REGENERATIVE BATTERY PACK TEST SYSTEM MODEL 17020C

The Chroma 17020C is a high-precision system designed for repeated and reliable testing of secondary battery modules and packs. Offering highly accurate sourcing and measurement, the 17020C is ideal for incoming and outgoing inspections as well as capacity, performance, production, and qualification testing.

Regenerative Discharge Capabilities

The test system efficiently recycles the energy discharged from a battery module, either from one channel to other charging channels or back to the grid, saving power and reducing thermal footprint.

Multiple Independent Channels

Supports dedicated charge / discharge tests on multiple battery modules or packs with distinct test characteristics. Channels can be paralleled for higher current requirements, offering flexibility between high channel count and high-current test.

Flexible Programming Functions

Operated with Chroma's user-friendly Battery Pro X software, which allows easy creation and execution of tests without needing advanced programming skills. Features include graphically aided test creation, pre-defined profiles, real-time monitoring, and integration with external equipment.

Backup Battery Unit (BBU) / Shelf Test

To ensure accurate BBU testing, it is essential that the slew rate of the testing equipment be minimal. The Chroma 17020C, with a slew rate of 5ms (transition from 10% to 90%), is an optimal solution for testing BBU and BBS, providing precise control and reliable performance.

Rapid Slew Rate

The 17020C features a -90% to +90% slew rate of 10ms, allowing it to replicate real drive profile conditions for accurate simulation of dynamic driving scenarios.

Safety Features

Includes Battery Polarity Check, Over Voltage Protection, Over Current Protection Check, Over Temperature Protection, and VDE-4105-AE Islanding Detection. Tested data is securely stored in non-volatile memory to prevent data loss during power or communication failures. With flexible programming functionality and user-friendly operating software, the Chroma 17020C provides a convenient, robust, and efficient solution for comprehensive battery test.

Ethernet

CE

MODEL 17020C

KEY FEATURES

- Charge / discharge modes (CC, CV, CP)
  - -Power Range: 10kW-80kW per channel with addition of 10kW per module
  - -Voltage Range: 150V
  - -Current Range: 100A per channel and parallel up to 800A
- Regenerative charge and discharge system
  - -Energy and Cost saving
  - -Low heat and less noise generation
- Parallel channel control through software
- Driving cycle simulation with 5ms slew rate from 10% to 90%.
- High resolution measurement: 1.5mV / 1mA (18 bit)
- Smooth current transition from charge to discharge or vice versa without over shoot
- Graphically aided test data analysis and statistics
- Data recovery protection after power failure

APPLICATIONS

- EV battery module
- Electric scooter
- Electric bike
- UPS
- Energy storage battery
- Power tools
- Car battery
- Lead-acid battery

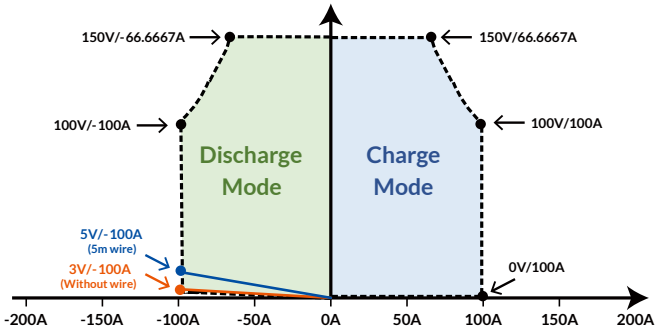
Chroma

Advancing Excellence

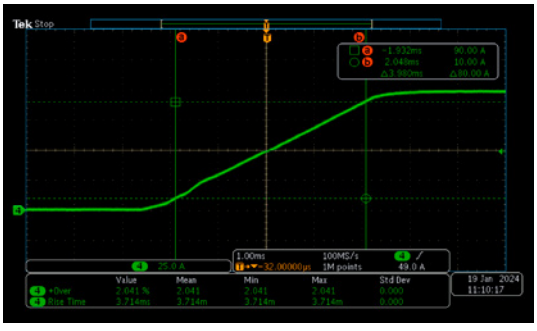
SYSTEM FUNCTIONS

■ Two measurement ranges and improved accuracy
-Voltage ranges: 60V / 150V; Current range: 50A / 100A
-Voltage accuracy: 0.02%FS, 60V ±12mV / 150V ±30mV
-Current accuracy: 0.05%FS, 50A±25mA / 100A±50mA

■ Full current discharge at 3V. Discharge current decreases below 3V as follows: 2V / -85A, 1.5V / -65A, 0.3V / -16A

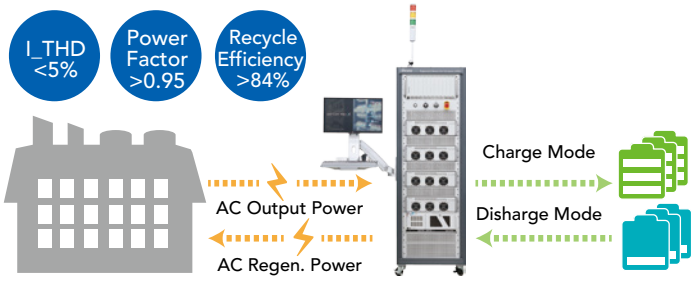


■ Smooth current transition from discharge to charge cycle
-Stable current, no overshoot during the transition
-No current interruption when switching from charge to discharge

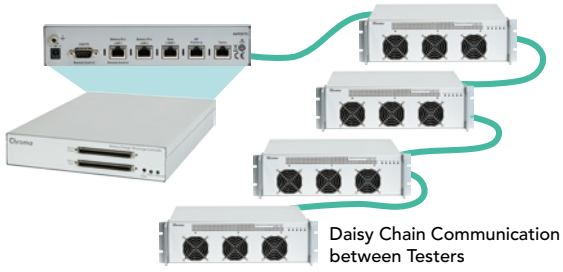


■ Operating modes
-Constant current (CC), voltage (CV), power (CP), resistance (CR), voltage-limit current (CC-CV), power-limit current (CP-CC) and Rest mode.
-Waveform current mode, DCIR mode, CV source mode

■ Regenerative battery energy discharge
-Recycled back to grid or internal loading
-Low heat output, reducing HVAC power consumption
-THD less than 5% at rated power
-PF over 0.9 at rated power



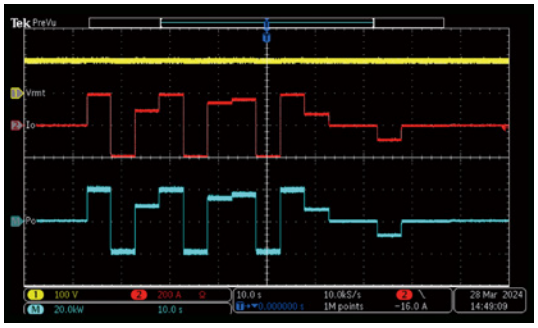
■ Communication between tester and controller
-Fast and efficient data handling: data is processed without buffering, ensuring low-latency communication across the network
-Ensures timely and accurate data exchange between devices in the daisy chain
-Min sampling rate 10ms


Daisy Chain Communication between Testers

■ Protection conditions
-OVP, UVP, OCP, UCP, OTP, UTP, over / under capacity (Ah) protections
-Reverse connection, Wire loss protection (ΔV)
-Delta Protection: -ΔV / +ΔV (V), +ΔI / -ΔI (A) protections

■ Report data recording parameters
-STEP / Test TIME / Real TIME ID / Cycle / Loop / STEP MODE / STEP TIME / VOLTAGE (V) / CURRENT (A) / CAPACITY (Ah) / Energy (Wh) / CUT OFF VOLTAGE (V) / CUT OFF CURRENT (A) / CUT OFF CAPACITY (Ah) / DCIR (mOhm) / TEMP (°C)

■ Fast current response for dynamic drive curve simulation
-Minimum slew rate of 5ms（10% to 90%）
-Report recording interval of 10ms
-Dynamic charge / discharge power and current waveforms comply with NEDC, FUDS and HPPC standards



■ Additional hardware safety features*
-Output isolation monitoring: ISO685 meter (option)
-Anti Islanding protection: VDE meter ufr1001e (option)
*: If this specification is required, please contact Chroma.

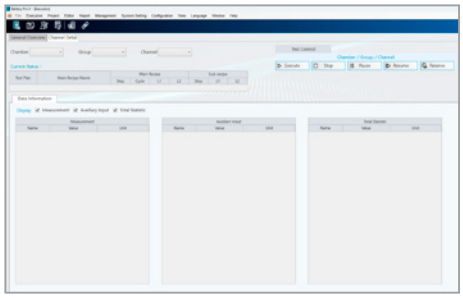

ISO685

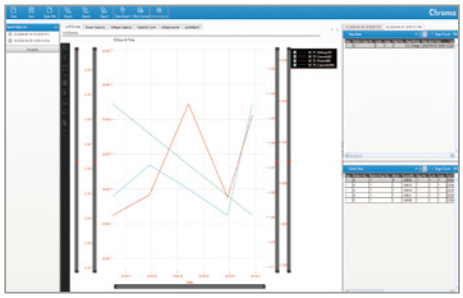

ufr1001e

GRAPHIC USER INTERFACE-BATTERY PRO X

The 17020C test system is engineered to meet the diverse requirements of testing secondary battery packs at a high level of safety and stability. The system's charge and discharge protection mechanisms automatically halt testing when abnormal conditions are detected, while its robust data storage and recovery features provide safeguards against data loss due to power failure.

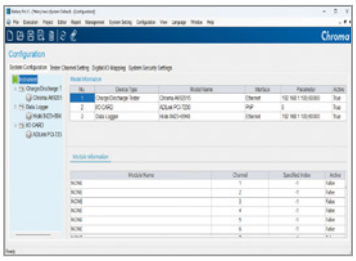
Battery Pro X main screen

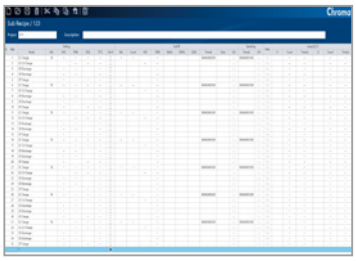

Charge / Discharge test program editor


Real time monitoring

Recipe Editor

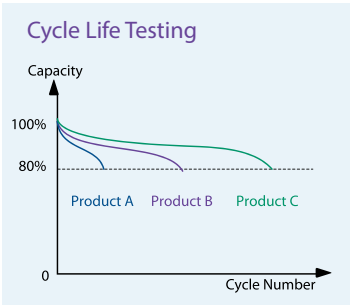
- Three-layered recipe list
- 550 charge / discharge conditions
- Set dual-layer loops (cycle & loop) with 999999 loops per layer
- Edit dynamic charge / discharge waveforms with 10ms current switching speed
- Testing steps: CV / CC / CP / CC-CV / Waveform current / DCIR
- Cut-off conditions (time, current, capacity, cut-off voltage, cut-off current, etc.)
- Next Step options: Next / End / Jump / Rest

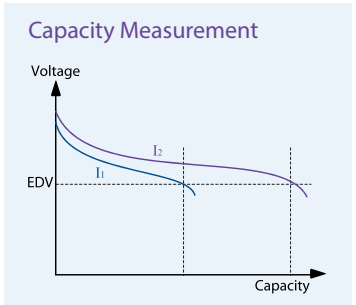




Statistical Reports

- Detailed report and step report generation
- Customized report format, exports test reports in PDF, CSV and XLS
- Graphical report function
- Report analysis function: create customized reports such as life-cycle report, Q (AH)-V (V) report, and V (V) / I (A) / T (°C) -time report through user-defined X and Y axis parameters
- Real-time browsing of per-channel test reports

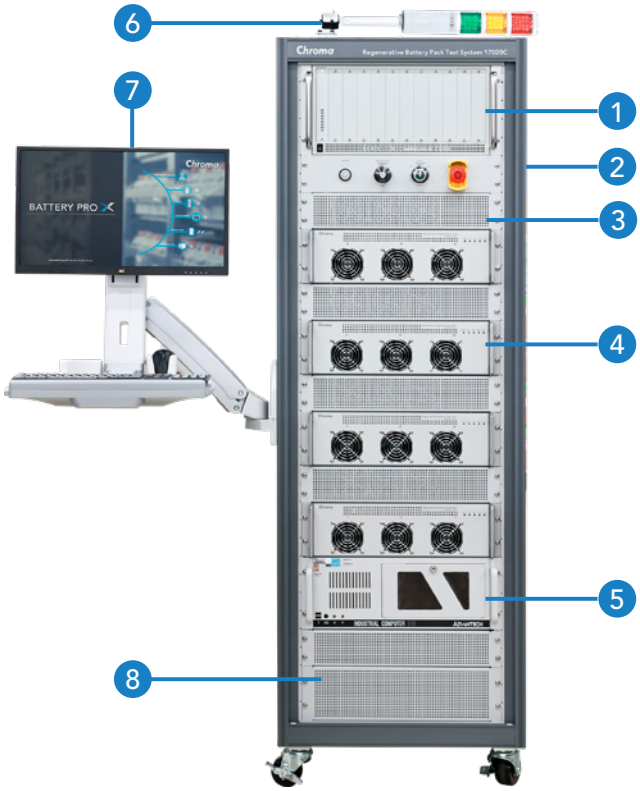




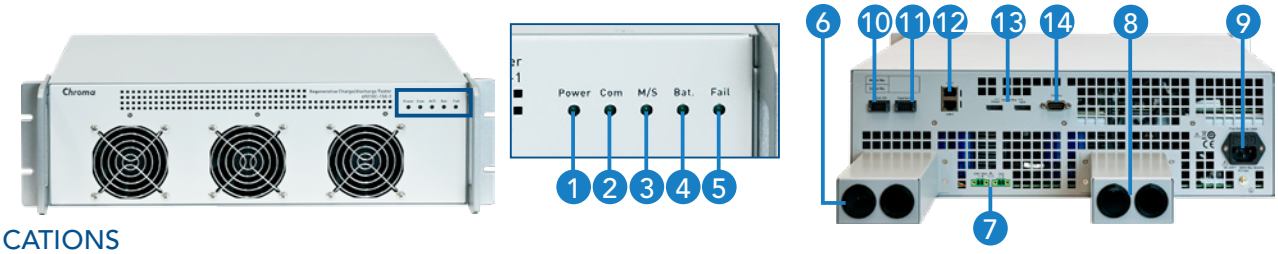
SYSTEM CONFIGURATION

1. Multi-function frame with BMS communication ports (80700+A692017)
2. Battery Charge / Discharge Data Progammer (A692015)
3. AC-DC bi-directional converter
4. Regenerative charge / discharge tester model 69210C series
5. Industrial PC (option)
6. Tower light for status indicator
7. Rack arm monitor with keyboard stand
8. Datalogger placement (option)

* Supports other equipment upon request



PANEL DESCRIPTION – 69210C SERIES REGENERATIVE CHARGE / DISCHARGE TESTER



SPECIFICATIONS

Model	17020C
Max. Voltage	150V
Max. Current	100A
Maximum Power	10kW
Channels	1-8CH
Max. Power (Parallelable)	80kW
Max. Current (Parallelable)	800A
Setting / Measurement per channel	
Voltage Range	60V / 150V
Voltage Accuracy ± (% of range)	0.02%
Current*1	50A / 100A
Current Accuracy ± (% of range)	0.05%
Voltage / Current Resolution	1.5mV / 1mA
Power	10kW
Power Accuracy ± (% of range)	0.07%
Output Ripple & Noise (0-20MHz)	
Voltage Noise (P-P) (% of full scale)	1%
Voltage Ripple (rms) (% of full scale)	0.1%
Current Noise (P-P) (% of full scale)	1%
Current Ripple (rms) (% of full scale)	0.15%
Current Programming	
Response Time (10% to 90%)	≦5ms
Response Time (-10% to -90%)	≦5ms
Response Time (-90% to 90% or 90% to -90%)	≦10ms
Overshoot	≦0.5%
AC Power	
Voltage Range	3Ø 200-220V_{ac} ± 10% $_{VLL}$*2 3Ø 380-400V_{ac} ± 10% $_{VLL}$ 3Ø 440-480V_{ac} ± 10% $_{VLL}$*3 47-63Hz for input AC Power
Current THD	<5% at rated power
Power Factor	>0.9 at rated power
Controller to PC	
Data Acquisition Rate to PC*4	Minimum 10ms
Others	
Protection	OVP, UVP, OCP, OTP, OPP, FAN
Efficiency at rated power	>=84% at 40kW
Operating Temperature	0˚C to 40˚C
Storage Temperature	-40˚C to 85˚C
Operating Humidity	10-90% RH, non-condensing
Safety & EMC	CE
Dimension (H x W x D)	
10-40kW	183cm x 60cm x 110cm

Note*1: The connection between the device and battery is a 3-meter-long cable as standard accessory. The maximum discharge current will derate at low voltage range, please refer to the detailed V-I curve.
Note*2: If this specification is required, please contact Chroma.
Note*4: 20μs sampling rate for calculating battery capacity and energy.
*All specifications are subject to change without notice.

1. Power Indicator
2. Communication with CSU Indicator
3. Parallel Indicator
4. UUT Conncetion Indicator
5. Module Failure Indicator
6. DUT Drive Cable Connector
7. DUT Sense Cable Connector
8. DC Bus from AD Converter
9. AC Input
10. Impedance Measurement Control
11. Separate Box Connector
12. CSU Controller Connector
13. Parallel Connector Port
14. AD Communication Connector

ORDERING INFORMATION

Regenerative Battery Pack Test System Model 17020C			
Power Range	Voltage (V)	Current (A)	Channels
10kW	150	100	1-4
20kW	150	200	1-2
40kW	150	400	1
80kW	150	800	1
Other Options			
HIOKI LR810X / M710X		Data logger measurement unit	
A170201		IPC for battery test system	
A692017		CAN (FD) / LIN Interface Module	
80700-5		80700 Multifunction Test Platform Mainframe 5 slots	
80700-11		80700 Multifunction Test Platform Mainframe 11 slots	

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