



NEBULA

5V Series-Regenerative Battery Cell Cycler Test System

Description

- Regenerative Design
- Max. Current per Channel: up to 3000A
- Max. Number of Channels: up to 16 per Rack
- Flexible Configuration with Paralleling of Channels
- Voltage: 5V Standard; 6V or 10V Versions on Demand
- Voltage Accuracy: $\pm 0.05\%$ F.S
- Current Accuracy: $\pm 0.05\%$ F.S
- Up to 4 Current Ranges per Channel for Higher Accuracy
- Temperature and Cell Voltage Measurement
- Ethernet Interface
- Windows® 10 Control Software with Industrial PC



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Features

- ✓ Modular design for easy maintenance
- ✓ Easy-to-operate control software in English
- ✓ Supports discharge voltage to 0 volts
- ✓ Channels can be connected in parallel to extend the current testing capabilities
- ✓ Voltage: 5V standard; 6V or 10V versions on demand
- ✓ Single-channel independent control, different channels can perform different tests at the same time
- ✓ CE certificate issued by TUV
- ✓ Powerful protection function
- ✓ Support battery condition simulation test
- ✓ Regenerative design
- ✓ Multiple current ranges with auto-ranging for higher accuracy
- ✓ Ethernet interface, control of external components like climate or temperature chamber

General Specifications

- Current Response Time: < 5ms (10%~90%)
- Simulation Time: ≥ 20 ms
- THD: $\leq 5\%$
- Protection Level: IP20
- Ambient Temperature: 0°C~45°C
- External Temperature Measurement of the Cells: -40°C~+120°C
- Interval of Data Recording: ≥ 10 ms
- Switching Time between Charge and Discharge: <10ms
- AC Input: 400VAC, 50-60Hz, Three-phase
- Cooling: Air cooled system, front to rear
- Relative Humidity: $\leq 85\%$ RH (No condensation)

Measuring Range	5V 300A	5V 600A	5V 900A	5V 1200A
Voltage Range/CH	0~5V	0~5V	0~5V	0~5V
Current Range/CH	± 300 A	± 600 A	± 900 A	± 1200 A
Voltage Accuracy/CH (0~45°C)	$\pm 0.05\%$ F.S.	$\pm 0.05\%$ F.S.	$\pm 0.05\%$ F.S.	$\pm 0.05\%$ F.S.
Current Accuracy/CH (10~40°C)	0~50A: $\pm 0.05\%$ F.S. 50~100A: $\pm 0.05\%$ F.S. 100~200A: $\pm 0.05\%$ F.S. 200~300A: $\pm 0.05\%$ F.S.	0~100A: $\pm 0.05\%$ F.S. 100~200A: $\pm 0.05\%$ F.S. 200~600A: $\pm 0.05\%$ F.S.	0~200A: $\pm 0.05\%$ F.S. 200~400A: $\pm 0.05\%$ F.S. 400~900A: $\pm 0.05\%$ F.S.	0~200A: $\pm 0.05\%$ F.S. 200~400A: $\pm 0.05\%$ F.S. 400~800A: $\pm 0.05\%$ F.S. 800~1200A: $\pm 0.05\%$ F.S.

Remarks: Please contact us or our distributors for more technical specifications.



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Model List

Items	Model	Number Of channels	Voltage/CH (V)	Current/CH (A)	Power/cabinet (KW)
4-layer rack	E1110025-1C4R	8	0~5	±150A	4
	E1110011-1C4R	8	0~5	±200A	8
	E1110026-1C4R	8	0~5	±250A	7
	E1110012-1C4R	8	0~5	±300A	12
	E1110013-1C4R	4	0~5	±400A	8
	E1110014-1C4R	4	0~5	±500A	10
	E1110015-1C4R	4	0~5	±600A	12
	E1110016-1C4R	2	0~5	±800A	8
	E1110017-1C4R	2	0~5	±900A	9
	E1110018-1C4R	2	0~5	±1000A	10
	E1110019-1C4R	2	0~5	±1200A	12
	E1110020-1C4R	1	0~5	±1500A	7.5
	E1110021-1C4R	1	0~5	±1800A	9
	E1110022-1C4R	1	0~5	±2100A	10.5
	E1110023-1C4R	1	0~5	±2400A	12
8-layer rack	E1110025-1C8R	16	0~5	±150A	8
	E1110011-1C8R	16	0~5	±200A	16
	E1110026-1C8R	16	0~5	±250A	14
	E1110012-1C8R	16	0~5	±300A	24
	E1110013-1C8R	8	0~5	±400A	16
	E1110014-1C8R	8	0~5	±500A	20
	E1110015-1C8R	8	0~5	±600A	24
	E1110016-1C8R	5	0~5	±800A	20
	E1110017-1C8R	5	0~5	±900A	22.5
	E1110018-1C8R	4	0~5	±1000A	20
	E1110019-1C8R	4	0~5	±1200A	24
	E1110020-1C8R	3	0~5	±1500A	22.5
	E1110021-1C8R	2	0~5	±1800A	18
	E1110022-1C8R	2	0~5	±2100A	21
	E1110023-1C8R	2	0~5	±2400A	24
E1110024	1	0~5	±3000A	15	

Remarks:

1. Dimensions of the 4-layer rack: W600*D700*H1098mm. Weight: 250KG.
2. Dimensions of the 8-layer rack: W600*D700*H1822mm. Weight: 350KG.
3. The above dimensions and weights are for reference only, and the actual product shall prevail.



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Main interface

NEETS Channel Step Edit Data Analysis Device Mgt Barcode Log Mgt User Mgt System Set

Change Discharge Slewing Simulation Pause DCIR Lock Alarm End OK Restore Default

View 12X

SuperAdmin

Device ID	Voltage (V)	Current (A)	Temperature (°C)	Status	
130_1	00:00:00	0 V	28.200,000 °C	User Stop	
130_2	00:00:00	-0.008 A	28.000,000 °C	User Stop	
130_3	00:00:00	-0.028 A	28.800,000 °C	User Stop	
130_4	00:00:00	0.001 A	28.700,000 °C	User Stop	
130_5	00:00:00	-0.001 A	28.100,000 °C	User Stop	
130_6	00:00:00	-0.017 A	28.400,000 °C	User Stop	
130_7	00:00:00	0.0000 V	0.0000 A	0.0000 °C	Lock
130_8	00:00:00	-0.011 V	0.002 A	28.100,000 °C	User Stop
130_9	00:00:00	0 V	0.002 A	27.700,000 °C	User Stop
130_10	00:00:00	0 V	-0.008 A	28.800,000 °C	User Stop
130_11	00:00:00	0 V	0.008 A	27.200,000 °C	User Stop
130_12	00:00:00	0 V	-0.003 A	28.800,000 °C	User Stop
130_13	00:00:00	0 V	-0.028 A	28.800,000 °C	User Stop
130_14	00:00:00	0 V	-0.009 A	28.400,000 °C	User Stop
130_15	00:00:00	0 V	0.016 A	28.200,000 °C	User Stop
130_16	00:00:00	0 V	0.007 A	27.800,000 °C	User Stop
130_17	00:00:00	0 V	-0.021 A	28.700,000 °C	User Stop
130_18	00:00:00	0 V	-0.015 A	28.200,000 °C	User Stop
130_19	00:00:00	0 V	-0.01 A	28.000,000 °C	User Stop
130_20	00:00:00	0 V	-0.006 A	28.800,000 °C	User Stop
130_21-130_24	User Stop				
130_25	00:00:00	0 V	0.006 A	28.800,000 °C	User Stop
130_26	00:00:00	0 V	-0.007 A	28.000,000 °C	User Stop
130_27	00:00:00	0 V	-0.006 A	27.000,000 °C	User Stop
130_28-130_30	User Stop				
130_31	00:00:00	3.308 V	-0.008 A	28.000,000 °C	Lock
130_32	00:00:00	0 V	-0.017 A	28.100,000 °C	User Stop
130_33	00:00:00	0 V	-0.005 A	27.000,000 °C	User Stop
130_34	00:00:00	0 V	-0.007 A	28.600,000 °C	User Stop
130_35	00:00:00	0 V	0 A	28.400,000 °C	User Stop
130_36	00:00:00	0 V	-0.024 A	28.200,000 °C	User Stop

Step editing interface

File(F) Step Storage Mgt Lower Machine Type Battery Model Simulation Setting(S) Protocol Editor

Step Edit

allstep_testline X

1.ne

Close All

Step Param Setting				Cut-off Condition				Sampling Interval			
Step Name	Param1	Param2	Param3	Voltage	Current	Time	Capacity	Next Step	ΔT	ΔV	ΔI
<input type="checkbox"/> 3	CH CC I: 10	A* Value™		V	A	00:00:10	S	Ah Next Step	S	V	A
<input type="checkbox"/> 4	DCH DC I: 10	A* Value™		V	A	00:00:10	S	Ah Next Step	S	V	A
<input type="checkbox"/> 5	Cycle Start Step: 3			V	A	S		Ah Next Step	S	V	A
<input type="checkbox"/> 6	CH CV U: 3:5	V* Value™		V	A	00:00:10	S	Ah Next Step	S	V	A
<input type="checkbox"/> 7	DCH DV U: 3	V* Value™		V	A	00:00:10	S	Ah Next Step	S	V	A
<input type="checkbox"/> 8	Cycle Start Step: 6			V	A	S		Ah Next Step	S	V	A
<input type="checkbox"/> 9	CH CC-CV U: 3:5	V* Value™	I: 10	V	A	00:00:10	S	Ah Next Step	S	V	A
<input type="checkbox"/> 10	DCH DC-DV U: 3	V* Value™	I: 10	V	A	00:00:10	S	Ah Next Step	S	V	A
<input type="checkbox"/> 11	Cycle Start Step: 9			V	A	S		Ah Next Step	S	V	A

Global Protect Global If Condition Single Step Protect Basic Setting

Global Condition

Voltage Upper Limit 3.6 V Voltage Lower Limit 2.9 V

Current Upper Limit 100 A

Global Recording Condition

Sampling Interval 1 s Voltage Interval V

Other Conditions

Cell Voltage Diff Limits V

Cell Temp Diff Limits °C

Total Voltage Diff Protection

BMS Aux voltage and temp

BMS Cell Total Voltage

Total Voltage Diff Limit V

Data query interface

File(F) View(V) E:\NEBULANEBT\SIC\DATA\192_168_10_130\31\20220615142853000

Data Analysis: **Device:**192.168.10.130 **Channel No.:**31 **Step:**allstep_test **Barcode:** **Remark:** **Mode:**Step Default **Current Page:**45 **Prev Page** **Next Page** **1** **GO** **Page Size:**200 ***10000** 1/1 **Total Records:**0:0045*10000 **Step Count:**5

RuntimeSeries RuntimeSeries-Voltage

RuntimeSeries-Voltage

CycleNum	ChNum	ChargeCapacity(Ah)	DischargeCapacity(Ah)	TotalCapacity(Ah)	ChargeRateCapacity(Ah/kg)	DischargeRateCapacity(Ah)
- 1-1	31	0.0277	0	0.0277	0.0277	0
+ 1	1	1	1-1	1-1	31	Other
+ 2	2	2	1-1	1-1	31	Charge
- 1-1-1	31	0.0277	-0.0277	0	0.0277	-0.0277
+ 3	3	3	1-1-1	1-1-1	31	Charge
+ 4	4	4	1-1-1	1-1-1	31	Discharge
- 1-1-2	31	0	0	0	0	0
+ 5	3	3	1-1-2	1-1-2	31	Charge

Specifications are subject to change without notice © Nebula Datasheet 5V Series 6-2022.



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