BaSyTec

Battery - System - Technology

CTS

Cell Test System

Research
Development
Production
Quality control

Optimized for high troughput of cells

BaSyTec is one of the leading manufacturers of battery test systems. Several hundred systems are operated today all over the world. Customers are battery manufacturers, universities, test laboratories, car makers, power tool manufacturers and producers of electronic equipment. The ongoing development is strongly related to our customer needs. BaSyTec offers today the most powerful battery test software and a wide product range. The cell test system (CTS) is made for high test throughput of single cells as it is needed from manufacturers and for quality control.

Main Features

The CTS system is optimized for testing large amounts of single cells. The maximum charge and discharge current is 5A. The automatic and dynamic current range selection allows testing of small button cell up to Laptop cells with this system. The key features are:

- 32 independent test channels
- Current ranges: 5 A, 3 A, 300 mA, 250 mA, 15 mA and 1 mA
- Automatic and dynamic current range selection
- continuous current range switching without current interruption, also in CV mode
- Voltage range of 5V/6V is optimized for single cells
- Cells are connected in four wire method
- Each channel has a temperature input for cell temperature monitoring
- Native (analog) CC operating mode
- Allows precise, high speed control through zero
- Other modes operate under digital control
- Small size, low cost
- Software compatible with all other BaSyTec battery test systems

Cell test system CTS with 32 independent channels and 2 CTS Lab with 16 independent channels each.

Typical Applications

The Cell Test System is optimized for a high test throughput of single cells.

The BaSyTec CTS test system is optimized for single cells (Li-Ion, NiMH, NiCd, Lead-Acid, DLC). It is also possible to test all other batteries that have a charging voltage below 5 V or 6 V. Typical applications are:

- Quality control in production lines
- Quality control in assembly
- Life cycle tests of cells
- Parameter tests of cells
- Application oriented tests
- Simulation of current profiles with high current dynamic
- Double layer capacitor testing

The CTS-LAB system offers less current (3A instead of 5A) but has a true bipolar voltage output and measurement so it can also be used for 3-electrode configurations.

The Innovative Concept

Compact Size

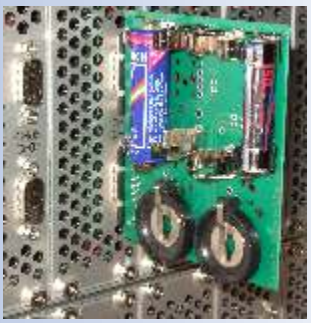
The Cell Test System is based on newest electronic circuits, resulting in low size, high accuracy, and low cost. A total volume of 70 liter for 32 test channels is the result of the compact design. A modular concept simplifies maintenance and maximizes reliability of the test system. All components for two test channels are mounted on one pcb and one heat sink designed as a plug in device. One central power supply and one central processor unit makes the system complete. The CTS system is delivered in a 19” enclosure. Several systems can be connected together if more channels are needed. The Cell test System is software compatible with all other BaSyTec battery test systems.

This allows the use and control of climate chambers, additional analogue input scanners and the open software interface to interact with customized interfaces. The approved BaSyTest Battery test software is used for programming, controlling and monitoring of battery tests.

Current ranges

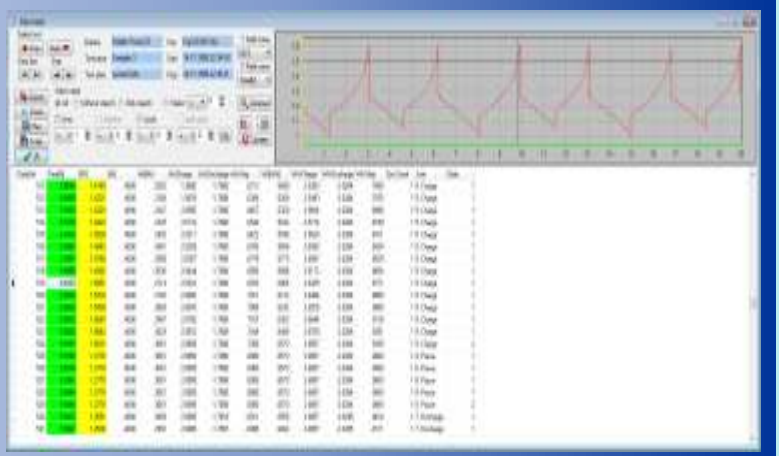
The cell test system has 6 current ranges, 5A, 3A, 300mA, 250mA, 15mA and 1mA. The CTS system selects automatically the current range. The user must not take care to select the right range. The dynamic current range selection even operates within a single program step. As an example a constant voltage charge where the current is going down with charging time will always select the best current range during the charge process. The non-interrupted current flow while current range switching is one of the key features of the CTS system.

While switching there is no current gap or a current spike. The four current ranges allow a dynamic in current of up to 1:10.000.000.
The wide current dynamic allows testing of a large range of cell sizes and of tests where a high current dynamic is required, for example running/idle applications.



Software

The BaSyTest software is used to define test procedures, to control the cell test system, to monitor running tests and to analyze test results. Test are defined by test plan written in the integrated test plan editor. Constant current, constant voltage and constant power control modes are possible. For discharging also constant resistance. The test procedures are downloaded to the test system where they are running independent from the pc.



Technical Specification

	CTS Standard	CTS LAB	CTS LAB XL
Channels per unit (max.)	32		20
Voltage range	0-6V	+/-6V	
Voltage precision	1mV		
Voltage resolution	0.3mV		
4-wire measurement	yes		
Min. discharge voltage	200mV or 0.2*current (whichever is greater)	-6V	
Current ranges (charge + discharge)	5A/300mA/ 15mA/1mA	3A/250mA/ 15mA/ 1mA	5A/300mA/ 15mA/1mA
	(Automatic and dynamic range switching)		
Current precision	1mA/50µA/ 2.5µA/0.2µA	0.5mA/50µA/ 2.5µA/0.2µA	1mA/50µA/ 2.5µA/0.2µA
Current resolution	200µA/10µA/ 0.5µA/0.05µA	100µA/8µA/ 0.5µA/0.05µA	200µA/10µA/ 0.5µA/0.05µA
Parallel operation	Yes, up to 4 channels		
Add. inputs per channel	NTC temperature		
Time resolution	1µs		
Minimum pulse length	10ms		
Current rise time	< 50µs		
3-Electrode configurations	limited	yes	yes
analogue controlled galvanostatic mode	yes		
analogue controlled potentiostatic mode(charge)	no		
Digital potentiostatic mode	yes		
Digital constant power mode	yes		
Digital constant resistance discharge mode	yes		
Software	BaSyTest		
Interface	Ethernet		
Battery connectors	D-SUB 9-pin Adapter for AAA, AA, C, D size and button cells available		
Size per unit (max.)	19” system 6HE units, 450*280*550mm		
Weight per unit (max.)	25kg		
Max. input power per Unit	< 1700W		
Input voltage range	110-264VAC / 47-63Hz		
Max. input current per unit	< 16A @ 110V, < 8A @ 220V		

Status: 1/2015

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