BLITZPower

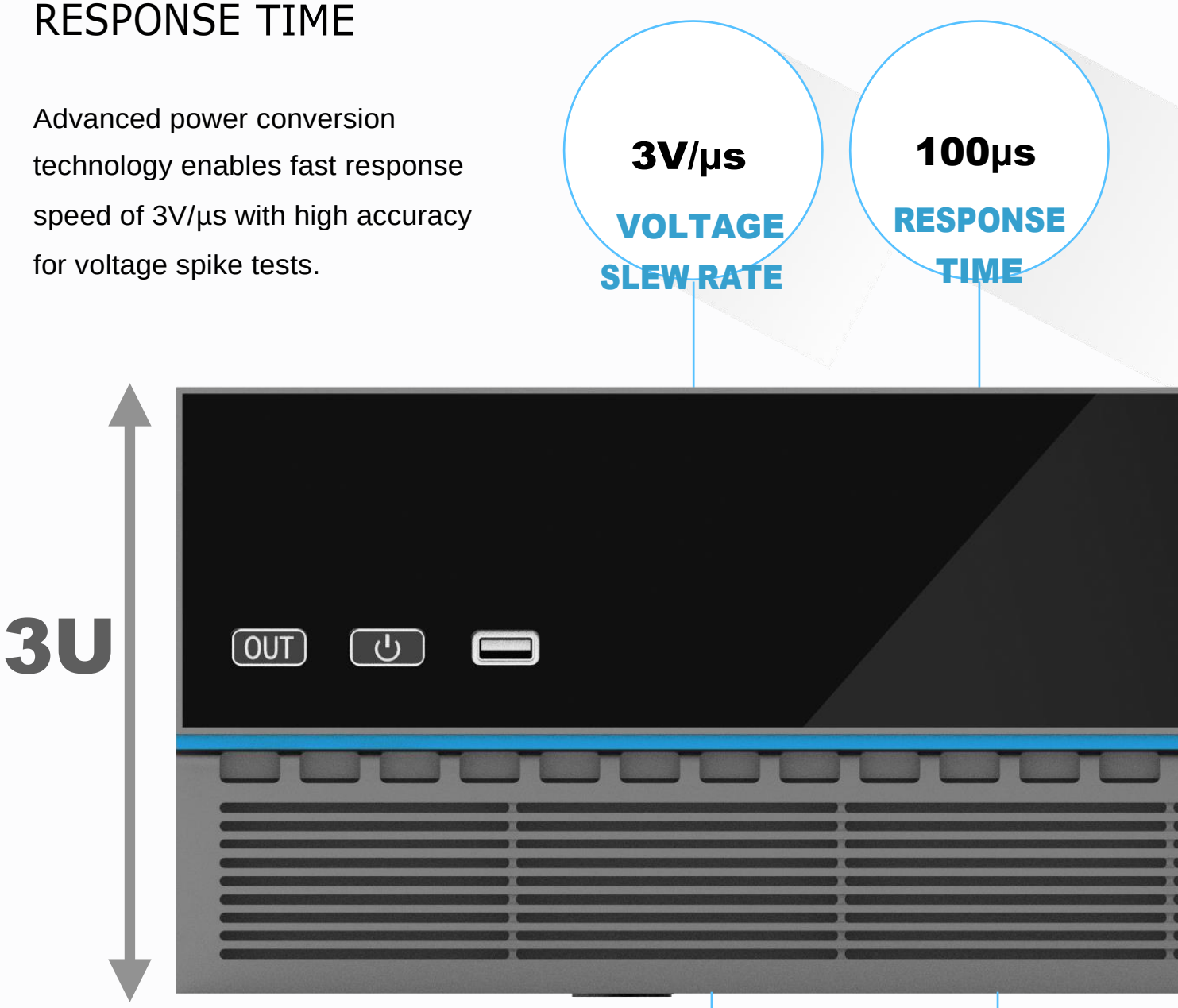
High Performance Grid Simulator
ACB series
0V to 779V, 6kVA to 220kVA

Regenerative Grid Simulator

blitz-power.com

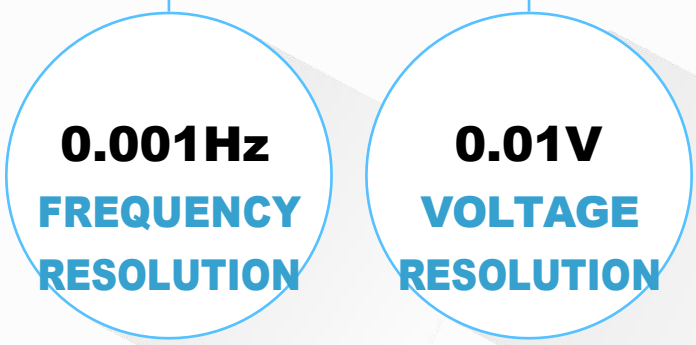
HIGH DYNAMIC
RESPONSE TIME

Advanced power conversion technology enables fast response speed of 3V/μs with high accuracy for voltage spike tests.



HIGH RESOLUTION
WITH ACCURACY

Power density of ACB series is up to 20kVA/3U, and it can perform numerous application test using auto-ranging function, which adjusts the voltage and current range flexibly.

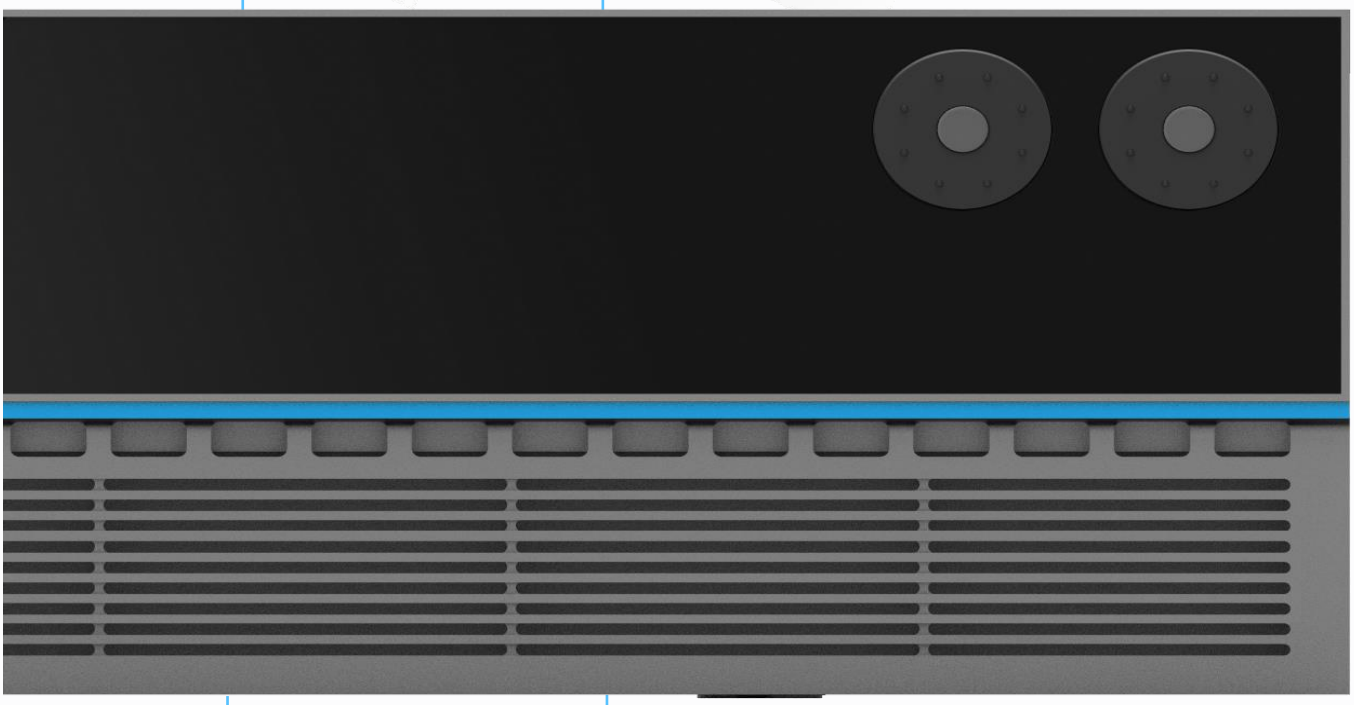


4
QUADRANT CONTROL

RLC
REGENERATIVE AC LOAD

FULLY TEST AC POWER WITH 4-QUADRANT

Full four-quadrant control enables reliable and efficient conversion of desired voltage and current, and AC load function with power regenerated to the grid.



0.1°
PHASE ANGLE RESOLUTION

359.9°
PHASE ANGLE CONTROL

COMPREHENSIVE PHASE CONTROL

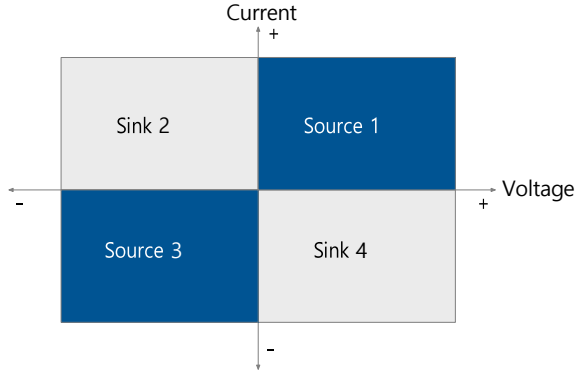
Simultaneous control of three phases up to 359.9° by unit angle of 0.1°, and phase angle of each of R, S, and T can be changed with the accuracy of 0.1%.

Ratings, types and voltages

Model	Power (kVA)	Voltage Range (LN_AC)	Frequency Range (Hz)	3-Phase Maximum Current (A)		1-Phase Maximum Current (A)		Voltage Range (V_DC)	Current Range (A_DC)
				rms	peak	rms	peak		
ACB006030A	6	0-450	0.001-200	30	90	90	270	±636	±90
ACB007030A	7.5	0-450	0.001-200	30	90	90	270	±636	±90
ACB009035A	9	0-450	0.001-200	35	105	105	315	±636	±105
ACB012035A	12	0-450	0.001-200	35	105	105	315	±636	±105
ACB015035A	15	0-450	0.001-200	35	105	105	315	±636	±105
ACB020035A	20	0-450	0.001-200	35	105	105	315	±636	±105
ACB022035A	22	0-450	0.001-200	35	105	105	315	±636	±105
ACB006030AH	6	0-450	0.001-5000	30	90	90	270	±636	±105
ACB007030AH	7.5	0-450	0.001-5000	30	90	90	270	±636	±90
ACB009030AH	9	0-450	0.001-5000	35	105	105	315	±636	±90
ACB012035AH	12	0-450	0.001-5000	35	105	105	315	±636	±105
ACB015035AH	15	0-450	0.001-5000	35	105	105	315	±636	±105
ACB020035AH	20	0-450	0.001-5000	35	105	105	315	±636	±105

Regenerative 4-Quadrant AC Grid Simulator

The ACB series is a programmable 4- quadrant grid simulator. It can test various grid-connected equipment by simulating AC power, and can also be used as an AC load. Moreover, it has the most advanced response speed, resolution, and accuracy, and is widely used in domestic and overseas testing and research institutions.



FEATURES

- 4-quadrant AC & DC Power Source
- AC & DC Electronic Load Function
- Fast Response Time : 3V/μs
- Constant Power Voltage Range : 0-779Vac (L-L)
- Frequency Change : 0.001 to 200Hz
- Phase Angle Control : single & 3 phase
- Harmonic Injection : up to 100th order
- High Accuracy : ±(0.01%+0.05% F.S.)
- High Density : 22kVA / 3U
- Parallel Connection : up to 220kVA

Technical data

Specification		
	ACB Series	ACB H Series
Output Type	AC,DC,AC+DC,DC+AC	
Working Mode	Regenerative, source & load integrated	
Number of phases of output	Single-phase, three-phase,three phases independent	
AC Input		
Voltage, Phases	304Vac to 480Vac / 380V±20%, 3ph+PE	
Frequency	47Hz to 63Hz	
Peak current	<1.5 * Rated Current	
Power factor	0.99	
Efficiency	>91%	
AC Voltage Output		
Voltage range	L-N/0-450V@0.001-200Hz	L-N/0-450V@0.001-200Hz L-N/0-300V@200-1600Hz L-N/0-250V@1600-2000Hz L-N/0-100V@2000-5000Hz
Resolution	0.01V	
Accuracy	±(0.01%+0.05% F.S.)	±(0.01%+0.05% F.S.)@0.001-400Hz ±(0.1%+0.1% F.S.)@400-3000Hz ±(0.3%+0.3% F.S.)@43000-5000Hz
Waveform type	Sine, triangle wave, impulse wave, clipping wave, half wave, multi-wave, 30 groups of DST, user defined	
DC component	＜20mV	
Load regulation	±0.05% F.S.	
Line regulation	±0.01% F.S. @10%	
Voltage slew rate	AC>3.0V/μs	
Voltage distortion	<0.3%@50Hz/60Hz <1%@0.001Hz-200Hz	＜1%@60-400Hz ＜1.5%@400-1600Hz ＜2%@1600-5000Hz
Voltage compenstion	Adaptive	
DC Voltage Output		
Accuracy	±(0.01%+0.05% F.S.)	
Resolution	0.01V	
Load regulation	±0.05% F.S.	
Line regulation	±0.01% F.S. @10%	
Voltage slew rate	DC>3.0V/μs	
Frequency Output		
Accuracy	±0.01%	
Resolution	0.001Hz	
Range	0.001 - 200Hz	
Phase Angle Control		
Accuracy	±0.1°@0.001-200Hz	
Resolution	±0.1°	
Phase angle range	0 - 359.9°	
Phase control	Single-phase, Three-phase, Three-phase independent	

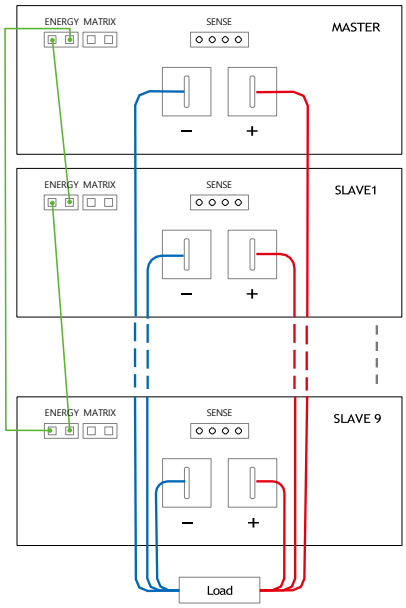
Technical data

Specification		
Harmonic Injection		
Range	up to 100th order @ 40-70Hz fundamental frequency; up to 25th order @ 70-200Hz fundamental frequency;	
Content	40%	
Magnitude error	±5%@ set value or 0.1% of the fundamental frequency;	
Current		
Accuracy	±(0.1%+0.1% F.S.)	
Resolution	0.01A	
Internal Resistance Mode		
R range (Ω) : 0-10	L range (mH) : 0-2	
Resolution : 0.001	Accuracy : ±0.01%+0.02% F.S.	
RLC Load		
Resistance range (Ω) : 0.001 to 1000	Resistance resolution (Ω)) : 0.001	Resistance accuracy : ±0.1% F.S.
Inductors range (mH) : 0.1 to 5000	Inductors resolution (mH) : 0.001	Inductors accuracy : ±0.1% F.S.
Capacitance range (mF) : 1 to 5000	Capacitance resolution (mF) : 0.1	Capacitance accuracy : ±0.1% F.S.
Crest factor range : 1.000 to 5.000	Crest resolution : 0.001	
Power factor range : -1.000 to 1.000	Power resolution : 0.001	
Transient Functions		
Programming	List, Wave, Step, Pulse, Advanced, Harmonics, Inter-harmonics, DST	
Time of step resolution	100μs	
Number of programmed waveforms	50	
Anolog programming	RMS, Amplitude, Instantaneous value(Amplifier mode)	
Environmental		
Cooling	Air cooled	
Temperature	Operating : 0 to 50˚C	Storage : -20 to 70˚C
Humidity	<80%, non-condensing	
Dimension & Weight		
Dimension (mm)	435(W) x 132(H) x 781(D)	
Weight	35kg	

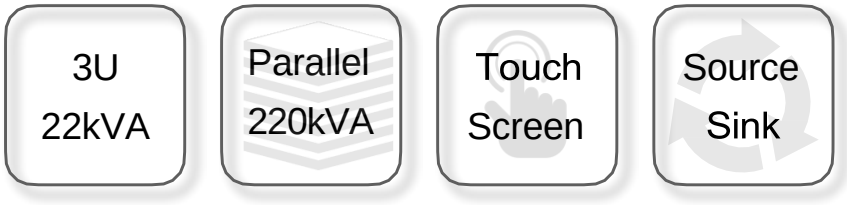
Modular and Scalable Design

The ACB series supports and adopts high-speed fiber optic communication technology, featuring strong anti-interference capability and zero latency, which enables capacity expansion up to 220kVA by connecting up to 10 units of 20kVA power modules. 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.



200kVA

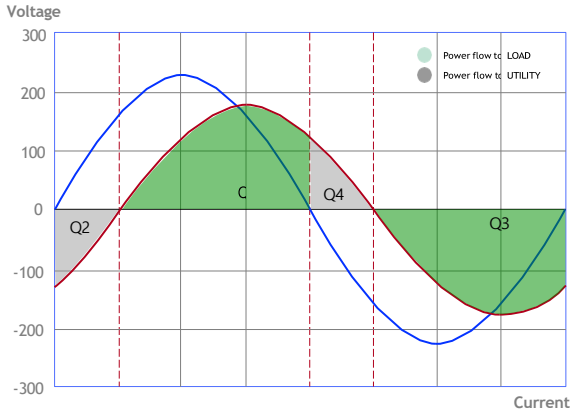


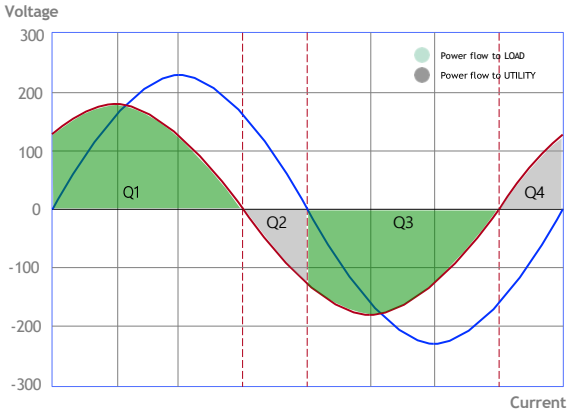
Features

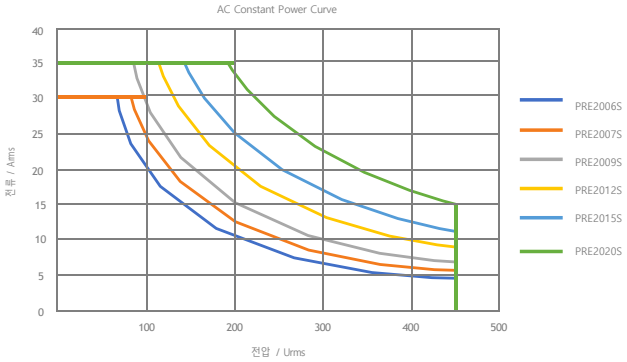
- For 380V, 400V, 480V AC
- Modular Rack System
- Module Redundancy Function
- Cabinet System with 42U & 19 inch Rack
- Minimal Footprint : 3U / 22kVA
- Up to 10 units parallel connection (220kVA)
- Extensive Protective Function (OVP, OCP, OT, …)
- Air Cooling

4-Quadrant Control

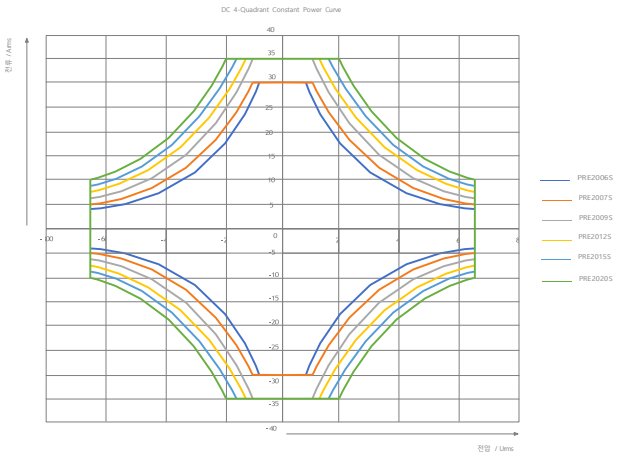
With four-quadrant control, ACB series can test PV inverters, V2G, EV chargers, EVSE, batteries, UPS, and AC/DC power supplies. It has a built-in load option as standard and can operate in any four-quadrant with programmable phase control. It can simulate inductive and capacitive loads, allowing you to test a full range of AC power loads.







The ACB series provides a wide voltage range through a designated power curve so that it can perform the test at the condition of both high and low voltage range.

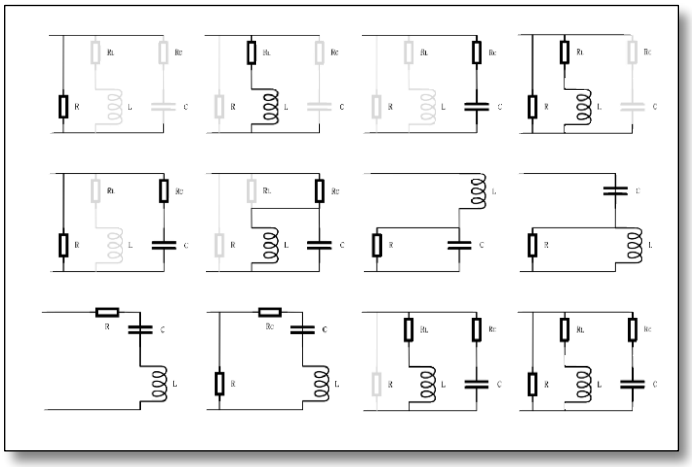


The ACB series applies advanced power conversion technology to provide AC output as well as DC output modes. The DC maximum average output current is the same as the AC RMS value and can be operated in four quadrant states. That is ACB series have the advantage of higher output power, while a typical AC power supply can only supply half of the AC RMS output value.

RLC network simulation function

In addition to power supply functions, the ACB series can be used as a linear load simulator and for a variety of purposes based on the power regeneration function. The ACB series features up to 12 built-in RLC network models and can simulate linear load characteristics with flexible parameters to test product performance under different impedances, three-phase balanced and unbalanced load modes.

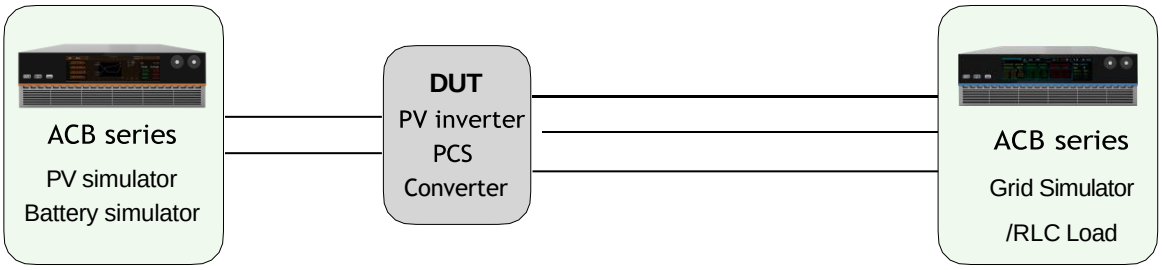
For products that require off-grid testing, such as OBC, UPS, ESS converter, etc., the RLC load function of the ACB series can be used to realize the source-to-load function conversion of the device, which greatly simplifies the ATE hardware configuration and realizes V2G, V2L, V2H and other tests at the same time.



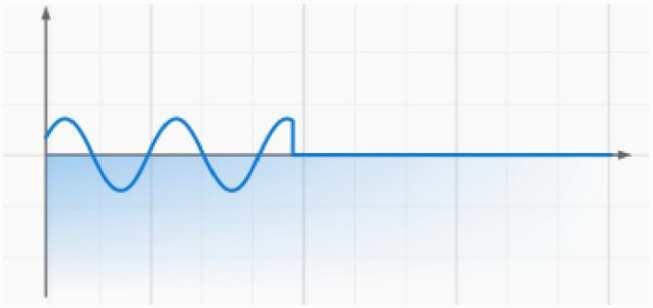
RLC load models

Anti-islanding test function

In addition to grid simulation functions, the ACB Series is an alternative to RLC loads, meeting the diverse test requirements of modern energy-related industries for linear load simulation, anti-islanding protection, and off-grid operation.

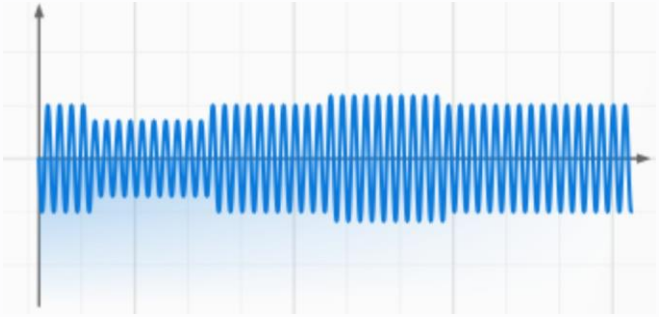


Powerful standard waveform library



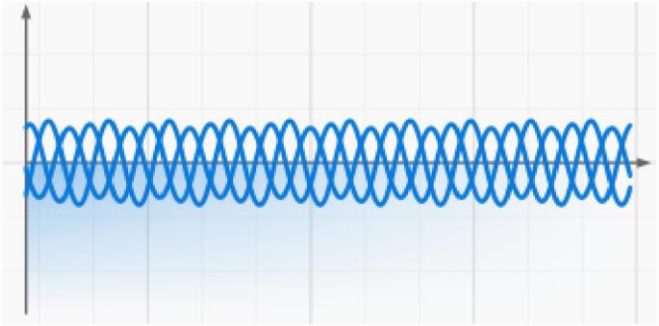
IEC61000-4-11
Interrupiton 90°@Class2/50Hz

IEC61000-4-13
Odd harmonics that are not multiples of 3
@Class3/50Hz

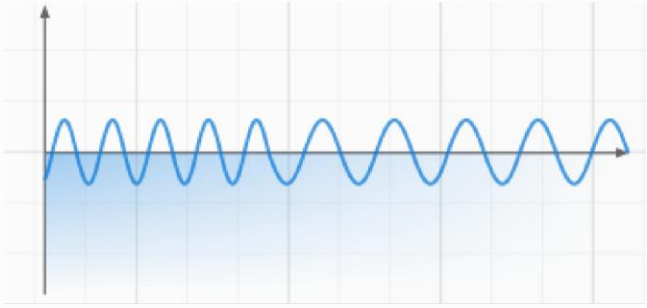


IEC61000-4-14
+20%-30% voltage fluctuation time time interval
0.2s@Class3/50Hz

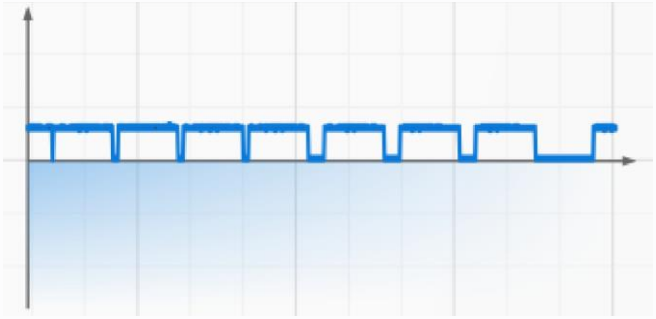
IEC61000-4-17
DC ripple voltage@Class3



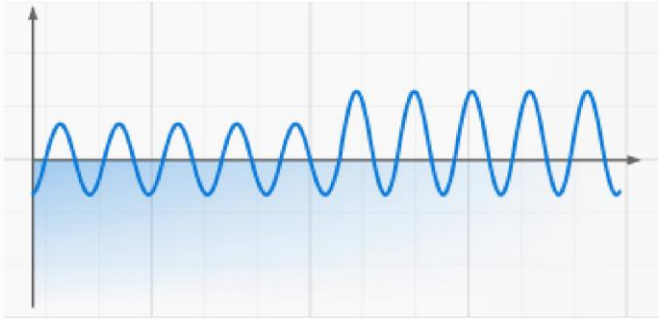
IEC61000-4-27
Voltage unbalance@Class3



IEC61000-4-28
Power frequency variation@Class4

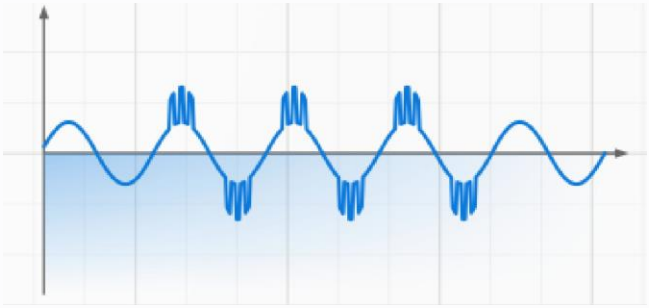


IEC61000-4-29
DC interruption

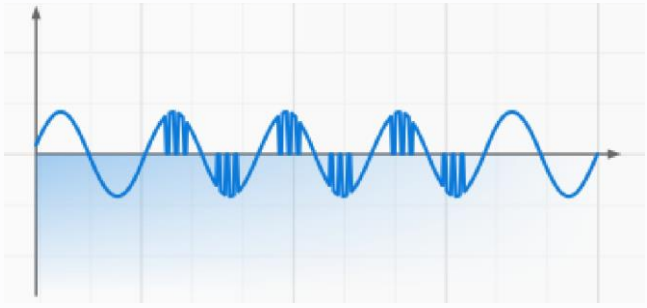


T/CPSS1007-2020
20V surge 10 cycles,
Half cycle voltage multiplication

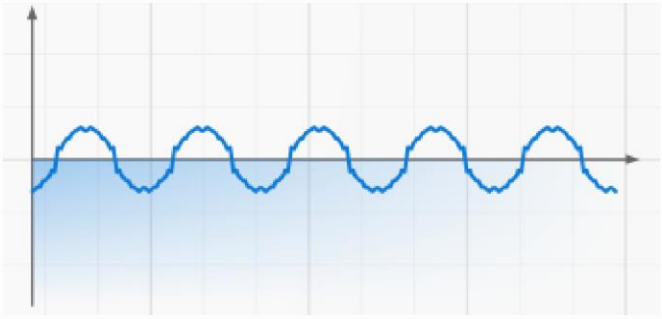
Powerful standard waveform library



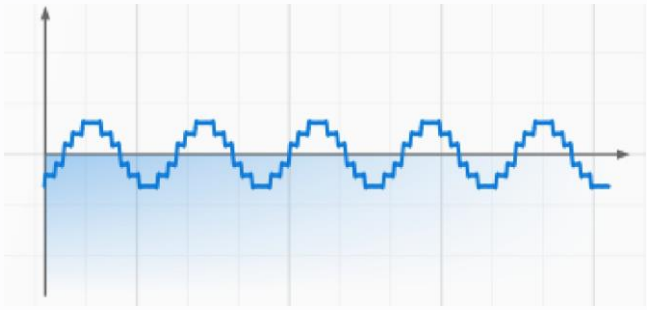
T/CPSS1007-2020
220V sudden increase to 440V,
3 cycles abnormal



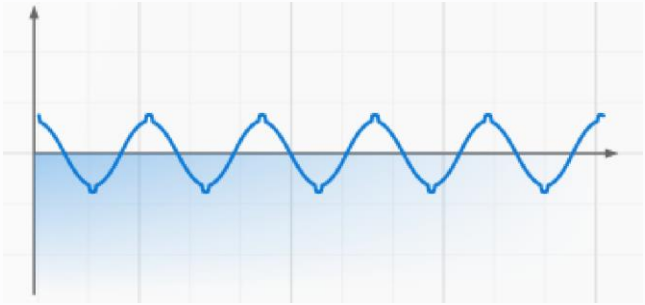
T/CPSS1007-2020
290V drop to 5V, 3 cycles abnormal
10 cycles normal



DST10 waveform

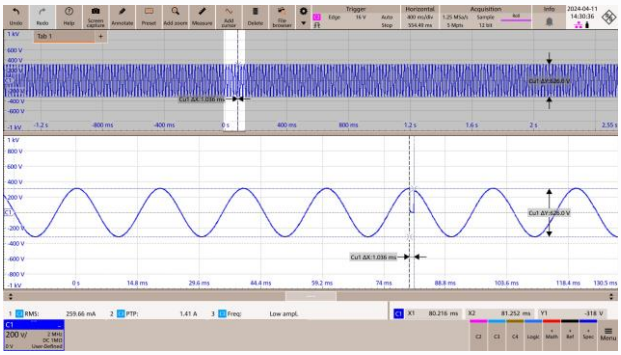


DST26 waveform

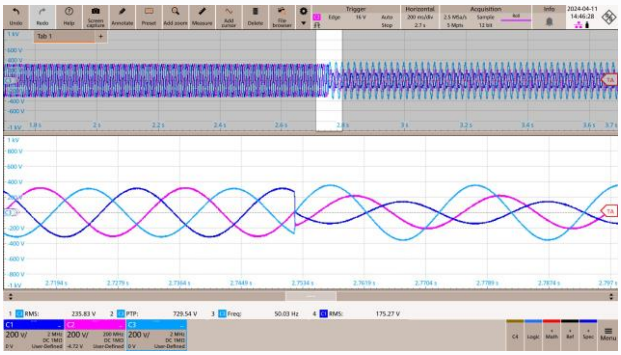


DST23 waveform

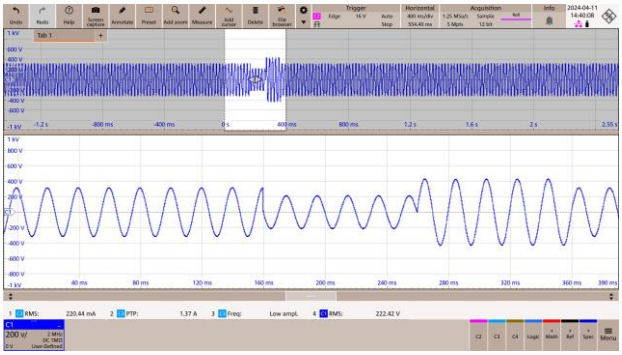
Waveforms



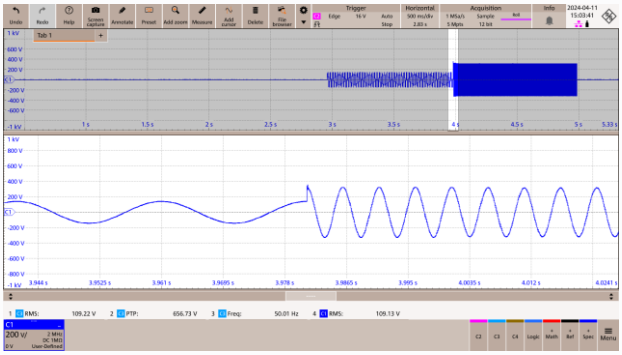
1ms interruption



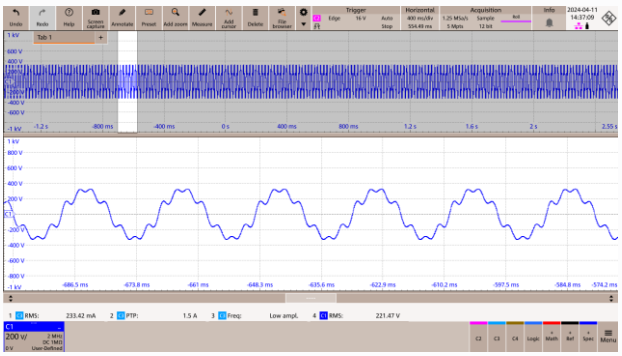
Single phase change



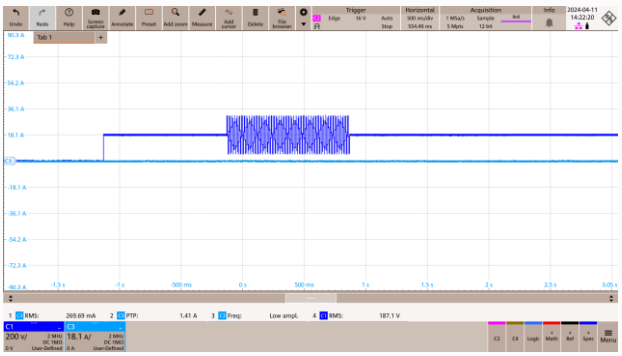
Phase shift



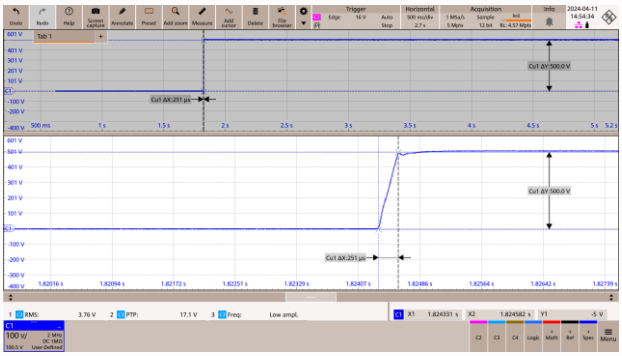
Frequency change



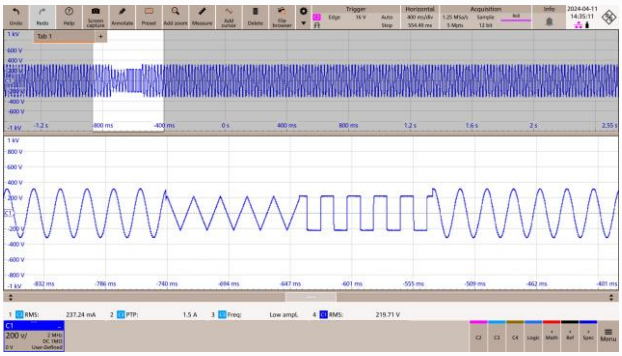
Harmonic injection



DC+AC output



Dynamic response time : 251μs



Programming output

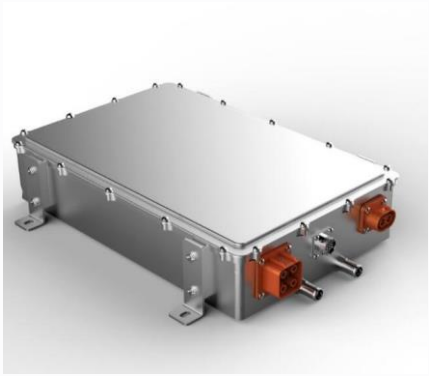
Application

The ACB series is an innovative product used in a variety of applications due to its unique technology and optimal performance. It can perform bidirectional AC power supply and act as regenerative AC loads, which can be utilized for long-term reliability testing applications including tests for ESS, PV inverter, wind turbine, electric vehicle DC charging stations, and a variety of grid-connected systems. They are particularly well suited for applications that require accurate and extremely fast response times when simulating AC power characteristics.

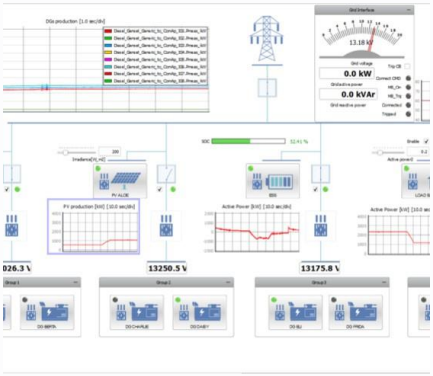
ESS Testing

PV Inverter Testing

Wind Turbine Testing

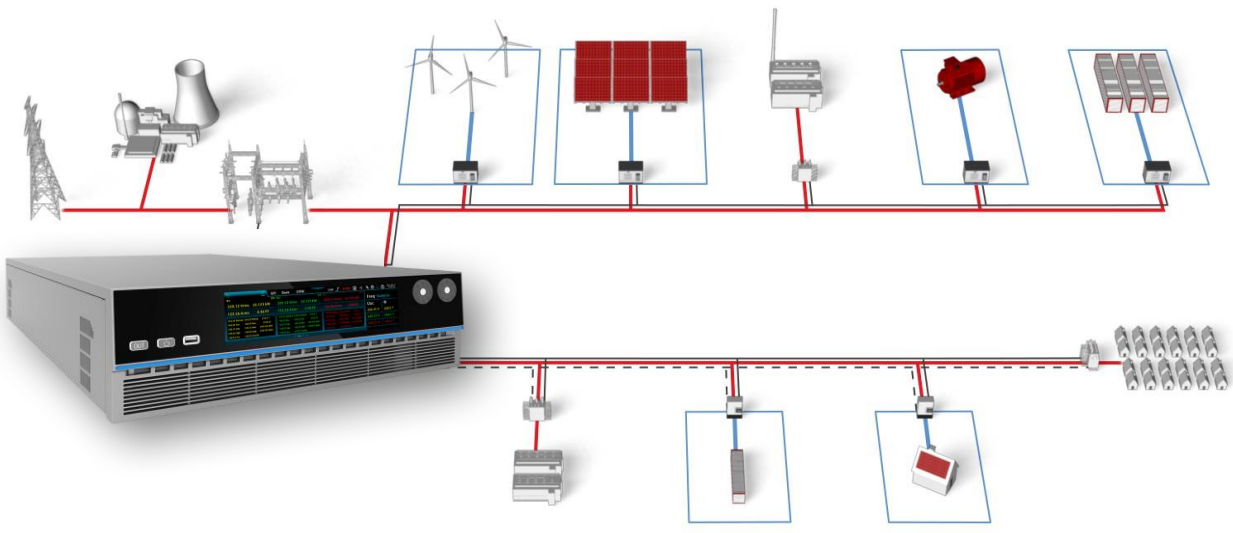


AC/DC Power Supply Testing



Power HiL

EV Charger & EVSE Testing

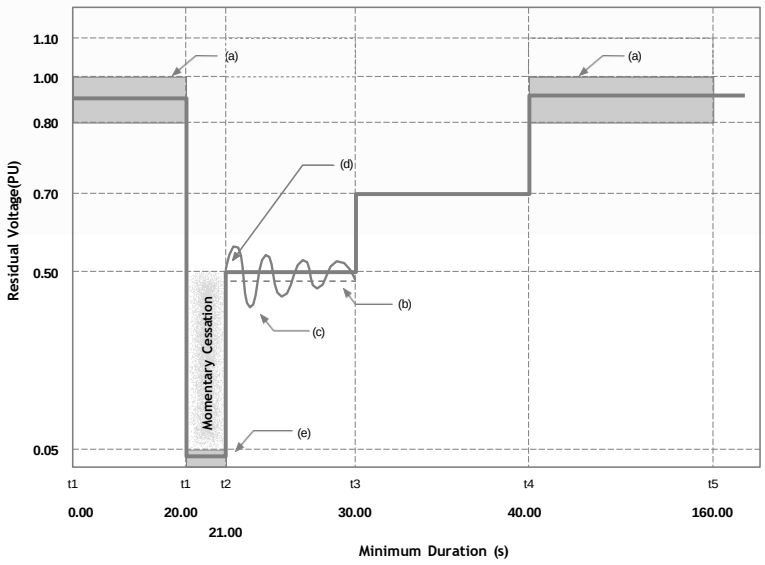


Powerful Software

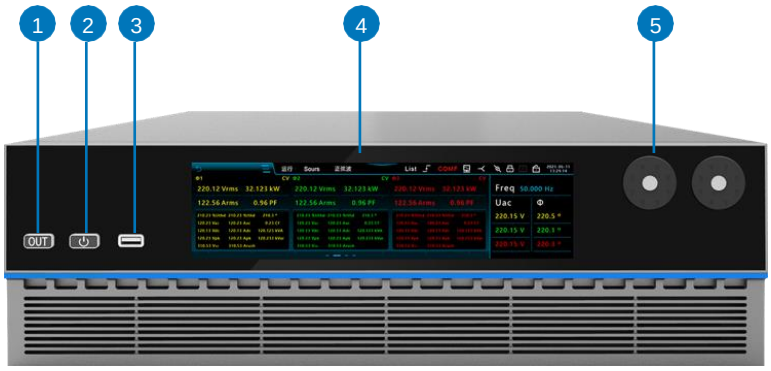
Provides Diverse Simulation Modes

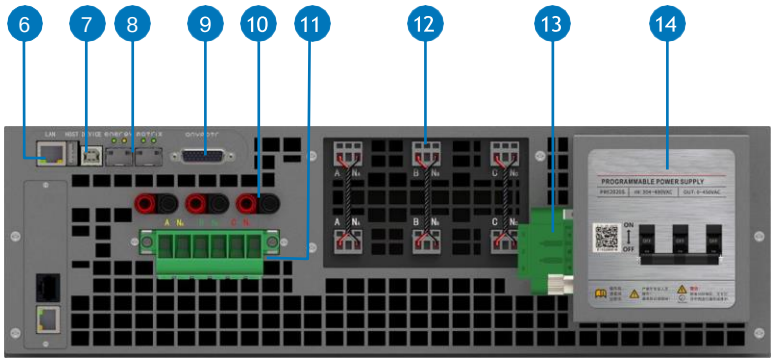
Low Voltage Ride-Through (LVRT) and Area Electrical Power System (EPS) Disturbance Simulation

ACB series can easily simulate tests such as LVRT test patterns with provided software, accurately control user-defined waveforms, and add features depending on the test environments.



Panel Description





1. Power Output Button
2. Power On / Reset Button
   Device on/off switch
3. USB Port
   External Storage Interface
4. 8.8” 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. Output Measurement Terminal
11. Voltage Sensing
12. Voltage Compensation Terminal
13. AC input & PE Terminal
14. AC Circuit Breaker
    AC power on/off

Dimension