Charlotte Historic District Commission ***Application for a Certificate of Appropriateness***
Staff Review ***Date: November 12, 2014***
HDC 2014-240

LOCAL HISTORIC DISTRICT:	Wesley Heights
PROPERTY ADDRESS:	617 Walnut Avenue
SUMMARY OF REQUEST:	Addition
OWNER:	Deedee Hall
APPLICANT:	Deedee Hall

Details of Proposed Request

Existing Conditions

The existing structure is a 1.5 story single family home constructed in 1938. It is listed as a contributing structure in the Wesley Heights National Register. Surrounding properties are a mix of single and multi-family structures. Adjacent structures are 1 and 1.5 story single family homes.

Proposal

The proposal is the addition of solar panels on the side of the roof. Mechanical systems associated with the panels should be located in the rear of the property.

Policy & Design Guidelines

The HDC Policy & Design Guidelines do not explicitly define the location of solar panels on rooftops but considers this proposal an Addition. Ideally, solar panels should be located to the rear of a property and not substantially visible. The Secretary of Interior's Standards states solar panels can be installed in a sensitive manner and should conform to guidance regarding rooftop additions, i.e. that they be minimally visible to avoid altering the historic character of the building. See the National Park Service's *Technical Preservation Services* section on alternative energy (ITS Number 52).

Additions to existing structures in Local Historic Districts have a responsibility to complement the original structure. Additions should reflect the design, scale and architectural style of the original structure. The following guidelines are intended to encourage addition designs that are compatible with the existing structure, while not fully mimicking the original design.

1. All additions will be reviewed for compatibility by the following criteria:	
a. **Size**	the relationship of the project to its site
b. **Scale**	the relationship of the building to those around it
c. **Massing**	the relationship of the building's various parts to each other
d. **Fenestration**	the placement, style and materials of windows and doors
e. **Rhythm**	the relationship of fenestration, recesses and projections
f. **Setback**	in relation to setback of immediate surroundings
g. **Materials**	proper historic materials or approved substitutes
h. **Context**	the overall relationship of the project to its surroundings

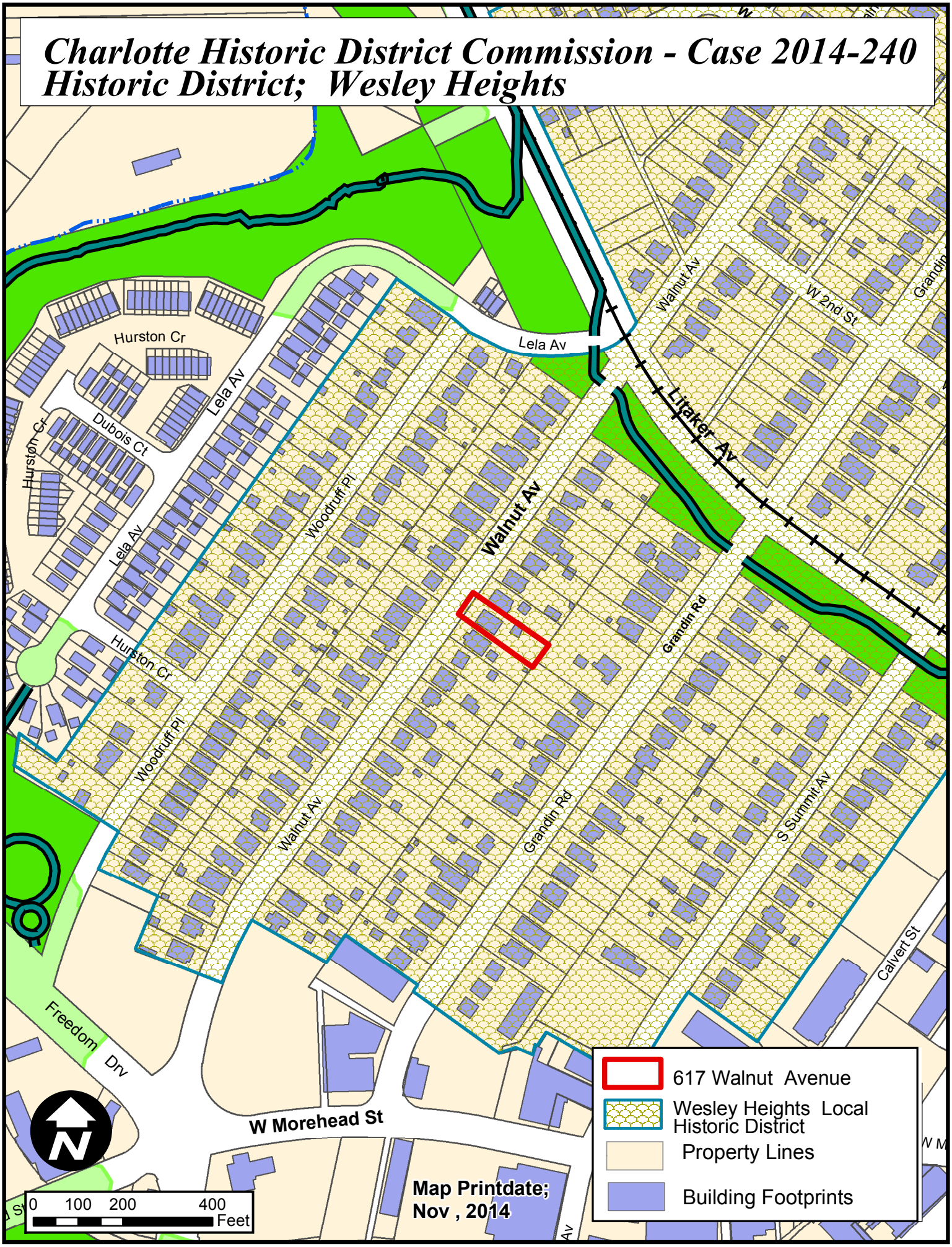
2. Additions must respect the original character of the property, but must be distinguishable from the original construction.

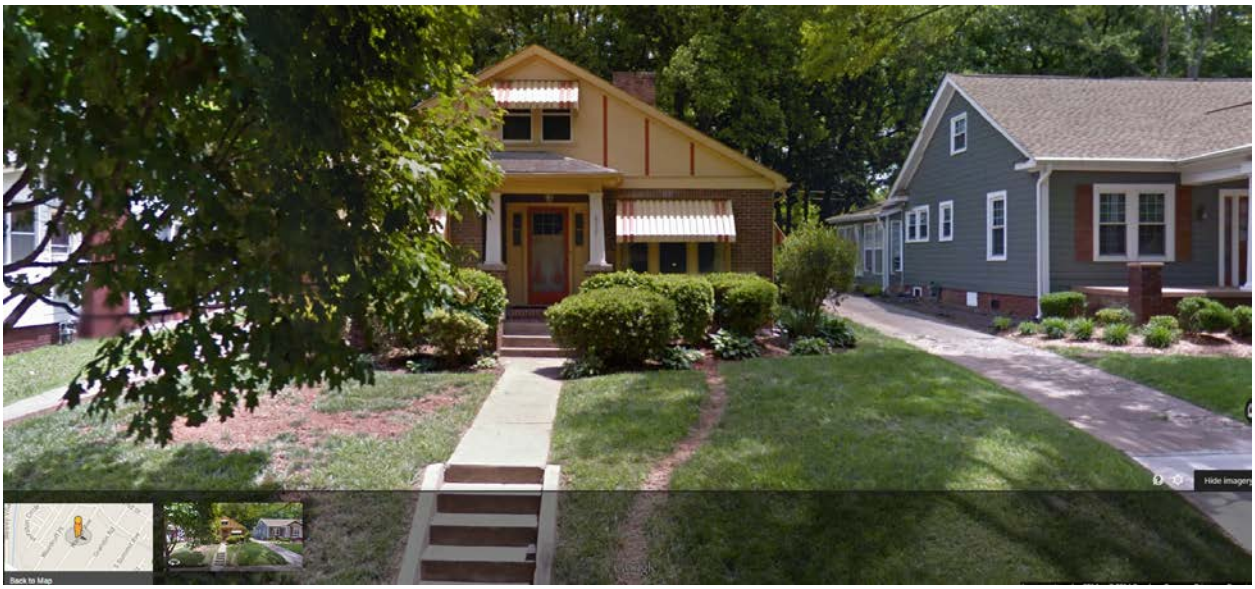
3. All additions to the front or side of existing properties must be of a design that is sensitive to the character and massing of the existing structure.

4. Additions to the front or side of existing structures that are substantially visible from a street must go before the full Commission.

Staff Analysis

The Commission shall determine if the proposal meets the applicable guidelines for additions.


Charlotte Historic District Commission - Case 2014-240
Historic District; Wesley Heights
Hurston Cr
Lela Av
Dubois Ct
Hurston Cr
Lela Av
Lela Av
Hurston Cr
Woodruff Pl
Woodruff Pl
Walnut Av
Walnut Av
Walnut Av
Grandin Rd
Grandin Rd
Grandin Rd
W 2nd St
Litaker Av
S Summit Av
Calvert St
Freedom Drv
W Morehead St
N
0 100 200 400 Feet
Map Printdate;
Nov , 2014
617 Walnut Avenue
Wesley Heights Local Historic District
Property Lines
Building Footprints



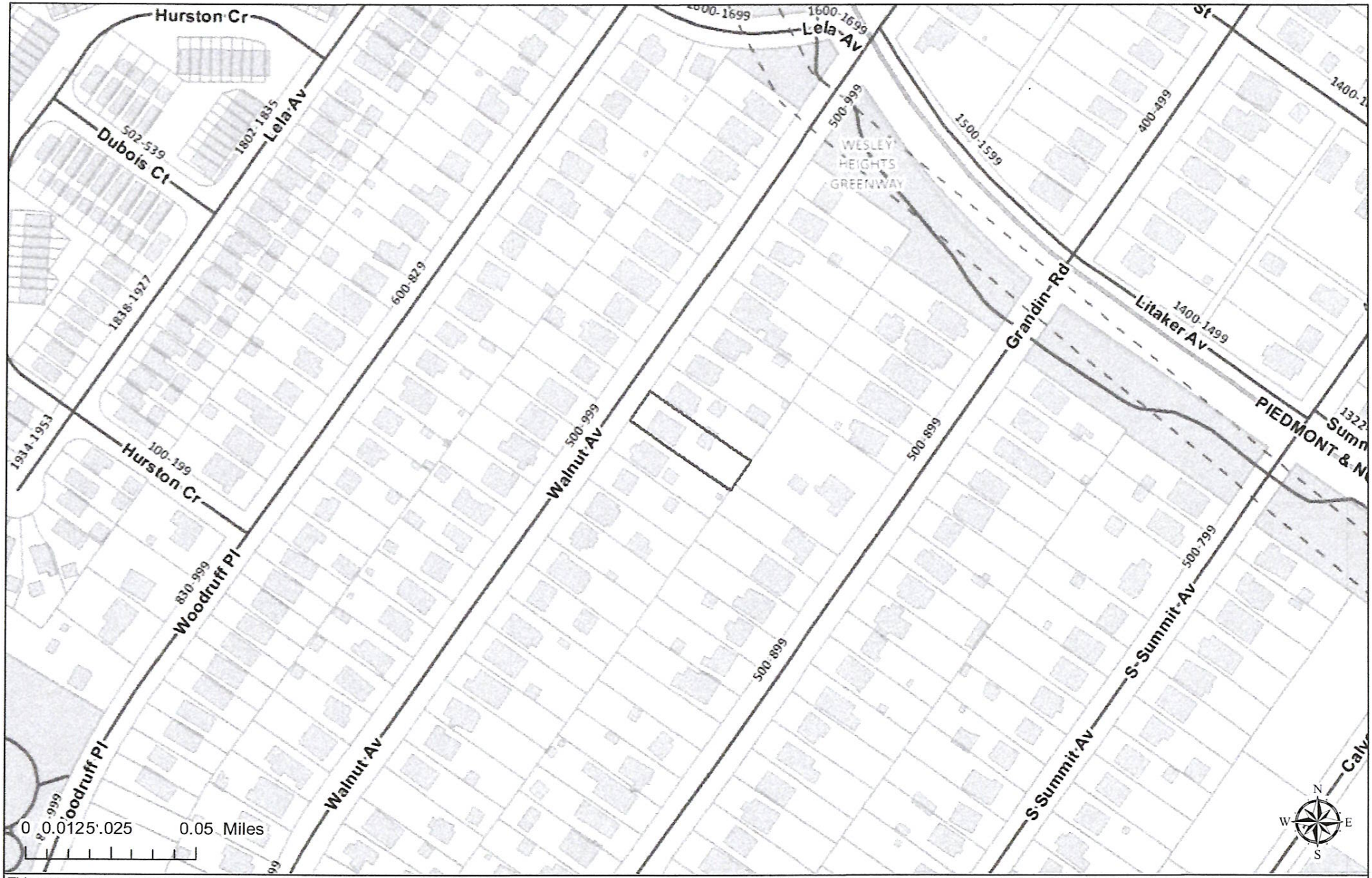
**The solar panels will be attached to the back right side (when facing the house as in this picture) of the rooftop, which cannot be seen from the street view.

* Red box on back of rooftop indicates where the solar panels will be attached to the roof of the home

Polaris 3G Map – Mecklenburg County, North Carolina

617 WALNUT AV, CHARLOTTE

Date Printed: 10/1/2014 7:46:58 AM



Print
Close

Parcel Information

Parcel ID	Account	Parent	Previous
07102208	INDIVIDUAL		

Owner(s)

Owner Name	Mailing Address	City/State
KIRK HELEN B RIGHTS SURVI	617 WALNUT AVE	CHARLOTTE NC 28208

Legal Information

Legal	Municipality	Date Annexed	Special District	Fire District	Acreage
L11 B11 M332-397	CHARLOTTE			CITY OF CHARLOTTE	0

Total Parcel Assessment

Building	Land	Features	Total
114900	76000	1100	192000

Exemptions

Exemption	Year Approved	Review Date	Amount

Sales Information

Sale	Price	Stamps	Qualify	VI	Type	Legal Ref.	Grantor
Aug 2 1977	0			IMP	WARRANTY D	03973-515	

Land Use

Use	Units	Type	Neighborhood	Assessment
R100	1	LT	H105	76000

Building Information

Bldg	Description	Type	Year	Property Location
1	Single-Fam	RES	1936	617 WALNUT AV CHARLOTTE

Bldg	Story	Units	Total SqFt	Heated SqFt	Foundation	Ext. Wall	Grade	Value
1	2.0 STORY	1	2214	2122	CRAWL SPACE	FACE BRICK -	AVERAGE 03	114900

Bldg	Heat	Fuel	Fire Place	AC	Fixtures	Bedrooms	Full Baths	3/4 Baths	1/2 Baths
1	AIR-DUCTED	GAS	1 - FP3	AC-NONE		3	1		1

Sub Area

Bldg	Description	Size
1	BASE (FIRST FLOOR)	1502
1	PORCH - ENCLOSED - UNFINISHED (NO HEAT)	60
1	PORCH - ENCLOSED - FINISHED (HEAT)	140
1	PORCH - OPEN - FINISHED	32
1	ATTIC - FINISHED	480

Depreciation

Bldg	Physical	Functional	Economic	Special	Override
1	AV - 16.00%				

Special Features & Yard Items

Bldg	Built	Type	Quantity	Units	Value
1	1936	GARAGE	1	18X18	1100

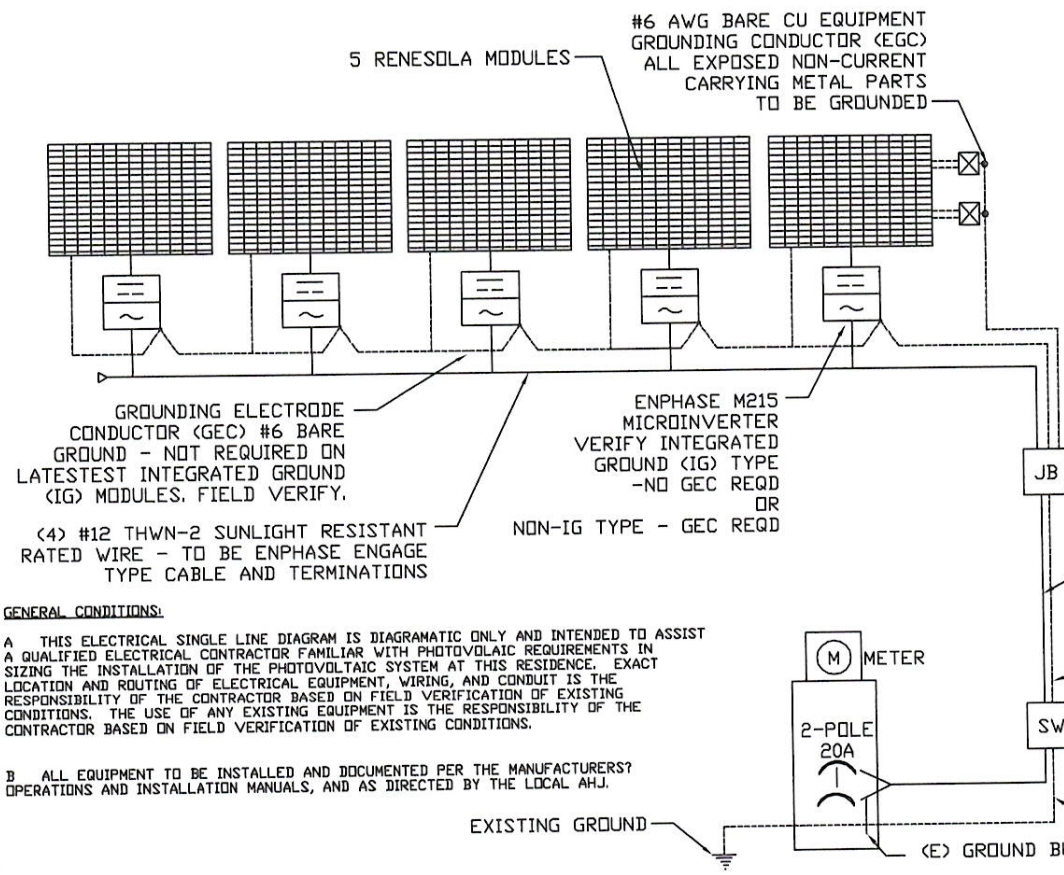
Notes

Tax Year	Notes	Note Date

Value Changes

Notice Date	Tax Year	Reason	Changed To	Deferred
Feb 8 2011	2011	Countywide Revaluation	192100	0
Jan 17 2003	2003	Countywide Revaluation	112300	0
Jan 5 1998	1998	Countywide Revaluation	73960	
Jan 2 1991	1991	Countywide Revaluation	50500	

SINGLE LINE DIAGRAM



SOLAR MODULE SPECIFICATIONS

MANUFACTURER:	RENESOLA
MAX POWER (Pmax)	250W
POWER TOLERANCE	0-+5%
MODULE EFFICIENCY	15.4%
MAXIMUM POWER CURRENT (Imp)	8.31 A
MAXIMUM POWER VOLTAGE (Vmp)	30.1 V
SHORT CIRCUIT CURRENT (Isc)	8.83 A
OPEN CIRCUIT VOLTAGE (Voc)	37.4 V

VALUES AT STANDARD TEST CONDITIONS STC (AIR MASS AM1.5, IRRADIANCE 1000W/M2, CELL TEMPERATURE 25°C)

MICROINVERTER SPECIFICATIONS

MANUFACTURER/MODEL:	ENPHASE M215
MAX. OUTPUT POWER	215W
NOMINAL OUTPUT CURRENT	0.9 AAC
MAX. INPUT VOLTAGE	45VDC
MAX. INPUT CURRENT	10.5 ADC
MAX. DC SHORT CIRCUIT CURRENT	15 ADC
CEC WEIGHTED EFFICIENCY	96.0%

MAXIMUM RATINGS

OPERATING TEMPERATURE	-40°C~+85°C
MAXIMUM SYSTEM VOLTAGE	600VDC
MAXIMUM SERIES FUSE RATING	20A

GENERAL CONDITIONS:

A THIS ELECTRICAL SINGLE LINE DIAGRAM IS DIAGRAMATIC ONLY AND INTENDED TO ASSIST A QUALIFIED ELECTRICAL CONTRACTOR FAMILIAR WITH PHOTOVOLAIC REQUIREMENTS IN SIZING THE INSTALLATION OF THE PHOTOVOLTAIC SYSTEM AT THIS RESIDENCE. EXACT LOCATION AND ROUTING OF ELECTRICAL EQUIPMENT, WIRING, AND CONDUIT IS THE RESPONSIBILITY OF THE CONTRACTOR BASED ON FIELD VERIFICATION OF EXISTING CONDITIONS. THE USE OF ANY EXISTING EQUIPMENT IS THE RESPONSIBILITY OF THE CONTRACTOR BASED ON FIELD VERIFICATION OF EXISTING CONDITIONS.

B ALL EQUIPMENT TO BE INSTALLED AND DOCUMENTED PER THE MANUFACTURERS? OPERATIONS AND INSTALLATION MANUALS, AND AS DIRECTED BY THE LOCAL AHJ.

NOTES:

1. EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH NEC ARTICLE 690.
2. CONDUCTORS ARE TO BE COPPER UNLESS OTHERWISE NOTED AND COMPLY WITH NEC 110.14.
3. ALL PV SYSTEM COMPONENTS SHALL BE LISTED AND COMPLY WITH UL1703 AND UL1741.
4. WIRING MATERIALS NOT PROTECTED IN CONDUIT SHALL BE SUITABLE FOR SUN EXPOSURE AND WET LOCATIONS.
5. CIRCUIT BREAKER TO BE SUITABLE PER NEC 690.64 (BX5).
6. THE EQUIPMENT GROUNDING CONDUCTOR SHALL BE CONTINUOUS PER NEC 690.48.
7. THE EQUIPMENT GROUNDING CONDUCTOR SHALL BE INSTALLED IN ACCORDANCE WITH NEC 690.43, 690.45 AND 250.122.
8. THE GROUNDING ELECTRODE CONDUCTOR SHALL BE CONTINUOUS PER NEC 250.64 (C) AND 690.47 (A). (WHEN REQUIRED)
9. LABEL SOLAR MODULES AND POWER INVERTERS WITH LISTING AGENCY NAME AND NUMBER PER NEC 110.3 (B).
10. BACKFED PV BREAKER SHALL BE INSTALLED AT THE OPPOSITE END OF THE BUS BAR FROM THE MAIN BREAKER.
11. AC DISCONNECT SHALL BE EXTERNALLY OPERATED KNIFE BLADE TYPE AND LOCKABLE IN THE "ON" AND "OFF" POSITIONS. VISIBLE DESIGNATIONS TO BE DIRECTLY ACCESIBLE TO THE UTILITY.

MAXIMUM TOTAL CURRENTS PRODUCED

2 MODULES	1.8 AMPS
3 MODULES	2.7 AMPS
4 MODULES	3.6 AMPS
5 MODULES	4.5 AMPS
6 MODULES	5.4 AMPS
7 MODULES	6.3 AMPS
8 MODULES	7.2 AMPS

Helen Kirk
617 Walnut Ave.
Charlotte, NC 28208

GLOBAL EFFICIENT ENERGY
2320 GRAVEL DR
FORT WORTH TX 76118
682-626-5593

ONE LINE DIAGRAM
PHOTOVOLTAIC SYSTEM

240 VAC SINGLE PHASE
ENPHASE M215 INVERTER
5 RENESOLA 250 W PV PANEL
250 WATT NOMIMAL

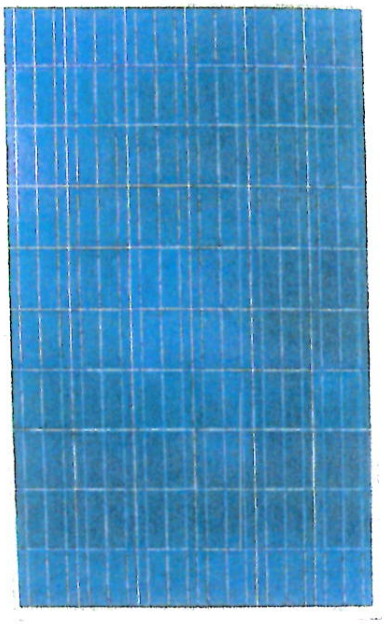
ReneSola

Virtus II

Virtus® II Module

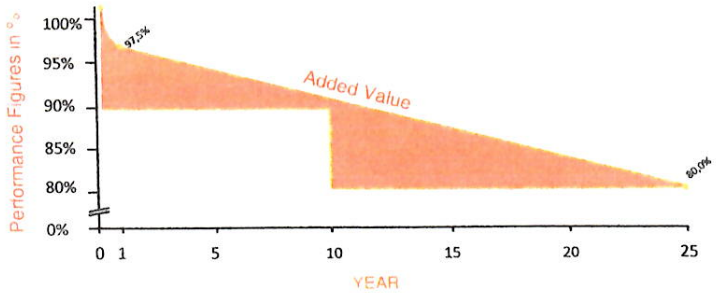
250W, 255W, 260W

- **High Module Conversion Efficiencies**
- **Easy Installation and Handling for Various Applications**
- **Mechanical Load Capability of up to 113 psf (5400 Pa)**
- **Conforms with IEC 61215:2005, IEC 61730: 2004, UL 1703 PV Standards**
- **ISO9001, OHSAS18001, ISO14001 Certified**
- **Application Class A, Safety Class II, Fire Rating C**



Also Applicable For Module With Black Frame

Guarantee



10-year
material & workmanship

25-year
linear power output

PV CYCLE

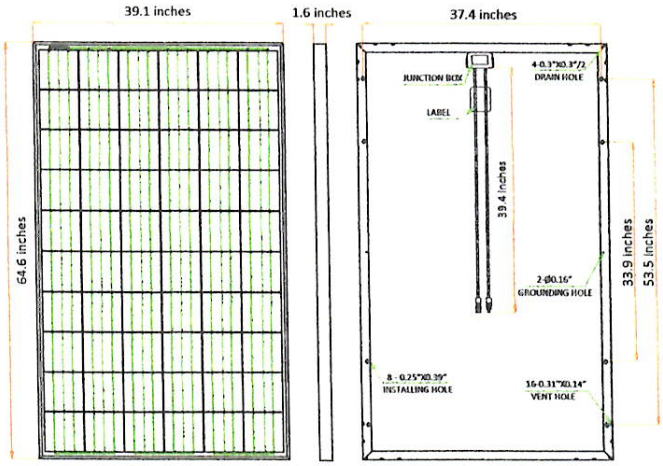
ReneSola.com

ReneSola

Virtus®II Module

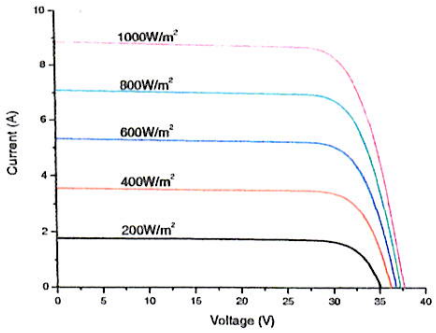
250W, 255W, 260W

Dimensions



Drawing Only for Reference

I-V Curves



Efficiency at Varied Irradiation

Irradiance	200W/m²	400W/m²	600W/m²	800W/m²	1000W/m²
Efficiency	15.8%	16.2%	16.2%	16.1%	16.0%

Electrical Characteristics STC

	JC250M-24/Bbh	JC255M-24/Bbh	JC260M-24/Bbh
Maximum Power (Pmax)	250 W	255 W	260 W
Power Tolerance	0 ~ +5W	0 ~ +5W	0 ~ +5W
Module Efficiency	15.4%	15.7%	16.0%
Maximum Power Current (Imp)	8.31 A	8.39 A	8.53 A
Maximum Power Voltage (Vmp)	30.1 V	30.4 V	30.5 V
Short Circuit Current (Isc)	8.83 A	8.86 A	8.95 A
Open Circuit Voltage (Voc)	37.4 V	37.5 V	37.6 V

Values at Standard Test Conditions STC (AM1.5, Irradiance 1000W/m², Cell Temperature 77°F)

Electrical Characteristics NOCT

	JC250M-24/Bbh	JC255M-24/Bbh	JC260M-24/Bbh
Maximum Power (Pmax)	185 W	189 W	193 W
Maximum Power Current (Imp)	6.57 A	6.63 A	6.74 A
Maximum Power Voltage (Vmp)	28.2 V	28.5 V	28.6 V
Short Circuit Current (Isc)	7.12 A	7.20 A	7.27 A
Open Circuit Voltage (Voc)	35.0 V	35.1 V	35.2 V

Values at Normal Operating Cell Temperature, Irradiance of 800W/m², AM1.5, Ambient Temperature 68°F, Wind Speed 1m/s.

Mechanical Characteristics

Cell Type	6 inches Virtus® II (Polycrystalline), 60 (6x10) pcs in series
Glass	High Transmission, Low Iron, Tempered Glass
Frame	Anodized Aluminum Alloy
Junction Box	IP65/IP67 Rated, With Bypass Diodes
Dimension	*64.6 x 39.1 x 1.6 inches
Output Cable	12 AWG, 39.4 inches
Weight	41.9 lbs
Installation Hole Location	See Drawing Above

Characteristics

Temperature Coefficient of Voc	-0.167%/°F (-0.30%/°C)
Temperature Coefficient of Isc	0.022%/°F (0.04%/°C)
Temperature Coefficient of Pmax	-0.222%/°F (-0.40%/°C)
Nominal Operating Cell Temperature (NOCT)	113 ± 3.6°F (45 ± 2°C)

Packing Information

Container	20' GP	40' GP	40' HQ
Pallets per Container	12	28	28
Pieces per Container	300	700	770

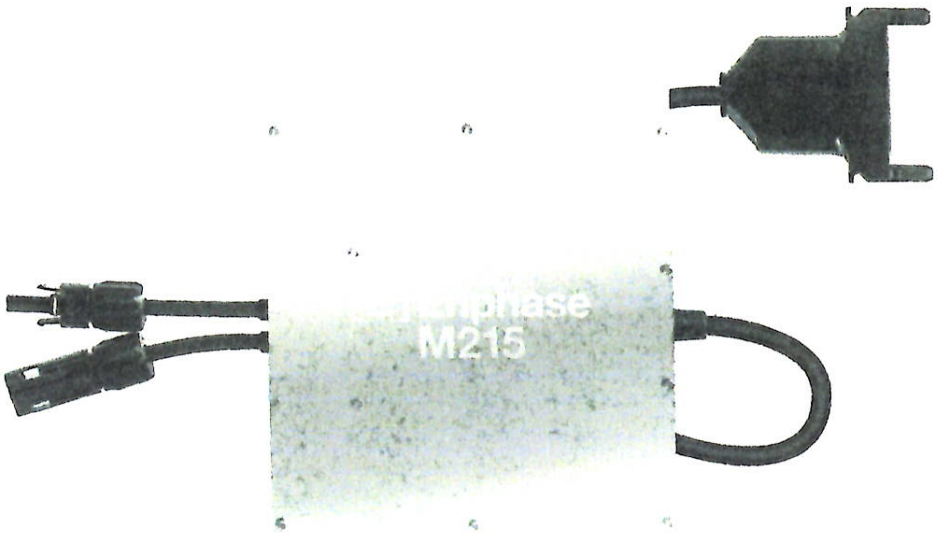
Maximum Ratings

Operating Temperature	-40°F ~ +185°F (-40°C ~ +85°C)
Maximum System Voltage	1000VDC (US)
Maximum Series Fuse Rating	20A (US)

Rev No: JC/TDS/2014.05 *Contact Renesola for tolerance specification

Enphase® **Microinverters**

Enphase® **M215**



The Enphase® M215 Microinverter with integrated ground delivers increased energy harvest and reduces design and installation complexity with its all-AC approach. With the advanced M215, the DC circuit is isolated and insulated from ground, so **no Ground Electrode Conductor (GEC) is required for the microinverter.** This further simplifies installation, enhances safety, and saves on labor and materials costs.

The Enphase M215 integrates seamlessly with the Engage® Cable, the Envoy® Communications Gateway™, and Enlighten®, Enphase's monitoring and analysis software.

PRODUCTIVE

- Maximizes energy production
- Minimizes impact of shading, dust, and debris
- No single point of system failure

SIMPLE

- No GEC needed for microinverter
- No DC design or string calculation required
- Easy installation with Engage Cable

RELIABLE

- More than 1 million hours of testing and millions of units shipped
- Industry-leading warranty, up to 25 years

[e] enphase® ENERGY

C US

Enphase® **M215** Microinverter // DATA

INPUT DATA (DC)	M215-60-2LL-S22-IG / S23-IG / S24-IG	
Recommended input power (STC)	190 - 270 W	
Maximum input DC voltage	48 V	
Peak power tracking voltage	27 V - 39 V	
Operating range	16 V - 48 V	
Min/Max start voltage	22 V / 48 V	
Max DC short circuit current	15 A	
Max input current	10 A	
OUTPUT DATA (AC)	**@208 VAC**	**@240 VAC**
Peak output power	225 W	225 W
Rated (continuous) output power	215 W	215 W
Nominal output current	1.1 A (A rms at nominal duration)	0.9 A (A rms at nominal duration)
Nominal voltage/range	208 V / 183-229 V	240 V / 211-264 V
Nominal frequency/range	60.0 / 57-61 Hz	60.0 / 57-61 Hz
Extended frequency range*	57-62.5 Hz	57-62.5 Hz
Power factor	>0.95	>0.95
Maximum units per 20 A branch circuit	25 (three phase)	17 (single phase)
Maximum output fault current	850 mA rms for 6 cycles	850 mA rms for 6 cycles
EFFICIENCY		
CEC weighted efficiency, 240 VAC	96.5%	
CEC weighted efficiency, 208 VAC	96.5%	
Peak inverter efficiency	96.5%	
Static MPPT efficiency (weighted, reference EN50530)	99.4 %	
Night time power consumption	65 mW max	
MECHANICAL DATA		
Ambient temperature range	-40°C to +65°C	
Dimensions (WxHxD)	171 mm x 173 mm x 30 mm (without mounting bracket)	
Weight	1.6 kg (3.4 lbs)	
Cooling	Natural convection - No fans	
Enclosure environmental rating	Outdoor - NEMA 6	
FEATURES		
Compatibility	Compatible with 60-cell PV modules.	
Communication	Power line	
Integrated ground	The DC circuit meets the requirements for ungrounded PV arrays in NEC 690.35. Equipment ground is provided in the Engage Cable. No additional GEC or ground is required. Ground fault protection (GFP) is integrated into the microinverter.	
Monitoring	Enlighten Manager and MyEnlighten monitoring options	
Compliance	UL1741/IEEE1547, FCC Part 15 Class B, CAN/CSA-C22.2 NO. 0-M91, 0.4-04, and 107.1-01	

* Frequency ranges can be extended beyond nominal if required by the utility

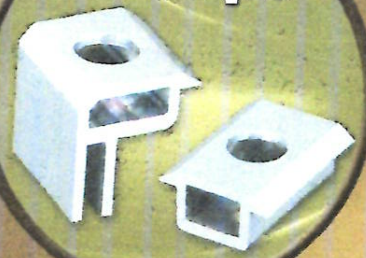
To learn more about Enphase Microinverter technology, visit enphase.com

[e] enphase® ENERGY

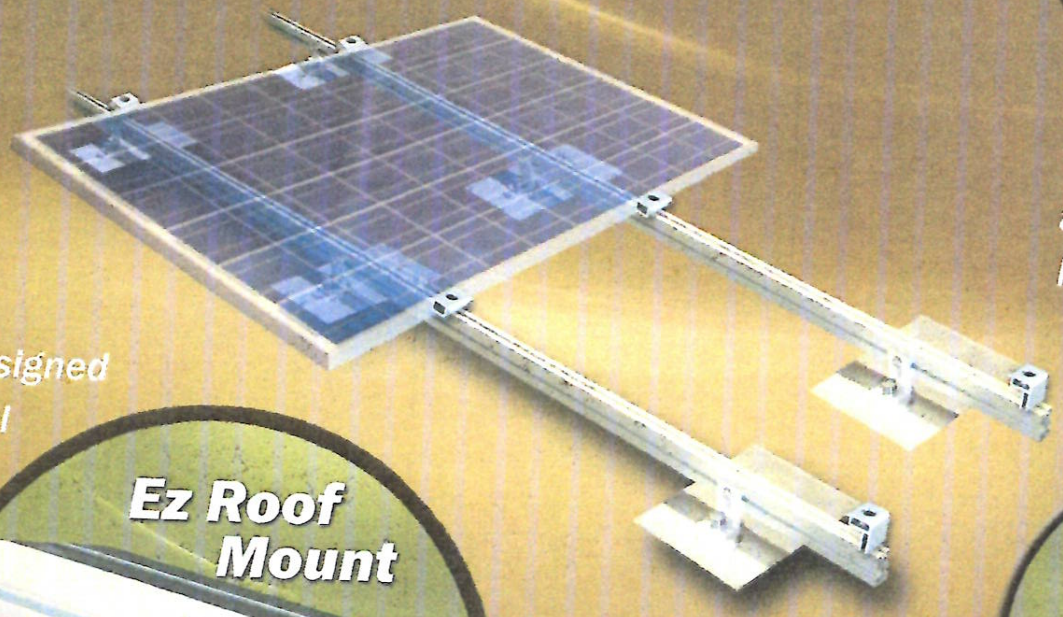
EZHelio™ Composite Shingle Pitched Roof System

Few components • Easy to install • Low price

Clamps



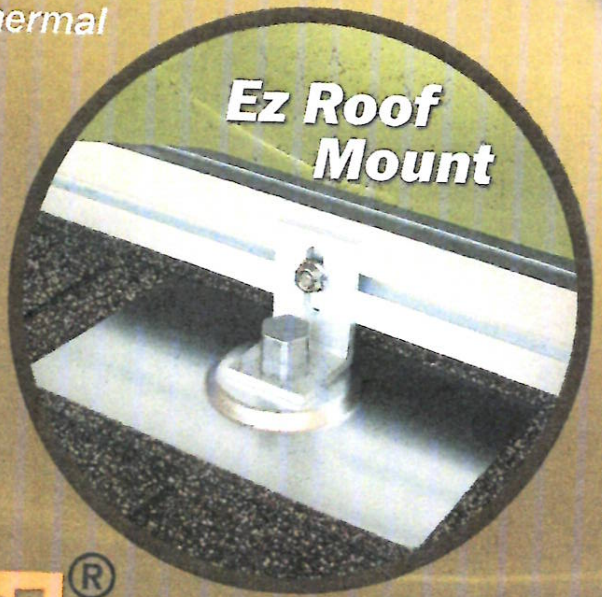
End and mid clamps designed for strength and thermal expansion



Rail

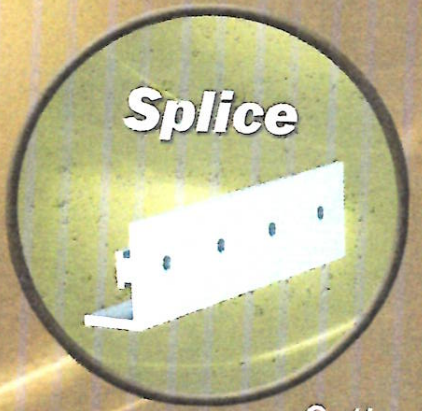
The rail is heavy duty and comes in 4 different lengths

Ez Roof Mount



Our Ez Roof Mount for composite shingles is simple, versatile and fast to install

Splice



Optional rail splice for longer rows of rail

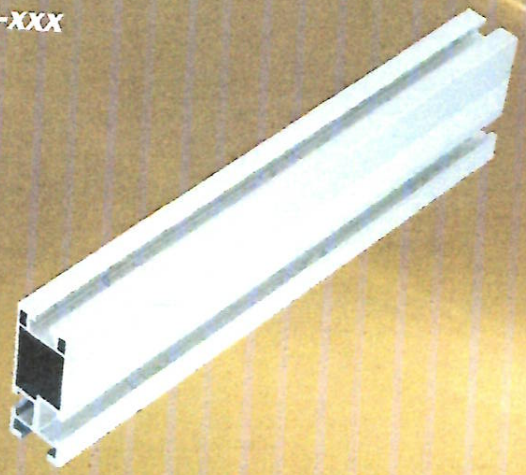
SUNMOD®

Component and Kits Detail

SUNMOD

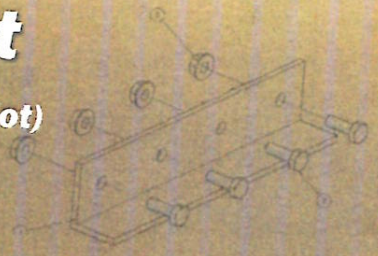
Helio Standard Rail

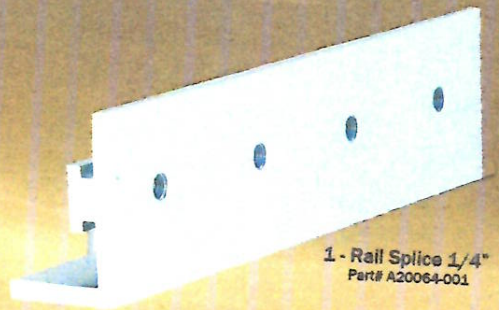
Kit # A20144-xxx



Rail Splice Kit

Kit # K10141-001 (3/8" rail slot)





1 - Rail Splice 1/4"
Part# A20064-001

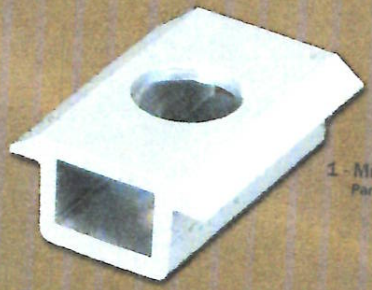
4 - Bolt 1/4 - 20 x 5/8"
Part# B19001-006

4 - Flange Nut 1/4"
Part# B15003-001

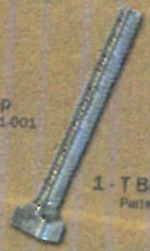
Mid Clamp Kit

Kit# K10001-001

All kits come complete with the following parts:



1 - Mid Clamp
Part# A20021-001



1 - T Bolt 1/4 - 20 x 2.1"
Part# B20015-002

1 - 1/4" Flange Nut
Part# B15002-001

40mm End Clamp Kit

Kit# K10002-040

All kits come complete with the following parts:

1 - End Clamp
Part# A20023-031

1 - 1/4" Flange Nut
Part# B15002-001

1 - T Bolt 1/4 - 20 x 2.1"
Part# B20015-002

How to determine the amount of racking and cost needed:

Sunmodo has taken out the guess work and provides you with an easy to understand matrix guide.

1. All you need to do is just count the number of rows you will need for your system.

2. Reference the rows needed by means of the matrix guide and you will know the exact parts list and cost

Example:

This system will need:

(1) Row of 3 panels
(1) Row of 6 panels
(3) Rows of 11 panels

Composite Shingle System Chart

How to use the chart:

1. Determine how many rows will be needed for each residential system
2. Each row will give you the amount of parts needed and cost.
3. By adding up the parts from of all the rows, you will get an over all list of parts needed and a total system cost.

SUNMODO

Components Needed

	 Any panel up to 40" wide	 Ez Roof Mount	 84" Rail	 124" Rail	 164" Rail	 206" Rail	 50mm End Clamp Kit	 Mid Clamp Kit	3/8" Rail Splice Kit
	Sunmodo Part #	K10068-001	A20144-084	A20144-124	A20144-164	A20144-206	K10002-050	K10001-001	K10141-001
2	Panel Row	4	2				4	2	
3	Panel Row	6		2			4	4	
4	Panel Row	8			2		4	6	
5	Panel Row	8				2	4	8	
6	Panel Row	10		4			4	10	2
7	Panel Row	12		2	2		4	12	2
8	Panel Row	14			4		4	14	2
9	Panel Row	16			2	2	4	16	2
10	Panel Row	18				4	4	18	2
11	Panel Row	20		2	4		4	20	4
12	Panel Row	20	2			4	4	22	4

LICENSE NUMBER
30597-U

EXPIRATION DATE
07/11/2015

STATE OF NORTH CAROLINA
BOARD OF EXAMINERS OF ELECTRICAL CONTRACTORS

THIS IS TO CERTIFY THAT:

Global Efficient Energy LLC

Qualifiers: Joel Donald Johnson

is duly registered and entitled to practice Electrical Contracting in the
Unlimited Classification
Limitation: Any project regardless of value

Witness our hands and seal of the Board

James W. Carpenter
Chairman

Jim Norman
Secretary - Treasurer

Global Efficient Energy LLC
2320 Gravel Road
Fort Worth, TX 76118

2014-2015 **CITY OF CHARLOTTE AND/OR MECKLENBURG COUNTY PRIVILEGE LICENSE**

SUBJECT TO ORDINANCES IN FORCE OR HEREAFTER ENACTED, TO CONDUCT THE FOLLOWING BUSINESS.

105 **ALL BUSINESS, TRADES, PROFESSIONS**

ACCOUNT NUMBER **0205255**

EXPIRES **JUNE 30, 2015**

SPECIALIST **LADORA CRUDUP**

PAID DATE **JULY 23, 2014**

LICENSE IS HEREBY GRANTED:

GLOBAL EFFICIENT ENERGY LLC
4121 ROSE LAKE DR STE 4121-A
CHARLOTTE, NC 28217

BUS. ADD: (IF DIFFERENT)

TAX COLLECTOR

NOT TRANSFERABLE

POST IN A CONSPICUOUS PLACE

GS 105-366 (d) (1) (a) requires notification to the Tax Collector 48 hours prior to going out of business, the transfer of or pending sale to another party. DO NOT REPRODUCE, DOCUMENT VOID IF NOT DUAL COLOR PRINT

Rev001_040108

* Example: Picture of 4 Solar Panels attached to a rooftop

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