



### Applications and Key Benefits

- + 48V sodium nickel chloride battery, 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 batteries
- + Very low total cost of ownership (TCO) compared to other battery 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 battery" - 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
- Battery 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 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
- 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)
- **48TL-H models:** optimized insulation to guarantee lowest thermal loss and maximize the battery energy efficiency  
Ideal for applications that require medium to very long discharge





### General Characteristics

Nominal Voltage	48 VDC
Open Circuit Voltage	51.6V
Bus Voltage Range	53 to 59 V
Faradic Charge Efficiency	100%
Cycles	> 3000 Cycles at 80% DoD
Operating Temperature Range	-20°C / + 60°C - -4°F / 140°F continuous

Model	Nominal Capacity	Nominal Energy	Gravimetric Energy Density	Volumetric Energy Density	Max Continuous Discharge Current	Warm-up Time to be Operational	Interface
	at C4 to 42V						

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

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

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

Model	Nominal Capacity	Nominal Energy	Gravimetric Energy Density	Volumetric Energy Density	Max Continuous Discharge Current	Warm-up Time to be Operational	Interface
48TL160H	160 Ah	7700 Wh	86 Wh / Kg 39 Wh / lb	83 Wh / liter	65 Amps	< 13 hours	RS 485 / USB Ethernet / CAN-bus

### Dimensions

Model	Front	Depth	Height	Weight
48TL80	260 mm / 10.24 in.	550 mm / 21.65 in.	320 mm / 12.60 in.	45 Kg / 99 lb
48TL120	496 mm / 19.53 in.	558 mm / 21.97 in.	320 mm / 12.60 in.	77 Kg / 170 lb
48TL160	496 mm / 19.53 in.	558 mm / 21.97 in.	320 mm / 12.60 in.	91 Kg / 201 lb
48TL160H	496 mm / 19.53 in.	578 mm / 22.76 in.	325 mm / 12.80 in.	90 Kg / 198 lb
48TL200	496 mm / 19.53 in.	558 mm / 21.97 in.	320 mm / 12.60 in.	105 Kg / 231 lb

### 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