Solar Proposal and Letter of Transmittal

Bexley Police Department

559 N Cassingham Rd, Bexley, OH 43209

Prepared By:

National Energy Control

Ethan Laake

Associate Engineer

Partner Organizations

Commonwealth Solar

Light Source International

Issued - Monday, November 17, 2025

Table of Contents

Letter of Transmittal

To:
Elizabeth Ellman
Sustainability Programs Coordinator
City of Bexley
2242 E. Main St.
Bexley, OH 43209
Email: eellman@bexley.org

From:
National Energy Control LLC
8361 Broadwell Rd
Cincinnati, OH 45244
Phone: 843-457-7005
Email: jdavis@nationalenergycontrol.com

Subject – Solar PV Carport System Proposal for City of Bexley Police Department

Dear Ms. Ellman,

National Energy Control LLC (NEC) is pleased to submit this proposal for the design, engineering, and installation of a solar photovoltaic (PV) carport system as outlined in the City of Bexley's Request for Proposal. The proposed installation will cover the existing parking lot, roof, and carport areas at the City of Bexley Police Department, 559 N. Cassingham Rd., Bexley, OH 43209.

This proposal has been prepared in accordance with the instructions outlined in the RFP, with any noted exceptions included in the accompanying bid form.

Authorized Contractor Information:
National Energy Control LLC is authorized to commit to all contractual terms and conditions contained in this proposal.

- Legal Company Name: National Energy Control LLC
- Corporate Address: 8361 Broadwell Rd, Cincinnati, OH 45244
- Telephone: 513-399-6500
- Email: jdavis@nationalenergycontrol.com

Contact Person During Evaluation:
Joshua Davis
Director of Sales, Eastern Region

National Energy Control LLC
Cell: 843-457-7005
Email: jdavis@nationalenergycontrol.com

Acknowledgment of RFP Appendixes:
We acknowledge receipt of all RFP appendices provided by the City of Bexley.

Proposal Validity:
This proposal shall remain valid for at least 90 days from the date of submission. If selected, NEC intends to self-perform the work as the General Contractor.

Contractor Acknowledgment:
By signing below, National Energy Control LLC affirms that all information submitted in this proposal is true and correct to the best of our knowledge and belief.

Sincerely,

DocuSigned by:
Rick Wooliver
B980DDDDCE5F478...

Date: 11/17/2025

Rick Wooliver
President
National Energy Control LLC

Project Team and Experience

National Energy Control LLC (NEC) is a nationally operating energy solutions provider headquartered in Cincinnati, Ohio. With more than 30 years of industry experience, NEC specializes in solar energy systems, EV charging infrastructure, lighting retrofits, HVAC optimization, generator systems, and mechanical controls. Our mission is to help clients achieve sustainable energy savings by reducing operating costs by at least 30% while improving long-term facility efficiency and environmental performance.

NEC employs a dedicated team of 11 professionals. This integrated team structure allows NEC to deliver complete turnkey solutions—from concept and design through engineering, installation, and commissioning.

Throughout our company's history, NEC has completed more than 450 energy-efficiency projects nationwide for both private and public clients. Our portfolio includes solar, lighting, and mechanical control installations for commercial and industrial facilities, as well as municipal and educational institutions. Our notable clients include Bridgestone, General Dynamics, Valeo, and Closure Systems International.

Rick Wooliver, President & Founder

Zach Monhollen, Vice President – Eastern Region

Ethan Laake, Engineering Manager

Joshua Davis, Director of Sales – Eastern Region (Primary POC)

Daniel Wier, Installer

Project Approach

Our approach to implementation, once a contract is awarded, is to assign the project to our in-house Lead Project Manager (PM), who will serve as the single point of contact for both National Energy Control (NEC) and the City of Bexley. The PM takes a lead role in assigning duties and coordinating all project resources, including engineering, procurement, construction, and quality assurance.

The PM will develop a comprehensive project plan that clearly defines scope, objectives, key milestones, and deliverables. This plan will be reviewed collaboratively with City representatives to ensure alignment of expectations, priorities, and site-specific requirements. Upon approval, NEC will issue a detailed project schedule (attached as a Gantt chart) outlining the primary phases, timelines, and responsibilities for each step of the project lifecycle.

Implementation Overview

1. Pre-Construction Phase
    - Project Initiation & Contract Signing - Conduct a site assessment and engineering review to validate all design assumptions, electrical interconnection points, and structural parameters.
    - Engineering & Design – Structural design for canopy, electrical layouts, and system optimization considering Ohio's wind and snowfall loads.
    - Permitting - Coordinate with the City and the Authority Having Jurisdiction (AHJ) to obtain all required permits and approvals.
    - Interconnection - Contact the electrical supplier for the interconnection application approval
2. Procurement
    - Materials - Source high-efficiency panels, inverters, steel, and other components with a supply chain focused on reliability.
    - Shipping - Coordinate material logistics to minimize lead times and ensure delivery aligns with the project schedule.
3. Construction & Installation
    - Site Preparation – Clearing and equipment setup, tailored to minimize disruption for the site.
    - Pile Installation – Driving piles for canopy foundations
    - Conduit Installation – Underground work for cabling runs, minimizing surface disruption in parking areas
    - Steel Erection – Assembling the carport canopy framework

- Solar Module – Mounting panels on the canopy; focuses on efficient, high-quality installation for long-term performance.
- DC Wiring – Connection modules to inverters; overlaps with module install for efficiency.
- AC Wiring – Grid-side wiring and inverter setup; ensures seamless integration with Ohio's grid standards

4. Commissioning & Closeout
    - Testing/Inspection - Perform system testing, inspection, and performance verification in line with manufacturer specifications and commissioning protocols.
    - PTO – System startup, utility approach for operation, and handover training.
    - Project Completion/Handover – Final walkthrough, documentation, and warranty documentation passed along to the City.

Feasibility Assessment

If selected as the bid winner, National Energy Control (NEC) has completed a preliminary feasibility assessment and determined the following to be the most effective and beneficial solution for the City of Bexley.

Following a detailed site audit conducted by Zachary Monhollen and an extensive evaluation of the existing electrical infrastructure, NEC recommends the installation of a 280-kW solar array at the Bexley Police Department.

The proposed system configuration includes:

- **245 kW** of solar capacity installed as carport structures over the existing employee parking lot, and
- **35 kW** of solar capacity installed on the existing carport covering the police cruisers.

In addition to the solar array, NEC will provide a lighting upgrade for the Police Department, enhancing efficiency, safety, and modernization of the facility.

Should the City of Bexley prefer the six-site distributed installation alternative, NEC is fully prepared to accommodate that request and align with the City's preferred deployment strategy.

Project Specifications

PV System Details

Project Details

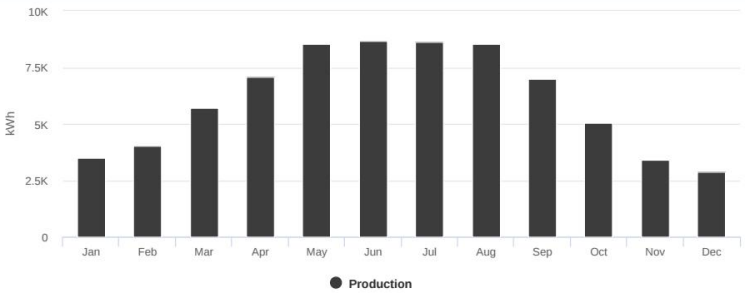
Address	559 North Cassingham Road, Bexley, OH 43209, USA
Owner	Ethan Laake
Last Modified	Ethan Laake 2 minutes ago
Location	(39.9816980203885, -82.92967618156888) (GMT -5)

System Metrics

Design	Design 1
Module DC Nameplate	56.10 kW
Inverter AC Nameplate	50.00 kW Load Ratio: 1.12
Annual Production	73.0 MWh
Performance Ratio	87.2%
kWh/kWp	1,301.6
Weather Dataset	TMY, 10km grid (39.95,-82.95), NREL (prospector)
Simulator Version	bf5cff529e-4ab72af116-951c70f68a-1a24cee528

Project Location

Energy Consumption



System Loss

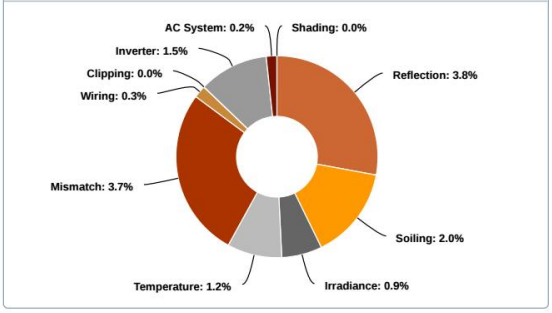


Figure 1: Helioscope Overview

This report depicts the solar carport canopy system for the Bexley Police Department. The system is designed at 56.10 kW DC with a 50.00 kW inverter, producing an estimated 73,019.5 kWh of clean energy each year. This will offset 17% of the facility's electricity use, reduce operating costs, and support the City of Bexley's sustainability goals.

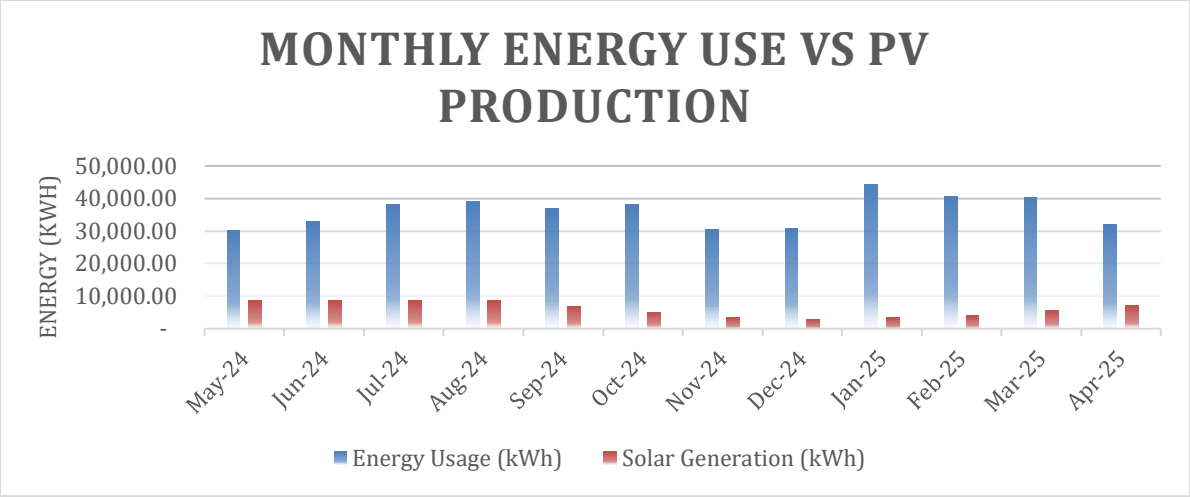


Figure 2: Solar System Offset

The provided electricity bills were utilized to compare the Bexley Police Department's monthly electricity consumption with the projected solar energy generation. The solar system is expected to produce 73,019.5 kWh of power annually, with higher production during the summer months (May–August), when sunlight is strongest. Figure 3 shows the proposed rendering of the solar canopy.

Figure 3: Solar Canopy Rendering

PV Components

Below is a list of the proposed equipment for the solar canopy. The list includes the essential pieces of the project. Specification sheets are available in Appendix A.

Equipment	Description	Warranty
Bila 535 W Dual Glass Module	144 Half Cut Bifacial Monocrystalline PERC, USA Cells, Modules made in Indiana	12 Year Product Materials & Workmanship Warranty 30 Year Linear Power Performance Warranty
CPS 50 kW, 1000 Vdc String Inverter	NEMA Type 4X Enclosure, 98.8% efficiency at peak, PVRSS certified for rapid shutdown	10 Year Warranty 15 and 20 Year Warranty Extensions
Terrasmart Parking Lot Canopy	Tee design to withstand larger snow and wind loads	20 Year Warranty

Financing Structure

Source	Type	Amount	% of Total	Notes
Total Project Cost	—	**$141,120**	**100%**	Represents the total installed system cost (56 kW × $2.52/Watt)
Federal ITC (Direct Pay)	Grant / Tax Credit	**$42,336**	**30.0%**	Direct cash payment, typically received within 6–12 months after commissioning
SRECs (Solar Renewable Energy Credits)	Performance Incentive	**$17,725**	**12.6%**	Based on projected annual energy generation and local SREC market value
Customer Equity / Cash Investment	Equity	**$81,059**	**57.4%**	Net customer contribution after incentives

Milestone	Timing (from Contract Signing)	% of Total	Payment Amount	Description
1. Contract Signing	Day 0	**50%**	**$70,560**	Initial payment to secure project and initiate engineering/design.
2. Material Delivery	Within 90 days	**25%**	**$35,280**	Payment due upon delivery of major system components (modules, racking, inverters, carport structures).
3. Installation Completion	Within 6 months	**25%**	**$35,280**	Final payment is due after full installation, inspection, and commissioning sign-off.
Total	—	**100%**	**$141,120**	Matches total project cost before incentives.

Sample Agreement

See the attached agreement in the submission email.

Post-Contract Required Information

1. Details on existing EV chargers
    - Identify any existing or planned EV charging stations on-site
2. Conduit paths/underground utilities
    - Existing underground utilities (gas, water, sewer, communications, etc.)
    - Preferred conduit runs for solar installations
    - Any unknown utility easements or as-built trenching records
3. Construction hours/limitations
    - Define allowable construction hours and days of the week, per police department request or city ordinances
    - Identify holiday or shift change periods
4. Parking access requirements
    - Provide guidelines for maintaining parking access
        1. Areas, number of spaces, traffic control/signage, etc.
5. Security & Access restrictions
    - Outline security protocols and access limitations for construction personnel
        1. Background check/badging requirements
        2. Escort policies for secure areas
        3. Restricted zones
        4. Procedures for material/tool storage overnight
        5. Emergency contact and site access approval process

References

Wyandot EMS – Contact: Kurt Clark (EMS Chief), (419) 835-4219, wyandotems@co.wyandot.oh.us

Evans Companies, Inc. – Contact: Zach Peterson (Vice President and Chief Legal Counsel), (513) 205-6373

Kemper Road Properties Group/DBA Kids First Sports Center – Contact: Jeff Metzger (Founder), (513) 226-9643, jmetzger8777@me.com

CommonWealth Solar – Contact: Daniel Wier (Owner), (859) 279-1739, daniel@cwsolarllc.com

Buckeye Gymnastics – Contact: David Holcomb (Owner), (614) 595-8891, buckgymnast@aol.com

Appendix A - Proposed Equipment Specifications

BILA SOLAR

530-550 Watt Dual Glass Module

144 Half Cut Bifacial Monocrystalline PERC

Model: AA550US-6x24GG

MADE IN INDIANA

Bilasolar.com

Cells Made in USA, Modules Made in Indiana

Proudly made in the USA with cells that qualify for domestic content requirements.

Enhanced Bifacial Performance

Bifacial Mono PERC cells provide more power output in low light conditions increasing overall energy yield.

Positive Power Tolerance

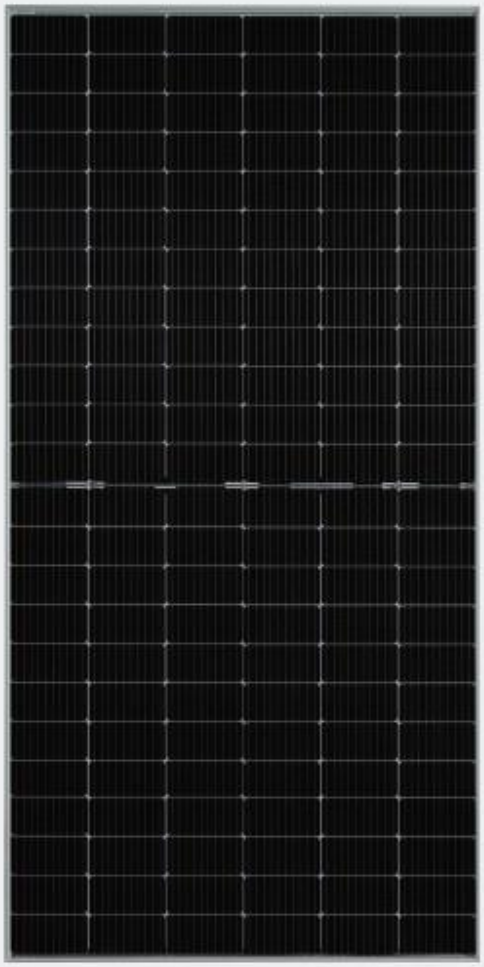
Positive power tolerance of 0~+5W guaranteeing more power.

Durable Mechanical Construction

Large format module certified to withstand snow loads (up to 5400 Pa) and extreme wind (up to 2400 Pa).

Quality Standards & Certifications

Quality components, quality built, quality performance. Conforms to UL 61730 and UL 61215.

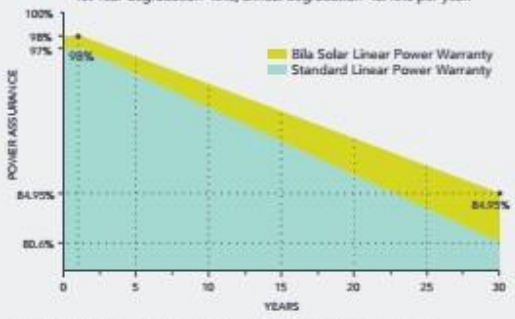


PREMIUM PRODUCT WARRANTY

12 Years — Product Materials & Workmanship Warranty*

30 Years — Linear Power Performance Warranty*

1st Year degradation <2%, annual degradation <0.45% per year.



*According to the applicable Bila Solar, Inc. Limited Product Warranty.

Caution: Read installation manual before using the product. Specifications included in this data sheet are subject to change without notice. © 2025 Bila Solar, Inc. All rights reserved.

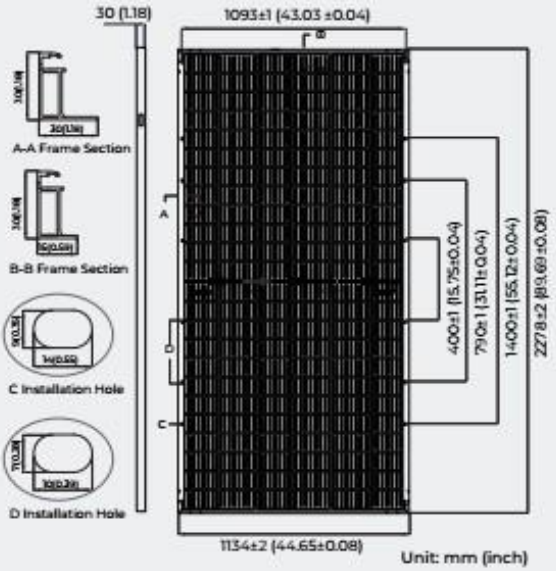
NATIONAL ENERGY CONTROL

Mechanical Specifications

Solar Cell	Mono PERC 182mm
No. of Cells	144 (6 × 24)
Dimensions	2278 × 1134 × 30mm (89.69× 44.65 × 1.18in.)
Weight	31.8kg (70.11lbs)
Junction Box	IP68 rated (3 bypass diodes)
Output Cable	4mm² (IEC), 12 AWG (UL) +400/-200mm (+15.75/-7.87in.) or customized
Connector	MC4 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, 576 pcs/53' dry van

Operating Parameters

Max. System Voltage	DC 1500V (IEC/UL)
Operating Temperature	-40°C ~ +85°C (-40°F ~ +185°F)
Max. Fuse Rating	25A
Frontside Max. Loading	5400Pa (112lb/ft²)
Backside Max. Loading	2400Pa (50lb/ft²)
Bifaciality	70%±5%
Fire Resistance	UL Type 29



Electrical Characteristics - STC

Irradiance 1000 W/m², cell temperature 25 °C, AM 1.5, Test uncertainty for Pmax: ±3%

Maximum Power at STC (Pmax/W)	550	545	540	535	530
Power Tolerance (W)			0 ~ +5		
Rated Voltage @ MPP (Vmp/V)	41.96	41.80	41.64	41.47	41.31
Rated Current @ MPP (Imp/A)	13.11	13.04	12.97	12.90	12.83
Open Circuit Voltage (Voc/V)	49.90	49.75	49.60	49.45	49.30
Short Circuit Current (Isc/A)	14.00	13.93	13.86	13.79	13.72
Module Efficiency	21.3%	21.1%	20.9%	20.7%	20.5%

Electrical Characteristics - NMOT

Irradiance 800 W/m², ambient temperature 20 °C, AM 1.5, wind speed 1 m/s.

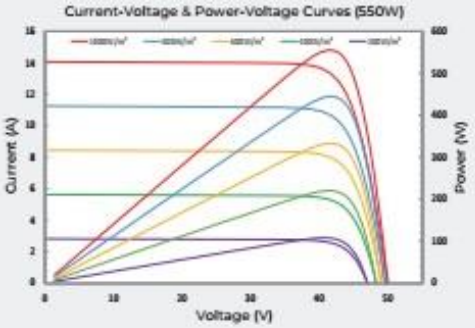
Maximum Power at NMOT (Pmax/W)	416.0	412.2	408.5	404.6	400.8
Rated Voltage @ MPP (Vmp/V)	39.79	39.64	39.49	39.33	39.18
Rated Current @ MPP (Imp/A)	10.46	10.40	10.34	10.29	10.23
Open Circuit Voltage (Voc/V)	47.32	47.18	47.04	46.89	46.75
Short Circuit Current (Isc/A)	11.30	11.24	11.18	11.13	11.07

Rearside Power Gain (Reference to 550W Front)

Rearside Power Gain	5%	15%	25%
Maximum Power (Pmax/W)	578	633	688
Rated Voltage @ MPP (Vmp/V)	41.96	42.06	42.06
Rated Current @ MPP (Imp/A)	13.76	15.04	16.35
Open Circuit Voltage (Voc/V)	49.90	50.00	50.00
Short Circuit Current (Isc/A)	14.70	16.07	17.46
Module Efficiency	22.4%	24.5%	26.6%

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



AA550U5-6x24GG-Ver2.3 (April 2025)

BILA SOLAR
Bila Solar — Made with pride in Indiana.
1249 S. White River Pkwy E. Dr.
Indianapolis, IN 46225

Bilasolar.com

CPS

Datasheet

50/60 kW, 1000 Vdc String Inverters for North America

The CPS 50/60 kW three-phase string inverters are designed for ground mount, rooftop and carport applications. The units are high performance, advanced, and reliable inverters designed specifically for the North American environment and grid. High efficiency at 98.8% peak and 98.5% CEC, wide operating voltages, broad temperature ranges, and a NEMA Type 4X enclosure enable this inverter platform to operate at high performance across many applications.

The CPS 50/60KTL products ship with either the Standard wire box or the Rapid Shutdown wire box, each fully integrated and separable with touch-safe fusing, monitoring, and AC and DC disconnect switches. The integrated PLC transmitter in the Rapid Shutdown wire box enables PVRSS certified module-level rapid shutdown when used with APS RSD-S-PLC/RSD-D products. The CPS FlexOM Gateway enables monitoring, controls, and remote product upgrades.

CPS SCA50KTL-DO/US-480
CPS SCA60KTL-DO/US-480

Key Features

- PVRSS certified for rapid shutdown
- 55 & 66 kVA rating allows max rated active power @ ±0.91 PF
- Selectable max. AC apparent power of 50/55 kVA and 60/66 kVA
- UL-1699B compliant arc-fault circuit protection
- 15-90° mounting orientation for low profile roof installs
- Optional FlexOM Gateway enables remote firmware upgrades
- Integrated AC and DC disconnect switches
- 3 MPPTs with 5 inputs each for maximum flexibility
- NEMA Type 4X outdoor rated enclosure
- UL 1741-SA certified to CA Rule 21, including SA8 - SA18
- UL 1741-SB and IEEE 1547-2018 certified
- Separable wire-box design for fast service
- Standard 10-year warranty with extensions up to 20 years

50/60KTL Standard Wire Box

50/60KTL Rapid Shutdown Wire Box

Chint Power Systems America
1380 Presidential Drive, Suite 100, Richardson, TX 75081
Tel: 855-584-7168 Mail: AmericaSales@chintpower.com Web: www.chintpowersystems.com

NATIONAL ENERGY CONTROL

CPS

Technical Data

Model name	CPS SCA50KTL-DO/US-480	CPS SCA60KTL-DO/US-480
DC Input		
Max. PV power	90 kW (33 kW per MPPT)	
Max. DC input voltage	1000 Vdc	
Operating DC input voltage range	200-950 Vdc	
Startup DC input voltage / power	330 V / 80 W	
Number of MPPTs	3	
MPPT voltage range for Pnom @ PF>0.99	480-850 Vdc	540-850 Vdc
Max. PV short circuit current[1]	163.2 A (54.4 A per MPPT)	
Number of DC inputs	15 inputs, 5 per MPPT	
DC disconnection type	Load-rated DC switch	
DC surge protection	Type II MOV	
AC Output		
Rated AC output power @ PF>0.99 to ±0.91[2]	50 kW	60 kW
Max. AC apparent power (selectable[3])	50 / 55 kVA	60 / 66 kVA
Rated output voltage	480 Vac	
Output voltage range[4]	422-528 Vac	
Grid connection type	3Φ / PE / N (neutral optional)	
Max. AC output current @ 480 Vac	60.2 A (@ 50 kVA) / 66.2 A (@ 55 kVA)	72.2 A (@ 60 kVA) / 79.4 A (@ 66 kVA)
Rated output frequency	60 Hz	
Output frequency range[4]	57-63 Hz	
Power factor	>0.99 (±0.8 adjustable)	
Current THD @ rated load	< 3%	
Max. fault current contribution (1 cycle RMS)	64.1 A (1.06/0.88 PU)	
Max. OCPD rating	125 A	125 A
AC disconnection type	Load-break rated AC switch	
AC surge protection	Type II MOV	
System and Performance		
Topology	Transformerless	
Max. efficiency	98.8%	
CEC efficiency	98.5%	
Standby / night consumption	< 1 W	
Environment		
Enclosure protection degree	NEMA 4X	
Cooling method	Variable speed cooling fans	
Operating temperature range[5]	-22°F to 140°F (-30°C to 60°C)	
Non-operating temperature range	-40°F to 158°F (-40°C to 70°C)	
Operating humidity	0-100%	
Operating altitude	13123 ft / 4000 m (derating from 9843 ft / 3000 m)	
Audible noise	<60 dBA @ 1 m and 77°F (25°C)	
Display and Communication		
User interface and display	LCD+LED	
Inverter monitoring	SunSpec, Modbus RS485	
Site-level monitoring	CPS FlexOM Gateway (1 per 32 inverters)	
Modbus data mapping	CPS	
Remote diagnostics / firmware upgrade functions	Standard / (with FlexOM Gateway)	
Mechanical		
Dimensions (H × W × D)	39.4 × 23.6 × 10.24 in (1000 × 600 × 260 mm)	
Weight	Inverter: 123.5 lb (56 kg) Wire box: 33 lb (15 kg)	
Mounting / installation angle[6]	15 to 90 degrees from horizontal (vertical or angled)	
AC termination	M8 stud type terminal block (wire range: #6-3/0 AWG CU/AL; lugs not supplied)	
DC termination[7]	Screw clamp, negative busbar (RSD version[7]), wire range: #14-#6 AWG CU	
Fused string inputs (5 per MPPT)	RSD[7] and Standard wire box: 25 A fuses provided (fuse values up to 30 A acceptable)	
Safety		
Certifications and standards	UL 1741-SA/SB Ed. 3, UL 1699B, UL 1998, CSA-C22.2 NO.107.1-01, IEEE 1547-2018, FCC Part 15	
Selectable grid standards	IEEE 1547a-2014, IEEE 1547-2018[8], CA Rule 21, ISO-NE, HECO	
Smart-grid features	Volt-RideThru, Freq-RideThru, Ramp-Rate, Specified-PF, Volt-VAR, Freq-Watt, Volt-Watt	
Warranty		
Standard	10 years	
Extended terms	15 and 20 years	

1) The sum of parallel-connected PV module short-circuit currents.
2) Active power derating begins at PF = ±0.91 to ±0.80 when max AC apparent power is set to 55 or 66 kVA.
3) Inverters are factory set to 50 kVA and 60 kVA by default. Contact CPS to enable the higher kVA setting.
4) The "output voltage range" and "output frequency range" may differ according to the specific grid standard.
5) Active power derating begins at 40°C when PF = ±0.9 and MPPTaVmin; at 45°C when PF = 1 and MPPTaVmin; and at 50°C when PF = 1 and MPPTa700 Vdc.
6) Shade cover accessory required for installation angles of 75 degrees or less.
7) RSD wire-box only includes fuses and fuse holders on the positive polarity.
8) Firmware version 17.0 or later required.

Surface Lot Canopy

Offices, schools, attractions, and municipal buildings are all typically surrounded by parking lots that offer little real estate value. Adding solar canopies to these parking lots is a viable option for increasing the value of underutilized property and creating a visible commitment to sustainability goals. Canopies can be customized with a variety of architectural and stylish finishings to bring any conceptual idea to life.

Benefits

- Our teams will partner with you to create multiple conceptual designs, each aimed at achieving desired outcomes
- Experienced project management personnel to guide you through the whole project process from design to completed construction
- Licensed engineers provide signed and sealed drawings, as well as offer support needed during the permitting process
- With installation crews across the country, we can ensure each project is completed on time and within budget

Make It Yours

- With several structural and geometric design options to choose from, every project can embody aesthetics and functionality
- Foundations can be designed to have minimal impact on existing parking stripe patterns
- Multiple finishing options and a catalog of additional accessories such as underdecking, snow guards, facia trim, and water management can turn any canopy into an architectural marvel
- Structures are engineered for various clearance heights and tilt angles to achieve any project goal desired

www.terrasmart.com | info@terrasmart.com