Applications and Key Benefits

48V sodium nickel chloride energy backup system, specifically designed for telecom application.
Ideal for:
- Telecom central office sites with stringent energy density requirement
- Telecom outdoor cabinets in locations with elevated or extreme temperature
- Installation with poor grid connection and frequent power outages
- Installation in locations where regular on-site maintenance is costly or not possible

- Constant performance at -20° to +60°C / -4°F to 140°F
- No cooling required
- >3000 cycles at 80% DoD
- 100% maintenance free in operation
- Allows remote monitoring
- Specific energy: 70% lighter and 30% smaller than conventional backup systems
- Very low total cost of ownership (TCO) compared to other backup technologies
- No outgassing and zero ambient emission
- Very long shelf life without maintenance: stores energy indefinitely when not connected

Sodium Nickel Chloride Technology

- Use of sodium and nickel as active materials, with solid ceramic electrolyte
- Active materials contained in sealed steel sheet cells
- “hot device” – internal operating temperature around 300°C / 572°F
- Made with 2.58 Volt cells with 140 Wh/kg / 310Wh/lb and 280 Wh/liter specific density
- Proven technology for energy storage and clean powering of electric vehicles

Environment

- Zero ambient emission:
  - can be installed in a sealed environment
- System outside temperature only few degrees above the ambient temperature
- Efficient material usage and 100% recyclable:
  - stainless steel, nickel, iron, salt, ceramic
- RoHs compliant

Technical Features

- Steel cell case and double stainless steel device case
- Integrated system (BMS) for monitoring, diagnostics and data logging
- User interface on front panel
- Ready for remote diagnostics and monitoring
- Compatible with any DC power supply and standard telecom rectifiers
- Scalable with parallel operation
- No memory effect
- BMS diagnostics alert on anomalies and disconnect the device in case of serious failure
- Supplementary protection with an independent circuitry in the event of BMS failure
- Integrated low voltage disconnect (LVD)

48TL-H models: optimized insulation to guarantee lowest thermal loss and maximize the system energy efficiency ideal for applications that require medium to very long discharge
## General Characteristics

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal Voltage</td>
<td>48V DC</td>
</tr>
<tr>
<td>Open Circuit Voltage</td>
<td>51.6V</td>
</tr>
<tr>
<td>Bus Voltage Range</td>
<td>53 to 59 V</td>
</tr>
<tr>
<td>Faradic Charge Efficiency</td>
<td>100%</td>
</tr>
<tr>
<td>Cycles</td>
<td>&gt; 3000 Cycles at 80% DoD</td>
</tr>
<tr>
<td>Operating Temperature Range</td>
<td>-20°C / + 60°C - -4°F / 140°F continuous</td>
</tr>
</tbody>
</table>

## Applicable Standards

- EN 61000-6-1
- CE
- CAS Nr 7440-02-0 - Nickel specification
- NEBS Level-1 DA-1976
- 48TL200: certified
- 48TL120 - 48TL160 - 48TL160H: designed to comply

## FIAMM Manufacturing

- Made in Switzerland
- ISO 9001 Quality Management System
- ISO 14001 Environmental Management System
- Over 10 years experience with sodium nickel chloride technology

## Dimensions

<table>
<thead>
<tr>
<th>Model</th>
<th>Front</th>
<th>Depth</th>
<th>Height</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>48TL80</td>
<td>260 mm</td>
<td>21.65 in.</td>
<td>320 mm / 12.60 in.</td>
<td>45 Kg / 99 lb</td>
</tr>
<tr>
<td>48TL120</td>
<td>496 mm</td>
<td>19.53 in.</td>
<td>558 mm / 21.97 in.</td>
<td>77 Kg / 170 lb</td>
</tr>
<tr>
<td>48TL160</td>
<td>496 mm</td>
<td>19.53 in.</td>
<td>558 mm / 21.97 in.</td>
<td>91 Kg / 201 lb</td>
</tr>
<tr>
<td>48TL160H</td>
<td>496 mm</td>
<td>19.53 in.</td>
<td>558 mm / 21.97 in.</td>
<td>90 Kg / 198 lb</td>
</tr>
<tr>
<td>48TL200</td>
<td>496 mm</td>
<td>19.53 in.</td>
<td>558 mm / 21.97 in.</td>
<td>105 Kg / 231 lb</td>
</tr>
</tbody>
</table>

## 48TL range - application with stable or unstable grid connection

<table>
<thead>
<tr>
<th>Model</th>
<th>Nominal Capacity</th>
<th>Nominal Energy</th>
<th>Gravimetric Energy Density</th>
<th>Volumetric Energy Density</th>
<th>Max Continuous Discharge Current</th>
<th>Warm-up Time to be Operational</th>
<th>Interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>48TL80</td>
<td>80 Ah</td>
<td>3650 Wh</td>
<td>81 Wh / Kg / 37 Wh / lb</td>
<td>80 Wh / liter</td>
<td>50 Amps</td>
<td>&lt; 20 hours</td>
<td>RS 232</td>
</tr>
<tr>
<td>48TL120</td>
<td>120 Ah</td>
<td>5700 Wh</td>
<td>74 Wh / Kg / 34 Wh / lb</td>
<td>64 Wh / liter</td>
<td>90 Amps</td>
<td>&lt; 14 hours</td>
<td>RS 485, USB</td>
</tr>
<tr>
<td>48TL160</td>
<td>160 Ah</td>
<td>7700 Wh</td>
<td>85 Wh / Kg / 38 Wh / lb</td>
<td>86 Wh / liter</td>
<td>120 Amps</td>
<td>&lt; 14 hours</td>
<td>RS 485, USB/CAN-bus</td>
</tr>
<tr>
<td>48TL200</td>
<td>200 Ah</td>
<td>9600 Wh</td>
<td>91 Wh / Kg / 42 Wh / lb</td>
<td>108 Wh / liter</td>
<td>150 Amps</td>
<td>&lt; 14 hours</td>
<td>RS 485, CAN-bus</td>
</tr>
</tbody>
</table>

## 48TL-H range - optimized for hybrid application with renewable energy and/or gen-set

<table>
<thead>
<tr>
<th>Model</th>
<th>Nominal Capacity</th>
<th>Nominal Energy</th>
<th>Gravimetric Energy Density</th>
<th>Volumetric Energy Density</th>
<th>Max Continuous Discharge Current</th>
<th>Warm-up Time to be Operational</th>
<th>Interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>48TL160H</td>
<td>160 Ah</td>
<td>7700 Wh</td>
<td>86 Wh / Kg / 39 Wh / lb</td>
<td>83 Wh / liter</td>
<td>65 Amps</td>
<td>&lt; 13 hours</td>
<td>RS 485, USB/CAN-bus</td>
</tr>
</tbody>
</table>

## Interface

- at C4 to 42V

## Interface

- RS 232 (option RS 485)
- RS 485 / USB
- RS 485 / USB / CAN-bus

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