

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 7-10 Sec 30.4.2
- Exposure Category B, C, or D
- Basic Wind Speed = 90 – 180 mph
- Level terrain. Topographic factor, $k_{zt} = 1.0$

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

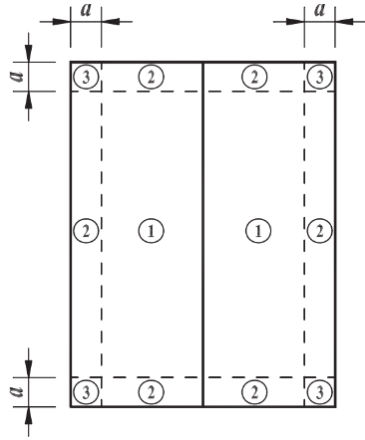
- 0.2-s Spectral Response Acceleration
- $S_s = 1.25$ and 3 per criteria shown on individual span tables sheets.
- $S_1 = 0.5$
- Seismic site class D

Array Assumptions

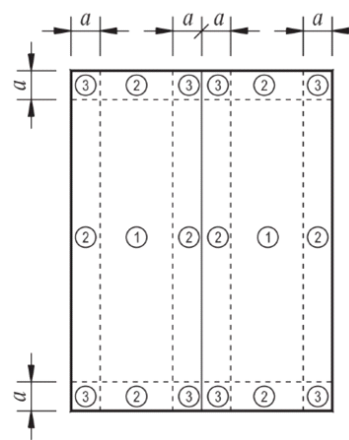
- Module orientation and Rail direction per criteria shown on individual span tables sheets.
- Maximum module dimensions of 40.1" x 67" (~19 sq.ft, 47.65 lbs) and 41" x 80" (~23 sq.ft, 58.6 lbs) per criteria shown on individual span tables sheets.
- Minimum distance between modules and roof edge is at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

Span Tables

Zone should be considered as per ASCE 7-10, Fig. 30.4-2A to 30.4-2D

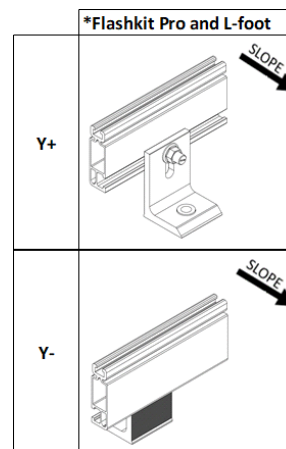


Gable Roofs $\theta \leq 7^\circ$



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

Rails can be installed in these possible orientations.





30 ft
Roof Height

18.66 sq.ft
Module Area

CROSS-SLOPE
Rail Direction

PRO SERIES
Clamp

Flashkit Pro

Attachment

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)	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	1	2	3						
0	B	0-7	127	127	127	127	127	123	127	127	117	127	127	110	127	122	101	127	118	95	127	113	90	126	101	81	119	93	66	112	85	54	104	78	45	98	67	39	92	57	52									
		7-27	127	127	118	127	127	113	127	127	107	127	126	100	127	121	95	127	117	91	127	113	86	127	102	78	124	93	65	117	86	56	111	80	48	103	69	42	97	60	37									
		27-45	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	129	127	127	127	127	124	124	124	118	118	118	113	110	106	102	102	100	95	95	89	89	89	90	83	83								
	C	0-7	127	126	107	127	120	98	127	115	91	127	108	86	126	101	81	121	96	72	117	91	63	109	83	50	100	71	41	93	59	35	87	50	47	81	43	41	72	38	37									
		7-27	127	125	99	127	119	93	127	114	88	127	108	83	127	102	77	126	96	70	122	92	63	115	84	52	106	74	44	98	62	38	92	53	50	86	46	44	81	41	39									
		27-45	129	129	129	128	128	128	125	125	125	121	121	121	118	117	117	115	114	114	112	108	108	104	99	99	97	91	91	91	84	84	85	77	77	81	67	67	73	59	59									
	D	0-7	127	117	94	127	110	88	127	103	82	122	97	73	118	91	64	114	87	56	109	82	49	99	69	40	91	57	52	85	48	45	78	41	39	68	36	35	60	49	91									
		7-27	127	116	90	127	110	84	127	103	80	127	97	71	122	92	64	118	88	57	115	83	52	105	72	43	97	60	37	90	51	48	84	44	42	77	38	37	67	51	93									
		27-45	126	126	126	122	122	122	119	118	118	115	114	114	112	109	109	107	103	103	98	98	96	90	89	83	83	84	74	74	79	64	64	69	56	56	61	49	49											
10	B	0-7	113	113	113	113	113	113	113	113	113	113	110	113	113	101	113	113	95	113	113	90	113	101	81	113	93	66	112	85	54	104	78	45	98	67	39	92	57	52										
		7-27	114	114	114	114	114	113	114	114	107	114	114	100	114	114	95	114	114	91	114	113	86	114	102	78	114	93	65	114	86	56	111	80	48	103	69	42	97	60	37									
		27-45	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	126	126	126	126	124	124	124	118	118	118	113	110	106	102	102	100	95	95	89	89	89	90	83	83									
	C	0-7	113	113	107	113	113	98	113	113	91	113	108	86	113	101	81	113	96	72	113	91	63	109	83	50	100	71	41	93	59	35	87	50	47	81	43	41	72	38	37									
		7-27	114	114	99	114	114	93	114	114	88	114	108	83	114	102	77	114	96	70	114	92	63	114	84	52	106	74	44	98	62	38	92	53	50	86	46	44	81	41	39									
		27-45	127	127	127	127	127	127	124	124	124	121	121	121	118	117	117	115	114	114	112	108	108	104	99	99	97	91	91	91	84	84	85	77	77	81	67	67	73	59	59									
	D	0-7	113	113	94	113	110	88	113	103	82	113	97	73	113	91	64	113	87	56	109	82	49	99	69	40	91	57	51	91	85	48	45	78	41	39	68	36	35	60	49	91								
		7-27	114	114	90	114	110	84	114	103	80	114	97	71	114	92	64	114	88	57	114	83	52	105	72	43	97	60	37	90	51	48	84	44	42	77	38	37	67	51	93									
		27-45	126	126	126	122	122	122	119	118	118	115	114	114	112	109	109	107	103	103	98	98	96	90	89	83	83	84	74	74	79	64	64	69	56	56	61	49	49											
20	B	0-7	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	95	95	95	95	95	95		
		7-27	117*	117*	117*	117*	117*	113*	117*	117*	95	117*	117*	95	117*	95	117*	95	117*	91	117*	113*	86	117*	95	78	117*	93	65	117*	86	56	111*	80	48	93	69	42	91	60	37									
		27-45	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*				
	C	0-7	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	95	95	95	95	95	95		
		7-27	117*	117*	95	117*	95	117*	93	117*	95	114*	88	117*	95	83	117*	95	77	117*	95	70	117*	92	63	115*	84	52	94	74	44	92	62	38	89	53	50	86	46	44	81	41	39							
		27-45	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*			
	D	0-7	95	95	94	95	95	88	95	95	82	95	95	73	95	91	64	95	87	56	95	82	49	95	69	40	91	57	52	85	48	45	78	41	39	68	36	35	60	49	91									
		7-27	119*	95	90	119*	95	84	119*	95	80	119*	95	71	119*	92	64	95	88	57	95	83	52	93	72	43	91	60	37	89	51	48	84	44	42	77	38	37	67	51	93									
		27-45	116*	116*	116*	116*	116*	116*	116*	114*	114*	114*	114*	114*	111*	109*	109*	105	103	103	102	98	98	96	90	89	83	83	84	74	74	79	64	64	69	56	56	61	49	49										
30	B	0-7	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94		
		7-27	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*	95*	95*	95*	95*	95*			
		27-45	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*	88*	88*	88*	88*			
	C	0-7	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	
		7-27	95*	95*	95*	95*	95*	93*	95*	95*	88*	95*	95*	83*	95*	95*	83*	95*	95*	77	95*	95*	70	95*	92*	63	95*	84*	52	95*	74	44	95*	62	38	92*	53	50	86*	46	44	81*	41	39						
		27-45	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*	88*	88*	88*	88*			
	D	0-7	95	95	94	95	95	88	95	95	82	95	95	73	95	91	64	95	87	56	95	82	49	95	69	40	91	57	52	85	48	45	78	41	39	68	36	35	60	49	91									
		7-27	103*	103*	90*	103*	103*	84	103*	103*	80	103*	97*	71	103*	92*	64	103*	88*	57	103*	83	52	103*	72	43	97*	60	37	90*	51	48	84	44	42	77	38	37	67	51	93									
		27-45	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*	96*							

* 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.

16 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.



30 ft
Roof Height

S_s = 1.25
Seismic

18.66 sq.ft

Module Area

ORIENTATION

CROSS-SLOPE
Rail Direction

SM
Rail Type

PRO SERIES
Clamp

Flashkit Pro

Attachment

• 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.

16 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)

[illegible]

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



Category
II

30 ft
Roof Height

Ss = 1.25
Seismic

18.66 sq.ft

LANDSCAPE

CROSS-SLOPE
Rail Direction

SM
Rail Type

PRO SERIES

Flashkit Pro

SPAN TABLES

[illegible]

• Cells with an asterisks indicates that the L-root 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.



ASCE 7-10
Design Standard

II
Risk Category

30 ft
Roof Height

Ss = 1.25
Seismic

22.78 sq.ft
Module Area

PORTRAIT
Orientation

CROSS-SLOPE
Rail Direction

SM
Rail Type

PRO SERIES
Clamp

Flashkit Pro
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)	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	120	120	120	120	120	114	120	120	107	120	119	100	120	114	94	120	109	89	120	103	84	118	94	69	111	86	55	103	77	45	96	65	37	89	56	49	84	48	43
		7-27	120	120	110	120	120	104	120	120	98	120	118	92	120	114	88	120	108	83	120	103	79	120	94	65	116	86	55	109	79	47	101	67	40	95	58	35	89	50	47
		27-45	121	121	121	121	121	121	121	121	121	121	121	121	121	121	121	119	119	119	116	116	116	110	109	109	103	101	101	97	93	93	92	87	87	81	81	82	73	73	
	C	0-7	120	117	98	120	112	91	120	105	85	120	99	80	118	93	69	114	88	60	109	84	53	100	72	42	92	59	34	85	50	45	79	42	39	69	36	34	61	48	31
		7-27	120	117	91	120	111	85	120	105	81	120	99	72	120	94	65	119	89	58	115	85	53	106	74	44	97	62	37	90	52	48	84	45	42	77	39	37	68	51	39
		27-45	121	121	121	121	121	121	117	117	117	114	114	110	109	109	106	104	104	102	99	99	99	95	91	91	89	84	84	83	75	75	78	65	65	70	56	56	61	50	50
10	D	0-7	120	108	88	120	101	82	119	95	71	115	89	61	110	84	53	104	80	47	99	71	41	91	58	50	84	48	43	75	40	37	65	52	39	57	46	29	50	41	26
		7-27	120	107	83	120	101	75	120	95	66	119	90	59	115	85	53	110	81	48	105	73	43	96	60	36	89	50	47	82	43	40	73	36	35	64	48	31	56	43	28
		27-45	119	119	119	115	115	115	111	111	111	107	105	105	102	99	99	98	95	95	95	90	90	88	83	83	82	72	72	77	62	62	66	53	53	58	47	47	51	41	41
	B	0-7	104	104	104	104	104	104	104	104	104	104	104	100	104	104	94	104	104	89	104	103	84	104	94	69	104	86	55	103	77	45	96	65	37	89	56	49	84	48	43
		7-27	104	104	104	104	104	104	104	104	104	98	104	104	92	104	104	88	104	103	79	104	94	65	104	86	55	104	79	47	101	67	40	95	58	35	89	50	47		
		27-45	121*	121*	121*	121*	121*	121*	121*	121*	121*	121*	121*	121*	121*	121*	121*	120*	120*	120*	118*	118*	118*	110	109	109	103	101	101	97	93	93	92	87	87	81	81	82	73	73	
20	C	0-7	104	104	98	104	104	91	104	104	85	104	99	80	104	93	69	104	88	60	104	84	53	100	72	42	92	59	34	85	50	45	79	42	39	69	36	34	61	48	31
		7-27	104	104	91	104	104	85	104	104	81	104	99	72	104	94	65	104	89	58	104	85	53	104	74	44	97	62	37	90	52	48	84	45	42	77	39	37	68	51	39
		27-45	121*	121*	121*	121*	121*	121*	118*	118*	118*	114	114	110	109	109	106	104	104	102	99	99	95	91	91	89	84	84	83	75	75	78	65	65	70	56	56	61	50	50	
	D	0-7	104	104	88	104	101	82	104	95	71	104	89	61	104	84	53	104	80	47	99	71	41	91	58	50	84	48	43	75	40	37	65	52	39	57	46	29	50	41	26
		7-27	104	104	83	104	101	75	104	95	66	104	90	59	104	85	53	104	81	48	104	73	43	96	60	36	89	50	47	82	43	40	73	36	35	64	48	31	56	43	28
		27-45	119	119	119	115	115	115	111	111	111	107	105	105	102	99	99	98	95	95	95	90	90	88	83	83	82	72	72	77	62	62	66	53	53	58	47	47	51	41	41
30	B	0-7	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	69	87	86	55	87	77	45	87	65	37	87	56	49	84	48	43	
		7-27	106*	106*	106*	106*	106*	104*	106*	106*	98*	106*	106*	87	106*	106*	87	106*	106*	83	106*	103*	79	106*	94*	65	106*	86	55	106*	79	47	101*	67	40	95*	58	35	84	50	47
		27-45	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	99*	99*	99*	99*	94*	93*	93*	91*	87*	87*	81	81	82	73	73
	C	0-7	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	72	42	87	59	34	85	50	45	79	42	39	69	36	34	61	48	31	
		7-27	106*	106*	87	106*	106*	85	106*	105*	81	106*	99*	72	106*	94*	65	106*	87	58	106*	85	53	106*	74	44	97*	62	37	84	52	48	82	45	42	77	39	37	68	51	39
		27-45	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	100*	98*	98*	98*	93*	91*	91*	89*	84	84	83	75	75	78	65	65	70	56	56	61	50	50
40	D	0-7	87	87	87	87	87	82	87	87	71	87	61	87	84	53	87	80	47	87	71	41	87	58	50	84	48	43	75	40	37	65	52	39	57	46	29	50	41	26	
		7-27	108*	107*	83	108*	101*	75	108*	87	66	108*	87	59	108*	85	53	108*	81	48	105*	73	43	86	60	36	84	50	47	81	43	40	73	36	35	64	48	31	56	43	28
		27-45	106*	106*	106*	106*	106*	106*	105*	105*	105*	102*	102*	99*	99*	99*	97*	95*	95*	95*	90	90	88	83	83	82	72	72	77	62	62	66	53	53	58	47	47	51	41	41	
	B	0-7	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	69	86	86	55	86	77	45	86	65	37	86	56	49	84	48	43	
		7-27	79*	79*	79*	79*	79*	79*	79*	79*	79*	79*	79*	79*	79*	79*	79*	79*	79*	79*	79*	79*	79*	79*	65	79*	79*	55	79*	79*	47	79*	67*	40	79*	58	35	79*	50	47	
		27-45	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*	73*	73*	
50	C	0-7	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	72	42	86	59	34	85	50	45	79	42	39	69	36	34	61	48	31	
		7-27	79*	79*	79*	79*	79*	79*	79*	79*	79*	79*	79*	79*	79*	79*	79*	79*	79*	79*	79*	79*	79*	79*	65	79*	79*	55	79*	79*	47	79*	67*	40	79*	58	35	79*	50	47	
		27-45	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*	73*	73*	
	D	0-7	87	87	87	87	87	82	87	87	71	87	61	87	84	53	87	80	47	87	71	41	87	58	50	84	48	43	75	40	37	65	52	39	57	46	29	50	41	26	
		7-27	108*	107*	83	108*	101*	75	108*	87	66	108*	87	59	108*	85	53	108*	81	48	105*	73	43	86	60	36	84	50	47	81	43	40	73	36	35	64	48	31	56	43	28
		27-45	106*	106*	106*	106*	106*	106*	105*	105*	105*	102*	102*	99*	99*	99*	97*	95*	95*	95*	90	90	88	83	83	82	72	72	77	62	62	66	53	53	58	47	47	51	41	41	



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

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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.



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



30 ft

Roof Height

S_s = 3.00
Seismic

18.66 sq.f
Module Area

ORIENTATION

CROSS-SLO
Rail Directio

SM
Rail Type

PRO SER
Clamp

Flashkit Pro
Attachment

Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	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	127	127	127	127	127	123	127	127	117	127	127	110	127	122	101	127	118	95	127	113	90	126	101	81	119	93	66	112	85	54	104	78	45	98	67	39	92	57	52
		7-27	127	127	118	127	127	113	127	127	107	127	126	100	127	121	95	127	117	91	127	113	86	127	102	78	124	93	65	117	86	56	111	80	48	103	69	42	97	60	37
		27-45	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	124	124	124	118	118	118	113	110	110	106	102	102	100	95	95	89	89	90	83	83
	C	0-7	127	126	107	127	120	98	127	115	91	127	108	86	126	101	81	121	96	72	117	91	63	109	83	50	100	71	41	93	59	35	87	50	47	81	43	41	72	38	37
		7-27	127	125	99	127	119	93	127	114	88	127	108	83	127	102	77	126	96	70	122	92	63	115	84	52	106	74	44	98	62	38	92	53	50	86	46	44	81	41	39
		27-45	125	125	125	125	125	125	125	125	125	125	121	121	121	118	117	117	115	114	114	112	108	108	104	99	99	97	91	91	91	84	84	85	77	77	81	67	67	73	59
10	D	0-7	127	117	94	127	110	88	127	103	82	122	97	73	118	91	64	114	87	56	109	82	49	99	69	40	91	57	52	85	48	45	78	41	39	68	36	35	60	49	94
		7-27	127	116	90	127	110	84	127	103	80	127	97	71	122	92	64	118	88	57	115	83	52	105	72	43	97	60	37	90	51	48	84	44	42	77	38	37	67	51	99
		27-45	125	125	125	122	122	122	119	118	118	115	114	114	112	109	109	107	103	103	103	98	98	96	90	90	89	83	83	84	74	74	79	64	64	69	56	56	61	49	49
	B	0-7	113	113	113	113	113	113	113	113	113	113	110	113	101	113	113	95	113	113	90	113	101	81	113	93	66	112	85	54	104	78	45	98	67	39	92	57	52		
		7-27	120*	120*	118*	120*	120*	113	120*	120*	107	120*	120*	100	120*	95	120*	117*	91	120*	113	86	120*	102	78	120*	93	65	117*	86	56	111	80	48	103	69	42	97	60	37	
		27-45	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	113*	110*	110*	106	102	102									

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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.



• Cells with an asterisks indicates that the L-root 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.

16 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]

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30 ft
Roof Height

Ss = 3.00
Seismic

18.66 sq.ft

LANDSCAPE

CROSS-SLOPE
Rail Direction

SM
Rail Type

PRO SERIES

Flashkit Pro

SPAN TABLES

[illegible]

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30 ft
Roof Height

Ss = 3.00
Seismic

22.78 sq.ft

ORIENTATION

CROSS-SLOPE
Rail Direction

SM
Rail Type

PRO SERIE

Flashkit Pro

Attachment

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)	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	120	120	120	120	120	114	120	120	107	120	119	100	120	114	94	120	109	89	120	103	84	118	94	69	111	86	55	103	77	45	96	65	37	89	56	49	84	48	43				
		7-27	119*	119*	110	119*	119*	104	119*	119*	98	119*	118*	92	119*	114	88	119*	108	83	119*	103	79	119*	94	65	116*	86	55	109	79	47	101	67	40	95	58	35	89	50	47				
		27-45	115*	115*	115*	115*	115*	115*	115*	115*	115*	115*	115*	115*	115*	115*	115*	115*	115*	115*	115*	115*	115*	109*	109*	103	101	101	97	93	93	92	87	87	87	81	81	82	73	73					
	C	0-7	120	117	98	120	112	91	120	105	85	120	99	80	118	93	69	114	88	60	109	84	53	100	72	42	92	59	34	85	50	45	79	42	39	69	36	94	61	48	91				
		7-27	119*	117*	91	119*	111	85	119*	105	81	119*	99	72	119*	94	65	114*	89	58	115*	85	53	106	74	44	97	62	37	90	52	48	84	45	42	77	39	37	68	51	93				
		27-45	115*	115*	115*	115*	115*	115*	115*	115*	115*	114*	114*	114*	110*	109*	109*	107*	104	104	102	99	99	95	91	91	89	84	84	83	75	75	78	65	65	70	56	61	50	50					
	D	0-7	120	108	88	120	101	82	119	95	71	115	89	61	110	84	53	104	80	47	99	71	41	91	58	50	84	48	43	75	40	37	65	52	93	57	46	29	50	41	26				
		7-27	119*	107	83	119*	101	75	119*	95	66	119*	90	59	115*	85	53	110	81	48	105	73	43	96	60	36	89	50	47	82	43	40	73	36	35	64	48	91	56	43	26				
		27-45	115*	115*	115*	115*	115*	115*	112*	111*	108*	105	105	102	99	99	98	95	95	95	90	90	88	83	82	72	72	72	62	62	66	53	53	58	47	47	51	41	41						
10	B	0-7	104	104	104	104	104	104	104	104	104	104	104	104	104	94	104	89	104	103	84	104	94	69	104	86	55	103	77	45	96	65	37	89	56	49	84	48	43						
		7-27	105*	105*	105*	105*	105*	104*	105*	105*	98*	105*	105*	92	105*	105*	88	105*	105*	83	105*	103*	79	105*	94	65	105*	86	55	105*	79	47	101*	67	40	95	58	35	89	50	47				
		27-45	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	103*	101*	101*	93*	93*	92*	87	87	87	81	81	82	73	73						
	C	0-7	104	104	98	104	104	91	104	104	85	104	99	80	104	93	69	104	88	60	104	84	53	100	72	42	92	59	34	85	50	45	79	42	39	69	36	94	61	48	91				
		7-27	105*	105*	91	105*	105*	85	105*	105*	81	105*	99*	72	105*	94	65	105*	89	58	105*	85	53	105*	74	44	97	62	37	90	52	48	84	45	42	77	39	37	68	51	93				
		27-45	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	106*	103*	101*	101*	93*	93*	92*	87	87	87	81	81	82	73	73					
	D	0-7	104	104	88	104	104	101	82	104	95	71	104	89	61	104	84	53	104	80	47	99	71	41	91	58	50	84	48	43	75	40	37	65	52	93	57	46	29	50	41	26			
		7-27	105*	105*	83	105*	101*	75	105*	95	66	105*	90	59	105*	85	53	105*	81	48	105*	73	43	96	60	36	89	50	47	82	43	40	73	36	35	64	48	91	56	43	26				
		27-45	108*	108*	108*	108*	108*	108*	108*	108*	107*	105*	105*	102*	99*	99*	98*	95*	95*	95*	90	90	88	83	82	72	72	72	62	62	66	53	53	58	47	47	51	41	41						
20	B	0-7	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	86	55	87	77	45	87	65	37	87	56	49	84	48	43					
		7-27	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	83*	88*	88*	79*	88*	88*	65	88*	86*	55	88*	79*	47	88*	67	40	86*	58	35	84*	50	47				
		27-45	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*	81*	81*	82*	73*	73*				
	C	0-7	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	86	55	87	77	45	87	65	37	87	56	49	84	48	43				
		7-27	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*	81*	81*	82*	73*	73*
		27-45	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*	81*	81*	82*	73*
	D	0-7	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	86	55	87	77	45	87	65	37	87	56	49	84	48	43				
		7-27	88*	88*	83*	88*	88*	75*	88*	88*	66	88*	88*	59	88*	85*	53	88*	81*	48	88*	73	43	86*	60	36	84*	50	47	82*	43	40	73	36	35	64	48	91	56	43	26				
		27-45	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	88*	83*	82*	72	72	72	62	62	66	53	53	58	47	47	51	41	41						
30	B	0-7	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86		
		7-27	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*			
		27-45	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*	68*											

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30 ft
Roof Height

Ss = 3.00
Seismic

22.78 sq.ft

ORIENTATION

CROSS-SLOPE
Rail Direction

SM
Rail Type

PRO SERIES
Clamp

Flashkit Pro

Attachment

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)	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	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	55	65	65	45	65	65	37	65	56	49	65	48	43								
		7-27	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*	40*	43*	43*	35	43*	43*	47										
		27-45	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*									
	C	0-7	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	59	34	65	50	45	65	42	39	65	36	94	61	48	91								
		7-27	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*	37*	43*	43*	48	43*	43*	42	43*	39*	37	43*	51	99							
		27-45	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*							
D	0-7	68	68	68	68	68	68	68	68	68	68	68	68	61	68	68	53	68	68	47	68	68	41	68	58	50	68	48	43	68	40	37	65	52	99	47	46	29	50	41	26							
	7-27	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*								
	27-45	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	41*	41*	41*							
70	B	0-7	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	55	60	60	45	60	60	37	60	56	49	60	48	43									
		7-27	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*	35*	37*	37*	47									
		27-45	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*	35*	35*	35*	35*								
	C	0-7	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	60	53	60	60	42	60	59	34	60	50	45	6															

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Ground Snow Load (psf)	Wind Exposure Category	Roof Tilt Angle (deg)	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	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149	149			
		7-27	149	149	142	149	149	149	136	149	149	131	149	149	126	149	147	121	149	141	117	149	149	136	113	149	128	103	147	120	94	139	114	89	128	105	81	127	98	70	121	91	88	108	108					
		27-45	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151	149	149	149	146	146	146	139	139	139	134	133	133	128	126	126	123	120	120	119	115	115	115	108	108	108						
	C	0-7	149	149	139	149	147	131	149	140	124	149	134	118	149	129	113	144	124	104	140	119	97	131	111	86	124	100	70	118	91	93	112	84	84	105	74	71	98	93	66	108	108							
		7-27	149	149	124	149	144	119	149	138	114	149	132	109	149	127	103	149	123	97	145	119	93	137	111	84	129	101	74	123	93	90	117	86	83	111	79	75	104	67	65	108	108							
		27-45	151	151	151	151	151	151	147	147	147	143	143	143	139	139	139	136	135	135	132	131	131	126	123	123	121	117	116	110	110	110	102	102	104	95	95	98	89	89	89	89								
D	0-7	149	143	127	149	136	120	149	130	114	145	124	106	140	120	98	135	115	91	131	110	85	123	99	66	117	90	91	110	82	82	102	69	65	95	90	57	90	84	51	108	108								
	7-27	149	140	116	149	134	111	149	129	104	149	124	98	146	119	93	141	115	88	136	110	84	128	100	72	121	91	88	115	84	82	108	74	71	101	91	61	95	85	55	108	108								
	27-45	149	149	149	144	144	144	140	140	140	136	136	136	133	131	129	127	126	123	120	116	116	115	108	108	108	100	100	100	100	100	93	93	95	87	87	90	81	81	81	81									
10	B	0-7	133	133	133	133	133	133	133	133	133	133	133	133	133	133	133	133	128	133	128	133	122	133	129	113	133	121	100	133	114	89	128	105	81	122	97	64	117	90	91	108	108							
		7-27	134	134	134	134	134	134	134	134	134	134	134	126	134	134	121	134	134	117	134	134	113	134	128	103	134	120	94	134	114	87	133	105	81	127	98	70	121	91	88	108	108							
		27-45	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145	139	139	139	134	133	133	128	126	126	123	120	120	119	115	115	115	108	108	108						
	C	0-7	133	133	133	133	133	131	133	133	124	133	118	133	129	113	133	124	104	133	119	97	131	111	86	124	100	70	118	91	93	112	84	84	105	74	71	98	93	66	108	108								
		7-27	134	134	124	134	134	119	134	134	114	134	132	109	134	127	103	134	123	97	134	119	93	134	111	84	129	101	74	123	93	90	117	86	83	111	79	75	104	67	65	108	108							
		27-45	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145	145	139	139	139	134	133	133	128	126	126	123	120	120	119	115	115	115	108	108	108					
D	0-7	133	133	127	133	133	120	133	130	114	133	124	106	133	120	98	133	115	91	131	110	85	123	99	66	117	90	91	110	82	82	102	69	65	95	90	57	90	84	51	108	108								
	7-27	134	134	116	134	134	111	134	129	104	134	124	98	134	119	93	134	115	88	134	110	84	128	100	72	121	91	88	115	84	82	108	74	71	101	91	61	95	85	55	108	108								
	27-45	147	147	147	144	144	144	140	140	140	136	136	136	133	131	131	129	127	127	126	123	123	120	116	116	115	108	108	108	100	100	101	93	93	95	87	87	90	81	81	81	81								
20	B	0-7	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118				
		7-27	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119					
		27-45	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128				
	C	0-7	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118			
		7-27	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119			
		27-45	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128	128			
D	0-7	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118	118			
	7-27	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119	119		
	27-45	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131			
30	B	0-7	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117			
		7-27	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*		
		27-45	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*		
	C	0-7	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	
		7-27	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	119*	
		27-45	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*	116*		
D	0-7	118	118	118	118	118	118	118	118																																									



30 ft
Roof Height

18.66 sq.ft
Module Area

CROSS-SLOPE
Rail Direction

UAF

Clamp

Flashkit Pro

Attachment

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)	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	127	127	127	127	127	123	127	127	117	127	127	110	127	122	101	127	118	95	127	113	90	126	101	81	119	93	66	112	85	54	104	78	45	98	67	39	92	57	34	37								
		7-27	127	127	118	127	127	113	127	127	100	127	121	95	127	117	91	127	113	86	127	102	78	124	93	65	117	86	56	111	80	48	103	69	42	97	60	37	83											
		27-45	129	129	129	129	129	129	129	129	129	129	129	129	129	129	127	127	124	124	124	118	118	118	113	110	110	106	102	102	100	95	95	89	89	89	90	83	83											
	C	0-7	127	126	107	127	120	98	127	115	91	127	108	86	126	101	81	121	96	72	117	91	63	109	83	50	100	71	41	93	59	35	87	50	31	81	43	41	72	38	37									
		7-27	127	125	99	127	119	93	127	114	88	127	108	83	127	102	77	126	96	70	122	92	63	115	84	52	106	74	44	98	62	38	92	53	33	86	46	44	81	41	39									
		27-45	129	129	129	128	128	128	125	125	125	121	121	121	118	117	117	115	114	114	112	108	108	104	99	99	97	91	91	91	84	84	85	77	77	81	67	67	73	59	59									
	D	0-7	127	117	94	127	110	88	127	103	82	122	97	73	118	91	64	114	87	56	109	82	49	99	69	40	91	57	34	85	48	30	78	41	39	68	36	35	60	32	31									
		7-27	127	116	90	127	110	84	127	103	80	127	97	71	122	92	64	118	88	57	115	83	52	105	72	43	97	60	37	90	51	32	84	44	42	77	38	37	67	34	33									
		27-45	126	126	126	122	122	122	119	118	118	115	114	114	112	109	109	107	103	103	98	98	96	90	90	89	83	83	84	74	74	79	64	64	69	56	56	61	49	49										
10	B	0-7	113	113	113	113	113	113	113	113	113	113	110	113	113	101	113	113	95	113	113	90	113	101	81	113	93	66	112	85	54	104	78	45	98	67	39	92	57	34	37									
		7-27	114	114	114	114	114	113	114	114	107	114	114	100	114	114	95	114	114	91	114	113	86	114	102	78	114	93	65	114	86	56	111	80	48	103	69	42	97	60	37									
		27-45	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	126	126	126	126	124	124	124	118	118	118	113	110	110	106	102	102	100	95	95	89	89	90	83	83									
	C	0-7	113	113	107	113	113	98	113	113	91	113	108	86	113	101	81	113	96	72	113	91	63	109	83	50	100	71	41	93	59	35	87	50	31	81	43	41	72	38	37									
		7-27	114	114	99	114	114	93	114	114	88	114	108	83	114	102	77	114	96	70	114	92	63	114	84	52	106	74	44	98	62	38	92	53	33	86	46	44	81	41	39									
		27-45	127	127	127	127	127	127	124	124	124	121	121	121	118	117	117	115	114	114	112	108	108	104	99	99	97	91	91	91	84	84	85	77	77	81	67	67	73	59	59									
	D	0-7	113	113	94	113	110	88	113	103	82	113	97	73	113	91	64	113	87	56	109	82	49	99	69	40	91	57	34	85	48	30	78	41	39	68	36	35	60	32	31									
		7-27	114	114	90	114	110	84	114	103	80	114	97	71	114	92	64	114	88	57	114	83	52	105	72	43	97	60	37	90	51	32	84	44	42	77	38	37	67	34	33									
		27-45	126	126	126	122	122	122	119	118	118	115	114	114	112	109	109	107	103	103	98	98	96	90	90	89	83	83	84	74	74	79	64	64	69	56	56	61	49	49										
20	B	0-7	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	95	95	95					
		7-27	117*	117*	117*	117*	117*	113*	117*	117*	95	117*	117*	95	117*	95	117*	95	117*	113*	86	117*	95	78	117*	93	65	117*	86	56	111*	80	48	93	69	42	91	60	37	83										
		27-45	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*						
	C	0-7	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	95	95	95	95				
		7-27	117*	117*	95	117*	95	117*	93	117*	95	117*	88	117*	95	83	117*	95	77	117*	95	70	117*	92	63	115*	84	52	94	74	44	92	62	38	89	53	33	86	46	44	81	41	39							
		27-45	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*	112*					
	D	0-7	95	95	94	95	95	88	95	95	82	95	95	73	95	91	64	95	87	56	95	82	49	95	69	40	91	57	34	85	48	30	78	41	39	68	36	35	60	32	31									
		7-27	119*	95	90	119*	95	84	119*	95	80	119*	95	71	119*	92	64	95	88	57	95	83	52	93	72	43	91	60	37	89	51	32	84	44	42	77	38	37	67	34	33									
		27-45	116*	116*	116*	116*	116*	116*	114*	114*	114*	114*	114*	114*	111*	109*	109*	105	103	103	102	98	98	96	90	90	89	83	83	84	74	74	79	64	64	69	56	56	61	49	49									
30	B	0-7	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94				
		7-27	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*	95*	95*	95*	95*				
		27-45	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*	88*	88*	88*				
	C	0-7	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94	94		
		7-27	95*	95*	95*	95*	95*	93*	95*	95*	88*	95*	95*	83*	95*	95*	77	95*	95*	70	95*	92*	63	95*	84*	52	95*	74	44	95*	62	38	92*	53	33	86*	46	44	81*	41	39									
		27-45	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*	88*	88*	88*				
	D	0-7	95	95	94	95	95	88	95	95	82	95	95	73	95	91	64	95	87	56	95	82	49	95	69	40	91	57	34	85	48	30	78	41	39	68	36	35	60	32	31									
		7-27	103*	103*	90*	103*	103*	84	103*	103*	80	103*	97*	71	103*	92*	64	103*	88*	57	103*	83	52	103*	72	43	97*	60	37	90*	51	32	84	44	42	77	38	37	67	34	33									
		27-45	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*	96*	96*	96*	96*				
40	B	0-7	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85	85				
		7-27	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*				
		27-45																																																

* Cells with an astrisks 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.



30 ft
Roof Height

18.66 sq.ft
Module Area

CROSS-SLOPE
Rail Direction

UAF

Clamp

Flashkit Pro

Attachment

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.

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.



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.

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.



Category
II

30 ft
Roof Height

Ss = 1.25
Seismic

18.66 sq.ft
Module Area

LANDSCAPE

CROSS-SLOPE
Rail Direction

Rail Type	SM
1	1
2	1
3	1
4	1
5	1
6	1
7	1
8	1
9	1
10	1
11	1
12	1
13	1
14	1
15	1
16	1
17	1
18	1
19	1
20	1
21	1
22	1
23	1
24	1
25	1
26	1
27	1
28	1
29	1
30	1
31	1
32	1
33	1
34	1
35	1
36	1
37	1
38	1
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UAF

Clamp

Flashkit Pro
Attachment

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.

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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[illegible]

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Ground Snow Load (psf)			Wind Exposure Category			Roof Tilt Angle (deg)			Basic Wind Speed (mph)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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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.



ASCE 7-10
Design Standard

II
Risk Category

30 ft
Roof Height

Ss = 3.00
Seismic

18.66 sq.ft
Module Area

PORTRAIT
Orientation

CROSS-SLOPE
Rail Direction

SM
Rail Type

UAF
Clamp

Flashkit Pro
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)	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	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	66	71	71	54	71	71	45	71	67	39	71	57	37	34	
		7-27	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	
		27-45	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	
	C	0-7	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	71	63	71	71	50	71	71	41	71	59	35	71	50	31	71	43	41	71	38	37	37
		7-27	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	52*	44*	52*	52*	38	52*	52*	33	52*	46*	44	52*	41	39	39	
		27-45	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*
D	0-7	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	69	74	69	40	74	57	34	74	48	30	74	41	39	68	36	35	60	32	31	31		
	7-27	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	57*	52*	57*	57*	43	57*	57*	37	57*	51*	32	57*	44	42	57*	38	37	57*	34	33	33		
	27-45	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	54*	
70	B	0-7	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	
		7-27	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	
		27-45	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*
	C	0-7	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	66	63	66	66	50	66	66	41	66	59	35	66	50	31	66	43	41	66	38	37	37	
		7-27	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*	45*
		27-45	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*
D	0-7	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	69	
	7-27	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*	49*
	27-45	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*
80	B	0-7	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	
		7-27	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*	
		27-45	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*
	C	0-7	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
		7-27	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*
		27-45	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*
D	0-7	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	65	
	7-27	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	44*	
	27-45	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*	41*
90	B	0-7	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58	58											

[illegible]

* Cells with an astrisks 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.

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.



30 ft
Roof Height

18.66 sq.ft
Module Area

CROSS-SLOPE
Rail Direction

UAF
Clamp

Flashkit Pro

Attachment

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.

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~~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.



ASCE 7-10
Design Standard

II
Risk Category

30 ft
Roof Height

Ss = 3.00
Seismic

22.78 sq.ft
Module Area

LANDSCAPE
Orientation

CROSS-SLOPE
Rail Direction

SM
Rail Type

UAF
Clamp

Flashkit Pro
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)	Basic Wind Speed (mph)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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