ANNEXURE: I

TECHNICAL BID PROFORMA

Item Name: DC electronic load and power supply.

1.0 Bidder Eligibility Criteria:

I	**Bidder Eligibility Criteria-I (Public Procurement – Preference to Make in India)**	**Class I / Class II**	**Local Content value**	**Reference, Page No.**
I	Only 'Class-I local suppliers' and 'Class-II local suppliers', as defined under DIPP, MoCI Order No. P-45021/2/2017-PP (BE II) dated 16th September 2020 and other subsequent orders issued therein.			

2.0 Technical Compliance:

S.NO	Specification	Complied/Not Complied	Ref. No
1	Number of DC electronic load required: One (chassis + module)		
2	Number of power supply required: One		
Electronic load specifications:			
1.	Electronic load should have a chassis that can Accommodate upto 1.8 kW or more power		
2.	Have more than five modules/channels of varying electronic load power (quote for only one module for the present tender)		
3.	Be upgraded later with additional modules/channels		
4.	The electronic load should be able to operate in constant current (CC), constant voltage (CV), or constant resistance (CR) modes		
5.	It should operate under triggered input and 16-bit V, A & P measurement functions.		
6.	Front panel control with keypad should be available for controlling the load		
7.	The total power should be able to split into multiple independent channels with lower power, ideally six independent channels		
8.	The independent channels should be able to group and operate together		
9.	The quoted product should have built-in pulse generator for continuous, pulsed, and toggled transient operation		
10.	overvoltage, overcurrent, overpower and overtemperature protection extensive self test, status reporting, and software calibration		

11.	The equipment should have built-in GPIB and RS-232 interface programming with SCPI command language		
12.	The input rating should be following: Current: 0 – 120 A, Voltage: 0 – 60 V, and Maximum Power: 600 W independent channel		
13.	In constant current mode of operation, it should have low range/high Range: 15		
14.	A/120 A, Regulation: 10 mA, Low Range Accuracy: 0.1% + 15 mA		
15.	In constant voltage mode of operation, it should have low range/high Range: 6 V/60		
16.	V, Regulation: 20 mV, Low Range Accuracy: 0.1% + 3 mV		
17.	In constant resistance mode of operation, multiple ranges ranging from milliOhms to1000 Ohms should be possible		
18.	It should have ripple and noise voltage of 8mVrms and current of 6mArms		
19.	Should have dwell characteristics of Range 0 - 10 s, Resolution 1 ms, Accuracy 5ms		
20.	Should possess transient generator of different frequency range between 0.25 Hz and 10 kHz with high accuracy, and pulse width of 50 μs ± 1% to 4 seconds ± 1% or better.		
21.	Low voltage operation 2V @ 120A, analog output control voltage/current 0-10V,		
22.	compliance UL 61010B-1, IEC 61010-1/EN 61010-1, CSA C22.2 No. 1010., operating		
23.	temperature range 0 °C to 55 °C		
24.	s. Input power supply should be based on Indian power conditions, 220-230 VAC and50 Hz.		
25.	DC Power Supply Specifications		
26.	Should operate with an AC input of 3 Phase 415 VAC Nominal ±10%, 45-65 Hz		
27.	DC output of Voltage: 0 – 200Vdc, Current: 0 – 140Adc Auto Range		
28.	It should have an output isolation of ±400Vdc, positive output to chassis ground, continuous		
29.	It should have an accuracy for voltage programming and readback: ≤ 200mV of full- scale voltage, and current programming and readback: ≤ 300 mA of full-scale current		
30.	It should have front panel control with Voltage / Current setting using number keypad & rotary nob		

31.	The operation mode on front panel should be CV, CC		
32.	It should have protection for over-voltage, overcurrent, over-temperature, and		
33.	reverse voltage protection		
34.	output voltage/current ripple of 40mV/45mA or better		
35.	Remote Sense Compensation Voltage of 5V or better should be provided		
36.	Output response time should be ≤ 30 ms at full load		
37.	It should have a command response time of <25 ms or better		
38.	Quoted product should have an efficiency of 90% typical at nominal line and max load		
39.	It should have a stability of ±0.1% for extended hours of operation.		
40.	Should have capability to expand to 100KW higher power levels by paralleling the		
41.	units (expansion will be done in future)		
42.	Graphical User Interface should provided for continuous recording of the voltage,		
43.	current & power for all channels and measurement trend data logging		
44.	analog interface input selectable: 0 to 5 V or 0 to 10 V should be provided to external data triggering/data collection		
45.	Should interface with GPIB, USB 2.0, 10/100 LAN, LXI compliance, SCPI 1993		
46.	IEEE488.2 compliant interface		
47.	It should have a control software for live remote monitor & control		
48.	It should have an acoustic noise less than 55 dBA for quiet operation		
49.	Chassis/frames size of 3U (5.25 inch/13.34 cm) to fit 10 kW power supply		
50.	Both the power supply and electronic load should be provided from same OEM for ease of		
51.	compatibility and avoid delay in communications		
52.	LabviewTM drivers should be readily available for the quoted products for integration with		
53.	computer		
54.	Minimum one year warranty from the date of installation		
55.	Optional items: Any additional accessories required for operation should be quoted.		

56.	The bidder should have supplied at least three similar instrument in India in the past three years. List of their customers and their contact details should be provided. IIT-Madras shall inquire the bidders' customers about the quality of product/service. If the testimonial from their customers is not satisfactory, IIT-Madras reserves the right to reject the bid based on technical grounds.		
57.	Installation and training onsite is required.		