MODULE: (22) APTOS SOLAR MODULES: DNA-144-BF26-365 INVERTER: (11) CHILICON POWER CP-720-72/96-240-MC4

DC SYSTEM SIZE: 8.03 kW

03/10/2022

Notes:

- 1. THIS PROJECT SHALL COMPLY WITH THE 2018 NORTH CAROLINA RESIDENTIAL CODE AND THE 2018 NORTH CAROLINA UNIFORM STATEWIDE BUILDING CODE (USBC) WHICH INCLUDES THE 2018 NCCC, 2018 NCEBC AND THE 2018 NCMC
- 2. ALL ELECTRICAL WORK SHALL BE DESIGNED PER LATEST NATIONAL, STATE AND LOCAL ELECTRICAL CODE.
- 3. 110.2 APPROVAL: ALL ELECTRICAL EQUIPMENT SHALL BE LABELED, LISTED OR CERTIFIED BY A NATIONALLY RECOGNIZED TESTING LABORATORY **ACCREDITED BY THE**

UNITED STATES OCCUPATIONAL SAFETY & HEALTH ADMMINISTRATION.PV **EQUIPMENT, SYSTEMS AND ALL ASSOCIATED WIRING AND INTERCONNECTIONS** SHALL ONLY BE INSTALLED BY QUALIFIED PERSONS.

THIS IS A (22) MODULE SOLAR ELECTRIC PROJECT USING APTOS SOLAR MODULES: DNA-144-BF26-365 365(WATT)

- 4. THIS SYSTEM USES (11) CHILICON POWER CP-720-72/96-240-MC4 INVERTERS.
- NO BATTERY BACKUP OR UPS IS USED IN THIS SYSTEM.
- THIS SYSTEM IS A 8.03 kW USING UNIRAC RAKING AT A 18 PITCH.
- 7. NO ALTERATIONS TO EXISTING DWELLING, THIS BUILDING IS A 1 STORY HOUSE.
- LOCAL UTILITY PROVIDED SHALL BE NOTIFIED PRIOR TO USE AND ACTIVATION OF ANY SOLAR PV INSTALLATION.
- 9. NO SHEET METAL OR TECH SCREWS SHALL BE USED TO GROUND DISCONNECT ENCLOSURE WITH TIN-PLATED ALUMINUM LUGS; PROPER **GROUNDING/GROUND BAR KITS** SHOULD BE USED.
- 10. ALL ELECTRICAL EQUIPMENT SHALL BE 3 FEET FROM GAS METER.

SHEET NO	DRAWING INFO
PV-1	COVER SHEET
PV-2	LAYOUT
PV-3	STRUCTURE
PV-4	WIRING
PV-5	SIGNAGE

LEGEND

ROOF OUTLINE

⋈ ○ ROOF VENT/MECHANICAL SOLAR MODULE (69"x41")

PV STAND-OFF/PENETRATION

CONDUIT RUN

VICINITY MAP



SATELLITE MAP



6710 JEFFERSON HWY RICHMOND, VA 23237 LICENSE #2705036452 SOLAR

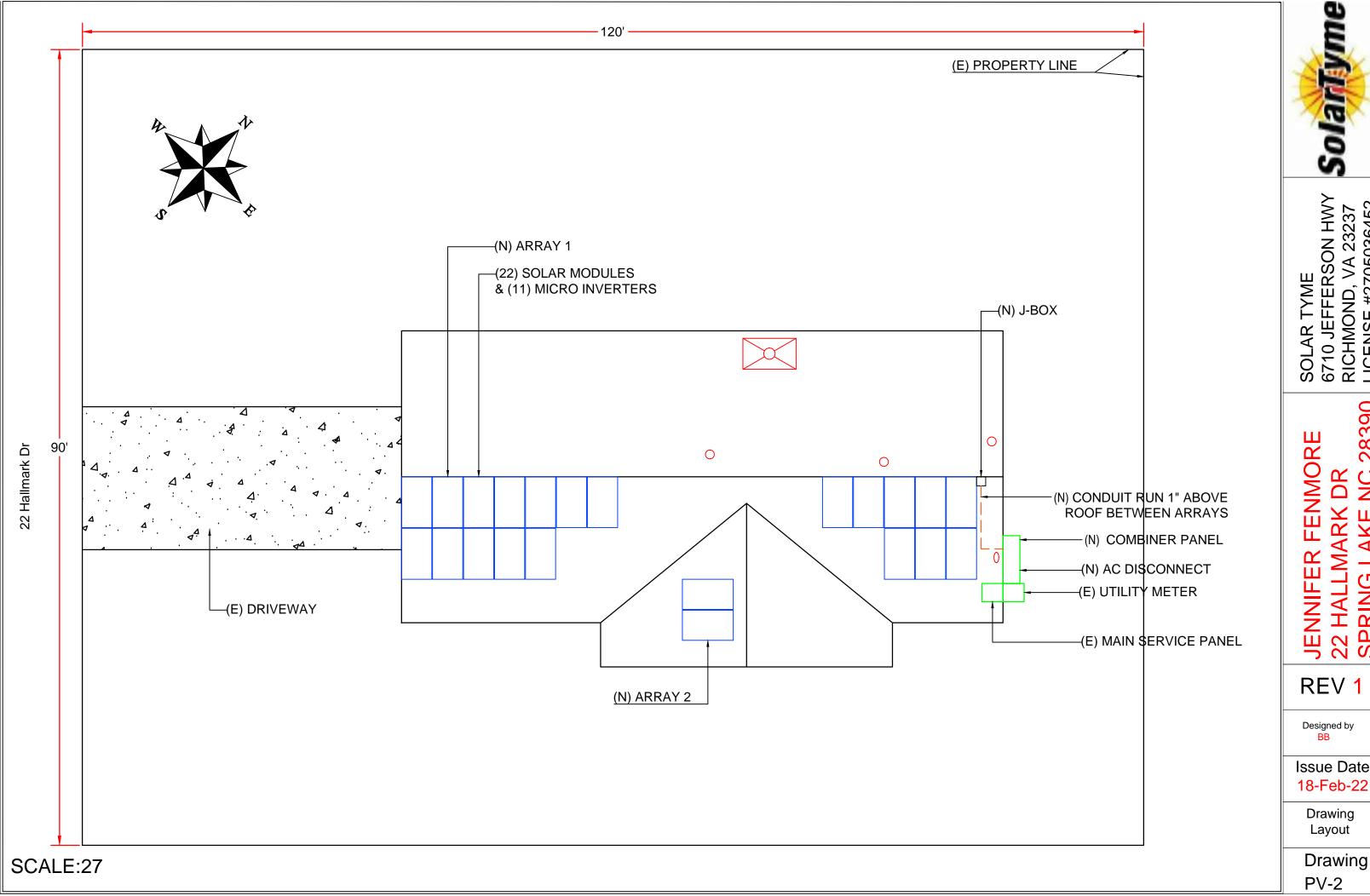
28390 S JENNIFE 22 HALLN SPRING REV₁

Designed by

Issue Date 18-Feb-22

Drawing **Cover Sheet**

Drawing PV-1



6710 JEFFERSON HWY RICHMOND, VA 23237 LICENSE #2705036452

28390 SPRING LAKE, NC

REV

Designed by BB

Issue Date

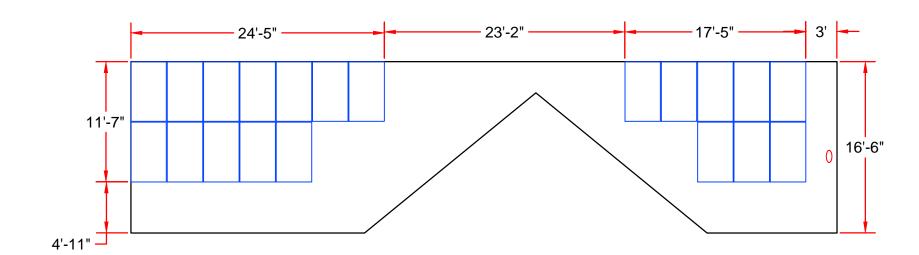
Drawing

Drawing

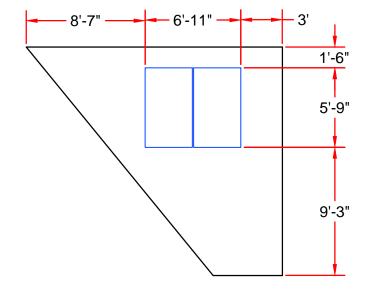
ROOF NOTES:

- 1. THE ROOF MODULES WILL NOT COVER ANY PLUMBING OR MECHANICAL VENTS
- 2. THIS SYSTEM IS ON COMP SHINGLE ROOF AT A 18 PITCH WITH 2x4TRUSSED AT 24" O.C.
- 3. THIS ROOF HAS 1 LAYERS OF COMP SHINGLES.
- 4. THESE BUILDINGS ARE 1 STORY HOUSES AND GARAGE.
- 5. NO ATTACHMENTS SHALL BE MADE WITHIN 6 INCHES OF ALL NAILING PLATES.
- 6. ALL WIRING SETBACK ON THE ROOF IS IN 3/4" EMT AND 4" ABOVE THE ROOF.
- 7. ALL LAG SCREWS SHALL HAVE A MINIMUM EMBEDMENT OF 2.5"
- 8. MAX CANTILEVER SHALL BE 18" OR AS SPECIFIED ON PLANS.
- 9. ALL RAILS TO BE LEVELED.
- 10. ALL CONNECTIONS SHALL BE SEALED WITH WATERPROOF SEALANT.
- 11. PROVIDE 3/16" PILOT HOLE PRIOR TO INSTALLATION OF 5/16 LAG SCREW

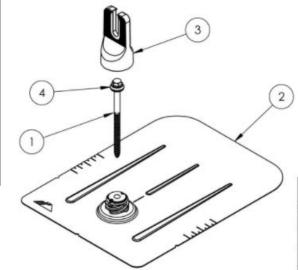
SCALE: 3/16" = 1'-0":ARRAY 1



SCALE: 3/16" = 1'-0":ARRAY 2

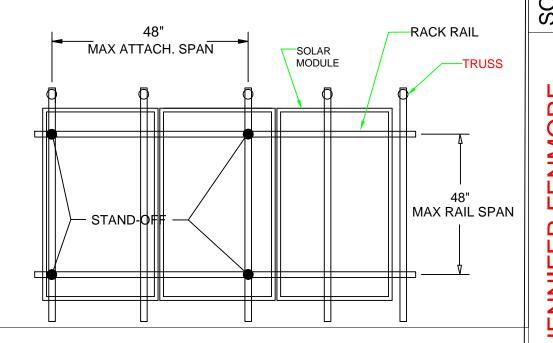


MODULE ATTACHMENT



ITEM NO.	DESCRIPTION
1	BOLT LAG 5/16 X 4.75"
2	ASSY, FLASHING
3	ASSY, CAP
4	WASHER, EPDM BACKED

ROOF ATTACHMENT



PER ASCE 7-16

WIND SPEED = 120 mph SNOW LOAD = 10 lb/sqft SolarTyme

6710 JEFFERSON HWY RICHMOND, VA 23237 LICENSE #2705036452

JENNIFER FENMORE

22 HALLMARK DR

SPRING LAKE, NC 28390

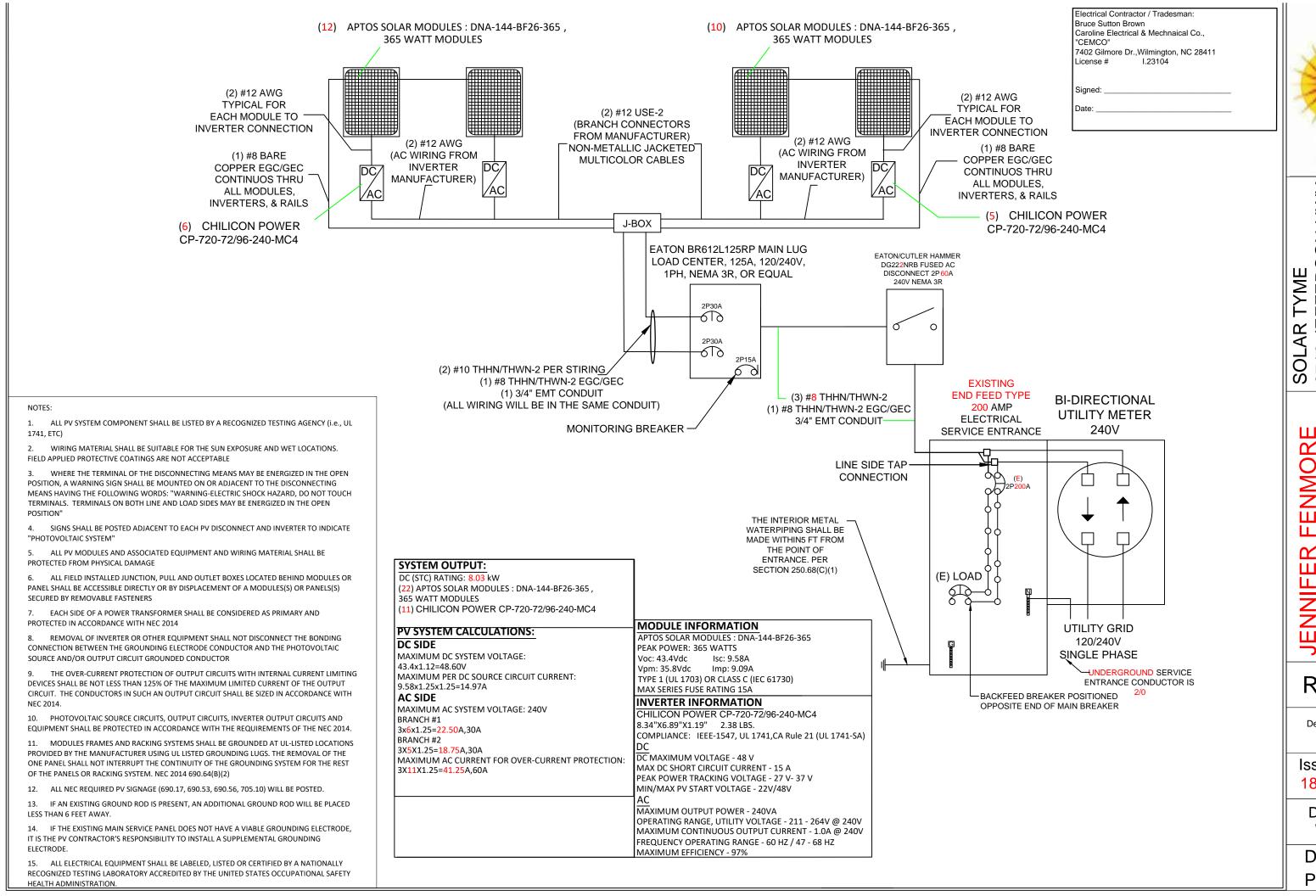
REV 1

Designed by BB

Issue Date 18-Feb-22

Drawing Structure

Drawing PV-3



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Designed by

Issue Date

18-Feb-22

Drawing

Wiring Drawing

PV-4

TO BE PLACED ON ALL INTERIOR & EXTERIOR PV CONDUITS, RACEWAYS, ENCLOSURE, CABLE ASSEMBLES, EVERY 10 FEET, 1' FROM TURNS AND ABOVE AND BELOW PENETRATIONS AND ALL DC COMBINER AND JUNCTION BOXES

PHOTOVOLTAIC POWER SOURCE

OPERATING AC VOLTAGE: 240 V

MAXIMUM OPERATING AC OUTPUT CURRENT: 41.25 A

TO BE PLACED ON MAIN SERVICE PANEL

PHOTOVOLTAIC SYSTEM **EQUIPPED WITH RAPID SHUTDOWN**

TO BE PLACED ON MAIN SERVICE PANEL PHOTOVOLTAIC SYSTEM **COMBINER PANEL** DO NOT ADD LOADS

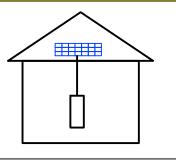
TO BE PLACED ON SOLAR SUB PANEL

RAPID SHUT DOWN SWITCH FOR SOLAR PV SYSTEM

TO BE PLACED ON AC DISCONNECT

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

TURN RAPID SHUTDOWN **SWITCH TO THE** "OFF" POSITION TO SHUTDOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN THE ARRAY



LABEL FOR PV SYSTEMS THAT SHUT DOWN THE ARRAY AND THE CONDUCTORS LEAVING THE ARRAY

ALL LABELS WILL BE ON RESISTANT MATERIAL SUITABLE FOR THE ENVIRONMENT ALL LABELS SHALL HAVE A RED BACKGROUND WITH MIN. 3/8" WHITE LETTERING

riangle WARNING riangle

ELECTRICAL SHOCK HAZARD DO NOT TOUCH TERMINALS. TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION.

TO BE PLACED ON DISCONNECT



DUAL POWER SUPPLY SOURCES: UTILITY GRID AND PV SOLAR ELECTRIC SYSTEM

TO BE PLACED ON MAIN SERVICE PANEL

WARNING: PHOTOVOLTAIC POWER SOURCE

TO BE PLACED ON MAIN SERVICE PANEL

PHOTOVOLTAIC SYSTEM **AC DISCONNECT**

♠WARNING ♠

DUAL POWER SUPPLY

SOURCES: UTILITY GRID AND PV SOLAR ELECTRIC SYSTEM **ELECTRIC SHOCK HAZARD**

DO NOT TOUCH TERMINALS TERMINALS ON BOTH THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION.

OPERATING VOLTAGE: 240 VOLTS OPERATING CURRENT: 41.25 AMPS

TO BE PLACED ON DISCONNECT

SOLAR PV BREAKER **BREAKER IS BACKFED** DO NOT RELOCATE

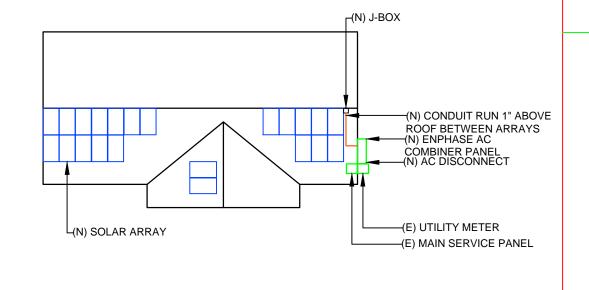
TO BE PLACED INSIDE MAIN SERVICE PANEL **NEXT TO SOLAR BREAKER**

CAUTION:

POWER TO THIS BUILDING IS ALSO SUPPLIED FROM A PHOTOVOLTAIC SYSTEM WITH DISCONNECTS **LOCATED AS SHOWN**



22 HALLMARK DR



TO BE PLACED ON MAIN SERVICE PANEL



SOLAR TYME 6710 JEFFERSON HWY RICHMOND, VA 23237 LICENSE #2705036452 28390

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> Drawing Signage

Drawing PV-5

Solar for Innovators

Residential I Commercial



Designed & Engineered in Silicon Valley 370W | 365W | 360W

Our DNA™ Split Cell Series impressively combines advanced solar technologies to maximize performance. Our patented Dual Nano Absorber (DNATM) Technology allows the panel to operate at high-efficencies in extreme temperatures. Contact our sales team today to learn more about our line of high-efficienty solar panels.



Patented DNA[™] technology boosts power performance & module efficiency



Advanced split cell technology with 9 ultra-thin busbars allows for less resistance and more photon



Ideal solution for applications affected by shading



All-black design for pristine aesthetics
No excessive silver bussing or ribbons



Robust product design is reslient in extreme weather. Up to 5400 Pa snow load and 210 mph

intertek (E





30 Year Warranty

3X IEC Standards

RETC Top Performer



3140 De La Cruz Blvd., Ste 200 Santa Clara, CA 95054 wwww.aptossolar.com info@aptossolar.com

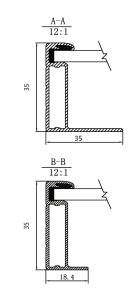
Linear Performance Warranty



DN4TM 120







Solar for Innovators

Electrical Specifiactions	DNA-120-MF26-360W	DNA-120-MF26-365W	DNA-120-MF26-370W
STCrated Output P _{mpp} (W)	360W	365W	370W
Module Efficiency	19.73%	20.01%	20.29%
Open Circuit Voltage V _{voc} (V)	40.6	40.7	40.8
Short Circiut Current I _{sc} (A)	11.24	11.36	11.51
Rated Voltage V _{mmp} (V)	33.8	33.96	34.06
Rated Voltage I _{mmp} (A)	10.66	10.75	10.87
Standard Test Conditions for front-face of panel: 1000 W	//m², 25°C, measurement und	certainty <3%	

Temperature Coefficients	
Temperature Coefficients P _{mmp}	-0.36%
Temperature Coefficients I _{sc}	+0.05%/°C
Temperature Coefficients V _{oc}	-0.29%/°C
Normal Operating Cell Temperature (NOCT)	44°C

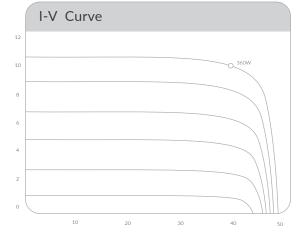
Test Operating Conditions	
Maximum Series Fuse	20A
Maximum System Voltage	1,500 VDC (UL&IEC)
Maximum Load Capacity (Per UL 1703)	5400 PA Snow Load / 210mph Wind Rating
Fire Performance Class	Class C/Type 1

Packaging Configuration	
Number of Modules per Pallet	30
Number of Pallets per 40ft. Container	26
Pallet Dimensions	1740 X 1140 X 1165
Pallet Weight (kg)	640
Container Weight (kg)	16640

McChamcarrio	perties
Cell Type	Monocrystalline
Glass	3.2mm, anti-reflection coating, high transmission, low iron, tempered glass
Frame	Anodized Aluminum Alloy
Junction Box	IP68
Dimensions	1756 X 1039 X 35mm

Mechanical Properties

4mm2 (EU)12AWG,39.37in.(1200mm) Weight 45.19lbs.(20.5kg) 1200mm Cable Length

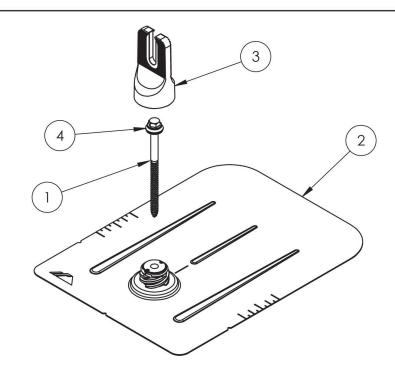








FlashFoot2

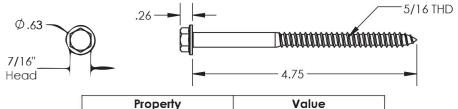


ITEM NO.	DESCRIPTION
1	BOLT LAG 5/16 X 4.75"
2	ASSY, FLASHING
3	ASSY, CAP
4	WASHER, EPDM BACKED

FLASHFOOT 2

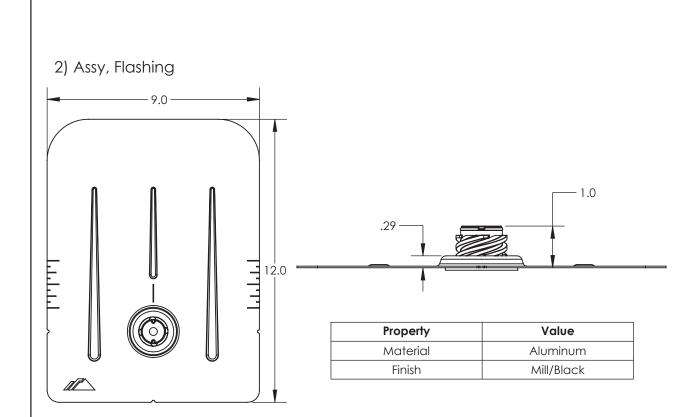
Part Number	Description
FF2-01-M1	FLASHFOOT2, MILL
FF2-01-B1	FLASHFOOT2, BLACK

1) Bolt, Lag 5/16 x 4.75

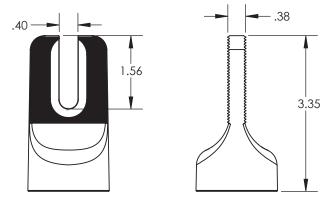


Property	Value
Material	300 Series Stainless Steel
Finish	Clear

v1.21

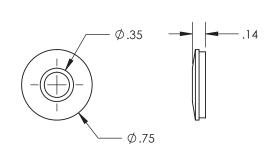


3) Assy, Cap



Property	Value
Material	Aluminum
Finish	Mill/Black

4) Washer, EPDM Backed



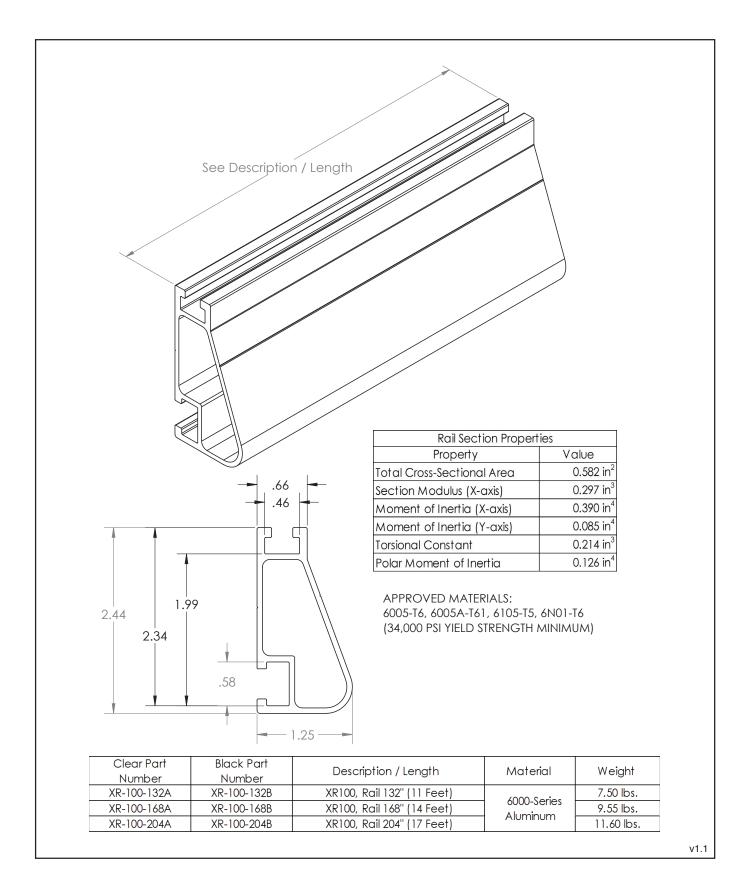
Property	Value
Material	300 Series Stainless Steel
Finish	Clear

v1.21

Cut Sheet



XR100 Rail



CHILICON POWER CP-720

Dual Panel Microinverter



CP-720™ Series Microinverters

The Chilicon CP-720 allows installers to maximize PV system production, while minimizing installation and operational costs. Microinverter based architectures offer the benefit of increased flexibility in module deployment, while also providing per module visibility to simplify system O&M. With its all-AC approach, integrated grounding, modular bus cabling, and ability to support up to 20 modules on a 30A branch circuit, the CP-720 simplifies both design and installation. Both freq-Watt and volt-Watt modes allow AC control in off-grid battery or generator systems. Coupled with the CP-100 gateway and cloud-based monitoring software, the CP-720 can form the energy management backbone of both residential and commercial PV systems.







Performance

- Supports up to 840W with no clipping (or 2x420W)
- Maximizes energy production over life of system
- Minimizes losses due to shading and debris
- Eliminates single point of failure for system

Simplicity

- All AC design No string calculations needed
- No GEC needed for microinverters
- Easy installation with standardized trunk cables

Versatility

- Compatible with most 60, 72, 96 & 128 cell panels
- Single SKU 240V or 208V
- Allows for variable module placement
- Robust PLC communication protocol (>500 ft range)
- Self supply mode (zero-export)
- Supports up to 30A branch circuits
- Up to 20 panels possible on one branch circuit

Reliability, Safety, & Compliance

- NEMA 6 rated construction
- 25 year warranty
- AC branch circuits will not support arc faults
- Quick disconnect circuit to mitigate grid instabilities
- NEC 690.12(B)(2) rapid shutdown compliant
- CA Rule 21 (UL 1741-SA) compliant







CP-720-60/72/96-208/240-MC4 Microinverter Specifications

INPUT DATA (DC)

Recommended input power (STC)	(190 - 450 W) x 2; (380 - 900 W) x 1	
Maximum DC input voltage	120 V	
MPPT voltage tracking range	56 – 82 V	
Operating range	48 – 102 V ¹	
Min./Max. start voltage	55 – 102 V ¹	
Max. DC input short circuit current	16 A	
Max. DC input current	13.5 A	
Ground fault protection	Transformer isolated 2000 Vrms input/output/chassis	
OUTPUT DATA (AC)	@ 208 V	@ 240 V
Max. continuous output power	713 W	720 W
Max. continuous output current	3.43 A (can be current limited to 2.66 A)	3.0 A (can be current limited to 2.4 A)
Nominal output voltage / range	208 / 183 – 229 V	240 / 211 – 264 V
Extended output voltage range	133 / 150 / 166 – 250 V	153 / 173 / 192 – 288 V
Nominal frequency / range	60.0 / 59.3 – 60.5 Hz	60.0 / 59.3 – 60.5 Hz
Extended frequency range	54.22 – 66.75 Hz ²	54.22 - 66.75 Hz ²
Power factor	-0.6 to 0.6 programmable	-0.6 to 0.6 programmable
Maximum units per 30 A branch circuit	7 (14 modules)/9 ³ (18 modules)	8 (16 modules)/10 ³ (20 modules)
Maximum output overcurrent protection	6.3 A Fuse; 12A peak for 30 uSec	6.3 A Fuse; 12A peak for 30 uSec
CEC weighted efficiency Peak inverter efficiency Static MPPT efficiency (EN 50530) Night time power consumption MECHANICAL DATA	96.1 % 96.7 % 99.5 % - 99.8 % 100 mW; Standby Reactive Current < 200mA	
Ambient temperature range	-40° C to +65° C	
Dimension (W x H x D) (Chassis only)	10" x 8" x 1.8" MC4 DC leads: 8.75" Integrated branch cable: 27"	
Weight	2 kg (4.4 lbs)	
Enclosure rating	NEMA 6	
FEATURES		0 mg
Communication	Mesh Networked Power Line (130.2 kHz carrier)	
Monitoring	Monitoring via CP-100 gateway and Online Cloud	
	UL1741, IEEE std 1547, IEEE std C62.41.2, CSA C22.2 NO. 107.1	
Certifications	CISPR 22 Class B; HECO Rule14H (Advanced Inverter), HECO Rule 22 (Self-Supply)	
	Rule 21 / UL1741SA; Complies with NEC 690.12(B)(2) Rapid Shutdown	
	Product Warranty 25 Years 2 x Series 60/72 Cell Mono or Poly PV modules 2 x Parallel HV Panasonic Modules; 2 x Parallel 96/128 Cell SunPower Modules ¹ Maximum DC exposed voltage equals single module Voc when in shutdown ² Supports 50Hz operating in extended mode range (45.2-55.7 Hz) ³ When current limited to 2.66A for 208V or 2.4A for 240V	



To learn more about Chilicon Power microinverters, call (310) 800-1396 or visit chilicongower.com