



Ref No. INST/12(75)/2020-Pur

Date: 18/09/2020

CORRIGENDUM

Reference to NIT no. INST/12(75)/2020-Pur for purchase of equipment: Multichannel Battery Test System with Accessories. Below mentioned revised technical specification of equipment.

Technical Specifications for High Precision Multichannel Battery Test system Total No. of channels required: 8 (Independent channels) and facility to add more channels in future

- Single Chassis : Multichannel Modular Single Chassis
- Voltage range: ± 5 V or 0 to 10 V or better for all channels
- Voltage Accuracy: atleast 0.5mV or $<\pm 0.02\%$ or better for all channels
- Voltage Control Resolution : $\leq 200\mu\text{V}$ or better for all channels
- Max Current : 1.5 A or more per channel
- Min Current: atleast 0.05 mA or better for all channels
- Current Ranges: Auto and Manual: 4 -5 ranges (ranging 0.1mA to 1A)
- Current accuracy: $< 0.05\%$ of FSR or better
- Current Control resolution: sub micro Amps or better for all channels
- Data Acquisition/ Sampling Rate : Minimum 5ms
- Cables: 8 Nos. (atleast 2 m long)
- Cell Connections : 4 terminal leads
- Battery Holder: Coin cell holders (4 Nos)
- K-Type thermocouple Teflon rigid (2.5 meters) -25 °C to 200 °C with accuracy of ± 2 °C (4 Nos.)
- EIS (Electrochemical Impedance Spectroscopy): 10 kHz - 10mHz on each channel or better with EIS fitting software
- Provision to measure Temperature from -25 °C to 200 °C with accuracy of ± 2 °C
- Provision for Safety limits on each channel to shut down the channel in the event something goes wrong during the experiment
- Manual Emergency Stop Switch should be available in case of emergency stoppage of whole equipment for safety

Software capability:

Complete battery cycling software facility with following options:

- Galvanostatic Charge / Discharge (Including C rate control) with voltage vs. time Graph plots
- Multigraph window capable of displaying up to 10 graphs within a single window
- Customize variables graph plot for each axis
- Voltage vs. Capacity plot during Charge/Discharge Cycles
- Atleast 3 limits and 3 recording conditions per sequence/cycle (ability to limit a cycle or changeover to next sequence with Time, Voltage/Current, Charge/Power all simultaneously)
- Multiple recording conditions
- Industrial CC-CV Method (Constant Current – Constant Voltage)



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- Cyclic Voltammetry, Current Scan (Current/Galvano Dynamic), Voltage Scan (Potentio Dynamic)
 - Constant Power / Constant Resistance
 - GITT and PITT Techniques
 - Columbic Efficiency Determination with fitting tool
 - Current Interrupt
 - Rest Time
 - Multiple loops
 - Provision to connect and control External devices like Furnace, Thermal chambers
 - Monitoring status of each Channel using Global Table/Summary Table
 - Option to update the experimental setting parameters on current running experiment without pausing/stopping the channel/experiment
 - Profile Importation Option to study Urban Life Cycle Tests
 - Analysis tools like Integral, Circular or linear fit should be available

Computer Station:

A suitable branded All-in-one desktop Computer for system control & data acquisition should be offered with the system. It should have following minimum specs: CPU Intel Core i7, RAM 8 GB RAM, HDD 1 TB, GPU DirectX 9.0c compliant display adapter with 1GB RAM, DVD writer: one; Operating system: Windows 10 + MS office home & student 2016; WLAN; Wi-Fi and Bluetooth combo; Wireless mouse and keyboard

Additional Necessary Requirement:

- Installation and Commissioning: An estimated time schedule for installation, commissioning and training must be provided with free of cost.
- Catalogues related to quoted machine should be enclosed in the offer. Dimensions of equipment, weight and space requirements should be submitted in technical offer.
- Pre-installation requirements should be furnished. Hard copy of all the operational manuals related to the system have to be provided while supplying the system.
- The compliance statement should include sufficient details in support of the claim against each of the desired specifications. Just mentioning 'complied' against the desired specification will not lead to qualification.
- Upgrades / Option items should also be quoted with description
- Warranty: 2 yrs or more
- Company must have a direct service support in India along with ready availability of spare parts.

The last date for receipt of tender has been **extended upto 12th October, 2020 till 2:00PM** which will be opened on the same date at 3:00PM at INST, Mohali.

Sd/-
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