



Republic of the Philippines
NATIONAL POLICE COMMISSION
NATIONAL HEADQUARTERS PHILIPPINE NATIONAL POLICE
OFFICE OF THE CHIEF, PNP
Camp BGen Rafael T Crame, Quezon City

OCT 23 2020

MEMORANDUM CIRCULAR
NO.: 2020-069

**PRESCRIBING THE MINIMUM TECHNICAL SPECIFICATIONS
FOR 2kW SOLAR POWER SYSTEM**

1. REFERENCES:

- a. NAPOLCOM Resolution No. 2020-0048 entitled: "Prescribing the Minimum Standards for Solar Power System" dated January 20, 2020;
- b. NAPOLCOM Memorandum Circular (MC) No. 2019-002 entitled: "Defining the Duty and Authority of the NAPOLCOM to Prescribe Minimum Standards for Uniforms, Arms, and Equipment to be Procured by the PNP" dated January 29, 2019; and
- c. PNP MC No. 2019-016 entitled "Implementing Guidelines of NAPOLCOM Resolution No. 2019-002 Defining the Commission's Function to Prescribe Minimum Standards for Uniforms, Arms and Equipment for the Philippine National Police and Delineation of Authority to the Chief, Philippine National Police and to Set Technical Specifications of PNP Uniforms, Arms and Equipment" dated April 4, 2019;
- d. Establishment of PNP Command Center and CCTV Project under Special Allotment Release Order-SARO-BMB-D-18-0013406 dated June 7, 2018;
- e. Memorandum from D, ES dated March 6, 2020 re: Request for Approval of Technical Specifications re: Solar Power System for PNP Buildings and Facilities;
- f. Memorandum from TDC dated May 14, 2019 with subject: Approved Program of Expenditure (POE-PA) of the PNP Trust Receipts for 1st Quarter CY 2019 re: Completion and Upgrading of Solar PV Panels (On-grid to Hybrid) for PNP Command Center; and
- g. PNP UESB Resolution No. 2020-008 entitled: "Proposed Minimum Technical Specifications for 2kW Solar Power System."

2. RATIONALE:

This MC sets forth the minimum technical specifications for 2kW Solar Power System to be used by the different PNP infrastructures and/or facilities.

CERTIFIED PHOTO COPY
FROM THE ORIGINAL


JENNIFER D. BONJOC
POLICE LIEUTENANT COLONEL
Chief, Administrative Section

3. SITUATION:

Solar power is a clean green electricity sourced from the sunlight or in some cases, from the heat of the sun. With the use of solar power in producing electricity, there is no greenhouse gas emissions that are released into the atmosphere. Installing solar power systems in a PNP infrastructure and/or facility setting generally means setting up a solar photovoltaic on the roof or other appropriate area.

Presently, the electricity of the various infrastructures/facilities of the PNP such as headquarters and police stations, at different regions is being supplied through electricity grid from city or rural areas. However, when an electrical supply fails and power outage occurs, the administrative and operational works of the PNP are being affected. Therefore, an alternative green power supply such as solar power which can supplement the entire or partial electricity consumption of the PNP is necessary.

As the PNP takes a step towards using an alternative source of energy, it considers Hybrid Solar Panel system, to ensure that there will be adequate power supply in its facilities and a backup power source when there are power shortfalls. Hence, there is a necessity to formulate the minimum technical specifications for solar power system.

4. PURPOSE:

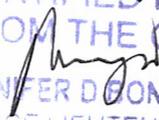
To provide and establish the minimum technical specifications for 2kW Solar Power System that will serve as reference in the procurement of the said solar power system.

5. DEFINITION OF TERMS:

For purposes of this MC, the following terms shall mean:

- a. **Ampere (A)** – is the unit for measuring electricity.
- b. **Electric current** – is measured in amperes (amps) and refers to the number of charges that move through the wire per second.
- c. **Hybrid Inverter** – (sometimes referred to as a multi-mode inverter) is an inverter which can simultaneously manage inputs from both solar panels and a battery bank, charging batteries with either solar panels or the electricity grid (depending on which is more economical or preferred).
- d. **Ingress Protection (IP)** – refers to the level of protection offered by an electrical enclosure, against solids and liquids. In an environment where dust or water could damage electronic components, a sealed enclosure is used to prevent such ingress and safe house the electronics.
- e. **Input Voltage** – is a supply voltage in the system.
- f. **Maximum System Voltage (V_{mpp})** – is the voltage when the power output is at the greatest. It is the actual voltage you want to see when it

CERTIFIED PHOTO COPY
FROM THE ORIGINAL


JENNIFER D. CONJOC
POLICE LIEUTENANT COLONEL
Chief, Administrative Section

is connected to the MPPT solar equipment (like an MPPT solar charge controller or a grid-tie inverter) under standard test conditions.

- g. **Module Efficiency** – efficiency rating of solar modules or panels to use the light from the sun generate electricity. The higher the efficiency rating, the less number of panels to be needed to make up a system that meets the energy requirements.
- h. **Monocrystalline** – more often called single-crystal silicon, in short mono c-Si or mono-Si, is the base material for silicon-based discrete components and integrated circuits used in virtually all modern electronic equipment. Mono-Si also serves as a photovoltaic, light-absorbing material in the manufacture of solar cells.
- i. **Open Circuit** – is the difference of electrical potential between two terminals of a device when disconnected from any circuit. There is no external load connected. No external electric current flows between the terminals.
- j. **Output Voltage** – is a voltage produced by a device such as voltage regulator.
- k. **Photovoltaic** – refers to Photo = "light" and photons = energy particles coming from sunlight; voltaic = producing a voltage or volts. Abbreviation = PV.
- l. **Polycrystalline** – or multicrystalline silicon, also called polysilicon or poly-Si, is a high purity, polycrystalline form of silicon, used as a raw material by the solar photovoltaic and electronics industry.
- m. **Power Supply** – is a source of power that supplies electric power to an electrical device.
- n. **Short Circuit** – refers to how many amps (i.e. current) the solar panels are producing when not connected to a load.
- o. **Solar cell, or photovoltaic cell (PV)** – is an electrical device that converts the energy of light directly into electricity by photovoltaic effect

6. TECHNICAL SPECIFICATIONS:

Description: A Solar Power System is a power producing equipment with specific dimensions consisting of solar cells and semiconductor properties enclosed within a material to serve as protection from environment. Such properties convert solar energy into electricity through process of photovoltaic effect. It supplies power directly to the load thru compatible solar power inverter and usually mounted on the rack that is fixed to the ground or rooftop.

CERTIFIED PHOTO COPY
FROM THE ORIGINAL


JENNIFER BONJOC
POLICE LIEUTENANT COLONEL
Chief, Administrative Section

Page 3 of 4

Chief, Administrative Section

A. Solar PV Panel

- a. Cell Type : Polycrystalline / Monocrystalline
- b. Nominal Power : 150W
- c. Module Efficiency : 15%
- d. Open Circuit Voltage : 21V
- e. Short Circuit Current : 8.5A
- f. Maximum System Voltage : 1000V
- g. Maximum Current : 8.5A
- h. Environmental Rating : IP65
- i. Dimension : Manufacturer's Standard
- j. Maximum Weight : 13.5kgs

B. Hybrid Inverter

Description: It is an electrical equipment which receives electrical direct current from compatible solar PV panels and interconnects to battery banks, local electrical loads (off-grid) or electrical grid networks.

- a. Rated Power : 2kW
- b. Input/output Voltage : Philippine Standard
- c. Frequency : Philippine Standard or Autosensing
- d. Display and Communication : Appropriate Display/Monitor and Communication Connection (Wired and Wireless)

13. EFFECTIVITY:

This MC shall take effect immediately after 15 days from filing a copy thereof at the UP Law Center in consonance with Section 3, Chapter 2, Book VII of Executive Order 292 otherwise known as the "Revised Administrative Code of 1987," as amended.



CAMILO PANCRATIUS P CASCOLAN
Police General
Chief, PNP

- Distribution:
- D-Staff
 - P-Staff
 - D, NSUs
 - IG, IAS
 - RD, PROs

CPNP Ltr's '20 S083451



S083451

- Copy furnished:
- Command Group
 - SPA to SILG

**CERTIFIED PHOTO COPY
FROM THE ORIGINAL**

JENNIFER D EONJOC
POLICE LIEUTENANT COLONEL
Chief, Administrative Section