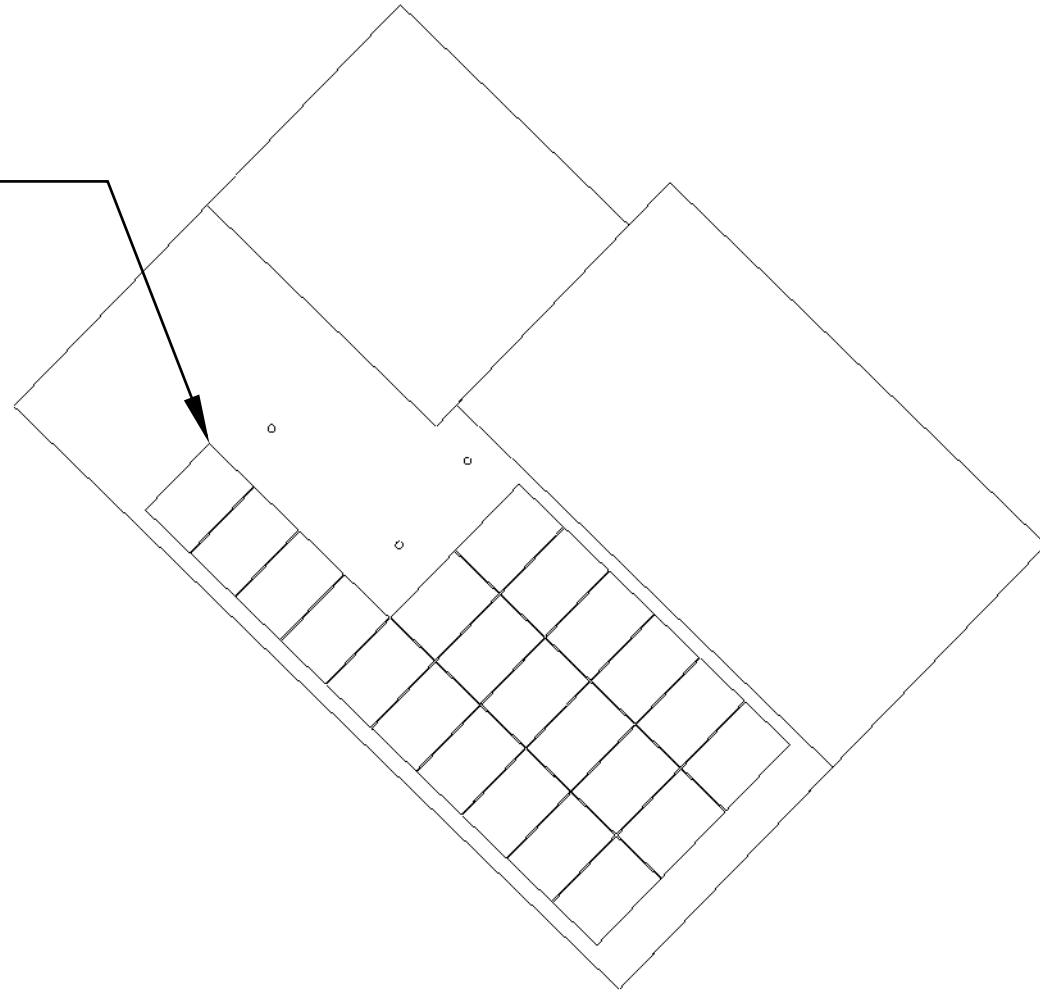




**SHEET SCHEDULE**

SHEET NO.	SHEET TITLE
G-01	COVER
S-01	ARRAY A LAYOUT
S-02	ASSEMBLY DETAILS
E-01	LINE DIAGRAM
R-01	RESOURCES
R-02	RESOURCES
R-03	RESOURCES
R-04	RESOURCES
R-05	RESOURCES
R-06	RESOURCES
R-07	RESOURCES

PHOTOVOLTAIC  
ARRAY



01  
G-01

SITE SKETCH  
SCALE: N/A

**PROJECT INFORMATION**

CONTRACTOR

NAME: CAPE FEAR SOLAR SYSTEMS, LLC  
PHONE: (910) 409-5533  
PROJECT MANAGER: ROBERT PARKER  
PHONE: (910) 232-6288

AUTHORITIES HAVING JURISDICTION

BUILDING: WAKE COUNTY  
ZONING: WAKE COUNTY  
ELECTRICAL: WAKE COUNTY  
UTILITY: DEP

APPLICABLE CODES & STANDARDS

BUILDING: IRC WITH NORTH CAROLINA AMENDMENTS 2018  
ELECTRICAL: NEC 2017  
FIRE: IFC WITH NORTH CAROLINA AMENDMENTS 2018,  
STATEWIDE UNIFORM REQUIREMENTS OF INSPECTION PROCEDURES  
FOR SOLAR PHOTOVOLTAIC SYSTEMS INSTALLED ON RESIDENTIAL  
ROOFTOPS

STRUCTURAL REVIEW PROVIDED BY:  
RONALD P. BITTLER, PE  
RB ENGINEERING, INC. (C-2499)  
168 QUADE DRIVE  
CARY, NC 27513  
919-677-9662  
PROJECT #RB-217049



02  
G-01

LOCATION MAP  
SCALE: N/A



8.69KW PV SYSTEM  
VALENTIN RESIDENCE

232 Village Bend Dr, Fuquay-  
Varina, NC 27526

COVER



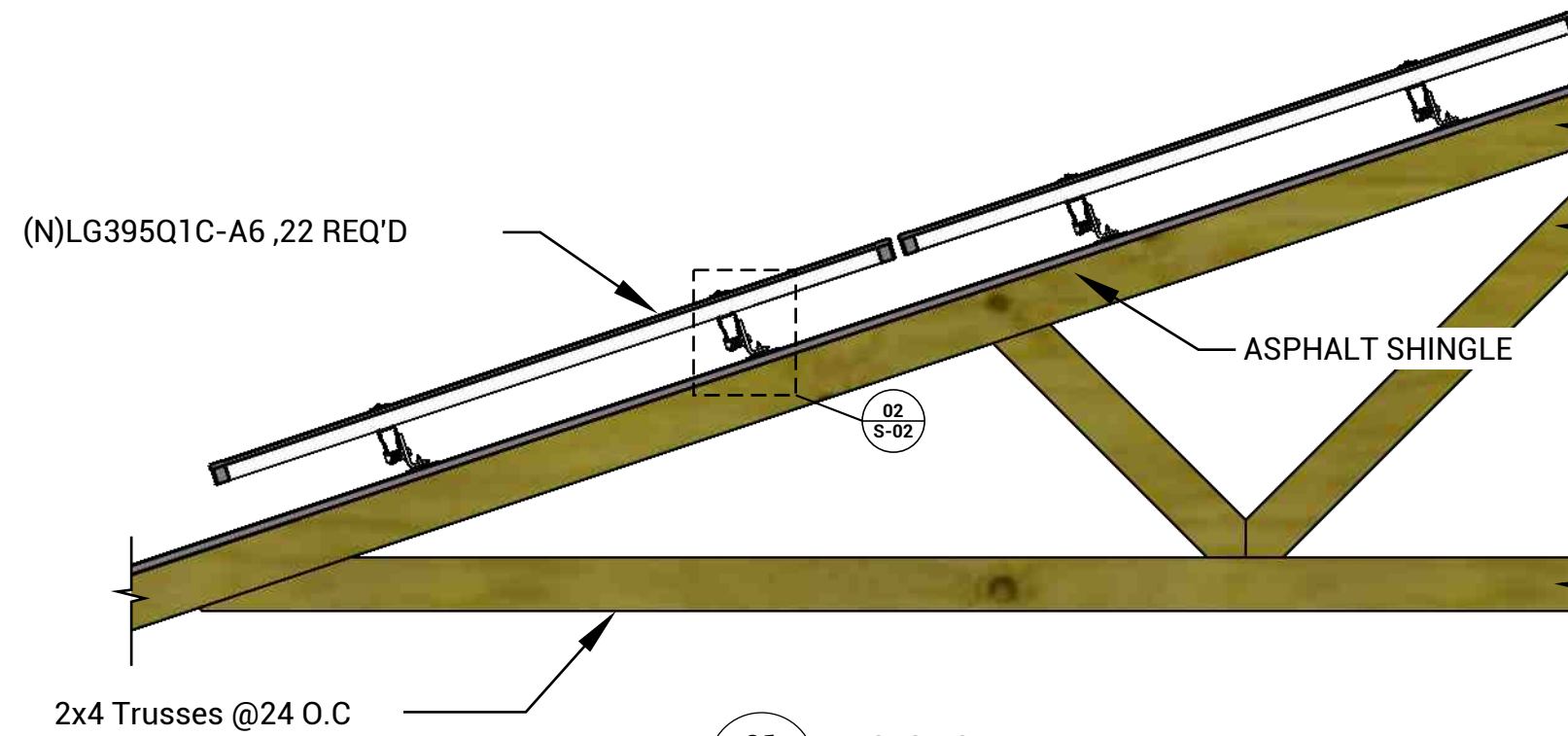
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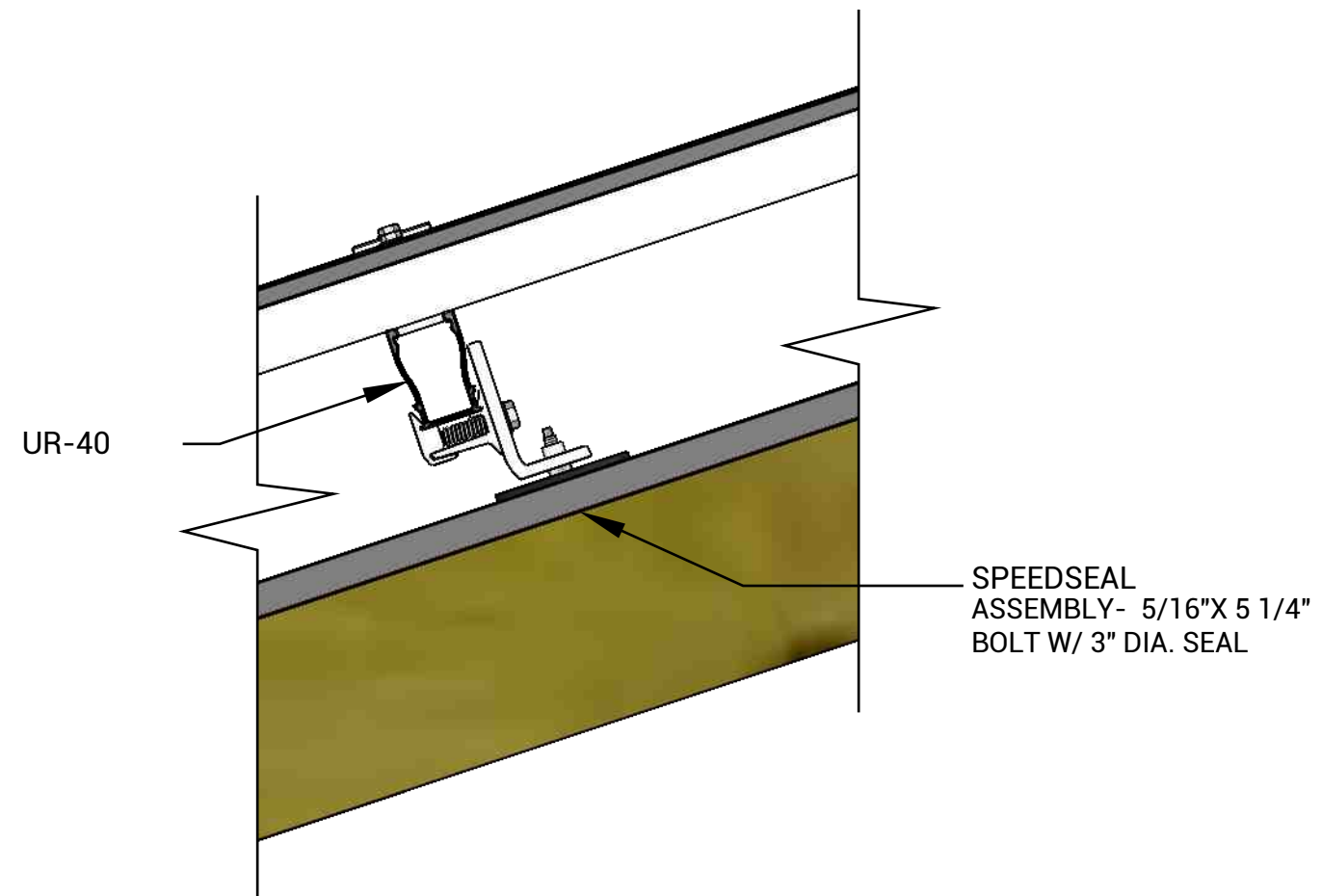
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Sheet No.  
**G-01**





**01**  
S-02 SECTION - RAIL  
SCALE: 3/4" = 1'



**02**  
S-02 DETAIL - SPEEDSEAL  
SCALE: 3" = 1'

**8.69KW PV SYSTEM**  
**VALENTIN RESIDENCE**  
232 Village Bend Dr, Fuquay-  
Varina, NC 27526

**ASSEMBLY DETAILS**



**REVISION LIST** ⚠

#	REV. DATE	DESC.

DATE: June 7, 2021  
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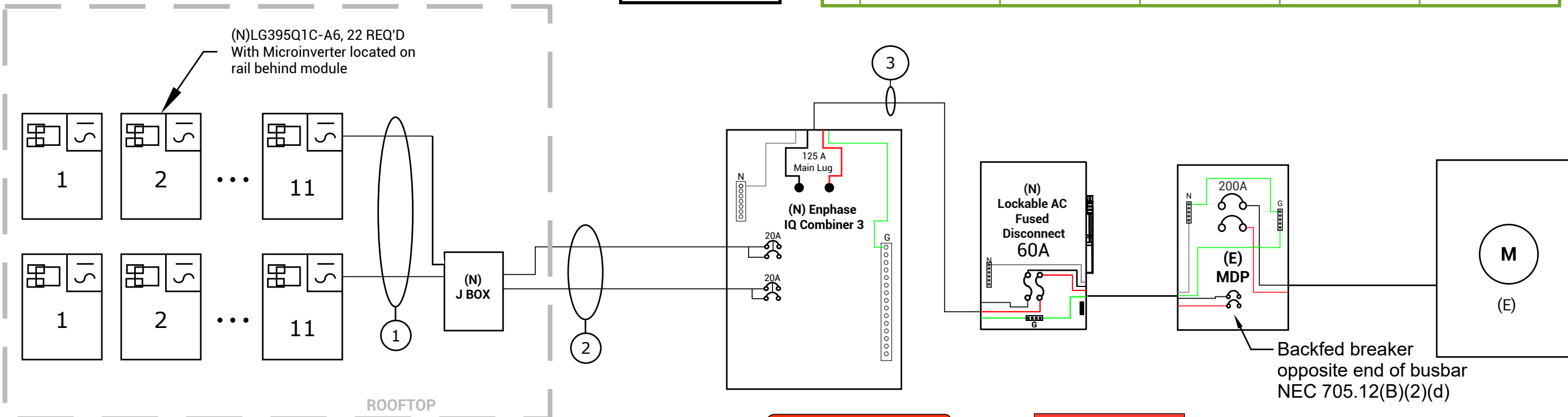
Sheet No.  
**S-02**

**GENERAL ELECTRICAL NOTES**

1. Equipment shall be new unless otherwise noted.
2. Equipment shall be listed unless otherwise noted.
3. Equipment shall be installed providing adequate working space in compliance with NEC.
4. Copper conductors shall be used and shall have insulation rating 600v, 90°C unless otherwise noted.
5. Conductors shall be sized in accordance with the NEC and ampacity shall be derated for temperature increase, conduit fill & voltage drop.
6. All conductors shall be installed in approved conduits. Conduits shall be adequately supported in accordance with the NEC.
7. AC Disconnect is optional, however it may be required by the utility.
8. Exposed non-current carrying metal parts shall be grounded in accordance with the NEC.
9. All work shall comply with the NEC and all applicable local electrical code requirements.
10. Contractor will provide labeling in accordance with the NEC, Article 110, 225, 690, and 705.

WIRING SCHEDULE					
TAG	CONDUIT SIZE	CONDUCTOR	NEUTRAL	GROUND	NOTES
1	NONE	12/2 Trunk Cable	NONE	6 AWG	(Mfg. supplied cabling within array)
2	1" PVC OR EQUIV	10/2 UF (60°)	NONE	10 AWG	J Box to IQ Combiner
3	1" PVC OR EQUIV	#6 THWN-2	#6 THWN-2	#6 THWN-2	IQ Combiner to Disco to MDP

LEGEND	
(N)	NEW
(E)	EXISTING
(O)	NEW BY OTHERS
----	NEUTRAL
----	GROUND



PANEL MODEL: LG395Q1C-A6, 22REQ'D, 395W INVERTER TYPE: Enphase IQ7A-72-2-US 22 REQ'D 349W, 240V 7.678 kW-AC/8.69 kW-DC/

**WARNING**  
TURN OFF PHOTOVOLTAIC AC DISCONNECT PRIOR TO WORKING INSIDE PANEL  
Location: Combiner box

**RAPID SHUTDOWN PV ARRAY**  
690.56 (c)(3)  
Location: Disconnect

**SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN**  
TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUT DOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN THE ARRAY  
690.56 (c)(1)(a)  
Location: Disconnect

**PV SOLAR BREAKER DO NOT RELOCATE THIS OVERCURRENT DEVICE**  
705.12 (B)(2)(3)(b)  
Location: PV Breakers

**WARNING**  
DUAL POWER SUPPLY SOURCES: UTILITY GRID AND PV SOLAR ELECTIC SYSTEM  
705.10  
Location: Disconnect

**PHOTOVOLTAIC SYSTEM AC DISCONNECT**  
RATED AC OPERATING CURRENT 34.8 AMPS AC  
AC NOMINAL OPERATING VOLTAGE 240 VAC  
690.54  
Location: MDP

**WARNING**  
PHOTOVOLTAIC SYSTEM COMBINER PANEL  
DO NOT ADD LOADS  
705.12  
Location: Combiner box

**SOLAR DISCONNECT**  
690.13 (B)  
Location: Disconnect



**8.69KW PV SYSTEM**  
**VALENTIN RESIDENCE**

232 Village Bend Dr, Fuquay-Varina, NC 27526

**LINE DIAGRAM**



**REVISION LIST**

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Sheet No.

# LG NeON<sup>®</sup>R

LG395Q1C-A6

395W

LG NeON<sup>®</sup>R is powerful solar module that provides world-class performance. A new cell structure that eliminates electrodes on the front maximizes the utilization of light and enhances reliability. LG NeON<sup>®</sup>R is a result of LG's efforts to increase customer's values beyond efficiency. LG NeON<sup>®</sup>R features enhanced durability, performance under real-world conditions, an enhanced warranty and aesthetic design suitable for roofs.



60

## LG NeON<sup>®</sup>R

LG395Q1C-A6

### General Data

Cell Properties (Material/Type)	Monocrystalline / N-type
Cell Maker	LG
Cell Configuration	60 Cells (6 x 10)
Module Dimensions (L x W x H)	1,740mm x 1,042mm x 40mm
Weight	18.5 kg
Glass (Material)	Tempered Glass with AR Coating
Backsheet (Color)	White
Frame (Material)	Anodized Aluminium
Junction Box (Protection Degree)	IP 68 with 3 Bypass Diodes
Cables (Length)	1,250mm x 2EA
Connector (Type/Maker)	MC 4 / MC

### Certifications and Warranty

Certifications*	IEC 61215-1/-1-1/2 : 2016, IEC 61730-1/2 : 2016, UL 61730-1 : 2017, UL 61730-2 : 2017, ISO 9001, ISO 14001, ISO 50001
	OHSA5 T8001
Salt Mist Corrosion Test	IEC 61701:2012 Severity 6
Ammonia Corrosion Test	IEC 62716 : 2013
Module Fire Performance	Type 1 (UL 61730)
Fire Rating	Class C (UL 790, ULC / ORD C 1703)
Solar Module Product Warranty	25 Years
Solar Module Output Warranty	Linear Warranty*

\*Improved: 1<sup>st</sup> year 98.5%, from 2-24th year: -0.25%/year down, 92.5% at year 25

### Temperature Characteristics

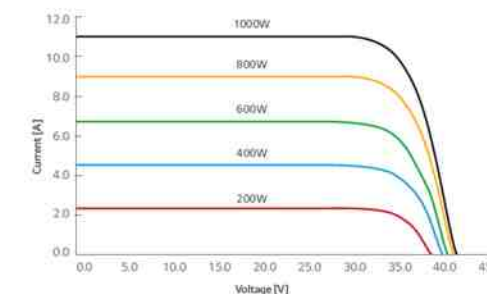
NMOT <sup>†</sup>	[°C]	44 ± 3
P <sub>max</sub>	[%/°C]	-0.29
V <sub>oc</sub>	[%/°C]	-0.24
I <sub>sc</sub>	[%/°C]	0.04

<sup>†</sup>NMOT (Nominal Module Operating Temperature): Irradiance 800 W/m<sup>2</sup>, Ambient temperature 20°C, Wind speed 1 m/s, Spectrum AM 1.5

### Electrical Properties (NMOT)

Model	LG395Q1C-A6	
Maximum Power (P <sub>max</sub> )	[W]	299
MPP Voltage (V <sub>mpp</sub> )	[V]	34.9
MPP Current (I <sub>mpp</sub> )	[A]	8.57
Open Circuit Voltage (V <sub>oc</sub> )	[V]	41.6
Short Circuit Current (I <sub>sc</sub> )	[A]	9.10

### I-V Curves



### Electrical Properties (STC\*)

Model	LG395Q1C-A6	
Maximum Power (P <sub>max</sub> )	[W]	395
MPP Voltage (V <sub>mpp</sub> )	[V]	37.0
MPP Current (I <sub>mpp</sub> )	[A]	10.69
Open Circuit Voltage (V <sub>oc</sub> , ±5%)	[V]	43.6
Short Circuit Current (I <sub>sc</sub> , ±5%)	[A]	11.29
Module Efficiency	[%]	21.8
Power Tolerance	[%]	0 ~ +3

\*STC (Standard Test Condition): Irradiance 1000 W/m<sup>2</sup>, Cell temperature 25°C, AM 1.5 Measure Tolerance: ±3%

### Operating Conditions

Operating Temperature*	[°C]	-40 ~ +85
Maximum System Voltage	[V]	1,000
Maximum Series Fuse Rating	[A]	20
Mechanical Test Load <sup>†</sup> (Front)	[Pa/psf]	5,400
Mechanical Test Load <sup>†</sup> (Rear)	[Pa/psf]	4,000

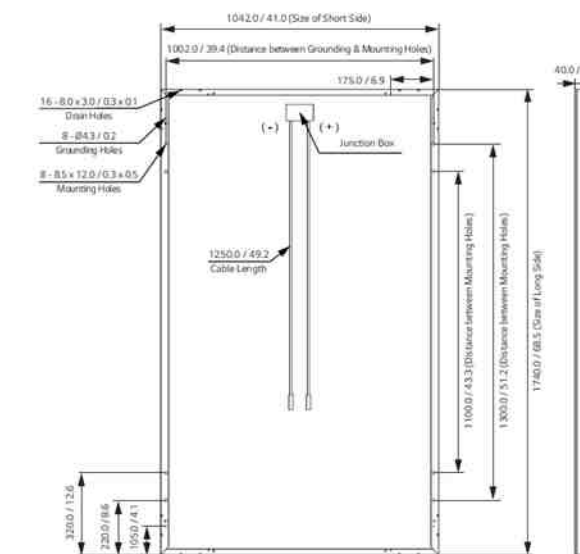
\*The operating ambient temperature of these devices may exceed 40°C at full load for all wire sizes if it is determined suitable in the field use application.

<sup>†</sup>Based on IEC 61215-2 : 2016 (Test Load = Design Load x Safety Factor (1.5))

### Packaging Configuration

Number of Modules per Pallet	[EA]	25
Number of Modules per 40' Container	[EA]	650
Number of Modules per 53' Container	[EA]	850
Packaging Box Dimensions (L x W x H)	[mm]	1,790 x 1,120 x 1,227
Packaging Box Dimensions (L x W x H)	[in]	70.5 x 44.1 x 48.3
Packaging Box Gross Weight	[kg]	498
Packaging Box Gross Weight	[lb]	1,098

### Dimensions (mm/inch)



### Features



#### Roof Aesthetics

LG NeON<sup>®</sup>R has been designed with aesthetics in mind: the lack of any electrodes on the front creates an improved, modern aesthetic.



#### 25-Year Limited Product Warranty

The NeON<sup>®</sup>R is covered by a 25-year limited product warranty. In addition, up to \$450 of labor costs will be covered in the rare case that a module needs to be repaired or replaced.



#### Enhanced Performance Warranty

The LG NeON<sup>®</sup>R has an enhanced performance warranty. After 25 years, LG NeON<sup>®</sup>R is guaranteed at least 92.5% of initial performance.



#### More generation per square meter

The LG NeON<sup>®</sup>R has been designed to significantly enhance its output, making it efficient even in limited space.

When you go solar, ask for the brand you can trust: LG Solar

### About LG Electronics USA, Inc.

LG Electronics is a global leader in electronic products in the clean energy markets by offering solar PV panels and energy storage systems. The company first embarked on a solar energy source research program in 1985, supported by LG Group's vast experience in the semi-conductor, LCD, chemistry and materials industries. In 2010, LG Solar successfully released its first Mono<sup>®</sup> series to the market, which is now available in 32 countries. The NeON<sup>®</sup> (previous Mono<sup>®</sup> NeON), NeON<sup>®</sup>2, NeON<sup>®</sup>2 Bifacial won the "Intersolar AWARD" in 2013, 2015 and 2016, which demonstrates LG's leadership and innovation in the solar industry.



LG Electronics USA, Inc.  
Solar Business Division  
2000 Millbrook Drive  
Lincolnshire, IL 60069  
www.lg-solar.com

Product specifications are subject to change without notice.  
LG395Q1C-A6.pdf  
011821

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## CAPE FEAR SOLAR SYSTEMS

901 Martin Street, Unit A  
Wilmington, NC 28401  
910-409-5533



GC LIC. NO. : 65677  
ELEC. LIC. NO. : U-33321

8.69KW PV SYSTEM  
VALENTIN RESIDENCE  
232 Village Bend Dr, Fuquay-  
Varina, NC 27526

RESOURCES

SUNPOWER<sup>®</sup>  
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### REVISION LIST

#	REV. DATE	DESC.

DATE: June 7, 2021  
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Sheet No.

R-01

## Enphase IQ 7A Microinverter

The high-powered smart grid-ready **Enphase IQ 7A Micro™** dramatically simplifies the installation process while achieving the highest system efficiency for systems with 60-cell and 72-cell modules.

Part of the Enphase IQ System, the IQ 7A Micro integrates with the Enphase IQ Envoy™, Enphase IQ Battery™, and the Enphase Enlighten™ monitoring and analysis software.

The IQ Series Microinverters extend the reliability standards set forth by previous generations and undergo over a million hours of power-on testing, enabling Enphase to provide an industry-leading warranty of up to 25 years.



### High Power

- Peak output power 366 VA @ 240 VAC and 295 VA @ 208 VAC

### Easy to Install

- Lightweight and simple
- Faster installation with improved, lighter two-wire cabling
- Built-in rapid shutdown compliant (NEC 2014 & 2017)

### Efficient and Reliable

- Optimized for high powered 60-cell and 72-cell modules
- Highest CEC efficiency of 97%
- More than a million hours of testing
- Class II double-insulated enclosure
- UL listed

### Smart Grid Ready

- Complies with advanced grid support, voltage and frequency ride-through requirements
- Envoy and Internet connection required
- Configurable for varying grid profiles
- Meets CA Rule 21 (UL 1741-SA)

## Enphase IQ 7A Microinverter

INPUT (DC)	IQ7A-72-2-US	
Commonly used module pairings <sup>1</sup>	295 W–460 W +	
Module compatibility	60-cell, 66-cell, and 72-cell PV modules	
Maximum input DC voltage	58 V	
Power point tracking voltage range <sup>2</sup>	18 V–58 V	
Min/Max start voltage	30 V / 58 V	
Max DC short circuit current (module Isc) <sup>3</sup>	15 A	
Overvoltage class DC port	II	
DC port backfeed current	0 A	
PV array configuration	1 x 1 ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit	
OUTPUT (AC)	@ 240 VAC	@ 208 VAC
Peak output power	366 VA	295 VA
Maximum continuous output power	349 VA	290 VA
Nominal (L-L) voltage/range <sup>4</sup>	240 V / 211–264 V	208 V / 183–229 V
Maximum continuous output current	1.45 A (240 VAC)	1.39 A (208 VAC)
Nominal frequency	60 Hz	
Extended frequency range	47–68 Hz	
AC short circuit fault current over 3 cycles	5.8 Arms	
Maximum units per 20 A (L-L) branch circuit <sup>5</sup>	11 (240 VAC)	11 (208 VAC)
Overvoltage class AC port	III	
AC port backfeed current	18 mA	
Power factor setting	1.0	
Power factor (adjustable)	0.85 leading ... 0.85 lagging	
EFFICIENCY	@240 VAC	@208 VAC
CEC weighted efficiency	97.0 %	96.5%
MECHANICAL		
Ambient temperature range	-40°C to +60°C	
Relative humidity range	4% to 100% (condensing)	
Connector type: DC (IQ7A-72-2-US)	MC4	
Dimensions (WxHxD)	212 mm x 175 mm x 30.2 mm (without bracket)	
Weight	1.08 kg (2.38 lbs)	
Cooling	Natural convection – No fans	
Approved for wet locations	Yes	
Pollution degree	PD3	
Enclosure	Class II double-insulated, corrosion resistant polymeric enclosure	
Environmental category / UV exposure rating	NEMA Type 6 / outdoor	
FEATURES		
Communication	Power Line Communication (PLC)	
Monitoring	Enlighten Manager and MyEnlighten monitoring options Compatible with Enphase IQ Envoy	
Disconnecting means	The AC and DC connectors have been evaluated and approved by UL for use as the load-break disconnect required by NEC 690.	
Compliance	CA Rule 21 (UL 1741-SA) UL 62109-1, UL1741/IEEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 107.1-01 This product is UL Listed as PV Rapid Shut Down Equipment and conforms with NEC-2014 and NEC-2017 section 690.12 and C22.1-2015 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according manufacturer's instructions.	

1. No enforced DC/AC ratio. See the compatibility calculator at <https://enphase.com/en-us/support/module-compatibility>.  
2. CEC peak power tracking voltage range is 38 V to 43 V.  
3. Maximum continuous input DC current is 10.2A.  
4. Voltage range can be extended beyond nominal if required by the utility.  
5. Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

To learn more about Enphase offerings, visit [enphase.com](https://enphase.com)

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To learn more about Enphase offerings, visit [enphase.com](https://enphase.com)



**8.69KW PV SYSTEM  
VALENTIN RESIDENCE**  
232 Village Bend Dr, Fuquay-  
Varina, NC 27526

**RESOURCES**

**SUNPOWER®**

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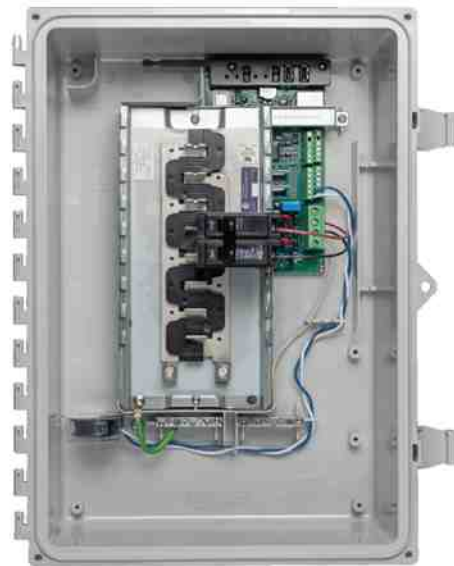
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Sheet No.

**R-02**

## Enphase IQ Combiner 3 (X-IQ-AM1-240-3)

The **Enphase IQ Combiner 3™** with Enphase IQ Envoy™ consolidates interconnection equipment into a single enclosure and streamlines PV and storage installations by providing a consistent, pre-wired solution for residential applications. It offers up to four 2-pole input circuits and Eaton BR series busbar assembly.



### Smart

- Includes IQ Envoy for communication and control
- Flexible networking supports Wi-Fi, Ethernet, or cellular
- Optional AC receptacle available for PLC bridge
- Provides production metering and optional consumption monitoring

### Simple

- Reduced size from previous combiner
- Centered mounting brackets support single stud mounting
- Supports back and side conduit entry
- Up to four 2-pole branch circuits for 240 VAC plug-in breakers (not included)
- 80 A total PV or storage branch circuits

### Reliable

- Durable NRTL-certified NEMA type 3R enclosure
- Five-year limited warranty
- UL listed

## Enphase IQ Combiner 3

MODEL NUMBER	
IQ Combiner 3 X-IQ-AM1-240-3	IQ Combiner 3 with Enphase IQ Envoy™ printed circuit board for integrated revenue grade PV production metering (ANSI C12.20 +/- 0.5%) and optional* consumption monitoring (+/- 2.5%).
ACCESSORIES and REPLACEMENT PARTS (not included, order separately)	
Enphase Mobile Connect™ CELLMODEM-03 (4G/12-year data plan) CELLMODEM-01 (3G/5-year data plan) CELLMODEM-M1 (4G based LTE-M/5-year data plan) Consumption Monitoring* CT CT-200-SPLIT	Plug and play industrial grade cellular modem with data plan for systems up to 60 microinverters. (Available in the US, Canada, Mexico, Puerto Rico, and the US Virgin Islands, where there is adequate cellular service in the installation area.) Split core current transformers enable whole home consumption metering (+/- 2.5%).
Wireless USB adapter COMMS-KIT-01	Installed at the IQ Envoy. For communications with Enphase Encharge™ storage and Enphase Enpower™ smart switch. Includes USB cable for connection to IQ Envoy or Enphase IQ Combiner™ and allows redundant wireless communication with Encharge and Enpower.
Circuit Breakers BRK-10A-2-240 BRK-15A-2-240 BRK-20A-2P-240	Supports Eaton BR210, BR215, BR220, BR230, BR240, BR250, and BR260 circuit breakers. Circuit breaker, 2 pole, 10A, Eaton BR210 Circuit breaker, 2 pole, 15A, Eaton BR215 Circuit breaker, 2 pole, 20A, Eaton BR220
EPLC-01	Power line carrier (communication bridge pair), quantity - one pair
XA-PLUG-120-3	Accessory receptacle for Power Line Carrier in IQ Combiner 3 (required for EPLC-01)
XA-ENV-PCBA-3	Replacement IQ Envoy printed circuit board (PCB) for Combiner 3
ELECTRICAL SPECIFICATIONS	
Rating	Continuous duty
System voltage	120/240 VAC, 60 Hz
Eaton BR series busbar rating	125 A
Max. continuous current rating (output to grid)	65 A
Max. fuse/circuit rating (output)	90 A
Branch circuits (solar and/or storage)	Up to four 2-pole Eaton BR series Distributed Generation (DG) breakers only (not included)
Max. continuous current rating (input from PV)	64 A
Max. total branch circuit breaker rating (input)	80A of distributed generation / 90A with IQ Envoy breaker included
Production Metering CT	200 A solid core pre-installed and wired to IQ Envoy
MECHANICAL DATA	
Dimensions (WxHxD)	49.5 x 37.5 x 16.8 cm (19.5" x 14.75" x 6.63"). Height is 21.06" (53.5 cm with mounting brackets).
Weight	7.5 kg (16.5 lbs)
Ambient temperature range	-40° C to +46° C (-40° to 115° F)
Cooling	Natural convection, plus heat shield
Enclosure environmental rating	Outdoor, NRTL-certified, NEMA type 3R, polycarbonate construction
Wire sizes	<ul style="list-style-type: none"> <li>• 20 A to 50 A breaker inputs: 14 to 4 AWG copper conductors</li> <li>• 60 A breaker branch input: 4 to 1/0 AWG copper conductors</li> <li>• Main lug combined output: 10 to 2/0 AWG copper conductors</li> <li>• Neutral and ground: 14 to 1/0 copper conductors</li> </ul> Always follow local code requirements for conductor sizing.
Altitude	To 2000 meters (6,560 feet)
INTERNET CONNECTION OPTIONS	
Integrated Wi-Fi	802.11b/g/n
Ethernet	Optional, 802.3, Cat5E (or Cat 6) UTP Ethernet cable (not included)
Cellular	Optional, CELLMODEM-01 (3G) or CELLMODEM-03 (4G) or CELLMODEM-M1 (4G based LTE-M) (not included)
COMPLIANCE	
Compliance, Combiner	UL 1741, CAN/CSA C22.2 No. 107.1, 47 CFR, Part 15, Class B, ICES 003 Production metering: ANSI C12.20 accuracy class 0.5 (PV production)
Compliance, IQ Envoy	UL 60601-1/CANCSA 22.2 No. 61010-1

To learn more about Enphase offerings, visit [enphase.com](http://enphase.com)

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2019-11-04



**8.69KW PV SYSTEM  
VALENTIN RESIDENCE**  
232 Village Bend Dr, Fuquay-  
Varina, NC 27526

**RESOURCES**



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Sheet No.  
**R-03**



To learn more about Enphase offerings, visit [enphase.com](http://enphase.com)



pe.eaton.com



## Eaton general duty cartridge fuse safety switch

DG222NRB

UPC:782113144221

### Dimensions:

- Height: 14.37 IN
- Length: 7.35 IN
- Width: 8.4 IN

Weight:10 LB

**Notes:**Maximum hp ratings apply only when dual element fuses are used. 3-Phase hp rating shown is a grounded B phase rating, UL listed.

### Warranties:

- Eaton Selling Policy 25-000, one (1) year from the date of installation of the Product or eighteen (18) months from the date of shipment of the Product, whichever occurs first.

### Specifications:

- **Type:** General duty, cartridge fused
- **Amperage Rating:** 60A
- **Enclosure:** NEMA 3R
- **Enclosure Material:** Painted galvanized steel
- **Fuse Class Provision:** Class H fuses
- **Fuse Configuration:** Fusible with neutral
- **Number Of Poles:** Two-pole
- **Number Of Wires:** Three-wire
- **Product Category:** General duty safety switch
- **Voltage Rating:** 240V

### Supporting documents:

- [Eaton's Volume 2-Commercial Distribution](#)
- [Eaton Specification Sheet - DG222NRB](#)

### Certifications:

- UL Listed

Product compliance: No Data

## CAPE FEAR SOLAR SYSTEMS

901 Martin Street, Unit A  
Wilmington, NC 28401  
910-409-5533



GC LIC. NO. : 65677

ELEC. LIC. NO. : U-33321

**8.69KW PV SYSTEM  
VALENTIN RESIDENCE**  
232 Village Bend Dr, Fuquay-  
Varina, NC 27526

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DATE: June 7, 2021

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Sheet No.

**R-04**



## SnapNrack SpeedSeal™ Foot

Patent Pending Lag Driven Sealant Solution for Ultra Rail



### A New Generation of Roof Attachments

- Innovative design incorporates flashing reliability into a single roof attachment
- 100% waterproof solution
- Sealing cavity with compressible barrier secures sealant in place & fills voids

### Maintain the Integrity of the Roof by Eliminating Disruption

- Zero prying of shingles
- Zero removal of nails leaving holes in the roof
- Roof remains installed the way manufacturer meant it to be

### Lag Driven Sealant Waterproofing

- Time Tested Roof Sealant provides lasting seal
- Sealant is compressed into cavity and lag hole as attachment is secured to rafter
- Active sealant solidifies bond if ever touched by liquid
- Technology passes UL 2582 Wind Driven Rain Test and ASTM E2140 Water Column Testing standards. Patent Pending.

### Single Tool Installation

- SnapNrack was the first in the industry to develop a complete system that only requires a single tool. That tradition is continued as a ½" socket is still the only tool necessary to secure the mount as well as all other parts of the system.



*Note: Sealant shown in white for illustration purposes only.*

## SnapNrack SpeedSeal™ Foot

Fastest Roof Attachment in Solar

- Lag straight to a structural member, no in-between components such as flashings or bases.
- Simply locate rafter, fill sealant cavity & secure to roof. *It's that simple!*



### Integrated Flashings. No Questions.

- Sealant fills around lag screw keeping roof and structure sealed and intact
- No added holes from ripping up nails, staples and screws holding shingles on roof

### Less Time. Less Parts. Less Tools.

- No more need for a pry bar to rip up shingles
- No more proprietary lag screws
- Single Tool installation with ½" socket



### Total System Solution One Tool. One Warranty.

- SnapNrack Ultra Rail is a straightforward intuitive install experience on the roof without compromising quality, aesthetics & safety, all supported by a 25 year warranty.
- Built-in Wire Management & Aesthetically pleasing features designed for Ultra Rail result in a long-lasting quality install that installers and homeowners love.

### Certifications

SnapNrack Ultra Rail System has been evaluated by Underwriters Laboratories (UL) and Listed to UL/ANSI Standard 2703 for Mechanical Loading and Fire. Additionally it is listed to UL 2582 for wind-driven rain and ASTM 2140.



8.69KW PV SYSTEM  
VALENTIN RESIDENCE

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Varina, NC 27526

RESOURCES

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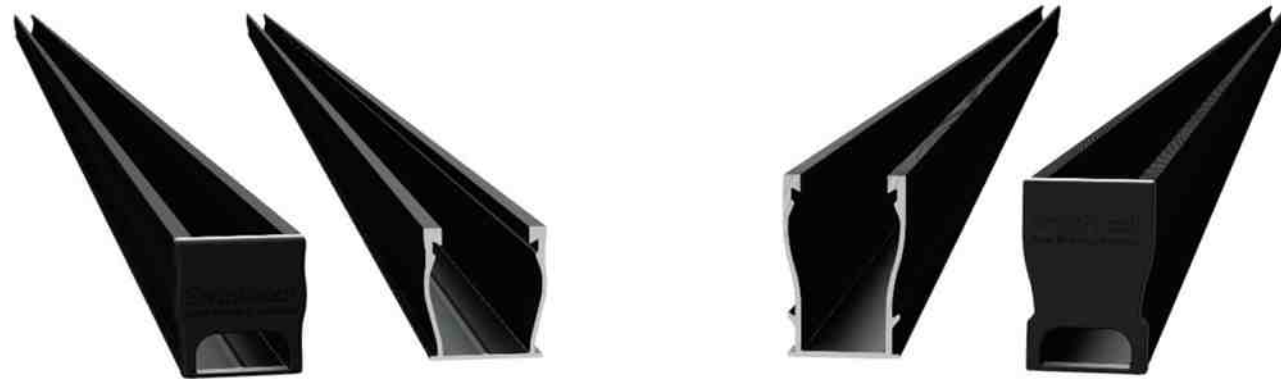
R-05

# Ultra Rail

**UR-40**  
**UR-60**

## SnapNrack Ultra Rail System

A sleek, straightforward rail solution for mounting solar modules on all roof types. Ultra Rail features two rail profiles; UR-40 is a lightweight rail profile that is suitable for most geographic regions and maintains all the great features of SnapNrack rail, while UR-60 is a heavier duty rail profile that provides a larger rail channel and increased span capabilities. Both are compatible with all existing mounts, module clamps, and accessories for ease of install.



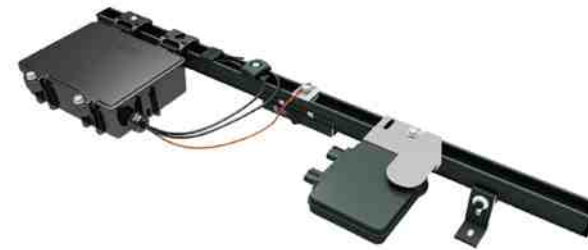
### The Entire System is a Snap to Install

- New Ultra Rail Mounts include snap-in brackets for attaching rail
- Compatible with all the SnapNrack Mid Clamps and End Clamps customers love
- Universal End Clamps and snap-in End Caps provide a clean look to the array edge



### Unparalleled Wire Management

- Open rail channel provides room for running wires resulting in a long-lasting quality install
- Industry best wire management offering includes Junction Boxes, Universal Wire Clamps, MLPE Attachment Kits, and Conduit Clamps
- System is fully bonded and listed to UL 2703 Standard



## The Ultimate Value in Rooftop Solar

Industry leading Wire Management Solutions

Mounts available for all roof types

Single Tool Installation

All SnapNrack Module Clamps & Accessories are compatible with both rail profiles

### Heavy Duty UR-60 Rail

- UR-60 rail profile provides increased span capabilities for high wind speeds and snow loads
- Taller, stronger rail profile includes profile-specific rail splice and end cap
- All existing mounts, module clamps, and accessories are retained for the same great install experience



**Start Installing Ultra Rail Today**

**RESOURCES** [snapnrack.com/resources](http://snapnrack.com/resources)  
**DESIGN** [snapnrack.com/configurator](http://snapnrack.com/configurator)  
**WHERE TO BUY** [snapnrack.com/where-to-buy](http://snapnrack.com/where-to-buy)

## Quality. Innovative. Superior.

SnapNrack Solar Mounting Solutions are engineered to optimize material use and labor resources and improve overall installation quality and safety.

877-732-2860 [www.snapnrack.com](http://www.snapnrack.com) [contact@snapnrack.com](mailto:contact@snapnrack.com)

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ELEC. LIC. NO. : U-33321

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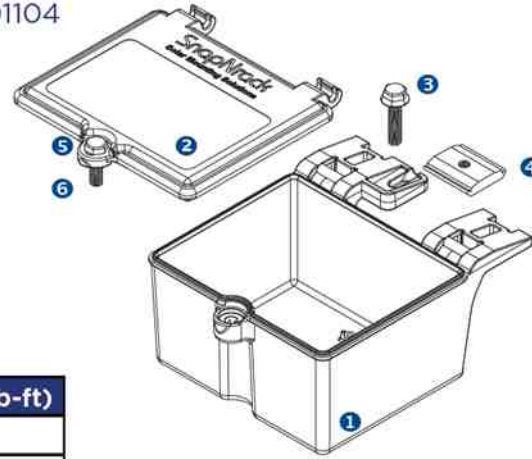
**R-06**

## Junction Box R for Rail Installation Manual

Part No. 242-01104

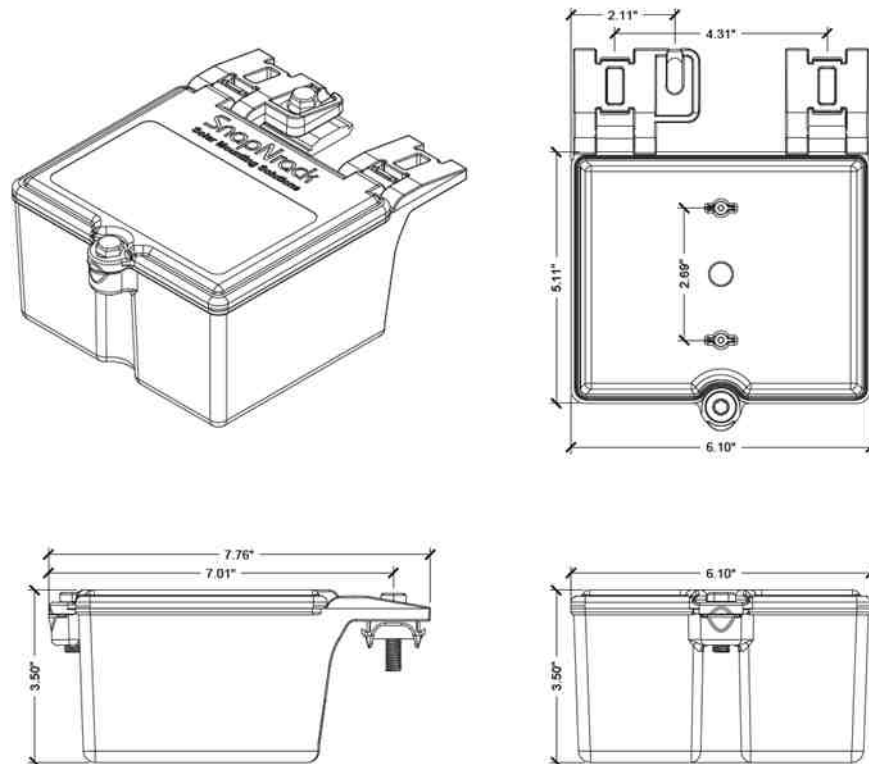
### Materials Included

- 1 (1) SnapNrack Junction Box Body
- 2 (1) SnapNrack Junction Box Lid w/Gasket
- 3 (1) 5/16"-18 X 1-1/4" SS HCS Bolt
- 4 (1) SnapNrack Channel Nut
- 5 (1) 5/16"-18 X 1" SS HCS Bolt
- 6 (1) 5/16"-18 Self-Retaining Washer



Hardware Description	Torque Specification (lb-ft)
Junction Box Channel Nut	5 lb-ft (60 lb-in)
Junction Box Lid	3 lb-ft (36 lb-in)

Technical Specifications	
Internal Dimensions	5.5" x 4.5" x 3.2" (inner box area)
Material	Box: Polycarbonate Gasket: Rubber
UL Environmental Rating	Type 4X (NEMA 4X)
Certifications	UL50
Temperature Range	-40°F - 185°F (-40°C - 85°C)
Compatibility	Box Mount: Ultra Rail, S100 Standard Rail, S200 Ground Rail Internal Mount: Type O DIN Rail



### Required Tools

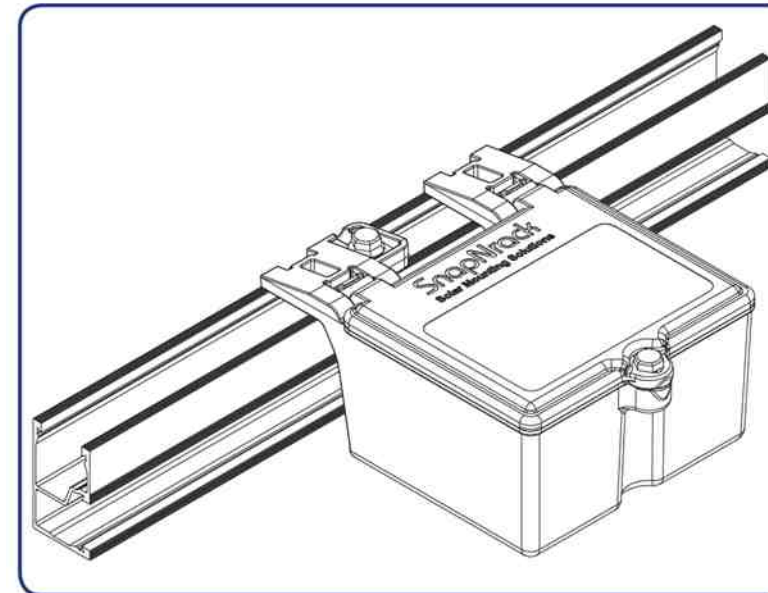
- Socket Wrench
- Torque Wrench
- 1/2" Socket

### Step-by-Step Instructions

1. Mount the junction box at the edge of the array where the conduit will terminate. Junction box access after installation should not require the removal of more than one module.
2. Tilt bolt and channel nut so one side of channel nut can easily fall into top rail channel. Press junction box until both clips snap into top rail channel.
3. Pull up on the head of the bolt to snap the channel nut into the top rail channel. Torque mount bolt to 5 lb-ft (60 lb-in).
4. Install outdoor-rated, sealed conduit fitting or sealed strain relief to side wall of junction box and complete wiring installation.

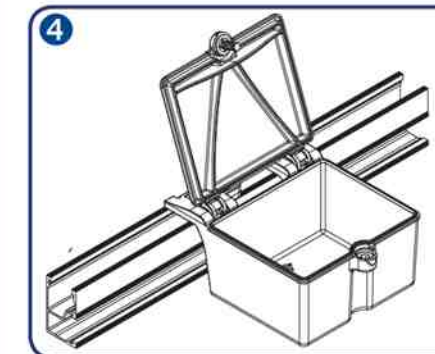
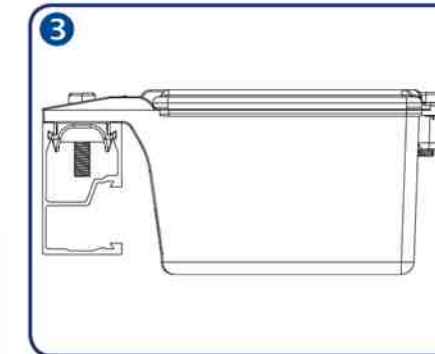
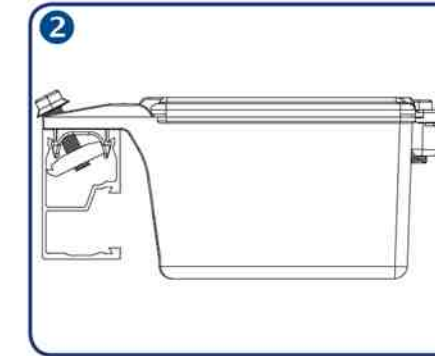
**CAUTION:** Nonmetallic enclosure does not provide grounding between conduit connections. Use grounding bushings and jumper wires.

5. Once wiring is complete, close lid and tighten bolt until the front lid tab makes contact with the tab on the box, then torque to 3 lb-ft (36 lb-in) minimum.



#### Installation Note:

To avoid the accumulation of water as a result of condensation inside junction boxes it is acceptable to add drainage openings with a minimum diameter of 1/8 inch and a maximum diameter of 1/4 inch. (Per NEC, 314.15)



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