TERMA BATTERY CELL TESTER – TBCT12

FOR APPLICATIONS THAT REQUIRE METICULOUS ACCURACY AT LOWER CURRENTS THE TBCT12 PROVIDES A MAXIMUM CURRENT OF 12.5A.

TBCT12 Key Features Description

Self-Calibration Capability

Each channel in the system can self-calibrate the voltage measurement mechanism by utilizing a precision voltage reference in the device. This allows for automated voltage calibration on command without user intervention. Current calibration is done using a traditional calibration kit and requires user intervention to perform.

Built-in Snapshot

Each channel has the capability of capturing quick snapshots of the output current and voltage to provide deep diagnostic capabilities of the battery cell. This snapshot is fully programmable and can be triggered automatically during the test run.

Built-in Direct Current Internal Resistance (DCIR)

Each channel has the capability to perform a DCIR function automatically and provide the calculated results. A minimum pulse of 2msec is guaranteed.

Built-in EIS

The system can also perform EIS to give detailed data on the state of health of the cell. This powerful Feature can be used without adding any additional external testing hardware. EIS specifications:

- Plug and play integration with TBCT, integration to cell tester workflows
- AC Output Current range: 10A (p-p)
- Frequency range: 1 mHz – 10 kHz
- Battery Impedance: 0.1 mΩ– 100 mΩ
- Fast measurement with multi-sine excitation
- Accuracy of impedance measurement < 1% (of measured values)
- Voltage input resolution (AC) <2 mV
- Voltage input resolution (DC) <0.5 mV
- Voltage measurement Accuracy (DC) <0.225 mV
- Cable impedance compensation

Built-in Cyber-Security

- Operating system updates (Debian based for Embedded controller)
- Authentication Authorization for GUI
- Encrypted sensitive information:
- Security Related Telemetry
- Remote Connections
- User management
  - Configure user and passwords access
- Firewalling
- Accounts for different roles, Admin, Developer, Tester,
- Debug UART Protection
- Virus scanner installation and execution

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TBCT12 key features

	Premium	Upgrades
Current Accuracy	0.03% / 100mA	Upgrade to 0.01% / 60mA
Snapshot/Oscilloscope Function	Basic per-channel snapshot (Voltage, Current, Power)	Upgrade to Full snapshot suite with enhanced diagnostics
Channel Count	8 channels (base config)	Expand to 16 / 24 / 32 channels
Local Data Storage	1 TB	Expandable on request
Safety Features	Standard interlocks	Enhanced compliance on request
Extended Warranty	1-year standard	Upgrade to 3 or 5 years
Custom Software Plugins / API Extensions	Available on request	Available on request
Remote Voltage Sense	Yes	
Dynamic Profiles Mode	Yes	
Analog IN Per Device	4	up to 8
Analog OUT Per Device	4	up to 8
Thermistors Per Device	16	
RS485 (Full Duplex) Per Device	4	up to 8
Graphical User Interface and open API	Yes	
Snapshot per Channel	- Voltage and current measurement per channel - Up to 8192 samples per snapshot per signal - Fixed sampling rate of 10kHz - Voltage and current setpoints for triggering snapshot	- Voltage, current, temperature, analog-in and analog-out measurement per channel - Up to 8192 samples per snapshot per signal - Configurable sampling rate from 100Hz up to 100kHz - Voltage, current, temperature, analog-in and analog-out setpoints for triggering snapshot2
Cyber Security Package	No	Yes
Self-Calibration Per Channel	No	Yes
DCIR Capability	Yes	
EIS Capability[1]	No	Yes
3 same type of channels	Included	
Data Acquisition Rate	Up to 1 kHz	
Parallel Channel Operation	Supported	
Energy Efficiency	~95% regenerative	
GUI for Test Control	Included	
Open API for Automation	Included	
Installation & Commissioning	Optional add-on	
On-site Training	Optional service package	
Annual Calibration & Maintenance	Optional contract	

[1] same type of channels in the same device only

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Detailed Specifications

Static Performance

Maximum Number of Channels Per Rack	256
Number of Possible Parallel Channels (parallel only possible with channels in same device)	4
Operation Modes	CC, CV, CP
Max. Power per channel	125W
Current range	±12.5A
Voltage Range	0 - 10V
Efficiency	Up to 95%

Measurement

		Premium
Current	Resolution	300µA
	Accuracy	7.5mA
Voltage	Resolution	150µV
	Accuracy	1mV
Temperature	Accuracy	0.1°C
Data acquisition	EtherCAT	up to 1kHz
	Ethernet	up to 1kHz (bandwidth dependent)

Waveform Measurement Built-in Snapshot

Digitizing Rate Range	100 – 100KSamples/Sec
Default Digitizing Rate	10 KSamples/Sec
Memory	4096 samples

Dynamic Performance

Current Rise/Fall Time (10-90%)	< 1.8msec
Time from Minus to Maximum Current	< 2.0msec

Safety

Isolation AC Input	1.0 kV AC Input to Chassis / 1.0 kV AC to DC Output
Isolation UUT Input	1.0kV Channel to Chassis for all channels 150VDC isolation channel-to-channel for 12.5 channels in same channel group (channel groups are channels: 1-8, 9-16, 17-24, 25-32, 33-40, 41-48, 49-56, 57-64). 500VDC isolation between channels of different groups
Internal Protection	Over- Current (OC) Under-Voltage (UV) Over-Voltage (OV) Over-Power (OP) Over-Temperature
Programmable Safety	Over/Under- Current (OC/UC) Over/Under-Voltage (OV/UV) Over/Under-Power (OP/UP) Over-Temperature
Emergency Stop	Yes
Mainst over current protection	Yes
Internal Protection	Yes
Lamp	Yes
safety lockout in the front for removing power to the outputs	No
safety lockout in the front for removing power to the devices	No
safety lockout in the back for total shutdown	Yes
Programmable Safety	Yes

If you have any questions, please contact our team terma.space@terma.com

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