OFFICE OF THE INSPECTOR GENERAL OF POLICE UT-LADAKH.

NIT No **08** of 2020
Dated: 24.12.2020

For and on behalf of the Lieutenant Governor of UT Ladakh e-tenders are invited from original manufactures, authorized distributors, agent, stockiest, MSME Unit holder's for Supply, transportation, installation, commissioning along with 3 years Annual Maintenance Contract (AMC) for 51, Solar Power plants to be installed at 47 different locations in entire UT Ladakh in different establishments of Ladakh Police. Details of Solar Power Plants and types of equipment with quantities required thereof is appended hereunder as Annexure-A. The summary of requirements is tabulated as below: -

I. Solar PCU

	Solar PCU unit types			
	5 KW	7 KW	10 KW	Total
Quantity required	**18**	**14**	**19**	**51**

II. Batteries.

	Solar Batteries types.		
	Tubular deep cycle battery C10 of 12V ,150 Ah	Tubular deep cycle battery 10 of 12V ,200 Ah	Total
Quantity required	**540**	**124**	**664**

III. Panels.

	Solar Panel types	
	Photo Voltaic Panel 370W MONO PERC	Total
Quantity required	**1122**	**1122**

IV. Other accessories.

		Accessories.							
	Battery rack required for no of batteries.	Cable 1C 4Sq.MM (in Mtrs)	Cable 2C10Sq. MM (IN Mtrs)	Cable 2C16Sq. MM (IN Mtrs)	DC Combiner Box (In no)	DC Distribution Box (In no)	AC Distribution box. (In no)	Earthing Protection (In set)	Module mounting structure. (in Watt)
Qty req.	**664**	**4590**	**5760**	**3420**	**512**	**51**	**51**	**51**	**415140**

Details of the project and tender are as under:

1- Scope of Work.

It includes two broad categories of works:

i. **Part-I: Supply, transportation, installation and commissioning :**
The broad scope of the works includes Supply, transportation, installation and commissioning of 51 Solar Power Plant (SPP) at 47 different location of UT Police Ladakh. Details thereof can be seen in the **Annexure-A&B** to this NIT.

As mentioned in Annexure-A &B of the NIT, Various solar Power Plants having different power supply capacities are to be installed at 47 different locations in various Police establishments spread across the entire UT of Ladakh. To a great extent the proposed power plants at each location differs from one another in terms of power supply/ output capacities, number of solar panels, number & types of batteries and PCU types etc. All the proposed power plants are to be installed and commissioned at all the proposed locations during the current financial year.

ii. **Part-II: Warranty and Annual Maintenance Contract :**

a. **Warranty:** Supplier or successful bidder shall provide free maintenance and warranty for all the equipment's viz Battery, PCU and Solar panel etc for initial three years. Warranty period shall be reckoned from the date of commissioning of all the 51 solar power plants

in complete form irrespective of any differences in time duration between completion of 1st and the last i.e 51th SPP. Meaning that warrant period shall be reckoned from the date of commissioning of last i.e 51th SPP.

b. **Annual Maintenance Contract (AMC):** Immediately after the expiry of warranty, period supplier or successful bidder have to enter into three years AMC mandatorily with the Ladakh Police. AMC includes servicing of components such as Solar Photo Voltaic (SPV) module, PCU / Inverter, Battery Bank, Junction Box, inter connecting wires / cables, module-mounting structure etc. of Solar PV Power Plant for 03 year from the date of expiry of warranty period.

c. The Annual Maintenance Contract (AMC) have to be mandatorily undertaken by the successful bidder **@3 %** (per annum) of final contact value. AMC shall start soon after the expiry of warranty period mentioned above.
Details of Warranty and Annual maintenance Contract requirements (AMC) are appended as **Annexure-D** to this NIT.

2. **Minimum Criterion for Bidding.**
The bidder must have following minimum criterion for bidding:
a. The bidder must have ISO 9001 certification for quality management systems.
b. The bidder must be ISO14001-certificate holder.
c. The bidder must have annual turnover of Rs. 1.0 Crore in the last two financial years.
d. GST registration certificate.
e. Latest GST return filing statement and PAN card.
f. The bidder must have authorized Service Centre in Ladakh.
g. The bidder must have dealership/ stockiest/ MSME unit/manufacturer authorization certificate.
h. The bidder must have PV modules and PCU test certificate from BIS or IEC.
i. The bidder must have experience of supplying, installing and testing/ commissioning Solar Photo-Voltaic Power Plants with any Government, Semi Government or PSU unit. in India preferably in harsh climatic conditions of Ladakh.
j. Details of the income tax return if applicable.
k. Bidder must be ready to enter into a mandatory AMC with Ladakh Police for a period of three years on conclusion of warranty period @3% per Annam of the total amount at which the project is awarded to successful bidder. In this regard bidder shall submit an undertaking taking duly notarized on an affidavit.

3- **Terms and Conditions:**

a. The tenders to be opened in two stages i.e. Technical bid on __12.2020 and Financial bid on **___.12.2020** at PHQ Ladakh Police, Leh in presence of duly authorized committee. Bidders will have the discretion to remain present beside the committee during the tender opening process but it not a mandatory requirement. As such absence of any bidder or any other representative thereof on his behalf during the tender opening process will not debar / restrict department from opening the tender on due date in presence of authorized committee and to process it further for its logical conclusion.

b. Bidder has to submit soft copy of document duly stamped and signed through online mode however hard copies of similar documents thereof may also be submitted in PHQ Ladakh in a sealed envelope. The Tender should be submitted in the following manner: -

i. The **First leaf** should contain the tender Fee of Rs. 4000/-(Non-refundable) & EMD of Rs. 9.50 Lakhs /- in the form of FDR/CDR drawn in favor of "Superintendent of Police, PHQ, UT Ladakh Police, Agling, Leh". It should also contain various other related documents as mentioned in the check list appended as **Annexure- C.** The First leaf should also contain the details of the equipment's, technical specifications and designs etc

ii. The **Second leaf** should contain the **Financial Bid** only. Rates offered should be strictly as per specifications mentioned in this tender document on BOQ format enclosed with the NIT.(**Note:** It is to be ensured that second leaf in the form of BOQ to be submitted only through online mode and as such no hard copy of second leaf is required to be submitted).

c. All the terms and conditions of tender including the technical specifications should be carefully studied for the sake of submitting complete and comprehensive tender documents and for submission of BOQ. Failure to comply with any of terms and conditions or instructions of the tender will lead to rejection of bid thereof.

d. Pre-bid Samples of the following components of the power plant must be made available at PHQ Ladakh Police Agling by or before the tender opening date i.e. .12.2020. Pre-bid samples with due marked, sealed and packed should reach Office of AIG (Prov.) PHQ Ladakh Police, Agling Leh Ladakh by or before . .2020. Tenders application without the pre-bid sample shall not be entertained for further technical and financial bid evaluation. Samples required to be submitted for the following components/ items:

1. Sample of the solar panel.
2. Sample of the of battery
3. Samples of the PCU.

(It is to be noted that cost to be incurred on the account of delivery and re-collection of the pre-bid samples to be completely borne by the participating bidders).

e. Technical specification of solar panel, PCU, barratry and accessories incomplete form must be accompanied with pre-bid samples in a sealed envelope. Each pages of the specification should be signed and stamped on each pages. The same specification should also be uploaded while filing the tender in the shape pdf and in this regard each pages of said document should be duly self-attested and stamped.

f. The quantities of items and power plant capacities indicated in the e-NIT are tentative in nature and as such, if required, PHQ has the discretion to introduce any changes thereof with due notice to all the bidders.

g. Likewise, if required, there shall be post bid inspection of the items either at the point of production or shipments or at point of installation which shall be conducted by the authorized committee of the department.

h. That the word **"Project or Work** "means supply, Transportation, installation, commission and 3 years warranty and subsequent 03 years annual maintenance contract for 51 solar plants mentioned in Annexure-A as single unit of work in complete form, to be executed by any single party/ bidder without splitting of any part or component of the project thereof.

i. That the installation of 51 units of Solar Power Plant at various locations shall be considered as single Project or work. As such evaluation for deciding the L1 shall be made by considering the rate quotes for equipment, transportation, installation and commissioning fall the 51 units in totality. As such tender evaluation **shall be not be** based on any of the following criteria:

a. On any individual Plant basis.
b. On any particular group of plant basis.
c. On any location basis and
d. On rate quotes for any particular equipment in singularity basis.

In view of above-mentioned terms & conditions, comparison among the various tenders for the rate quotes mentioned in BOQ for deciding the L1 shall be based on the totality of amount quoted for complete supply, transportation, installation and testing/ commissioning of all the 51 units together as one project or work.

j. The quantities shown in the BOQ (column-2) is the item wise summary of various types of equipment required for installation all the designated 51 Solar Power plants. Therefore, comparison for deciding the L1 shall be based on the total amount quoted for component-A and B of the project as indicated as Grand total at Column-6 of BOQ. Except for above mentioned method no individual plant based or item wise comparison shall be taken into consideration for choosing the L1, so that Project or work may be allocated to any single party in totality without any splitting of work for hassle free and efficient implementation of the work.

k. Rates quotes to be made by taking complete consideration of all the likely costs to be incurred on the account materials supplies (including all types of taxes), transportation to all the 51 locations, installation, testing / commissioning and breakage/ damage loss till testing / commissioning of project and necessary handing over thereof to the department. No separate transportation,

storage/climatic induced damages to batteries etc or any other type of breakage/ pilferage loss compensation uptill commissioning and handing over of project to the department shall be borne by the department.

l. Likewise, if the equipment's / materials proposed to be supplied by the L1 party does not fulfill the quality and specifications of the items mentioned in instant e-NIT at Annexure-B or if it does not matches with the pre-bid samples during the process of supply and inspection thereof at any later stages then the L1 bidder loses his/her right to claim the tender and as such next lowest bidders shall be evaluated for allocation of work/ project.

m. The bidders shall furnish an undertaking or affidavit duly attested by notary that design of their equipment is free from legal encumbrances and that no legal case of any kind of litigation regarding the patent design is pending in any court of law. Likewise, the bidder is not debarred by government authority for execution of government works.

n. The bidders should to ready to include warranty and AMC (as per the terms mentioned in the instant NIT) besides supply, installation and commissioning work as mandatory requirement.

o. No claim shall be laid against the department either in respect of interest or depreciation in value for the amount of security deposit and or earnest money. In the case of bank deposits, the department shall not be responsible for any loss on account of failure of the bank.

p. The tenderers shall have to submit a check-list of documents supporting the tender in pdf format as detailed in **Annexure-C** to the NIT.

4-Other instructions:

i. Request for extension on the last date of receipt of tenders shall not be entertained.

ii. In case of any unforeseen technical reason, if required, the purchaser reserves the right change the specification and to order additional quantity or reduce the quantity of the material advertised at the time of placement of order for which the quoted rate shall remain valid for period of six months from the date of initial supply order to the selected firm.

iii. Any litigation or any other legal proceedings in connection with this work shall remain under the preview / jurisdiction of local court of Union Territory of Ladakh.

iv. In case of any doubt, dispute or differences arising out of the contract or terms of tender, the same shall be referred to Departmental Purchase Committee of PHQ Ladakh for deciding the remedial measures and recommendations thereof shall be binding on both the parties.

v. No other conditions except those mentioned above will be acceptable.

vi. Offers not providing clause by clause compliance shall be considered non-responsive and shall not be evaluated.

vii. Offers not providing minimum array capacity of designated rating (Wp) shall be considered non-responsive and shall not be evaluated.

viii. Bidder not willing to provide required warranty conditions and mandatory Annual Maintenance Contract (AMC) with Ladakh police as per terms and conditions laid out in instant NIT shall be considered non-responsive and shall not be evaluated.

5-**Earnest Money:**

i. Tenders shall be accompanied with the earnest money Rs. 9.50 Lakhs (Rupees Nine Lack fifty thousand) in the form of CDR/FDR/ pledged to SP PHQ UT Ladakh.

ii. The bidder shall have to upload scanned copy of Earned Money Deposit in the shape of CDR/ FDR from any nationalized bank/State owned banks. However, the successful tenderer would have to deposit the Earnest Money in original with Police Hqrs, before allotment of the work or issuance of the supply order. No interest shall be payable by the department on the EMD deposited by the bidders.

iii. Tender without EMD shall be rejected.

iv. Earnest money deposit shall be released in favor of the unsuccessful tender(s) within one month after the final acceptance of the tender.

6-**Security Deposit**:

The successful tenderer has to provide security deposit equivalent to 10% of the value of the contract in the CDR/FDR pledged to SP PHQ UT Ladakh at the time the contract is allotted. Security deposit will be released after the successful completion of the project.

7-**Delivery / installation and testing / commissioning**

1. The installation, testing and commissioning timeline shall be agreed at the time of finalization of the work order by the Ladakh Police and it shall be mandatory for the L1 suppliers to comply with complete direction of Ladakh Police with regard to time lime targets.
2. In case of failure to install and test and commission all the 51 Solar Power plant as per agreed timeline then the department(Ladakh Police) shall have the right to make a risk purchase at the cost of supplier and/or cancel the contract and claim reasonable compensation/damages. The

contract of supply shall be repudiated if the supplies are not made within the prescribed period and to the satisfaction of Ladakh Police.

8-**Validity:**

The tender shall remain unconditionally valid for a period of 12 months from the date of opening of the tenders.

9-**Payment schedule:**

Payment @ 25% shall be released in a phased manner in four (04) installments subject to complete testing and provisional commissioning of number of Power plant Units under each category as per below mentioned plan. Payment shall be released after due certification by the appropriate committee to be constituted by the PHQ Ladakh to the effect that the SSP unit is well functional and is fit for usage(i.e provisional commissioning).

All the four phases are scheduled to be completed as per the timeline to be decided by Ladakh Police separately as mentioned above. Project cost shall remain unchanged at any cost on the account of any excuses related to delay in work execution or any changes in market forces etc.: -

Type of unit	**Number of Units**	**1st Phase**	**2nd Phase**	**3rd Phase**	**4th Phase**
PCU Unit 5KW	18	4	5	5	4
PCU Unit 7 KW	14	3	4	4	3
PCU Unit 10 KW	19	4	5	5	5
Total	**51**	**11**	**14**	**14**	**12**
Scheduled percentage amount of payment to be released on completion and commissioning of numbers of SPP shown against each phases.	-	**25%**	**25%**	**25%**	**25%**

Note: Payments of AMC shall be released on yearly basis. AMC shall be for three years and will be reckoned soon after the expiry of warranty period.

10-**Penalty:**

In case of failure on the part of the tenderer to fully commission the project on stipulated time frame then penalty @ 5% of the project cost per month shall be levied on the tenderer.

11-**Changes:**

No variation or modification or waiver of any of the terms and conditions and specifications etc shall be deemed valid unless mutually agreed upon in writing by both the purchaser and the supplier after the allotment of works.

12-**Post bid material inspection:**

If required, the material inspection shall be done at the factory location before shipment of the material from factory location before shipment or any other location to be notified by the department.

13-**Agreement:**

The successful tenderer(s) shall be required to execute an agreement on a valid stamped paper for strict compliance of the terms and conditions of the contract, vis-à-vis the NIT and the supply order within seven days of placement of the order.

Addl. Director General of Police,
UT-Ladakh.

Annexure-A

Details of the Solar Power Plant of UT-Police Ladakh.

S. no	Unit	Location/address.	No solar PCU units required				No of Battery required			No of Battery racks required.	No of S Panel required	Other accessories							
			5 KW(96V)	7 KW (120V)	10 KW (120V)	Total	12V 150 AH	12V 200 Ah	Total		370 W	Cable1 C 4Sq MM (n Mtrs)	Cable2C 10Sq MM (n Mtrs)	2C16M M (IN Mtrs)	ARY Junction box	Main Junction Box	AC Distribution box.	Earthing Kit	Solar Panel Module (in Watt)
1	Camp Office cum IGP residence	AglingLeh	0	0	1	1	20	0	20	20	30	90	0	180	1	1	1	1	11100
2	DIG residence	Skara Leh	0	0	1	1	20	0	20	20	30	90	0	180	1	1	1	1	11100
3	IRP BnHq.	AglingLeh	0	0	1	1	20	0	20	20	30	90	0	180	1	1	1	1	11100
4	CID	Leh	0	0	2	2	0	40	40	40	60	180	0	360	2	2	2	2	22200
5	Traffic	AglingLeh	0	1	0	1	0	10	10	10	24	90	180	0	1	1	1	1	8880
6	UTDRF	SkampariLeh	0	1	0	1	0	10	10	10	24	90	180	0	1	1	1	1	8880
7	Telcom Leh	DPL Leh	2	0	0	2	0	16	16	16	24	180	360	0	2	2	2	2	8880
8	DPO	SkampariLeh	1	0	0	1	0	8	8	8	12	90	180	0	1	1	1	1	4440
9	P/S Leh	Leh	0	0	2	2	40	0	40	40	60	180	0	360	2	2	2	2	22200
10	P/S Nubra	Nubra	0	1	0	1	10	0	10	10	24	90	180	0	1	1	1	1	8880
11	P/S Nyoma	NyomaLeh	0	0	1	1	20	0	20	20	30	90	0	180	1	1	1	1	11100
12	W P/S Leh	Polo ground Leh	0	0	1	1	20	0	20	20	30	90	0	180	1	1	1	1	11100
13	PP Housinhg Colony	Leh	0	1	0	1	10	0	10	10	24	90	180	0	1	1	1	1	8880
14	PP Choglamsar	DPL Choglamsar	1	0	0	1	8	0	8	8	12	90	180	0	1	1	1	1	4440
15	PP Khaltsi	KhaltshiLeh	1	0	0	1	8	0	8	8	12	90	180	0	1	1	1	1	4440
16	PP Kharu	KharuLeh	1	0	0	1	8	0	8	8	12	90	180	0	1	1	1	1	4440
17	PP Tangtse	TangtseLeh	0	1	0	1	10	0	10	10	24	90	180	0	1	1	1	1	8880
18	PP Chushul	ChushulLeh	0	1	0	1	10	0	10	10	24	90	180	0	1	1	1	1	8880
19	PP Turtuk	TurtukLeh	0	1	0	1	10	0	10	10	24	90	180	0	1	1	1	1	8880
20	PP Panamik	PanamikLeh	0	1	0	1	10	0	10	10	24	90	180	0	1	1	1	1	8880
21	TFC Tangtse	TangtseLeh	0	0	1	1	20	0	20	20	30	90	0	180	1	1	1	1	11100
22	TFC cum PCP North Pullu	PulluLeh	0	0	1	1	0	20	20	20	30	90	0	180	1	1	1	1	11100

	TFC cum PCP Sarchu	SarchuLeh	0	0	1	1	0	20	20	20	30	90	0	180	1	1	1	1	11100
24	PCP Mahay	MahayLeh	0	0	1	1	20	0	20	20	30	90	0	180	1	1	1	1	11100
25	PCP Upshi	UpshiLeh	0	1	0	1	10	0	10	10	24	90	180	0	1	1	1	1	8880
26	PCP Khaltsi	KhaltsiLeh	1	0	0	1	8	0	8	8	12	90	180	0	1	1	1	1	4440
27	SSP Residence	ResidenceLeh	0	0	1	1	20	0	20	20	30	90	0	180	1	1	1	1	11100
28	ASP Residence	ResidenceLeh	1	0	0	1	8	0	8	8	12	90	180	0	1	1	1	1	4440
29	DySPHqresi.Leh	Leh	1	0	0	1	8	0	8	8	12	90	180	0	1	1	1	1	4440
30	DPO	BarooKargil	0	0	2	2	40	0	40	40	60	180	0	360	2	2	2	2	22200
31	District PCR	PCR PP Bazar	1	0	0	1	8	0	8	8	12	90	180	0	1	1	1	1	4440
32	P/S kargil	BarooKargil	0	1	0	1	10	0	10	10	24	90	180	0	1	1	1	1	8880
33	P/S Drass	Drass	0	1	0	1	10	0	10	10	24	90	180	0	1	1	1	1	8880
34	P/S Zanskar	Zanskar	0	0	1	1	20	0	20	20	30	90	0	180	1	1	1	1	11100
35	PP Bazar	Bazar Kargil	1	0	0	1	8	0	8	8	12	90	180	0	1	1	1	1	4440
36	PP Shilikchay	ShilikchaykargIl	1	0	0	1	8	0	8	8	12	90	180	0	1	1	1	1	4440
37	PP Wakha	WakhaKargil	1	0	0	1	8	0	8	8	12	90	180	0	1	1	1	1	4440
38	PP Kahangral	KahangralKargIl	1	0	0	1	8	0	8	8	12	90	180	0	1	1	1	1	4440
39	PP Chiktan	ChiktanKargil	0	1	0	1	10	0	10	10	24	90	180	0	1	1	1	1	8880
40	PP Batalik	BatalikKargil	0	1	0	1	10	0	10	10	24	90	180	0	1	1	1	1	8880
41	PP Sankoo	SankooKargil	1	0	0	1	8	0	8	8	12	90	180	0	1	1	1	1	4440
42	PP Panikhar	PanikharKargil	0	1	0	1	10	0	10	10	24	90	180	0	1	1	1	1	8880
43	PP Rangdom	RangdomKargI	0	0	1	1	20	0	20	20	30	90	0	180	1	1	1	1	11100
44	PP Minamarg	MinamargKargIl	0	0	1	1	20	0	20	20	30	90	0	180	1	1	1	1	11100
45	SSP residence	BarooKargil	0	0	1	1	20	0	20	20	30	90	0	180	1	1	1	1	11100
46	ASP Residence	BarooKargil	1	0	0	1	8	0	8	8	12	90	180	0	1	1	1	1	4440
47	DySP Qtrs.	BarooKargil	1	0	0	1	8	0	8	8	12	90	180	0	1	1	1	1	4440
	Total		**18**	**14**	**19**	**51**	**540**	**124**	**664**	**664**	**1122**	**4590**	**5760**	**3420**	**51**	**51**	**51**	**51**	**415140**

Addl. Director General of Police,
UT-Ladakh.

Summary of total number equipment/ accessories required for installation 51 Solar Power Plants.

Types of PCU	Qty required. (number of units)
PCU Unit 5 KW	18
PCU Unit 7 KW	14
PCU Unit 10KW	19
Batteries 12V 150 AH	540
Batteries 12V 200 Ah	124
Panels 370 W	1122
No of Battery rack required for 664 units of batteries.	664
Cable 1C 4Sq.MM (in Mtrs)	4590
Cable 2C10Sq.MM (IN Mtrs)	5760
Cable 2C16Sq.MM (IN Mtrs)	3420
DC Combiner Box (In no)	51
DC Distribution Box (In no)	51
AC Distribution box. (In no	51
Earthing Protection (In set)	51
Module mounting structure. (in Watt)	415140

25/1/20

Addl. Director General of Police,
UT-Ladakh.

Annexure-B

Technical Specifications

I. PCU Unit

Description	Qty required.
PCU Unit 5 KW	18
PCU Unit 7 KW	14
PCU Unit 10 KW	19
Total	51

II. Batteries.

Description	Qty required.
Batteries 12V 150 AH	540
Batteries 12V 200 Ah	124
Total	664

III. Panels.

Description	Qty required.
Panels 370 W	1122
Total	1122

IV. Other accessories.

Description	Cable 1C 4Sq.MM (in Mtrs)	2C10Sq.MM (IN Mtrs)	2C16Sq. MM (IN Mtrs)	DC Combiner Box (In no)	DC Distribution Box (In no)	AC Distribution box. (In no)	Earthing Protection (In set)	Module mounting structure. (in Watt)
Qty required.	**5760**	**3420**	**3320**	**51**	**51**	**51**	**51**	**415140**

(V) Solar PCU Technical specification.

system rating	**5 KW**	**7 KW**	**10 KW**
Photovoltaic input			
input voltage range (vmp)	130-190	130-190	160-230
maximum pv power (kw)	5.5	8.25	11
MPPT based charge controller			
Type of charger	PWM with MPPT		
INPUT voltage range (VOC)	120-240	150-300	150-300
Charging Stage	float, Bulk,Boost (Adjustable)		
Grid Input			
input supply phase	1 phase two wire		
normal voltage & voltage Range	230vAC (+15%,-20%)		
Nominal Frequency & Range	50Hz (+/-3 Hz)		
Battery			
Nominal Battery Bank Voltage	96v	120v	120v
Battery recharge current setting range from grid side	0-31	0-37	0-50
Battery recharge current setting range from array side	0-50	0-65	0-80
Inverter			
Switching Element	IGBT		
Control	32 Bit DSP Controlled		
Nominal output	230 +/-1% Vac, 1 Phase 2 wire		

Output waveform	Pure Sine Wave		
Nominal Frequency	50 Hz		
Power Factor	0.8 lag to 0.8 lead		
Nominal Output			
Nominal Output Current(A)	21.5 A	33 A	44 A
Overload at nominal output voltage	110% for 10 minutes, 200% for 5 Secs		
System Data			
Noise @ 1 meter (dBA 1 2dBA)	<62dBA		
Transfer	<10 mS		
Protection	Under/Over voltage protection for input, Output, Battery & Array, Reverse polarity		
	protection for Array & Battery, Protection for Output Overload, Short circuit and Over Temperature, MCB & Surge protection at grid/DG input, Battery, Array path and PCU O/P		
Display Parameter	Voltage, Current: Array, Battery, Grid, Output		
Indications	MPPT Charge ON/OFF, Battery Charging/		
	Discharging, Grid ON, Load ON, Inverter ON,		
	Array ON, Inverter Overload with Blinking Inv.		
	On LED, Inverter over temperature		
Environment			
IP Protection Level	IP-21		
Temperature Operating (ºC)	0-50 ºC without any degradation		
Max. Relative humidity @ 25ºC	Up to 95% (non-condensing)		
Max. Altitude above sea level without de-rating (m)	1000m		
Standard Compliance			
Certifications	The PCU should be tested from the MNRE approved test centers BIS accredited. testing- calibration laboratories		

(VI) Solar PV Panels Technical specification.

Electrical Parameters @ STC	
Cell Type	Mono PERC
No. of Cells	72
Peak Power PMax (Wp)	370
Rated Module Voltage (V)	24
Maximum Power Voltage Vmp (V)	39.25
Maximum Power Current Imp (A)	9.43
Open Circuit VolatgeVoc (V)	47.08
Short Circuit Current Isc (A)	10.01
Module Efficiency (%)	18.89%
Maximum System Voltage (V)	1500V
Maximum Series Fuse Rating	20A
Mechanical Data	
Module Dimensions (mm)	1976x991
LxWxT	x35
Module Weight (kgs)	22.5
IP Rating	IP 67

Cable & Connectors	1000mm length cables, MC4 Compatible/MC4 Connectors
Frame	Silver Anodized aluminum alloy
Glass	3.2mm thick high transmission low iron tempered glass, AR coated
Cell Encapsulant	EVA (Ethylene Vinyl Acetate)
Back Sheet	Composite Film
Maximum Surface Load Capacity	5400 Pa (Pascals)
Aplication Class	Class A (Safety Class II)
Permissible Operating Conditions	
Operating Temperature	- 40°C to + 85°C
Temp coefficient of Open Circuit Voltage	-0.33 %/°C
Temp coefficient of Short Circuit Current	0.03 %/°C
Temp coefficient of Power	-0.41 %/°C
Warranty and Certifications	
Product Warranty	12 Years
Performance Warrant	Linear Performance Warranty for 25 Years with 3% for 1st year degradation and 0.70% from year 2 to 25
Certificates	The pv panels should be tested from the MNRE approved test centers BIS accredited. testing- calibration laboratories.

(VII) Solar Battery Technical specification.

Name	Nominal Voltage	C10 capacity upto10.5V 27O C	Length ± 3	Width ± 3	Height upto float top ±3	Dry Weight ±5%	Filled Weight ±5%	Electrolyte Volume ±5%
battery 150Ah	12	150	502	191	440	34.5	60	20.6
Battery 200Ah	12	200	502	191	440	40.53	67.5	21.8

(VIII) Battery rack

Battery rack for 664 numbers of barratries Made up of iron angle frames with fine finishing and painted.

(IX) Solar PV Mounting Structure technical specification

Wind velocity withstanding capacity	150 km / hour The designs have been certified by a recognized Lab/ Institution/certified engineers in this regard and submit wind loading calculation sheet to users if they desire so. Suitable fastening arrangement such as grouting and calming should be provided to secure the installation against the specific wind speed.
Structure material	Pre galvanized sheet steel with a minimum galvanization thickness of 80 microns and the structural patterns shall be made before galvanizing
Bolts, nuts, panel mounting clamps, fasteners (with spring washers)	Stainless steel SS 304
Mounting arrangement for metal sheet roofs	Mounting directly on the sheet metal, ensuring stability and wind withstanding capacity or penetrating the sheet metal and fixing to the sub-structure, ensuring that the roof remains water proof and ensuring stability and wind

	withstanding capacity.
Mounting arrangement for elevated structures	The elevated structure has to be securely anchored to the supporting surface. Concrete foundations of appropriate weight and depth for elevated structures mounted directly on the ground; Bolted with anchor bolts of appropriate strength for elevated structures mounted on RCC surface
Panel tilt angle	North – south orientation with a fixed tilt angle of 27-30 degrees(depending on location), south facing. However to accommodate more capacity the angle inclination may be reduced until the plant meets the specified performance ratio requirements.

(X) Cables Technical specification.

S.NO	Particulars	unit	1C X4mm	2c x 10.0	2c x 16.0
1	Cable type		YY		
2	Voltage grade		1100 Volt		
3	Applicable standard		IS:004/2010 with up to date amendment		
4	Material		copper		
5	Size	mm^2	4	10	16
6	No of conductor	nos	56	80	126
7	Form of conductor		Flexible conductor		
8	Max resistance of conductor at 20^0c	Ohm/km	4.95	1.20	1.91
9	Max overall dia of cable	mm	4.80	16.50	19.10
10	Standard coil length	m	90 r above		

(XI) DC Distribution Box

1. A DC distribution box shall be mounted close to the solar grid inverter. The DC distribution box shall be of the thermo-plastic IP65 DIN-rail mounting type and shall comprise the following components and cable terminations:
   a. Incoming positive and negative DC cables from the DC Combiner Box;
   b. DC circuit breaker, 2 pole (the cables from the DC Combiner Box will be connected to this circuit breaker on the incoming side);
   c. Outgoing positive and negative DC cables to the solar grid inverter.

As an alternative to the DC circuit breaker a DC isolator may be used inside the DC Distribution Box or in a separate external thermoplastic IP 65 enclosure adjacent to the DC Distribution Box. If a DC isolator is used instead of a DC circuit breaker, a DC fuse shall be installed inside the DC Distribution Box to protect the DC cable that runs from the DC Distribution Box to the Solar Grid Inverter.

(XII) AC Distribution Box

An AC distribution box shall be mounted close to the solar grid inverter. The AC distribution box shall be of the thermo plastic IP65 DIN rail mounting type.

(XIII) DC Combiner Box

A DC Combiner Box shall be used to combine the DC cables of the solar module arrays with DC fuse protection for the outgoing DC cable(s) to the DC Distribution Box.

(XIV) EARTHING PROTECTION

a. Each array structure of the PV yard should be grounded/ earthed properly as per IS:3043- 1987. In addition, the lighting arrester/masts should also be earthed inside the array field. PCU, ACDB and DCDB should also be earthed properly.
b. Earth resistance shall not be more than 5 ohms maintenance free. It shall be ensured that all the earthing points are bonded together to make them at the same potential.

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Annexure-C.

SNO	Name of the document.
1	OEM/ OEM authorization certificate/ MSME certificate/ authorized distributor or supplier certificate.
2	ISO-9001 and ISO-14001 certificate.
3	Experience certificate for working with government, semi government or PSU.
4	BIS/ IEC approval test certificates
5	Document showing availability of service center in Ladakh.
6	Annual turn overstatement for last two years , duly authenticated by CA.
7	GST registration certificate and latest GST return filing statement / clearance certificate.
8	Scan copies of income tax return. (if applicable)
9	Copy of PAN card
10	Copy of EMD
11	Copy of Tender fee
12	Copy of undertaking / affidavit showing clearance of any legal encumbrances.
13	Copy of technical specification of PCU, batteries, Panel, cables and earthings of solar power plant proposed for supply duly attested under seal and signature.
14	An undertaking by the bidders to the affect that the Annual Maintenance Contract (AMC) of the project for a period of three years shall be undertaken by them @1% of the total cost of tender value.
15	Any other mention in the tender NIT.

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Annexure-D

(Warranty and Annual Maintenance Contract conditions)

1. Warranty:

1. Supplier or successful bidder shall provide 03 years free maintenance and warranty for all the all equipment's viz Battery, PCU and Solar panel etc supplied by his firm.
2. During the warranty period supplier shall be responsible for extending free maintenances services at all the 47 locations of solar power plants in entire Ladakh for ensuring smooth functioning of all the power plants.
3. The warranty will start from the date of its successful installation and commission at each earmarked site and will remain in force for three successive year. During period of warranty tenderer shall also be responsible for providing free replacements of power plant component if it gets malfunctioned due to manufacturing defects.

2. Annual Maintenance Contract Part:

1. Immediately after the expiry of warranty period supplier or successful bidder have to compulsorily enter for another three years AMC with the Ladakh Police. AMC includes servicing of components such as Solar Photo Voltaic (SPV) module, PCU / Inverter, Battery Bank, Junction Box, inter connecting wires / cables, module mounting structure etc. of Solar PV Power Plant for 3 year from the date of expiry of warranty period @3% of the contract value per annum.
2. With regard to replacement of faulty components of the plant namely SPV Modules, PCU, Battery, Junction Boxes, Cables etc, if not covered under warranty provisions for required items as recommended by the experts of the supplier shall be borne by the Ladakh Police during the period covered under AMC.
3. Scope of annual maintenance contract includes maintenance of the plant every quarter, technical & engineering support, Modules to be cleaned every month and to conduct two weeks of training for the staff.
4. Whenever a complaint is lodged by Ladakh Police, the contractor for AMC will attend to the same within 48 Hours. In case of any major complain it will be corrected in ten days from the date of the complaint.
5. The maintenance service provided shall ensure proper functioning of the Solar PV Power Plant as a whole. All preventive / routine maintenance and breakdown / corrective maintenance required for ensuring maximum time have to be provided by contractor doing AMC. Accordingly, the AMC shall have two distinct components as described below :
   (i.) Preventive / Routine Maintenance: Preventive and Routine Maintenance of all the components of the system will be carried out by the Contractor for AMC at least once in a month. This includes maintenance of system checking of all the electrical connections for proper functioning of the system.
   (ii.) Breakdown / Corrective Maintenance: Whenever a complaint is lodged by Ladakh Police , contractor for AMC will attend to the same within Forty Eight Hours (48 hours). In case any major component needs to be rectified, it will be corrected within a period not exceeding 10 (Ten) days from the date of complaint.
6. Periodic reports regarding various parameters of the functioning of the plant will be generated after the visit of the engineer on quarterly basis.
7. These reports shall include the following information:
   (a) Number of visits to site.
   (b) Number of complaints received during the period of AMC.
   (c) Major cause of failure, as observed.
   (d) Major service done during the AMC period till date.
8. The records maintained during the AMC period will be made available from time to time to Ladakh Police .
9. Provide all maintenance services necessary and advisable to efficiently operate and maintain the plant, including all associated and apparent mechanical and electrical equipment keeping in view the objectives set-forth herein above.

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