iBT-Industrial Battery Tester Series Specifications	
iBT-2104P	**(1.5V) to 5V -- 5A**

General Description	
Product Description	The iBT-P series consists of specially designed circuit for large volume industrial battery testing. This product is intended to provide economical large-scale battery testing capabilities with high qualities, precision, and reliabilities that require significant batch samples for product qualification. The product typically ranges from 128 to 256 channels per chassis.
Picture 41” x 28 ” x 82” (W x D x H)	
Application Notes	• Production line • Battery life cycles • Quality Control for incoming materials • Quality Control for sampling final products

Product Features	• This series target large volume testing with multiple independent channels. Each channel comes with three current ranges with 16 bit resolution and 0.05% accuracy • A unique mathematic filter is adapted in software to reduce the fluctuation of current or voltage in light of a digitalized control system • Distributed networking: All program download in the micro controller using Ethernet control board: the tester consist of Microcontroller board mainly has the following features, data sampling, and execution into program set. Current, voltage, the timing of any parameters can set to end conditions of each step. • The power failure protection to allow test resumes after power failure. • Advanced software package, MITS Pro (Multiple Integrated Testing System, professional version), provides flexible scheduling, user-friendly interface, distributed system control & DAQ and easy automatic or manual maintenance and calibration • Safety protection may include but not limited to: over current, over voltage, over temperature, PC failure, communication failure, fire/smoke alarm • Besides hardware protection, there is also software protection that provides first-line, precise, yet flexible limitations for the current, voltage, temperature, capacity and time variables. • Software limitations for V, I & T. • Modular compact design, plug and play modular system • PWM design features energy reuse energy to charge other cells. Regenerative channel are available for high current application (10A or higher). Up to 85% of discharged power from cell can be reused for charging. In addition to saving of charging power, it also saves energy for air-conditioning. • High performance at low cost • Optional custom design tray for engagement is available • For additional safety, as an option, temperature measurement can be provided, which will trigger safety protection.
Product Operation Mode	• Constant current, Constant voltage, Constant voltage to constant current, Constant current charging to constant voltage charging, C-Rate, Rest, Constant power, and Constant load. • Data record includes Current, Voltage, Time, Capacity, Energy, and cycle. • Record the conditions: Time interval Δt, voltage interval ΔV, Current interval ΔI.

Hardware Specifications Linear Bipolar Circuitry	iBT2104P
Channels per system	256
Voltage Range (min/max)	Control: 1.5 V to 5V Read: -5V to 5V
Voltage accuracy	+/- 2.5 mV
Current Ranges	5A
Current accuracy	+/- 2.5mA
Measurement Resolution	24 bit resolution with 0.00004% FSR
Control Resolution	16 bit resolution with 0.0015% FSR
Current Rising Time	2mS
Time Resolution	10mS
Voltage Clamp	Group
Maximum Power (W/Ch)	25W
Operation Modes:	Constant current, Constant voltage, Constant voltage to constant current, Constant current charging to constant voltage charging, C-Rate, Rest, Constant power, and Constant load.
Auto-Calibration	options
Connection to Computer	TCP/IP
Ventilation Method	Air cooled
Room Operating Temperature	10 to 30 deg. C
Computer Specifications	PC with 22” flat-screen monitor is included, pre-loaded with our MITS_Pro software for testing.
Chassis Size Options	**Channel Number Options**
Chassis Size (W X D X H)	41” X 28” X 82”


EMERGENCY
STOP

MITS Pro 4.0 Software Control Specifications for Formation system	
Current(A)	Outputs constant current to the cell or battery at the value specified. Positive current refers to charge, and negative current refers to discharge.
Voltage(V)	Outputs constant Voltage to the cell or battery at the value specified.
C-Rate	C-Rate is a common method for indicating the discharge as well as the charge current of a battery. It can be expressed as I = M*C Where I = current A; C = capacity of battery; M is the C-rate value.
Rest	The battery is disconnected from the charge/discharge circuit but remains connected to the Voltage measurement circuit to enable open-circuit Voltage measurement.
Power(W)	Outputs constant power to the cell or battery at the value specified. This is accomplished by iteratively measuring the battery voltage and calculating the current necessary, according to Ohm's Law *V=IR and P=IV*, to achieve the power level set by the user. Each time the channel is sampled, the calculation is performed, and the current will quickly stabilize at the desired power level and maintain this power level as the voltage changes.
Load(Ohm)	Applies a constant resistance load to the battery at the value specified. A positive value for load will result in a positive current, and a negative value for load will result in a negative current.
Set Variable(s)	Change test related variables including channel capacity, energy and all test counter variables.
Internal Resistance	This function applies a 10-pulse train with 1ms pulse width of the specified magnitude following a constant-current charge or discharge step
End Conditions	Time, Voltage, Current, Capacity, Energy, ΔV, DV/dt, formula, meta-variables, and other combinations
Data Logging Rate	During a standard step: 15 to 50ms per point per channel no more than 200 data per second
Network Capabilities	Provide TCP/IP access for networking
Data Result File	Imported into Microsoft Excel; Arbin's Excel Data Pro macro included for easy data manipulation
Data File Content	Channel data: test time, step time, voltage, current, capacity, energy, first/second derivative of I or V, auxiliary input data (optional). Statistical data: Cycle #, Cycle Capacity/Energy, Max. voltage, etc.

Auxiliaries Options & Accessories

Arbin Instruments provides a wide variety of auxiliary modules for expanding the capability of the main I/V control circuitry. Each module is a plug-n-play type board that can be added to the system. These auxiliary modules are classified as input-only, input/output, and control modules.

Input Modules

Auxiliary inputs can be used to record desired data as well as to terminate or regulate charge and discharge processes based upon measured conditions. Selectable inputs are: Voltage, Temperature, Pressure and pH.

Input/Output Modules

Digital I/O is an integrated peripheral on/off control. The output commonly is used to control valves and switches. The input allows an external control signal to control testing procedure.

Control Modules

Arbin provides control modules for auto-calibration, Smart Battery Testing, External Charger, Temperature Chamber interface and AC impedance measurement.

For more information please visit:

http://www.arbin.com/products/accessories/auxiliaries.htm

Safety & UPS Features

Several safety provisions are provided in the Arbin systems. There are three levels of fusing provided inside the system for further protection at the channel, board and power supply level. The software also has several safety functions, which can be used to avoid over-charging, discharging, over-heating etc.

Smart UPS(Optional): This option uses a very small Smart UPS to back up power to the computer only. It allows users to enable the auto-resume option to all or specific channels whenever tests have stopped due to power interruption. Provision is made for the user to intervene if required before the channels resume after power failure. This option is almost a must for facilities with unreliable power sources, unless the entire facility is under backup power.