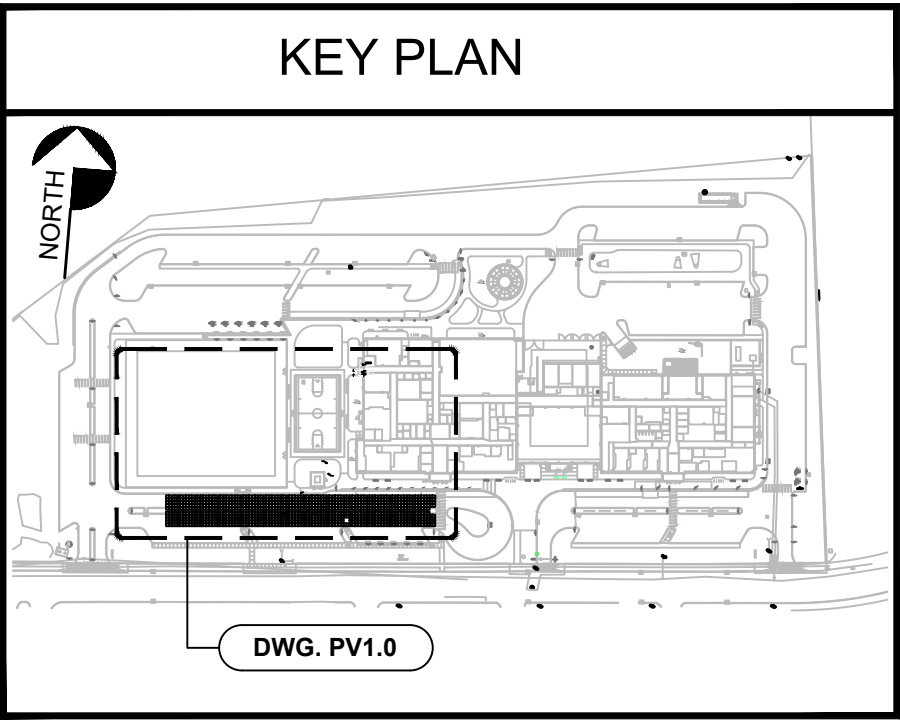


1 PARTIAL PV PLAN
Scale: 1/16" = 1'-0"



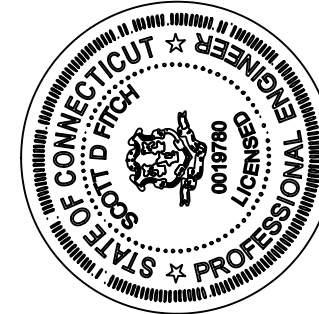
ACES - WHITNEY ACADEMY
130 LEEDER HILL DRIVE, HAMDEN CT

CARPORT PV SYSTEM
ELECTRICAL SERVICE A
PARTIAL PV PLAN

Project No.:	Drawn By: KFH
Date: 09/27/23	Design By: KFH
Scale: N.T.S.	Check By: DSF

Drawing No.:

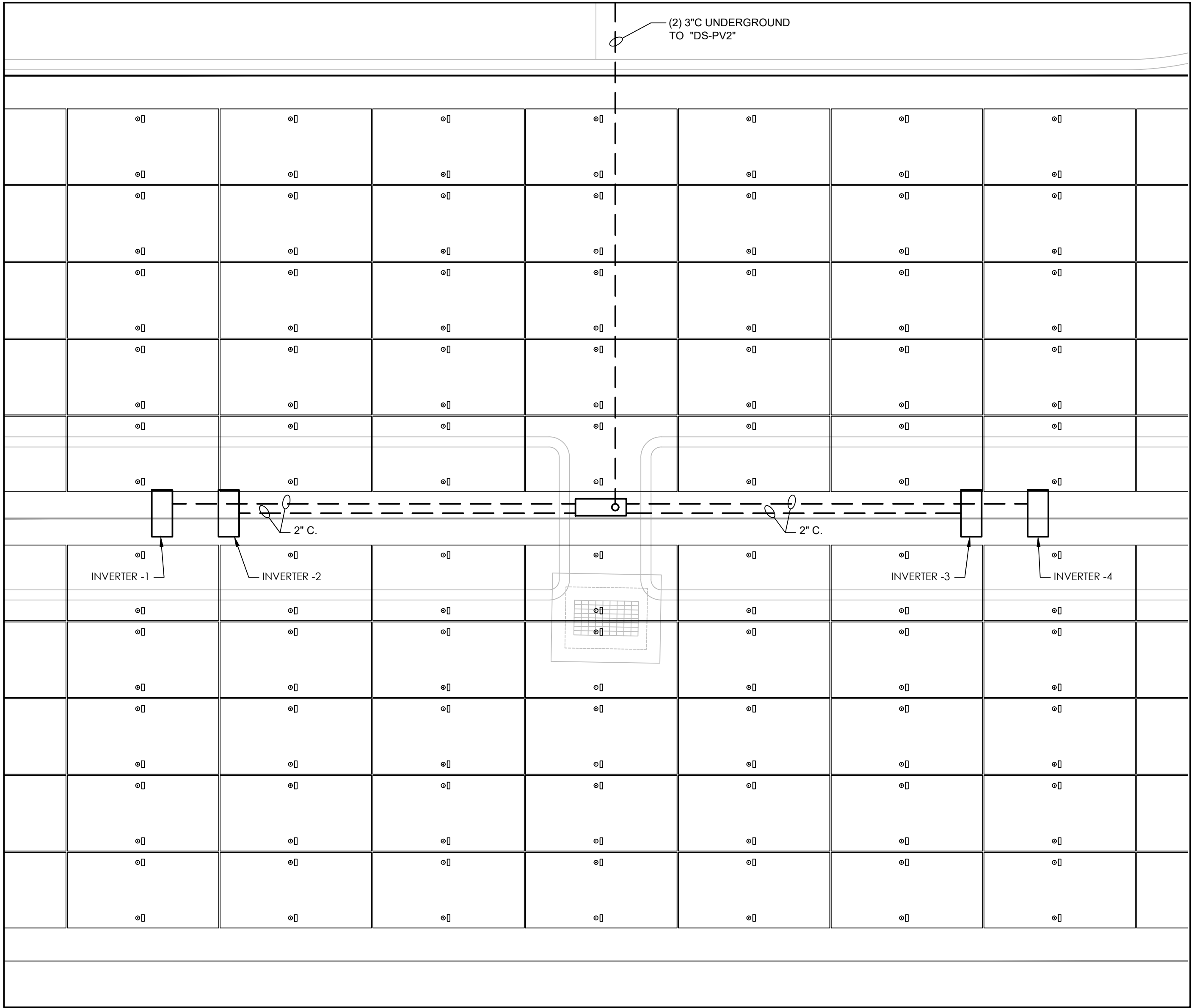
PV1.0



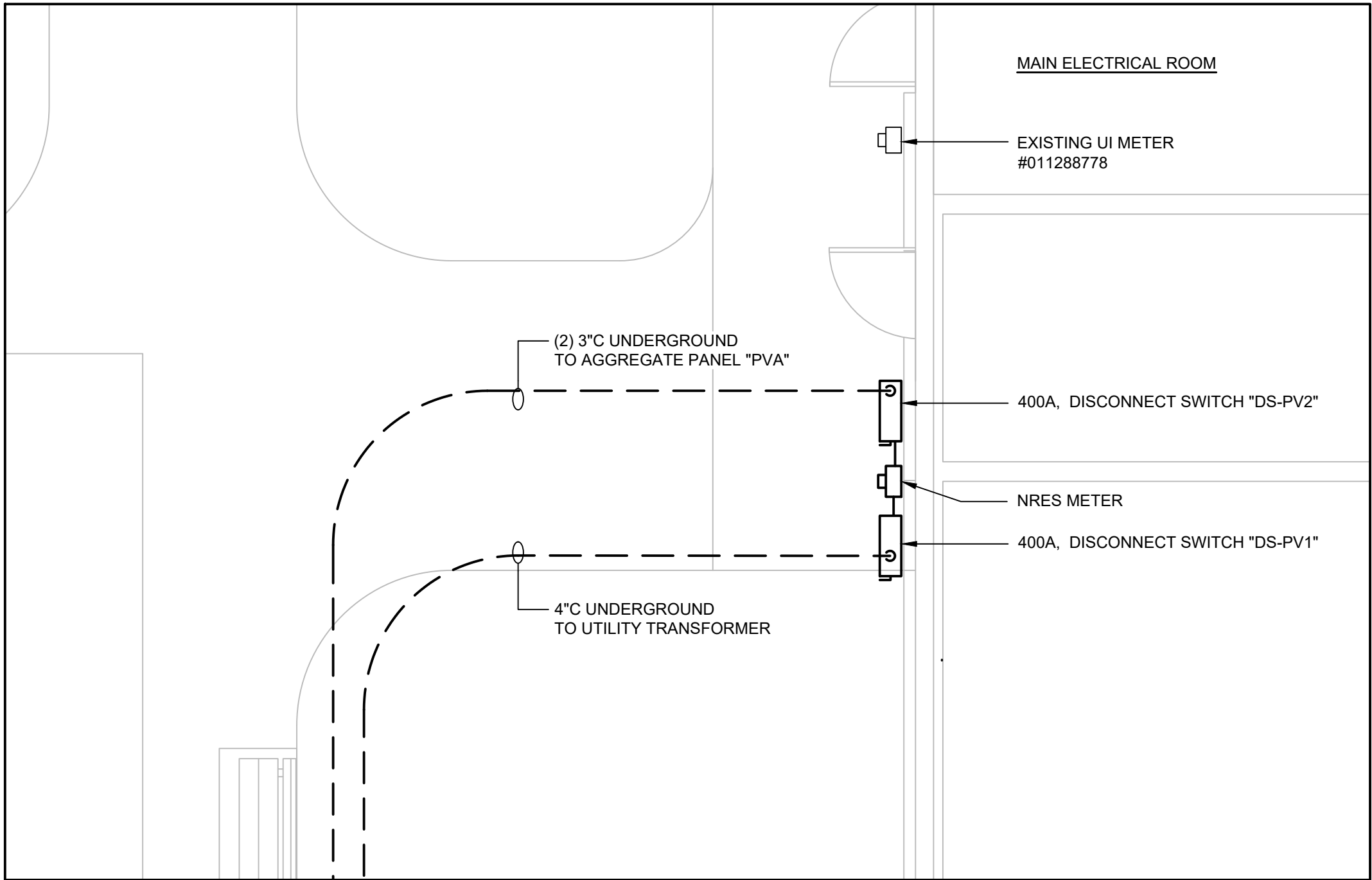
System Size:
255 kW (DC)
192.0 kW (AC)

ICDS
Innovative Construction & Design Solutions, LLC
10 White Wood Lane
N. Branford, CT 06471
Phone: (203) 453-8596
Email: info@icdsllc.com

Rev	Date	Description
1	09/27/23	ISSUED FOR PERMIT
2	03/29/24	UTILITY INTERCONNECTION
3	09/06/24	ISSUED FOR FIELD USE



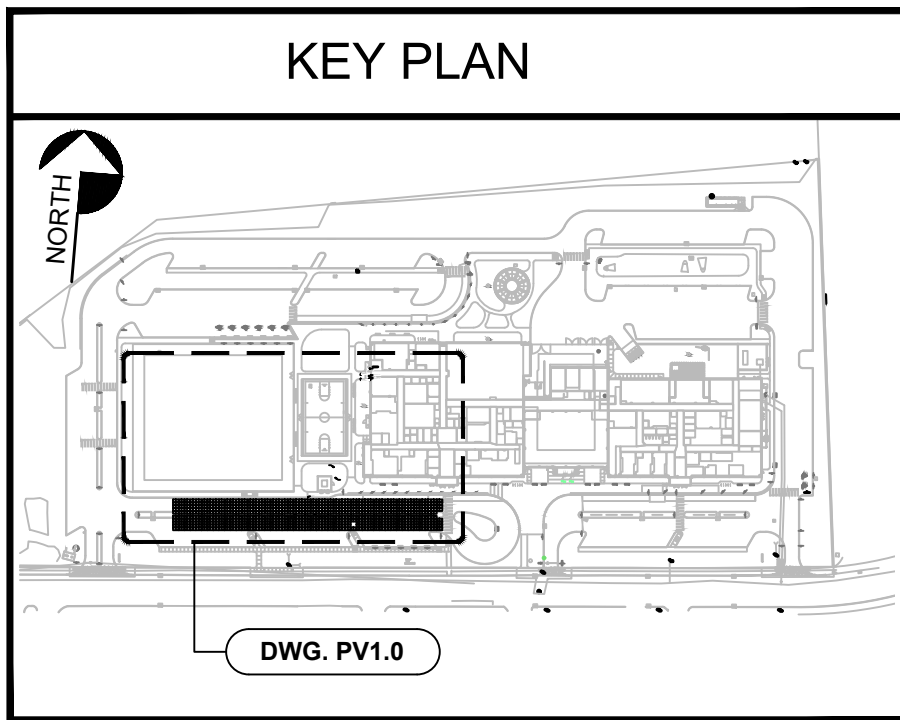
1 PARTIAL PV PLAN
Scale: 1/4" = 1'-0"



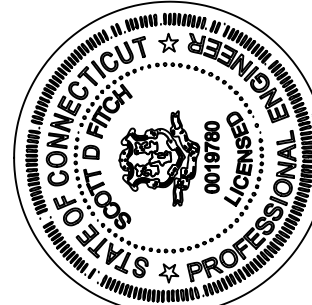
1 PARTIAL PV PLAN
Scale: 1/4" = 1'-0"

PV SYSTEM CONFIGURATION SUMMARY			
MAIN FEATURES:		ELECTRICAL CONFIGURATION:	
NOMINAL AC POWER:	192.00 KW AC	MODULES PER STRING:	26 STRINGS OF 18
PEAK DC POWER:	255 KWp	MAX. DC VOLTAGE:	1000 V
MODULE TECHNOLOGY:	MONO-CRYSTALLINE	QUANTITY OF STRINGS:	26
INVERTER TOPOLOGY:	TL STRING - UL1741		
PV MODULES:		INVERTER CONFIGURATION:	
MANUFACTURER:	WAAREE ENERGIES LIMITED	DESIGNATION:	"INV-1" thru "INV-4"
MODEL:	WSMD-545	MANUFACTURER:	SUNGROW
PEAK POWER:	545 Wp	MODEL:	(2) SG60CX-US (2) SG36CX-US
QUANTITY:	468 MODULES	NOMINAL POWER:	SG60CX-US = 60 KW AC SG36CX-US = 36 KW AC 4 INVERTERS
PHYSICAL CONFIGURATION:		QUANTITY:	480V
METHODOLOGY:	ROOF MOUNT	OUTPUT POWER:	480V
TILT / TRACKING :	8° FIXED TILT / AZIMUTH 168°	DC DISCONNECT:	INTEGRAL / LOCKABLE OFF
RACKING SYSTEM:	CARPORT MOUNTING SYSTEMS	AC DISCONNECT:	EXTERNAL

STRING LAYOUT SUMMARY			
INVERTER No.	MPPT No.	STRING No.	MODULES PER STRING
INV-1	1	1	18
		2	18
	2	3	18
		4	18
	3	5	18
	4	6	18
INV-2	5	7	18
	6	8	18
	1	1	18
	2	2	18
	3	3	18
INV-3	4	4	18
	5	5	18
	6	6	18
INV-4	1	1	18
	2	2	18
	3	3	18
	4	4	18



Rev	Date	Description
3	09/06/24	ISSUED FOR FIELD USE
2	03/29/24	UTILITY INTERCONNECTION
1	09/27/23	ISSUED FOR PERMIT



System Size:
255 kW (DC)
192.0 kW (AC)

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ICDS
Innovative Construction & Design Solutions, LLC

ACES - WHITNEY ACADEMY
130 LEEDER HILL DRIVE, HAMDEN CT
CARPORT PV SYSTEM
ELECTRICAL SERVICE A
PARTIAL PV PLAN

Project No.:	Drawn By: KFH
Date: 09/27/23	Design By: KFH
Scale: N.T.S.	Check By: DSF

Drawing No.:

PV2.0

GENERAL NOTES			
1. THE ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR INSTALLING ALL EQUIPMENT AND FOLLOWING ALL MANUFACTURER'S OR ENGINEER'S DIRECTIONS AND INSTRUCTIONS SHOWN HERE.	10. THIS PHOTOVOLTAIC SYSTEMS UTILITY CONNECTION POINT SHALL MEET THE SPECIFIC REQUIREMENTS OF ARTICLE 705.12, NATIONAL ELECTRICAL CODE PLEASE FOLLOW THE SPECIFIC INSTRUCTIONS IN THIS DRAWING SET TO MEET THIS REQUIREMENT.	SHALL ROUTE AND LOCATE THE CONDUITS TO SUIT SITE CONDITIONS BUT SHALL NOT EXCEED CONDUCTOR LENGTHS SHOWN ON DRAWINGS. CONTRACTOR SHALL COORDINATE ALL CHANGES IN WIRING AND CONDUIT WITH THE ENGINEER.	
2. THE ELECTRICAL CONTRACTOR IS ADVISED THAT ALL DRAWINGS, COMPONENT MANUALS, ESPECIALLY THE INVERTER MANUALS, ARE TO BE READ AND UNDERSTOOD PRIOR TO INSTALLATION OR ENERGIZING OF ANY EQUIPMENT. THE CONTRACTOR IS ALSO ADVISED TO HAVE ALL COMPONENTS SWITCHED IN THE OFF (OPEN) POSITION AND FUSES REMOVED PRIOR TO INSTALLATION OF FUSE-BEARING COMPONENTS.	11. THE GROUNDING OF THE PHOTOVOLTAIC SYSTEM SHALL COMPLY WITH THE NEC 690.46 AND NEC 690.47. IF THE REQUIREMENTS DESCRIBED IN THIS DRAWING SET ARE CLOSELY FOLLOWED, THE GROUNDING REQUIREMENT WILL BE MET. ANY CHANGES WILL NEED TO BE REVIEWED AND DEEMED ACCEPTABLE BY THE ENGINEER, MANUFACTURER AND LISTING AGENCY FOR PRODUCT SAFETY.	20. WHERE WIRE AND CABLE ROUTING IS NOT SHOWN, AND DESTINATION ONLY IS INDICATED, CONTRACTOR SHALL DETERMINE EXACT ROUTING AND LENGTHS REQUIRED. A SHOP DRAWING OF PROPOSED INSTALLATION SHALL BE SUPPLIED PRIOR TO INSTALLATION.	32. SAFETY REGULATIONS (LOCK OUT - TAG OUT, ETC.) IS THE FULL RESPONSIBILITY OF THE CONTRACTOR DURING CONSTRUCTION.
3. THIS SOLAR PHOTOVOLTAIC SYSTEM IS TO BE INSTALLED FOLLOWING THE CONVENTIONS OF THE NATIONAL ELECTRICAL CODE. ANY LOCAL CODE WHICH MAY SUPERCEDE THE NEC SHALL GOVERN.	12. THE CONTRACTOR IS RESPONSIBLE FOR MOUNTING ALL EQUIPMENT PER MANUFACTURER'S SPECIFICATIONS. IF SPECIFICATIONS ARE NOT APPARENT, THE CONTRACTOR SHALL USE DILIGENT EFFORTS TO MOUNT EQUIPMENT SUCH THAT IT WILL BE CLEAN, LEVEL AND SOLID IN ORDER TO LAST THE LIFETIME OF THIS SOLAR ELECTRIC SYSTEM.	21. BENDS SHALL NOT DAMAGE RACEWAY OR SIGNIFICANTLY CHANGE THE INTERNAL DIAMETER OF RACEWAYS (NO KINKS).	33. THE WIRING SIZE IS BASED ON ESTIMATED CONDUIT ROUTING AS SHOWN IN THIS DRAWING PACKAGE. SHOULD THE CONDUITS LENGTH INCREASE DUE TO RELOCATION OF SOURCE AND/OR ROUTING, THE CONDUITS AND THE CONDUCTORS MAY NEED TO BE RESIZED. PLEASE CONTACT THE ENGINEER PRIOR TO MAKING ANY FIELD CHANGES.
4. ALL COMPONENTS TO BE INSTALLED WITH THIS SYSTEM ARE TO BE LISTED BY A THIRD PARTY TESTING AGENCY (UL, ETL, ETC.). EQUIPMENT SHALL BE NEMA 3R OUTDOOR RATED OR BETTER, UNLESS LOCATED INDOORS.	13. THESE DRAWINGS ARE SCHEMATIC IN NATURE AND ARE NOT INTENDED TO SHOW ALL POSSIBLE CONDITIONS. IT IS INTENDED THAT COMPLETE ELECTRICAL SYSTEMS BE PROVIDED WITH ALL NECESSARY EQUIPMENT, APPURTENANCES, AND CONTROL, COMPLETELY COORDINATED WITH ALL DISCIPLINES.	22. SUPPORT CONDUCTORS IN VERTICAL CONDUITS IN ACCORDANCE WITH REQUIREMENTS IN NEC 300.19.	34. ELECTRICAL CONTRACTOR TO PROVIDE SIGNAGE TO ALL ELECTRICAL BOXES, JUNCTION BOXES, PULL BOXES, DC DISCONNECTS, CONDUIT RUNS, AC DISCONNECTS, SUB PANELS AND MAIN SERVICES PER NEC ARTICLE 690.
5. THE CONTRACTOR IS RESPONSIBLE FOR SELECTING AND PURCHASING EQUIPMENT THAT WILL LAST THE LIFETIME OF THE PV SYSTEM. ALL ENCLOSURES, CONDUIT, STRAPS PAINTED METAL SURFACES, CONCRETE, GROUNDING EQUIPMENT AND OTHER PRODUCTS SHALL BE SELECTED TO LAST THE LIFETIME OF THE PV SYSTEM. THE ENGINEER SPECIFIES THE MINIMUM REQUIRED EQUIPMENT AND SPECIFICATIONS TO ACCOMPLISH THE PROJECT AND THE ELECTRICAL CONTRACTOR IS RESPONSIBLE TO ENSURE THAT THESE SPECIFICATIONS ARE MET OR EXCEEDED WITH GOOD QUALITY EQUIPMENT, WORKMANSHIP AND SKILL.	14. ALL 1000VDC PHOTOVOLTAIC EQUIPMENT/ CIRCUITS PROVIDED SHALL BE INSTALLED OUTDOORS. AT NO POINT SHALL 1000VDC SYSTEMS PENETRATE THE ENVELOPE OF THE BUILDING. NO EXCEPTIONS. ALL ROOFTOP ACCESS SHALL BE LOCKED AND ACCESSIBLE ONLY TO AUTHORIZED, QUALIFIED PERSONNEL. ALL POINTS OF ACCESS SHALL BE LABELED "DANGER - HIGH VOLTAGE - KEEP OUT" WITH MECHANICALLY AFFIXED, PERMANENT WEATHERPROOF LABEL.	23. INSTALL ALL WIRING MATERIALS IN A NEAT WORKMANLIKE MANNER. USE GOOD TRADE PRACTICES AS REQUIRED BY CHAPTER 3 OF THE NEC.	35. MODULE INSTALLATION: A. REFER TO THE MODULE MANUAL FOR MORE DETAILS ON RIGGING, UNPACKING, HANDLING, PLANNING & INSTALLATION. B. THE MODULES MAY BE SHIPPED WITH SEVERAL MODULES PER BOX. TAKE CARE WHEN OPENING THE BOX TO ENSURE THAT ALL MODULES ARE SECURELY HANDLED. C. NEVER LEAVE A MODULE UNSUPPORTED OR UNSECURED. CONTRACTOR IS RESPONSIBLE FOR ALL MATERIAL HANDLING ON THE JOB SITE.
6. DC VOLTAGE FROM THE ARRAY IS ALWAYS PRESENT AT THE DC DISCONNECT ENCLOSURE AND THE DC TERMINALS OF THE INVERTER DURING DAYLIGHT HOURS. ALL PERSONS WORKING ON OR INVOLVED WITH THIS PHOTOVOLTAIC SYSTEM MUST BE WARNED THAT SOLAR MODULES ARE ENERGIZED WHEN EXPOSED TO DAYLIGHT. THE LINE AND LOAD TERMINALS ON THE DC DISCONNECTS MAY BE ENERGIZED IN THE OPEN POSITION AND THE SWITCH IS TO BE LABELED TO COMPLY WITH ARTICLE 690.17 OF THE NEC REFLECTING THIS.	15. PULL BOXES, JUNCTION BOXES, CONDUIT BODIES AND GUTTERS UTILIZED FOR ROUTING OF 1000VDC CONDUCTORS SHALL BE PROVIDED IN ACCORDANCE WITH NEC ARTICLE 314 PART IV AND MARKED "DANGER - HIGH VOLTAGE" WITH PERMANENT WEATHERPROOF LABEL. TAKE CARE IN AFFIXING THIS LABEL AS NOT TO VOID UL LISTING OF THE BOX, ITSELF. COORDINATE EXACT METHOD WITH MANUFACTURER, PRIOR TO INSTALL.	24. INSTALL CONDUIT TO MAINTAIN PROPER CLEARANCES AND IN A NEAT INCONSPICUOUS MANNER. RUN PARALLEL AND AT RIGHT ANGLES TO STRUCTURAL MEMBERS OR OTHER CONDUITS. PROVIDE BOXES, FITTINGS AND BENDS FOR CHANGES IN DIRECTION. FASTEN CONDUIT SECURELY IN PLACE.	36. SOLAR COMMISSIONING - BEFORE CLOSING DISCONNECTS OR ATTEMPTING TO ENERGIZE THE INVERTERS, THE FOLLOWING COMMISSIONING PROCEDURE SHALL BE COMPLETED: A. CHECK THE OPEN CIRCUIT VOLTAGE (Voc) AND POLARITY (+/-) OF EACH SOURCE CIRCUIT. RECORD THE VALUES ON COMMISSIONING RECORD DOCUMENTS. B. CHECK THE SHORT CIRCUIT CURRENT (Isc) FOR EACH SOURCE CIRCUIT. RECORD THE VALUES ON COMMISSIONING RECORD DOCUMENTS. C. CHECK THAT ALL FUSES, DISCONNECTS AND OTHER BALANCE OF SYSTEM COMPONENTS ARE RATED FOR 600 VDC AND THE APPROPRIATE CURRENT CAPACITY. D. COMPLETE A VISUAL INSPECTION OF ALL THE MODULES TO CHECK FOR BROKEN GLASS, FRAYED WIRES, EXPOSED CONDUCTORS AND ANY OTHER PROBLEMS THAT MAY CAUSE A FAULT.
7. ALL PORTIONS OF THIS SOLAR ELECTRIC SYSTEM SHALL BE CLEARLY MARKED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE ARTICLE 690 PART VI.	16. WIRE BEND RADIUS OF 1000VDC CONDUCTORS SHALL BE PERFORMED IN ACCORDANCE WITH NEC ARTICLE 300.34.	25. SUPPORT CONDUIT USING STEEL PIPE STRAPS, LAY-IN ADJUSTABLE HANGERS, CLEVIS HANGERS OR SPLIT-HANGERS. HANGER SPACING SHALL BE INSTALLED PER NEC REQUIREMENTS FOR THE TYPE OF CONDUIT BEING INSTALLED. USE APPROVED BEAM CLAMPS FOR CONNECTION TO STRUCTURAL MEMBERS.	37. INVERTER COMMISSIONING - BEFORE TURING ON, OR CLOSING ANY OF THE INVERTER DISCONNECTS, THE FOLLOWING COMMISSIONING PROCEDURE SHALL BE COMPLETED: A. CHECK THAT THE INVERTER IS PROPERLY GROUNDED, AS DESCRIBED BY THE MANUFACTURER & THESE INSTRUCTIONS. B. CHECK THE INVERTER DC INPUT VOLTAGE (Voc) FROM THE SOLAR ARRAY FOR PROPER POLARITY INSIDE THE INVERTER CABINET. C. CHECK DC INPUT VOLTAGE (Voc) IS WITHIN THE PROPER RANGE IN THE INVERTER CABINET AS DEFINED BY THE INVERTER RATING LABEL AND ACCOMPANIED MANUAL.
8. THE ELECTRICAL CONTRACTOR SHALL PERFORM INITIAL HARDWARE CHECKS AND PV/WIRING CONTINUITY CHECKS PRIOR TO TERMINATING ANY WIRES.	17. SUPPORT OF ALL EMT CONDUIT BODIES SHALL BE PERFORMED IN ACCORDANCE WITH NEC ARTICLE 358.30. SUPPORT OF ALL RMC CONDUIT BODIES SHALL BE PERFORMED IN ACCORDANCE WITH NEC ARTICLE 344.30.	26. PROVIDE PULL, JUNCTION, OR PRECAST CONCRETE UTILITY BOXES WHERE REQUIRED TO FACILITATE THE INSTALLATION OF WIRING IN ADDITION TO THOSE SHOWN ON DRAWINGS. BENDS IN CONDUITS BETWEEN PULL BOXES SHALL NOT EXCEED THE EQUIVALENT OF FOUR 90 DEGREE BENDS.	
9. FOR PROPER MAINTENANCE AND ISOLATION OF INVERTERS, REFER TO ISOLATION PROCEDURE IN INVERTER MANUAL. CONTRACTOR PERFORMING THE MAINTENANCE IS RESPONSIBLE TO FOLLOW ALL LOCKOUT/TAGOUT PROCEDURES.	18. PROVIDE GROUND BUSHING AT BOTH ENDS OF STRING HOMERUNS, BONDED TO EQUIPMENT GROUNDING CONDUCTOR.	27. WHEN FIELD CUTTING IS REQUIRED, THE CONDUIT SHALL BE CUT SQUARE AND DEBURRED.	
	19. THE LAYOUT OF CONDUIT IS INDICATIVE ONLY. CONTRACTOR	28. CONDUIT SIZES NOT SPECIFIED SHOULD CONFORM TO NEC SPECIFICATIONS, INCLUDE FILL FACTOR AND DERATING FOR NUMBER OF CONDUCTORS.	
		29. ALL DC CONDUCTORS SHALL BE COPPER PV WIRE OR SINGLE CONDUCTOR CABLE MARKED SUNLIGHT RESISTANT AND TYPE USE-2/RHW-2	
		30. ALL AC CONDUCTORS SHALL BE ALUMINUM TYPE XHHW-2	
		31. THE WIRING MINIMUM SIZE SHOULD BE #12 AWG.	

SUNGROW Clean power for all	
Type designation	SG60CX-US
Input (DC)	
Max. PV input voltage	1000 V
Min. PV input voltage / Start-up input voltage	200 V / 250 V
Nominal PV input voltage	710 V
MPP voltage range	200 V – 1000 V
No. of independent MPP inputs	6
No. of PV strings per MPPT	2
Max. PV input current	26 A * 6
Max. PV short-circuit current per MPPT	45 A
Output (AC)	
AC output power	60 kVA @ 113°F (45 °C) / 50 kVA @ 122°F (50 °C)
Max. AC output current	72.2 A
Nominal AC voltage	3 / N / PE, 277 / 480 V
AC voltage range	422 V – 528 V
Nominal grid frequency / Grid frequency	60 Hz / 55 – 65 Hz
Harmonic (THD)	< 3 % (at nominal power)
DC current injection	< 0.5 % In
Power factor at nominal power / Adjustable power factor	> 0.99 / 0.8 leading – 0.8 lagging
Feed-in phases / Connection phases	3 / 3
Efficiency	
Max. efficiency	98.80 %
CEC efficiency	98.00 %
Protection	
DC reverse polarity protection	Yes
AC short circuit protection	Yes
Leakage current protection	Yes
Grid monitoring	Yes
DC switch	Yes
AC switch	Yes
PV string monitoring	Yes
Arc fault circuit interrupter (AFCI)	Yes
PID Recovery function	Yes *
Overvoltage protection	DC Type II / AC Type II
Rapid Shutdown	Yes
General Data	
Dimensions (W * H * D)	Inverter: 782 mm * 645 mm * 310 mm (30.7" * 25.4" * 12.2") Wire-Box: 231 mm * 295 mm * 234 mm (9.1" * 11.6" * 9.2")
Weight	65 kg (143.3 lbs)
Topology	Transformerless
Ingress protection rating	Type 4X (NEMA 4X, IP66)
Night power consumption	< 2 W *
Operating ambient temperature range	-30 to 60 °C (> 45 °C derating) -22 to 140 °F (> 113°F derating)
Allowable relative humidity range	0 % – 100 %
Cooling method	Smart forced air cooling
Max. operating altitude	4000 m / 13123.4 ft (> 3000 m / 9842.5 ft derating)
Display	LED, Bluetooth + APP
Communication	RS485 / optional: WiFi and Ethernet
Third-Party communication protocol	SunSpec Modbus
DC connection type	MC4 (#12 - #10AWG)
AC connection type	OT (#5 - 2/0AWG, Cu or Al)
Compliance	UL1741, UL 1741 SA, CA Rule 21, IEEE 1547, IEEE 1547.1, CSA C22.2, No. 107.1-01, UL 1699B and FCC Part 15, UL1998, Rule 14, NEC 2023, Sunspec Rapid Shutdown
Grid Support	LVRT, HVRT, active & reactive power control and power ramp rate control

INVERTER SPECIFICATION SHEET - 1

SUNGROW Clean power for all	
Type designation	SG36CX-US
Input (DC)	
Max. PV input voltage	1000 V
Min. PV input voltage / Start-up input voltage	200 V / 250 V
Nominal PV input voltage	710 V
MPP voltage range	200 V – 1000 V
No. of independent MPP inputs	4
No. of PV strings per MPPT	2
Max. PV input current	26 A * 4
Max. PV short-circuit current per MPPT	45 A
Output (AC)	
AC output power	36 kVA @ 113°F (45 °C) / 30 kVA @ 122°F (50 °C)
Max. AC output current	43.3 A
Nominal AC voltage	3 / N / PE, 277 / 480 V
AC voltage range	422 V – 528 V
Nominal grid frequency / Grid frequency	60 Hz / 55 – 65 Hz
Harmonic (THD)	< 3 % (at nominal power)
DC current injection	< 0.5 % In
Power factor at nominal power / Adjustable power factor	> 0.99 / 0.8 leading – 0.8 lagging
Feed-in phases / Connection phases	3 / 3
Efficiency	
Max. efficiency	98.60 %
CEC efficiency	98.00 %
Protection	
DC reverse polarity protection	Yes
AC short circuit protection	Yes
Leakage current protection	Yes
Grid monitoring	Yes
DC switch	Yes
AC switch	Yes
PV string monitoring	Yes
Arc fault circuit interrupter (AFCI)	Yes
PID Recovery function	Yes *
Overvoltage protection	DC Type II / AC Type II
Rapid Shutdown	Yes
General Data	
Dimensions (W * H * D)	Inverter: 702 mm * 595 mm * 310 mm (27.6" * 23.4" * 12.2") Wire-Box: 231 mm * 295 mm * 234mm (9.1" * 11.6" * 9.2")
Weight	54 kg (119.0 lbs)
Topology	Transformerless
Ingress protection rating	Type 4X (NEMA 4X, IP66)
Night power consumption	< 2 W *
Operating ambient temperature range	-30 to 60 °C (> 45 °C derating) -22 to 140 °F (> 113°F derating)
Allowable relative humidity range	0 % – 100 %
Cooling method	Smart forced air cooling
Max. operating altitude	4000 m / 13123.4 ft (> 3000 m / 9842.5 ft derating)
Display	LED, Bluetooth + APP
Communication	RS485 / optional: WiFi and Ethernet
Third-Party communication protocol	SunSpec Modbus
DC connection type	MC4 (#12 - #10AWG)
AC connection type	OT (#6 - 2/0AWG, Cu or Al)
Compliance	UL1741, UL 1741 SA, CA Rule 21, IEEE 1547, IEEE 1547.1, CSA C22.2, No. 107.1-01, UL 1699B and FCC Part 15, UL1998, Rule 14, NEC 2023, Sunspec Rapid Shutdown
Grid Support	LVRT, HVRT, active & reactive power control and power ramp rate control

INVERTER SPECIFICATION SHEET - 2

ARKA SERIES

WSMD-515 to WSMD-545

ELECTRICAL CHARACTERISTICS

Models	Pmax (W)		Vmp (V)		Imp (A)		Isc (A)		Voc (V)		Module Eff. (%)
	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	
WSMD-515	515	388.3	40.99	37.70	12.57	10.29	13.49	10.89	48.86	45.80	20.01
WSMD-520	520	391.9	41.14	37.90	12.65	10.34	13.55	10.94	49.01	46.00	20.20
WSMD-525	525	395.6	41.29	38.00	12.73	10.40	13.63	11.00	49.16	46.10	20.39
WSMD-530	530	399.2	41.45	38.20	12.80	10.45	13.69	11.05	49.31	46.20	20.59
WSMD-535	535	403.1	41.60	38.40	12.88	10.51	13.76	11.11	49.46	46.40	20.78
WSMD-540	540	406.7	41.75	38.50	12.95	10.56	13.83	11.16	49.61	46.50	20.98
WSMD-545	545	410.4	41.90	38.70	13.02	10.62	13.90	11.22	49.76	46.70	21.17

*Standard Test Conditions (STC) - 1000 W/m² irradiance, Air Mass 1.5 and 25°C cell temperature. Nominal Operating Cell Temperature (NOCT) - 800 W/m² irradiance, Air Mass 1.5, Ambient temperature 20°C and Wind speed 1 m/s.
Average power reduction of 4.5% at 200 W/m² as per IEC 60904-1. Measuring Uncertainty ± 3%.

System Voltage

1500 V

Series Fuse Rating

25 A

MECHANICAL CHARACTERISTICS

Length x Width x Thickness (L x W x T)

2272 mm (L) x 1133 mm (W) x 35 mm (T)

Weight

27.5 kgs

Solar Cells per Module (Units) / Arrangement

144 cells / (12x6 || 12x6)

Solar Cell Type & Size

Mono PERC, 91 x 182 mm

Front Glass

3.2 mm Low Iron and Tempered glass with ARC coating

Encapsulate

PID Free & UV Resistant

Junction Box (Protection degree/ Material)

IP68 / Weatherproof PPO

Cable & Connector (Protection degree / Type)

IP68 rated / MC4 compatible

Cable cross - section & Length

4 mm² & 500mm

Frame

Anodized Aluminium Alloy

DESIGN SPECIFICATIONS

THERMAL CHARACTERISTICS

Temperature coefficient of Current (Isc), α (%/°C) 0.05

Temperature coefficient of Voltage (Voc), β (%/°C)0.25

Temperature coefficient of Power (Pm), γ (%/°C) -0.34

NOCT (°C) 43 ± 2

Operating temperature range (°C) -40 to 85

Waaree Energies Ltd. is amongst the top Solar Energy Companies and has the country's largest Solar PV Module manufacturing capacity of 12 GW. In addition, it is committed to provide top notch EPC services, project development, rooftop solutions, solar water pumps and also an Independent Power Producer. Waaree has its presence in over 350+ locations nationally and 68 countries globally.

*If you need specific product certificates, and if module installations are to deviate from our guidance specified in our installation manual, please contact your local Waaree sales and technical representatives.

12 Years Product Warranty • 27 Years Power Output Warranty

- The electrical data given here is for reference purpose only.
- Please confirm your exact requirements with the sales representative while placing your order.
- Refer installation Manual instructions & Waaree warranty statement for terms & conditions.
- Waaree Reserves the right to change the specifications without prior notice.

www.waaree.com

WEL/E&PD/515-545/144/MP/HG/08/10.04.2023

