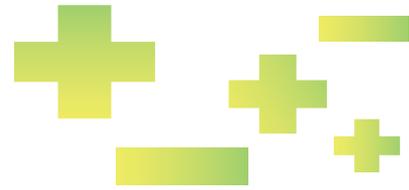


FIAMM

Industrial Batteries

SO|NICK

48TL80



Applications and Key Benefits

- + 48V sodium nickel chloride battery, specifically designed for telecom application Suitable for:
 - Hybrid or off-grid installation
 - Installation in remote location
 - Use with renewable energy (Wind / Solar)
 - Frequent power outages
 - Extreme temperature conditions
 - Installation with very compact space availability
- + Constant performance at -20° to +60°C / -4°F to 140°F
- + No cooling required
- + >2000 cycles at 80% DoD
- + 100% maintenance free in operation
- + Allows remote monitoring
- + Specific energy 70% lighter and 30% smaller than conventional batteries
- + Very low total cost of ownership (TCO) compared to other battery technologies
- + Very long shelf live without maintenance
- + Capacity to store energy indefinitely when not connected
- + No outgassing and zero ambient emission

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 battery" - internal operating temperature around 300°C / 572°F
- Made with 2,58 Volt cells with 140 Wh/kg / 310 Wh/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
- Battery outside temperature only few degrees above the ambient temperature
- Efficient material usage and 100% recyclable: stainless steel, nickel, iron, salt, ceramic
- Free of toxic materials: no lead or cadmium
- RoHs compliant

Technical Features

- Steel cell case and double stainless steel battery case
- Integrated battery monitoring 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
- Typical failure mode (internal short) does not develop violent energy release - batteries remain in operation with slight loss of performance
- BMS diagnostics alert on anomalies and disconnect the battery in case of serious failure
- Supplementary protection with an independent circuitry in the event of BMS failure
- Integrated low voltage disconnect (LVD)





48TL80 Technical Data

Electrical Characteristics

Nominal Voltage	48 VDC
Open Circuit Voltage	51.6V
Bus Voltage Range	53 to 59 V
Nominal Capacity	80 Ah at C4 to 42V
Nominal Energy	3650 Wh at C4 to 42V
Gravimetric Energy Density	81 Wh / Kg - 37 Wh / lb
Volumetric Energy Density	80 Wh / liter
Max Continuous Discharge Current	50 Amps
Faradic Charge Efficiency	100%



Operating Conditions

Operating Temperature Range	-20°C / + 60°C - -4°F / 140°F continuous
Warm-up Time to be operational	< 20 hours
Thermal Losses in operation	60 W
Nr of Cycles	> 2000 Cycles at 80% DoD

Communication

Data Interface Protocol	RS 232 (optional RS 485)
Alarm Dry Contact NO / NC	230 Vac / 2 A

Dimensions

Front	260mm / 10.24 inch
Depth	550mm / 21.65 inch
Height	320mm / 12.60 inch
Weight	45 Kg / 100 lb

Applicable Standards

- EN 61000-6-1

FIAMM Manufacturing

- Over 10 years experience with sodium nickel chloride technology and application in electric vehicles
- ISO 9001 Quality Management System
- ISO 14001 Environmental Management System