Congratulations on the decision to go solar and take control of your energy production. Your project has completed the design phase and is ready to move to permitting and procurement. Very soon, we will be arriving onsite to start building your array. Before we move forward, we would like to have you review some of the project details to make sure we are delivering the project you expect.

Please review the accompanying design binder. Don't worry about the technical details, that is what you have us for. Please review the items below and initial in the space next to the item if you are in agreement. If not, please let us know how we can make this right.

DS JS

PV-01 – In the top left corner, confirm the size of the system is what you expected, and the racking is of the correct type (ground vs roof, standard or elevated for ground mount).

DS JS

PV-02 – Is the array in the correct location (remember to look at distances from surrounding structures).

DS JS

PV-02 – Confirm the trench path from the array to your meter is in the correct location.

DS JS

PV-02 – Confirm there are no underground obstructions that are not noted on this page along the trench path? (***Remember that you are responsible for any underground obstructions that are damaged if they are not noted)

DS JS

PV-08 – In the first line, please confirm the array orientation
(array is to be built level, or if the array will be built with the grade).

DS JS

PV-08 – Please review the notes and let us know if there is anything that you do not agree with. Please note if any lines start with an asterisk (*), as those are your responsibility.

After we are in agreement, we can proceed with the next steps in the process. We will apply for the required permits and begin ordering equipment. At this point, any changes to the design will be accompanied with a change order, and any cost impacts, either positive or negative, will be noted. Any changes after this point will have an impact on installation timing.

We are excited to build this project, and we will be reaching out soon to schedule the installation.

4' ELEVATED GROUND MOUNT: 18.20 kW

JEFF SANDBORN - SOLAR PROJECT

42.838404° -84.955077°

PROJECT DESCRIPTION

OWNER: JEFF SANDBORN 517-204-3637
SALESPERSON: DALLEN REBER 435-669-1860
COORDINATOR: JACKIE MCCLINTIC 517-474-2482
ARRAY TYPE: 4' ELEVATED GROUND MOUNT
DC SYSTEM SIZE:18.20 kW
AC SYSTEM SIZE: 15.00 kW
RACKING USED: SINCLAIR RACKING
RACKING DESCRIPTION: 4' LOW EDGE FIXED TILT

EQUIPMENT SUMMARY:

40	CANADIAN SOLAR CS3W-455MB-AG
1	PRIMO 15.0-1 (240V)
	DIRECT ETHERNET VIA EGAUGE

APPLICABLE CODES & STANDARDS:

BUILDING: IBC 2015
ELECTRICAL: NEC 2017

AUTHORITIES HAVING JURISDICTION:

BUILDING: IONIA COUNTY
ELECTRICAL: IONIA COUNTY
UTILITY: CONSUMERS ENERGY

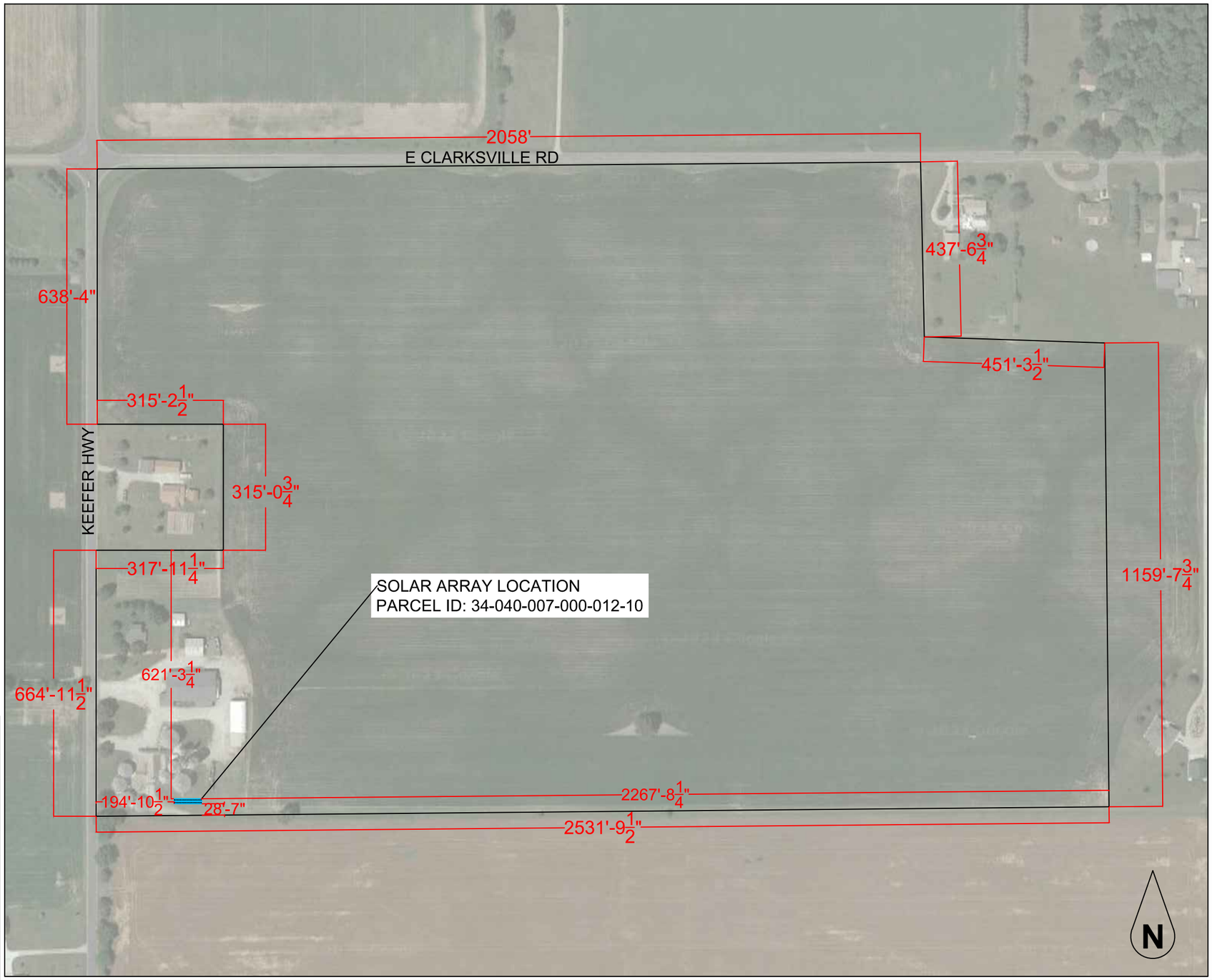
DESIGN CRITERIA:

OCCUPANCY: I
ZONING: RESIDENTIAL
MIN AMBIENT TEMP: -24°C
MAX AMBIENT TEMP: 31°C
SNOW LOAD: 35 LBS.
WIND EXPOSURE CATEGORY: C (ASCE 7)
WIND SPEED: 120 MPH (ASCE 7-10 FIGURE 26.5-1B)
UTILITY CONFIGURATION: 240VAC SINGLE PHASE
ARRAY ORIENTATION: PORTRAIT

PROJECT NOTES

- THIS PHOTOVOLTAIC (PV) SYSTEM SHALL COMPLY WITH THE NATIONAL ELECTRIC CODE (NEC) ARTICLE 690, ALL MANUFACTURER'S LISTING AND INSTALLATION INSTRUCTIONS, AND THE RELEVANT CODES AS SPECIFIED BY THE AUTHORITY HAVING JURISDICTIONS (AHJ) APPLICABLE CODES
- GROUND FAULT DETECTION AND INTERRUPTION (GFDI) DEVICE IS INTEGRATED WITH THE INVERTER IN ACCORDANCE WITH [NEC 690.5(A)]
- THE UTILITY INTERCONNECTION APPLICATION MUST BE APPROVED AND PV SYSTEM INSPECTED PRIOR TO PARALLEL OPERATION
- LINE-SIDE INTERCONNECTION SHALL BE IN ACCORDANCE WITH [NEC 705.12(A)]
- LOAD-SIDE INTERCONNECTION SHALL BE IN ACCORDANCE WITH [NEC 705.12(B)]
- ALL PV SYSTEM COMPONENTS; MODULES, UTILITY-INTERACTIVE INVERTERS, AND SOURCE CIRCUIT COMBINER BOXES ARE IDENTIFIED AND LISTED FOR USE IN PHOTOVOLTAIC SYSTEM AS REQUIRED BY [NEC 690.4] & [NEC 690.60]
  - PV MODULES: UL 1703 CERTIFIED, NFPA 70 CLASS C FIRE
  - INVERTER(S): UL 1741 CERTIFIED, IEEE 1547, 929, 519
  - COMBINER BOX(S): UL 1703 OR UL 1741 NECESSARY

SHEET INDEX TABLE



harvest solar
2218 East High Street
Jackson, Michigan 49203
(517) 788-8800
harvestsolar.com

REVISIONS

Description	Date	Rev
Initial Binder Created	11/13/23	0.1
Enginnering Release	11/14/23	0.2
Binder Release	11/20/23	1.0
Rev Binder Release	12/14/23	1.1
----	----	----

ENGINEERING STAMP

JEFF SANDBORN
23162
10227 KEEFER HIGHWAY
PORTLAND, MI 48875

DESIGNED BY:	REVIEWED BY:
ME	NMC

SHEET NAME: COVER SHEET

SHEET SIZE: ANSI (11" x 17")

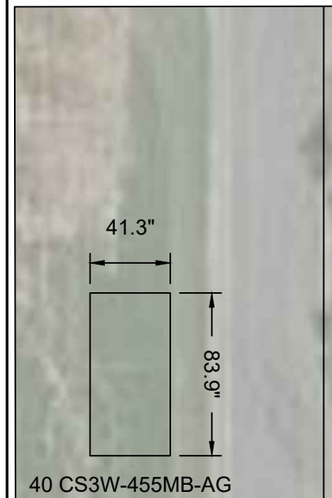
SHEET NUMBER: PV-01

RACKING CHARACTERISTICS

MANUFACTURER	SINCLAIR RACKING
DESCRIPTION	4' LOW EDGE FIXED TILT

GROUND MOUNT 1 SPECIFICS

ARRAY AZIMUTH	180°
MODULE COUNT	40
ARRAY WATTAGE (KW)	18.20
ARRAY AREA (SQ. FT.)	1925.04



40 CS3W-455MB-AG
PANEL: 62.6 LBS.

EXISTING WATER LINE

ADDITIONAL EQUIPMENT RACKING NEEDED

EXISTING UTILITY METER AND MAIN SERVICE PANEL
NEW MAIN SOLAR DISCONNECT & CUSTOMER OWNED EGAUGE

INTERCONNECTION TO BE IN MAIN SERVICE PANEL

ROUTER
LOCATED NEAR BARN OFFICE

R

MSD PM
UM MSP

70' TRENCH & ETHERNET CABLE

EXISTING ELECTRICAL LINES

245' BORE, CONDUIT, WIRE, AND ETHERNET

EXISTING ELECTRICAL LINES

INVERTER, SUB PANEL

EXISTING GAS LINE

SUPPORT POLES

INV SUB

12'-8"

68'-10"

N

EQUIPMENT & UNDERGROUND UTILITES LEGEND

CB COMBINER BOX	GEN GENERATOR	INV INVERTER	JB JUNCTION BOX	MSP MAIN SERVICE PANEL	ELECTRIC	POTABLE WATER
MSD MAIN SOLAR DISCONNECT	NF-DIS NON-FUSED AC DISCONNECT	PSP PHOTOVOLTAIC SUB PANEL	PM PRODUCTION METER	PB PULL BOX	GAS, OIL, STEAM, & PETROLEUM	SEWERS &DRAINS
R ROUTER	SUB SERVICE SUB PANEL	TB TAP BOX	TSW TRANSFER SWITCH	UM UTILITY METER	COMMS & INTERNET	PROPOSED EXCAVATION

harvest solar
2218 East High Street
Jackson, Michigan 49203
(517) 788-8800
harvestsolar.com

REVISIONS

Description	Date	Rev
Initial Binder Created	11/13/23	0.1
Enginnering Release	11/14/23	0.2
Binder Release	11/20/23	1.0
Rev Binder Release	12/14/23	1.1
----	----	----

ENGINEERING STAMP

JEFF SANDBORN
23162
10227 KEEFER HIGHWAY
PORTLAND, MI 48875

DESIGNED BY:	REVIEWED BY:
ME	NMC

SHEET NAME:
MODULE LAYOUT/SITE PLAN

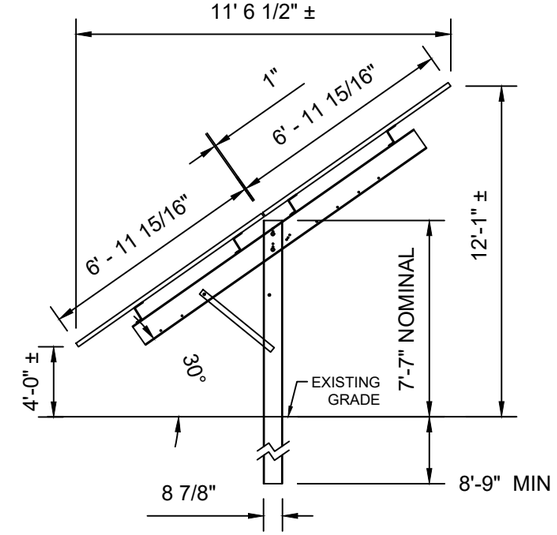
SHEET SIZE:
ANSI (11" x 17")

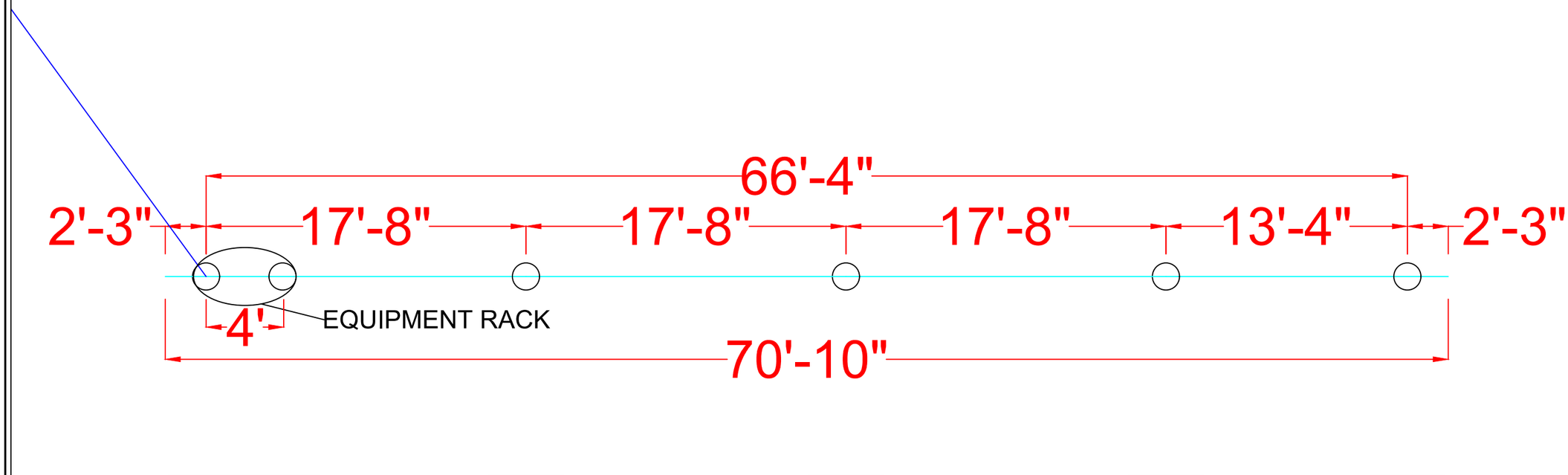
SHEET NUMBER:
PV-02

GROUND MOUNT 1 SPECIFICS	
ARRAY TILT (FIXED)	30°
FLAT SIDE OF POSTS FACES	WEST
ARRAY AZIMUTH	180°
MAGNETIC DECLINATION	6° WEST
POST HEIGHTS (MIN - MAX)	91" - 103"

OVERALL MEASURED GRADE VARIANCE (TO BE MEASURED BEFORE POST INSTALLATION)

SINCLAIR CS3W 455 4FT LOW EDGE





WAS SITE FLAGGED?	Y / N
WHEELED DISTANCE (METER TO CLOSEST ARRAY POST)	
WHEELED DISTANCE BY SALES (OUTSIDE STRUCTURES/TRENCH)	245'
WHEELED DISTANCE BY SALES (INSIDE STRUCTURES)	0'

MEASURED POST HEIGHT FROM GRADE (AFTER INSTALLATION)

N

harvest solar
2218 East High Street
Jackson, Michigan 49203
(517) 788-8800
harvestsolar.com

REVISIONS		
Description	Date	Rev
Initial Binder Created	11/13/23	0.1
Enginnering Release	11/14/23	0.2
Binder Release	11/20/23	1.0
Rev Binder Release	12/14/23	1.1
----	----	----

ENGINEERING STAMP

JEFF SANDBORN
23162

10227 KEEFER HIGHWAY
PORTLAND, MI 48875

DESIGNED BY:	REVIEWED BY:
ME	NMC

SHEET NAME: INSTALLATION SPECS

SHEET SIZE: ANSI (11" x 17")

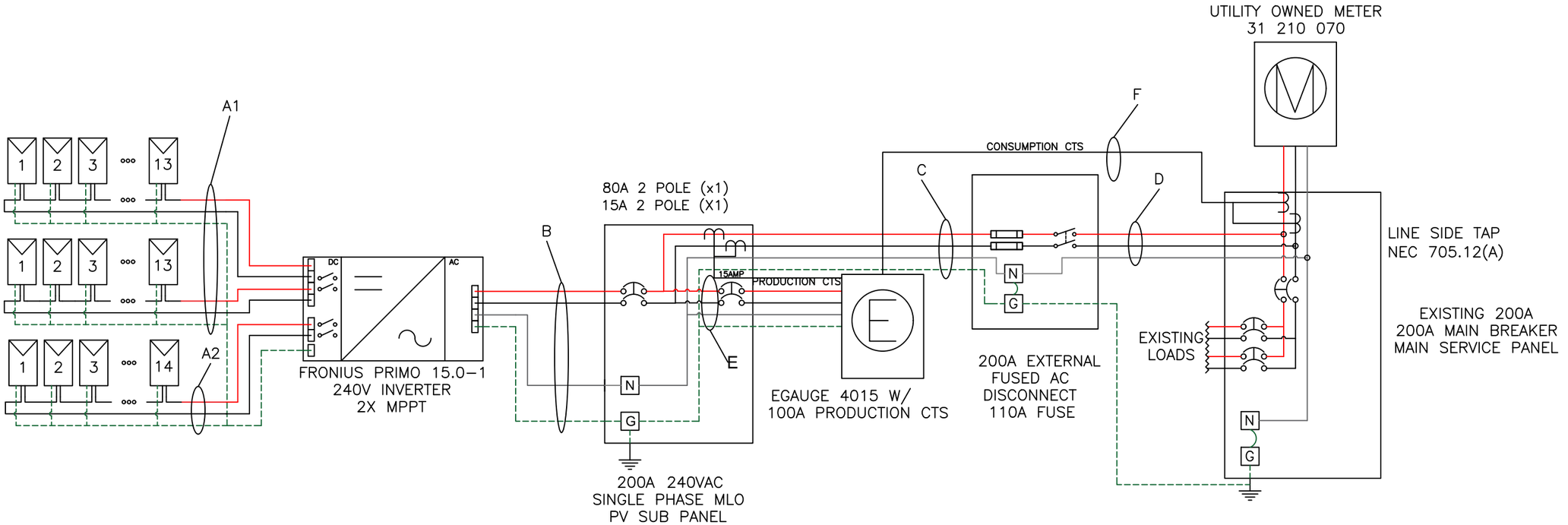
SHEET NUMBER: PV-03

DC SYSTEM WIRE SCHEDULE

ID	DESCRIPTION		Voc	Vmp	Isc	Imp	POWER (W)	FUSE SIZE	MIN DC WIRE SIZE (TYPE)	MIN GROUND WIRE	MIN CONDUIT SIZE (TYPE)	ONE WAY DISTANCE	VOLTAGE DROP	CONDUIT FILL
	PV MODULE	CANADIAN SOLAR CS3W-455MB-AG	55.58	41.3	11.66	11.02	455	NA	NA	NA	NA	NA	NA	NA
A1	SOURCE CIRCUIT	13 MODS PER STRING	722.5	536.9	11.66	11.02	5915	NA	#10 AWG (RPVU)	#10 AWG	1 1/4" (SEAL TIGHT)	20'	0.07%	17.71%
A2	SOURCE CIRCUIT	14 MODS PER STRING	778.1	578.2	11.66	11.02	6370	NA	#10 AWG (RPVU)	#10 AWG	1 1/4" (SEAL TIGHT)	110'	0.39%	17.71%

AC SYSTEM WIRE SCHEDULE

ID	FROM	TO	NOMINAL CURRENT	NOMINAL VOLTAGE	OCPD SIZE	NO. OF PARALLELS	MIN AC WIRE SIZE (TYPE)	MIN NEUTRAL SIZE (TYPE)	MIN GROUND SIZE (TYPE)	MIN CONDUIT SIZE (TYPE)	ONE WAY DISTANCE	VOLTAGE DROP	CONDUIT FILL
B	INV	SUB PANEL	62.5	240	80	1	#4 AWG (CU)	#8 AWG (CU)	#8 AWG (CU)	1" (PVC SCH 40)	10'	0.16%	27.67%
C	SUB PANEL	AC DISCO	62.5	240	80	1	#2/0 AWG (CU)	#4 AWG (CU)	#4 AWG (CU)	2" HDPE	295'	1.60%	17.63%
D	AC DISCO	INT	62.5	240	80	1	#3 AWG (CU)	#6 AWG (CU)	/	1" (PVC SCH 40)	10'	0.12%	27.67%
E	SUB PANEL	EGAUGE	12	240	15	1	#12 AWG (CU)	#12 AWG (CU)	#12 AWG (CU)	3/4" (PVC SCH 40)	295'	/	10.42%
F	EGAUGE	MSP	/	/	/	1	#14 AWG (CU)	#14 AWG (CU)	#14 AWG (CU)	3/4" (PVC SCH 40)	125'	/	10.42%



SYSTEM SUMMARY

UTILITY CONFIG:	240VAC SINGLE PHASE
SYSTEM kW DC:	18.20 kW
SYSTEM kW AC:	15.00 kW
CONT. CURRENT (100%/125%):	62.5/78.125 AMPS
MONITORING:	DIRECT ETHERNET VIA EGAUGE

EQUIPMENT SUMMARY

40	CANADIAN SOLAR CS3W-455MB-AG MODULE
1	PRIMO 15.0-1 (240V) INVERTER

MISC NOTES:

- EGC SHALL BE #6 UNLESS NOTED OTHERWISE

harvest solar
2218 East High Street
Jackson, Michigan 49203
(517) 788-8800
harvestsolar.com

REVISIONS

Description	Date	Rev
Initial Binder Created	11/13/23	0.1
Enginnering Release	11/14/23	0.2
Binder Release	11/20/23	1.0
Rev Binder Release	12/14/23	1.1
----	----	----

ENGINEERING STAMP

JEFF SANDBORN
23162
10227 KEEFER HIGHWAY
PORTLAND, MI 48875

DESIGNED BY:	REVIEWED BY:
ME	NMC

SHEET NAME: LINE DIAGRAM/ WIRE SCHEDULE

SHEET SIZE: ANSI (11" x 17")

SHEET NUMBER: PV-04

MECHANICAL MATERIALS

PV EQUIPMENT

CATEGORY	DESCRIPTION	QUANTITY	PART NUMBER	QUANTITY PICKED
Module	Canadian Solar CS3W-455MB-AG	40	Short Leads	
Inverter	Fronius Primo 15.0-1 (240V)	1		
Monitoring	eGauge 4015 Core Energy Meter	1	EG4015-64E	
Monitoring	100A 20mm Split Core CTs	2	ACTL-0750-100 Opt C0.6	
Monitoring	100A 20mm Split Core CTs	2	ACTL-0750-100 Opt C0.6	
Monitoring	eGauge Powered Enclosure, 120V	1	#N/A	
Monitoring	CAT5E Cable	310'		
Monitoring	3/4" Sch 40 PVC	40'		
Monitoring	3/4" Sch 80 PVC	40'		

RACKING

CATEGORY	DESCRIPTION	QUANTITY	PART NUMBER	QUANTITY PICKED
SLR - Z-Purlin	Z-Purlin 214"	16		
SLR - Upright Post	Post - 4x9x174" (For Inverter Rack)	1		
SLR - Upright Post	Post - 4x9x174"	5		
SLR - Truss	134"	5		
SLR - Strut	Strut - 40"	5		
SLR - Hardware Kits	Assembly Hardware Kits	5		
SLR - Bolt	1/4-20x3/4 Serrated Flange Bolt	160		
SLR - Nut	1/4-20 Serrated Flange Nut	160		

ELECTRICAL MATERIALS

WIRING

CATEGORY	DESCRIPTION	QUANTITY	PART NUMBER	QUANTITY PICKED
Positive (A)	#10 AWG RPVU (Rated for 2kV - Red)	130'		
Negative	#10 AWG RPVU (Rated for 2kV - Black)	130'		
Ground	#10 AWG THWN CU	10'		
Conduit	1-1/4" Seal Tight	10'		
Hot Lines (B)	#6 AWG THWN CU	20'		
Neutral	#8 AWG THWN CU	10'		
Ground	#8 AWG THWN CU	10'		
Conduit	1" Sch 40 PVC	10'		
Hot Lines (C)	#2/0 AWG THWN CU	590'		
Neutral	#4 AWG THWN CU	295'		
Ground	#4 AWG THWN CU	295'		
Conduit	2" EDPE	295'		
Hot Lines (D)	#3 AWG THWN CU	20'		
Neutral	#6 AWG THWN CU	10'		
Ground	#6 AWG THWN CU	10'		
Conduit	1" Sch 40 PVC	10'		
TWISTED PAIR CT Extention Wire (F)	#14-2 AWG CL3R CU	125'		
Conduit	3/4" Sch 40 PVC	105'		
Conduit	3/4" Sch 80 PVC	20'		

OCPD + AC EQUIPMENT

CATEGORY	DESCRIPTION	QUANTITY	PART NUMBER	QUANTITY PICKED
Disconnect	200A 240V (Single Phase, Fusible)	1	D224NRB	
Fuses	110A	2	TR110R	
PV Sub Panel	200A 240V MLO (Single Phase)	1		
Breakers	80A 2 Pole	1	HOM280	
eGauge Breakers	15A 2 Pole	1		
Grounding	Integrated in Racking	---		

harvest solar
2218 East High Street
Jackson, Michigan 49203
(517) 788-8800
harvestsolar.com

REVISIONS

Description	Date	Rev
Initial Binder Created	11/13/23	0.1
Enginnering Release	11/14/23	0.2
Binder Release	11/20/23	1.0
Rev Binder Release	12/14/23	1.1
----	----	----

ENGINEERING STAMP

JEFF SANDBORN
23162
10227 KEEFER HIGHWAY
PORTLAND, MI 48875

DESIGNED BY:	REVIEWED BY:
ME	NMC

SHEET NAME: BOM

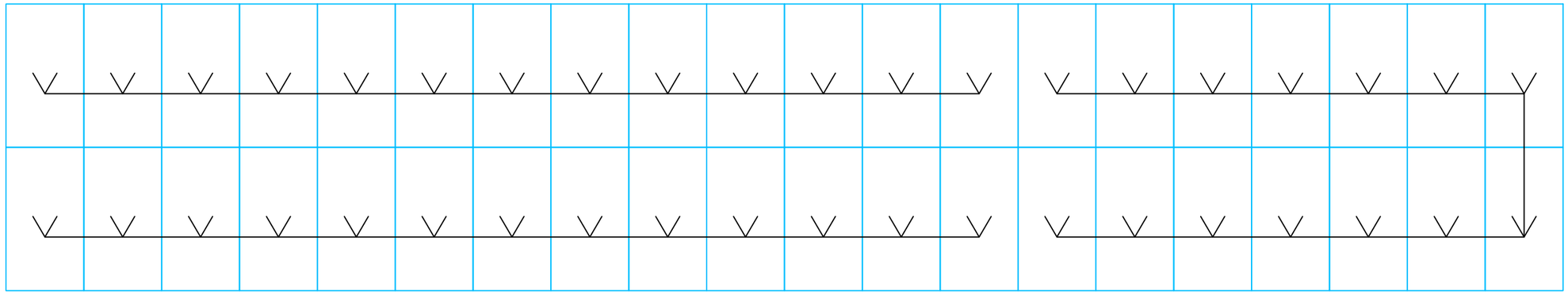
SHEET SIZE: ANSI (11" x 17")

SHEET NUMBER: PV-05

STRING LAYOUT

MPPT 1.1

MPPT 2.1



MPPT 1.2

harvest solar
2218 East High Street
Jackson, Michigan 49203
(517) 788-8800
harvestsolar.com

REVISIONS		
Description	Date	Rev
Initial Binder Created	11/13/23	0.1
Enginnering Release	11/14/23	0.2
Binder Release	11/20/23	1.0
Rev Binder Release	12/14/23	1.1
----	----	----

ENGINEERING STAMP

JEFF SANDBORN
23162

10227 KEEFER HIGHWAY
PORTLAND, MI 48875

DESIGNED BY:	REVIEWED BY:
ME	NMC

SHEET NAME:
STRING LAYOUT

SHEET SIZE:
ANSI (11" x 17")

SHEET NUMBER:
PV-06

PHOTOVOLTAIC LABELS AND WARNINGS

INSTALLATION SECTION	LABELS/ WARNINGS NEEDED
COMBINER BOX	3 (*if DC disco*), 6 (*if DC disco*), 9 (*if DC disco)*, & 15 (*w/ finger safe fuse holders*)
DC CONDUIT/ CONDUIT RACEWAY/ PULL BOX/ JUNCTION BOX	14 (*every 10' minimum*)
INVERTER	2 (*if AC disco*), 3 (*if DC disco*), 6 (*if DC disco*), 9 (*if DC disco*), 10 (*if AC disco*), & 24 (If 240 Delta)
PV SUB PANEL	1 (*if MB*), 4, 5, 10 (*if MB*), & 24 (If 240 Delta)
PRODUCTION METER	16 & 25 (If 240 Delta)
AC DISCONNECT (*IF NOT THE MAIN SOLAR DISCONNECT*)	1, 10, & 24 (If 240 Delta)
MAIN SERVICE PANEL (*ONLY IF USING BACKFED BREAKER*)	4, 5, 7, 16, 17, & 24 (If 240 Delta)
MAIN SOLAR DISCONNECT (*PV AC DISCONNECT*)	1, 4, 12 (*only if Rapid Shutdown*), 16, 18, 23 (If Ameren-IL) & 24 (If 240 Delta)
UTILITY METER	13 (If Ameren-IL meter is more than 10ft away or out of sight of disco), 16, 19 (*only if Rapid Shutdown*), & 25 (If 240 Delta)
ENERGY STORAGE SYSTEM (*ONLY IF BATTERIES INSTALLED*)	8 (*on battery disco*), 11 (*on utility meter*), & 21 (*on battery disco*)

1	**Photovoltaic AC Disconnect**				QTY	
	Maximum AC Operating Current	62.5	A		1	
	Nominal Operating AC Voltage	240	V			
3	**Photovoltaic DC Disconnect**					
	Rated Mppt Current	22.04	A		QTY	ON INVERTER...
	Rated Mppt Voltage	578.20	V		1	Fronius Primo 15.0-1 (240V)
	Maximum System Voltage	778.10	V			
	Maximum Circuit Current	23.20	A			
	Max Rated Output Current of the Charge Controller if Installed	NA	A			

4
WARNING
ELECTRICAL SHOCK HAZARD
TERMINALS ON THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION
NEC 690.13(B) / Roll: 596-00878
10-Pk: 596-00893 / Metal 5-Pk: 596-00921

5
WARNING
TURN OFF PHOTOVOLTAIC AC DISCONNECT PRIOR TO WORKING INSIDE PANEL
NEC 690.13(B) & OSHA 1910.145(f)(7)
Roll: 596-00499 / 10-Pk: 596-00664
5-Pk: 596-00832

6
WARNING
ELECTRICAL SHOCK HAZARD
TERMINALS ON THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION
DC VOLTAGE IS ALWAYS PRESENT WHEN SOLAR MODULES ARE EXPOSED TO SUNLIGHT
NEC 690.13(B) / Roll: 596-00879
10-Pk: 596-00894 / 5-Pk: 596-00920

7
WARNING
POWER SOURCE OUTPUT CONNECTION. DO NOT RELOCATE THIS OVERCURRENT DEVICE
NEC 705.12(B)(2)(c) / Roll: 596-00243
10-Pk: 596-00675 / Metal 5-Pk: 596-00917

8
ENERGY STORAGE SYSTEM DISCONNECT
NEC 706.15(C) / Roll: 596-00997
10-Pk: 596-01005

9
PHOTOVOLTAIC
DC DISCONNECT
NEC 690.13(B)
Roll: 596-00238 / 10-Pk: 596-00854

10
PHOTOVOLTAIC
AC DISCONNECT
NEC 690.13(B)
Roll: 596-00237 / 10-Pk: 596-00853

11
WARNING
THREE POWER SOURCES
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM
THIRD SOURCE IS ENERGY STORAGE SYSTEM

12
RAPID SHUTDOWN FOR SOLAR PV SYSTEM
NEC 690.56(C)(2) / Roll: 596-01003 / 10-Pk: 596-01040

13
CAUTION:
MULTIPLE SOURCES OF POWER
LOCKABLE AC GENERATION SOURCE DISCONNECT AVAILABLE FOR ISOLATION FROM UTILITY

14
WARNING: PHOTOVOLTAIC POWER SOURCE
NEC 690.31(G)(3)(4) / Roll: 596-00206 / 10-Pk: 596-00678

15
DO NOT DISCONNECT UNDER LOAD
NEC 690.15(C) & NEC 690.33(E)(2)
Roll: 596-00244 / 10-Pk: 596-00671

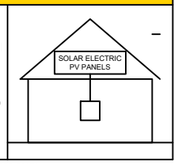
16
WARNING DUAL POWER SOURCE
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM
NEC 705.12(D)(3) / Roll: 596-00495
10-Pk: 596-09665 / Metal 5-Pk: 596-00833

17
CAUTION
PHOTOVOLTAIC SYSTEM CIRCUIT IS BACKFED
NEC 690.13(F), NEC 705.12(B)(3-4) & NEC 690.59
Roll: 596-00587 / 10-Pk: 596-00666 / Metal 5-Pk: 596-00834

18
MAIN PHOTOVOLTAIC SYSTEM DISCONNECT
NEC 690.13(B) / Roll: 596-00243
10-Pk: 596-00675 / Metal 5 Pk: 596-00860

23
LOCKABLE AC GENERATION SOURCE DISCONNECT

19
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



NEC 690.56(C)

20
This Solar PV Installation was Provided by
harvest solar
888-90-SOLAR
www.harvestsolar.com
1/JOB - TO BE INSTALLED IN BEST AVAILABLE LOCATION

24
CAUTION:
B PHASE HAS 208 VOLTS TO GROUND
NEC 408.3(F)(1)

25
CAUTION:
C PHASE HAS 208 VOLTS TO GROUND

harvest solar
2218 East High Street
Jackson, Michigan 49203
(517) 788-8800
harvestsolar.com

REVISIONS

Description	Date	Rev
Initial Binder Created	11/13/23	0.1
Enginnering Release	11/14/23	0.2
Binder Release	11/20/23	1.0
Rev Binder Release	12/14/23	1.1
----	----	----

ENGINEERING STAMP

JEFF SANDBORN
23162
10227 KEEFER HIGHWAY
PORTLAND, MI 48875

DESIGNED BY:	REVIEWED BY:
ME	NMC

SHEET NAME: LABEL INDEX

SHEET SIZE: ANSI (11" x 17")

SHEET NUMBER: PV-07

HARVEST SOLAR - PROJECT SPECIFIC NOTES

*** = CUSTOMER RESPONSIBLE ITEMS**

* GRADE - GRADE IS LESS THAN 12" BUILD ARRAY LEVEL

* UNDERGROUND OBSTRUCTIONS - UNDERGROUND ELECTRIC AND GAS LINES

MONITORING - DIRECT ETHERNET VIA EGAUGE

ROUTER LOCATION - ROUTER LOCATED IN BARN OFFICE BY THE DESK

INTERCONNECTION METHOD - INTERCONNECTION TO BE DONE BY TAPPING LINE SIDE IN MAIN SERVICE PANEL

MISC - UTILITY LINES ENTER FROM UNDERGROUND

MISC - BRING EQUIPMENT RACKING TO LAND OUR EQUIPMENT ON

ADD LABEL- "EQUIPMENT RATED FOR 100A MAX FUSE SIZE 80A"

harvest solar
2218 East High Street
Jackson, Michigan 49203
(517) 788-8800
harvestsolar.com

REVISIONS

Description	Date	Rev
Initial Binder Created	11/13/23	0.1
Enginnering Release	11/14/23	0.2
Binder Release	11/20/23	1.0
Rev Binder Release	12/14/23	1.1
----	----	----

ENGINEERING STAMP

JEFF SANDBORN
23162

10227 KEEFER HIGHWAY
PORTLAND, MI 48875

DESIGNED BY:	REVIEWED BY:
ME	NMC

SHEET NAME:
PROJECT NOTES

SHEET SIZE:
ANSI (11" x 17")

SHEET NUMBER:
PV-08

NEW

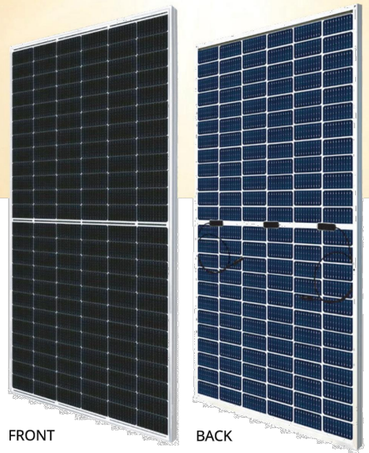
CanadianSolar

BiHiKu6

520 W ~ 545 W

BIFACIAL MONO PERC

CS6W-520|525|530|535|540|545MB-AG



MORE POWER

- 545 W — Module power up to 545 W
Module efficiency up to 21.2 %
- Up to 12.3 % lower LCOE
Up to 5.2 % lower system cost
- Comprehensive LID / LeTID mitigation technology, up to 50% lower degradation
- Compatible with mainstream trackers, cost effective product for utility power plant
- Better shading tolerance

MORE RELIABLE

- Minimizes micro-crack impacts
- Heavy snow load up to 5400 Pa,
wind load up to 2400 Pa*

* For detailed information, please refer to Installation Manual.

12 Years — **Enhanced Product Warranty on Materials and Workmanship***

30 Years — **Linear Power Performance Warranty***

1st year power degradation no more than 2%

Subsequent annual power degradation no more than 0.45%

*According to the applicable Canadian Solar Limited Warranty Statement.

MANAGEMENT SYSTEM CERTIFICATES*

ISO 9001:2015 / Quality management system
ISO 14001:2015 / Standards for environmental management system
ISO 45001: 2018 / International standards for occupational health & safety

PRODUCT CERTIFICATES*

IEC 61215 / IEC 61730 / CE / INMETRO / MCS / UKCA
CEC listed (US California)
UL 61730 / IEC 61701 / IEC 62716 / IEC 60068-2-68
Take-e-way

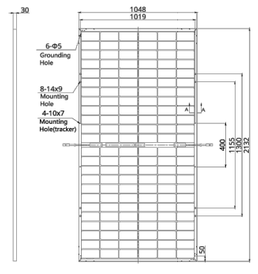
* The specific certificates applicable to different module types and markets will vary, and therefore not all of the certifications listed herein will simultaneously apply to the products you order or use. Please contact your local Canadian Solar sales representative to confirm the specific certificates available for your Product and applicable in the regions in which the products will be used.

CSI SOLAR (USA) CO., LTD. is committed to providing high quality solar photovoltaic modules, solar energy and battery storage solutions to customers. The company was recognized as the No. 1 module supplier for quality and performance/price ratio in the IHS Module Customer Insight Survey. Over the past 20 years, it has successfully delivered over 63 GW of premium-quality solar modules across the world.

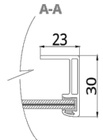
CSI SOLAR (USA) CO., LTD.
1350 Treat Blvd. Suite 500, Walnut Creek, CA 94598, USA | www.csisolar.com/na | service.ca@csisolar.com

ENGINEERING DRAWING (mm)

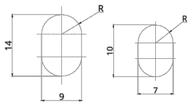
Rear View



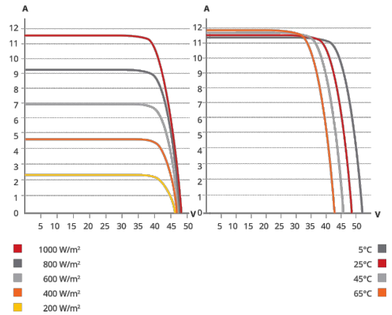
Frame Cross Section



Mounting Hole



CS3W-435MB-AG / I-V CURVES



ELECTRICAL DATA | STC*

		Nominal Max. Power (Pmax)	Opt. Operating Voltage (Vmp)	Opt. Operating Current (Imp)	Open Circuit Voltage (Voc)	Short Circuit Current (Isc)	Module Efficiency
CS3W-435MB-AG		435 W	40.5 V	10.75 A	48.5 V	11.42 A	19.5%
Bifacial Gain**	5%	457 W	40.5 V	11.29 A	48.5 V	11.99 A	20.5%
	10%	479 W	40.5 V	11.83 A	48.5 V	12.56 A	21.4%
	20%	522 W	40.5 V	12.90 A	48.5 V	13.70 A	23.4%
	30%	566 W	40.5 V	13.98 A	48.5 V	14.85 A	25.3%
CS3W-440MB-AG		440 W	40.7 V	10.82 A	48.7 V	11.48 A	19.7%
Bifacial Gain**	5%	462 W	40.7 V	11.36 A	48.7 V	12.05 A	20.7%
	10%	484 W	40.7 V	11.90 A	48.7 V	12.63 A	21.7%
	20%	528 W	40.7 V	12.98 A	48.7 V	13.78 A	23.6%
	30%	572 W	40.7 V	14.07 A	48.7 V	14.92 A	25.6%
CS3W-445MB-AG		445 W	40.9 V	10.89 A	48.9 V	11.54 A	19.9%
Bifacial Gain**	5%	467 W	40.9 V	11.43 A	48.9 V	12.12 A	20.9%
	10%	490 W	40.9 V	11.98 A	48.9 V	12.69 A	21.9%
	20%	534 W	40.9 V	13.07 A	48.9 V	13.85 A	23.9%
	30%	579 W	40.9 V	14.16 A	48.9 V	15.00 A	25.9%
CS3W-450MB-AG		450 W	41.1 V	10.96 A	49.1 V	11.60 A	20.1%
Bifacial Gain**	5%	473 W	41.1 V	11.51 A	49.1 V	12.18 A	21.2%
	10%	495 W	41.1 V	12.06 A	49.1 V	12.76 A	22.2%
	20%	540 W	41.1 V	13.15 A	49.1 V	13.92 A	24.2%
	30%	585 W	41.1 V	14.25 A	49.1 V	15.08 A	26.2%
CS3W-455MB-AG		455 W	41.3 V	11.02 A	49.3 V	11.66 A	20.4%
Bifacial Gain**	5%	478 W	41.3 V	11.57 A	49.3 V	12.24 A	21.4%
	10%	501 W	41.3 V	12.12 A	49.3 V	12.83 A	22.4%
	20%	546 W	41.3 V	13.22 A	49.3 V	13.99 A	24.4%
	30%	592 W	41.3 V	14.33 A	49.3 V	15.16 A	26.5%
CS3W-460MB-AG		460 W	41.5 V	11.09 A	49.5 V	11.72 A	20.6%
Bifacial Gain**	5%	483 W	41.5 V	11.64 A	49.5 V	12.31 A	21.6%
	10%	506 W	41.5 V	12.20 A	49.5 V	12.89 A	22.7%
	20%	552 W	41.5 V	13.31 A	49.5 V	14.06 A	24.7%
	30%	598 W	41.5 V	14.42 A	49.5 V	15.24 A	26.8%

* Under Standard Test Conditions (STC) of irradiance of 1000 W/m², spectrum AM 1.5 and cell temperature of 25°C.
** Bifacial Gain: The additional gain from the back side compared to the power of the front side at the standard test condition. It depends on mounting (structure, height, tilt angle etc.) and albedo of the ground.

ELECTRICAL DATA

Operating Temperature	-40°C ~ +85°C
Max. System Voltage	1500 V (IEC/UL) or 1000 V (IEC/UL)
Module Fire Performance	TYPE 29 (UL 61730) or CLASS C (IEC61730)
Max. Series Fuse Rating	25 A
Application Classification	Class A
Power Tolerance	0 ~ + 10 W
Power Bifaciality*	70 %

* Power Bifaciality = $Pmax_{rear}$ / $Pmax_{front}$, both $Pmax_{rear}$ and $Pmax_{front}$ are tested under STC, Bifaciality Tolerance: ± 5 %

* The specifications and key features contained in this datasheet may deviate slightly from our actual products due to the on-going innovation and product enhancement. CSI Solar Co., Ltd. reserves the right to make necessary adjustment to the information described herein at any time without further notice.
Please be kindly advised that PV modules should be handled and installed by qualified people who have professional skills and please carefully read the safety and installation instructions before using our PV modules.

ELECTRICAL DATA | NMOT*

	Nominal Max. Power (Pmax)	Opt. Operating Voltage (Vmp)	Opt. Operating Current (Imp)	Open Circuit Voltage (Voc)	Short Circuit Current (Isc)
CS3W-435MB-AG	326 W	38.0 V	8.59 A	45.8 V	9.21 A
CS3W-440MB-AG	330 W	38.2 V	8.65 A	46.0 V	9.26 A
CS3W-445MB-AG	334 W	38.3 V	8.71 A	46.2 V	9.31 A
CS3W-450MB-AG	338 W	38.5 V	8.76 A	46.4 V	9.35 A
CS3W-455MB-AG	341 W	38.7 V	8.82 A	46.6 V	9.40 A
CS3W-460MB-AG	345 W	38.9 V	8.87 A	46.8 V	9.45 A

* Under Nominal Module Operating Temperature (NMOT), irradiance of 800 W/m², spectrum AM 1.5, ambient temperature 20°C, wind speed 1 m/s.

MECHANICAL DATA

Specification	Data
Cell Type	Mono-crystalline
Cell Arrangement	144 [2 X (12 X 6)]
Dimensions	2132 × 1048 × 30 mm (83.9 × 41.3 × 1.2 in)
Weight	28.4 kg (62.6 lbs)
Front / Back Glass	2.0 mm heat strengthened glass with anti-reflective coating
Frame	Anodized aluminium alloy
J-Box	IP68, 3 bypass diodes
Cable	4.0 mm² (IEC), 12 AWG (UL)
Cable Length (Including Connector)	Portrait : 400 mm (15.7 in) (+) / 280 mm (11.0 in) (-); landscape: 1400 mm (55.1 in); leap-frog connection: 1850 mm (72.8 in)*
Connector	T4 or MC4 series
Per Pallet	33 pieces
Per Container (40' HQ)	660 pieces or 627 pieces (only for US)

* For detailed information, please contact your local Canadian Solar sales and technical representatives.

TEMPERATURE CHARACTERISTICS

Specification	Data
Temperature Coefficient (Pmax)	-0.34 % / °C
Temperature Coefficient (Voc)	-0.26 % / °C
Temperature Coefficient (Isc)	0.05 % / °C
Nominal Module Operating Temperature	41 ± 3°C

PARTNER SECTION

harvest solar
2218 East High Street
Jackson, Michigan 49203
(517) 788-8800
harvestsolar.com

REVISIONS

Description	Date	Rev
Initial Binder Created	11/13/23	0.1
Enginnering Release	11/14/23	0.2
Binder Release	11/20/23	1.0
Rev Binder Release	12/14/23	1.1
----	----	----

ENGINEERING STAMP

JEFF SANDBORN
23162

10227 KEEFER HIGHWAY
PORTLAND, MI 48875

DESIGNED BY:	REVIEWED BY:
ME	NMC

SHEET NAME: RESOURCE DOCUMENT

SHEET SIZE: ANSI (11" x 17")

SHEET NUMBER: R-01

/ Perfect Welding / Solar Energy / Perfect Charging

FRONIUS PRIMO LITE

Solutions for a brighter tomorrow

PC board replacement concept

SnapINverter mounting system

Smart Grid Ready

Design Flexibility

With power categories ranging from 3.8 kW to 15.0 kW, the transformerless Fronius Primo Lite is the ideal compact single-phase inverter for residential applications. The sleek design is equipped with the SnapINverter hinge mounting system, which allows for lightweight, secure, and convenient installation. The Fronius Primo Lite has several integrated features that set it apart from competitors including dual power point trackers, high system voltage, and a wide input voltage range.

TECHNICAL DATA FRONIUS PRIMO LITE

GENERAL DATA	FRONIUS PRIMO LITE 3.8 - 8.2	FRONIUS PRIMO LITE 10.0-15.0
Dimensions (width x height x depth)	16.9 x 24.7 x 8.1 in.	20.1 x 28.5 x 8.9 in.
Weight	47.29 lbs.	82.5 lbs.
Protection Class	NEMA 4X	
Night time consumption	< 1 W	
Inverter topology	Transformerless	
Cooling	Variable speed fan	
Installation	Indoor and outdoor installation	
Ambient operating temperature range	-40 - 131°F (-40 - 55°C)	-40 - 140°F (-40 - 60°C)
Permitted humidity	0 - 100 %	
Elevation	4,000 m (13,123 ft)	
DC connection terminals	4x DC+ and 4x DC- screw terminals for copper (solid / stranded / fine stranded) or aluminum (solid / stranded)	4x DC+1, 2x DC+2 and 6x DC- screw terminals for copper (solid / stranded / fine stranded) or aluminum (solid / stranded)
AC connection terminals	Screw terminals 12 - 6 AWG	
Warranty	10 years / extensions up to 15 and 20 years available[1]	
Certificates and compliance with standards	UL 1741-2010 Second Edition (incl. UL1741 Supplement SA 2016-09 for California Rule 21 and Hawaiian Electric Code Rule 14H), UL1998 (for functions: AFCI, RCMU and isolation monitoring), IEEE 1547-2003, IEEE 1547.1-2003, ANSI/IEEE C62.41, FCC Part 15 A & B, NEC 2017 Article 690, C22. 2 No. 107.1-16, UL1699B Issue 2 -2013, CSA TIL M-07 Issue 1 – 2013	

PROTECTIVE DEVICES	STANDARD WITH ALL PRIMO LITE MODELS
DC reverse polarity protection	Yes
Anti Islanding	Internal; in accordance with UL 1741-2016-09, IEEE 1547-2003 and NEC 2017
Over temperature protection	Output power derating/ Active cooling
AFCI	Yes
Rapid shutdown compliant	Yes
Ground Fault Protection with Isolation Monitor Interrupter	Yes
DC disconnect	Yes

INTERFACES	STANDARD WITH ALL PRIMO LITE MODELS
USB (A socket)	Inverter update possible via USB
2x RS422 (RJ45 socket)	Fronius Solar Net, interface protocol

[1] Fronius Limited Warranty Conditions for the USA. Different terms or restrictions may apply in other countries. More Information www.fronius.us/warranty

TECHNICAL DATA FRONIUS PRIMO LITE

INPUT DATA	PRIMO LITE 3.8-1	PRIMO LITE 5.0-1	PRIMO LITE 6.0-1	PRIMO LITE 7.6-1	PRIMO LITE 8.2-1
Recommended PV power (kWp)	3.0 - 6.0 kW	4.0 - 7.8 kW	4.8 - 9.3 kW	6.1 - 11.7 kW	6.6 - 12.7 kW
Max. usable input current (MPPT 1/MPPT 2)	18 A / 18 A				
Max. usable input current (MPPT 1+MPPT 2)	36 A				
Max. array short circuit current (1.5* Imax) (MPPT1/MPPT2)	27 A / 27 A				
Nominal input voltage	410 V	420 V	420 V	420 V	420 V
Operating voltage range	80 V - 600 V				
DC startup voltage	80 V				
MPP Voltage Range	200 - 480 V	200 - 400 V	240 - 480 V	250 - 480 V	270 - 480 V
Max. input voltage	600 V (1,000 V optional[2])				
Admissible conductor size DC	AWG 14 - AWG 6 copper (solid / stranded / fine stranded) (AWG 10 copper or AWG 8 aluminium for overcurrent protective devices up to 60 A, from 61 to 100 A minimum AWG 8 for copper or AWG 6 aluminium has to be used), AWG 6 - AWG 2 copper (solid / stranded) Multi Contact Wiring able with AWG 12				
Number of MPPT	2				

OUTPUT DATA		PRIMO LITE 3.8-1	PRIMO LITE 5.0-1	PRIMO LITE 6.0-1	PRIMO LITE 7.6-1	PRIMO LITE 8.2-1
Max. output power	208 V/240 V	3,800 VA/3,800 VA	5,000 VA/5,000 VA	6,000 VA/6,000 VA	7,600 VA/7,600 VA	7,900 VA/8,200 VA
Output configuration		208/240 V				
Frequency range (adjustable)		45.0 - 55.0 Hz / 50 - 66 Hz				
Operating frequency range default for CAL setups		--/ 58.5 - 60.5 Hz				
Operating frequency range default for HI setups		--/ 57.0 - 63.0 Hz				
Nominal operating frequency		60 Hz				
Admissable conductor size AC		AWG 14 - AWG 6				
Total harmonic distortion		< 5.0 %				
Power factor range		0.85 - 1 ind./cap				
Max. continuous output current	208 V	18.3 A	24.0 A	28.8 A	36.5 A	38.0 A
	240 V	15.8 A	20.8 A	25.0 A	31.7 A	34.2 A
OCPD/AC breaker size	208 V	25 A	30 A	40 A	50 A	50 A
	240 V	20 A	30 A	35 A	40 A	45 A
Max. Efficiency		96.7 %	96.9 %	96.9 %	96.9 %	97.0 %
CEC Efficiency		95.0 %	95.5 %	96.0 %	96.0 %	96.5 %

INPUT DATA	PRIMO LITE 10.0-1	PRIMO LITE 11.4-1	PRIMO LITE 12.5-1	PRIMO LITE 15.0-1
Recommended PV power (kWp)	8.0 - 12.0 kW	9.1 - 13.7 kW	10.0 - 15.0 kW	12.0 - 18.0 kW
Max. usable input current (MPPT 1/MPPT 2)	33.0 / 18.0 A			
Max. usable input current (MPPT 1+MPPT 2)	51 A			
Max. array short circuit current (1.5 * Imax)	49.5 A / 27.0			
Nominal input voltage	655 V	660 V	665 V	680 V
Operating voltage range	80 V - 1,000 V			
DC startup voltage	80 V			
MPP Voltage Range	220 - 800 V	240 - 800 V	260 - 800 V	320 - 800 V
Max. input voltage	1,000 V			
Admissible conductor size DC	AWG 14 - AWG 6 copper direct, AWG 6 aluminum direct (AWG 10 copper or AWG 8 aluminium for overcurrent protective devices up to 60 A, from 61 to 100 A minimum AWG 8 for copper or AWG 6 aluminium has to be used), AWG 4 - AWG 2 copper or aluminum with optional input combiner			
Number of MPPT	2			
Integrated DC string fuse holders	4- and 4+ for MPPT 1 / no fusing required on MPPT 2			

OUTPUT DATA		PRIMO LITE 10.0-1	PRIMO LITE 11.4-1	PRIMO LITE 12.5-1	PRIMO LITE 15.0-1
Max. output power	208 V/240 V	9,995 VA/9,995 VA	11,400 VA/11,400 VA	12,500 VA/12,500 VA	13,750 VA/15,000 VA
Output configuration		1~NPE 208/240 V			
Frequency range (adjustable)		45-55 Hz / 50 - 66 Hz			
Operating frequency range default for CAL setups		--/ 58.5 - 60.5 Hz			
Operating frequency range default for HI setups		--/ 57.0 - 63.0 Hz			
Nominal operating frequency		60 Hz			
Admissible conductor size AC		AWG 10- AWG 2 copper (solid/stranded/fine stranded) (AWG 10 copper or AWG 8 aluminum for overcurrent protective devices up to 60 A, from 61 to 100 A minimum AWG 6 aluminum has to be used), AWG 6-AWG 2 copper (solid/strarded) Multi Contact Wiring able with AWG 12			
Total harmonic distortion		< 2.5 %			
Power factor range		0-1 ind./cap.			
Max. continuous output current	208 V	48.1 A	54.8 A	60.1 A	66.1 A
	240 V	41.6 A	47.5 A	52.1 A	62.5 A
OCPD/AC breaker size	208 V	70 A	70 A	80 A	90 A
	240 V	60 A	60 A	70 A	80 A
Max. Efficiency		96.7 %			
CEC Efficiency 600 V/1,000 V	240 V	96.0 % / 96.5 %			96.5 % / 97.0 %

[2] inverter rated for up to 1,000 V open-circuit. Nominal, Operating, and MPP voltages based on 600 V system design. Actual DC system voltage is dependent on PV string-sizing, not inverter input capacity.

/ Perfect Welding / Solar Energy / Perfect Charging

THREE BUSINESS UNITS, ONE GOAL: TO SET THE STANDARD THROUGH TECHNOLOGICAL ADVANCEMENT.

What began in 1945 as a one-man operation now sets technological standards in the fields of welding technology, photovoltaics and battery charging. Today, the company has around 5,660 employees worldwide and 1,321 patents for product development show the innovative spirit within the company. Sustainable development means for us to implement environmentally relevant and social aspects equally with economic factors. Our goal has remained constant throughout: to be the innovation leader.

Further information about all Fronius products and our global sales partners and representatives can be found at **www.fronius.com**

Fronius USA LLC
6797 Fronius Drive
Portage, IN 46368 USA
pv-support-usa@fronius.com
www.fronius.us

M,06,0229,EN-US USA REV. 08/05/2022

harvest solar
2218 East High Street
Jackson, Michigan 49203
(517) 788-8800
harvestsolar.com

REVISIONS

Description	Date	Rev
Initial Binder Created	11/13/23	0.1
Enginnering Release	11/14/23	0.2
Binder Release	11/20/23	1.0
Rev Binder Release	12/14/23	1.1
----	----	----

ENGINEERING STAMP

JEFF SANDBORN
23162

10227 KEEFER HIGHWAY
PORTLAND, MI 48875

DESIGNED BY:	REVIEWED BY:
ME	NMC

SHEET NAME: RESOURCE DOCUMENT

SHEET SIZE: ANSI (11" x 17")

SHEET NUMBER: R-02

Gauge Systems

eGauge Core Specifications

Model: EG4015

Measurement

AC Voltage: (Y: L-N, Δ: L-L)
L1: 85-277 Vrms
L2: 0-277 Vrms
L3: 0-277 Vrms

DC Voltage:
42 Vrms
Power: 9-60 Vdc
Measurement: -60-60Vdc

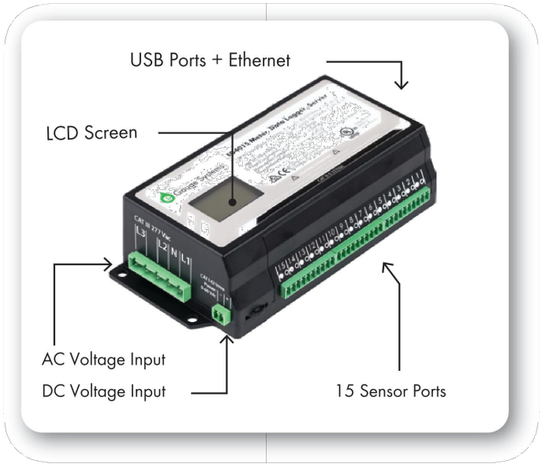
Current:
15 sensor ports
6900A max
Sensor ports isolated from USB, Ethernet and voltage inputs

Frequency:
50 or 60 Hz

Logging Values:
V, A, W, Wh, Hz, VA
VAr, THD, deg

Power Draw:
12W max, 2W typical
2 5V USB Ports @ 1A max

Accuracy:
ANSI C12.20 - 0.5% Compliant



Environment Conditions

Operating Temp: -30° to 70°C (-22° to 158°F)

Max Altitude: 4000m (13,123ft)

Max Humidity: 80% up to 31°C

Meas. Category: Overvoltage Category III

Location: Open type indoor device

Pollution Degree: 2

Data Logger Capacity

Register Count: 64 (data storage points)

Granularity: *(duration/avg)*
1 hr/1 sec
1 yr/1 minute
10 yrs/15 minute
Device Lifetime/1 day

Safety and Regulatory

Safety: IEC/UL 61010-1 Ed. 3.0 B:2010

CE:
IEC 61000-6-1 Ed. 3.0 B:2016
IEC 61000-6-3 Ed. 2.1 B:2011

FCC:
FCC Title 47 CFR Part 15-Subpart B Class B
ICES-003 Information Technology-Equipment Class B

eGauge Core Specifications

General

Warranty: 2 years, 5 years

Network Connection

Powerline: None

Ethernet: IEEE 802.3 - LAN

WiFi/Cellular: Optional with USB accessory

Data Communication

Import: Modbus RTU*, Modbus TCP

Export: Modbus RTU*, Modbus TCP, BACnet IP, BACnet MS/TP*, XML

* Requires USB485 converter

User Interface

Compatible browsers: *(Only up-to-date versions supported)*
Google Chrome
Firefox
Safari
Microsoft Edge

Apps: Android & IOS

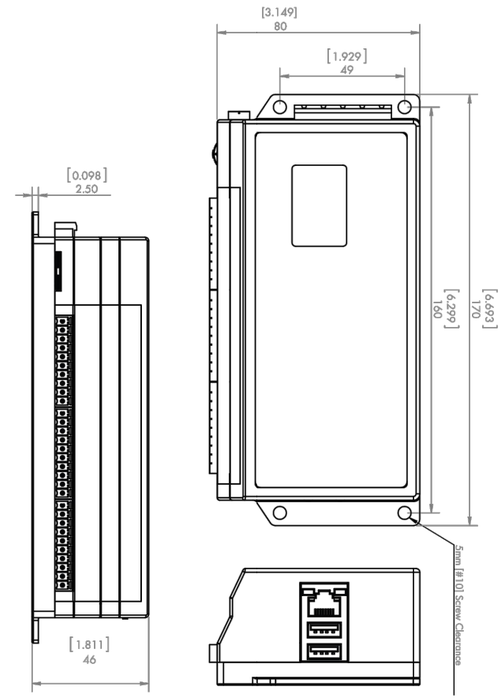
Enclosure

Material: FRABS

Dimensions: 17 x 8 x 4.6cm (6.7 x 3.15 x 1.81in)

Weight: 300g (0.66lbs)

Dimensions *([in.] mm)*



CTid® www.eGauge.net (720) 545-9767 x1 sales@egauge.net

harvest solar
2218 East High Street
Jackson, Michigan 49203
(517) 788-8800
harvestsolar.com

REVISIONS

Description	Date	Rev
Initial Binder Created	11/13/23	0.1
Enginnering Release	11/14/23	0.2
Binder Release	11/20/23	1.0
Rev Binder Release	12/14/23	1.1
----	----	----

ENGINEERING STAMP

JEFF SANDBORN
23162
10227 KEEFER HIGHWAY
PORTLAND, MI 48875

DESIGNED BY:	REVIEWED BY:
ME	NMC

SHEET NAME: RESOURCE DOCUMENT

SHEET SIZE: ANSI (11" x 17")

SHEET NUMBER: R-03