Vectren Indiana Net Metering Application for Interconnection (Level 1)

VECTREN
A CenterPoint Energy Company

(Level 1*-Certified Inverter-Based Generation Equipment 10 kW or Smaller)**

I. PROVIDE CUSTOMER & PROJECT INFORMATION

1. Customer

Customer Name	Home/Business Phone	Daytime Phone	Email Address (Optional)
Jeff A Cron	812-475-9925	812-488-1220	jeffcron@yahoo.com

Customer Address	City	State	Zip Code
2845 Oak View Ct.	Evansville	IN	47711

2. Facility

Reason for Application (Select one)	If there are multiple meters at this address, specify which location will be net-metered
■ New Facility ☐ Increased Capacity ☐ Transfer Ownership	*Example: "House", "Garage", etc.*

Type of Facility (Select one)	Inverter Manufacturer and Model Number
■ Solar Photovoltaic ☐ Wind Turbine ☐ Other (Specify) _____	Enphase IQ7-60-2-US

Inverter AC Power (kW) (Each)	Inverter Quantity	Total Max. Inverter Power (kW)
.24	15	3.6

3. Contractor/Installer

Contractor/Installer Name	Daytime Phone	Email Address
Cron Engineering, LLC	812-204-4379	pattycron@yahoo.com

Contractor/Installer Address	City	State	Zip Code
2845 Oak View Ct.	Evansville	IN	47711

II. ATTACH REQUIRED DOCUMENTATION

1. Attach/Include Equipment Documentation

Attach or include documentation confirming that a nationally recognized testing and certification laboratory has listed the equipment.

2. Attach/Include Equipment Diagram

Attach a single-line diagram that includes all electrical equipment from the point where service is taken from Vectren Energy Delivery of Indiana to the inverter, which includes the main panel, sub panels, breaker sizes, fuse sizes, transformers, and disconnect switches (as required). Refer to the "Customer Checklist for Establishing Customer-Owned Generation" to determine if a disconnect switch is required by Vectren.

Note: A Net Metering customer is required to maintain insurance on the net metering facility. Proof of insurance shall be required by Vectren prior to installing the net meter, as part of the Interconnection Agreement process. Refer to 170 Indiana Administrative Code 4-4.2-8 for specific details.

III. SUBMIT YOUR APPLICATION

Submit application electronically

Select the button below and attach all required documentation.

Submit Application

Note: This option may not be available in some PDF viewers.

Submit application manually

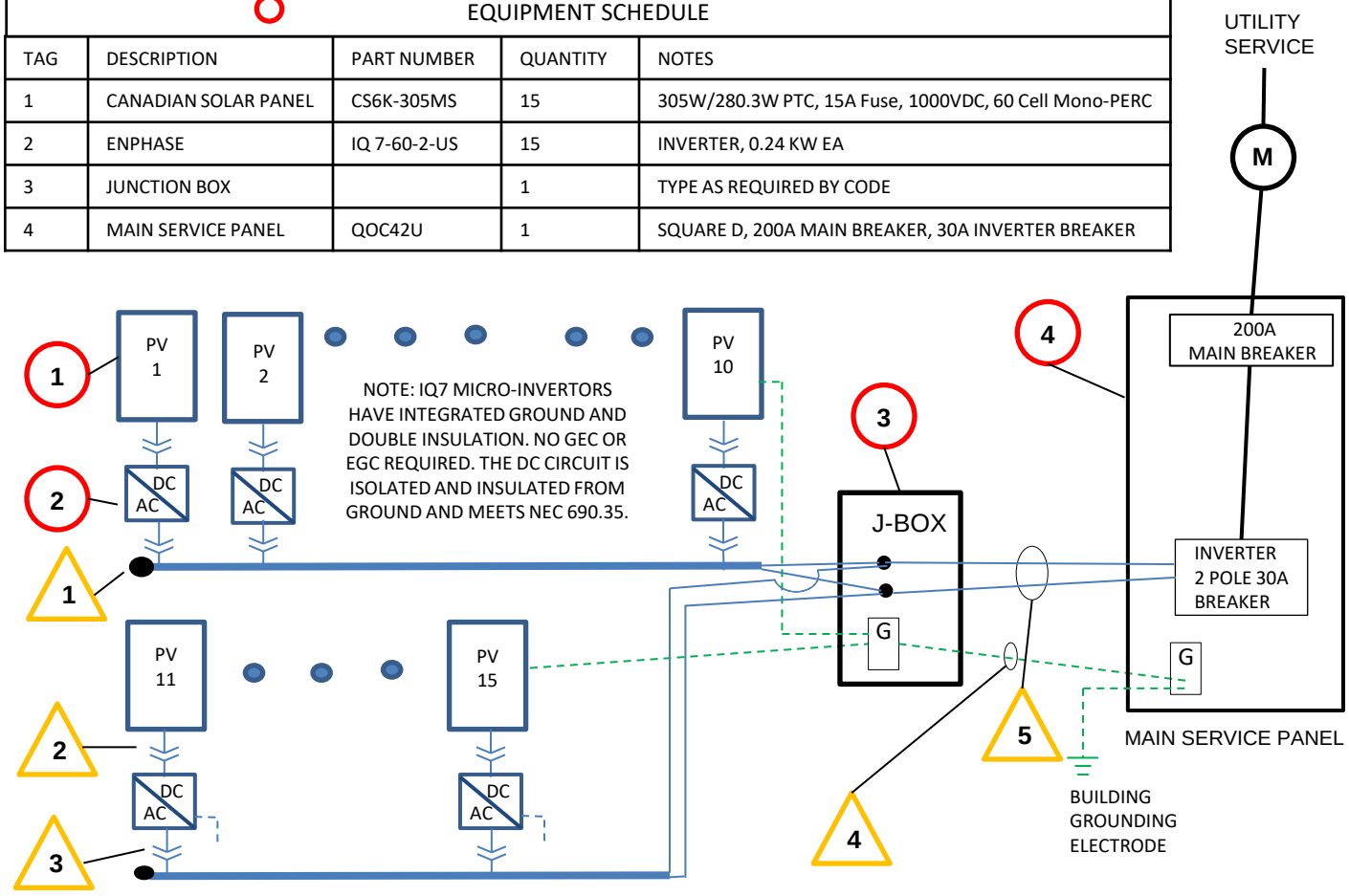
Please send your completed application and all required documentation by email to **newservice@vectren.com** or by fax to **(888) 287-2770**.

Print Application

** Level 1 as defined in 170 Indiana Administrative Code 4-4.3-4(a) ** Certified as defined in 170 Indiana Administrative Code 4-4.3-5*
All positions and references are in accordance to Vectren's TARIFF FOR ELECTRIC SERVICE (I.U.R.C. No. E-13) and are subject to future changes.

EQUIPMENT SCHEDULE

TAG	DESCRIPTION	PART NUMBER	QUANTITY	NOTES
1	CANADIAN SOLAR PANEL	CS6K-305MS	15	305W/280.3W PTC, 15A Fuse, 1000VDC, 60 Cell Mono-PERC
2	ENPHASE	IQ 7-60-2-US	15	INVERTER, 0.24 KW EA
3	JUNCTION BOX		1	TYPE AS REQUIRED BY CODE
4	MAIN SERVICE PANEL	QOC42U	1	SQUARE D, 200A MAIN BREAKER, 30A INVERTER BREAKER



CONDUCTOR SCHEDULE

TAG	DESCRIPTION	PART NUMBER	QUANTITY	NOTES
1	ENPHASE	Q-TERM-10	2	TERMNATOR CAP
2	ENPHASE	MC4	15	DC Connector CABLE
3	ENPHASE	Q-12-10-240	15	Portrait Q-Cable
4	GROUND WIRE	#10 AWG		BARE COPPER
5	CABLE	#10 AWG		NON-METALLIC

Cron Engineering, LLC
Patricia C Cron, Principal
2845 Oak View Ct.
Evansville, IN 47711
812-204-4379
pattycron@yahoo.com

Drawn by: PCC 11-11-19

Checked by: JAC 11-11-19

One-Line Standard Electrical Diagram for Micro-Inverter PV Systems

Customer: Jeff Cron
Address: 2845 Oak View Ct., Evansville, IN 47711
Size: 4,575 Watts

Scale: NTS | DRWG NO: 2019-12 | REV: A

SUPERPOWER
CS6K-300|305|310|315MS

*Black frame product can be provided upon request.

Canadian Solar's new SuperPower modules with Mono-PERC cells significantly improve efficiency and reliability. The innovative technology offers superior low irradiance performance in the morning, in the evening and on cloudy days, increasing the energy output of the module and the overall yield of the solar system.

25 years **linear power output warranty**

10 years **product warranty on materials and workmanship**

KEY FEATURES

- 11 % more power than conventional modules
- High PTC rating of up to: 91.90 %
- Improved energy production due to low temperature coefficients
- IP68 junction box for long-term weather endurance
- Heavy snow load up to 6000 Pa, wind load up to 4000 Pa *

MANAGEMENT SYSTEM CERTIFICATES*

ISO 9001:2015 / Quality management system
ISO 14001:2015 / Standards for environmental management system
OHSAS 18001:2007 / International standards for occupational health & safety

PRODUCT CERTIFICATES*

IEC 61215 / IEC 61730: VDE / CE / MCS / CEC AU / INMETRO
UL 1703 / IEC 61215 performance: CEC listed (US) / FSEC (US Florida)
UL 1703: CSA / IEC 61701 ED2: VDE / IEC 62716: VDE
UNI 9177 Reaction to Fire: Class 1
IEC60068-2-68:SGS
Take-e-way

* We can provide this product with special BOM specifically certified with salt mist, ammonia and sand blowing tests. Please talk to our local technical sales representatives to get your customized solutions.

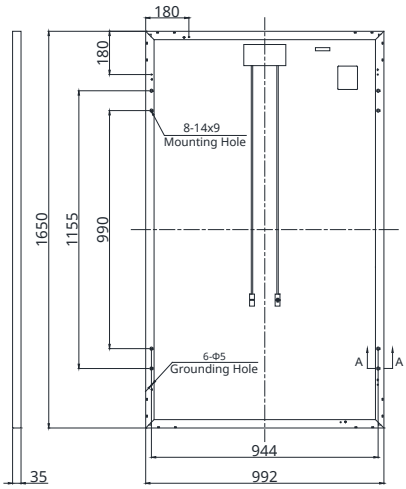
CANADIAN SOLAR INC. is committed to providing high quality solar products, solar system solutions and services to customers around the world. No. 1 module supplier for quality and performance/price ratio in IHS Module Customer Insight Survey. As a leading PV project developer and manufacturer of solar modules with over 30 GW deployed around the world since 2001.

*For detail information, please refer to Installation Manual.

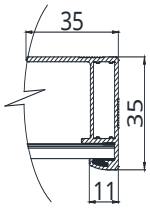
CANADIAN SOLAR INC.
545 Speedvale Avenue West, Guelph, Ontario N1K 1E6, Canada, www.canadiansolar.com, support@canadiansolar.com

ENGINEERING DRAWING (mm)

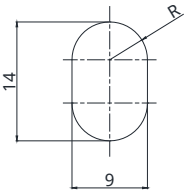
Rear View



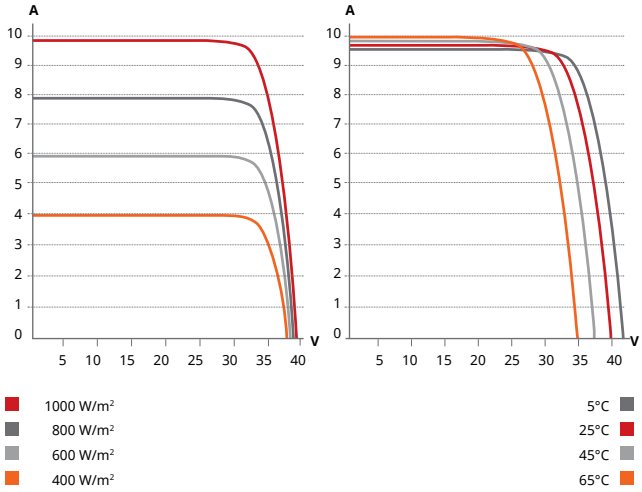
Frame Cross Section A-A



Mounting Hole



CS6K-305MS / I-V CURVES



ELECTRICAL DATA | STC*

CS6K	300MS	305MS	310MS	315MS
Nominal Max. Power (Pmax)	300 W	305 W	310 W	315 W
Opt. Operating Voltage (Vmp)	32.5 V	32.7 V	32.9 V	33.1 V
Opt. Operating Current (Imp)	9.24 A	9.33 A	9.43 A	9.52 A
Open Circuit Voltage (Voc)	39.7 V	39.9 V	40.1 V	40.3 V
Short Circuit Current (Isc)	9.83 A	9.91 A	9.99 A	10.07 A
Module Efficiency	18.33%	18.63%	18.94%	19.24%
Operating Temperature	-40°C ~ +85°C			
Max. System Voltage	1000 V (IEC/UL) or 1500 V (IEC/UL)			
Module Fire Performance	TYPE 1 (UL 1703) or CLASS C (IEC 61730)			
Max. Series Fuse Rating	15 A			
Application Classification	Class A			
Power Tolerance	0 ~ + 5 W			

* Under Standard Test Conditions (STC) of irradiance of 1000 W/m², spectrum AM 1.5 and cell temperature of 25°C.

ELECTRICAL DATA | NMOT*

CS6K	300MS	305MS	310MS	315MS
Nominal Max. Power (Pmax)	222 W	226 W	230 W	233 W
Opt. Operating Voltage (Vmp)	30.0 V	30.2 V	30.4 V	30.6 V
Opt. Operating Current (Imp)	7.40 A	7.48 A	7.55 A	7.63 A
Open Circuit Voltage (Voc)	37.2 V	37.4 V	37.6 V	37.8 V
Short Circuit Current (Isc)	7.93 A	7.99 A	8.06 A	8.12 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.

PERFORMANCE AT LOW IRRADIANCE

Excellent performance at low irradiance, with an average relative efficiency of 97.5 % for irradiances between 200 W/m² and 1000 W/m² (AM 1.5, 25°C).

* 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. Canadian Solar Inc. reserves the right to make necessary adjustment to the information described herein at any time without further notice.

MECHANICAL DATA

Specification	Data
Cell Type	Mono-crystalline, 6 inch
Cell Arrangement	60 (6 × 10)
Dimensions	1650 × 992 × 35 mm (65.0 × 39.1 × 1.38 in)
Weight	18.2 kg (40.1 lbs)
Front Cover	3.2 mm tempered glass
Frame Material	Anodized aluminium alloy
J-Box	IP68, 3 diodes
Cable	4.0 mm² (IEC), 12 AWG (UL), 1000 mm (39.4 in)
Connector	T4 series
Per Pallet	30 pieces
Per Container (40' HQ)	840 pieces

TEMPERATURE CHARACTERISTICS

Specification	Data
Temperature Coefficient (Pmax)	-0.39 % / °C
Temperature Coefficient (Voc)	-0.29 % / °C
Temperature Coefficient (Isc)	0.05 % / °C
Nominal Module Operating Temperature (NMOT)	42 ± 3 °C

PARTNER SECTION

CANADIAN SOLAR INC.
545 Speedvale Avenue West, Guelph, Ontario N1K 1E6, Canada, www.canadiansolar.com, support@canadiansolar.com

Enphase IQ 7 and IQ 7+ Microinverters

The high-powered smart grid-ready **Enphase IQ 7 Micro™** and **Enphase IQ 7+ Micro™** dramatically simplify the installation process while achieving the highest system efficiency.

Part of the Enphase IQ System, the IQ 7 and IQ 7+ Microinverters integrate seamlessly with the Enphase IQ Envoy™, Enphase Q Aggregator™, Enphase IQ Battery™, and the Enphase Enlighten™ monitoring and analysis software.

IQ Series Microinverters extend the reliability standards set forth by previous generations and undergo over a million hours of power-on testing, enabling Enphase to provide an industry-leading warranty of up to 25 years.

Easy to Install

- Lightweight and simple
- Faster installation with improved, lighter two-wire cabling
- Built-in rapid shutdown compliant (NEC 2014 & 2017)

Productive and Reliable

- Optimized for high powered 60-cell and 72-cell* modules
- More than a million hours of testing
- Class II double-insulated enclosure
- UL listed

Smart Grid Ready

- Complies with advanced grid support, voltage and frequency ride-through requirements
- Remotely updates to respond to changing grid requirements
- Configurable for varying grid profiles
- Meets CA Rule 21 (UL 1741-SA)

* The IQ 7+ Micro is required to support 72-cell modules.

UL CERTIFIED
SAFETY US-CA
E341165

To learn more about Enphase offerings, visit **enphase.com**

ENPHASE

Enphase IQ 7 and IQ 7+ Microinverters

INPUT DATA (DC)	IQ7-60-2-US	IQ7PLUS-72-2-US
Commonly used module pairings[1]	235 W - 350 W +	235 W - 440 W +
Module compatibility	60-cell PV modules only	60-cell and 72-cell PV modules
Maximum input DC voltage	48 V	60 V
Peak power tracking voltage	27 V - 37 V	27 V - 45 V
Operating range	16 V - 48 V	16 V - 60 V
Min/Max start voltage	22 V / 48 V	22 V / 60 V
Max DC short circuit current (module Isc)	15 A	15 A
Overvoltage class DC port	II	II
DC port backfeed current	0 A	0 A
PV array configuration	1 x 1 ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit	

OUTPUT DATA (AC)	IQ 7 Microinverter		IQ 7+ Microinverter	
Peak output power	250 VA		295 VA	
Maximum continuous output power	240 VA		290 VA	
Nominal (L-L) voltage/range[2]	240 V / 211-264 V	208 V / 183-229 V	240 V / 211-264 V	208 V / 183-229 V
Maximum continuous output current	1.0 A	1.15 A	1.21 A	1.39 A
Nominal frequency	60 Hz		60 Hz	
Extended frequency range	47 - 68 Hz		47 - 68 Hz	
AC short circuit fault current over 3 cycles	5.8 Arms		5.8 Arms	
Maximum units per 20 A (L-L) branch circuit[3]	16 (240 VAC) 13 (208 VAC)		13 (240 VAC) 11 (208 VAC)	
Overvoltage class AC port	III		III	
AC port backfeed current	0 A		0 A	
Power factor setting	1.0		1.0	
Power factor (adjustable)	0.7 leading ... 0.7 lagging		0.7 leading ... 0.7 lagging	

EFFICIENCY	@240 V	@208 V	@240 V	@208 V
Peak CEC efficiency	97.6 %	97.6 %	97.5 %	97.3 %
CEC weighted efficiency	97.0 %	97.0 %	97.0 %	97.0 %

MECHANICAL DATA	IQ 7 Microinverter
Ambient temperature range	-40°C to +65°C
Relative humidity range	4% to 100% (condensing)
Connector type	MC4 (or Amphenol H4 UTX with additional Q-DCC-5 adapter)
Dimensions (WxHxD)	212 mm x 175 mm x 30.2 mm (without bracket)
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

FEATURES	
Communication	Power Line Communication (PLC)
Monitoring	Enlighten Manager and MyEnlighten monitoring options. Both options require installation of an Enphase IQ Envoy.
Disconnecting means	The AC and DC connectors have been evaluated and approved by UL for use as the load-break disconnect required by NEC 690.
Compliance	CA Rule 21 (UL 1741-SA) UL 62109-1, UL1741/IEEE1547, 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 Shut Down Equipment and conforms with NEC-2014 and NEC-2017 section 690.12 and C22.1-2015 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according manufacturer's instructions.

1. No enforced DC/AC ratio. See the compatibility calculator at https://enphase.com/en-us/support/module-compatibility.
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.

To learn more about Enphase offerings, visit **enphase.com**

ENPHASE.

2018-02-08

Q Cable Specifications

Specification	Value
Voltage rating	600V
Voltage withstand test (kV/1min)	AC 3.0
Max DC conductor resistance (20ºC) (Ω/km)	5.433
Insulation resistance (20ºC)	≥20M (Ω/km)
System temperature range (ambient)	-40ºC to +65ºC (-40ºF to 149ºF)
Cable temperature rating	90ºC Dry / 90ºC Wet
Cable rating	DG
Certification	UL 3003, TC-ER equivalent
Flame test rating	FT4
Cable conductor insulator rating	THHN/THWN-2
Environmental protection rating	IEC 60529 IP67 NEMA 6
UV resistance	720h
Compliance	RoHS, OIL RES I, CE, UV Resistant, combined UL for Canada and United States
Conductor size	12 AWG
Maximum loop size	12 cm (4.75 “)
Flat cable dimensions	6 mm x 9.5 mm (0.2” x 0.37”)
Sealing cap dimensions	38.6 mm x 20 mm (1.5” x 0.7”)
Cable connector dimensions	20 mm x 1.1 mm x 6.5 mm (0.7” x 0.04” x 0.25”)

Enphase Connector Ratings

Enphase connectors in the following table have a maximum current of 20A, a maximum OCPD of 20 A, and an ambient temperature range of -40° to +79° C (-40° to +174.2° F).

Part Number	Model	Maximum Voltage
840-00387	Q-12-10-240	250 VAC
840-00388	Q-12-17-240	250 VAC
840-00389	Q-12-20-200	250 VAC
840-00385	Q-DCC-2	100 VDC
840-00386	Q-DCC-5	100 VDC