

**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**

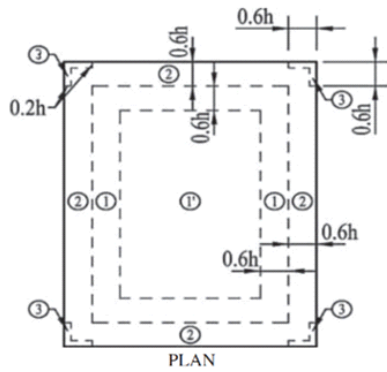
- 0.2-s Spectral Response Acceleration,  $S_S \leq 3$
- $S_S = 1.25$  and 3 per criteria shown on individual span tables sheets.
- $S_1 = 0.5$
- Seismic site class D

**Array Assumptions**

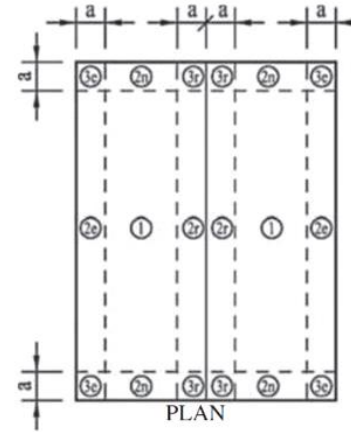
- Module orientation and Rail direction per criteria shown on individual span tables sheets.
- Maximum module dimensions of 40.1" x 67" (~19 sq.ft, 47.65 lbs) and 41" x 80" (~23 sq.ft, 58.6 lbs) per criteria shown on individual span tables sheets.
- Minimum distance between modules and roof edge is at 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  $\theta \leq 7^\circ$



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

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

- **Roof Tilt  $0^\circ$ - $7^\circ$** 
  - Roof Zone 1 = 1
  - Roof Zone 2 = 2
  - Roof Zone 3 = 3
- **Roof Tilt  $7^\circ$ - $27^\circ$** 
  - Roof Zone 1 = 1, 2e
  - Roof Zone 2 = 2n, 2r, 3e
  - Roof Zone 3 = 3r
- **Roof Tilt  $27^\circ$ - $45^\circ$** 
  - Roof Zone 1 = 1, 2e, 2r
  - Roof Zone 2 = 2n, 3r
  - Roof Zone 3 = 3e

Rails can be installed in these possible orientations.

*CT5	
Y+	Alternate orientation not allowed
Y-	



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

Solarhooks CT5  
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)																																							
				Roof Wind Zone																																							
				90			95			100			105			110			115			120			130			140			150			160			170			180			
				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	81	83	83	78	83	83	75	83	82	70	83	79	66	83	76	61	81	69	47	76	62	39	70	50	33	64	41	29	54	36	26	45	32	23	
			Exposed	83	82	70	83	78	65	83	75	57	81	70	48	78	66	42	75	60	38	72	53	35	65	42	29	52	36	25	42	31	33	37	27	29	33	24	25	29	32	23	
		7-20	Interior	83	83	83	83	83	79	83	82	75	83	78	71	83	75	66	81	70	60	78	66	51	73	53	40	66	41	34	58	36	29	49	31	26	42	27	23	37	24	30	
			Exposed	83	75	66	80	69	57	77	64	47	74	55	41	70	46	37	66	41	34	62	37	31	50	31	26	41	27	34	36	23	29	31	31	25	27	22	24	24	20		
		20-27	Interior	84	84	84	84	84	84	84	84	84	84	83	84	84	79	84	81	76	84	72	84	75	68	82	67	55	77	56	42	73	44	34	67	38	29	61	33	25	52	29	21
			Exposed	84	80	76	84	77	71	84	73	66	83	68	58	80	64	48	77	54	41	74	47	36	67	38	29	60	33	24	50	28	20	42	25	25	37	33	22	33	29	20	
	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	
		Exposed	84	84	79	84	83	76	84	80	72	82	76	67	78	73	62	75	69	53	72	65	46	64	51	37	48	41	31	39	35	26	34	31	22	30	27	29	27	24	25		
	C	0-7	Interior	83	83	73	83	80	68	83	77	64	83	73	54	81	69	46	78	65	41	75	59	37	67	46	32	58	38	27	47	33	23	40	29	31	35	25	27	31	23	24	
			Exposed	80	69	46	77	64	40	73	55	36	68	47	32	64	42	29	57	38	27	50	35	24	40	29	31	34	25	27	30	33	23	26	29	20	23	25	18	31	22	16	
		7-20	Interior	83	77	69	82	73	64	79	68	54	76	63	45	73	53	40	69	45	36	65	40	33	54	34	28	45	29	24	38	25	31	33	27	29	29	24	26	26	21		
			Exposed	72	52	39	68	43	35	64	38	32	56	35	29	50	31	26	44	29	24	40	26	33	34	33	28	45	29	24	25	25	21	33	22	18	29	19	16	26	17	14	
20-27		Interior	84	83	78	84	79	75	84	76	69	84	71	64	82	67	55	79	62	46	77	53	40	70	41	32	64	35	26	54	30	22	46	26	28	40	23	24	35	31	21		
		Exposed	82	67	55	78	59	44	75	49	38	71	42	33	67	38	29	64	34	26	57	32	23	46	27	28	39	23	24	34	30	20	29	26	18	26	23	18	23	20	14		
27-45	Interior	84	84	82	84	84	78	84	82	75	84	79	70	81	76	66	78	72	60	75	68	52	67	57	40	55	45	33	42	38	28	37	33	24	33	29	21	29	26	27			
	Exposed	81	75	66	77	71	58	73	66	48	68	59	41	64	51	37	54	44	33	46	40	29	37	33	24	32	29	20	28	25	26	24	33	22	32	29	19	29	26	16			
D	0-7	Interior	83	78	65	83	75	57	81	70	48	78	65	42	75	59	38	71	52	34	67	45	31	57	37	26	45	32	23	38	28	30	33	24	26	29	32	23	26	29	20		
		Exposed	75	59	37	70	50	33	65	43	30	59	38	27	51	35	25	44	32	22	40	29	31	34	24	26	29	32	22	25	27	19	33	24	17	29	21	16	26	19	13		
	7-20	Interior	80	70	58	77	65	47	74	55	41	69	46	37	65	40	33	60	37	30	54	33	28	44	28	23	37	24	30	32	32	26	28	28	23	25	24	20	33	22	18		
		Exposed	65	40	33	59	36	30	51	32	26	45	29	24	40	26	33	37	24	30	33	27	28	28	23	24	24	20	32	21	17	28	18	16	24	16	13	22	14	12			
	20-27	Interior	84	77	71	84	73	66	83	68	58	80	63	47	77	53	40	74	45	36	70	40	32	64	34	26	52	29	21	44	25	26	38	33	23	33	30	20	30	26	18		
		Exposed	77	53	40	73	44	35	68	39	30	64	35	26	58	32	23	51	29	21	46	26	28	38	22	23	33	29	20	28	25	17	25	22	16	33	19	18	29	17	12		
27-45	Interior	84	83	76	84	80	72	82	76	67	78	72	62	75	68	52	71	64	45	67	56	40	53	43	32	41	37	27	35	32	23	31	28	29	27	25	24	33	22				
	Exposed	75	68	52	70	63	43	65	33	58	45	33	46	40	30	46	34	27	37	33	24	31	28	30	27	24	25	23	32	21	31	28	18	27	24	15	24	22	19				
10	B	0-7	Interior	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62		
			Exposed	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62
		7-20	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63
			Exposed	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63
		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
			Exposed	81	80	76	81	77	71	81	73	66	81	68	58	80	64	48	77	54	41	74	47	36	67	38	29	60	33	24	50	28	20	42	25	25	37	33	22	33	29	21	
	27-45	Interior	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	
		Exposed	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	
	C	0-7	Interior	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62		
			Exposed	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	62	
		7-20	Interior	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	
			Exposed	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63	63
20-27		Interior	81	81	78	81	79	75	81	76	69	81	71	64	81	67	55	79	62	46	77	53	40	70	41	32	64	35	26	54	30	22	46	26	28	40	23	24	35	31	21		
		Exposed	81	67	55	78	59	44	75	49	38	71	42	33	67	38	29	64	34	26	57	32	23	46	27	28	39	23	24	34	30	20	29	26	18	26	23	18	23	20	14		
27-45	Interior	75																																									









ASCE 7-16  
Design Standard

II  
Risk Category

30 ft  
Roof Height

Ss = 1.25  
Seismic

19 sq.ft  
Module Area

LANDSCAPE  
Orientation

CROSS-SLOPE  
Rail Direction

SML  
Rail Type

PRO SERIES  
Clamp

Solarhooks CT5  
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				
				Roof Wind Zone																																								
0	B	0-7	Interior	98	98	98	98	98	98	98	98	94	98	98	90	98	98	86	98	95	82	98	91	79	98	85	72	91	79	64	85	74	56	80	67	49	76	61	43	70	54	38		
			Exposed	98	98	86	98	94	81	98	89	77	98	85	73	95	82	68	91	78	64	87	75	59	81	67	50	75	60	42	68	52	55	62	45	49	55	40	43	49	54	38		
		7-20	Interior	99	99	99	99	99	99	99	99	99	91	99	95	86	99	90	82	99	86	78	95	82	75	88	76	65	82	67	57	78	60	50	73	52	43	67	46	38	63	41	51	
			Exposed	99	90	82	99	85	78	92	81	73	88	77	66	85	72	62	82	66	57	79	63	52	73	53	44	67	45	38	60	39	49	52	52	43	46	46	38	41	41	34		
		20-27	Interior	99	99	99	99	99	99	99	99	99	99	99	99	99	99	92	99	94	88	99	90	84	99	83	77	93	77	68	87	69	58	83	63	49	79	56	41	75	50	36		
			Exposed	99	99	92	99	93	87	99	88	82	99	84	78	97	80	74	92	76	67	89	72	62	83	64	49	78	55	40	73	47	34	67	41	44	62	55	38	55	49	34		
	27-45	Interior	100	100	100	100	100	100	100	100	100	100	100	100	100	100	97	100	100	99	100	99	91	82	92	85	76	85	79	69	80	74	62	75	67	53	67	53	67	62	46			
		Exposed	100	100	97	100	100	92	100	97	87	100	92	83	96	88	79	91	84	76	87	81	71	80	75	63	74	66	52	65	59	43	58	52	37	51	46	50	45	41	42			
	C	0-7	Interior	98	98	88	98	97	84	98	92	80	98	88	76	98	84	71	94	81	66	90	78	63	83	71	53	78	64	46	72	56	39	65	49	52	59	43	46	52	38	41		
			Exposed	98	84	71	93	80	65	88	76	60	84	72	54	80	67	49	77	63	45	74	58	41	65	49	53	58	42	45	50	55	39	44	48	34	39	42	36	52	38	27		
		7-20	Interior	99	94	85	99	88	80	97	84	76	91	79	71	87	76	65	84	71	61	81	65	56	76	57	47	70	49	40	64	42	53	56	56	46	50	49	41	44	44	36		
			Exposed	87	76	65	83	69	59	80	64	53	77	58	48	73	53	44	69	48	40	65	44	55	57	37	47	49	48	40	42	42	35	56	37	36	49	32	27	44	29	24		
20-27		Interior	99	99	96	99	97	90	99	91	85	99	87	81	99	83	77	96	79	72	92	76	66	86	66	54	80	59	44	76	51	37	70	45	31	65	39	41	59	53	36			
		Exposed	99	82	77	95	78	70	90	74	64	86	68	56	83	64	49	80	58	44	72	53	39	71	45	32	64	39	40	57	50	35	50	44	30	44	39	27	39	35	24			
27-45	Interior	100	100	100	100	100	95	100	100	90	100	96	86	100	91	82	95	87	78	90	84	75	83	77	66	77	70	56	69	64	47	62	56	40	55	49	35	49	44	47				
	Exposed	100	91	82	94	86	77	88	82	73	84	78	67	80	75	62	76	69	55	71	65	50	63	56	41	54	48	34	47	42	44	41	55	37	54	49	32	48	43	28				
D	0-7	Interior	98	94	81	98	90	77	98	85	73	94	81	67	90	78	63	86	75	58	83	70	53	77	63	45	70	54	38	64	47	50	56	41	44	49	54	39	44	48	34			
		Exposed	90	78	63	85	74	56	81	68	51	78	64	46	74	59	41	69	53	38	65	49	52	57	41	44	48	53	38	42	46	33	55	40	29	49	36	25	43	32	23			
	7-20	Interior	99	85	78	92	81	73	88	77	66	85	71	62	81	66	56	78	62	51	76	56	47	69	48	39	62	41	51	54	53	44	47	47	39	42	41	34	56	37	30			
		Exposed	81	65	56	78	60	50	74	54	45	70	49	40	66	44	55	62	40	66	44	55	62	37	46	48	47	39	41	41	34	53	36	29	47	31	26	41	27	22	37	24	20	
	20-27	Interior	99	93	87	99	88	82	99	84	78	96	80	73	92	76	67	88	71	60	85	66	53	80	58	43	75	49	35	69	43	46	63	37	39	56	50	34	50	44	30			
		Exposed	92	76	66	88	70	58	84	64	51	80	59	44	77	53	39	75	49	35	70	45	31	64	38	39	55	49	34	48	42	29	42	37	26	55	33	22	49	29	20			
27-45	Interior	100	100	92	100	97	87	100	92	83	96	88	79	91	84	75	86	80	70	83	77	66	76	69	55	67	62	45	60	54	38	52	47	33	46	41	43	41	55	37				
	Exposed	91	84	75	85	79	69	81	76	64	77	70	56	72	65	50	66	61	45	62	56	40	53	47	33	45	41	42	39	53	35	52	46	30	46	41	26	41	36	23				
10	B	0-7	Interior	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88		
			Exposed	88	88	86	88	88	81	88	88	77	88	85	73	88	82	68	88	78	64	87	75	59	81	67	50	75	60	42	68	52	55	62	45	49	55	40	43	49	54	38		
		7-20	Interior	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88
			Exposed	88	88	82	88	85	78	88	81	73	88	77	66	85	72	62	82	66	57	79	63	52	73	53	44	67	45	38	60	39	49	52	52	43	46	46	38	41	41	34		
		20-27	Interior	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	
			Exposed	96	96	92	96	93	87	96	88	82	96	84	78	96	80	74	92	76	67	89	72	62	83	64	49	78	55	40	73	47	34	67	41	44	62	55	38	55	49	34		
	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	98	
		Exposed	98	98	97	98	98	92	98	97	87	98	92	83	96	88	79	91	84	76	87	81	71	80	75	63	74	66	52	65	59	43	58	52	37	51	46	50	45	41	42			
	C	0-7	Interior	88	88	88	88	88	84	88	88	80	88	88	76	88	84	71	88	81	66	88	78	63	83	71	53	78	64	46	72	56	39	65	49	52	59	43	46	52	38	41		
			Exposed	88	84	71	88	80	65	88	76	60	84	72	54	80	67	49	77	63	45	74	58	41	65	49	53	58	42	45	50	55	39	44	48	34	39	42	36	52	38	27		
		7-20	Interior	88	88	85	88	88	80	88	84	76	88	79	71	87	76	65	84	71	61	81	65	56	76	57	47	70	49	40	64	42	53	56	56	46	50	49	41	44	44	36		
			Exposed	87	76	65	83	69	59	80	64	53	77	58	48	73	53	44	69	48	40	65	44	55	57	37	47	49	48	40	42	42	35	56	37	36	49	32	27	44	29	24		
20-27		Interior	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96		
		Exposed	96	82	77	95	78	70	90	74	64	86	68	56	83	64	49	80	58	44	72	53	39	71	45	32	64	39	40	57	50	35	50	44	30	44	39	27	39	35	24			
27-45	Interior	98	98	98	98	98	95	98	98	90	98	96	86	98	91	82	95	87	78	90	84	75	83	77	66	77	70	56	69	64														









ASCE 7-16  
Design Standard

II  
Risk Category

30 ft  
Roof Height

Ss = 1.25  
Seismic

23 sq.ft  
Module Area

PORTRAIT  
Orientation

CROSS-SLOPE  
Rail Direction

SML  
Rail Type

PRO SERIES  
Clamp

Solarhooks CT5  
Attachment

SPAN TABLES

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

Table with columns for Ground Snow Load (psf), Wind Exposure Category, Roof Tilt Angle (deg), Panel Exposure, Basic Wind Speed (mph) (90-180), and Roof Wind Zone (1-3). Rows are categorized by Ground Snow Load (0, 10, 20) and Wind Exposure Category (B, C, D). Each cell contains a numerical value representing the maximum allowable rail span in inches.

\* 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.  
19 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.











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

PRO SERIES  
Clamp

Solarhooks CT5  
Attachment

SPAN TABLES

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

Table with columns for Ground Snow Load (psf), Wind Exposure Category, Roof Tilt Angle (deg), Panel Exposure, Basic Wind Speed (mph), and Roof Wind Zone (1-3).

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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

PRO SERIES  
Clamp

Solarhooks CT5  
Attachment

SPAN TABLES

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

Table with columns for Ground Snow Load (psf), Wind Exposure Category, Roof Tilt Angle (deg), Panel Exposure, Basic Wind Speed (mph), and Roof Wind Zone (90 to 180 mph). Rows are categorized by roof height (60, 70, 80 ft) and wind exposure (B, C, D). Each cell contains a numerical value representing the allowable rail span, with some cells highlighted in yellow or having a strikethrough.

\* 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.
19 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.





ASCE 7-16  
Design Standard

II  
Risk Category

30 ft  
Roof Height

Ss = 3.00  
Seismic

19 sq.ft  
Module Area

PORTRAIT  
Orientation

CROSS-SLOPE  
Rail Direction

SML  
Rail Type

PRO SERIES  
Clamp

Solarhooks CT5  
Attachment

SPAN TABLES

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

Table with columns for Ground Snow Load (psf), Wind Exposure Category, Roof Tilt Angle (deg), Panel Exposure, Basic Wind Speed (mph), Roof Wind Zone, and Rail Spans (inches). Rows are categorized by Ground Snow Load (0, 10, 20) and Wind Exposure Category (B, C, D). Each cell contains a numerical value representing the allowable rail span in inches.

\* 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.  
19 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			
0	B	0-7	Interior	98	98	98	98	98	98	98	98	94	98	98	90	98	98	86	98	95	82	98	91	79	98	85	72	91	79	64	85	74	56	80	67	49	76	61	43	70	54	38			
			Exposed	98	98	86	98	94	81	98	89	77	98	85	73	95	82	68	91	78	64	87	75	59	81	67	50	75	60	42	68	52	55	62	45	49	55	40	43	49	54	38			
		7-20	Interior	99	99	99	99	99	99	99	99	99	99	91	99	95	86	99	90	82	99	86	78	95	88	76	65	82	67	57	78	60	50	73	52	43	67	46	38	63	41	51			
			Exposed	99	90	82	99	85	78	92	81	73	88	77	66	85	72	62	82	66	57	79	63	52	73	53	44	67	45	38	60	39	49	52	52	43	46	46	38	41	41	34			
		20-27	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	99		
			Exposed	99	99	92	99	93	87	99	88	82	99	84	78	97	80	74	92	76	67	89	72	62	83	64	49	78	55	40	73	47	34	67	41	44	62	55	38	55	49	34			
	27-45	Interior	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100			
		Exposed	100	100	97	100	100	92	100	97	87	100	92	83	96	88	79	91	84	76	87	81	71	80	75	63	74	66	52	65	59	43	58	52	37	51	46	50	45	41	42				
	10	B	0-7	Interior	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88			
				Exposed	88	88	86	88	88	81	88	88	77	88	85	73	88	82	68	88	78	64	87	75	59	81	67	50	75	60	42	68	52	55	62	45	49	55	40	43	49	54	38		
			7-20	Interior	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	88	
				Exposed	88	88	82	88	85	78	88	81	73	88	77	66	85	72	62	82	66	57	79	63	52	73	53	44	67	45	38	60	39	49	52	52	43	46	46	38	41	41	34		
			20-27	Interior	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96	96		
				Exposed	96	96	92	96	93	87	96	88	82	96	84	78	96	80	74	92	76	67	89	72	62	83	64	49	78	55	40	73	47	34	67	41	44	62	55	38	55	49	34		
		27-45	Interior	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90	90			
			Exposed	90	90	82	90	90	86	77	88	82	73	84	78	87	80	75	82	76	69	55	71	65	50	63	56	41	54	48	34	47	42	44	41	55	37	51	46	50	45	41			
		20	B	0-7	Interior	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72		
					Exposed	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72
				7-20	Interior	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73
					Exposed	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73	73
				20-27	Interior	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75
					Exposed	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75	75
			27-45	Interior	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	
				Exposed	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	72	

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 19 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.















ASCE 7-16  
Design Standard

II  
Risk Category

30 ft  
Roof Height

Ss = 3.00  
Seismic

23 sq.ft  
Module Area

PORTRAIT  
Orientation

CROSS-SLOPE  
Rail Direction

SML  
Rail Type

PRO SERIES  
Clamp

Solarhooks CT5  
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			
				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	
90	B	0-7	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13			
			Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13		
		7-20	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	
			Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	
		20-27	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	
			Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	
	27-45	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19		
		Exposed	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19		
	100	B	0-7	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12		
				Exposed	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
			7-20	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
				Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22
20-27			Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	
			Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
27-45		Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17		
		Exposed	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17		
C		0-7	Interior	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12			
			Exposed	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12		
		7-20	Interior	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	
			Exposed	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	22	
	20-27	Interior	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18		
		Exposed	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18		
27-45	Interior	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17			
	Exposed	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17	17			
D	0-7	Interior	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13				
		Exposed	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13			
	7-20	Interior	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24			
		Exposed	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24		
	20-27	Interior	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20			
		Exposed	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20		
27-45	Interior	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19				
	Exposed	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19			

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 19 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.





ASCE 7-16  
Design Standard

II  
Risk Category

30 ft  
Roof Height

Ss = 3.00  
Seismic

23 sq.ft  
Module Area

LANDSCAPE  
Orientation

CROSS-SLOPE  
Rail Direction

SML  
Rail Type

PRO SERIES  
Clamp

Solarhooks CT5  
Attachment

SPAN TABLES

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

Table with columns for Ground Snow Load, Wind Exposure Category, Roof Tilt Angle, Basic Wind Speed (mph), Roof Wind Zone, and various span values (1-3) for different configurations (B, C, D).

\* 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.
19 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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Design Standard

II  
Risk Category

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LANDSCAPE  
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CROSS-SLOPE  
Rail Direction

SML  
Rail Type

PRO SERIES  
Clamp

Solarhooks CT5  
Attachment

SPAN TABLES

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

Table with columns for Ground Snow Load, Wind Exposure Category, Roof Tilt Angle, Panel Exposure, Basic Wind Speed (mph), Roof Wind Zone, and various span values (1-3) for different roof heights and wind speeds.

\* 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.
19 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.













ASCE 7-16

Design Standard

II

Risk Category

30 ft

Roof Height

Ss = 1.25

Seismic

19 sq.ft

Module Area

LANDSCAPE

Orientation

CROSS-SLOPE

Rail Direction

SML

Rail Type

UAF

Clamp

Solarhooks CT5

Attachment

SPAN TABLES

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

Table with columns for Ground Snow Load, Wind Exposure Category, Roof Tilt Angle, Panel Exposure, Basic Wind Speed (90-180 mph), and Roof Wind Zone (1-3 rails for each speed).

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.
19 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.





ASCE 7-16  
Design Standard

II  
Risk Category

30 ft  
Roof Height

Ss = 1.25  
Seismic

19 sq.ft  
Module Area

LANDSCAPE  
Orientation

CROSS-SLOPE  
Rail Direction

SML  
Rail Type

UAF  
Clamp

Solarhooks CT5  
Attachment

SPAN TABLES

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

Table with columns: 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, and rows for different roof pitches and exposure categories (B, C, D) with Interior/Exposed conditions.

\* 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.
19 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.

























ASCE 7-16  
Design Standard

II  
Risk Category

30 ft  
Roof Height

Ss = 3.00  
Seismic

19 sq.ft  
Module Area

PORTRAIT  
Orientation

CROSS-SLOPE  
Rail Direction

SML  
Rail Type

UAF  
Clamp

Solarhooks CT5  
Attachment

SPAN TABLES

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

Table with columns for Ground Snow Load (psf), Wind Exposure Category, Roof Tilt Angle (deg), Panel Exposure, Basic Wind Speed (mph) from 90 to 180, and Roof Wind Zone (1-3). Rows are categorized by 60 and 70 degrees of tilt, and further by 0-7, 7-20, 20-27, and 27-45 degrees of exposure. Values range from 15 to 28 inches.

\* Cells with an asterisks 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.
19 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.









ASCE 7-16  
Design Standard

II  
Risk Category

30 ft  
Roof Height

Ss = 3.00  
Seismic

19 sq.ft  
Module Area

LANDSCAPE  
Orientation

CROSS-SLOPE  
Rail Direction

SML  
Rail Type

UAF  
Clamp

Solarhooks CT5  
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		
				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			
60	B	0-7	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	36					
			Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	37	40	38	35			
		7-20	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	38	32			
			Exposed	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	38	31				
		20-27	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	32				
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	32				
	27-45	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37					
		Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37					
	70	B	0-7	Interior	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35					
				Exposed	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35				
			7-20	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38			
				Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38			
20-27			Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34				
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34				
27-45		Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32					
		Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32					
80		B	0-7	Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30					
				Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30				
			7-20	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33			
				Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33			
	20-27		Interior	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30				
			Exposed	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30				
	27-45	Interior	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29					
		Exposed	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29					

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ASCE 7-16

Design Standard

II

Risk Category

30 ft

Roof Height

Ss = 3.00

Seismic

23 sq.ft

Module Area

LANDSCAPE

Orientation

CROSS-SLOPE

Rail Direction

SML

Rail Type

UAF

Clamp

Solarhooks CT5

Attachment

SPAN TABLES

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

Table with columns: Wind Exposure Category, Roof Tilt Angle (deg), Panel Exposure, Basic Wind Speed (mph) (90-180), Roof Wind Zone, and span values (1-3) for various roof heights (30, 40, 50).

\* Cells with an asterisks 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.
19 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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II  
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30 ft  
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23 sq.ft  
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Rail Direction

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# 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													
				Roof Wind Zone																																																	
1			2			3			1			2			3			1			2			3			1			2			3			1			2			3			1			2			3		
60	B	0-7	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39												
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39											
		7-20	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43									
			Exposed	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43									
		20-27	Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38								
			Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38								
	27-45	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36									
		Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36								
	C	0-7	Interior	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39									
			Exposed	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39	39								
		7-20	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43							
			Exposed	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43						
20-27		Interior	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38							
		Exposed	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38						
27-45	Interior	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36							
	Exposed	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36							
D	0-7	Interior	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43								
		Exposed	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43						
	7-20	Interior	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47						
		Exposed	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47	47					
	20-27	Interior	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42					
		Exposed	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42	42					
27-45	Interior	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40						
	Exposed	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40						
70	B	0-7	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34						
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34				
		7-20	Interior	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37			
			Exposed	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37			
		20-27	Interior	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33			
			Exposed	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33			
	27-45	Interior	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32			
		Exposed	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32			
	C	0-7	Interior	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34				
			Exposed	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34		
		7-20	Interior	37	37	37	37																																														

