



Chroma's 17030 system include a driving cycle simulation function. Since automotive battery packs are used at quick and irregular intervals, the 17030 includes the capability to create seamless transitions between maximum charge and maximum discharge (or maximum discharge and maximum charge) with a rapid 50 ms conversion. This feature allows for charge/discharge mode simulations of real world driving scenarios. The system simulates the real conditions on the battery pack in its working condition.

Chroma's 17030 system has flexible programming functions and includes Chroma's powerful Battery Pro software. Battery Pro is a user friendly software environment allowing for the creation of a wide range of test scenarios from basic charge and discharge to complex drive cycle testing. Battery Pro's features allows quick and intuitive test development to eliminate the need for tedious scripting or programming by a software developer.

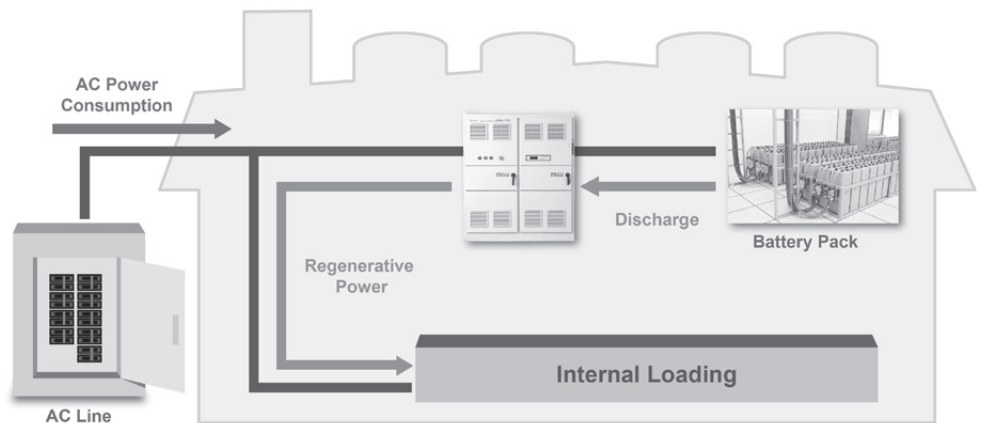
There are multiple safety features built into the 17030 including battery polarity checks, overvoltage protection, overcurrent protection and over temperature protection. In the unlikely event of a power or computer communication loss, the data is securely stored within the system in non-volatile memory thereby protecting against potential data loss and allowing for continuous flow after restart.

### KEY FEATURES

- Supports high power battery certification: IEC, SAE, GB, and etc.
- Regenerative battery discharge, Saves energy, environment-friendly and provides low heat dissipation
- Driving cycle simulator
- Industry Leading Accuracy
- 10ms Data acquisition
- Charge / discharge mode
  - Constant Current
  - Constant Voltage
  - Constant Power
- Customized rating power
  - Voltage range : 10~1200V
  - Current range : 0~1000A
  - Power range : 90~500kW (Parallel up to 2 units)
- System Integration:
  - Chamber Control
  - Multi-channels voltage/ temperature measurement (Max 256CH)
  - BMS Communication

### Regenerative Energy

- Regenerate power to grid, Low heat dissipation, reduce air-conditioner loads and facility power consumption
- THD under 5% at rated power
- The PF over 0.9 at rated power
- Efficiency above 85% when operated above 20% of rated power



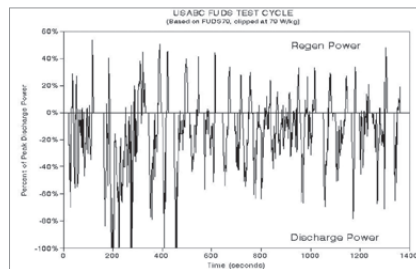
Chroma's 17030 is an automated regenerative test system specifically designed for high power battery pack tests. Accurate power sources and measurements ensure test quality suitable for repetitive and reliable testing of crucial battery packs. Applications include incoming inspections capacity validation, production and certification testing.

Chroma's 17030 system architecture offers regenerative discharging designed to recycle the electric energy sourced by the battery pack. This feature saves electricity, reduces the facilities costs, reduces the thermal foot print and provides a green solution by reducing the environmental impact to the planet.

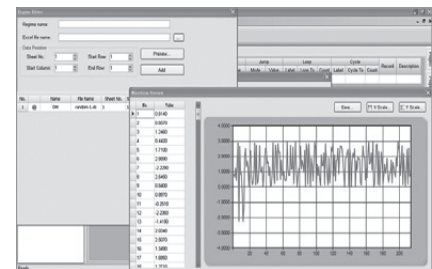
### Driving Cycle Simulation (Power/ Current Waveform mode)

Simulate real automotive working conditions by defining quick and irregular charging and discharging conditions.

- Import dynamic charge/discharge waveforms to simulate the DRIVE CYCLE or other actual applications via .xls file formats
- Supports 720,000 points within driving profile memory for saving profiles of each channel
- Minimum transition time ( $\Delta t$ ) = 10ms



Support FUDS test



Loading FUDS waveform current

## Software Function - Battery Pro

The 17030 Test system is specifically designed to meet the various requirements for testing secondary battery packs with high safety and stability. Charge and discharge protection aborts tests when abnormal conditions are detected. Data loss, storage and recovery are protected against power failure.

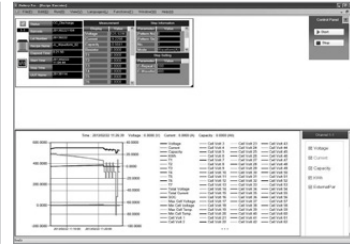
- Real-time battery pack status browse
- Icon Manager: Test status of each channel is managed through different icons, easy to read and understand
- Authority management: Allows for multiple user authority
- Fault record tracking: Records abnormal states of each channel independently

## Recipe editor

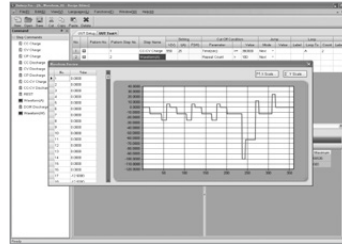
- 255 charge/discharge conditions
- Sets dual layer loops (cycle & loop) with 9999 loops per layer
- Ability to edit dynamic charge/discharge waveform
- 10ms current switching speed in waveform current mode
- Testing modes: CV/CC/CP/CC-CV/Waveform current/DCIR
- Cut-off conditions (time, current, capacity, cut-off voltage, cut-off current, etc.)



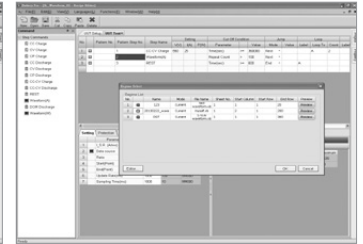
Battery Pro Main Page



Status browser



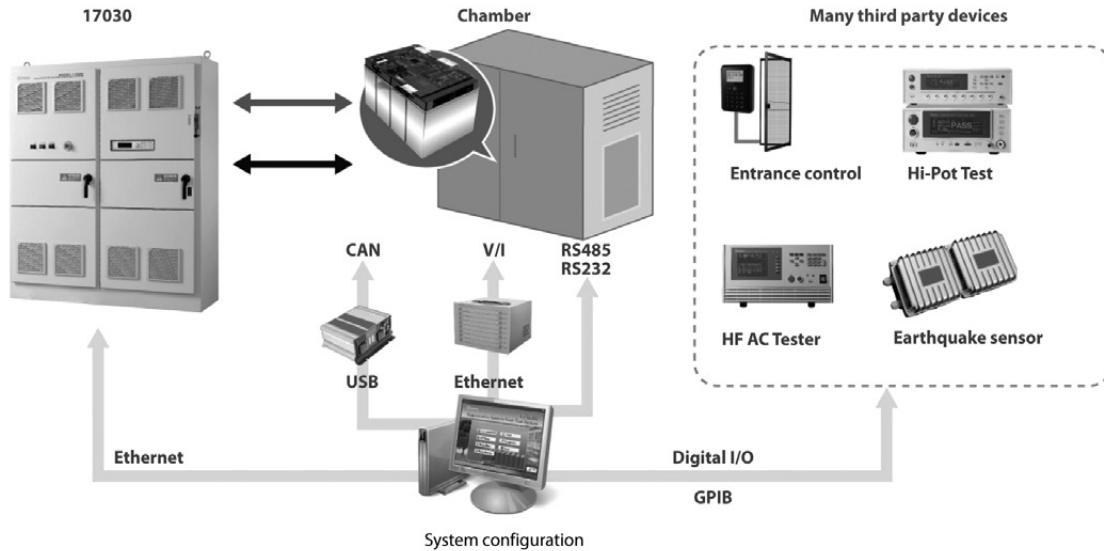
DST waveform current



Loading multi-waveform

## Software Integration

- Battery Pro can communicate to most thermal chambers for life and temperature testing .
- Many third party devices can be integrated into the 17030 via standard interface protocols (discrete I/O interface, GPIB, etc).



## ORDERING INFORMATION

Model 17030 Regenerative Battery Pack Test System			
Power Range	Voltage	Current	Channel
90kW	450V	200A	1
180kW	450V	200A	2
	700V	300A	1
210kW	900V	500A	1
250kW	700V	500A	1
	900V	500A	1
280kW	700V	200A	2
300kW	700V	1000A	1
500kW	1200V	700A	1
Others and Options			
<b>51101-64</b>	Thermal/Multi-function Data logger 64 channel (option)		
<b>A170201</b>	IPC for battery test system		
<b>A692003</b>	Thermal sensor (0~90°C) and cable (30cm)		

SPECIFICATIONS-1						
Model	17030 *					
Channel	1	2	1	1	1	
Max Power *1	90kW	180kW	180kW	250kW	210kW	
Max Power / Per channel	90kW	90kW	180kW	250kW	210kW	
Max Voltage	450V	450V	700V	700V	900V	
Max Current / Per channel	200A	200A	300A	500A	500A	
<b>Constant Voltage Mode</b>						
Voltage Range *2	15-450Vdc	15-450Vdc	15-700Vdc	15-700Vdc	19-900 Vdc	
Voltage accuracy	0.1%F.S.	0.1%F.S.	0.1%F.S.	0.1%F.S.	0.1%F.S.	
Voltage resolution	10mV	10mV	15mV	15mV	20mV	
<b>Constant Current Mode</b>						
Maximum Current	200A	200A	300A	500A	500A	
Current accuracy	0.1%F.S.	0.1%F.S.	0.1%F.S.	0.1%F.S.	0.1%F.S.	
Current resolution	10mA	10mA	15mA	20mA	20mA	
<b>Constant Power Mode</b>						
Max Power / Per channel	90kW	90kW	180kW	250kW	210kW	
Power accuracy	0.2%F.S.	0.2%F.S.	0.2%F.S.	0.2%F.S.	0.2%F.S.	
Power resolution	5W	5W	10W	20W	20W	
Current Rising Time (10% to 90% Load)	10ms with 0.2Ω Resistive load	10ms with 0.2Ω Resistive load	10ms with 0.2Ω Resistive load	10ms with 0.2Ω Resistive load	10ms with 0.2Ω Resistive load	
Ripple Noise (DC Current)	<1%F.S.	<1%F.S.	<1%F.S.	<1%F.S.	<1%F.S.	
Overshoot	<1%F.S.	<1%F.S.	<1%F.S.	<1%F.S.	<1%F.S.	
<b>Measurement *3</b>						
<b>Voltage Read Back</b>						
range	0~450V	0~450V	0~700V	0~700V	0~900V	
accuracy	0.05% rdg.+0.05% F.S.	0.05% rdg.+0.05% F.S.	0.05% rdg.+0.05% F.S.	0.05% rdg.+0.05% F.S.	0.05% rdg.+0.05% F.S.	
resolution	10mV	10mV	15mV	15mV	20mV	
<b>Current Read Back</b>						
High range	0~200A	0~200A	0~300A	0~500A	0~500A	
accuracy	0.1%F.S.	0.1%F.S.	0.1%F.S.	0.1%F.S.	0.1%F.S.	
Low range	0~50A	0~50A	0~75A	0~125A	0~125A	
accuracy	0.2%F.S.	0.2%F.S.	0.2%F.S.	0.2%F.S.	0.2%F.S.	
resolution	10mA	10mA	15mA	20mA	20mA	
<b>Power Read Back</b>						
Power range	90kW	90kW	180kW	250kW	250kW	
Power accuracy	0.2% F.S.	0.2% F.S.	0.2% F.S.	0.2% F.S.	0.2% F.S.	
Power resolution	5W	5W	10W	20W	20W	
<b>Thermal Sensor</b>						
range	0°C ~90°C	0°C ~90°C	0°C ~90°C	0°C ~90°C	0°C ~90°C	
accuracy	±0.2°C	±0.2°C	±0.2°C	±0.2°C	±0.2°C	
resolution	0.1°C	0.1°C	0.1°C	0.1°C	0.1°C	
<b>AC Input</b>						
Line voltage / Frequency *4	3Ø 200V/220V/380V/440V/480V ± 5%, 47~63Hz					
<b>Others</b>						
Audible noise level (in 1m distance)	Under 80dB					
Efficiency (Typical)	85%					
Interface *5	Ethernet					
Operation Temperature	0°C ~ 40°C					
Dimension (H x W x D) *6	Transformer	1111 x 813 x 686mm / 43.75 x 32 x 27 inch	1257 x 1041 x 813mm / 49.5 x 41 x 32 inch	1257 x 1041 x 813mm / 49.5 x 41 x 32 inch	1257 x 1041 x 813mm / 49.5 x 41 x 32 inch	1257 x 1041 x 813mm / 49.5 x 41 x 32 inch
	Power Enclosure	1982 x 1982 x 915mm / 78 x 78 x 36 inch	1982 x 1982 x 915mm / 78 x 78 x 36 inch	1982 x 1982 x 915mm / 78 x 78 x 36 inch	1982 x 1982 x 915mm / 78 x 78 x 36 inch	1982 x 1982 x 915mm / 78 x 78 x 36 inch
Weight *7	Transformer	approx. 465 kg / approx. 1025 lbs	approx. 710 kg / approx. 1560 lbs	approx. 640 kg / approx. 1400 lbs	approx. 710 kg / approx. 1560 lbs	approx. 710 kg / approx. 1560 lbs
	Power Enclosure	approx. 1140 kg / approx. 2500 lbs	approx. 1600 kg / approx. 3500 lbs	approx. 1140 kg / approx. 2500 lbs	approx. 1140 kg / approx. 2500 lbs	approx. 1270 kg / approx. 2800 lbs

SPECIFICATIONS-2					
Model		17030 *			
Channel		1	2	1	1
Max Power *1		250kW	280kW	300kW	500kW
Max Power / Per channel		250kW	140kW	300kW	500kW
Max Voltage		900V	700V	700V	1200V
Max Current / Per channel		500A	200A	1000A	700A
<b>Constant Voltage Mode</b>					
Voltage Range *2		19-900 Vdc	15-700Vdc	15-700Vdc	30-1200Vdc
Voltage accuracy		0.1%F.S.	0.1%F.S.	0.1%F.S.	0.1%F.S.
Voltage resolution		20mV	15mV	15mV	30mV
<b>Constant Current Mode</b>					
Maximum Current		500A	200A	1000A	700A
Current accuracy		0.1%F.S.	0.1%F.S.	0.1%F.S.	0.1%F.S.
Current resolution		20mA	10mA	40mA	30mA
<b>Constant Power Mode</b>					
Max Power / Per channel		250kW	140kW	300kW	500kW
Current accuracy		0.2%F.S.	0.2%F.S.	0.2%F.S.	0.2%F.S.
Power resolution		20W	10W	20W	40W
Current Rising Time (10% to 90% Load)		10ms with 0.2Ω Resistive load	10ms with 0.2Ω Resistive load	10ms with 0.2Ω Resistive load	10ms with 0.2Ω Resistive load
Ripple Noise (DC Current)		<1%F.S.	<1%F.S.	<1%F.S.	<1%F.S.
Overshoot		<1%F.S.	<1%F.S.	<1%F.S.	<1%F.S.
<b>Measurement *3</b>					
Voltage Read Back					
Range		0~900V	0~700V	0~700V	0~1200V
Accuracy		0.05% rdg.+0.05% F.S.	0.05% rdg.+0.05% F.S.	0.05% rdg.+0.05% F.S.	0.05% rdg.+0.05% F.S.
Resolution		20mV	15mV	15mV	30mV
Current Read Back					
High range		0~500A	0~200A	0~1000A	0~700A
Accuracy		0.1% F.S.	0.1%F.S.	0.1%F.S.	0.1%F.S.
Low range		0~125A	0~50A	0~250A	0~175A
Accuracy		0.2% F.S.	0.2%F.S.	0.2%F.S.	0.2%F.S.
Resolution		20mA	10mA	40mA	30mA
Power Read Back					
Power range		250kW	140kW	300kW	500kW
Power accuracy		0.2% F.S.	0.2% F.S.	0.2% F.S.	0.2% F.S.
Power resolution		20W	10W	20W	40W
Thermal Sensor					
Range		0°C ~90°C	0°C ~90°C	0°C ~90°C	0°C ~90°C
Accuracy		±0.2°C	±0.2°C	±0.2°C	±0.2°C
Resolution		0.1°C	0.1°C	0.1°C	0.1°C
AC Input					
Line voltage / Frequency *4		3Ø 200V/220V/380V/440V/480V ± 5%, 47~63Hz			
<b>Others</b>					
Audible noise level (in distance)		Under 80dB			
Efficiency (Typical)		85%			
Interface *5		Ethernet			
Operation Temperature		0 °C~ 40 °C			
Dimension (H x W x D) *6	Transformer	1257 x 1041 x 813mm / 49.5 x 41 x 32 inch	1257 x 1041 x 813mm / 49.5 x 41 x 32 inch	1257 x 1041 x 813mm / 49.5 x 41 x 32 inch	1257 x 1041 x 813mm / 49.5 x 41 x 32 inch
	Power Enclosure	1982 x 1982 x 915mm / 78 x 78 x 36 inch	1982 x 1982 x 915mm / 78 x 78 x 36 inch	1982 x 1982 x 915mm / 78 x 78 x 36 inch	2286 x 5030 x 609mm / 90 x 198 x 24 inch
Weight *7	Transformer	approx. 710 kg / approx. 1560 lbs	approx. 710 kg / approx. 1560 lbs	approx. 710 kg / approx. 1560 lbs	approx. 1420 kg / approx. 3120 lbs
	Power Enclosure	approx. 1270 kg / approx. 2800 lbs	approx. 1270 kg / approx. 2800 lbs	approx. 1650 kg / approx. 3640 lbs	approx. 2270 kg / approx. 5000 lbs

**Note\*1 :** Customized rated power : Voltage 10~1200V; max Current 1000A ; Power 90~500kW

**Note\*2 :** The output range of voltage is referred by the cabling. The connection between the device and battery is 3 meters long as standard accessory.

**Note\*3 :** 20us sampling rate for calculating battery capacity and energy

**Note\*4 :** The transformer is for isolation and to accommodate various facility voltages

**Note\*5 :** The interface from PC to 17030 is through Ethernet

**Note\*6 :** The dimension is for reference. The dimensions are subject to change base on real condition

**Note\*7 :** The weight is for reference. The weight are subject to change base on real condition