ACTIONPOWER

High Performance DC Power Supply

Cortex DC Series

0V to 2000V, 15kW to 3MW



Programmable Bidirectional DC Power Supply CE RoHS Compliant

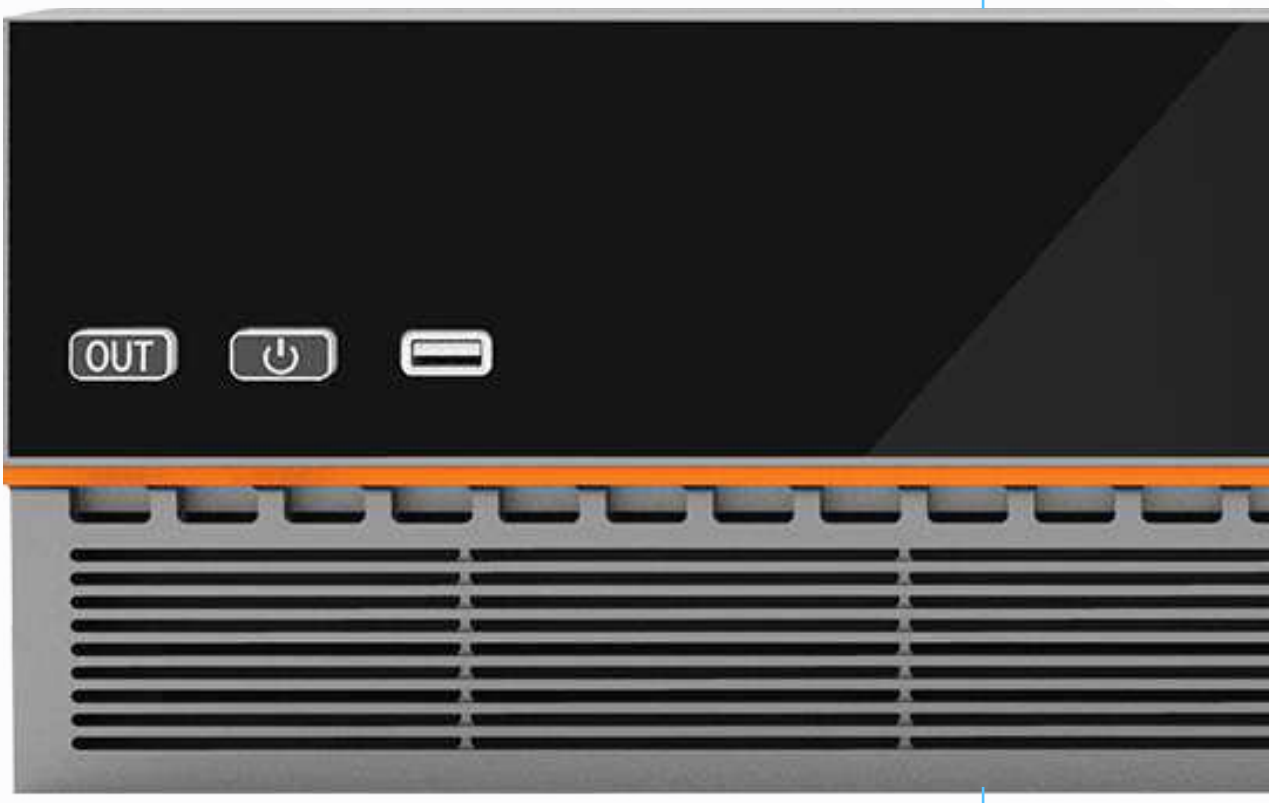
actionpowertest.com

FAST SLEW RATE
WITH EXCEPTIONAL RISE/FALL TIME
FOR SPEED-CRITICAL APPLICATION

The bi-directional power supply with the best performance, which provides 0.02% of voltage and current accuracy and 600μs of response time based on the unique topology.

600 μs
ULTRA FAST RESPONSE TIME

3U



HIGH ACCURACY
VOLTAGE & CURRENT

It performs fast dynamic characteristics by stable and precise control using equipped high accuracy voltage and current measurement device and micro-processor for digital signal.

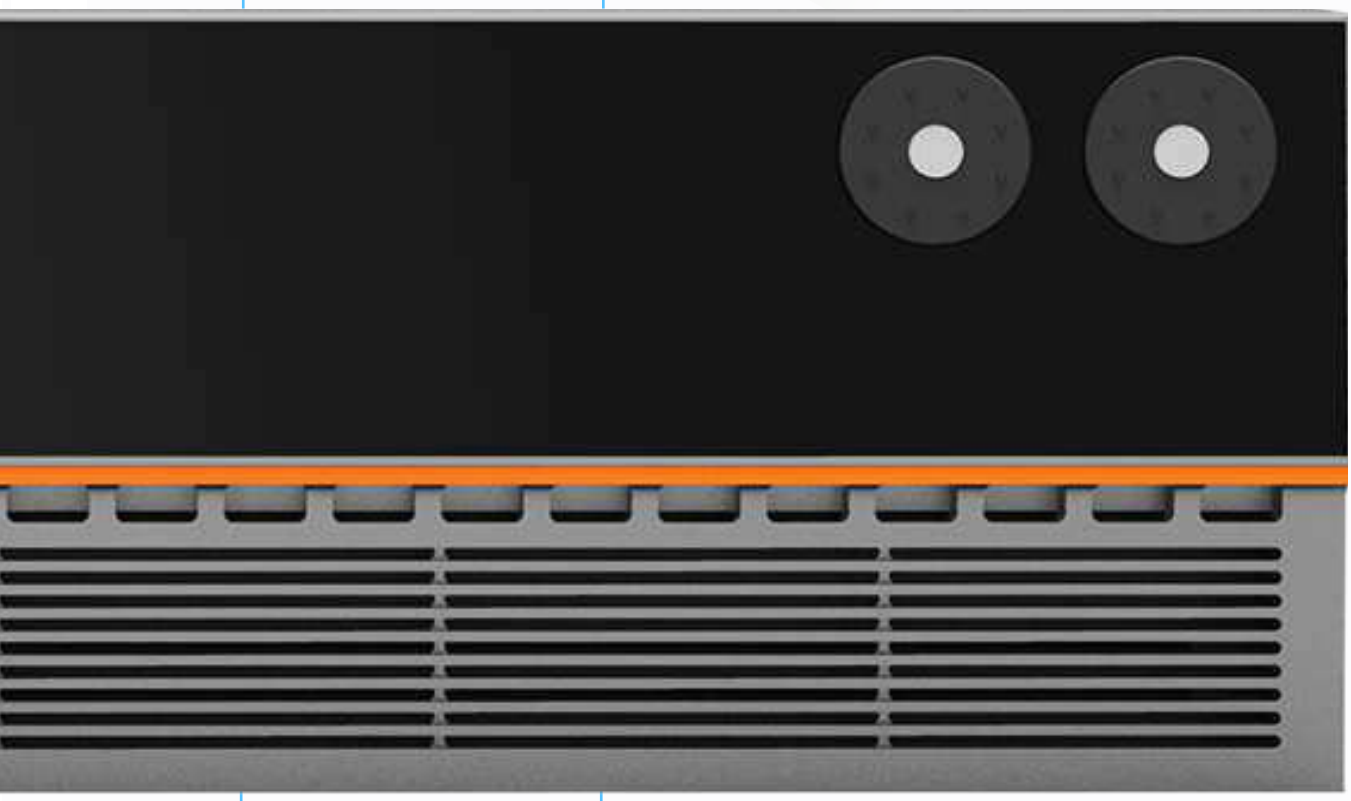
0.02%
HIGH ACCURACY

0V
SUPPORT ZERO VOLT INPUT

2000V
MAXIMUM DC VOLTAGE OUTPUT

HIGH VOLTAGE
DC POWER SUPPLY

Cortex DC series provides the safety feature that it stably maintains 0V in standby mode, and the maximum voltage range is up to 2000Vdc.



3MW
MAXIMUM DC OUTPUT POWER

30kW/3U
HIGH DENSITY POWER

HIGH POWER DENSITY
WITH AUTO RANGING

Power density of Cortex DC series is up to 30kW/3U, and it can perform numerous application test using auto-ranging function, which adjusts the voltage and current range, flexibly.

Ratings, types and voltages

Power	Model	Voltage	Current
15kW	CD15-040B	40	±667
	CD15-060B	60	±667
	CD15-080B	80	±667
	CD15-800B	800	±54
	CD15-1K0B	1000	±54
	CD15-1K5B	1500	±45
	CD15-2K0B	2000	±45

Power	Model	Voltage	Current
20kW	CD20-040B	40	±667
	CD20-060B	60	±667
	CD20-080B	80	±667
	CD20-800B	800	±80
	CD20-1K0B	1000	±80
	CD20-1K5B	1500	±60
	CD20-2K0B	2000	±60

Power	Model	Voltage	Current
30kW	CD30-800B	800	±80
	CD30-1K0B	1000	±80
	CD30-1K5B	1500	±60
	CD30-2K0B	2000	±60

FEATURES

- Fast Response Time : <600μs
- High Voltage Accuracy : <0.02%
- High Current Accuracy : <0.02%
- Parallel Connection : up to 3MW
- Electric Load Function
- High Power Density : 30kW/3U
- Battery Simulation Function
- PV Simulation Function

Technical data

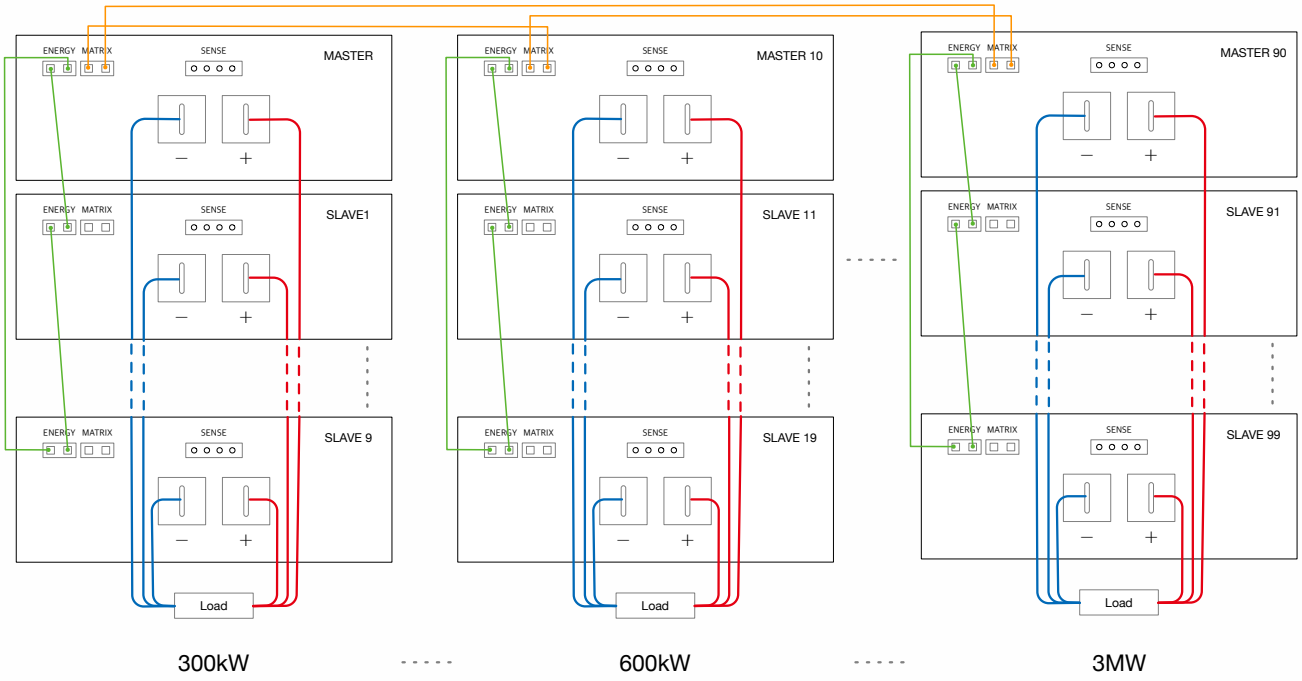
Model	40V/60V/80V	800V/1000V	800V/1000V
AC Input			
Voltage, Phases	*304Vac to 480Vac / 380V±20%, 3ph+PE*		
Frequency	*47Hz to 63Hz*		
Inrush Current	*<50A*		
Power Factor	*0.99*		
Efficiency up to	*93.5%*	*94%*	*95%*
DC Output Voltage			
Accuracy	*±0.02% F.S.*		
Resolution	*±10mV*	*±50mV*	*±100mV*
Display Accuracy	*±0.02% F.S.*		
Line Regulation CV	*±0.01% F.S. (208-408V AC±10% input voltage, constant load and constant temperature)*		
Load Regulation CV	*±0.01% F.S. (0-100% load, constant load and constant temperature)*		
Ripple (rms) CV	*<25mV*	*<200mV*	*<200mV*
Ripple and Noise p-p CV	*<300mVpp*	*<1200mVpp*	*<2400mVpp*
Remote Compensation	*Max.voltage±1V*	*Max.voltage and 2%F.S.±1V*	
Rise Time 10%-90% CV	*1ms*	*800μs*	
Voltage Slew Rate	*50V/ms*	*1500V/ms*	*3000V/ms*
Recovery Time	*2.5ms±0.75%F.S*	*600μs ±0.75% F.S. (50% -100% or 100% -50/% load)*	
Discharge Time	*≤20s*	*≤20s*	*≤30s*
DC Output Current			
Accuracy	*±0.15% F.S.*	*±0.02% F.S.*	
Resolution	*±100mA*	*±10mA*	
Display Accuracy	*±0.15% F.S.*	*±0.02% F.S.*	
Display Resolution	*±10mA*	*±10mA*	
Line Regulation CC	*±0.01% F.S. (208-408V AC±10% input voltage, constant load and constant temperature)*		
Load Regulation CC	*±0.05% F.S. (0-100% load, constant load and constant temperature)*		
Rise Time 10%-90% CC	*1ms*	*500μs*	
Fall Time 10%-90% CC	*1ms*	*500μs*	

Technical data

Model	40V/60V/80V	800V/1000V	800V/1000V
DC Output Power			
Accuracy	*±30W*		
Resolution	*±10W*	*±1W*	
Display Accuracy	*±30W*		
Display Resolution	*±10W*	*±1W*	
Resistance			
Range	*0.003-100Ω*	*0.05-100Ω*	*0.5-3000Ω*
Programming Accuracy	*1mΩ*	*0.01Ω*	*0.1Ω*
Programming Resolution	*1mΩ*	*0.01Ω*	*0.01Ω*
Protective Functions			
OVP	*Over-voltage protection, adjustable 0 - 110% UNominal (±1% F.S.)*		
OCP	*Over-current protection, Adjustable 0V- ±110% INominal (±1% F.S.)*		
OPP	*Over-power protection, range 0V ~ ±110% PNominal (±1% F.S.)*		
OTP	*Over-temperature protection*		
Interface			
Type-B USB, Ethernet, CAN, RS232, RS485, ModBus TCP			
Device Configuration			
Parallel Operation	*Up to 100 units with energy-matrix bus (3MW)*		
Environment Conditions			
Operating Temperature	*0 to 50 (°C) (power derating over 35°C)*		
Storage Temperature	*-20 to 70(°C)*		
Humidity	*≤ 80%. Not condensing*		
Altitude	*Output current derating 2%/100m above 2000m or derating 1°C/100m*		
Mechanical Spec.			
Cooling	*Cooling Air Forced*		
Dimensions	*435mm x 132mm x 781mm*		
Weight	*40kg*	*35kg*	

Modular and Scalable Design

The Cortex DC series applies the DMPS (Digital Matrix Parallel System) method for high performance and stable power supply, which enables capacity expansion up to 3MW by connecting up to 100 units of 30kW power modules in parallel using high-speed fiber optic communication. In particular, redundancy function ensures stable operation of the test system even in the event of fault at specific modules . That is in case of fault in any slave module, the system bypass the abnormal module and operate continuously so that secures the reliability and stability of the system by minimizing down-time.

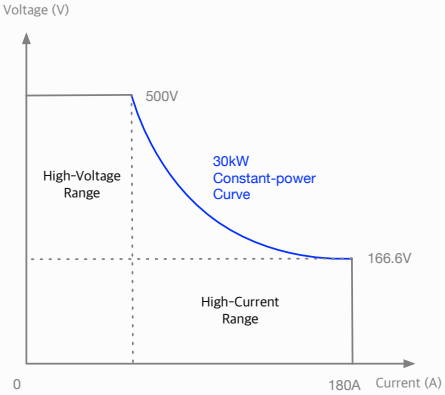




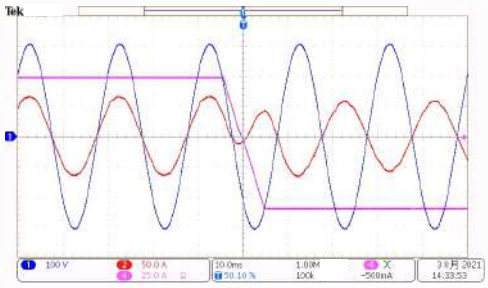
Features

- For 380V, 400V, 480V AC
- Modular rack system
- Module redundancy function
- Cabinet system with 42U & 19 inch rack
- Minimal footprint : 3U / 30kW
- Up to 100 units parallel connection (3MW)
- Extensive protective function (OVP, OCP, OT, …)
- Air cooling

Auto ranging

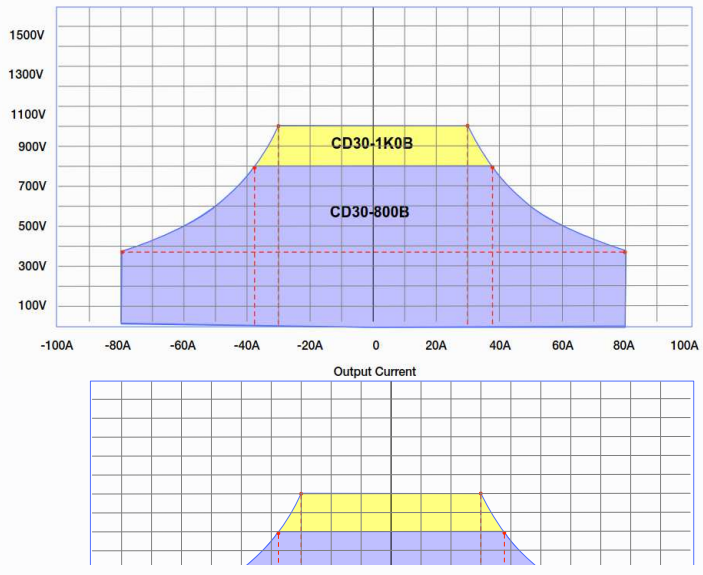


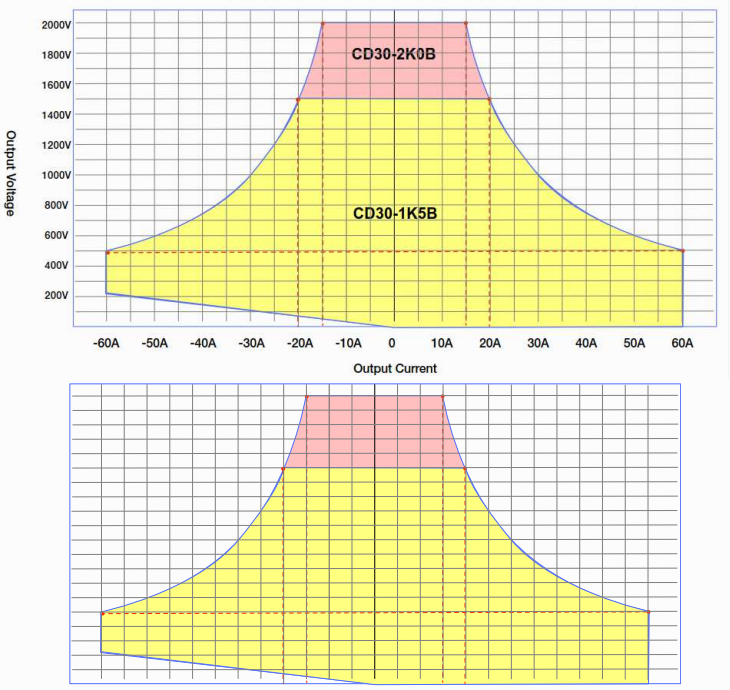
The auto ranging function automatically controls voltage and current through the programmable DC power supply to maintain the rated output over a wide operating range. That is the higher voltage is available at lower current, and vice versa, allowing the DUT to be tested under different voltage/current conditions with a single DC power supply.



In addition, it supports smooth and ultra-fast automatic switching with the bidirectional Automatic “source” & “load” function. The overshoot of voltage or current can be effectively controlled without any delay in the transition between the two states of source and load.

30kW Cortex DC Series Auto Ranging





Application

The modular Cortex DC series is an innovative product used in a variety of applications based on the unique technology and optimal performance. It can act as regenerative electronic load while supplying bidirectional DC power, which is applicable to long-term reliability test applications involving a variety of power sources, including electric vehicle DC charging stations, on-board chargers, automotive battery charge and discharge tests, fuel cell discharge tests, ESS charge and discharge tests, and other power sources. They are particularly well suited for applications requiring very fast response times, such as simulating electric vehicle driving patterns.



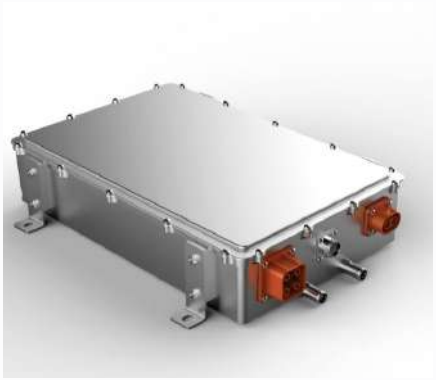
EV Battery Testing



Solar Array Testing



Fuel Cell Discharge Testing



Onboard Charger Stability Testing

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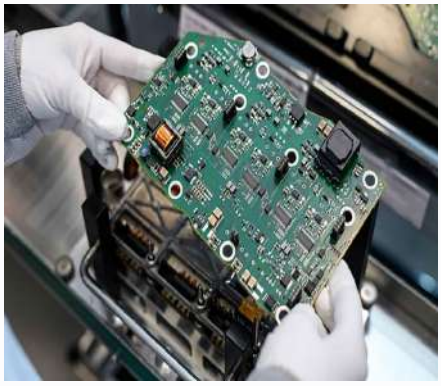
DC EVSE Stability Testing



ESS Testing
(Solar Array & Battery Simulator)



Power Electronic Components Testing



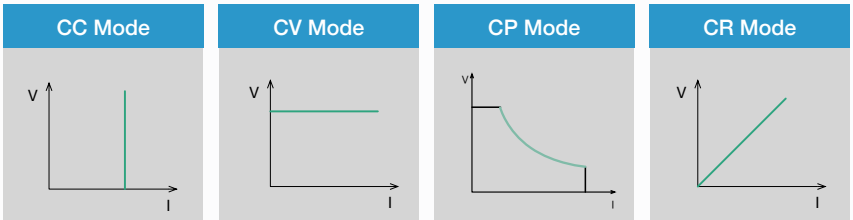
Server Power Supply Reliability Testing

Powerful Software

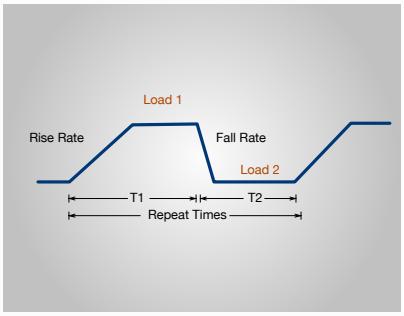


Provides Diverse Simulation Modes

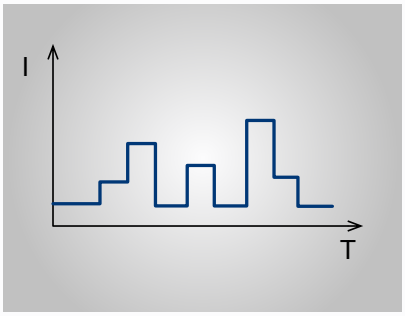
Basic Mode



Dynamic Mode



Programmable Sequences



FEATURES

- Battery Simulation

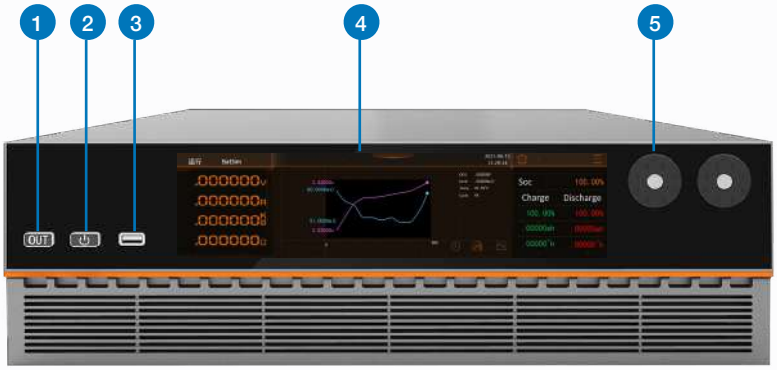
LiMn204, LiCoO2, LiFePO4, NiMH, Ternary LI, LiTiO2 and PbO2 batteries

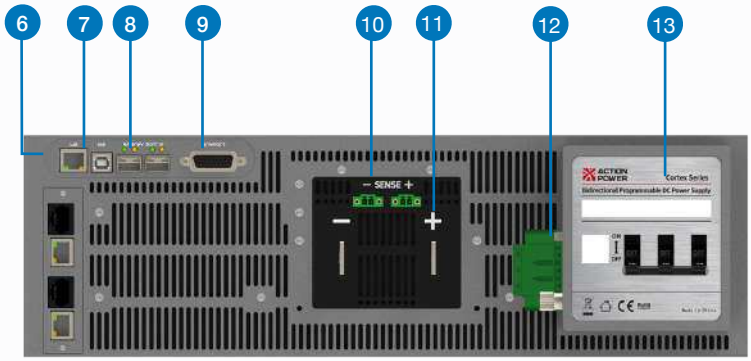
- PV Simulation

Static curves, Curve programming, Static MPPT, Dynamic MPPT, Weather Simulation, Shading of photovoltaic panels

- Programming waveform
- Curve import and export

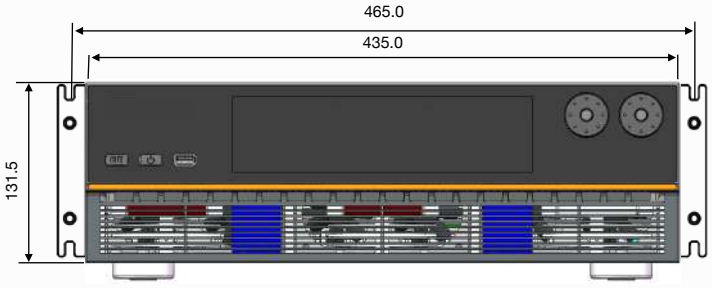
Panel Description

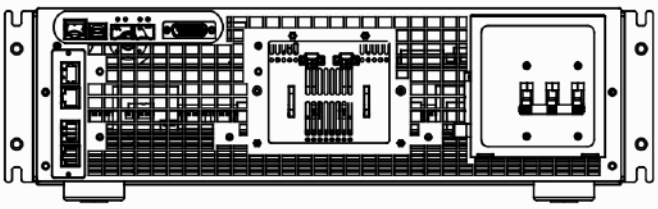


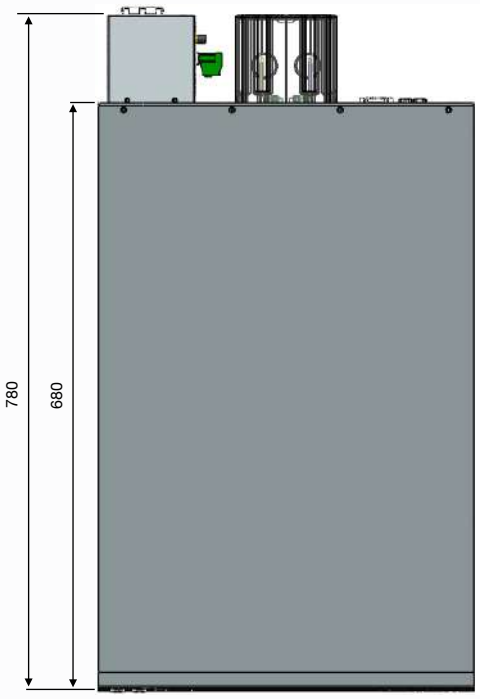


1. Power Output Button
2. Power On / Reset Button
   Device on/off switch
3. USB port
   External Storage Interface
4. 18” FHD Touch Screen
   Display setting and measurement data
5. Pushable Knob
   To edit the settings on-screen
6. LAN Interface
7. USB Interface
8. Energy Matrix Interface
   Parallel connection
9. Anyport Interface
10. Voltage Sensing
11. Output Positive/Negative Terminals
12. AC input & PE Terminal
13. AC Circuit Breaker
    AC power on/off

Dimension







ACTIONPOWER

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