

CENTRE FOR RURAL ENERGY
GANDHIGRAM RURAL INSTITUTE - Deemed to be University
(Re Accredited with Grade "A" by NAAC)

Gandhigram – 624 302

Dindigul District, Tamil Nadu, India.

Tel: 0451-2452371-76: Extn. 2062

Fax: 0451- 2454466, 2453071

CRE/Equipment/2019

06.03.2019

Quotation Call for

For and on behalf of Gandhigram Rural Institute – Deemed to be University, Gandhigram quotations are invited for the supply of following equipment as per the specification below:

Code	Equipment
CRE01	Concentrating Solar Collector - Detailed Specification as in Annexure
CRE02	Solar Photo Voltaic IV Curve Tester - Detailed Specification as in Annexure
CRE03	Hybrid Vertical Axis Wind Turbine - Detailed Specification as in Annexure
CRE04	Pyrheliometer - Detailed Specification as in Annexure
CRE05	Data Logger- Detailed Specification as in Annexure
CRE06	Module level tracking Smart Grid Inverter with Monitoring Unit - Detailed Specification as in Annexure
CRE07	Solar Panels (Different Configuration) - Detailed Specification as in Annexure
CRE08	Solar Water Pumping Demonstration System
CRE09	Leakage Current Tester
CRE10	Non-Touchable HV Tester
CRE11	UG Cable Route Tracer

The terms and conditions for the quotations are as below:

- (i) Print TIN / CST or Registration Number in the quotation submission letter.
- (ii) The rate should clearly indicate the unit/nos.
- (iii) The rate should specify whether it includes duties and taxes land also packing and forwarding charges.
- (iv) If the rates are exclusive of the items mentioned against(ii) above the rate at which these items will be charges should also be specified wherever possible
- (v) The period upto the materials/equipments are guaranteed should be specified. The amount chargeable as Annual Maintenance charges after the guarantee / warranty period should be indicated separately.
- (vi) The nearest service point should also be indicated in the offer.
- (vii) The offer should be as far as possible from ready stock.
- (viii) Where the offer is not from ready stock, the period before which supply will be affected should be indicated.
- (ix) The mode of payment should be specified.
- (x) Payment will be made within a week from the date of receipt of materials and duty certified by the officers concerned / with in a week of the satisfactory completion of the work.
- (xi) Validity of the offer should normally be for 30 days from the date of offer. If otherwise, the period should be specifically mentioned.
- (xii) Quotation should be addressed in the name of (Use Separate Cover for each item)
“**Registrar, Gandhigram Rural Institute – Deemed to be University, Gandhigram**”
and should be sent in a sealed envelope super scribing “**Quotation for Equipments :Item Code CRE _____**”
to reach the following address:
The Director
Centre for Rural Energy
Gandhigram Rural Institute – Deemed to be University
Gandhigram – 624 302, Dindigul Dt.
- (xiii) **Hard Copy of Quotation will be received (By Post / In Person) up to 3.00 p.m. on 15.03.2019**
- (xiv) Quotation will be opened at 4.00 p.m. on the same day in the presence of the Representatives of the firms who are available.

CRE01 CONCENTRATING SOLAR COLLECTOR

Specification

Reflector	Curved Tempered Mirror (quality-Ultra clear glass)
Size of the reflector & Nos	1500 mm x 1060 mm x 4 mm
No. of Reflector	2
Reflectivity	94 %
Aperture Area	3 Sq.m
Receiver Tube	Non - Evacuated Receiver tube
Absorptivity	> 90 %
Absorber Tube	O.D 26mm x I.D 23mm
Absorber Tube Material	Stainless steel
Glass Envelope	OD 50mm x ID 46 mm
Selective Coating	Pyromark - High Temperature paint
Concentration ratio	25
Rim Angle	65°
Mechanical Structure	Mild Steel with G.I coating and structure designed for withstand the wind speed upto 22 m/s
Tracking	Manual tracking

CRE02 SOLAR PHOTO VOLTAIC IV CURVE TESTER

Specification

Voltage Range : 1000 V DC

Ampere Range : 12 A DC

DC Current Clamp

AC Power Clamp

To measure

Single Panel / String OPC and STD Data with Voc, Isc, Pmax, Efficiency, Fill factor, Solar irradiation,

Temperature, Inverter efficiency

PC Interface (USB) with Memory

Blue tooth connectivity

CRE03 HYBRID VERTICAL AXIS WIND TURBINE

Specification

Capacity : 2 kW
Type : Top and Bottom - Savonius ; Mid - Darrieus
Cut in velocity : 3 m/s
Rotor Diameter : 3m
Mounting Structure
Erection and Commissioning

CRE04 PYRHELIOMETER

Specification

ISO 9060:1990 CLASSIFICATION	:	First Class
Maximum Irradiance	:	2000 W/m ²
Response time (95 %)	:	5s
Non-stability (change/year)	:	<0.5%
Non-linearity (0 to 1000 W/m ²)	:	<0.2%
Sensitivity	:	7 to 14 μV /W/m ²
Calibration Certificate		

CRE05 DATA LOGGER

Specification

Analog Input Module: Universal Type

- DC current input Input resistance: Input resistor (49.9 Ω) incorporated Input range: -20 – +20 mA
- DC narrow span voltage input range (-1000 – +1000 mV) Input resistance: ≥ 100 k Ω
- DC wide span voltage input range (-10 – +10 V) Input resistance: ≥ 1 M Ω
- Thermocouple input: Input resistance: ≥ 100 k Ω Input range: See Table 1 Conformance range: See Table 1
- RTD input (2- or 3-wire): Input sensing: ≤ 0.33 mA Input range: See Table 1 Maximum lead wire resistance: 20 Ω per wire.
- Potentiometer input: Input sensing: ≤ 0.33 mA Input range: 0 – 4000 Ω Maximum lead wire resistance: 20 Ω per wire ·
- Resistor input: Input sensing: ≤ 0.33 mA Input range: 0 – 4000 Ω Maximum lead wire resistance: 20 Ω per wire

Large Main (Internal) Memory: 4 GB.

Additional SD card Slot expandable up to 16GB

Isolation: Ethernet to internal bus or internal power to RUN contact output to power supply to FE

Read rate: Approx. ≤ 1 msec. (Connected max. modules)

Indicator LEDs: PWR, RUN, RECORD, SD CARD, ERROR

COMMUNICATION

Ethernet TCP/ IP

Web server function

Modbus/TCP slave

FTP client or server function

E-Mail

SNTP Client

User Defined Browser View: User's original web browser views can be developed using HTML and JavaScript.

Arithmetic Function

Current consumption: 45 mA

Operating temperature: 0 to 50°C (32 to +122°F)

CRE06 MODULE LEVEL TRACKING SMART GRID INVERTER WITH MONITORING UNIT

Specification

Commonly used module pairings	210 - 350+ W
Compatibility	72 and 60-cell PV Modules
Maximum input DC voltage	60 V
Peak power tracking voltage	27 V - 48 V
Operating range	16 V - 60V
Min/Max start voltage	22 V / 48 V
Max DC short circuit current	15 A

OUTPUT DATA (AC)

Peak output power	258 W
Maximum continuous output power	250 W
Rated output current	1.09 A
Nominal voltage	230 V
Nominal frequency	50.0 Hz
Power factor	>0.95
Total harmonic distortion at peak power	< 3%
Maximum units per 20 A branch circuit	14 (Ph + N), 42 (3Ph + N)
Maximum units per cable section	14 (Ph + N), 24 (3Ph + N)
Maximum output fault current	850 mA rms for 6 cycles
Current (inrush)	0 A
AC backfeed current to module	0 mA

EFFICIENCY

EN 50530 (EU) efficiency	95.7%
Static MPPT efficiency (weighted, reference EN50530)	99.5%
Night time power consumption	0.065 W

MECHANICAL DATA

External operating temperature range (ambient)	-40°C to +65°C
Internal operating temperature range	-40°C to +85°C
Enclosure environmental rating Outdoor	- IP67
Connector type	MC4
Cooling	Natural convection - No fans

Communication	Power line communication / TCP Protocol
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CRE07 SOLAR PANELS (DIFFERENT CONFIGURATION) - DETAILED SPECIFICATION AS IN ANNEXURE

Specification

1.Solar Module Mono PERC Technology 350Wp

Nominal Power P_{mpp}(Wp) 350
Watt Class sorting-(W) 0/+5
Nominal Power Voltage V_{mpp}(V) 38.59
Nominal Power Current I_{mpp}(I) 9.08
Open Circuit Voltage –V_{oc}(V) 47.26
Short Circuit Current –I_{sc}(I) 9.68
Panel Efficiency (%) 17.85

2. Solar Module Twin Peak Technology 2S 345Wp

Nominal Power P_{mpp}(Wp) 345
Watt Class sorting-(W) -0/+5
Nominal Power Voltage V_{mpp}(V) 38.7
Nominal Power Current I_{mpp}(I) 8.92
Open Circuit Voltage –V_{oc}(V) 46.5
Short Circuit Current –I_{sc}(I) 9.64
Panel Efficiency (%) 17.2

3. Solar Module BIFACIAL MONO PERC Technology 320Wp

Nominal Power P_{mpp}(Wp) 320
Watt Class sorting-(W) 0/+5
Nominal Power Voltage V_{mpp}(V) 46.1
Nominal Power Current I_{mpp}(I) 8.84
Open Circuit Voltage –V_{oc}(V) 37.0
Short Circuit Current –I_{sc}(I) 9.48
Panel Efficiency (%) 16.29

4. Solar Module HJIT technology 320Wp

Nominal Power P_{mpp}(Wp) 320
Watt Class sorting-(W) 0/+5
Nominal Power Voltage V_{mpp}(V) 38.1
Nominal Power Current I_{mpp}(I) 8.67
Open Circuit Voltage –V_{oc}(V) 45.0
Short Circuit Current –I_{sc}(I) 9.21
Panel Efficiency (%) 16.5

5. Solar module PERL Technology 320 Wp

Nominal Power P_{mpp}(Wp) 320
Watt Class sorting-(W) 0/+5
Nominal Power Voltage V_{mpp}(V) 37.4
Nominal Power Current I_{mpp}(I) 8.56
Open Circuit Voltage –V_{oc}(V) 46.4
Short Circuit Current –I_{sc}(I) 9.05
Panel Efficiency (%) 16.49

6. Solar Module Tall Max Technology 330Wp

Nominal Power P_{mpp}(Wp) 330
Watt Class sorting-(W) 0/+5
Nominal Power Voltage V_{mpp}(V) 38.3
Nominal Power Current I_{mpp}(I) 9.5
Open Circuit Voltage –V_{oc}(V) 47.8
Short Circuit Current –I_{sc}(I) 8.9
Panel Efficiency (%) 17.08

CRE08 SOLAR WATER PUMPING DEMONSTRATION SYSTEM

Specification

Capacity	:	1 HP
Type	:	Submergible
Head	:	10m
Shut off Head	:	12m
Drive	:	Inverter with VFD
Solar Panels, Mounting Structure and Necessary instruments		

CRE09 LEAKAGE CURRENT TESTER

Specification

Non Contact Ground Resistance Measurement
No Auxiliary Electrodes Needed
Recording Facility
Leakage Current (0.100mA ~ 30.00 A / 60.00A)
Auto Range Selection
Auto Power Off 0 μ A Ultra High Resolution
Large Conductor Diameter (Minimum 30mm)
Wide Frequency Response (40Hz-1KHz)
Data Hold and Max / Min Hold
Relative Measurement
Highly accurate current measurements: 1 μ A resolution to pinpoint leak origin
True-rms measurements for accuracy when measuring complex, non-sinusoidal waveforms
Eliminates unwanted noise
Forward-facing LED work light for may be used in dark wiring cabinets
Backlite display; auto backlight off and auto power off option
CAT III 600 V safety ratings
Internal Memory Logging
Advanced shielding to ensure accurate results when measuring near other conductors
Easy-to-carry,
Meets all of the applications and performance classes for safety standards

CRE10 NON-TOUCHABLE HV TESTER

Specification

Non-contact voltage detector

Wide range of detection; finds 80V to 275kV

For indoor or outdoor use

Selected voltage may be detected approximately 10" away from voltage source;

CRE11 UG CABLE ROUTE TRACER

Specification

- Route tracing of buried underground any metallic cables up to 10 km max length.
- LCD Bar-graph on Audio frequency receiver unit for precise indication of cable route tracing.
- Route tracing of underground loaded live cables with passive frequency and inductive coupling.
- Peak and null reception methods for route tracing of cables.
- Depth measurement of buried cables up to 5m with
- Ground survey of underground metallic utilities.
- Pin-Pointing of contact nature faults.
- Easy to carry on site

Audio Frequency Generator

- Output Power 1, 2, 4 and 8 Watts selectable
- Output Frequency 480Hz, 1450Hz & 9820Hz selectable frequency
- Impedance Matching From 0.5 to 1000 Ohms selectable
- Indication Analog meter indication to indicate of transmitted power and charge condition of internal battery ON & Battery Charging Indication
- Power Supply 230V AC 10 %, 50 Hz Single phase, or external 12 Volt DC or Internal rechargeable accumulator
- Operating Time Internal accumulator 1.5Hrs on 8Watts Mains and Ext DC power supply no time limit

Audio Frequency Receiver

- Receiving Passive – 50 HZ
- Frequency Active 480Hz, 1450Hz, 9820Hz selectable
- Gain More than 90 db
- Indication LCD Bar-graph display with scale illumination for signal strength & Battery status indication
- Power alkaline batteries