

भारतीय प्रौद्योगिकी संस्थान ततरुपतत Indian Institute of Technology Tirupati Settipalli, Renigunta Road Tirupati 517506	दूरभाषसंख्या Phone no: 0877 – 2500335 ईमेल Email : govindak@iittp.ac.in
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Prof. T.S. Natarajan
Registrar i/c

Ref: Engineering Unit
Date: 02.11.2017

Public Tender No: IITT/Civil/06/2017/15

Due Date: 27.11.2017 at 3.30PM

Dear Sir/Madam,

On behalf of the **Indian Institute of Technology TIRUPATI**, sealed quotations are invited in two part bid system for supply of 48 Volts DC Light fittings, DC Fans, DC power supply systems and other accessories for **IIT Campus near Merlapaka Village, Venkatagiri Road, YERPEDU Mandalam, Chitoor District, Andhra Pradesh.**

The detailed specifications of the material are given in the Annexure "A". Technical literature/leaflet showing the compliance of the specification may also be attached with the quotation.

Please ensure that the specifications are basic essence of the product. It must be ensured that the offers must be strictly as per our specifications. At the same time it must be kept in mind that merely copying our specifications in the quotation shall not make the parties eligible for consideration of the quotation. A quotation has to be supported with the printed technical leaflet/literature of the quoted model of the item by the quoting party/manufacturer and the specifications mentioned in the quotation must be reflected /supported by the printed technical leaflet/literature. Therefore the model quoted is invariably be highlighted in the leaflet/literature enclosed with the quotation. Non-compliance of the above shall be treated as incomplete/ambiguous and the offer can be ignored without giving an opportunity for clarification/negotiation etc. to the bidder.

The eligibility criteria for participation in bid are mentioned below:

1. The Bidder must be an Original Equipment Manufacturer (OEM) or his Authorized Dealer/Authorized Distributor/ Authorized Stockiest. The bidder should submit the list of installations of the model being quoted in India and supplied to IITs, reputed organization in the last 2 years along with proof of supply by providing copies of Purchase Orders and also performance certificates from clients with contact address and telephone numbers.
2. Bidder should be registered under **GST** Act with the relevant State Sales Tax Authorities. The bidder should furnish along with the bid document, the relevant **GST** Registration Document and PAN / TAN copies.

3. Distributorship Certificate: Sole selling Agents/Distributors of a particular make should submit a certificate from their principals to the effect that they are the authorized Agents of the Manufacturers and that they are authorized to import and supply the item/equipment to IIT Tirupati.
4. Performance Certificate of each fitting and accessories obtained from a reputed testing agency shall be included / attached.
5. **The interested bidders are advised to go through the conditions envisaged for eligible criteria for participation in the bidding**

Instructions to the Bidder

(i) **Preparation of Bids:** The bidders must ensure that bids are submitted in **two part bid system (i.e.) Technical bid and Financial (Price) bid in separate envelopes.**

(ii) **Techno-commercial bid:** The technical bid should consist of all technical details/brochures along with commercial terms and conditions super-scribed as TECHNICAL BID with Tender No. and date and time of closing and the bidder's name and address. No prices should be included in technical bid. The Earnest Money Deposit @ 2% of quoted value must be sent along with technical bid either in the form of Demand Draft and Bank Guarantee payable at Tirupati.

(iii) **Financial (Price) Bid** should indicate item-wise prices for the items with firm and fixed rates in figures and words super-scribed with the Tender No. and date of closing of the Tender with name of supply/work and the bidder's Name and address. The price bid should not contain any conditional clauses. No price escalation for any reasons whatsoever is allowed. All prices should be given in Indian Rupees only.

(iv) The technical and the financial bids duly signed by the bidders or their authorised signatories with name and seal should be put in separate covers and sealed. Both sealed covers should be put into a bigger cover duly super-scribed with PT No. and due date/time with name of supply /work. **Technical bids must either be spiral bound / stapled together. No loose sheets will be accepted. All pages must be numbered.**

(v) **Submission of the tender:** The complete sealed bids in all respects shall be sent to the following address well in advance either by post or by courier so as to reach this office before the due date and time specified in the Schedule. The bids received after closing date and time shall not be considered. The Institute shall not be responsible for the late receipt of tender on account of postal, courier or any other delay.

The Registrar I/C,
Indian Institute of Technology Tirupati,
Renigunta Road,
Settipalli Post,
Tirupati-517 506, Andhra Pradesh

While submitting the bids, the bidders must sign all the tender documents as a token of accepting of tender documents as well as terms and conditions stipulated therein. Tender documents without signature of bidders or their authorised signatories will be treated as invalid bids.

No conditional offer or terms and conditions will be entertained by the institute and such bids will be treated as invalid.

(vi) The tender documents can be down loaded from IIT Tirupati web site:<http://iittp.ac.in/tenders> on or after 09.11.2017.

(vii) Bid Security (EMD): *EMD either in the form of Bank Guarantee or Demand draft at 2% of quoted value initially valid up-to 90 days drawn in favour of Indian Institute of Technology Tirupati payable at Tirupati must be sent along-with the technical bid only. The technical bid without EMD would be considered as UNSOLICITED and will be REJECTED. Photo/FAX copies of the Demand Draft/Banker's pay orders will not be accepted. No interest will be paid for the EMD and the EMD (Bid Security) will be refunded to the successful bidder on production of Performance Bank Guarantee and in case of unsuccessful bidders, the EMD will be refunded on finalisation of tender.*

(viii) Details of our Banker

Name of bank	State Bank of India
Address of bank branch	Settipalli Branch Renigunta Road, Tirupati
Bank Branch code	006677
IFS Code	SBIN0006677
Bank Account Number	35523338208

(ix) Bid security be forfeited without any intimation in such cases as below:-

- a) If a bidder withdraws its bid during the period of bid validity
- b) If a successful bidder fails to execute the awarded contract
- c) If a successful bidder fails to provide performance Bank guarantee

1. (x) Specifications must be as required and specified in our tender documents and no modifications to the specifications are acceptable during the course of execution of contract.

(xi) Opening of the tender: The Technical Bids will be opened by the tender committee duly constituted in the presence of bidders or their authorised representatives on 27.11.2017 at 16.00 hours. **The technical bid without EMD will not be entertained and treated as invalid bid.** Then the bids will be evaluated by the Technical Evaluation Committee which will decide the suitability of the technical bids as per our requirement and terms and conditions. Once the technical evaluation is completed, the price Bids of only those bidders who are found technically acceptable will be opened in the presence of Authorized Representatives of such

bidder(s) if any on a date and at a venue to be intimated by IIT Tirupati to the short listed bidders.

(xii) The bidder shall note that any unsolicited post-tender reduction by them would disqualify them from participating from the bidding and forfeit the security bid.

(xiii) Incomplete bids are liable for rejection.

(xiv) Prices: The price should be quoted on FOR: IIT, Tirupati basis. The bid should consist of basic price, P&F charges, freight and applicable taxes. The percentage of tax & duties should be clearly indicated.

The total landed cost will be calculated from the information provided by the bidder in their price bids. The bid conforming to the lowest cost would then be considered for award of contract.

If the offer does not contain tax details, it will be treated that your offer is inclusive of all taxes and happen stand lowest, you are bound to supply as per offered rate without taxes and no revision is entertained.

If the tenderer offers discount it should be in clear terms and percentage.

(xv) The custom duty if any applicable must be shown separately. It may be noted that IIT Tirupati is exempted from payment of custom duty and duty at concessional rate against duty exemption will be paid.

(xvi) IIT Tirupati reserves the right to split and award item-wise contract to the lowest bidder.

(xvii) Offer validity: The offer must be valid for 90 days from the closing date. If the validity of offers for acceptance is less than 90 days, the same will not be considered.

(xviii) IIT Tirupati reserves the full right to accept / reject any tender or all tenderers at any stage without assigning any reason.

Yours sincerely,

Registrar, IIT Tirupati

Important Commercial terms and conditions:

- a) The due date for the submission of the tender is **27.11.2017 at 15.30 hours.**
- b) **Inspection Clause:** All major items will be inspected by a team of IIT Tirupati at factory/ Supplier's premises and after clearance in the form of report, the items shall be despatched to IIT Tirupati. Readiness of items shall need to be intimated well in advance for our inspection formalities.
- c) **Delivery Schedule:** Please note that delivery is the essence of the contract. In case there is any deviation in the delivery schedule, liquidated damages will be levied for the delayed supply period. Therefore, it should be ensured that all the ordered items should be supplied within **Two months** from the date of receipt of Purchase Order on door delivery basis at our Institute as per Purchase order terms in securely and sufficiently packed condition by following standard packing procedure to withstand transit damages
- d) **Extension of time:** If the supply of stores is delayed due to reason of force majeure such as acts of God, acts of public enemy, acts of Government, fires, floods, epidemics, quarantine restriction, strikes etc., supplier shall give notice within 15 days to Institute in writing of his claim for an extension of time. The Institute on receipt of such notice after verification, if necessary, may agree to extend the Contract delivery date as may be reasonable but without prejudice to other terms and conditions of the contract.
- e) **Payment terms:** No Advance payment will be made for Indigenous purchase. Our normal payment terms are 100% within 30 days after receipt of complete supply at our site and acceptance.
- f) **Performance Bank Guarantee:** Performance Bank guarantee for 10% of Purchase order value should be produced in the form of Bank Guarantee from the nationalised /scheduled Bank valid till the completion of warranty / guarantee period plus sixty days as claim period. Failure to render contracted service during the warranty/guarantee period by the contractor, the performance bank guarantee will be forfeited. No interest is payable on the performance Bank guarantee amount.
- g) **Liquidated damages:** If the Contractor fails to deliver the material within the time specified in the Contract or any extension thereof, the Institute shall recover from the Contractor as Liquidated Damages at the rate of 0.5% of order value per week or 0.5% of the value of the stores for which the delivery is delayed for each week of delay as the case may be subject to a maximum of 10% of the order value.
- h) **Guarantee/Warranty:** The Contractor shall guarantee that the material supplied shall comply fully with the specifications laid down, for material, workmanship and performance after acceptance of the material. Warranty should be for a period of 2 years. In case of Authorized distributor / Authorized dealer, they should submit the warranty certificate from manufacturers in addition the Warranty offered by the supplier. If any defects are

discovered therein or any defects therein found to have developed under proper use arising from faulty stores design or workmanship, the Contractor shall remedy / replace such defective items at his own cost.

- i) **Insurance:** IIT Tirupati being a Central autonomous body under Ministry of HRD, Government of India, we will not insure our goods. However, to safe guard the ordered material from probable transit damage while in transportation the contractor may insure the goods at his risk and cost.
- j) **Do not quote the optional items or additional items unless otherwise mentioned in the tender documents / specifications.**
- k) **ARBITRATION CLAUSE:** Arbitration in the event of any dispute or difference arising under these terms & conditions or any condition contained in the Purchase Order or in connection with this contract(except as to any matter the decision of which is specially provided for by these conditions), the same shall be referred to the sole arbitration of the Registrar, IIT, Tirupati or of some other person appointed by him and the dispute further processed in terms of the Arbitration & Conciliation Act ,1996. There will be no objection that the arbitrator is a Government Servant that he deal with matter which the Contract relates to or that in the course of his duties as Government Servant has expressed views on all or any of the matters in dispute or difference. The award of the arbitrator shall be final and binding on the parties of this Contract.

If the arbitrator is the Registrar, IIT, Tirupati

- i. In the event of his being transferred or vacating his office by resignation or otherwise , it shall be lawful for his successor in office either to proceed with the reference himself for to appoint another person as arbitrator, or
- ii. In the event of his being unwilling or unable to act for any reason, it shall be lawful for the Registrar, IIT, Tirupati to appoint another person as arbitrator.

If the arbitrator is a person appointed by the Reistrar, IIT, Tirupati – In the event of his denying or neglecting or refusing to act, or resigning or being unable to act, for any reason, shall be lawful for the Reistrar, IIT, Tirupati to proceed with the reference himself or to appoint another person as arbitrator in place of the outgoing arbitrator subject, as aforesaid , to the Arbitration & Conciliation Act ,1996, and the rules there-under and any statutory modifications thereof for the time being in force shall be deemed to apply to the arbitration proceeding under the clause. The Arbitrator shall have the power to extend with the consent of the purchaser and the contractor the time for making and publishing the award. The venue of Arbitration shall be the place as the purchaser in his absolute discretion may determine work under the Contract shall, if reasonably possible, continue during Arbitration Proceedings.

- l) All amendments, time extension, clarifications etc., if any will be uploaded in the website only and will not be published in newspapers. Bidders should regularly visit the above

website to keep themselves updated. No extension in the bid due date/ time shall be considered on account of delay in receipt of any document by mail.

Acknowledgement: It is hereby acknowledged that the tenderer has gone through all the conditions mentioned above and agrees to abide by them.

**SIGNATURE OF TENDERER
ALONG WITH SEAL OF THE
COMPANY WITH DATE**

TECHNICAL SPECIFICATIONS FOR DC FITTINGS

1. 17watts, 48 volts DC LED 4 feet Tube light (IP20 Compliant) for Item No.1

- a) The 17W, DC LED linear light should be highly efficient, reliable and working with 48V DC.
- b) The construction of the LED 4 feet tube light shall be high power LEDs with 120 lumens/watt, Aluminium extruded heat sink for optimum thermal management, external DC-DC driver with voltage range of 45-51V and incompatible with AC tube light fixtures.
- c) The fitting suitable for ceiling mount/wall mount, IP 20 compliant.
- d) The warrantee of the fitting not less than 2 years.

Specifications:

Sl. No.	Parameters	Units	Specifications
1	Operating Voltage	VDC	45-51
2	Efficiency	%	94+/- 2%
3	Power Consumption	W	≈17
4	CRI		>80
5	CCT	K	5200-6700
6	LED lumens output	Lm	2050
7	Input Reverse Polarity Protection		Yes
8	Output Short circuit protection		Yes
9	Output Open circuit protection		Yes
10	Thermal Shutdown		Yes
11	Transient Voltage Protection		Yes

2. 8 watts, 48 volts, DC LED surface mount fixture (IP20 Compliant) for Item No.2

- a) The 8W, DC LED Surface mount fixture should be highly efficient, reliable and working with 48V DC.
- b) The construction of the LED light shall be high power LEDs with 120 lumens/watt, aluminium extruded heat sink for optimum thermal management, external DC-DC driver with voltage range of 45-51V and incompatible with AC tube light fixtures.
- c) The fitting suitable for ceiling mount, IP 20 compliant.
- d) The warrantee of the fitting not less than 2 years.

Specifications:

Sl. No.	Parameters	Units	Specifications
1	Operating Voltage	VDC	45-51
2	Power Consumption	W	≈8
3	CRI		>80
4	CCT	K	5200-6700
5	LED lumens output	Lm	975
6	Input Reverse Polarity Protection		Yes
7	Output Short circuit protection		Yes
8	Output Open circuit protection		Yes
9	Thermal Shutdown		Yes
10	Transient Voltage Protection		Yes

3. 32watts, 48 volts DC LED Linear Light (IP20 Compliant) for Item No.3

- a) The 32W, DC LED linear light should be highly efficient, reliable and working with 48V DC.
- b) The construction of the LED tube light shall be high power LEDs with 140 lumens/watt; Aluminium extruded heat sink for optimum thermal management, external DC-DC driver with voltage range of 45-51V and incompatible with AC tube light fixtures.
- c) The fitting suitable for ceiling mount, IP 20 compliant.
- d) The warrantee of the fitting not less than 2 years.

Specifications:

Sl. No.	Parameters	Units	Specifications
1	Operating Voltage	VDC	45-51
2	Efficiency	%	92+/- 2%
3	Power Consumption	W	≈32
4	CRI		>80
5	CCT	K	5200-6700
6	LED lumens output	Lm	4150
7	Input Reverse Polarity Protection		Yes
8	Output Short circuit protection		Yes
9	Output Open circuit protection		Yes
10	Thermal Shutdown		Yes
11	Transient Voltage Protection		Yes

4. 9 watts, 48 volts DC Recess/Surface mounted Round Light (IP20 Compliant) for Item 4 & 5

- a) The 9W DC LED light should be highly efficient, reliable and working with 48V DC.
- b) The construction of the LED light shall be high power LEDs with 120 lumens/watt, aluminium extruded heat sink for optimum thermal management, external DC-DC driver with voltage range of 45-51V and Uniform, color consistent, soft and glare free light using Polystyrene diffuser.
- c) The fitting suitable for recess mount application, IP 20 compliant.
- d) The warranty of the fitting not less than 2 years.

Specifications:

Sl. No	Parameters	Units	Surface mounted	Recess mounted
1	Operating Voltage	VDC	45-51	45-51
2	Efficiency	%	94+/- 2%	94+/- 2%
3	Power Consumption	W	≈9	≈9
4	CRI		>80	>80
5	CCT	K	5200-6700	5200-6700
6	Light output(at 8m height)	lux	48	48
7	LED lumens output	Lm	1050	1050
8	Input Reverse Polarity Protection		Yes	Yes
9	Output Short circuit protection		Yes	Yes
10	Output Open circuit protection		Yes	Yes
11	Thermal Shutdown		Yes	yes

5. 5w, 48 volts DC LED bulb for Wall bracket fixture for item 6:

- a) The 5W DC LED bulb should be highly efficient, reliable and working with 48V DC.
- b) The construction of the LED bulb shall be high power LEDs with 120 lumens/watt, heat sink covered with PBT for good aesthetics and thermal management, external DC-DC driver with voltage range of 45-51V and Suitable to mount in all standard B22 holders for indoor applications.
- c) The bulb suitable for fixing in wall/ceiling mount fixture.
- d) The warranty of the system not less than 1 year.

Specifications:

Sl. No.	Parameters	Units	Specification
1	Operating Voltage	VDC	45-51
2	Power Consumption	W	≈5
3	CRI		>80
4	CCT	K	5200-6700

5	LED lumens output	Lm	600
6	Input Reverse Polarity Protection		Yes
7	Output Short circuit protection		Yes
8	Output Open circuit protection		Yes
9	Transient Voltage Protection		Yes

6. 32 w, 48 volts DC Recess/Surface mounted (600mm x 600mm) Square light (IP20 Compliant) for item 7 & 8

- a) The 32W DC LED light should be highly efficient, reliable and working with 48V DC.
- b) The construction of the LED square light shall be high power LEDs with 140 lumens/watt, aluminium extruded heat sink for optimum thermal management, external DC-DC driver with voltage range of 45-51V and Uniform, color consistent, soft and glare free light using Polystyrene diffuser.
- c) The fitting suitable for recess mount application, IP 20 compliant.
- d) The warrantee of the fitting not less than 2 years.

Specifications:

Sl. No.	Parameters	Units	Specification
1	Operating Voltage	VDC	45-51
2	Efficiency	%	92+/- 2%
3	Power Consumption	W	≈32
4	CRI		>80
5	CCT	K	5200-6700
6	LED lumens output	Lm	4150
7	Input Reverse Polarity Protection		Yes
8	Output Short circuit protection		Yes
9	Output Open circuit protection		Yes
10	Thermal Shutdown		Yes

7. 5w, 48 volts DC LED bulb for Bulkhead fitting (IP20 Compliant) for item 9:

- a) The 5W DC LED bulb should be highly efficient, reliable and working with 48V DC.
- b) The construction of the LED bulb shall be high power LEDs with 120 lumens/watt, heat sink covered with PBT for good aesthetics and thermal management, external DC-DC driver with voltage range of 45-51V and Suitable to mount in all standard B22 holders for indoor applications.
- c) The Bulb suitable for fixing in wall/ceiling mount fixture.
- d) The warrantee of the system not less than 1 year.

Specifications:

Sl. No.	Parameters	Units	Specification
1	Operating Voltage	VDC	45-51
2	Power Consumption	W	≈5
3	CRI		>80
4	CCT	K	5200-6700
5	LED lumens output	Lm	600
6	Input Reverse Polarity Protection		Yes
7	Output Short circuit protection		Yes
8	Output Open circuit protection		Yes
9	Transient Voltage Protection		Yes

8. 30w, 48 Volts DC powered ceiling fan with feature for remote operation for Item 11:

Parameter	Specifications
Type of fan	External rotor
Type of motor	PM BLDC
Fan size (Sweep)	1200 ±5 mm
Nominal Operating Voltage	48 V DC
Operating Voltage Range	45-52 V DC
Power input	30 W Max
Max Speed	300 – 320 RPM
Air delivery at max speed	200-210 m ³ /min
Motor controller	Sensor less control strategy
ON/OFF and speed control operation	With built-in remote (IR) Sensor for external remote control
Multiple speed settings	From 180 RPM to max speed in near equal steps from remote
Starting	Fan shall start and run at 45V to 52 V DC
Start up at all speeds	Smooth starting with a maximum of 180 degree (mechanical) reverse rotation, if any.
Memorising last set speed	Fan controller shall be capable of running at the last set speed, at the time of Power ON
Insulation resistance	5 M Ohm @ 600 V DC

Winding Temperature rise	70 ° C
Type of blades	Aluminium sheet
Protection features	Blocked Blade, Reverse polarity, Over voltage and Over Current
Operating noise at at full speed	65 dBA
No load operating noise	52 dBA
Motor construction	Totally enclosed type
Corrosion resistance	Motor body and blades shall be corrosion resistant
Safe operation temperature	50 ° C
Max humidity	90 % Rh
Other fan accessories	Standard down rod, canopy and shackle clip
Safety features	Compliance to mechanical safety of fan suspension system (clamp and down rod)
Remote Specifications:	
Parameters	Specifications
IR Transmitter:	Infrared LED, 940nm
Operation Protocol	NEC
Carrier Frequency	38 kHz
Indicator LED:	3mm Red LED
Maximum operating distance:	3 m
Max. Key Count:	Six
Type of Switches	Tactile
Fan key count:	3 (on/off, Speed increase and decrease)
Light key count:	3 (on/off, Light increase and decrease)
Controller:	16bit Microcontroller
Power Supply	3V Lithium battery, Model: CR2032
Power Consumption (Avg.):	Less than 20 mW
Enclosure Material:	ABS Plastic
Approx Dimensions (l × w × h):	80mm×40mm×18mm
Approx. Weight:	35 gms.

8. Exhaust Fan Specifications for Item 12:

Parameters	Specifications
Motor Design	DC Brushless Motor
Housing	Aluminium Die-Cast
Impellor	Metal
Bearing	Ball Bearing
Operating Voltage	48V (45 to 51V DC)
Dielectric Strength	AC 500V for 1 minute
Insulation	Class B Protection Grade IP 44
Speed Control	0-10V / PWM Motor current limit soft start
Connection	Terminal PA – 10
Motor Protection	Ultra Temperature Protection under standard speed
Operating Temperature	-20 to +80 degree Celsius (operating)
Net Weight	2.3 kg
Max Input Current	1.10 Amps
Input Power	53 Watts (Max)
Speed (RPM)	2850 RPM
Air Flow (CFM)	645 CFM
Static Pressure	25 mm H2O
Noise (dB)	67 dB (A)
Dimensions	225 mm

9. 500 watts Integrated DC Power Supply System (IPS) for item No.13

The unit converts 230V AC supply (Alternating Current) to 48VDC supply (Direct Current) and it can deliver 500 watts power output. The equipments compatible with this product are 48V DC Tube lights, Brushless DC Fans, LED/LCD Televisions, DC Mobile phone charger, DC Laptop charger, DC Dessert Cooler etc. All these equipments must operate on 48VDC supply.

Specifications:

Sl. No.	Parameters	Specifications
1	Input AC supply	150-250V AC 50Hz +/- 5Hz
2	Input Current	3.6A max
3	Input Power factor	>0.95 at 25% full load
4	Output Voltage	48V DC

5	Output voltage window	45-51V adjustable
6	DC output current	10.4 amps
7	DC output power	500 watts
8	Power conversion efficiency	>93%
9	Output voltage regulation	< 1 % from 10 % Load to Full load
10	Output Ripple	< 200 mV p-p at Full load
11	Isolation	Input and Output: 2KV DC Input and earth: 600V DC
12	Protection features at AC Input	Fuse, MOV for transient, Under voltage and over voltage
13	Protection features at DC Output	Over voltage, over load, Inrush current limiting, short circuit, Over Temperature shut-off, Hot Plug inrush current limiting.
14	Operating Temperature and humidity	0 deg C to + 50 deg C; up to 95% RH
15	Nature of cooling	Forced air
16	Applicable Standards	Compliance to electrical safety, EMC and environmental conditions
17	Remote Monitoring	Yes
18	Communication Interface	Yes
19	MTBF	>300,000 hours Telcordia SR-332

10. 1.0 kW Integrated DC Power Supply System (IPS) for item No.14:

The unit converts 230V AC supply (Alternating Current) to 48VDC supply (Direct Current) and it can deliver 1.0 kW power output. The equipments compatible with this product are 48V DC Tube lights, Brushless DC Fans, LED/LCD Televisions, DC Mobile phone charger, DC Laptop charger, DC Dessert Cooler etc. All these equipments must operate on 48VDC supply.

Specifications:

Sl. No.	Parameters	Specifications
1	Input AC supply	180-250V AC 50Hz +/- 5Hz
2	Input Current	7.2 A max
3	Input Power factor	>0.95 at 25% full load
4	Output Voltage	48V DC
5	Output voltage window	45-51V adjustable
6	DC output current	20.8 amps
7	DC output power	1000 watts
8	Power conversion efficiency	>93%
9	Output voltage regulation	< 0.5 % from 10 % to Full load
10	Output Ripple	< 200 mV p-p at Full load
11	Isolation	Input and Output: 2KV DC

		Input and earth: 600V DC
12	Protection features at AC Input	Fuse, MOV for transient, Under voltage and over voltage
13	Protection features at DC Output	Over voltage, over load, Inrush current limiting, short circuit, Over Temperature shut-off, Hot Plug inrush current limiting.
14	Operating Temperature and humidity	0 deg C to + 50 deg C; up to 95% RH
15	Nature of cooling	Forced air
16	Applicable Standards	Compliance to electrical safety, EMC and environmental conditions
17	Remote Monitoring	Yes
18	Communication Interface	Yes
19	MTBF	>300,000 hours Telcordia SR-332

11. 2.4 kW Integrated DC Power Supply System (IPS) for item No.15

The unit converts 230V AC supply (Alternating Current) to 48VDC supply (Direct Current) and it can deliver 2.4 kW power output. The equipments compatible with this product are 48V DC Tube lights, Brushless DC Fans, LED/LCD Televisions, DC Mobile phone charger, DC Laptop charger, DC Dessert Cooler etc. All these equipments must operate on 48V DC supply.

Specifications:

Sl. No.	Parameters	Specifications
1	Input AC supply	180-250V AC 50Hz +/- 5Hz
2	Input Current	18 A max
3	Input Power factor	>0.95 at 25% full load
4	Output Voltage	48V DC
5	Output voltage window	45-51V adjustable
6	DC output current	49.92 amps
7	DC output power	2400 watts
8	Power conversion efficiency	>94% from 30% to 100% load
9	Output voltage regulation	< 1 % from 10 % Load to Full load
10	Output Ripple	< 300 mV p-p at Full load
11	Isolation	Input and Output: 2KV DC Input and earth: 600V DC
12	Protection features at AC Input	Fuse, MOV for transient, Under voltage and over voltage
13	Protection features at DC Output	Over voltage, over load, Inrush current limiting and short circuit
14	Operating Temperature and humidity	0 deg C to + 50 deg C; up to 95% RH

15	Nature of cooling	Forced air
16	Applicable Standards	Compliance to electrical safety, EMC and environmental conditions
17	Remote Monitoring	Yes
18	Communication Interface	Yes
19	MTBF	>300,000 hours Telcordia SR-332

PRICE BID – DC FITTINGS

S.No.	Description of items	Qty.	Unit	Rate	Amount
1.	Supply of LED 4 feet tube light fitting including Driver with Extruded Al Housing, with opal acrylic diffuser of 17W LED direct 48±3V input to LED fixture including all accessories required for fixing the same in the ceiling/wall.	1000 Nos.	Each		
2.	Supply of LED Mirror light fitting including Driver with Extruded Al. Housing, with opal acrylic diffuser of 8W LED direct 48±3V input to LED fixture including all accessories required for fixing the same on the ceiling/wall.	80 Nos.	Each		
3.	Supply of LED 4 feet tube light fitting including Driver with Extruded Al Housing, with opal acrylic diffuser of 32 W LED direct 48±3V input to LED fixture including all accessories required for fixing the same in the ceiling/wall.	30 Nos.	Each		
4.	Supply of white Al casting housing with acrylic/poly carbonate diffuser of 9W Cool white LED Circular type surface mounting fitting direct 48±3V input to LED fixture including Driver and all accessories required to fixing the same in the wall / ceiling	740 Nos.	Each		
5.	Supply of white Al casting housing with acrylic/poly carbonate diffuser of 9W Cool white LED Circular Recessed mounting light fitting direct 48±3V input to LED fixture including Driver and all accessories required to fixing the same in the wall / ceiling	280 Nos.	Each		
6.	Supply of 5W Cool white LED wall bracket fitting direct 48±3V input to LED fixture including Driver and all accessories required to fixing the same in the wall / ceiling	680 Nos.	Each		
7.	Supply of white Al casting housing with acrylic/poly carbonate diffuser of 32W Cool white LED recess mounting (600mm x 600mm) light fitting direct 48±3V input to LED fixture including Driver and all accessories required to fixing the same in the ceiling.	36 Nos.	Each		
8.	Supply of white Al casting housing with acrylic/poly carbonate diffuser of 32W Cool white LED surface mounting (600mm x 600mm) down light fitting direct 48±3V input to LED fixture including Driver and all	55 Nos.	Each		

	accessories required to fixing the same in the wall / ceiling				
9.	Supply of Bulk head luminaires suitable for 5w 48±3V DC LED bulb as per the detailed Specification	30 Nos.	Each		
10.	30 w, 48±3 V, BLDC Ceiling fan, 1200mm sweep (3 wings) including DC remote as per the detailed Specification.	800 Nos.	Each		
11.	53 w, 48±3 V, BLDC Exhaust fan, 225 mm sweep(3 wings) as per the detailed Specification	120 Nos.	Each		
12.	500 w, AC-DC converter (DPU)- 1No. with 4 MCBs in Metal Enclosures as per the detailed Specification.	15 Nos.	Each		
13.	1000 w AC-DC converter (DPU)- 1 Nos. with 4 MCBs in Metal Enclosures as per the detailed Specification	4 Nos.	Each		
14.	2400 w, AC-DC converter (DPU)- 1 Nos. with 12 MCBs in Metal Enclosures as per the detailed Specification	48 Nos.	Each		
				TOTAL	
				Taxes if any	
				G TOTAL	

Total amount in fig. and in words:

Signature with Seal