Certificate of Appropriateness

Milwaukee Historic Preservation Commission/841 N Broadway/Milwaukee, WI 53202/phone 414-286-5712

Property	**3002 W State Street**	**Concordia HD**
Description of work	Solar panels per attached plans.	
Date issued	11/13/2024	

Under the provisions of Section 320-21 (11) and (12) of the Milwaukee Code of Ordinances, the Milwaukee Historic Preservation Commission has granted a certificate of appropriateness for the work listed above. The work was found to be consistent with preservation guidelines. The following conditions apply to this certificate of appropriateness:

N/A

All work must be done in a craftsman-like manner. Staff must approve any changes or additions to this certificate before work begins. Work that is not completed in accordance with this certificate may be subject to correction orders or citations. If you require technical assistance, please contact Historic Preservation staff as follows: Phone: (414) 286-5712 E-mail: hpc@milwaukee.gov.

Permits and timeline

You are responsible for determining if permits are required and obtaining them prior to commencing work. Consult the Development Center on the web or by telephone for details www.milwaukee.gov/lms (414) 286-8210. If permits are not required, work must be completed within one year of the date this certificate was issued. If permits are required, permits must be obtained within one year of the date this certificate was issued.

City of Milwaukee Preservation Staff

NAME:

*EMME*Y MALLOY

CITY OF MILWAUKEE
STATE OF WISCONSIN

AC SYSTEM SIZE:

38 X .290KVA = 11.02KW

RACKING

SUNMODO PITCHED ROOF
SMR SYSTEM

MODULE SPECS (STC):

HYPERION
HY-DH108P8-395W(B)
1722mm x 1134mm x 30mm

Voc: 36.98V
Isc: 13.70A
MAX SERIES FUSE: 25A
49.8 LBS PER MODULE

INVERTER:
(38) ENPHASE
IQ8PLUS-72-2-US MICRO
INVERTERS

BATTERY:

NONE

METER ENCLOSURE

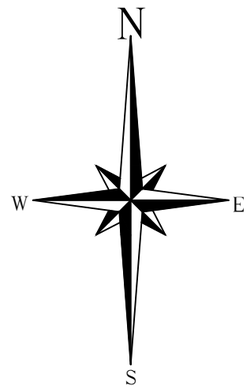
EXTERNAL DISCONNECT

MAIN PANEL

COMBINER PANEL
(RIGHT SIDE OF MAIN)

ARRAYS

INVERTER
(ONE PER MODULE)



Segment Name	Area (ft²)	Tilt	Azimuth	Solar Access	Module PMax	Module Count	kW DC STC
Segment A	147.13	44.4	90.2	90.56	395	7	2.765
Segment B	252.23	44.6	269.4	88.33	395	12	4.740
Segment C	252.23	26.5	180.7	89.61	395	12	4.740
Segment D	84.08	26.2	270.2	81.22	395	4	1.580
Segment E	63.06	26.0	89.9	87.59	395	3	1.185

General Notes

ELECTRICAL

DESIGN DRAWING

No.	Revision/Issue	Date

Firm Name and Address

Current Electric Company
2942 North 117th Street
Wauwatosa, WI 53222
Phone: (262) 786 5885
Fax: (262) 786 7856
WWW.CurrentElectricCo.Com

Project Name and Address

MALLOY/KENNELLY RESIDENCE
3002 W STATE STREET
MILWAUKEE, WI 53208

Project

Sheet

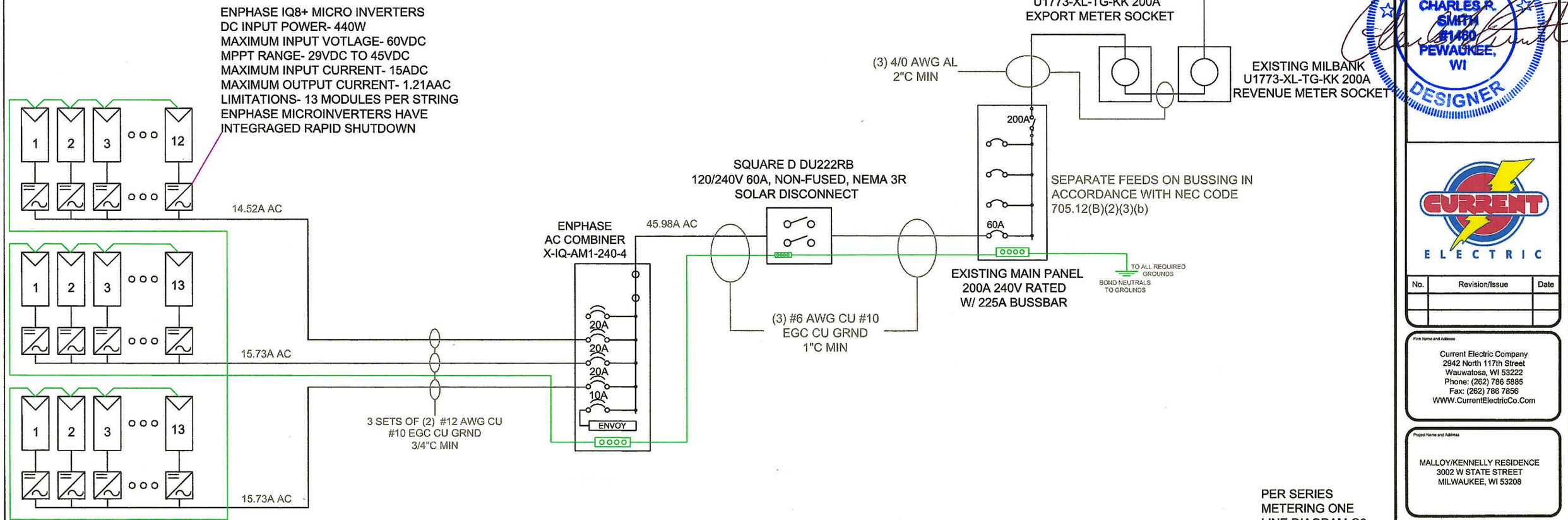
Date 10/22/2024

SITE PLAN

Scale NO SCALE

(38) HYPERION 395W MODULES
HY-DH108P8-395W(B)
(1) STRING OF 12 MODULES
(2) STRINGS OF 13 MODULES
CONNECTED IN SERIES PER STRING

SYSTEM SIZE (DC):
(38) X HYPERION 395W = 15.010KW
SYSTEM SIZE (AC):
(38) X IQ8PLUS-72-2-US .290KVA = 11.02KW



PER SERIES
METERING ONE
LINE DIAGRAM O3

General Notes

ELECTRICAL

DESIGN DRAWING

WISCONSIN
CHARLES R. SMITH
E-41480
PEWAUKEE, WI
DESIGNER

CURRENT ELECTRIC

No.	Revision/Issue	Date

Firm Name and Address

Current Electric Company
2942 North 117th Street
Wauwatosa, WI 53222
Phone: (262) 786 5885
Fax: (262) 786 7856
WWW.CurrentElectricCo.Com

Project Name and Address

MALLOY/KENNELLY RESIDENCE
3002 W STATE STREET
MILWAUKEE, WI 53208

Project	Sheet
Date 10/22/2024	ONELINE
Scale NO SCALE	

Kennelly 3002 W State Street Milwaukee, Wi 53208 Solar

Material and design speculation

5.

Project Description

The owners of 3002 W State Street seek to add a photovoltaic solar system to their home. The proposed installation of 38x modules will be split between the detached garage and the home itself, with design consideration given to eliminate visibility of installation from the front of the home or street.

On the detached garage we are proposing adding 19x Hyperion 395w black solar modules. The modules will be installed in 3 sections: 4x on the west facing roof, 12x on the south facing roof, and 3x on the east facing roof. The modules will be installed on the roof via the Sunmodo SMR Pitched Roof system. Under each module 1x Enphase IQ8+ microinverters will be installed and wired in series into a roof mounted junction box. This is a flashing based solar mounting solution that provides both chemical and mechanical leak protection. Under each array 1x Unirac SoloBox weatherproof roof mounted junction box will be added, providing wiring access from the arrays to the interior of the garage. After their installation, the 3 solar arrays will be joined in a junction box mounted inside the structure. On the south exterior wall of the structure an A/C disconnect will be installed and connected to the interior junction box. Out of the A/C disconnect the conduit will continue through a trench across the yard to the south, to join up with another A/C disconnect on the house before entering the basement.

On the house we are proposing adding an additional 19x of the same solar modules. The modules will be installed in 2 sections: 7x on the east facing roof and 12x on the west facing roof. These will be attached to the roof and wired in the same manner as the garage installation. The wiring will again be connected via roof mounted junction boxes and through the attic. Conduit will run from the completed array into the basement to join with the wiring from the garage mounted array. Completed wiring will terminate in an Enphase IQ Series combiner panel, to be installed in the area near the home's main service panel in the basement. The combiner panel will then be fed via a breaker in the main service panel. On the exterior of the home an additional 200a meter socket will be added to accommodate a solar production meter. This will be wired in series with the original meter.

All work done shall meet or exceed 2017 NEC and State and Local regulations. All installation procedures listed by the manufacturer shall be followed for all installed equipment. Please see attached equipment datasheets for more detailed information.

DATA SHEET

IQ8 and IQ8+ Microinverters

Our newest IQ8 Microinverters are the industry's first microgrid-forming, software-defined microinverters with split-phase power conversion capability to convert DC power to AC power efficiently. The brain of the semiconductor-based microinverter is our proprietary application-specific integrated circuit (ASIC), which enables the microinverter to operate in grid-tied or off-grid modes. This chip is built using advanced 55-nm technology with high-speed digital logic and has superfast response times to changing loads and grid events, alleviating constraints on battery sizing for home energy systems.

Part of the Enphase Energy System, IQ8 Series Microinverters integrate with the IQ Battery, IQ Gateway, and the Enphase App monitoring and analysis software.

Enphase 25 year limited warranty

IQ8 Series Microinverters redefine reliability standards with more than one million cumulative hours of power-on testing, enabling an industry-leading limited warranty of up to 25 years.

Connect PV modules quickly and easily to IQ8 Series Microinverters using the included Q-DCC-2 adapter cable with plug-and-play MC4 connectors.

UL CERTIFIED SAFETY

IQ8 Series Microinverters are UL Listed as PV rapid shutdown equipment and conform with various regulations, when installed according to the manufacturer's instructions.

Easy to install

- Lightweight and compact with plug-and-play connectors
- Power line communication (PLC) between components
- Faster installation with simple two-wire cabling

High productivity and reliability

- Produce power even when the grid is down*
- More than one million cumulative hours of testing
- Class II double-insulated enclosure
- Optimized for the latest high-powered PV modules

Microgrid-forming

- Compliant with the latest advanced grid support**
- Remote automatic updates for the latest grid requirements
- Configurable to support a wide range of grid profiles
- Meets CA Rule 21 (UL 1741-SA) and IEEE 1547:2018 (UL 1741-SB)

NOTE:

- IQ8 Microinverters cannot be mixed with previous generations of Enphase microinverters (IQ7 Series, IQ6 Series, and so on) in the same system.
- IQ Microinverters ship with default settings that meet North America's IEEE 1547 interconnection standard requirements. Region-specific adjustments may be requested by an Authority Having Jurisdiction (AHJ) or utility representative according to the IEEE 1547 interconnection standard. An IQ Gateway is required to make these changes during installation.

*Meets UL 1741 only when installed with IQ System Controller 2 or 3.
**IQ8 and IQ8+ support split-phase, 240 V installations only.

IQ8 and IQ8+ Microinverters

INPUT DATA (DC)	UNITS	IQ8-60-2-US	IQ8PLUS-72-2-US
Commonly used module pairings[1]	W	235–350	235–440
Module compatibility	—	To meet compatibility, PV modules must be within maximum input DC voltage and maximum module I_{sc} listed below. Module compatibility can be checked at https://enphase.com/installers/microinverters/calculator.	
MPPT voltage range	V	27–37	27–45
Operating range	V	16–48	16–58
Minimum/Maximum start voltage	V	22/48	22/58
Maximum input DC voltage	V	50	60
Maximum continuous input DC current	A	10	12
Maximum input DC short-circuit current	A	25	
Maximum module (I_{sc})	A	20	
Overvoltage class DC port	—	II	
DC port backfeed current	mA	0	
PV array configuration	—	Ungrounded array; no additional DC side protection required; AC side protection requires maximum 20 A per branch circuit.	

OUTPUT DATA (AC)	UNITS	IQ8-60-2-US	IQ8PLUS-72-2-US
Peak output power	VA	245	300
Maximum continuous output power	VA	240	290
Nominal grid voltage (L-L)	V	240, split-phase (L-L), 180°	
Minimum and Maximum grid voltage[2]	V	211-264	
Maximum continuous output current	A	1.0	1.21
Nominal frequency	Hz	60	
Extended frequency range	Hz	47–68	
AC short-circuit fault current over three cycles	Arms	2	
Maximum units per 20 A (L-L) branch circuit[3]	—	16	13
Total harmonic distortion	%	<5	
Overvoltage class AC port	—	III	
AC port backfeed current	mA	30	
Power factor setting	—	1.0	
Grid-tied power factor (adjustable)	—	0.85 leading ... 0.85 lagging	
Peak efficiency	%	97.7	
CEC weighted efficiency	%	97	
Nighttime power consumption	mW	23	25

MECHANICAL DATA	
Ambient temperature range	-40°C to 60°C (-40°F to 140°F)
Relative humidity range	4% to 100% (condensing)
DC connector type	MC4
Dimensions (H × W × D)	212 mm (8.3 in) × 175 mm (6.9 in) × 30.2 mm (1.2 in)
Weight	1.08 kg (2.38 lbs)
Cooling	Natural convection–no fans
Approved for wet locations	Yes
Pollution degree	PD3
Enclosure	Class II double-insulated, corrosion-resistant polymeric enclosure
Environmental category/UV exposure rating	NEMA Type 6/Outdoor

(1) No enforced DC/AC ratio.
(2) Nominal voltage range can be extended beyond nominal if required by the utility.
(3) Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

COMPLIANCE	
Certifications	CA Rule 21 (UL 1741-SA), UL 62109-1, IEEE 1547:2018 (UL 1741-SB), FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 107.1-01. This product is UL Listed as PV rapid shutdown equipment and conforms with NEC 2014, NEC 2017, NEC 2020, and NEC 2023 section 690.12 and C22.1-2018 Rule 64-218 rapid shutdown of PV Systems, for AC and DC conductors, when installed according to the manufacturer's instructions.

Revision history

REVISION	DATE	DESCRIPTION
DSH-00207-3.0	February 2024	Updated the information about IEEE 1547 interconnection standard requirements.
DSH-00207-2.0	October 2023	Included NEC 2023 specification in the “Compliance” section.
DSH-00207-1.0	September 2023	Updated module compatibility specification.

RUNERGY

TIER 1 HY-DH108P8B

395-415W

21.3%	P-Type	108 Pieces
Max. Efficiency	**Bifacial** & Dual Glass	Half-Cell

High Conversion Efficiency

Module efficiency up to 21.3% achieved through advanced cell technology and manufacturing process

Excellent weak light performance

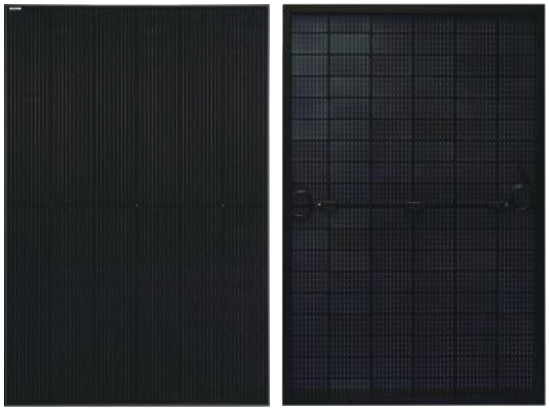
More power output in weak light condition, such as cloudy days, morning and sunset

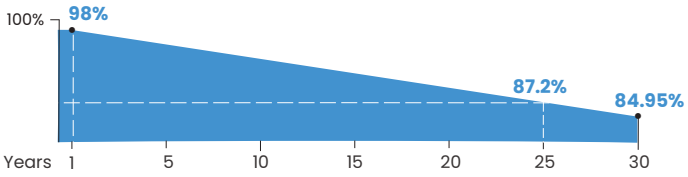
Extended mechanical performance

Module certified to withstand extreme wind(2400 Pa) and snow loads(5400 Pa)

Quality Guarantee

High module quality ensures long-term reliability





Runergy P-Type Dual Glass Product Performance Warranty

- **15 Years** warranty for materials and workmanship
- **30 Years** warranty for extra linear power output
- 1st year <**2%**, annual degradation <**0.45%**

IEC61215 / IEC61730 / UL61730 / IEC61701 / IEC62716 / IEC60068 / ISO9001 / ISO14001/ ISO45001

Munich RE

www.runergy.com
sales-inform@runergy.com

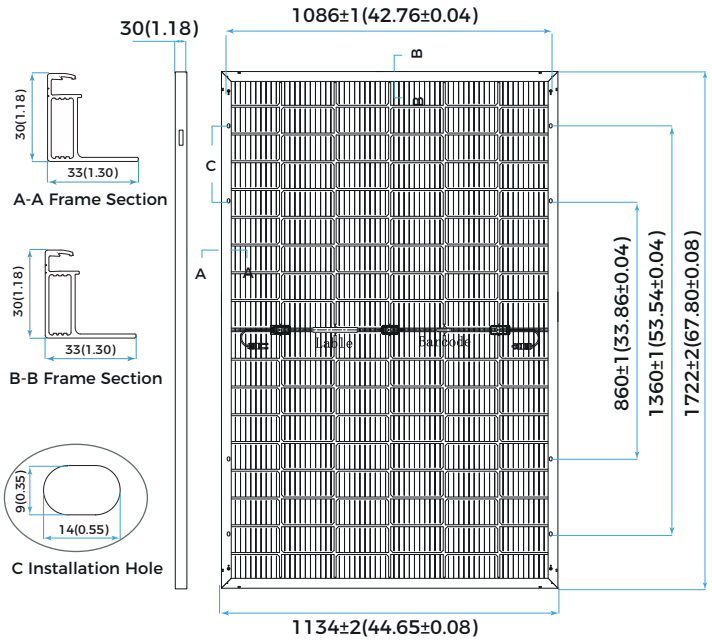
RUNERGY

HY-DH108P8B-395/415

Unit: mm(inch)

Mechanical Parameters

Solar Cell	Mono PERC 182mm
No. of Cells	108 (6 × 18)
Dimensions	1722 × 1134 × 30mm(67.80 x 44.65 x 1.18in)
Weight	24.2kg(53.35lbs)
Junction Box	IP68 rated (3 bypass diodes)
Output Cable	4mm² (IEC), 12 AWG(UL) ±1200mm(47.24in.) or customized
Connector	RY01 or similar
Front Cover	2.0mm (0.079in.)semi-tempered AR glass
Back Cover	2.0mm (0.079in.)semi-tempered glass
Container	36 pcs/Pallet, 936 pcs/40' HQ



Operating Parameters

Max. System Voltage	DC 1500V（IEC/UL）
Operating Temperature	-40˚C ~ +85˚C(-40°F ~ +185°F)
Max. Fuse Rating	30A
Frontside Max. Loading	5400Pa(112lb/ft²)
Backside Max. Loading	2400Pa(50lb/ft²)
Bifaciality	70%±10%
Fire Resistance	IEC Class A

Electrical Characteristics - STC

Irradiance 1000 W/m², cell temperature 25 ˚C, AM1.5, , Test uncertainty for Pmax: ±3%

Maximum Power at STC (Pmax/W)	415	410	405	400	395
Power Tolerance (W)			0 ~ +5		
Optimum Operating Voltage (Vmp/V)	31.61	31.45	31.21	31.01	30.84
Optimum Operating Current (Imp/A)	13.13	13.04	12.98	12.90	12.81
Open Circuit Voltage (Voc/V)	37.45	37.32	37.23	37.07	36.98
Short Circuit Current (Isc/A)	14.02	13.95	13.87	13.79	13.70
Module Efficiency	21.3%	21.0%	20.7%	20.5%	20.2%

Electrical Characteristics - NMOT

Irradiance 800 W/m², ambient temperature 20 ˚C, AM1.5, wind speed 1 m/s.

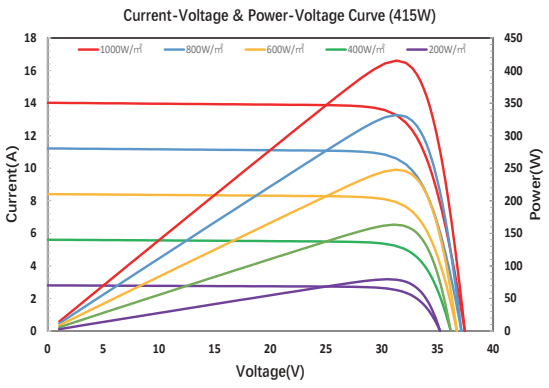
Maximum Power at NMOT (Pmax/W)	313.9	310.2	306.4	302.5	298.8
Optimum Operating Voltage (Vmp/V)	29.98	29.82	29.60	29.41	29.25
Optimum Operating Current (Imp/A)	10.47	10.40	10.35	10.29	10.22
Open Circuit Voltage (Voc/V)	35.51	35.39	35.31	35.15	35.07
Short Circuit Current (Isc/A)	11.31	11.25	11.19	11.13	11.05

Rearside Power Gain (Reference to 415W Front)

Rearside Power Gain	5%	15%	25%
Maximum Power (Pmax/W)	436	477	519
Optimum Operating Voltage (Vmp/V)	31.61	31.71	31.71
Optimum Operating Current (Imp/A)	13.79	15.05	16.36
Open Circuit Voltage (Voc/V)	37.45	37.55	37.55
Short Circuit Current (Isc/A)	14.72	16.08	17.48
Module Efficiency	22.3%	24.4%	27.6%

Temperature Characteristics

Nominal Module Operating Temperature	42 ± 2 ˚C
Nominal Cell Operating Temperature	45 ± 2 ˚C
Temperature Coefficient of Pmax	-0.35%/˚C
Temperature Coefficient of Voc	-0.26%/˚C
Temperature Coefficient of Isc	0.048%/ ˚C



HY-DH108P8B-Global-Ver3.0

Specifications included in this datasheet are subject to change without notice.