High Power DC Source & Load

TBC series

12V to 2000V, 300kW to 10MW

Programmable Bidirectional DC Power Supply

HIGH POWER CAPACITY WITH PARALLEL OPERATION

With 300kW – 1MW of unit capacity, the total capacity can be expanded up to 10MW by series-parallel connections.

2000V
MAXIMUM DC OUTPUT VOLTAGE

10MW
MAXIMUM DC OUTPUT POWER

MULTI-
OUTPUT MODE

Multiple DC power supply panels can individually operate in single mode to configure multi-channel output, or in Master/Slave mode to configure single-channel output with combined capacity.

SIMULATION FUNCTION WITH HIGH PERFORMANCE

TBC, TBS, TBL series provide real-time battery and PV simulation function with fast response time of less than 1 ms.

BATTERY
SIMULATION

PV
SIMULATION

ELEC-TRONIC
LOAD

TBC, TBS, TBL series provide grid-regenerative DC electronic load function, which is applicable for testing fuel cell stack or fuel cell engine system, etc.

Ratings, types and voltages

TBC series

Model	Power [kW]	Output Voltage [V]	Output Current [A]	Size (WHD) [mm]	Weight [kg]
TBC30-1210	±300	12-1200	±1000	2010x1955x1200	2,640
TBC40-1210	±400	12-1200	±1000	2010x1955x1200	2,850
TBC50-1212	±500	12-1200	±1250	2010x1955x1200	3,020
TBC60-1212	±600	12-1200	±1250	2410x1955x1200	3,500
TBC30-2004	±300	20-2000	±400	1610x1955x1200	1,900
TBC40-2006	±400	20-2000	±600	1610x1955x1200	2,430
TBC50-2007	±500	20-2000	±700	2010x1955x1200	2,670
TBC60-2008	±600	20-2000	±800	3410x1955x1200	3,500
TBC75-2010	±750	20-2000	±1000	3410x1955x1200	4,390
TBC100-2014	±1000	20-2000	±1400	3410x1955x1200	4,940

TBC series : 300kW

Technical data

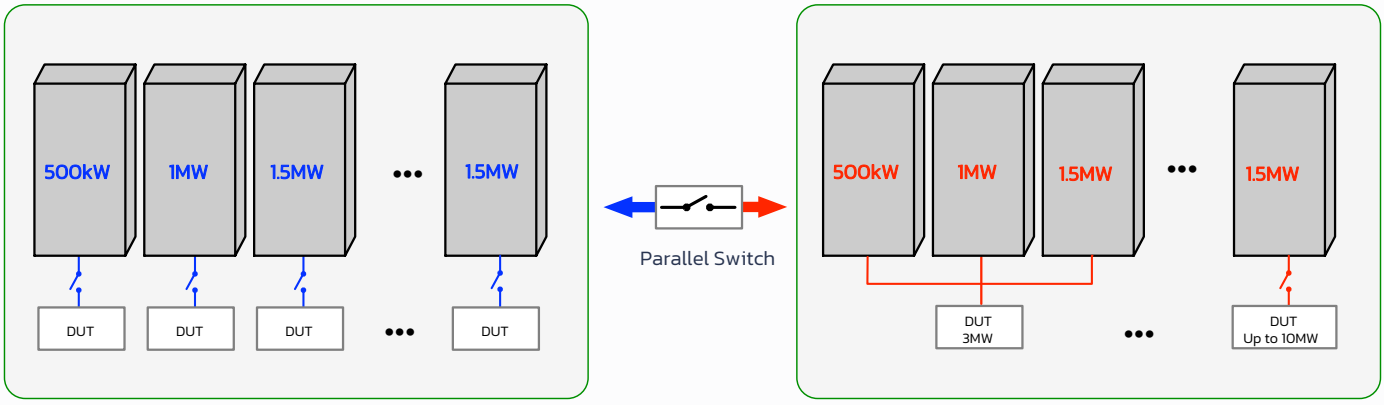
TBC series	Specification
AC Input	
Voltage, Phases	380V±15%, 3ph+PE
Frequency	47Hz to 63Hz
Power factor	0.99 @ full load
Efficiency	Model of 300kW and above : >94%, others: >90%
Harmonic current	≤3%
DC Output Voltage	
Accuracy	±0.1% F.S.
Resolution	0.01V
Ripple(RMS)	0.1% F.S. (resistive load)
Slew rate	200V/ms
DC Output Current	
Accuracy	±0.1% F.S.
Resolution	0.01A
Ripple(RMS)	0.1% F.S. (resistive load)
Slew rate	500A/ms
Rise time	≤2ms (10%~90% rated current)
Switching time	≤4ms (switching from -09% to +90%)
Peak time	60s (1200V type)
Measurement	
Voltage accuracy	±0.1% F.S.
Voltage resolution	0.001V
Current accuracy	±0.1% F.S.
Current resolution	0.001A
Power accuracy	±0.2% F.S.
Power resolution	1W
Protective Functions	
OVP	Over-voltage protection, adjustable 0 - 110% $U_{Nominal}$ (±1% F.S.)
OCP	Over-current protection, Adjustable 0V- ±110% $I_{Nominal}$ (±1% F.S.)
OPP	Over-power protection, range 0V ~ ±110% $P_{Nominal}$ (±1% F.S.)
OT	Overt-temperature protection

Technical data

TBC series	Specification
Battery Simulation	
Battery type	Different battery types such as lithium manganate, lithium cobaltate, lithium iron phosphate, nickel-hydrogen, ternary lithium, lithium titanate, and lead-acid batteries can be simulated User-defined battery types and open first, second and third-order RC battery models are supported
Parameter	Number of batteries in series connection, number of batteries in parallel connection, initial SOC, initial temperature, internal resistance, cell capacity and other parameters
Interface	Import of CSV user-defined model is supported
Real-time performance	1ms command refresh rate
Interface	
Ethernet, CAN, RS232, RS485	
Device Configuration	
Parallel operation	Up to 10MW with energy-matrix bus
Insulation and Withstanding Voltage	
10MΩ/DC500V；3600VAC(5000VDC)/1min	
Environmental Conditions	
Operating temperature	-10 to 40°C
Storage temperature	-20 to 70°C
Relative humidity	10 to 90% RAH
Altitude	≤2000m without derating, Above 2000m please contact ACTION POWER
Cooling Method	
Air-cooled	Dry clean air
Option	
Discharging resistor cabinet	Under abnormal operating conditions of the system, energy will be safely dissipated through the bleeder resistor cabinet to protect the DUT
Capacitance compensation	Voltage drop caused by cable impedance and the voltage ripple of the DUT

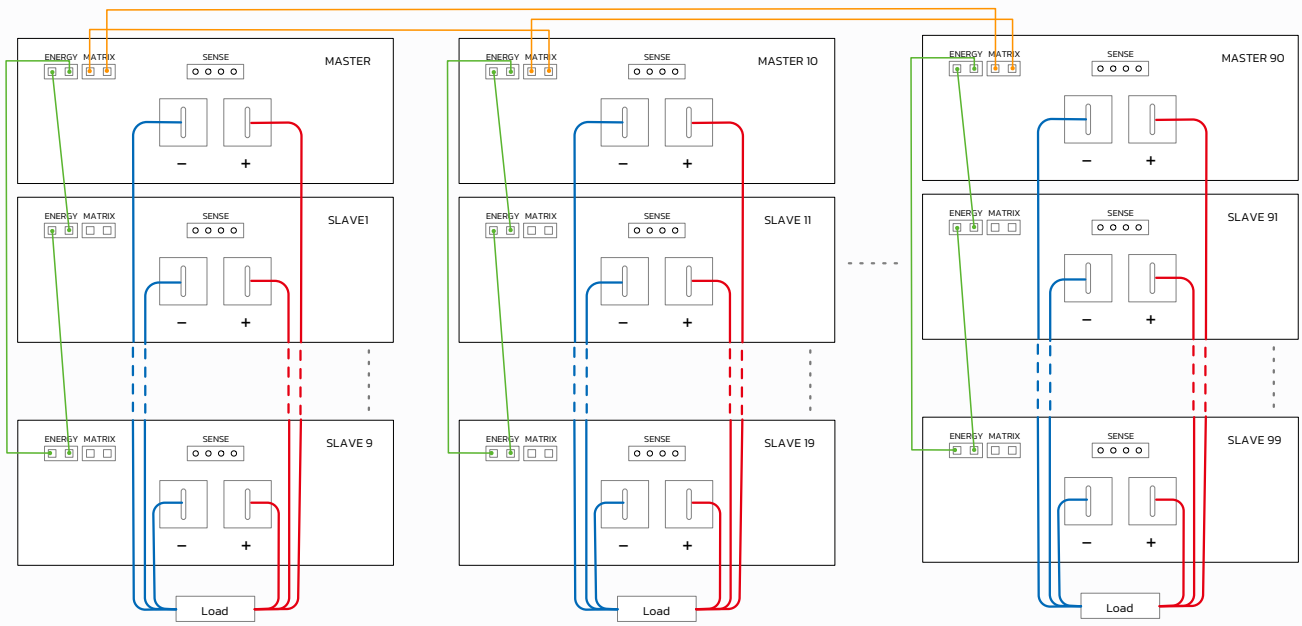
High Power Scalable Design

TBC series apply DMPS (Digital Matrix Parallel System) method for large-scale parallel expansion and stable power supply, which enables capacity expansion up to 10MW by connecting in p arallel in 1MW increments from 300kW minimum through high-speed optical fiber communication m ethod. In particular, parallel connected panels can be used in multi-output mode by separating outputs according to user needs, enabling multiple test equipment to be tested at the same time, maximizing user convenie nce and sa ving costs.

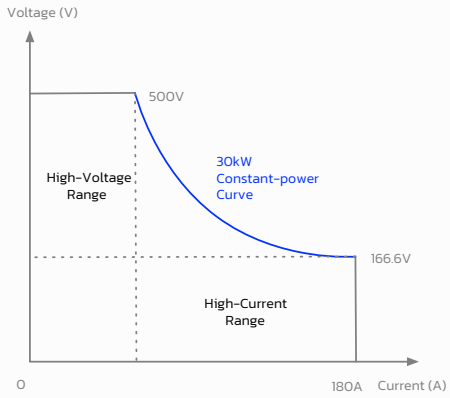


Multi-Output Mode **Parallel Mode**

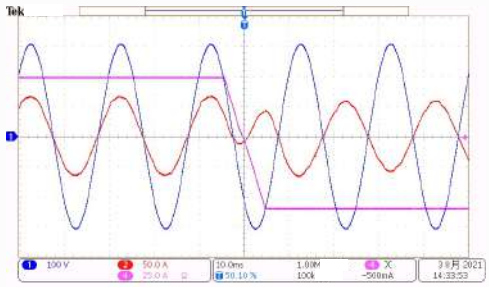
Output Expansion up to 10MW with Master / Slave Control



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.

CV/CC Priority Setting Function

CV (constant voltage) priority / CC (constant current) priority mode can be selected and set.

Suppression ot Overshoot with CC Priority Mode

With the TBC series power supply, the CC priority mode can effectively respond to load variat ions. This mode suppresses momentary current spikes when the load suddenly changes its resistance, thus ensuring stable protection for sensitive loads.

Configuring the power supply in CC priority mode allows for voltage adjustment according to load changes, maintaining a stable current. This effectively protects sensitive loads such as high-power laser diodes and minimizes the risk of damage due to overshoot.

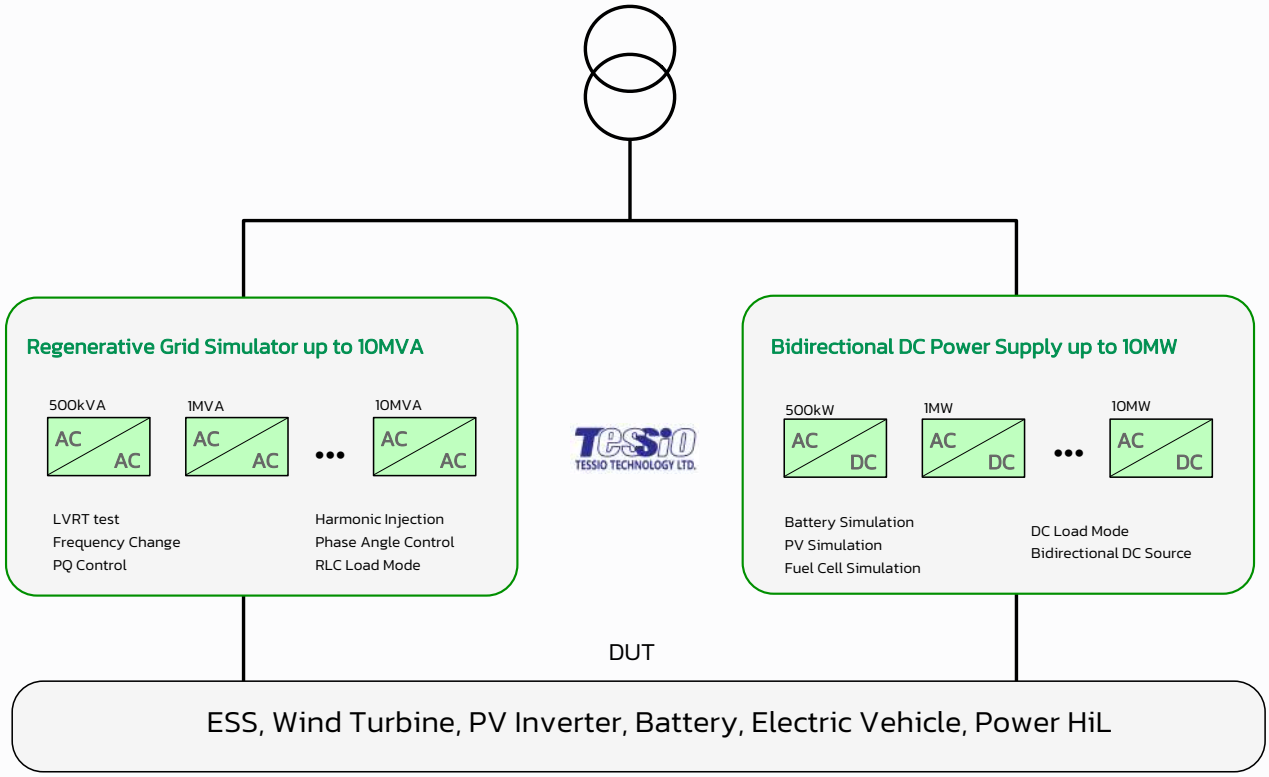
Current Overshoot in CV Priority Mode

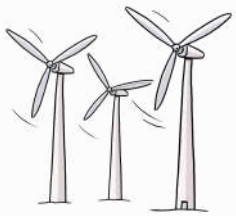
In CV priority mode, the power supply prioritizes maintaining a constant output voltage. However, sudden load variations can cause momentary current spikes, posing a risk of damage to sensitive loads.

Therefore, configuring the TBC series power supply in CC priority mode enhances load stability and prevents damage caused by overshoot.

Application

Tessio's high-capacity bi-directional DC power supplies are innovative products that are used in a vari ety of applications based on unique technology and optimal performance. Tessio products can act as regenerative electronic load while providing bi-directional DC power, which is applicable of long-term reliability test applications such as electric vehicle DC charging stations, automotive battery charge and discharge tests, fuel cell discharge tests, ESS charge and discharge tests and other applications requiring very fast response time, such as simulating electric vehicle driving patterns.

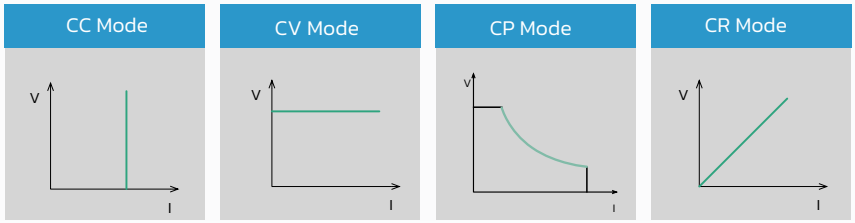




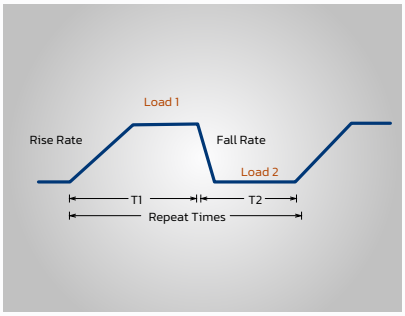
Powerful Software

Provides Diverse Simulation Modes

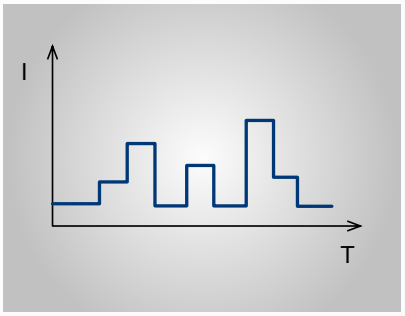
Basic Mode



Dynamic Mode



Programmable Sequences



KEY FEATURES

■ Battery Simulation

LiMn2O4, 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

■ Electronic Load Function

■ Programming Waveform