

High Power Bidirectional DC Electronic Load ANEL(F) Series



Product Introduction

The ANEL(F) Series Regenerative DC Electronic Load is a high-tech product integrated with high-frequency PWM rectification technology, bidirectional DC conversion technology, and FPGA digital control technology. It has adaptive grid feedback capability and can support the continuous energy feedback in the full power range. It simultaneously possesses the capability of bidirectional operation in both positive and negative directions, enabling seamless energy transfer. With dual-loop control technology, it achieves ultra-high control precision, rapid response to customer load changes, ensuring equipment test stability and data precision. With its wide range of voltage and current adaptability capabilities and rich programming test functions, it better meets the diverse testing needs of customers' products. The device also includes multiple protection programming functions to better protect the safety of customer equipment during testing.

Features

- Source load integrated machine, with a pure load mode.
- Supports CV, CC, CP, and CR working modes.
- Voltage 0.05%FS, current 0.1%FS, and power 0.2%FS.
- Minimum current 0A and minimum power 0KW.
- Response times≤3ms; switching times≤4ms.
- Power factor≥0.99, current harmonic distortion≤3%.
- Provides 900-step programming function with a minimum programming time of 1mS.
- Supports simulation of 7 types of batteries including ternary lithium, lithium iron phosphate, lithium titanium oxide, lithium cobalt oxide, lithium manganese oxide, nickel-metal hydride, and lead-acid batteries.
- Supports 1st, 2nd, and 3rd grade battery models and internal resistance models, and allows for import and export of data in CSV and mat formats.
- Provides multi-unit parallel mode, supports parallel output of multiple loads of the same model.
- Equipped with CAN, RS232/RS485, LAN and other communication interfaces.

Specification and model

Product series	Product model	Rated current	Rated power	Peak current	Peak power	Voltage range	Overall dimensions/mm (W×D×H)
800V Series	ANEL800-800-100(F)	800A	100kW	1000A	125KW	12V-800V	1500×1000×2100
	ANEL800-1000-160(F)	1000A	160kW	1250A	200KW	12V-800V	2000×1000×2100
	ANEL800-1000-200(F)	1000A	200kW	1250A	250KW	12V-800V	2000×1000×2100
	ANEL800-1000-250(F)	1000A	250kW	1250A	312KW	12V-800V	2000×1000×2100
	ANEL800-1000-300(F)	1000A	300kW	1250A	375KW	12V-800V	2000×1200×2100
	ANEL800-1000-400(F)	1000A	400kW	1250A	500KW	12V-800V	2000×1200×2200
	ANEL800-1000-500(F)	1000A	500kW	1250A	625KW	12V-800V	2000×1200×2200
1000V Series	ANEL1000-600-100(F)	600A	100kW	750A	125KW	12V-1000V	1500×1000×2100
	ANEL1000-1000-160(F)	1000A	160kW	1250A	200KW	12V-1000V	2000×1000×2100
	ANEL1000-1000-200(F)	1000A	200kW	1250A	250KW	12V-1000V	2000×1000×2100
	ANEL1000-1000-250(F)	1000A	250kW	1250A	312KW	12V-1000V	2000×1000×2100
	ANEL1000-1000-300(F)	1000A	300kW	1250A	375KW	12V-1000V	2000×1200×2100
	ANEL1000-1000-400(F)	1000A	400kW	1250A	500KW	12V-1000V	2000×1200×2200
	ANEL1000-1000-500(F)	1000A	500kW	1250A	625KW	12V-1000V	2000×1200×2200

Any changes to the above parameter specifications will not be notified separately.

Product name		High Power Bidirectional DC Electronic Load	
Work mode		CV CC CP CR	
Energy feedback		Grid-following feedback	
Isolation function		Electrical isolation between input and output	
CV mode	Setting range	12V-Vmax	
	Resolution	0.1V	
	Accuracy	0.05%FS	
CC mode	Setting range	0A-Imax	
	Resolution	0.1A	
	Accuracy	0.1%FS	
CP mode	Setting range	0kW-Pmax	
	Resolution	0.01kW	
	Accuracy	0.2%FS	
CR mode	Setting range	0Ω-1,000Ω	
	Resolution	0.1Ω	
	Accuracy	0.5%FS	
Dynamic characteristics	Recovery time	≤3ms (10%-90% load switching)	
	Rise time	≤3ms	
	Switching time	≤4ms	

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AC characteristic	Mode	3-phase 4-wire+PE
	Voltage	323V-347V
	Frequency	45Hz-65Hz (Follows grid frequency)
	Phase	Follows grid phase
	Power factor	≥ 0.99
	Total harmonic content	$\leq 3\%$ (tested under conditions of standard AC power input with distortion within 1.5%)
	Overall efficiency	≥ 0.94
	Feedback performance	Full power continuous feedback
Product features	Output programming	It allows programmable output voltage waveforms, including voltage and current slopes, steps, cyclic control, and jump control.
	Emergency stop	It has an emergency stop button and built-in output contactor for quickly and completely disconnecting from the load equipment.
	Battery simulation	It can simulate five types of batteries: lithium ternary, lithium manganese, lithium cobalt, lithium iron phosphate, lead-acid, and nickel-metal hydride. It supports customizing battery cell capacity, series/parallel quantity, State of Charge (SOC), and temperature parameters.
	Ramp-up function	It provides voltage, current, and power programming ramp-up
	Multi-mode function	It supports various load modes, including CV, CC, CR, CP, CV-CC, CC-CP, CP-CR, CV-CC-CR, etc.
Protection functions	AC protection	AC undervoltage, overvoltage, and phase loss protection
	Built-in protection	Bus overvoltage protection, power module overheating protection, power module overcurrent protection, and power module short circuit protection
	Protection setting	Allow setting protection parameters and enable for OVP, LVP, OCP, LCP and OPP protection
	Limit setting	It supports setting upper and lower limits for voltage, current, and power parameters
Display and operation	Display mode	LCD
	Operation mode	Number key, knob and touch screen three-in-one
Display resolution	Voltage	0.001V
	Current	0.001A
	Power	0.001kW
Communication interface	Serial interface	Standard RS232/RS485 (select one)
	CAN interface	Supports CAN2.0 protocol, with a communication data update frequency ≥ 50 Hz
	Ethernet	Supports the Ethernet communications
Analog interface		Supports external emergency stop switch quantity signal control
Safety performance working environment	Insulation resistance	$\geq 2\text{M}\Omega$ (tested at 1,000V insulation voltage)
	Withstand voltage	2,000VDC 5mAmin
	Grounding resistance	$\leq 100\text{m}\Omega$
	Working temperature	0°C-40°C
	Working humidity	20-90%RH (no condensation)
	Altitude	$\leq 2,000\text{m}$
Storage temperature		-10°C-70°C
Noise		$\leq 70\text{dB}$
Cooling method		Temperature-controlled air cooling. It has a built-in temperature-controlled variable speed fan.
Protection level		IP21

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