Programmable Dc Electronic Load Single And Dual Channel Benchtop Power Supply And Battery Capacity Tester

Item Number: CD12

Introduction

Engineered for precise battery characterization and power supply validation, this programmable DC electronic load delivers 1mV and 1mA resolution, advanced static and dynamic testing modes, robust multi-stage system protection, and seamless USB automated communication across industrial laboratory environments.

Learn More

Application	Description	Key Benefit
Battery Cell & Pack Characterization	Evaluates capacity degradation, internal resistance, and discharge curves of lithium-ion, solid-state, and lead-acid batteries up to 9999Ah.	Delivers automated cut-off logging and high-resolution capacity data without manual intervention.
Switched-Mode Power Supply (SMPS) Verification	Subject commercial switching converters and linear regulators to static, dynamic, and cross-regulation stress tests.	Verifies transient voltage recovery, ripple behavior, and load regulation precision under severe steps.
LED Driver & Ballast Testing	Emulates real LED diode electrical loads to verify power conversion efficiency and ripple suppression in lighting drivers.	Prevents driver damage while testing performance under variable forward voltage conditions.
Automated Production Line QC	Conducts high-speed end-of-line go/no-go screening, list-mode sequencing, and short-circuit verification on manufactured power modules.	Reduces cycle times and ensures consistent build quality through automated USB-driven routines.
EV On-Board Charger & DC-DC Testing	Applies steady and dynamic high-voltage/high-current sinking to evaluate sub-assembly automotive DC-DC conversion stages.	Ensures compliance with stringent automotive power electronics performance and safety standards.
Academic Research & Materials Science	Sinks controlled current profiles during the evaluation of novel fuel cells, supercapacitors, and photovoltaic harvesting modules.	Captures minute 1mV/1mA variations to assist in accurate electrochemical and materials modeling.

Parameter	Specification (CD12-5410)	Specification (CD12-5420)	Specification (CD12-5411)
Channel Architecture	Single Channel	Dual Channel	Single Channel
Rated Input Power	400W	400W (200W × 2)	400W
Input Voltage Range	0 to 150V	0 to 150V	0 to 500V
Input Current Range	0 to 40A	0 to 20A × 2	0 to 15A
Constant Voltage Mode Range	0.1 to 19.999V, 0.1 to 150.00V	0.1 to 19.999V, 0.1 to 150.00V	0.1 to 19.999V, 0.1 to 500.00V
Constant Voltage Resolution	1mV, 10mV	1mV, 10mV	1mV, 10mV
Constant Voltage Accuracy	±(0.05% + 0.02%FS)	±(0.05% + 0.02%FS)	±(0.05% + 0.02%FS)
Constant Current Mode Range	0 to 3.000A, 0 to 40.00A	0 to 3.000A, 0 to 20.00A	0 to 3.000A, 0 to 15.00A
Constant Current Resolution	1mA, 10mA	1mA, 10mA	1mA, 10mA
Constant Current Accuracy	±(0.05% + 0.05%FS)	±(0.05% + 0.05%FS)	±(0.05% + 0.05%FS)
Constant Resistance Mode Range	0.05Ω to 1kΩ, 1kΩ to 4.5kΩ	0.05Ω to 1kΩ, 1kΩ to 4.5kΩ	0.05Ω to 1kΩ, 1kΩ to 4.5kΩ
Constant Resistance Resolution	10mΩ, 100mΩ	10mΩ, 100mΩ	10mΩ, 100mΩ
Constant Resistance Accuracy	±(0.1% + 0.5%FS)	±(0.1% + 0.5%FS)	±(0.1% + 0.5%FS)

Parameter	Specification (CD12-5410)	Specification (CD12-5420)	Specification (CD12-5411)
Constant Power Mode Range	0 to 400W	0 to 200W	0 to 400W
Constant Power Resolution	10mW	10mW	10mW
Constant Power Accuracy	±(0.1% + 0.5%FS)	±(0.1% + 0.5%FS)	±(0.1% + 0.5%FS)
Dynamic Test Modes	CC, CV	CC, CV	CC, CV
Dynamic Timing (T1 & T2)	1ms to 60s (Resolution: 1ms)	1ms to 60s (Resolution: 1ms)	1ms to 60s (Resolution: 1ms)
Dynamic Timing Accuracy	0.1% + 1ms	0.1% + 1ms	0.1% + 1ms
Battery Discharge Modes	CC, CR	CC, CR	CC, CR
Max Battery Discharge Capacity	9999Ah	9999Ah	9999Ah
Battery Test Resolution	1mA, 10mA, 10mΩ, 100mΩ	1mA, 10mA, 10mΩ, 100mΩ	1mA, 10mA, 10mΩ, 100mΩ
Voltage Readback Range	0 to 19.999V, 0 to 150.00V	0 to 19.999V, 0 to 150.00V	0 to 19.999V, 0 to 500.00V
Voltage Readback Resolution	1mV, 10mV	1mV, 10mV	1mV, 10mV
Voltage Readback Accuracy	±(0.05% + 0.1%FS)	±(0.05% + 0.1%FS)	±(0.05% + 0.1%FS)
Current Readback Range	0 to 3.000A, 0 to 40.00A	0 to 3.000A, 0 to 20.00A	0 to 3.000A, 0 to 15.00A
Current Readback Resolution	1mA, 10mA	1mA, 10mA	1mA, 10mA
Current Readback Accuracy	±(0.05% + 0.1%FS)	±(0.05% + 0.1%FS)	±(0.05% + 0.1%FS)
Power Readback Range	0 to 400W	0 to 200W	0 to 400W
Power Readback Resolution	10mW	10mW	10mW
Power Readback Accuracy	±(0.1% + 0.5%FS)	±(0.1% + 0.5%FS)	±(0.1% + 0.5%FS)
Overvoltage Protection (OVP)	Cut-off > 155V	Cut-off > 155V	Cut-off > 510V
Overcurrent Protection (OCP)	Cut-off > 42A	Cut-off > 22A	Cut-off > 16A
Overpower Protection (OPP)	420W	220W	420W
Overtemperature Protection (OTP)	85°C Dual-stage	85°C Dual-stage	85°C Dual-stage
Short Circuit Current (CC)	≒3A / ≒40A	≒3A / ≒20A	≒3A / ≒15A
Short Circuit Voltage (CV)	0V	0V	0V
Short Circuit Resistance (CR)	≒40mΩ	≒40mΩ	≒40mΩ
Display	2.8-inch TFT LCD (400×240)	2.8-inch TFT LCD (400×240)	2.8-inch TFT LCD (400×240)
Interface	USB Device standard	USB Device standard	USB Device standard
AC Input Power Supply	220V AC ±10% / 110V AC ±10%, 45-65Hz	220V AC ±10% / 110V AC ±10%, 45-65Hz	220V AC ±10% / 110V AC ±10%, 45-65Hz
Operating Temperature	0°C to 40°C	0°C to 40°C	0°C to 40°C
Storage Temperature	-10°C to 70°C	-10°C to 70°C	-10°C to 70°C
Relative Humidity	< 80% RH	< 80% RH	< 80% RH
Physical Dimensions (W×H×D)	90mm × 190mm × 300mm	90mm × 190mm × 300mm	90mm × 190mm × 300mm