Fast bidirectional power supplies

**AL3000R**

- powers from 5KW up to 500KW
- voltages from 10 up to 1200V
- connectable in parallel over 4MW
- rise/fall time down to 500 µS
- reduced sizes and high performance
- modular execution
- constant power models
- overload capacity up to 200% for 1’
- high conversion efficiency > 92%
- functioning CV / CC / constant power, resistor simulation
- access to PID adjustment parameters
- easy to use, easy maintenance and calibration
- precision better than 0.2%
- insulated output
- software for PC control

**Typical applications**

- Power supply of equipment in general where high demands of reaction are required
- Battery charger and discharger, batteries simulation, automotive
- Trafo, coils, cores tests

**Description and applications**

Fast power supplies AL3000R series are robust, economical, easy to use static equipments. Developed for intensive use on production lines are ideal for research and development laboratories. Due to their high switching frequency joined to the multilevel switching technology they provide a clean DC source in low ripple with short reaction times and a high conversion efficiency> 92%. They can operate in two quadrants, supply and absorb energy from the load with line regeneration. The power range goes from 5KW up to 500KW with parallel option up to over 4MW with a range of voltages from 10V up to 1000V. The operating modes provideconstant 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 to ensure maximum adaptation to the load. Equipped with a modern and simple user interface which makes setup and parameter readings very simple and intuitive. They are realized in wheeled cabinet (low and medium powers) or cabinet.

Programmable via serial RS485 optional USB, LAN or optic fiber. 4 digital I / O and 4 analog I / O they guarantee a perfect 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 drop along the cables (up to 10% of the F.S.). They bear abrupt load variations even with recovery times of less than 1 mS for load variations of 50%.

All the equipments can be fitted with dissipative BLCD module for the dissipation of energy coming from the load.
# Fast bidirectional power supplies

## AL3000R

## Main features

<table>
<thead>
<tr>
<th>Output features</th>
<th>Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Output voltage</strong></td>
<td><strong>F.S. + 10% accuracy 0.2% F.S.</strong></td>
</tr>
<tr>
<td><strong>Minimum regulated voltage</strong></td>
<td><strong>F.S. + 10% accuracy 0.3% F.S.</strong></td>
</tr>
<tr>
<td><strong>Minimum regulated current</strong></td>
<td><strong>F.S. + 10% accuracy 0.5% F.S.</strong></td>
</tr>
<tr>
<td><strong>Accuracy CV</strong></td>
<td><strong>-</strong></td>
</tr>
<tr>
<td><strong>Accuracy CC</strong></td>
<td><strong>-</strong></td>
</tr>
<tr>
<td><strong>Power limitation</strong></td>
<td><strong>-</strong></td>
</tr>
<tr>
<td><strong>Simulated resistance</strong></td>
<td><strong>-</strong></td>
</tr>
<tr>
<td><strong>Line regulation</strong></td>
<td><strong>Typ 0.2% F.S.</strong></td>
</tr>
<tr>
<td><strong>Load regulation</strong></td>
<td><strong>Typ 0.2% F.S.</strong></td>
</tr>
<tr>
<td><strong>Linearity</strong></td>
<td><strong>0.0.2% F.S.</strong></td>
</tr>
<tr>
<td><strong>Max output ripple HF</strong></td>
<td><strong>Typ 0.2% F.S.</strong></td>
</tr>
<tr>
<td><strong>Maximum power output</strong></td>
<td><strong>500KVW, parallelable over 4MVW</strong></td>
</tr>
<tr>
<td><strong>Maximum power input</strong></td>
<td><strong>Same as power output</strong></td>
</tr>
<tr>
<td><strong>Output connections</strong></td>
<td><strong>Internal terminals</strong></td>
</tr>
<tr>
<td><strong>Overload</strong></td>
<td><strong>0% standard, optional 200%</strong></td>
</tr>
<tr>
<td><strong>Constant power (CP models)</strong></td>
<td><strong>1/2 Vmax 2In</strong></td>
</tr>
<tr>
<td><strong>Maximum time in overload</strong></td>
<td><strong>1 minute</strong></td>
</tr>
<tr>
<td><strong>Rise / Fall time</strong></td>
<td><strong>According to the model up to 500µS</strong></td>
</tr>
<tr>
<td><strong>Recovery time for load variation of 50%</strong></td>
<td><strong>Typ. 1mS</strong></td>
</tr>
<tr>
<td><strong>Maximum voltage recovered from sensing</strong></td>
<td><strong>10% f.s.</strong></td>
</tr>
<tr>
<td><strong>Conversion efficiency</strong></td>
<td><strong>&gt;92%</strong></td>
</tr>
</tbody>
</table>

## Controls on the front

- Run/stop button
- Voltage setting potentiometer
- Current setting potentiometer
- Other: Main switch, emergency, views

## Supply

- **Line voltage**: 400V 3F ± 10%
- **Frequency**: 45 - 65Hz
- **Cosphi**: Typ 0.99
- **Line protection**: Automatic breaker
- **Connections**: Internal
- **Dimensions**: According to the model, cabinet
- **Weight**: According to the model
- **Output connections**: Internal
- **Operating temperature**: 5 - 40°C
- **Storage temperature**: -5 - 60°C
- **Protection**: IP20
- **Cooling**: Forced air
- **Noise at 1mt**: Typ 65dbA
- **Safety and EMC**: CE (EMC and LVDT)

## Insulation

- **Line / output / GND**: 2500Vms
- **Output / GND**: 1500Vms
- **Maximum output voltage applicable / GND**: It depends on the output voltage

## Interfaces

- **Communication**: RS485, Optional USB, LAN, Optic fiber
- **Digital inputs**: 2, 24V NPN + emergency circuit
- **Digital outputs**: 2, 24V PNP
- **Analog inputs**: 2, 0 - 10V
- **Analog outputs**: 2, 0 - 10V

## Principled schemes

- **CP model**: Standard model
- **Source**: Sink
- **Line**: Trafo, Filter, IGBT bridge
- **Out**: Filter
# Fast bidirectional power supplies

**AL3000R**

## High-power technology

### Available powers

<table>
<thead>
<tr>
<th>Power (kW)</th>
<th>Voltage (V)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>10</td>
<td>30</td>
</tr>
<tr>
<td>15</td>
<td>50</td>
</tr>
<tr>
<td>20</td>
<td>100</td>
</tr>
<tr>
<td>30</td>
<td>200</td>
</tr>
<tr>
<td>50</td>
<td>300</td>
</tr>
<tr>
<td>75</td>
<td>400</td>
</tr>
<tr>
<td>100</td>
<td>500</td>
</tr>
<tr>
<td>150</td>
<td>600</td>
</tr>
<tr>
<td>200</td>
<td>700</td>
</tr>
<tr>
<td>300</td>
<td>800</td>
</tr>
<tr>
<td>400</td>
<td>1000</td>
</tr>
<tr>
<td>500</td>
<td>1200</td>
</tr>
</tbody>
</table>

Other voltages on request

### Available standard voltages

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

## Options / Finishing on request

- **/M-FVC-SW**: Software ALmanager
- **/PCR**: Interface for parallel
- **/LAN**: LAN interface
- **/FIB**: Optic fiber interface
- **/Sout**: Access to particular output (specify)
- **/USB**: USB interface
- **/Cons**: Separate control unit (3 mt cable)

## Available designs

- Wheeled Cabinet
- Cabinet

## Modular assembly for easy maintenance

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Fast bidirectional power supplies
AL3000R

Frontal

Software ALmanager

Other Zenone Elettronica products

- Current Sources GI1K series
- Pulsed Current Sources GI1K xxx SI series
- Current Sources GIS1K series with bandwidth from DC up to 2.5KHz
- Single-phase voltage sources GV1K series
- Single-phase voltage sources GTS1K series with bandwidth from DC up to 2.5KHz
- Frequency converters FVC1K three-phase series with high overload and output frequency up to 450Hz
- Fast Power supply AL3000 series

ZENONE ELETTRONICA HISTORY

Founded in 1990 in Mirabella Eclano (AV) 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 technological level, focusing on testing equipments for measurement laboratories and production lines

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