



RFQ-HCR-SYR-2024-78
Annex A - Terms of Reference and Technical
Specifications
for
SUPPLY, DELIVERY AND INSTALLATION OF SOLAR
POWER SYSTEM FOR UNHCR OPERATION IN WATA
ELKHAN, LATAKIA- SYRIA.

1. Objective:

Provision of Solar Energy System for Wata El khan Agriculture Guidance unit.

Location:

- Wata El khan, Latakia Governorate – Syria.

2. General Terms:

- Brand and data sheet in English or Arabic must be in the technical offer for items # 1,2 and 3. with naming the supported documents in the technical offer.
- During the implementation phase, the bidder is committed to submit samples for all materials for UNHCR approval before delivery to the site. No samples are required during the offers' submission.
- The bidder should provide a warranty against manufacturing defect, damage, or unnatural wear for a minimum period of:
 - 1 year for the inverter starting from the delivery day.
 - 3 years for lithium Battery starting from the delivery day.
 - 6 months warranty period / Performance Guarantee for the remaining items

Technical requirement:

Solar system

1. Inverter Charger:

- Rated Power Minimum: 6200 Watt
 - Dual outputs, for smart load management
 - Maximum PV input current increases to 27A
 - Zero (0ms) transfer time to protect mission-critical loads such as servers and ATMs
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- High PV input voltage range
- Detachable LCD control module with multiple communications
- Selectable high-power charging current
- Built-in Wi-Fi for mobile monitoring.
- Configurable AC/Solar input priority via LCD setting
- Reserved communication port for BMS (RS485 or CAN-BUS)
- USB On-the-Go function
- AC Charger: 120A
- Parallel operation up to 9 units

2. Battery:

- Type: Lithium LifePo4 - 16 New Cells Great A
- Nominal Voltage: 48v
- Rated Power: 200Ah /10 KW
- Display: LCD
- BMS Connection Interface: RS485/RS232/CAN-BUS
- Should be built-in WIFI or Bluetooth
- Cycles : >6000
- WIFI or Bluetooth : Yes
- 4-year warranty

3. Solar Panel Specs:

- Type:N-Type / Hi-MO 6 / Hi-Mo 7
 - Minimum Watt: 585 Watt or more
 - Efficiency: >=21%
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- Operating Temperature: -40 °C to 70 °C
- Junction Box IP68, three diodes
- Solar voltage should be compatible with the requested inverter

4. Iron base:

measuring 4x6 and with a thickness of no less than 2.5 mm, is used to securely hold the panels; the iron must be rust-proof or (حديد مزيبق).

6 fixation points for each panel has, and all joints are secured with rust-proof insulated bolts, along with epoxy for the base mounting screws."

5. Accessories:

The work includes installing all necessary high-quality accessories to ensure full protection, safe system operation, and optimal performance. This includes and not limited to:

- Electrical connection between battery and inverter: 50mm
- Electrical connection between Solar and inverter 2x10mm, minimum requirement 15 Meters.
- The cable between the inverter and the main electrical panel is 2x6mm.
- All cables, electrical connections and conductors should be pure copper.
- All Electrical connections should be completely wired inside proper plastic cable trays or tubes and connections must be all inside junction boxes.
- Fuses are required to protect the system from electrical overloads and short circuits.
- An electrical panel with needed circuit breakers must be installed on (input, output, solar panels, and batteries).
- Digital amp breakers 25 Ampere (Digital Adjustable Low High Voltage Protection Circuit Breaker for input and output).



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Internal electricity network

1. Switch: QTY * 12

Supplying and installing an electrical switch, insulated and protected by a plastic cover, high quality locally made or equivalent, including all necessary accessories.

The work includes installing all necessary wires, cabling not less than 1.5mm², and conductors, with a cross-section that suits the installation place according to the UNHCR project supervisor's instruction.

2. Socket: QTY * 20

Supplying and installing 16 ampere American Socket outlet-16 A-230 V with lock, first quality with all needed accessories.

- The work includes installing all necessary wires, cabling, and conductors, with a minimum cross-sectional area of 3mm² for the wires.
- The contractor is responsible for connecting the socket to the electrical source, and the method must be approved by a UNHCR project supervisor.

3. Ceiling-mounted LED luminaire 12 Watt: QTY * 2

Supplying and installing Surface-mounted LED Luminaire, 12 W (At Least), 220V, Chinese-made first quality or equivalent with all needed accessories.

- Shape, colour, and lighting temperature are UNHCR project supervisor instructions.
- The contractor should be responsible for good and elegant installation.
- Light should be connected to the electricity with all needed materials and accessories.
- The work includes installing all necessary wires, cabling, and conductors, with a minimum cross-sectional area of 1.5mm² for the wires.
- The contractor is responsible for connecting the device to the electrical source, and the method must be approved by a UNHCR project supervisor

4. Ceiling-mounted LED luminaire 18 Watt: QTY * 12

Supplying and installing Surface-mounted LED Luminaire, 18 W (At Least), 220V, Chinese-made first quality or equivalent with all needed accessories.



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- Shape, colour, and lighting temperature are UNHCR project supervisor instructions.
- The contractor should be responsible for good and elegant installation.
- Light should be connected to the electricity with all needed materials and accessories.
- The work includes installing all necessary wires, cabling, and conductors, with a minimum cross-sectional area of 1.5mm² for the wires.
- The contractor is responsible for connecting the device to the electrical source, and the method must be approved by a UNHCR project supervisor

5. Electrical panel: QTY * 1

Supplying and installing the electrical panel fits for 8 circuit breakers, made from PVC with transparent cover, external mounting, locally made, first quality or equivalent with all needed works and materials.

- The electrical panel shall contain all needed indicator lights.
- Should be suitable for mounting the circuit breakers and electric installation on an approved holder fixed onto the back of the cover of the electrical board panel.

6. Electrical circuit breaker: QTY * 6

Supplying and installing electricity circuit breaker, thermal-magnetic operation, 10, 16, 20, 25, 32 & 40 Ampere. With all needed works, connection works, materials, and accessories

All circuit breakers should meet all the following specifications and conditions.

- Circuit breaker shall be European, or Japanese-made high quality or their equivalent.
- Type should fit the use according to UNHCR project site supervisor instructions
- Rated frequency 50 Hz.
- Circuit breaker shall be installed and connected to the power supply line and shall be fixed into the electrical board panel.



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Other work

1. Visibility board: QTY * 1

Supplying and installing a plexiglass sign board consists of two sheets of minimum 3mm thickness each, the back sheet is white and the front one is transparent with a total dimensions of 90 x 60 cm.

- The UNHCR project supervisor will choose installation places and writing formulas.
- The laser engraving method on the front side of the white sheet.
- Acrylic colours should be used to paint the engraved phrases according to the colours chosen by the UNHCR project supervisor.
- Fixation should be implemented using chrome bolts (each one 4 bolts), with all needed accessories.
- All materials tools and accessories should be high quality and should be approved by the UNHCR project supervisor.
- Edges should be smoothed well.

Bill of Quantities

Sn	Item	Unit	QTY
Solar system			
1	Inverter Charger	Unit	1
2	Battery Specs:	Unit	1
3	Solar Panel	Unit	8
4	An iron base	LM	1
5	Accessories of the solar system	LM	1
Internal electricity network			
1	Switch	Unit	12
2	Socket	Unit	20
3	Ceiling-mounted LED luminaire 12 Watt	Unit	2
4	Ceiling-mounted LED luminaire 18 Watt	Unit	12
5	Electrical panel	Unit	1
6	Electrical circuit breaker		6
Other work			
1	Visibility board	Unit	1

Thank you
