SMF CHARGERS

Regenerative High Switching Frequency Formation Technology for Lithium-Ion Cells
This multi-line modular converter is designed for lithium-ion cell formation and is built with high frequency switching technology. Each line works with a specific formation control program, up to 50A and 6V. The unit manages up to 256 formation lines.

**SYSTEM COMPONENTS**
The equipment is comprised of three major subsystems:
1. A high frequency bidirectional AC/DC stage with galvanic insulation;
2. High frequency bidirectional DC/DC circuits;
3. A control unit for the converter and the formation lines through a proprietary software suite.

The SMF Charger works with a companion formation chamber which provides automatic electrical contact with the lithium-ion cells to form.

**EQUIPMENT PERFORMANCE**
Input AC/DC IGBT inverter stage:
- power factor > 0.99
- current distortion < 5%

This guarantees high compatibility with the electrical grid.

High efficiency output DC/DC stage > 90%

**TURNKEY SYSTEM FOR CELL FORMATION**
The SMF charger is designed to be easily integrated with Solith Modular Formation Chamber (MFC) which provides the automatic electrical contact of Li-ion cells. The system is supplied as one ready-to-use piece of equipment.

**GENERAL SMF CHARGER FEATURES**
- Current Accuracy: ±0.1% FS
- Voltage Accuracy: ±0.1% FS
- Output DC/DC Stage Efficiency: ≥90%
- Input Power Factor: >0.99
- Input Current Total Harmonic Distortion (THD): ≤5%
- Regenerative Function for Excess Energy During Discharge
- Overvoltage and Overcurrent Hardware Control for Enhanced Reliability
- Single Circuit Independent Operation
- Two Independent Control Loops for Current and Voltage
## TECHNICAL DATA

<table>
<thead>
<tr>
<th>Model</th>
<th>Type</th>
<th>Current (A)</th>
<th>Voltage (V)</th>
<th>Number of circuits per cabinet</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMF-168-5A-5V</td>
<td>ONLY CHARGE</td>
<td>0-5</td>
<td>0-5 charge</td>
<td>168</td>
</tr>
<tr>
<td>SMF-256-5A-5V</td>
<td>CHARGE/DISCHARGE</td>
<td>0-5</td>
<td>0-5 charge, 1.5 -5 discharge</td>
<td></td>
</tr>
<tr>
<td>SMF-96-10A-6V</td>
<td>CHARGE/DISCHARGE</td>
<td>0-10</td>
<td>0-6 charge, 1.8-6 discharge</td>
<td>96</td>
</tr>
<tr>
<td>SMF-96-25A-6V</td>
<td>CHARGE/DISCHARGE</td>
<td>0-25</td>
<td>0-6 charge, 1.8-6 discharge</td>
<td>96</td>
</tr>
<tr>
<td>SMF-168-30A-5V</td>
<td>CHARGE/DISCHARGE</td>
<td>0-30</td>
<td>0-6 charge, 1.8-6 discharge</td>
<td>168</td>
</tr>
<tr>
<td>SMF-96-50A-6V</td>
<td>CHARGE/DISCHARGE</td>
<td>0-50</td>
<td>0-6 charge, 1.8-6 discharge</td>
<td>96</td>
</tr>
<tr>
<td>SMF-48-100A-6V</td>
<td>CHARGE/DISCHARGE</td>
<td>0-100</td>
<td>0-6 charge, 1.5-6 discharge</td>
<td></td>
</tr>
</tbody>
</table>

Other versions are available upon Customer's request.

**KEY FEATURES AND BENEFITS**

- **PF ≥ 0.99 during charge & discharge:**  
  NO NEED FOR EXTERNAL POWER FACTOR CORRECTION SYSTEM
- **THD ≤ 5%:**  
  NO NEED FOR EXTERNAL HARMONIC DISTORTION CORRECTION SYSTEM  
  NO HARMONIC RESONANCE IN THE POWER GRID
- Galvanic insulation with respect to the AC grid:  
  HIGHER SAFETY STANDARDS
- Modular concept design:  
  FAST DC/DC MODULE REPLACEMENT (LOWER DOWNTIME)  
  SINGLE CIRCUIT DSP CONTROL BOARD
- Fast Service System/Autodiagnostic with integrated DSP sensors:  
  FASTER RESPONSE & INTERVENTION TIME
- Switching technology:  
  HIGHER ENERGY EFFICIENCY COMPARED TO LINEAR TECHNOLOGY
- Regenerative switching mode topology:  
  ENERGY SAVINGS IN EXCESS OF 60% COMPARED TO TRADITIONAL SYSTEMS
- Compact footprint:  
  HIGH CIRCUIT DENSITY (UP TO 256 PER CABINET)  
  SMALL DIMENSIONS
- Proven experience in switching technology equipment:  
  MORE THAN 600 UNITS INSTALLED WORLDWIDE