Indian Institute of Technology Palakkad
भारतीय प्रौद्योगिकी संस्थान पालक्काड
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शिक्षा मंत्रालय के अधीन, भारत सरकार

IIT PALAKKAD

16-02-2021

CORRIGENDUM – I

Sub.: SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF BATTERY TEST SYSTEM (DC ELECTRONIC LOAD/DC POWER SOURCE/CUSTOMIZED CONTACTOR RELAY BOARD)

Ref.: ITPKD/ME/SC/068/2020-21 dated 11-02-2021

The following revisions may please be noted in the Tender Document cited in the reference above.

References (Page No.1)

S. No.	Particulars	Link
1	Amendments to the Tender Document	https://iitpkd.ac.in/sites/default/files/purchase/01AmendmentstotheTenderDocument.pdf
2	Language / Format / Signing of the Bids	https://iitpkd.ac.in/sites/default/files/purchase/02LanguageFormatSigningoftheBids.pdf
3	Conformity of the Tender Document	https://iitpkd.ac.in/sites/default/files/purchase/03ConformityoftheTenderDocument.pdf
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10	Intellectual Property Rights, Warranty and Indemnity	https://iitpkd.ac.in/sites/default/files/purchase/10IntellectualPropertyRightsWarrantyandIndemnity.pdf
11	Format of Bank Guarantee	https://iitpkd.ac.in/sites/default/files/purchase/11FormatofBankGuarantee.pdf
12	Procedure for Submission of e-Tender	https://iitpkd.ac.in/sites/default/files/purchase/12ProcedureforSubmissionofe-Tender.pdf

Technical Specifications of the Equipment

1	**GENERAL PURPOSE OF THE SYSTEM**	Testing of Lithium-ion battery packs
2	**DC ELECTRONIC LOAD**	Programmable DC electronic load
2.1	**Operating range**	
2.1.1	Rated voltage	0 – 180 V or better
2.1.2	Rated current	0 – 300 A or better
2.1.3	Rated power	3000W or more
2.1.4	Min operating voltage	1.8V @ 280A or better
2.2	**AC Input**	
2.2.1	Voltage	220 230 V
2.2.2	Frequency	50 – 60 Hz
2.2.3	Power	180VA or better
2.2.4	Fuse	2.5A or better
2.2.5	Input terminal impedence	300 kΩ or better
2.3	**Protection**	
2.3.1	Over Voltage Protection	adjustable (maximum voltage 200V) or better
2.3.2	Over Current Protection	adjustable (maximum current 325A or better)
2.3.3	Over Power Protection	maximum 3050W or better
2.3.4	Over Temperature Protection	80 °C or better
2.3.5	Over voltage safety value	110% VF.S
2.3.6	Reverse alarm	should be present
2.3.7	Alarm tone	should be present
2.4	**Static Mode**	
2.4.1	Constant current mode - Range	0-320A or better
2.4.2	Resolution	5 milliampere or better
2.4.3	Accuracy	±(0.05%+ 0.05% FS) or better
2.4.4	Constant voltage mode - Range	0 – 120V or better
2.4.5	Resolution	2 millivolt or better
2.4.6	Accuracy	±(0.05% + 0.05% FS) or better
2.4.7	Constant power mode - Range	0-3000 W or better
2.4.8	Resolution	100 milliwatt or better
2.4.9	Accuracy	±(0.2% + 0.2% FS) or better
2.4.10	Constant resistance mode-Range	adjustable (1000 milliohm - 2000 ohm @200 V)or better
2.4.11	Resolution	1000 milliohm or better
2.4.12	Accuracy	Vin /Rset (0.2%) +0.2% I.FS or better
2.5	**Dynamic Mode (CCD/ CRD)**	
2.5.1	Resolution	10 µs or better
2.5.2	Accuracy	5 µs + 100 ppm or better
2.5.3	Slew Rate	5 mA /µs – 3.2A/µs or better
2.5.4	Slew Rate Resolution	5 mA / µs or better
2.5.5	Slew Rate Accuracy	5% ± 10 µs or better
2.6	**Measurement/ Read back**	
2.6.1	Current - Range	0-320A or better
2.6.2	Resolution	5 milliampere or better

2.6.3	Voltage - Range	0 – 120V or better
2.6.4	Resolution	10 millivolt or better
2.6.5	Power - Range	3000 W or better
2.6.6	Sampling frequency	500 kHz or better
2.7	**Battery discharge test**	must have battery discharge function and should be able to perform discharge test under CC,CR,CP mode
2.8	**Communication**	RS232, RS485 and USB
2.9	**Software**	Should be provided for controlling the load operations through computer
3.0	**General**	
3.1	Operating temperature	0 °C to 40 °C or better
3.2	Humidity	Indoor use, ≤ 95%
3.3	High current cables for connecting to battery pack	Current rating 120 A or more.
3.4	Length of high current cables	2 m positive and 2 m negative side or more with properly crimped end termination for connecting to battery pack
3.5	Dimension and cooling	2U rack mountable and forced air cooled using inbuilt fan
3.6	Weight	preferably less than 40 kg
4	BATTERY MANAGEMENT SYSTEM (BMS) WITH CANBUS	
4.1	Compatability	For Li-ion battery pack upto 48V nominal (60V maximum) or better
4.2	Individual Cell Voltage rating	0.2V-5V per cell
4.3	Rated pack voltage	48V nominal (60V maximum)or better
4.4	Rated pack current	100A or better
4.5	Number of supported cells in series	1 to 16 or better
4.6	Supply voltage Vdc	10-60V
4.7	Analog Outputs Voltage	Upto 5V
4.8	Cell Voltage Measurement Range	0.5- 5V
4.9	Cell Voltage Measurement Error	maximum 0.25%
4.10	Cell Balancing Current	150 milliampere or better
4.11	Cell Voltage Resolution	0.1 millivolt or better
4.12	Operating Temperature	-40 to 80 °C or better
4.13	Digital Output Sink Current	175 milliampere or better
4.14	Digital Output Voltage	60 V or better
4.15	CANBUS speed	minimum 250 Kbps or better
4.16	Cell voltage tap wiring harness for 16 cell	minimum length 1.5 m or more
4.17	I/O pre wired HARNESS- CAN bus configuration	minimum length 1.5 m or more
4.18	Current sensor harness	minimum length 1.5 m or more
4.19	One dual range current sensor (Hall effect based)	200 A or better
4.20	CAN adapter	should be present
4.21	Cell and pack level Over-voltage and under-voltage protection	should be present

4.22	Cell and pack level Over-current protection	should be present
4.23	Cell and pack level Temperature protection	should be present
4.24	Intelligent cell balancing	should be present
4.25	Cell and pack level State of charge monitoring	should be present
4.26	Cell and pack level State of health monitoring	should be present
4.27	Data logging capabilities	should be present
4.28	Stored diagnostic information	should be present
4.29	BMS should come with a default PC software that can be used to monitor battery and cell level performance, read and reset trouble codes, program battery profile information and update settings	should be present
5	**CONTACTOR MODULE AND RELAY BOARD ASSEMBLY**	
5.1	Contactor current rating	100A or more
5.2	Contactor voltage rating	50Vdc or more
5.3	Connections	should be connected to battery pack, DC source (charger) and DC electronic load
5.4	Connection rating	100A for Battery, 30A for Battery charger
5.5	Integration with BMS	Vendor should integrate the BMS with the contactor module to provide automatic cut off for battery charger and load for over Charge/Discharge conditions
5.6	Cut off for battery charger and load for over Charge/Discharge conditions.	should be provided
5.7	Internal/ external fuse protection	should be provided
6	**FEATURES OF THE COMPLETE SYSTEM**	
6.1	Communication - USB/RS232 or appropriate interface with appropriate GUI based software compatible with Windows operating system, through which one can control and monitor the discharging of battery pack.	should be present
6.2	Display - LCD display on front panel showing system status	should be present
6.3	Metering and Fault detection with alarm and auto cut-off facility in case of any emergency.	should be present
6.4	Schematic drawing showing the main components and basic schemes.	should be provided
6.5	All the design CAD drawings showing dimensions and space requirement.	should be provided

6.6	Cables and other communication connections such that one can control and monitor the discharging of battery pack.	should be provided
6.7	Spare fuses and fuse holders of appropriate rating	should be provided
6.8	Switches of appropriate types and rating	should be provided
6.9	Appropriate indicator lamps	should be provided
6.10	Duty cycle	continuous

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