51	
		7-20	Interior	88	88	88	88	88	88	88	88	88	88	88	88	88	88	85	88	88	81	88	85	77	88	78	69	84	71	62	80	64	58	75	60	54	70	56	51	65	53	48	
			Exposed	88	88	85	88	88	80	88	83	76	88	79	70	87	75	65	84	70	62	81	65	59	76	60	55	69	55	50	64	52	47	60	48	42	56	45	51	53	52	48	
		20-27	Interior	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	91	96	93	86	96	85	79	95	79	72	90	73	64	85	66	59	81	62	55	77	58	51		
			Exposed	96	96	95	96	96	96	96	91	84	96	86	80	96	82	76	95	96	91	75	66	85	66	59	80	61	54	76	57	50	70	53	46	65	50	40	61	47	34		
	27-45	Interior	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	95	99	99	91	99	94	84	95	87	78	88	81	73	82	77	65	77	71	61	71	65	57		
		Exposed	99	99	99	99	99	94	99	99	89	99	85	85	99	90	81	94	87	78	90	83	75	82	77	66	76	70	60	68	63	55	63	59	51	59	56	48	55	53	44		
	C	0-7	Interior	88	88	88	88	88	86	88	88	82	88	88	78	88	87	75	88	83	70	88	80	65	85	74	60	80	66	56	75	61	52	68	57	48	63	54	45	60	51	53	
			Exposed	88	86	75	95	82	69	90	78	64	86	75	61	83	70	58	79	66	55	76	63	53	69	58	49	63	53	44	58	50	52	54	47	48	51	42	45	48	51	49	
		7-20	Interior	88	88	88	88	83	88	86	78	88	82	75	88	78	69	86	75	64	83	69	61	78	62	56	72	57	52	66	53	49	62	50	45	58	47	52	55	43	49		
			Exposed	88	78	68	85	73	63	82	67	60	79	63	57	76	60	54	72	57	52	68	55	50	62	50	46	57	47	52	53	41	48	50	50	45	47	47	46	43	42	35	
20-27		Interior	96	96	96	96	93	96	94	88	96	89	83	96	85	79	96	81	76	94	78	70	88	70	62	82	63	56	78	59	52	73	55	48	68	52	44	63	49	38			
		Exposed	96	85	79	96	80	75	92	76	68	88	72	63	85	66	59	82	63	56	79	60	53	74	55	48	67	51	43	62	48	36	58	43	47	54	51	40	51	48	35		
27-45	Interior	99	99	99	99	97	99	99	92	99	98	88	99	93	84	98	89	81	93	86	77	85	80	70	79	74	62	73	66	58	65	61	53	61	58	50	57	54	47				
	Exposed	99	93	84	96	88	80	91	84	76	86	80	71	82	77	66	79	63	62																								

* Cells with an asterisk indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

* Cells with an asterisk indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

* Cells with an asterisk indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

[illegible]

* Cells with an asterisk indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																							
				90			95			100			105			110			115			120			130			140			150			160			170			180			
				Roof Wind Zone																																							
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3				
0	B	0-7	Interior	98	98	98	98	98	98	98	98	98	96	98	98	91	98	98	87	98	97	84	98	93	80	98	86	74	93	80	66	87	75	61	82	69	57	77	64	54	73	60	50
			Exposed	98	98	87	98	96	83	98	91	79	98	87	75	96	83	70	92	80	65	88	77	62	82	69	57	77	63	53	70	59	49	64	55	46	60	52	53	57	49	50	
		7-20	Interior	98	98	98	98	98	98	98	98	98	93	98	97	88	98	92	84	98	88	80	97	84	77	89	77	68	83	70	62	79	63	57	75	59	54	69	55	50	64	52	47
			Exposed	98	92	84	98	87	79	94	82	75	90	78	69	86	75	64	83	69	61	80	64	59	75	59	54	68	55	50	63	51	46	59	48	53	55	44	50	52	52	47	
		20-27	Interior	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	94	98	96	90	98	84	78	94	78	71	89	72	63	84	65	58	80	61	54	76	57	51
			Exposed	98	98	94	98	95	88	98	90	84	98	85	79	98	81	76	94	78	70	90	75	65	84	65	58	79	60	54	75	56	49	69	52	46	64	49	39	61	46	49	
	27-45	Interior	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99		
		Exposed	99	99	98	99	99	93	99	99	88	99	94	84	98	90	81	93	86	77	89	82	74	82	76	65	76	69	59	67	63	55	62	59	51	58	55	48	55	52	43		
	C	0-7	Interior	98	98	90	98	98	85	98	94	81	98	90	78	98	86	74	95	82	69	91	79	65	85	73	59	79	65	55	74	61	51	67	57	48	62	53	44	59	50	52	
			Exposed	98	86	74	94	84	61	68	90	78	63	86	74	60	82	69	57	79	65	55	76	62	52	68	57	48	62	53	43	58	49	51	54	46	48	51	53	44	48	50	39
		7-20	Interior	98	95	87	98	90	82	98	85	78	92	81	73	89	77	67	85	73	63	82	68	61	77	61	56	72	57	52	65	53	48	61	49	44	57	46	52	54	54	49	
			Exposed	89	77	67	85	72	63	81	65	59	78	62	56	75	59	54	71	56	51	67	54	49	61	50	45	57	46	51	53	48	49	49	44	46	46	39	54	42	34		
20-27		Interior	98	98	98	98	98	92	98	93	87	98	88	88	82	98	84	78	97	80	75	93	77	69	87	69	61	82	62	56	77	58	51	72	54	48	67	51	43	63	48	37	
		Exposed	98	84	78	96	80	73	91	76	66	88	70	62	84	65	58	81	62	55	78	59	53	73	55	48	66	51	42	61	47	50	57	42	46	54	51	39	51	48	34		
27-45	Interior	99	99	99	99	99	96	99	99	92	99	97	87	99	93	83	97	89	80	92	85	77	88	82	73	84	78	68	78	73	62	71	65	57	64	61	53	60	57	49	57	54	46
	Exposed	99	92	83	95	88	79	90	83	75	85	80	70	81	76	65	78	72	61	74	67	58	65	61	53	60	57	49	56	55	52	43	51	48	45	47	44	52	40	52	49	35	
D	0-7	Interior	98	96	83	98	91	79	98	87	75	96	83	70	92	79	65	88	76	62	84	73	59	78	65	54	72	60	50	65	56	47	61	52	54	57	49	51	54	46	48		
		Exposed	91	79	65	87	76	61	83	70	58	79	66	55	76	62	52	72	59	50	67	57	48	61	52	54	57	48	50	53	44	47	49	52	42	46	49	37	54	46	33		
	7-20	Interior	98	87	79	95	82	75	90	78	69	86	74	64	83	68	61	80	64	58	77	61	56	71	56	51	64	52	47	60	48	42	56	45	51	53	52	48	50	49	44		
		Exposed	83	68	61	79	63	57	76	60	54	72	57	52	67	54	49	64	52	47	61	50	44	56	45	51	52	47	48	48	42	56	44	37	52	39	33	49	35	29			
	20-27	Interior	98	95	89	98	90	84	98	85	79	98	81	75	93	77	69	90	74	64	87	68	61	81	62	55	76	57	51	71	53	47	65	50	40	61	47	49	57	42	46		
		Exposed	93	77	69	89	72	63	85	66	59	82	63	56	79	60	53	76	57	50	72	54	48	65	50	41	60	46	49	56	53	43	53	50	37	49	47	38	47	42	29		
27-45	Interior	99	99	93	99	99	89	99	94	84	97	89	80	92	85	77	88	82	73	84	78	68	77	71	61	69	64	56	63	60	52	59	56	48	55	52	44	52	49	52			
	Exposed	92	85	77	87	81	72	82	77	66	78	73	62	75	67	58	69	64	56	64	61	53	59	56	48	55	52	43	51	48	45	47	44	52	40	52	49	35					
10	B	0-7	Interior	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	
			Exposed	87	87	87	87	87	83	87	87	79	87	87	75	87	83	70	87	80	65	87	77	62	82	69	57	77	63	53	70	59	49	64	55	46	60	52	53	57	49	50	
		7-20	Interior	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87
			Exposed	87	87	84	87	87	79	87	82	75	87	78	69	86	75	64	83	69	61	80	64	59	75	59	54	68	55	50	63	51	46	59	48	53	55	44	50	52	47		
		20-27	Interior	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	
			Exposed	95	95	94	95	95	88	95	90	84	95	85	79	95	81	76	94	78	70	90	75	65	84	65	58	79	60	54	75	56	49	69	52	46	64	49	39	61	46	49	
	27-45	Interior	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	
		Exposed	98	98	98	98	98	93	98	88	98	94	84	98	90	81	93	86	77	89	82	74	82	76	65	76	69	59	67	63	55	62	59	51	58	55	48	55	52	43			
	C	0-7	Interior	87	87	87	87	87	85	87	87	81	87	87	78	87	86	74	87	82	69	87	79	65	85	73	59	79	65	55	74	61	51	67	57	48	62	53	44	59	50	52	
			Exposed	87	86	74	87	81	68	87	78	63	86	74	60	82	69	57	79	65	55	76	62	52	68	57	48	62	53	43	58	49	51	54	46	48	51	53	44	48	50	39	
		7-20	Interior	87	87	87	87	87	82	87	85	78	87	81	73	87	77	67	85	73	63	82	68	61	77	61	56	72	57	52	65	53	48	61	49	44	57	46	52	54	54	49	
			Exposed	87	77	67	85	72	63	81	65	59	78	62	56	75	59	54	71	56	51	67	54	49	61	50	45	57	46	51	53	48	49	49	44	46	46	39	54	42	34		
20-27		Interior	95	95	95	95	95	92	95	93	87	95	88	82	95	84	78	95	80	75	93	77	69	87	69	61	82	62	56	77	58	51	72	54	48	67	51	43	63	48	37		
		Exposed	95	84	78	95	80	73	91	76	66	88	70	62	84	65	58	81	62	55	78	59	53	73	55	48	66	51	42	61	47	50	57	42	46	54	51	39	51	48	34		
27-45	Interior	98	98	98	98	98	96	98	98	92	98	97	87	98	93	83	97	89	80	92	85	77	88	82	73	84	78	68	78	73	62	71	65	57	64	61	53	60	57	49	57	54	46
	Exposed	98	92	83	95	88	79	90	83	75	85	80	70	81	76	65	78	72	61	74	67	58	65	61	53	60																	

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.



ASCE 7-16
Design Standard

II
Risk Category

30 ft
Roof Height

Ss = 1.25
Seismic

23 sq.ft
Module Area

LANDSCAPE
Orientation

CROSS-SLOPE
Rail Direction

SML
Rail Type

UAF
Clamp

L-Foot
Attachment

SPAN TABLES

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
				90			95			100			105			110			115			120			130			140			150			160			170			180																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
60	B	0-7	Interior	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	59	

[illegible]

* Cells with an asterisk indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																																																													
				90						95						100						105						110						115						120						130						140						150						160						170						180					
				Roof Wind Zone																																																																													
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3																																				
0	B	0-7	Interior	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83																																
			Exposed	83	83	73	83	80	68	83	76	63	83	73	59	80	68	56	77	65	53	74	61	50	67	55	44	61	50	37	56	46	32	52	40	28	48	35	25	43	31	33	31	33	31	33	31	33	31	33																															
		7-20	Interior	83	83	83	83	83	81	83	83	77	83	80	74	83	77	69	83	73	65	80	69	61	75	62	55	69	56	50	63	51	44	59	47	38	55	41	34	51	36	30	30	30	30	30	30	30	30	30	30	30																													
			Exposed	83	77	69	82	72	64	79	67	59	76	63	56	72	59	52	68	55	49	65	52	47	59	47	39	54	40	33	50	35	29	46	30	25	41	27	33	36	36	36	36	36	36	36	36	36	36	36	36																														
		20-27	Interior	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84																															
			Exposed	84	82	78	84	79	74	84	75	69	84	71	64	82	66	60	79	62	56	76	59	53	70	53	48	64	48	40	59	42	33	55	36	28	51	32	24	48	29	31	31	31	31	31	31	31	31																																
	27-45	Interior	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84	84																																
		Exposed	84	84	81	84	84	78	84	81	74	84	78	70	80	75	65	77	71	62	74	67	58	66	61	53	60	55	48	55	50	41	50	47	35	46	40	30	40	30	40	30	40	30	40	30	40	30																																	
	C	0-7	Interior	83	83	76	83	82	71	83	79	66	83	75	62	82	71	58	79	67	55	77	64	52	70	58	47	64	53	40	58	48	35	54	43	30	50	38	27	46	33	33	33	33	33	33	33	33	33	33																															
			Exposed	82	71	58	79	66	54	75	62	51	71	58	48	67	55	44	63	52	40	60	50	36	54	44	31	49	37	26	45	32	34	38	28	30	34	25	27	30	33	33	33	33	33	33	33	33																																	
		7-20	Interior	83	79	72	83	75	67	81	70	62	78	66	58	75	62	55	71	58	51	68	55	49	61	49	41	56	43	35	52	37	31	48	32	27	44	29	36	39	25	32	32	32	32	32	32	32	32																																
			Exposed	75	62	54	70	57	51	66	53	47	62	50	42	59	47	38	56	42	35	53	39	32	48	33	27	43	28	35	37	37	30	32	32	27	29	28	29	25	25	25	25	25	25	25	25																																		
20-27		Interior	84	84	80	84	81	76	84	77	72	84	74	67	84	69	63	81	65	59	78	62	56	73	55	50	67	50	44	61	46	36	57	39	30	53	34	26	50	31	22	31	31	31	31	31	31	31																																	
		Exposed	84	69	63	80	64	58	77	60	54	74	56	51	70	53	48	66	50	43	63	47	38	57	40	31	52	34	25	48	29	32	44	26	27	38	34	23	34	30	24	30	24	30	24	30	24																																		
27-45	Interior	84	84	84	84	84	80	84	84	77	84	80	73	83	77	68	80	74	65	77	70	61	70	63	55	63	58	50	57	53	46	52	49	38	48	44	33	43	38	29	31	31	31	31	31	31	31																																		
	Exposed	83	77	68	79	73	64	75	68	59	71	64	56	66	60	53	62	57	50	59	54	47	53	49	39	48	42	32	41	37	27	36	32	23	28	30	28	25	26	26	26	26	26	26	26	26																																			
D	0-7	Interior	83	80	68	83	76	63	83	72	59	80	68	56	77	64	52	74	61	49	70	57	47	63	52	39	57	47	34	52	41	29	48	36	25	44	32	34	39	28	30	30	30	30	30	30	30	30																																	
		Exposed	77	64	52	73	60	49	68	56	45	64	53	40	60	50	36	57	47	33	54	43	30	49	37	26	43	31	33	37	27	29	32	36	25	28	31	22	25	28	26	26	26	26	26	26	26																																		
	7-20	Interior	82	73	64	79	67	59	76	63	55	72	59	52	68	55	49	64	52	46	61	49	41	56	42	35	51	36	40	47	31	26	41	27	34	37	36	30	32	32	32	32	32	32	32	32	32																																		
		Exposed	68	55	49	63	51	45	60	48	39	56	43	35	53	39	32	51	35	29	48	32	27	42	27	34	36	36	29	31	26	27	27	22	36	24	26	32	24	18	24	18	24	18	24	18																																			
	20-27	Interior	84	79	74	84	75	69	84	70	64	81	66	60	78	62	56	76	58	53	72	55	50	66	50	43	60	44	35	56	38	29	52	33	24	48	29	31	44	26	27	27	27	27	27	27	27																																		
		Exposed	78	62	56	75	57	52	71	54	48	67	50	44	63	47	39	60	43	34	57	39	31	52	33	25	48	28	31	42	25	26	37	33	22	32	29	26	29	26	26	26	26	26	26																																				
27-45	Interior	84	84	78	84	81	74	84	78	69	80	75	65	77	71	61	74	67	58	69	63	55	62	57	49	56	52	44	51	47	36	47	41	31	40	36	27	36	32	23	32	32	32	32	32	32																																			
	Exposed	77	70	61	72	66	57	67	61	53	63	58	50	59	54	47	56	51	43	52	49	38	47	42	31	40	36	26	34	31	33	30	27	28	27	36	25	36	32	24	30	24	30	24	30																																				
10	B	0-7	Interior	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74																																	
			Exposed	74	74	73	74	74	68	74	74	63	74	73	59	74	68	56	74	65	53	74	61	50	67	55	44	61	50	37	56	46	32	52	40	28	48	35	25	43	31	33	31	33	31	33	31	33																																	
		7-20	Interior	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74																																
			Exposed	74	74	69	74	72	64	74	67	59	74	63	56	72	59	52	68	55	49	65	52	47	59	47	39	54	40	33	50	35	29	46	30	25	41	27	33	36	36	36	36	36	36	36	36	36																																	
		20-27	Interior	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81	81																																	
			Exposed	81	81	78	81	79	74	81	75	69	81	71	64	81	66	60	79	62	56	76	59	53	70	53	48	64	48	40	59	42	33	55	36	28	51	32	24	48	29	31	31	31	31	31	31	31																																	
	27-45	Interior	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83	83																																	
		Exposed	83	83	81	83	83	78	83	81	74	83	78	70	80	75	65	77	71	62	74	67	58	66	61	53	60	55	48	55	50	41	50	47	35	46	40	30	40	30	40	30	40	30	40	30	40																																		
	C	0-7	Interior	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74																																	
			Exposed	74	71	58	74	66	54	74	62	51	71	58	48	67	55	44	63	52	40	60	50	36	54	44	31	49	37	26	45	32	34	38	28	30	34	25	27	30	33	33	33	33	33	33	33	33																																	
		7-20	Interior	74	74	72	74	74	67	74	70	62	74	66	58	74	62	55	71	58	51	68	55	49	61	49	41	56	43	35	52	37	31	48	32	27	44	29	36	39	25	32	32	32	32	32	32	32	32																																
			Exposed	74	62	54	70	57	51	66	53	47	62	50	42	59																																																																	

Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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			1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
60	B	0-7	Interior	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
			Exposed	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46	46

* Cells with an asterisk indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																						
				90			95			100			105			110			115			120			130			140			150			160			170			180		
				Roof Wind Zone																																						
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3			
0	B	0-7	Interior	98	98	98	98	98	98	98	98	97	98	98	92	98	98	88	98	98	84	98	94	81	98	87	75	94	81	67	88	76	62	82	70	58	78	64	54	74	61	51
			Exposed	98	98	88	98	96	83	98	92	79	98	88	76	97	84	71	93	81	66	89	78	63	83	71	58	77	64	54	71	59	50	65	55	47	61	52	42	57	49	51
		7-20	Interior	99	99	99	99	99	99	99	99	94	99	88	99	89	99	85	99	89	81	99	85	77	90	78	69	84	71	62	80	64	58	75	60	54	70	56	51	65	53	48
			Exposed	99	93	85	99	88	80	96	83	76	90	79	70	87	75	65	84	70	62	81	65	59	76	60	55	69	55	50	64	52	47	60	48	42	56	45	51	53	52	48
		20-27	Interior	99	99	99	99	99	99	99	99	99	99	99	99	99	99	95	99	97	91	99	93	86	99	85	79	95	79	72	90	73	64	85	66	59	81	62	55	77	58	51
			Exposed	99	99	95	99	96	89	99	91	84	99	86	80	99	82	76	95	79	72	91	75	66	85	66	59	80	61	54	76	57	50	70	53	46	65	50	40	61	47	34
	27-45	Interior	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	95	100	94	84	95	87	78	88	81	73	82	77	65	77	71	61	71	65	57			
		Exposed	100	100	100	100	100	100	94	100	100	89	100	95	85	99	90	81	94	87	78	90	83	75	82	77	66	76	70	60	68	63	55	63	59	51	59	56	48	55	53	44
	C	0-7	Interior	98	98	91	98	98	86	98	95	82	98	90	78	98	87	75	96	83	70	92	80	65	85	74	60	80	66	56	75	61	52	68	57	48	63	54	45	60	51	53
			Exposed	98	86	75	95	82	69	90	78	64	86	75	61	83	70	58	79	66	55	76	63	53	69	58	49	63	53	44	58	50	52	54	47	48	51	42	45	48	51	49
		7-20	Interior	99	96	88	99	91	83	99	86	78	94	82	75	90	78	69	86	75	64	83	69	61	78	62	56	72	57	52	66	53	49	62	50	45	58	47	52	55	43	49
			Exposed	89	78	68	85	73	63	82	67	60	79	63	57	76	60	54	72	57	52	68	55	50	62	50	46	57	47	52	53	41	48	50	50	45	47	47	46	43	42	35
20-27		Interior	99	99	99	99	99	93	99	94	88	99	89	83	99	85	79	98	81	76	94	78	70	88	70	62	82	63	56	78	59	52	73	55	48	68	52	44	63	49	38	
		Exposed	99	85	79	97	80	75	92	76	68	88	72	63	85	66	59	82	63	56	79	60	53	74	55	48	67	51	43	62	48	36	58	43	47	54	51	40	51	48	35	
27-45	Interior	100	100	100	100	100	97	100	100	92	100	98	88	100	93	84	98	89	81	93	86	77	85	80	70	79	74	62	73	66	58	65	61	53	61	58	50	57	54	47		
	Exposed	100	93	84	96	88	80	91	84	76	86	80	71	82	77	66	79	63	62	75	68	59	65	62	54	60	57	49	56	53	46	53	50	39	49	47	49	47	43	45		
D	0-7	Interior	98	97	84	98	92	79	98	88	76	97	84	71	92	80	66	89	77	63	85	74	60	79	66	55	74	61	51	66	56	47	62	53	43	58	49	51	55	47	48	
		Exposed	92	80	66	88	76	62	84	72	59	80	67	56	77	63	53	73	60	51	68	58	48	62	53	43	57	49	51	53	45	47	50	52	43	47	49	48	43	46	39	
	7-20	Interior	99	88	80	96	83	76	90	79	70	87	75	65	83	69	62	80	65	59	78	62	56	72	57	52	65	53	48	61	49	43	57	46	51	53	40	48	50	50	45	
		Exposed	83	69	61	80	64	58	76	61	55	73	58	52	68	55	50	65	52	48	62	50	45	57	46	51	53	48	49	49	43	46	46	38	53	49	39	50	36	39		
	20-27	Interior	99	96	90	99	91	85	99	86	80	99	82	76	94	78	71	90	75	65	87	70	61	82	62	56	77	58	51	71	54	47	66	50	41	62	47	35	58	43	47	
		Exposed	94	78	71	90	74	64	86	67	60	82	63	56	79	60	53	76	57	51	73	55	48	66	51	42	61	47	34	57	42	44	53	50	38	50	47	33	47	43	39	
27-45	Interior	100	100	94	100	100	95	100	95	85	99	90	81	93	86	78	89	82	74	85	79	69	78	73	62	71	65	57	64	60	52	59	56	49	56	53	45	53	50	39		
	Exposed	93	86	77	88	82	73	83	78	67	79	74	63	75	69	59	70	62	54	65	62	54	60	57	49	55	52	44	52	49	37	48	46	48	45	53	42	52	50	36		
10	B	0-7	Interior	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	84	88	88	81	88	87	75	88	81	67	88	76	62	82	70	58	78	64	54	74	61	51	
			Exposed	88	88	88	88	88	83	88	88	79	88	88	76	88	84	71	88	81	66	88	78	63	83	71	58	77	64	54	71	59	50	65	55	47	61	52	42	57	49	51
		7-20	Interior	88	88	88	88	88	88	88	88	88	88	88	88	88	88	85	88	88	81	88	85	77	88	78	69	84	71	62	80	64	58	75	60	54	70	56	51	65	53	48
			Exposed	88	88	85	88	88	80	88	83	76	88	79	70	87	75	65	84	70	62	81	65	59	76	60	55	69	55	50	64	52	47	60	48	42	56	45	51	53	52	48
		20-27	Interior	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	91	96	93	86	96	85	79	95	79	72	90	73	64	85	66	59	81	62	55	77	58	51	
			Exposed	96	96	95	96	96	96	96	91	84	96	86	80	96	82	76	95	96	91	75	66	85	66	59	80	61	54	76	57	50	70	53	46	65	50	40	61	47	34	
	27-45	Interior	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	94	84	95	87	78	88	81	73	82	77	65	77	71	61	71	65	57			
		Exposed	99	99	99	99	99	94	99	89	99	95	85	99	90	81	94	87	78	90	83	75	82	77	66	76	70	60	68	63	55	63	59	51	59	56	48	55	53	44		
	C	0-7	Interior	88	88	88	88	88	86	88	88	82	88	88	78	88	87	75	88	83	70	88	80	65	85	74	60	80	66	56	75	61	52	68	57	48	63	54	45	60	51	53
			Exposed	88	86	75	88	82	69	88	78	64	86	75	61	83	70	58	79	66	55	76	63	53	69	58	49	63	53	44	58	50	52	54	47	48	51	42	45	48	51	49
		7-20	Interior	88	88	88	88	88	83	88	86	78	88	82	75	88	78	69	86	75	64	83	69	61	78	62	56	72	57	52	66	53	49	62	50	45	58	47	52	55	43	49
			Exposed	88	78	68	85	73	63	82	67	60	79	63	57	76	60	54	72	57	52	68	55	50	62	50	46	57	47	52	53	41	48	50	50	45	47	47	46	43	42	35
20-27		Interior	96	96	96	96	96	93	96	94	88	96	89	83	96	85	79	96	81	76	94	78	70	88	70	62	82	63	56	78	59	52	73	55	48	68	52	44	63	49	38	
		Exposed	96	85	79	96	80	75	92	76	68	88	72	63	85	66	59	82	63	56	79	60	53	74	55	48	67	51	43	62	48	36	58	43	47	54	51	40	51	48	35	
27-45	Interior	99	99	99	99	99	97	99	99	92	99	98	88	99	93	84	98	89	81	93	86	77	85	80	70	79	74	62	73	66	58	65	61	53	61	58	50	57	54	47		
	Exposed	99	93	84	96	88	80	91	84	76	86																															

[illegible]

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.



L-Font

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

[illegible]

* Cells with an asterisk indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

* Cells with an asterisk indicates that the L-foot must be oriented in the Y- direction as indicated in the image.

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

40 Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

Maximum Allowable Rail Spans for Rooftop Solar Panels Parallel to the Roof Surface (inches)

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	Panel Exposure	Basic Wind Speed (mph)																																										
				90			95			100			105			110			115			120			130			140			150			160			170			180						
				Roof Wind Zone																																										
				1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3							
0	B	0-7	Interior	98	98	98	98	98	98	98	98	98	96	98	98	91	98	98	87	98	97	84	98	93	80	98	86	74	93	80	66	87	75	61	82	69	57	77	64	54	73	60	50			
			Exposed	98	98	87	98	96	83	98	91	79	98	87	75	96	83	70	92	80	65	88	77	62	82	69	57	77	63	53	70	59	49	64	55	46	60	52	53	57	49	50				
		7-20	Interior	98	98	98	98	98	98	98	98	98	93	98	87	88	98	92	84	98	88	80	97	84	77	89	77	68	83	70	62	79	63	57	75	59	54	69	55	50	64	52	47			
			Exposed	98	92	84	98	87	79	94	82	75	90	78	69	86	75	64	83	69	61	80	64	59	75	59	54	68	55	50	63	51	46	59	48	53	55	44	50	52	52	47				
		20-27	Interior	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	94	98	96	90	98	84	78	94	78	71	89	72	63	84	65	58	80	61	54	76	57	51				
			Exposed	98	98	94	98	95	88	98	90	84	98	85	79	98	81	76	94	78	70	90	75	65	84	65	58	79	60	54	75	56	49	69	52	46	64	49	39	61	46	49				
	27-45	Interior	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	99	94	99	99	99	93	83	94	86	78	87	81	71	81	76	64	76	70	60	70	64	56					
		Exposed	99	99	98	99	99	93	99	99	88	99	94	84	98	90	81	93	86	77	89	82	74	82	76	65	76	69	59	67	63	55	62	59	51	58	55	48	55	52	43					
	C	0-7	Interior	98	98	90	98	98	85	98	94	81	98	90	78	98	86	74	95	82	69	91	79	65	85	73	59	79	65	55	74	61	51	67	57	48	62	53	44	59	50	52				
			Exposed	98	86	74	94	81	68	90	78	63	86	74	60	82	69	57	79	65	55	76	62	52	68	57	48	62	53	43	58	49	51	54	46	48	51	53	44	48	50	89				
		7-20	Interior	98	95	87	98	90	82	98	85	78	92	81	73	89	77	67	85	73	63	82	68	61	77	61	56	72	57	52	65	53	48	61	49	44	57	46	52	54	54	49				
			Exposed	89	77	67	85	72	63	81	65	59	78	62	56	75	59	54	71	56	51	67	54	49	61	50	45	57	46	51	53	53	48	49	49	44	46	46	89	54	42	84				
20-27		Interior	98	98	98	98	98	92	98	93	87	98	88	88	82	98	84	78	97	80	75	93	77	69	87	69	61	82	62	56	77	58	51	72	54	48	67	51	43	63	48	37				
		Exposed	98	84	78	96	80	73	91	76	66	88	70	62	84	65	58	81	62	55	78	59	53	73	55	48	66	51	42	61	47	50	57	42	46	54	51	39	51	48	34					
27-45	Interior	99	99	99	99	99	96	99	99	92	99	97	87	99	93	83	97	89	80	92	85	77	88	82	73	84	78	68	77	71	61	69	64	56	63	60	52	59	56	48	55	52	44	52	49	52
	Exposed	99	92	83	95	88	79	90	83	75	85	80	70	81	76	65	78	72	61	74	67	58	65	61	53	60	57	49	56	53	45	52	49	56	53	45	52	49	46	48	54	44				
D	0-7	Interior	98	96	83	98	91	79	98	87	75	96	83	70	92	79	65	88	76	62	84	73	59	78	65	54	72	60	50	65	56	47	61	52	54	57	49	51	54	46	48					
		Exposed	91	79	65	87	76	61	83	70	58	79	66	55	76	62	52	72	59	50	67	57	48	61	52	54	57	48	50	53	44	47	49	52	42	46	49	87	54	46	83					
	7-20	Interior	98	87	79	95	82	75	90	78	69	86	74	64	83	68	61	80	64	58	77	61	56	71	56	51	64	52	47	60	48	42	56	45	51	53	52	48	50	49	44					
		Exposed	83	68	61	79	63	57	76	60	54	72	57	52	67	54	49	64	52	47	61	50	44	56	45	51	52	47	48	48	42	56	44	87	52	89	88	49	85	29						
	20-27	Interior	98	95	89	98	90	84	98	85	79	98	81	75	93	77	69	90	74	64	87	68	61	81	62	55	76	57	51	71	53	47	65	50	40	61	47	49	57	42	46					
		Exposed	93	77	69	89	72	63	85	66	59	82	63	56	79	60	53	76	57	50	72	54	48	65	50	41	60	46	49	56	53	43	53	50	37	49	47	88	47	42	29					
27-45	Interior	99	99	93	99	99	89	99	94	84	97	89	80	92	85	77	88	82	73	84	78	68	77	71	61	69	64	56	63	60	52	59	56	48	55	52	44	52	49	52						
	Exposed	92	85	77	87	81	72	82	77	66	78	73	62	75	67	58	69	64	56	64	61	53	59	56	48	55	52	43	51	48	51	48	45	47	44	52	40	52	49	85						
10	B	0-7	Interior	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87			
			Exposed	87	87	87	87	87	83	87	87	79	87	87	75	87	83	70	87	80	65	87	77	62	82	69	57	77	63	53	70	59	49	64	55	46	60	52	53	57	49	50				
		7-20	Interior	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87			
			Exposed	87	87	84	87	87	79	87	82	75	87	78	69	86	75	64	83	69	61	80	64	59	75	59	54	68	55	50	63	51	46	59	48	53	55	44	50	52	52	47				
		20-27	Interior	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95	95			
			Exposed	95	95	94	95	95	88	95	90	84	95	85	79	95	81	76	94	78	70	90	75	65	84	65	58	79	60	54	75	56	49	69	52	46	64	49	39	61	46	49				
	27-45	Interior	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98				
		Exposed	98	98	98	98	98	93	98	88	98	94	84	98	90	81	93	86	77	89	82	74	82	76	65	76	69	59	67	63	55	62	59	51	58	55	48	55	52	43						
	C	0-7	Interior	87	87	87	87	87	85	87	87	81	87	87	78	87	86	74	87	82	69	87	79	65	85	73	59	79	65	55	74	61	51	67	57	48	62	53	44	59	50	52				
			Exposed	87	86	74	87	81	68	87	78	63	86	74	60	82	69	57	79	65	55	76	62	52	68	57	48	62	53	43	58	49	51	54	46	48	51	53	44	48	50	89				
		7-20	Interior	87	87	87	87	87	82	87	85	78	87	81	73	87	77	67	85	73	63	82	68	61	77	61	56	72	57	52	65	53	48	61	49	44	57	46	52	54	54	49				
			Exposed	87	77	67	85	72	63	81	65	59	78	62	56	75	59	54	71	56	51	67	54	49	61	50	45	57	46	51	53	53	48	49	49	44	46	46	89	54	42	84				
20-27		Interior	95	95	95	95	95	92	95	93	87	95	88	82	95	84	78	95	80	75	93	77	69	87	69	61	82	62	56	77	58	51	72	54	48	67	51	43	63	48	37					
		Exposed	95	84	78	95	80	73	91	76	66	88	70	62	84	65	58	81	62	55	78	59	53	73	55	48	66	51	42	61	47	50	57	42	46	54	51	39	51	48	34					
27-45	Interior	98	98	98	98	98	96	98	98	92	98	97	87	98	93	83	97	89	80	92	85	77	88	82	73	84	78	68	77	71	61	69	64	56	63	60	52	59	56	48	55	52	49	52		
	Exposed	98	92	83	95	88	79	90	83	75	85	80	70	81	76	65	78																													

[illegible]

10 Highlighted cell indicate 3-rail system span. Contact Unirac Engineering Services for support.

Highlighted cell with strikethrough indicate 3-rail system span and module clamp allowable capacity exceeds with 3-rails. 4-Rail system required. Contact Unirac Engineering Services for support.

* Cells with an asterisk indicates that the L-foot must be oriented in the Y- direction as indicated in the image.