

GENERAL NOTES

1. ALL ELECTRICAL MATERIALS SHALL BE NEW AND LISTED BY RECOGNIZED ELECTRICAL TESTING LABORATORY
CUSTOM MADE EQUIPMENT SHALL HAVE COMPLETE TEST DATA SUBMITTED BY THE MANUFACTURER ATTESTING TO ITS SAFETY
 2. OUTDOOR EQUIPMENT SHALL BE NEMA 3R RATED OR BETTER
 3. ALL METALLIC EQUIPMENT SHALL BE GROUNDED
 4. CONTRACTOR SHALL OBTAIN ELECTRICAL PERMITS PRIOR TO INSTALLATION AND SHALL COORDINATE ALL INSPECTIONS, TESTING COMMISSIONING AND ACCEPTANCE WITH THE CLIENT, UTILITY CO. AND CITY INSPECTORS AS NEEDED.
 5. THE ELECTRICAL CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS OF SERVICE POINTS AND SERVICE SIZES WITH THE SERVING UTILITY COMPANY AND COMPLY WITH ALL UTILITY COMPANIES REQUIREMENTS.
 6. DRAWINGS ARE DIAGRAMMATIC ONLY. ROUTING OF RACEWAYS SHALL BE OPTION OF THE CONTRACTOR UNLESS OTHERWISE NOTED AND SHALL BE COORDINATED WITH OTHER TRADES.
 7. IF THE ROOF MATERIAL OR ROOF STRUCTURE NOT ADEQUATE FOR PV INSTALLATION, CALL ENGINEER PRIOR TO INSTALL. THE CONTRACTOR IS RESPONSIBLE TO VERIFY THAT THE ROOF IS CAPABLE OF WITHSTANDING THE EXTRA WEIGHT.
 8. IF THE DISTANCES FOR CABLE RUNS ARE DIFFERENT THAN SHOWN, THE CONTRACTOR SHALL NOTIFY THE ELECTRICAL ENGINEER TO VALIDATE THE WIRE SIZE. FINAL DRAWINGS WILL BE RED-LINED AND UPDATED AS APPROPRIATE.
 9. WHENEVER A DISCREPANCY IN QUALITY OF EQUIPMENT ARISES ON THE DRAWING OR SPECIFICATIONS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AND INSTALLING ALL MATERIAL AND SERVICES REQUIRED BY THE STRICTEST CONDITIONS NOTED ON THE DRAWINGS OR IN THE SPECIFICATIONS TO ENSURE COMPLETE COMPLIANCE AND LONGEVITY OF THE OPERABLE SYSTEM REQUIRED BY THE ARCHITECT/ENGINEERS.
 10. ALL BROCHURES, OPERATION MANUALS, CATALOGS, SHOP DRAWINGS, ETC. SHALL BE HANDED OVER TO OWNER'S REPRESENTATIVE AT THE COMPLETION OF WORK
- ### PHOTOVOLTAIC NOTES:
1. ROOFTOP MOUNTED PHOTOVOLTAIC PANELS AND MODULES SHALL BE TESTED, LISTED AND IDENTIFIED BY RECOGNIZED ELECTRICAL TESTING LABORATORY
 2. SOLAR SYSTEM SHALL NOT COVER ANY PLUMBING OR MECHANICAL VENTS
 3. MODULES AND SUPPORT STRUCTURES SHALL BE GROUNDED.
 4. SOLAR INVERTER SHALL BE LISTED TO UL1741.
 5. REMOVAL OF AN INTERACTIVE INVERTER OR OTHER EQUIPMENT SHALL NOT DISCONNECT THE BONDING CONNECTION BETWEEN THE GROUNDING ELECTRODE CONDUCTOR AND THE PHOTOVOLTAIC SOURCE AND/OR OUTPUT CIRCUIT GROUNDED CONDUCTORS.

6. ALL PV MODULES AND ASSOCIATED EQUIPMENT AND WIRING SHALL BE PROTECTED FROM PHYSICAL DAMAGE.
7. LIVE PARTS OF PV SOURCE CIRCUITS AND PV OUTPUT CIRCUITS OVER 150V TO GROUND SHALL NOT BE ACCESSIBLE TO OTHER THAN QUALIFIED PERSONS WHILE ENERGIZED.
8. INVERTER IS EQUIPED WITH INTEGRATED GFDI, THUS PROVIDING GROUND FAULT PROTECTION
9. ALL CONDUCTORS SHALL BE COPPER AND 90 DEG RATED
10. ALL ELECTRICAL EQUIPMENT SHALL BE LISTED BY A RECOGNIZED ELECTRICAL TESTING LABORATORY.
11. A SINGLE CONDUCTOR SHALL BE PERMITTED TO BE USED TO PERFORM THE MULTIPLE FUNCTIONS OF DC GROUNDING, AC GROUNDING AND BONDING BETWEEN AC AND DC SYSTEMS.
12. NON-CURRENT CARRYING METAL PARTS OF EQUIPMENT SHALL BE EFFECTIVELY BONDED TOGETHER. BOND BOTH ENDS OF RACEWAYS.

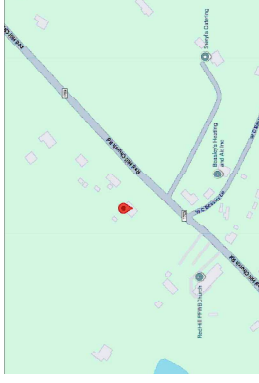


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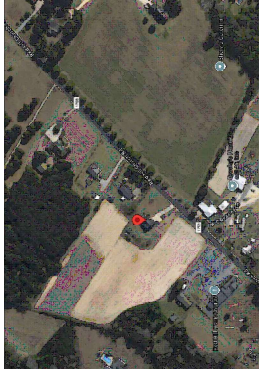
THE INSTALLATION OF SOLAR ARRAYS AND PHOTOVOLTAIC POWER SYSTEMS SHALL COMPLY WITH THE FOLLOWING CODES:

- 2020 NATIONAL ELECTRICAL CODE
- 2018 NORTH CAROLINA STATE BUILDING CODE: RESIDENTIAL
- 2018 NORTH CAROLINA STATE BUILDING CODE: BUILDING
- 2018 NORTH CAROLINA STATE BUILDING CODE: FIRE

AS ADOPTED BY THE STATE OF NORTH CAROLINA
ALL OTHER ORDINANCE ADOPTED BY THE
LOCAL GOVERNING AGENCIES



VICINITY MAP
SCALE: NTS

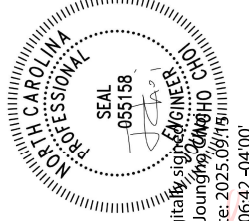


SATellite VIEW
SCALE: NTS

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11	A-POWER DATA SHEET

Joungh oChoi
Digitally signed by Joungh oChoi
Date: 2025.09.15 16:06:42 -04'00'



Project Name:
Lisa Allison-Moon
Property address:
**5445 Red Hill Church Rd,
Coats, NC 27521**

PV SOLAR SYSTEM DETAILS

SYSTEM SIZE: DC STC: 7,360 KW
SYSTEM SIZE: AC INV: 6,128 KW
SOLAR MODULES: (16) APTOS 460 watt
MICROINVERTERS: (8) APTOS MAC-800
BATTERY: (1) FranklinWH APower 2, 10KW
SMART CONTROLLER: (1) FranklinWH AGate

ELECTRICAL INFORMATION:

EXISTING
MAIN SERVICE PANEL BUS SIZE: 200A
MAIN SERVICE PANEL BREAKER SIZE: 200A
MOUNTING SYSTEM: IRONRIDGE XR10

BUILDING INFORMATION:

CONSTRUCTION TYPE: V-B
OCCUPANCY: R3
ROOF: COMP SHINGLE
RAFTER: 2 X 6 @ 24" O.C.

CONTRACTOR

Wiring Solutions Plus LLC

Address:
4724 Hargrove Rd, Raleigh, NC 27616

Phone Number:
984-200-7489

E-Mail:
wiring.solutions.office@gmail.com

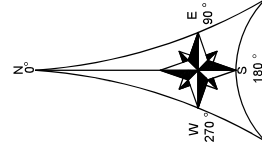
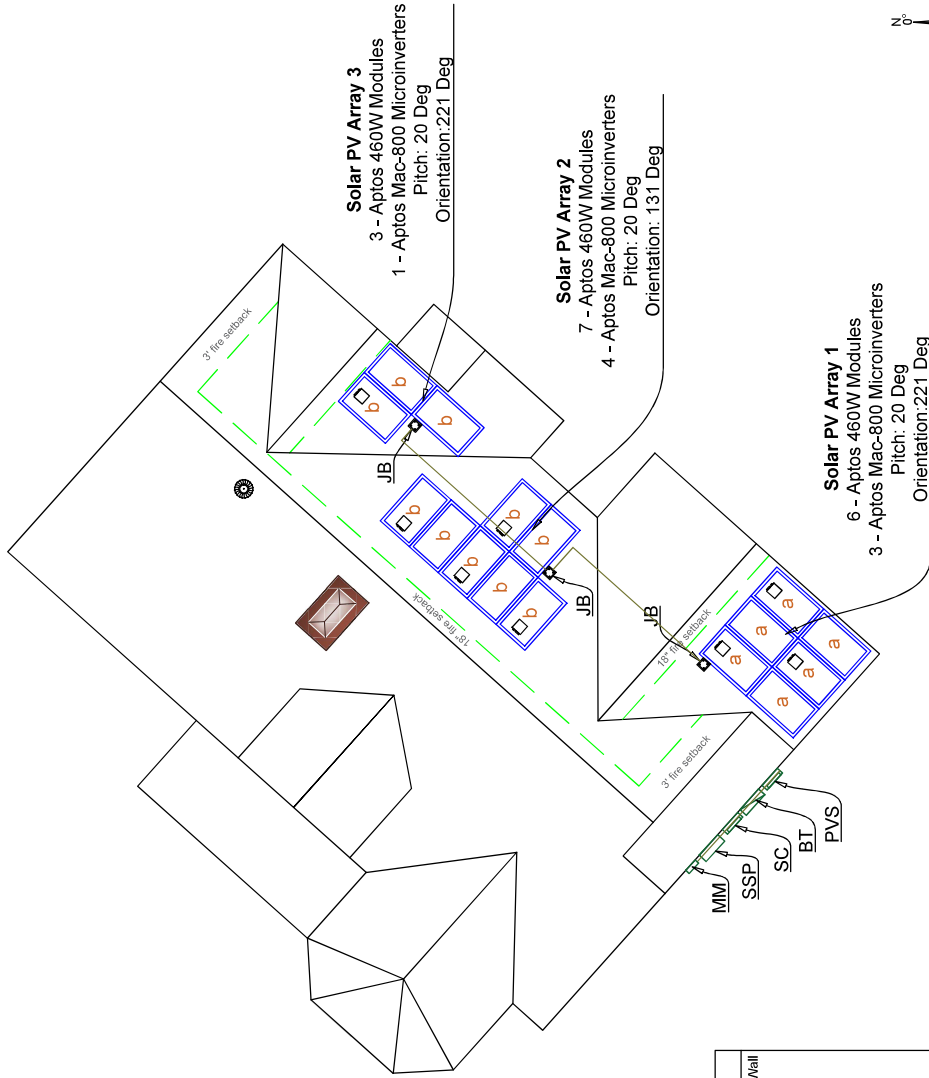
License Number:
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DATE: 09/15/2025

INDEX	
MM	(E) Meter Main
SSP	(E) Service Sub Panel
PVS	(N) PV Sub Panel
SC	(N) AGate System Controller
BT	(N) Franklin APower Battery
JB	(N) Junction Box
	(N) Microinverter
	(N) Solar Module
	EMT Type Conduit

RooF Face Area:2792
Module Area:352
12.60% of Roof Coverage



SCALE: 3/32" = 1'-0"

1

ROOF PLAN

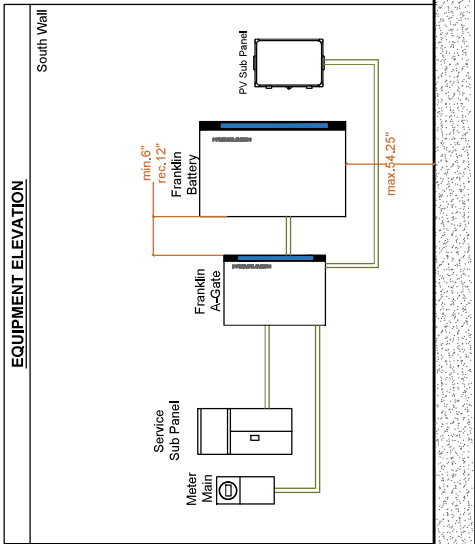
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ITEM

DESCRIPTION

QTY

1

PV MODULE

(N) APTOS 460WATT
DNA-120MF10-460W
Voc=41.97V, Vmp=35.36V
Isc=13.75A, Imp=13.13.00A

16

2

PVC JUNCTION BOX

(N) 4"x4"x2" UL LISTED WATER TIGHT
NEMA TYPE 3

3

3

SMART CONTROLLER

(N) FRANKLIN WH AGATE
SMART CONTROLLER

1

4

PV SUB PANEL

(N) 125A PV SUB PANEL

1

5

SERVICE SUB PANEL

(E) SERVICE SUB PANEL WITH 200A
BUSBAR

1

6

METER MAIN

(E) DUKE ENERGY UTILITY METER 240V

1

7

MICROINVERTER

(N) APTOS MAC-800 MICROINVERTERS
MAC-800 (240V)
PEAK PWR TRACKING VOLTAGE: =16-60V
CEC EFFICIENCY: =96.7 %
MAXIMUM INPUT CURRENT: =15 A
MAXIMUM OUTPUT CURRENT: =3.19 A
MAXIMUM INPUT POWER: =320 -540W+
MAXIMUM OUTPUT POWER: =766 VA

8

8

BATTERY

(N) FRANKLIN WH APOWER 2.10KW
BATTERY, MODEL #APR-10K15V2-US

1

WIRE CHART

#	MODULE QTY x NEC MULT x MICROINV. OUTPUT AMPS = DESIGN AMPS	BREAKER SIZE (A)	WIRE TYPE	GEC	WIRE RATING X TEMP DERATE X CONDUCTOR DERATE = DERATED WIRE	CONDUIT SIZE
1	3 X 1.25 X 3.19 = 11.96 A	20	(2) #12 AWG, PV CABLE	(1) #6 BARE SOLID COPPER EGC	30 X .71 X 1 = 21.3 >= 11.96	IN FREE AIR
2	5 X 1.25 X 3.19 = 19.93 A	20	(2) #12 AWG, PV CABLE	(1) #6 BARE SOLID COPPER EGC	30 X .71 X 1 = 21.3 >= 19.93	IN FREE AIR
3	5 X 1.25 X 3.19 = 19.93 A	20	(4) #10 AWG CU-THWN-2	(1) #10 AWG CU-THWN-2 EGC	35 X .91 X .8 = 25.48 >= 19.93	3/4" EMT
4	8 X 1.25 X 3.19 = 31.9 A	40	(3) #8 AWG CU-THWN-2	(1) #10 AWG CU-THWN-2 EGC	45 X .91 X 1 = 40.95 >= 31.9	3/4" EMT
5	-	200	(3) #4/0 AWG, AL	(1) #4 AWG, AL EGC	-	2" PVC
6	48 X 1.25 = 60 A	60	(2) #4 AWG, AL	(1) #10 AWG CU-THWN-2 EGC	-	3/4" EMT

KEY NOTES:

SOLID BARE G.E.C (FREE-AMP) MOUNTED UNDER ARRAY

PER NEC ARTICLE 690.35 INVERTER GROUND FAULT PROTECTION PROVIDED

ALL GROUNDS AND NEUTRALS BONDED TO EXISTING GROUNDING CONDUCTOR WIREVERSIBLE CRIP CONNECTOR.

BACKFED BREAKERS MUST BE LOCATED @ OPPOSITE END OF BUS BAR FROM MAIN BREAKER OR MAIN LUG ON GRID SIDE. WHEN A BACKFED BREAKER IS THE METHOD OF UTILITY INTERCONNECTION, BREAKER SHALL NOT READ "LINE OR LOAD".

PER NEC 250.68(C): CONDUCTOR SPLICES ONLY ALLOWED WITH COMPRESSION CONNECTORS OR EXOTHERMIC WELDING

ALL GROUNDS AND NEUTRALS BONDED TO EXISTING GROUNDING CONDUCTOR WIREVERSIBLE CRIP CONNECTOR.

VERIFY (E) UFER GROUND NEAR MSP. IF (E) UFER IS NOT ACCESSIBLE OR VERIFIABLE, INSTALL A NEW 5/8" Ø X 8' LONG GROUNDING ROD AND BOND SOLAR SYSTEM EQUIPMENT GROUNDING ACCORDINGLY.

2

SINGLE LINE DIAGRAM

Project Name:
Lisa Allison-Moon
Property address:
5445 Red Hill Church Rd,
Coats, NC 27521

CONTRACTOR
Wiring Solutions Plus LLC
Address:
4724 Hargrove Rd, Raleigh, NC 27616
Phone Number:
984-200-7489
E-Mail:
wiring.solutions.office@gmail.com
License Number:
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Wiring Solutions Plus

DATE: 09/15/2025

SYSTEM SIZE: DC STC: 7.360 KW
SYSTEM SIZE: AC INV: 6.128 KW

FRANKLIN

FRANKLIN

AGATE POWER SWITCH

200A

60A

40A

200A

EXISTING 120/240V 1P 3W METER MAIN COMBO

FEED THROUGH LUGS

Branch b. (10) Modules. (5) Microinverters

Branch a. (6) Modules. (3) Microinverters

⚠

WARNING

SOURCES: UTILITY GRID AND
PV SOLAR ELECTRICAL SYSTEM

PHOTOVOLTATIC AC DISCONNECT

RATED OUTPUT CURRENT:

NOMINAL OPERATING VOLTAGE:

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

WARNING: PHOTOVOLTATIC
POWER SOURCE

PV SOLAR BREAKER

DO NOT RELOCATE
THIS OVERCURRENT
DEVICE

⚠

WARNING

TERMINALS ON THE LINE AND
LOAD SIDES MAY BE ENERGIZED
IN THE OPEN POSITION

WARNING!

INVERTER OUTPUT CONNECTION, DO NOT
RELOCATE THIS OVERCURRENT DEVICE

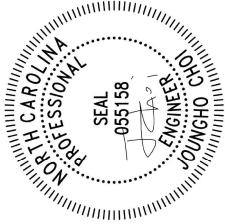
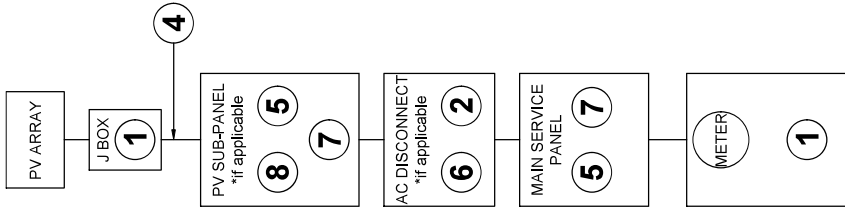
PV LOAD CENTER SIZED FOR PV
BREAKERS ONLY OR RENDERED UNABLE
TO ACCEPT ANY ADDITIONAL LOADS.

MAXIMUM VOLTAGE: V

MAXIMUM CIRCUIT CURRENT:
MAX RATED OUTPUT CURRENT OF
THE CHARGE CONTROLLER OR
DC-TO-DC CONVERTER
(IF INSTALLED): A

MARKINGS, LABELS AND WIRING SIGNS

- A. Purpose: Provide emergency responders with appropriate warning and guidance with the use of the marking signs and labels.
- B. Main Service Disconnect.
- C. Markings: Verbiage, Format and Type of Material.
- D. Markings: Verbiage, Format and Type of Material.
- E. Markings: Verbiage, Format and Type of Material.
- F. Markings: Verbiage, Format and Type of Material.
- G. Markings: Verbiage, Format and Type of Material.
- H. Markings: Verbiage, Format and Type of Material.
- I. Markings: Verbiage, Format and Type of Material.
- J. Markings: Verbiage, Format and Type of Material.
- K. Markings: Verbiage, Format and Type of Material.
- L. Markings: Verbiage, Format and Type of Material.
- M. Markings: Verbiage, Format and Type of Material.
- N. Markings: Verbiage, Format and Type of Material.
- O. Markings: Verbiage, Format and Type of Material.
- P. Markings: Verbiage, Format and Type of Material.
- Q. Markings: Verbiage, Format and Type of Material.
- R. Markings: Verbiage, Format and Type of Material.
- S. Markings: Verbiage, Format and Type of Material.
- T. Markings: Verbiage, Format and Type of Material.
- U. Markings: Verbiage, Format and Type of Material.
- V. Markings: Verbiage, Format and Type of Material.
- W. Markings: Verbiage, Format and Type of Material.
- X. Markings: Verbiage, Format and Type of Material.
- Y. Markings: Verbiage, Format and Type of Material.
- Z. Markings: Verbiage, Format and Type of Material.



3

SIGNAGE

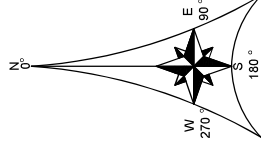
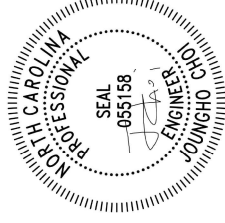
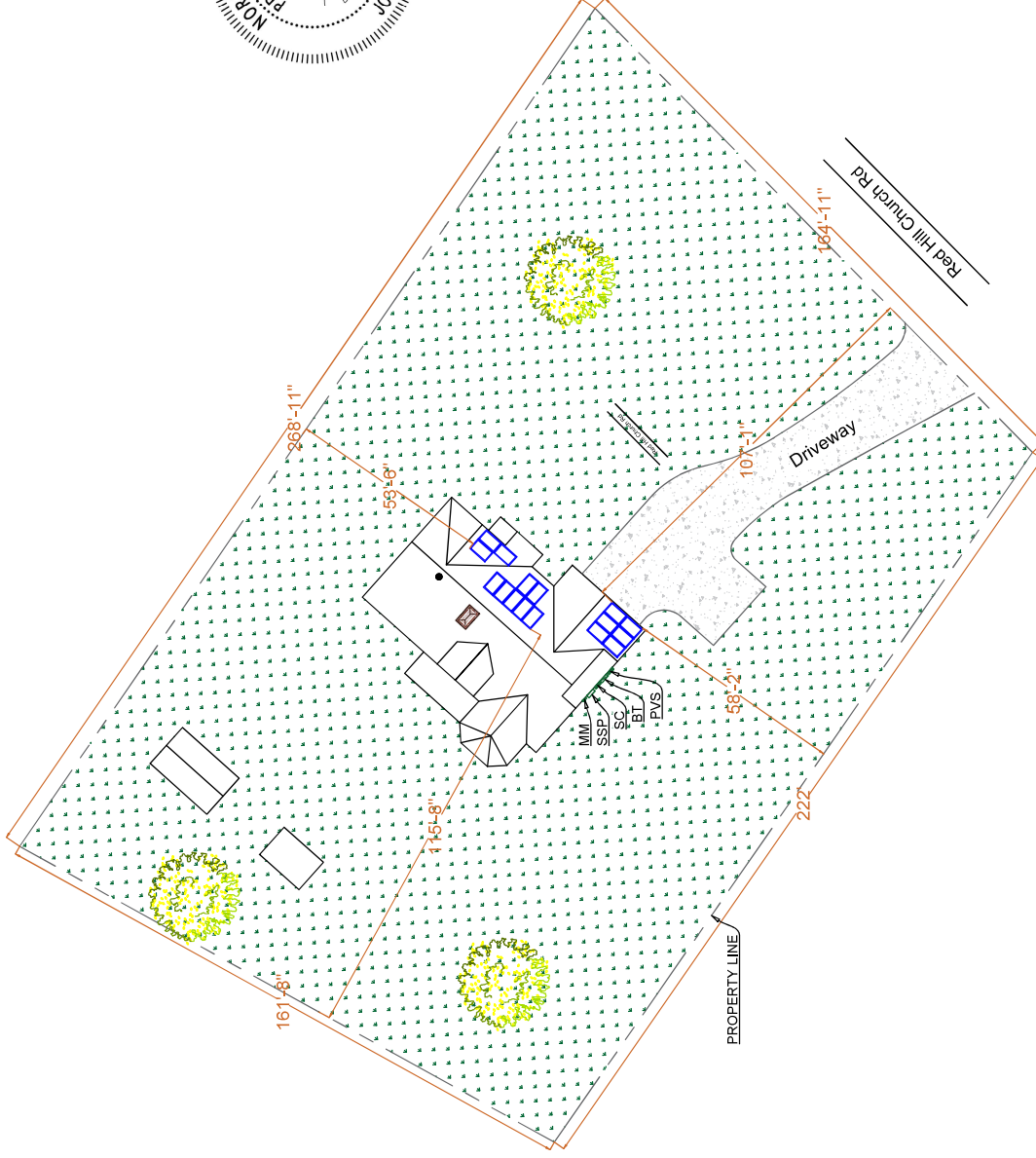
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MM	Meter Main
SSP	Service Sub Panel
SC	AGate System Controller
BT	Franklin APower Battery
PVS	PV Sub Panel
	Solar Module



SCALE: 1/32" = 1'-0"

4

SITE PLAN

Project Name:
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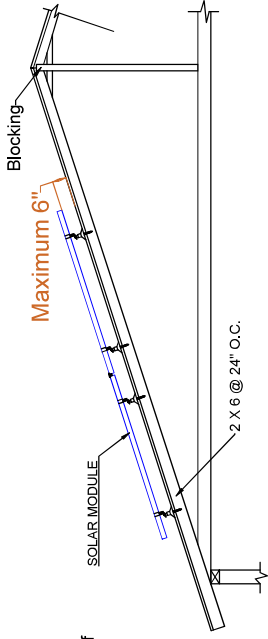


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MODULE WEIGHT (lbs)	52.9
# OF MODULES	16
TOTAL MODULE WEIGHT (lbs)	846.4
RACK WEIGHT (lbs)	169.28
MICROINVERTER WEIGHT (lbs)	45.6
TOTAL SYSTEM WEIGHT (lbs)	1061.28
# OF STANDOFFS	38
MAX SPAN BETWEEN STANDOFFS (in)	48
LOADING PER STANDOFF (lbs)	27.92
TOTAL AREA (sq.ft.)	352
LOADING (PSF)	2.90

1. Ironridge XR10 Racking System (XR-10-168A)
2. Ironridge Halo Ultra Grip Attachment (QM-HUG-01-M1)
3. Bird Mesh (BIRD-MESH-BLK-PACK)
4. Roof attachment hardware to be mounted to existing structure (2 X 6 @ 24" O.C. RAFTER) with 48" O.C. rail spans less.
5. Lag bolts are 1/4" X 3.5" stainless steel with 2.5" minimum embedment into the center of the roof
6. Roof sheathed with 1/2" plywood and upper surface is faced with felt paper.

Finished roof surface is **One layer of COMP SHINGLE** .

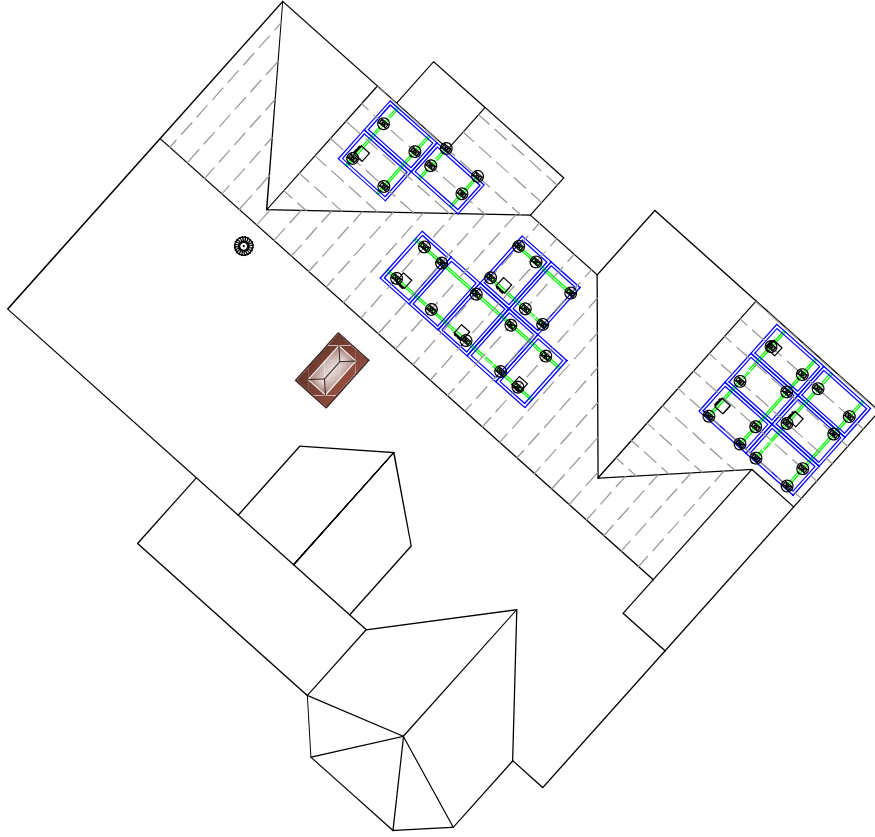
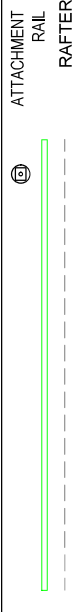
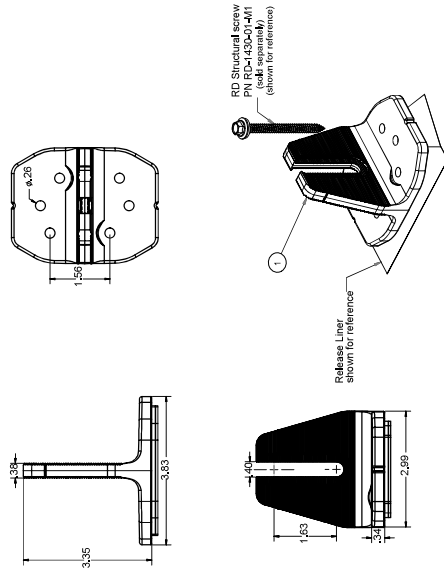


QUICKMOUNT® HALO ULTRAGRIP

ITEM NO	DESCRIPTION	QTY IN KIT
1	QM Halo UltraGrip (M1 or Black)	1

PART NUMBER	DESCRIPTION	Property	Value
QM-HUG-01-M1	Halo UltraGrip - M1	Material	3000 Series Aluminum
QM-HUG-01-B1	Halo UltraGrip - Black	Finish	M11 or Black

1. Halo UltraGrip



5 ATTACHMENT LAYOUT

Project Name:
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MACTM 800

Solar for Innovators



High-performance 2:1 Microinverter Up to 800W



Maximum AC Power Output

- Up to 800W
- 10% more AC power output than competing products



Superior Long-term Reliability

- Industry leading 25-year warranty
- Over 2GW of microinverters deployed across 28 countries
- NEMA6 (IP67) enclosures are rated for protection in harsh outdoor conditions



Built for Safety

- Built-in rapid shutdown feature in compliance with National Electrical Code (NEC)
- 5,000V surge protection feature



Streamlined Installation

- Separate trunk cables
- Compatible with Residential and Commercial PV Panels
- Battery integration ready

Accessories



AC Trunk Cable,
12/70 AWG Cable



AC Trunk Connector



AC Trunk Port Cap



AC Connector Cap - M



DC Extension Cable



AC Trunk Port
Disconnect Tool

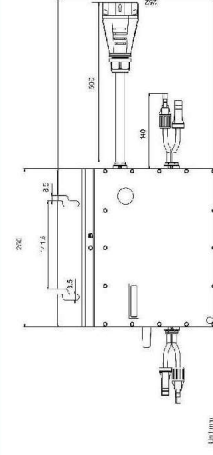


AC Trunk Connector
Unlock Tool



MACTM 800

Solar for Innovators



Input Data (DC)

Commonly used module power (W)	320W/540W ¹
Maximum input voltage(V)	60
MPPT voltage range(V)	16-60
Start-up voltage(V)	22
Maximum input current I _{sc} (A) ¹	2 ¹ 15

Mechanical Data

Ambient temperature range (°C)	-40 to +65
Dimensions W X H X D (mm)	250 X 170 X 28
Weight (KG)	2.6
Enclosure rating	Outdoor-NEMA (IP67)
Cooling	Natural convection - No fans

Output Data (AC)

Peak output power(WA)	800
Maximum continuous output power(WA)	766
Maximum continuous output current (A)	3.19
Nominal output voltage/range(V) ²	240/211-264
Nominal frequency/range (Hz) ²	60/55-65
Power factor (adjustable)	>0.99 default 0.8 leading...0.8 lagging
Total harmonic distortion	<3%
Maximum units per branch ³	5/4

Efficiency

CEC peak efficiency	96.7%
CEC weighted efficiency	96.5%
Nominal MPPT efficiency	99.8%
Nighttime power consumption (mW)	<50

Loading Quantity

Container	1 X 20 GP
Pallet No.	10 22
Carton No.	480 1008
Total quantity	2400 5040

Features

Communication	2.4GHz Proprietary RF (Nordic)
Monitoring	AST Cloud ⁴
Warranty	25 Years
Compliance	UL 1741, IEEE 1547, UL 1741 SA (240Vac), LLL 1741 SB (208Vac and 240Vac), CA Rule 21 (240Vac), CSA C22.2 No.107.1-16, FCC Part 15B, FCC Part 15C
PV Rapid Shutdown	Comforms with NEC-2017 and NEC-2020 Article 690.12 and CEC 2021 Sec 64-218 Rapid Shutdown of PV Systems

¹ Maximum continuous input DC current is 12.5A

² Nominal voltage/frequency range can be changed due to the requirements of local power department.

³ Refer to local requirements for exact number of microinverters per branch.

⁴ Aptos Monitoring System.



6 INVERTER DATA SHEET

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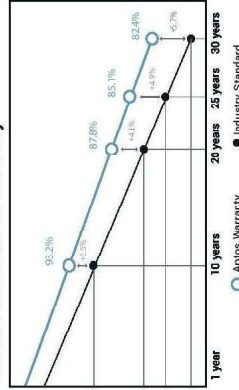
DNA-120-MF10-460W Residential | Commercial

Our DNA Split Cell Series uses advanced selective emitter PERC technology with thin film layers to improve heat tolerance, maximize energy harvest, minimize resistive loss, and use 5% more of the available active area for optimal power performance.

Industry Leading 30 Years Product and Performance Warranty

445W | 450W | 455W | 460W

Linear Performance Warranty



Key Features

Advanced Technology
Patented DNA™ technology boosts power performance & module efficiency.



Miami-Dade Approved
Maximum Durability: LEVEL 6 S&T MIST Tested, 3400Pa Wind Load Certified Panels



Awards
Winners of the Leadership in Solar Energy award for three consecutive years and listed as one of the Top Solar Products from 2021-2022



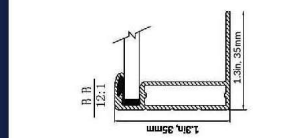
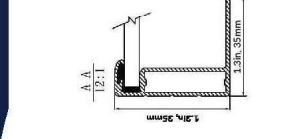
Bankable Investment
Comprehensive warranty that covers both 30-year product and 30-year power performance.



Aesthetics
All black design with advanced split cell technology features 10 ultra-thin busbars that allow for less resistance and greater energy harvest.

DNA™ 120-Monofacial

Solar for Innovators



DNA™ 120 Monofacial

Electrical Specifications	DNA-120-MF10-445W	DNA-120-MF10-450W	DNA-120-MF10-455W	DNA-120-MF10-460W
STC Rated Output P_{max} (W)	445W	450W	455W	460W
Open Circuit Voltage V_{oc} (V)	41.79	39.42	41.88	39.38
Short Circuit Current I_{sc} (A)	13.36	11.89	13.51	12.09
Rated Voltage V_m (V)	55.03	33.32	35.15	32.39
Rated Current I_m (A)	12.70	10.31	12.80	10.40
Module Efficiency	20.57%	20.79%	21.03%	21.26%

STC Test Conditions: 1000 W/m² Irradiance, 25°C Temperature, AM1.5 Spectrum, 1.5m Air Mass, 1.5m Cell Area

Temperature Coefficients

Temperature Coefficients P_{max}	-0.35%/°C
Temperature Coefficients V_{oc}	+0.254%/°C
Temperature Coefficients I_{sc}	-0.27%/°C
Temperature Coefficients V_m	-0.27%/°C
Temperature Coefficients I_m	-0.27%/°C
Temperature Coefficients V_{oc}	+0.254%/°C
Temperature Coefficients I_{sc}	-0.27%/°C
Temperature Coefficients V_m	-0.27%/°C
Temperature Coefficients I_m	-0.27%/°C

Test Operating Conditions

Maximum Series Fuse	25A
Maximum System Voltage	1500 VDC (UL1699)
Maximum Load Capacity (Per UL 1703)	5400 PA Snow Load / 5400 PA Wind Load
Fire Performance Type	Type 1

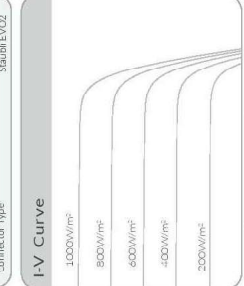
Packaging Configuration

Number of Modules per Pallet	31
Number of Pallets per 40ft Container	24
Pallet Dimensions	76.29" X 44.48" X 49.76" in, 1928 X 1130 X 1264 mm
Pallet Weight (Est)	1440
Module per 40ft Container	744

8207 Callaghan Rd, Ste 100,
San Antonio, Texas 78220
www.aptosolar.com | sales@aptosolar.com

Mechanica Properties	SEPERC
Cell Type	3.2mm anti-reflection coating, high transmission, low iron, tempered glass
Class	Anodized Aluminum Alloy
Frame	IP68
Junction Box	75.1 X 44.6 X 1.3 in, 1903 X 1134 X 35 mm
Dimensions	52.79in (1342mm)
Weight	44mm2 (EU) 12AWG (39.37in (1200mm))
Output Cable	47.2 in
Cable Length	POE
Snapsulant	Snapsulant
Connector Type	Snapsulant

I-V Curve



7 MODULE DATA SHEET

Project Name:
Lisa Allison-Moon
Property address:
5445 Red Hill Church Rd,
Coats, NC 27521

CONTRACTOR

Wiring Solutions Plus LLC
Address:
4724 Hargrove Rd, Raleigh, NC 27616
Phone Number:
984-200-7489
E-Mail:
wingsolutionsoffice@gmail.com
License Number:
25181-L



DATE: 09/15/2025



Flush Mount System

Datasheet



Built for solar's toughest roofs.

IronRidge builds the strongest mounting system for pitched roofs in solar. Every component has been tested to the limit and proven in extreme environments. Our rigorous approach has led to unique structural features, such as curved rails and reinforced flashings, and is also why our products are fully certified, code compliant and backed by a 25-year warranty.



Strength Tested

All components evaluated for superior structural performance.



Class A Fire Rating

Certified to maintain the fire resistance rating of the existing roof.



UL 2703 Listed System

Entire system and components meet newest effective UL 2703 standard.



PE Certified

Pre-stamped engineering letters available in most states.



Design Assistant

Online software makes it simple to create, share, and price projects.



25-Year Warranty

Products guaranteed to be free of impairing defects.

XR Rails

Datasheet

XR10 Rail



A low-profile mounting rail for regions with light snow.

- 6" spanning capability
- Moderate load capability
- Clear and black finish

XR100 Rail



The ultimate residential solar mounting rail.

- 8" spanning capability
- Heavy load capability
- Clear and black finish

XR1000 Rail



A heavyweight mounting rail for commercial projects.

- 12" spanning capability
- Extreme load capability
- Clear anodized finish

Bonded Splices



All rails use internal splices for seamless connections.

- Self-drilling screws
- Varying versions for rails
- Form's secure bonding

Clamps & Grounding

UFOs



Universal Fastening Objects bond modules to rails.

- Fully assembled & lubed
- Single, universal size
- Clear and black finish

Stopper Sleeves



Snap onto the UFO to turn bond modules to rails.

- Bonds modules to rails
- Sized to match modules
- Clear and black finish

CAMO



Bond modules to rails while saying completely hidden.

- Universal end-cam clamp
- Tool-less installation
- Fully assembled

Grounding Lugs



Connect arrays to equipment ground.

- Low profile
- Single tool installation
- Mounts in any direction

Attachments

FlashFoot2



Flash and mount XR Rails with superior waterproofing.

- Twist-on Cap eases install
- Wind-driven rain tested
- Mill and black finish

Conduit Mount



Flash and mount conduit, strut, or junction boxes.

- Twist-on Cap eases install
- Wind-driven rain tested
- Secures 3/4" or 1" conduit

Slotted L-Feet



Drop-in design for rapid rail attachment.

- Secure rail connections
- Slot for vertical adjusting
- Clear and black finish

Bonding Hardware



Bond and attach XR Rails to roof attachments.

- T & Square Bolt options
- Nut uses 7/16" socket
- Assembled and lubricated

Resources



Design Assistant

Go from rough layout to fully engineered system. For free. Go to ironridge.com/design



NABCEP Certified Training

Earn free continuing education credits, while learning more about our systems. Go to ironridge.com/training

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RACKING DATA SHEET

Project Name:
Lisa Allison-Moon
Property address:
**5445 Red Hill Church Rd,
Coats, NC 27521**

CONTRACTOR

Wiring Solutions Plus LLC

Address:
4724 Hargrove Rd, Raleigh, NC 27616

Phone Number:
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E-Mail:
wiring.solutions.office@gmail.com

License Number:
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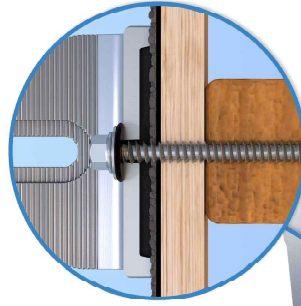
DATE: 09/15/2025



The Respect Your Roof Deserves

When integrating with a home, solar attachments must be dependable for the lifetime of the rooftop. Due to recent innovations, many asphalt shingles have bonded courses. A mount that protects without the need to pry shingles can really speed things up.

Halo UltraGrip™ ("HUG") is here to respect the roof. Its Halo is a cast-aluminum barrier that encases the UltraGrip, our industrial-grade, foam-and-rastic seal. This allows HUG to accelerate the installation process and provide the utmost in waterproofing protection. Give your roof a HUG.



Multi-Tiered Waterproofing
HUG utilizes a multi-tiered stack of components to provide revolutionary waterproofing. The cast-aluminum barrier, foam-and-rastic seal, and stainless steel rafter screw work together to provide a multi-tiered seal around the UltraGrip base—a foam-backed rastic seal combination that prevents water intrusion by adhering and sealing with the shingle surface.

~Halo UltraGrip™ is part of the QuickMount® product line.



UltraGrip™ Seal Technology
HUG UltraGrip utilizes a state-of-the-art seal design that uses a unique, foam-backed adhesive provides an airtight seal around the UltraGrip. The UltraGrip conforms and adheres to every hook and cranny of composition shingles, filling gaps and shingle step-downs (up to 1/8" in height).



Rafter & Deck Mounting Options
Mount HUG to the roof rafters, the roof deck, or both with our custom-engineered RD (rafter-or-deck) Structural Screw. The RD Structural Screw anchors HUG to the roof structure, providing a secure mounting. See the stack of waterproofing barriers. See the backside for more installation information.



Triple Rated & Certified to Respect the Roof™
UL 2703, 441 (27)
TAS 100(A)-95



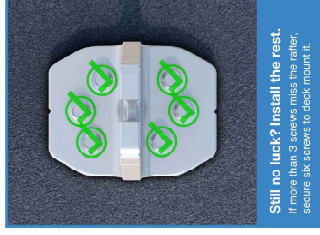
Adaptive, Rafter-Friendly Installation



Hit the rafter? Good to go!
When you find a rafter, you can move on. Only 2 RD Structural Screws are needed.

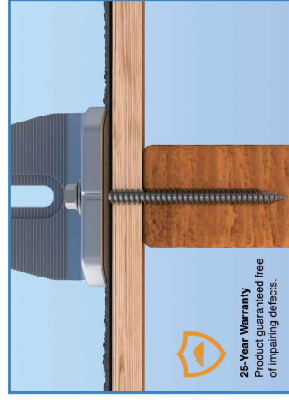


Miss the rafter? Try it again.
Place another screw to the left or right. If rafter is found, install 3rd and final screw.



Still no luck? Install the rest.
If more than 3 screws miss the rafter, secure six screws to deck mount it.

Trusted Strength & Less Hassle



25-Year Warranty
Product guaranteed free of impairing defects.

Structural capacities of HUG™ were reviewed in many load directions, with racking rail running cross-slope or up-slope in relation to roof pitch.

For further details, see the HUG certification letters for attaching to rafters and decking.

IronRidge designed the HUG, in combination with the RD Structural Screw to streamline installs, which means the following:

- No prying shingles
- No roof nail interference
- No pilot holes necessary
- No sealant (in most cases)
- No butyl shims needed



The rafter-mounted HUG has been tested and rated to support 1004 (lbs) of uplift and 368 (lbs) of lateral load.



Parts are designed and certified for compliance with the International Building Code & ASCE/SEI-7.



HUG passed both the JL 441 Section 27 "Rain Test" and TAS 100(A)-95 "Wind Driven Rain Test" by Intertek.



Systems conform to UL 2703 mechanical and bonding requirements. See Flush Mount Manual for more info.

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ATTACHMENT DATA SHEET

Project Name:
Lisa Allison-Moon
Property address:
5445 Red Hill Church Rd,
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CONTRACTOR

Wiring Solutions Plus LLC
Address:
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Phone Number:
984-200-7489
E-Mail:
wiring.solutions.office@gmail.com
License Number:
25181-L



DATE: 09/15/2025

FRANKLINWH

aPower 2 AC-coupled battery

Store solar generated power while the sun is shining. Use the stored energy when needed to lower electric bills. Run heavy loads such as air conditioners and water heaters as usual even during grid outages. Provide homeowner peace of mind by fully charging before severe weather events.

The system is off-grid ready, designed to operate independently from the main power grid to deliver reliable energy in any situation.

- ✓ 10 kW continuous / 15 kW peak for 10s
- ✓ 8 kW charge power
- ✓ 15 kWh AC¹ per unit, up to 225 kWh (15 units) per aGate
- ✓ 60 MWh warranty throughput



PERFORMANCE SPECIFICATIONS

SKU	APR-10C15V2-US	
Model Number	aPower 2	
Nameplate / Certification	aPower X-20	
CEC Listing Name	aPower X20V	
Battery Chemistry	Lithium Iron Phosphate (LFP)	
Usable System Energy	15 kWh AC ¹ per unit, up to 15 units per aGate	
Aggregate Throughput	60 MWh	
Real Power (Charge)	8 kW continuous	
Nominal Output Power (AC)	2.5 kW	5 kW 6.7 kW 8.4 kW 10 kW ²
Maximum Apparent Power	2.9 kVA	5.8 kVA 7.7 kVA 9.6 kVA 11.5 kVA
Maximum Continuous Current	12 A	24 A 32 A 40 A 48 A
Nominal AC Voltage	120 / 240 V, 20 / 208 V (single phase), 60 Hz	
Coupling	AC-coupled	
Phase	2 W+NPE	
Round Trip Efficiency	90%	
Maximum Short-Circuit Current Rating	10 kA	
Load Start Capability	Up to a 5-ton air conditioner	
Work Modes	Self-Consumption Time of Use Emergency Backup	
Noise Emission	30 dB(A) Typical / 45 dB(A) Maximum	
Flood Resistance	Up to 2" from the aPower 2 base	
User Interface	FranklinWH App	
Warranty	15 years ³	

COMPLIANCE INFORMATION

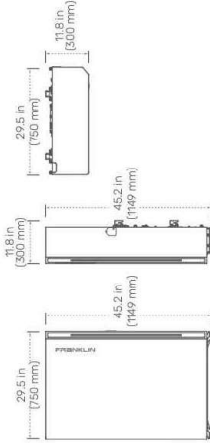
Certifications	UL 9540, UL 9540A, UL 1713, UL 1741, UL1741 SB, UL 1741 FCS, UL 60730-1, IEEE 1547, IEEE 1547.1, UN 38.3, CSA C22.2 No. 07.1	
Seismic	AC 156, GSHPD, IEEE 693-2005 (High)	
Environmental	California Proposition 65 RoHS Directive 2011 / EU	
Emissions	FCC Part 15 Class B, IEC 603	

- At beginning of life, 3.1kWh charge/discharge power, 77% (25°C)
- Refer to the installation manual and commissioning guide for proper wire and GFCI sizes
- For more details, please refer to the FranklinWH System Limited Warranty for End Users available in the Documentation Center on the FranklinWH website.

WWW.FRANKLINWH.COM

MECHANICAL SPECIFICATIONS

Dimensions (H x W x D)	45.2 in. x 29.5 in. x 11.6 in. (1149 mm x 750 mm x 300 mm)
Weight, aPower 2 Complete	357 lb. (162 kg)
Weight, without Cover	335 lb. (152 kg)
Weight, Cover	22 lb. (10 kg)
Mounting	Wall or floor mount
Cooling	Natural air-cooled design



ENVIRONMENTAL SPECIFICATIONS

Enclosure Type	Type 3B
Ingress Protection	IP67 (Battery Pack & aGate only) IP54 (Wiring)
Operating Temperature	Operates up to 131°F (55°C) at 50% derated output -4°F to 122°F (-20°C to 50°C)
Operating Humidity (RH)	Up to 100% RH, condensing
Altitude	Maximum 9,843 ft (3,000 m)
Environment	Indoor and outdoor rated

Compatibility Notice: At launch, the aPower 2 is compatible with the aGate 1.3 only. Compatibility with earlier aGate and aPower versions is anticipated in Q2 2025. Copyright 2025 FranklinWH Energy Storage Inc. All rights reserved. The Franklin logo, FranklinWH, and other trademarks or service marks are the trademarks of FranklinWH Energy Storage Inc. This document is for informational use only. It is subject to change without notice. 2025-1-13

11 A - POWER DATA SHEET

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