## UL Product iQ®



# Mounting Systems, Mounting Devices, Clamping Devices and Ground Lugs for Use with Photovoltaic Modules and Panels

#### **COMPANY**

SUNRUN SOUTH LLC, DBA SNAPNRACK

775 Fiero Ln Suite 200 San Luis Obispo, CA 93401 United States

E359313

Cat. No.	Investigated for Bonding	Investigated for Mechanical Loading	System Fire Classification (A, B or C)	Tested in Combination With
Photovoltaic mounting system				

Series 200 Country Std	\/ <del>+</del>	V Mists	N.	Paradovina de la Nova d
Series 200 - Consisting of the	Y*	Y – Minimum	N	Listed PV Modules, where XXX is the
Following Components:		mechanical load		wattage value. All wattage values are
Kee Klamp Tee, Speed Rail Tee,		ratings defined		covered:
Speed Rail Single Swivel,		by UL 2703 for		
Threaded Pipe Coupler, Pipe		all modules		Aptos Solar:
Clamp Assembly, Ground Rail,		listed		DNA-120-MF23-XXX
Mid Clamp, X End Clamp,				DNA-120-BF23-XXX
Universal End Clamp				DNA-144-MF23-XXX
				DNA-144-BF23-XXX
				DNA-120-MF26-XXXW, DNA-120-MF26-
				XXXW, DNA-144-MF26-XXXW
				DNA-120-BF26-XXXW
				DNA-144-BF26-XXXW
				Boviet Solar:
				BVM6610P-XXX
				BVM6610M-XXX
				BVM6612P-XXX
				BVM6612M-XXX
				D A IAI00 1 5 IAI - VVV
				Canadian Solar:
				CS6K-XXX-M
				CS6K-XXX-M-SD
				CS6K-XXX-P
				CS6K-XXX-P-SD
				CS6K-XXX-MS
				CS6P-XXX-M
				CS6P-XXX-P
				CS6P-XXX-P-SD
				CS6V-XXX-M
				CS3W-XXX-P
				CS6V-XXX-P
				CS6X-XXX-P
				CS3K-XXX-P
				CS3K-XXX-MS
				CS3U-XXX-MS
				CS3U-XXX-P
				CS1K-XXX-MS
				CS1H-XXX-MS
				CS1H-XXX-MS-AB
				CS1Y-XXX-MS
				CS3N-XXX-MS
				CS1Y-XXX-MS
				CS3W-XXXMB-AG
				CS3Y-XXXMB-AG
				CS6W-XXXMB-AG
				CS6R-XXXMS-HL
				CS3W-xxxMS
				CS3W-xxxP, where xxx is 385 to 450
				ContainTood
				CertainTeed -
				CTXXXHC11-06,
				CTXXXHC11-06.
				Chint Solar: CHSM6612M-XXX
				CHSM6612M/HV-XXX
	<u> </u>			CHSM6612M(BL)-XXX
				**CHSM72M-HC-XXX (Astro 4)

<sup>\*\*</sup>CHSM72M-HC-XXX (Astro 4)

<sup>\*\*</sup>CHSM72M-HC-XXX (Astro 5)

UR-40 Mounting and Bonding Systems for use with Photovoltaic Modules, consisting of the following components: UR-40 Rail, Mid Clamp, X End Clamp, Universal End Clamp, UR-40 Splice, UR-40 Composition Mount Kits, SpeedSeal Foot Mount Kit, SpeedSeal Deckfoot Mount Kit for UR-40, Standard Standoff for UR-40, Four Hole Standoff for UR-40, Heavy Duty Standoff for UR-40, OmniBase Standoff for UR-40, Metal Roof Base Standoff for UR-40, UR-40 Corrugated Block, Standard Base Seam Clamp for UR-40, Wide Base	Y*	Y – Minimum mechanical load ratings defined by UL 2703 for all modules listed	Y – Class A with and without skirt assembly for Type 1, Type 2 and Type 29 modules	Dehui Solar: DH-M760B-XXXW DH-M760W-XXXW DH-M772W-XXXW DH-M772F-XXXW DH-M772F-XXXW ET Solar: ET-P660XXXBB ET-P660XXXWB ET-P660XXXWW ET-P660XXXWW ET-P660XXXWW FF-M60XXXWWG P660XXXWWG M660XXXWWG M660XXXWWG M660XXXWWWG Freedom Forever Procurement: FF-MP-BBB-xxx, where xxx is 365 to 410.
Seam Clamp for UR-40, UR-40 Universal Tile Hook, UR-40 Flat				Hanwha/Q Cells:
Tile Hook, UR-40 Tile Hook F,				Q.PEAK BLK-G3.1-XXX Q.PEAK G3.1-XXX
UR-40 Tile Hook WS, Flat Tile Replacement Kit for UR-40, S				Q.PLUS BFR-G3.1-XXX
Tile Replacement Kit for UR-40,				B.LINE PLUS BFR-G4.1-XXX
W Tile Replacement Kit for UR-				B.LINE PRO BFR-G4.1-XXX Q.BASE GY-XXX
40, UR-40 Hanger Bolt Clamp,				Q.PEAK BFR-G4-XXX
UR-40 Tilt Kits, SnapNrack Ground Lug Models 242-02101				Q.PEAK BFR-G4.1-XXX
or 242-92202, Ilsco Ground Lug				Q.PEAK BLK-G4.1-XXX
Models GBL-4DBT or SGB-4, UR-				Q.PEAK BLK-G4.1/TAA-XXX
40 Skirt Assembly, MLPE Frame				Q.PEAK G4-XXX Q.PEAK G4.1-XXX
Attachment Kit, MLPE Rail				Q.PEAK G4.1/MAX-XXX
Attachment Kit, Smart Clips, Tilt Kits, Seam Clamp Simple Tilt				Q.PEAK G4.1/TAA-XXX
Kits, Adjustable Tile Hook,				Q.PLUS BFR-G4-XXX
OmniShield				Q.PLUS BFR-G4.1-XXX
				Q.PLUS BFR-G4.1/TAA-XXX Q.PLUS G4-XXX
				Q.PLUS GY-XXX
				Q.PLUS BFR-GY-XXX
				Q.PRO BFR-G4-XXX
				Q.PRO BFR-G4.1-XXX
				Q.PRO BFR-G4.3-XXX
				Q.PRO BFR-GY-XXX O.PRO BLK-GY-XXX
				Q.PRO G4-XXX
				Q.PRO GY-XXX
				Q.PRO GY/SC-XXX
				Q.PEAK DUO-G6+-XXX
				Q.PEAK DUO-BLK-G6+-XXX
				Q.PEAK DUO-G6-XXX Q.PEAK DUO-BLK-G6-XXX
				Q.PEAK DUO-BEK-G0-XXX
				Q.PEAK DUO-BLK-G8+-XXX  Q.PEAK DUO-G8-XXX  Q.PEAK DUO-BLK-G8-XXX
				Q.PEAK DUO-BLK-G8-XXX
				Q.PLUS L-G4-XXX
				Q.PLUS L-G4.1-XXX Q.PLUS L-G4.2-XXX
				Q.PEAK L-G4.1-XXX
				Q.PEAK L-G4.2-XXX
				Q.PLUS DUO-L-G5-XXX
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Q.PEAK DUO BLK ML-G10.a+/TS-XXX, Q.PEAK DUO G10-XXX, Q.PEAK DUO BLK-G10-XXX, Q.PEAK DUO G10+-XXX, Q.PEAK

DUO BLK-G10+-XXX Q.TRON-G1+ XXX

JKMXXXPP-60 JKMXXXPP-60-V

LGXXXQAK-A6 LGXXXN2W-E6 LGXXXN1K-E6 LGXXXQAC-A6

UR-60 Mounting and Bonding Systems for use with Photovoltaic Modules, consisting of the following components: UR-60 Rail, Mid Clamp, X End Clamp, Universal End Clamp, UR-60 Splice, UR-60 Composition Mount Kits, SpeedSeal Foot Mount Kit, Standard Standoff for UR-60, Four Hole Standoff for UR-60, Heavy Duty Standoff for UR-60, OmniBase Standoff for UR-60, Metal Roof Base Standoff for UR-60, Wide Base Seam Clamp for UR-60, UR-60 Corrugated Block, Standard Base Seam Clamp for UR-60, Wide Base Seam Clamp for UR-60, UR-60 Universal Tile Hook, UR-60 Flat Tile Hook, UR-60 Tile Hook WS, Flat Tile Replacement Kit for UR-60, S Tile Replacement Kit for UR-60, W Tile Replacement Kit for UR-60, UR-60 Tilt Kits, SnapNrack Ground Lug Models 242-02101 or 242-92202, Ilsco Ground Lug Models GBL-4DBT or SGB-4, UR-40 Skirt Assembly, MLPE Frame Attachment Kit, Smart	Y*	Y – Minimum mechanical load ratings defined by UL 2703 for all modules listed	Y – Class A with and without skirt assembly for Type 1, Type 2 and Type 29 modules	LGXXXN1K-B6 LGXXXN2T-E6 LGXXXN3K-V6  Longi: LR6-60-XXXM LR6-60BK-XXXM LR6-60HV-XXXM LR6-60PB-XXXM LR6-60PB-XXXM LR6-60PH-XXXM LR6-60PH-XXXM LR4-72HPH-XXXM LR4-72HPH-XXXM LR4-60HIB-XXXM LR6-60HIB-XXXM LR6-60HIB-XXXM LR6-50HIB-XXXM LR6-50HIB-XXM LR6-50HIB-XXXM LR6-50HIB-XXXM LR6-50HIB-XXXM LR6-50HIB-XXXM LR	
				MSEXXXSQ6S MSEXXXSQ4S MSEXXXSR8K MSEXXXSR8T MSEXXXSR9S MSE60AXXX MSEXXXTS60 MSEXXXSX5K MSEXXXSX5T MSEXXXSX6S MSEXXXSX6S MSEXXXSX6W TXI6-XXX120BB MSExxxSX5R, where xxx is 375 to 390  Next Energy Alliance: USNEA-XXXM3-60 USNEA-XXXM3-72 USNEA-XXXM3B-72  Panasonic: VBHNXXXKA01 VBHNXXXKA02 VBHNXXXKA03	Feedback

VBHNXXXKA04 VBHNXXXSA17

SSGXXX-P SILXXXBL

VSUN Solar:

VSUNXXX-144BMH-DG, VSUNXXX-120BMH, VSUNXXX-108BMH

Yingli:

YLXXXA-29b YLXXXP-29b

ZNShine:

ZXM6-60-XXX/M

 $ZXM6\text{-}NH120\text{-}XXXM,\,ZXM6\text{-}NH144\text{-}XXXM$ 

ZXM7-SH108-XXX/M

REC Solar, model RECxxxAA Pure-R, where xxx can be 390-430

REC Solar, model RECxxxNP3, where xxx can be 380-410

Trina Solar, model TSM-xxxNE09RC.05, where xxx can be 365-430

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MightyMount – Metal-T	Υ	N	Y – Class A when	
consisting of the following:	'	''	mounted with Type	SEG Solar, model
				SEG-xxx-BMD-HV &
Track, Short Leg, Tall Leg, Pinned			1, 2 or 3 modules	SEG-xxx-BMD-TB,
Channel Nut, Ultra Rail Mid			per Exception of	
Clamp, Ultra Rail End Clamp,			11.1 of UL 2703	where xxx can be 370-425
Wire Management Clips,				
				Aptos Solar, model
Ground Lugs, MLPE Rail				DNA-108-MF10-xxxW, where
Attachment Kit and MLPE Frame				xxx can be 390-415
Attachment Kit, OmniShield.				xxx can be 390-415
				NRTL Listed Module Level Power
				Electronics:
				Danid Chutdaum Davissau
				Rapid Shutdown Devices:
				AP Smart:
				Model RSD-S-PLC
1				Celestica International:
1				DG-006-F001201x
1				DG-006-F001401x
				Delta Electronics:
				GPI00010105
				Ginlong Technologies:
				Solis-RSD-1G
				Solis-MLRSD-R1-1G
				Solis-MLRSD-R2-1G
				SMA:
				RSB-2S-US-10
				N3B-23-03-10
				Microinverters:
				Enphase:
				M250
				M215
				C250
				IQ6-60-2-US
				IQ6PLUS-72-2-US
				IQ7-60-2-US
				IQ7-60-B-US
				IQ7PLUS-72-2-US
				IQ7PLUS-72-B-US
				IQ8-60
1				IQ8PLUS-72
				IQ8A-72
1				IQ8H-208-72
1				IQ8H-240-72
				Optimizers:
				·····
				Generac – Optimizer model S2502
1				SolarEdge:
1				P300-5NC4ARS
1				
				P320-5NC4ARS
				P370-5NC4AFS
				P400-5NC4AFS
				P320
				P340
1				
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1				P370	
				P400	
				P401	I
				P405	
				P485	
				P505	
				P730	
				P800p	
				P850	
				P860	
				P950	
				S440	
				S500	
				P1100	
				P1101	

#### Monitoring Devices:

Tigo: TS4-R-F TS4-R-M TS4-R-O TS4-R-S TS4-R-M-DUO TS4-R-O-DUO TS4-R-S-DUO TS4-A-F TS4-A-2F TS4-A-O TS4-A-S

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MightyMount Comp-S	Υ	N	Y – Class A with	
iviigittyiviount comp-3	'	l IN		
consisting of the following:			and without skirt	
Comp-S Track, Ultra Rail Mid			assembly for Type	
Clamp, Ultra Rail End Clamp,			1, Type 2 and Type	
Wire Management Clins			29 modules	
Wire Management Clips,			29 modules	
Ground Lugs, MLPE Rail				
Attachment Kit and MLPE Frame				
Attachment Kit.				
Attachinent Nt.				
				4
				To order
1				1
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RL Universal Mounting System	Y*	N	Y – Class A with and without skirt	Aptos Solar: DNA-120-MF23-XXX
USL - Mounting and Bonding			assembly for Type	DNA-120-BF23-XXX
Systems for use with			1, Type 2 and Type	DNA-144-MF23-XXX
Photovoltaic Modules,			29 modules	DNA-144-BF23-XXX
consisting of the following				DNA-120-MF26-XXXW, DNA-120-MF26-
components: Mount Assembly,				XXXW, DNA-144-MF26-XXXW
Ridge Mount Assembly,				DNA-120-BF26-XXXW
Umbrella Flashing Assembly,				DNA-144-BF26-XXXW
SpeedSeal Track Assembly,				DNA-120-BF10-xxx, where xxx is 435 to
SpeedSeal Decktrack Assembly,				455,
Link Assembly, Wire				DNA-108-BF10-xxx, where xxx is 385 to 410
Management Clips, Ground				
Lugs, MLPE Rail Attachment Kit				Canadian Solar:
and MLPE Frame Attachment				CS6K-XXX-M
Kit.				CS6K-XXX-M-SD
				CS6K-XXX-P
				CS6K-XXX-P-SD
				CS6K-XXX-MS
				CS3K-XXX-P
				CS3W-XXX-P
				CS3N-XXX-MS
				CS3K-XXX-MS
				CS3U-XXX-MS
				CS3U-XXX-P
				CS1K-XXX-MS
				CS1H-XXX-MS
				CS1H-XXX-MS-AB
				CS1Y-XXX-MS CS3W-XXXMB-AG
				CS3Y-XXXMB-AG
				CS6W-XXXMB-AG
				CS6R-XXXMS-HL
				CS3W-xxxMS
				CS3W-xxxP, where xxx is 385 to 450
				CertainTeed -
				CTXXXHC11-06,
				CTXXXHC11-06.
				Chint Solar:
				CHSM6612M-XXX
				CHSM6612M/HV-XXX
				CHSM6612M(BL)-XXX
				**CHSM72M-HC-XXX (Astro 4)
				**CHSM72M-HC-XXX (Astro 5)
				Dehui Solar:
				DH-M760B-XXXW
				DH-M760W-XXXW
				DH-M772W-XXXW
				DH-M760F-XXXW
				DH-M772F-XXXW
				Freedom Forever Procurement:  FF-MP-BBB-xxx, where xxx is 365 to 410.
				Hanwha/Q Cells:
				Q.PEAK DUO-G5-XXX
				Q.PEAK DUO-BLK-G5-XXX
				Q.PLUS DUO-G5-XXX

Runergy: HY-DH108P8-XXX(Y)

Hyundai: **HiA-SXXXMS** 

SEG Solar: SEG-XXX-BMB-HV, SEG-xxx-BMB-TB

Silfab:

SLAXXX-M

SLAXXX-P

SSAXXX-M

SSAXXX-P

SLGXXX-M

		,	,			
Ton	Speed Mounting System	Y*	N	Y – Class A with	SLGXXX-P	
liop	speed wounting system	<b>'</b>	IN .	and without skirt	SSGXXX-M	
11101	L - Mounting and Bonding			assembly for Type	SSGXXX-P	
					SILXXXBL	
	tems for use with			1, Type 2 and Type	SILXXXML	
	otovoltaic Modules,			29 modules	SILXXXNT	
	nsisting of the following				SILXXXHL	
	nponents: Mount, Row Link,				SILXXXNL	
Skii	rt Assembly, Wire				SILXXXBK	
Ma	nagement Clips, Ground					
Lug	s, MLPE Frame Attachment				SILXXXNX	
Kit.					SILXXXNU	
					SILXXXHC	
					SILXXXHN	
					SILXXXBG	
					Solaria:	
					Solaria PowerXT-XXXR-PX	
					Solaria PowerXT-XXXR-BX	
					Solaria PowerXT-XXXR-AC	
					Solaria PowerXT-XXXR-PM	
					Solaria PowerXT-XXXR-PM-AC	
					Solding Fowerst Stock Five Ac	
					SunPower:	
					SPR-AXXX-G-AC	
					SPR-AXXX	
					SPR-AXXX-BLK-G-AC	
					SPR-AXXX-BLK	
					SPR-MXXX-H-AC	
					SPR-MXXX	
					SPR-MXXX-BLK-H-AC	
					SPR-MXXX-BLK	
					SunSpark:	
					SST-XXXM3-60	
					SST-XXXM3B-60	
					SST-XXXM3-72	
					SST-XXXM3B-72	
					Talesun:	
					TP660M-XXX	
					TP660P-XXX	
					TP672M-XXX	
					TP672P-XXX	
					Trina:	
					TSM-XXXDD05(II)	
					TSM-XXXDD05A.05(II)	
					TSM-XXXDD05A.08(II)	
					TSM-XXXDD05A.082(II)	
					TSM-XXXPA05	
					TSM-XXXPA05	
					TSM-XXXPA05.08	.↓
					TSM-XXXPD05	#
					TSM-XXXPD05.002	Feedback
					TSM-XXXPD05.05	\$
					TSM-XXXPD05.05S	†
					TSM-XXXPD05.08	
					TSM-XXXPD05.082	
					TSM-XXXPD05.08D	
					TSM-XXXPD05.08S	
					TSM-XXXI 203.003 TSM-XXXDD05H.05(II)	
					1311 7770000311.03(11)	

DG-006-F001201x DG-006-F001401x

Monitoring Devices:

Tigo: TS4-R-F TS4-R-M TS4-R-O TS4-R-S

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		TS4-R-M-DUO TS4-R-O-DUO TS4-R-S-DUO TS4-A-F TS4-A-2F TS4-A-O TS4-A-S
		Generac – Optimizer model S2502

### Photovoltaic Ground Lug - Bolt-through Design - Tested in Combina

		Standard	1	tigated for		Mou	ınting	Surfa	ce		ounting Screw	ho	nting- ole nge		eld-w
Cat. No.		Mounting Hardware Provided		Mounting	Min Profile (w x l)			Mtl	Surface Prep	Size	Tightening Torque (lbs-in.)	Min	Max	Wire Type (Mtl)	
242- 02101	20	Υ	Y	N	1.5 in. x 1.5 in.		nrack nd or dard	AL	Anodized	5/16- 18	16	N/A	N/A	CU	Soli
242- 92202	20	Υ	Y	N	0.5 in. x 0.5 in	Mou on R Level Slide Assel Rails	L rlock r mbly	AL	Anodized	5/16- 18	8 ft-lb	N/A	N/A	CU	Soli

#### **Photovoltaic Bonding Device: MLPE Frame Attachment Kit**

		Frame		MILPE	MILPE		
	Max	Thickness	MLPE	Thickness	Slot		Tested in
	OCPD	Anodized	Thickness	SS 304	Width	Torque	Combination
Cat. No.	(A)	AL (mm)	AL(mm)	(mm)	(mm)	Value	With:

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- / /	10	<b>Z</b> J.	0.0	) -	IVI

242- 02151	20	0.8 - 2.4	2.0 - 3.2	2.0	8.1 - 8.5	10 ft.lb.	PV Modules Described in Mounting Systems noted above with frame thickness limitations.
							limitations.

The following components have been tested for roof penetration utilizing the Wind-Driven Rain Test from UL Subject 2582:

Cat. No.	Tested with the Following Securement Means	Seal/Sealant &	Tested with the Following Roof Deck Construction
Photovoltaic mounting system component			
RL Universal Mounting System - Umbrella Bolt Flashing consisting of Composition flashing, Flash Track PRC, Flash Track End Caps, Umbrella Bolt; SpeedSeal Track.	Lag Bolt	No sealant	Asphalt shingles
UR-40 Mounting System - Consisting of the following components: Composition flashing, Umbrella L-foot, Umbrella Bolt; SpeedSeal Foot Assembly kit	Lag Bolt	No sealant	Asphalt shingles
UR-60 Mounting System - Consisting of the following components: Composition flashing, Umbrella L-foot, Umbrella Bolt, and SpeedSeal Foot Assembly kit	Lag Bolt	No sealant	Asphalt shingles

<sup>\* -</sup> Not all components have been evaluated for bonding. See UL report and instruction manual for details.

Trademark and/or Tradename: "SNAPNRACK"

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<sup>\*\*-</sup> These modules are not considered for Fire as they are not type 1, 2 or 29 rated.