ZENONE
POWER ELECTRONIC TEST EQUIPMENTS

AL3000R SERIES DC POWER REGENERATIVE

AL3000R Series

Fast, Bi-directional DC Power Supplies

Key Features:

- Powers levels from **5KW up to 500KW**
- Voltages ranges from **10Vdc up to 1200Vdc**
- Current up to **500Adc**
- Parallel configurations **up to 4MW**
- Rise and fall times down to 500 µS
- Compact size and high performance
- Modular execution
- Constant power mode models available
- Overload capacity up to 200% for 1 minute
- High conversion efficiency > 92%
- Operating Modes: CV / CC /constant power, resistor simulation
- Access to PID adjustment parameters
- Easy to use, easy maintenance and calibration
- Precision better than 0.2%
- Isolated output
- Windows™ Software for PC control

General Description

The AL3000R series power supplies are robust, economical, easy to use solid-state equipment. Developed for intensive use on production lines, these supplies are ideal for research and development laboratories. Due to their high switching frequency combined with multi-level switching technology, they provide a clean DC output voltage with low ripple and short reaction times and a high conversion efficiency of more than 92%. They can operate in two quadrants, supply and absorb energy from the load with line regeneration. The power range is from 5KW up to 500KW with parallel option up to 4MW and a range of voltages from 10V up to 1000V. The operating modes provide constant voltage CV, constant current CC, constant power and internal resistance simulation. The CP models provide output in constant power supplying twice the current in the mid-voltage range to ensure maximum power to the load. The AL3000R is equipped with a modern and simple user interface which makes setup and parameter readings very simple and intuitive. These units are packaged in a wheeled cabinet (low and medium power levels) or stationary cabinet.

Programmable via serial RS485 optional USB, LAN or optical fiber. Four digital I/O and four analog I/O support easy integration with automatic test lines. The output voltage can be regulated with continuity from 0 to the maximum value, as well as the current, power and the internal resistance. All devices are equipped with “sensing” for the compensation of the voltage drop along the cables (up to 10% of the F.S.). They handle abrupt load variations with recovery times of less than 1 mS for load variations of 50%.

All the equipments can be fitted with dissipative Brushless DC motor control (BLDC) module for the dissipation of energy coming from the load.

Distributed by

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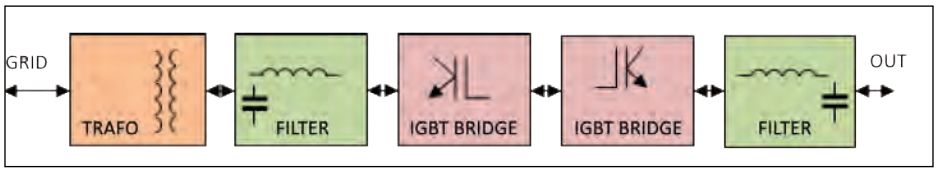
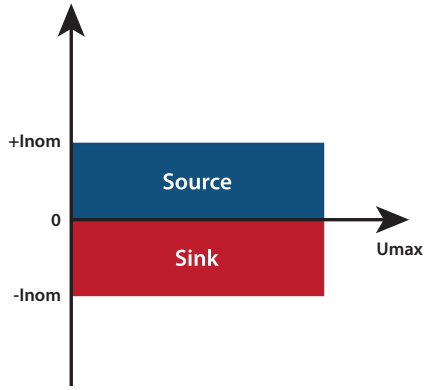
Topology

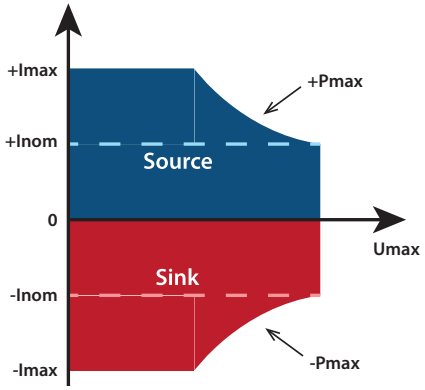
Using an isolation dual back-to-back full bridge topology, the AL3000R provides efficient and reliable solid state power conversion in both regenerative and non-regenerative modes.
The AL3000R is available in either standard version (max current available at max voltage) or in Constant Power version using a more flexible range where higher output current is available at lower voltage settings. This is illustrated in the diagram to the right.



AL3000R Topology

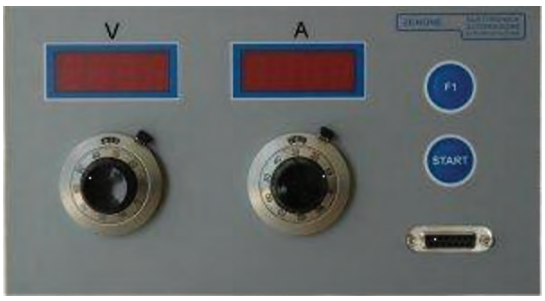


Standard Version - Point Rated



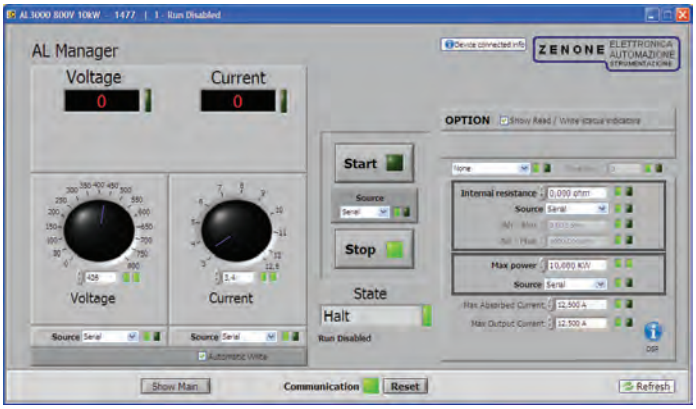
Constant Power (CP) Version

Front Panel Controls



Multi-turn potentiometers provide precision control over voltage and current set points. Settings can be locked so no accidental adjustment can be made.
Two large LED Segment displays provide continuous readouts of voltage and current to the load.

AL Manager Software



Intuitive Windows based AM Manager control software turns any PC into a remote operator console. The AM Manager software provided a higher level of power supply control than available from the front panel.

Typical Applications

- General purpose DC power supply suitable for demanding and dynamic hi power DC loads.
- Battery charger and discharge testing
- Battery simulation
- EV Drivetrain Design and Test
- Transformer, coils and magnetic cores testing.

Technical Specification

Output features	
Output voltage	10V ~ 1200V
Minimum regulated voltage	0V
Minimum regulated current	1% F.S.
Accuracy CV	Typ. 0.2% F.S.
Accuracy CC	Typ. 0.3% F.S.
Power limitation	0 ~ Pmax
Simulated resistance	Function of power, 1mΩ Resolution
Line regulation	Typ. 0.2% F.S.
Load regulation	Typ. 0.2% F.S.
Linearity	0.2% F.S.
Max offset	0.2%
Max output ripple HF	Typ. 0.2%F.S.
Maximum power output	500KW, parallelable over 4MW
Maximum power input	The same as power output
Output connections	Internal terminals
Overload	0% standard, optional 200%
Constant power (CP models)	on ½ Vmax 2*In
Maximum time in overload	1 minute
Rise / Fall time (10 / 90%)	According to the model up to 500µS
Recovery time for load variation of 50%	Typ. 1mS
Maximum voltage recovered	10% F.S. from sensing
Conversion efficiency	> 92%

Measurements (Range / Accuracy)	
Voltage	F.S +10% / accuracy 0.2% F.S
Current	F.S +10% / accuracy 0.3% F.S
Power	F.S +10% / accuracy 0.5% F.S
Front Panel Controls	
Run/stop	Button
Voltage setting	Potentiometer
Current setting	Potentiometer
Other	Main switch, Emergency, Views
Supply	
Line voltage	480V 3 Phs ± 10%
Frequency	45 ~ 65Hz
Cos phi	Typ. 0.99
Line protection	Automatic breaker
Connections	Internal
Other	
Dimensions	Depends on model and cabinet
Weight	Depends on model
Output connections	Internal
Operating temperature	5 ~ 40°C / 41 ~ 104°F
Storage temperature	-5 ~ 60°C / 23 ~ 140°F
Protection	IP20
Cooling	Forced air
Noise at 1mt	Typ. 65dbA
Safety and EMC	CE (EMC & LVDT)
Insulation	
Line / output / GND	2500 Vrms
Output / GND	1500 Vrms
Maximum output voltage	It depends on the output applicable / GND
Remote Control Interfaces	
Communication	RS485, Optional USB, LAN, Optical fiber
Digital inputs	2: 24V NPN & Emergency Circuit
Digital outputs	2: 24V PNP
Analog inputs	2: 0 ~ 10V
Analog outputs	2: 0 ~ 10V

Example of an AL3000R unit rated at 500kW

AL3000R - DC POWER SUPPLIES | REGENERATIVE

Available Configurations

Contact PPST Solutions to discuss your application requirements and configure an optimal power supply or system configuration.

Standard Voltages
10V
30V
50V
100V
200V
300V
400V
500V
600V
700V
800V
1000V
1200V

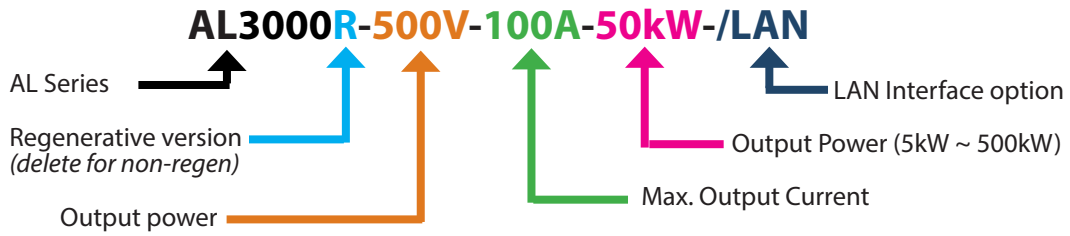
Output Power
5KW
10KW
15KW
20KW
30KW
50KW
75KW
100KW
150KW
200KW
300KW
400KW
500KW

Options	
/M-FVC-SW	Software AL Manager
/PCR	Interface for parallel operation
/LAN	LAN interface
/FIB	Optic fiber interface
/Sout	Access to particular output (specify)
/USB	USB interface
/Cons	Separate control unit (3 meter / 10 ft cable)

Zenone Elettronica History

Founded in 1990 in Mirabella Eclano (AV), Italy by a staff with high experience in the power electronics sector, Zenone Elettronica has quickly become a leader in the development and manufacture of power electronics with a high level of technological sophistication, focusing on test equipment for measurement laboratories and production lines.

Order Example



Other products available from Zenone Elettronica

- Continuous mode Current Sources GI series
- Pulsed Current Sources GI1K xxx SI series
- DC up to 2.5KHz High Bandwidth Current Sources GIS1K series
- DC up to 2.5KHz High Bandwidth Single-phase voltage sources GTS1K series

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