



## evoTractionBattery | 48/10

Capacity	Energy density	Weight	Voltage
9946 Wh	169 Wh/kg	59 kg	51,8 V

## Powerful traction batteries for electric vehicles and machines

There is a revolution on the horizon in the mobility and mechanical engineering sectors. Lithium-ion technology promises high energy and power densities with maximised service life. This will promote electrification and the replacement of lead-acid batteries. Batteries from the ecovolta brand can be used to power commercial and industrial vehicles, construction and agricultural machinery, boats and mobile machines as well as appliances. System implementation is particularly straightforward thanks to our integration support.

### Maximum energy density and scalability

The round cells used with lithium-ion NMC cell technology deliver a high level of energy density. This provides you with ideal capacities in small installation spaces. The battery packs can be operated both in series and in parallel and can thus be easily scaled.

### Powerful charge and discharge

The battery packs are fast-charging. This ensures that the vehicles or machines equipped with them are quickly ready for use, even in shift operation. The high discharge power is ideal for full-time use in power-intensive on- and off-road applications.

### Safe, long-lasting and cycle-resistant technology

ecovolta products are validated according to high safety standards. The battery packs require no regular maintenance. The cycle stability of the premium cells, the automotive-tested BMS and the robust design result in a long service life and optimum Total Cost of Ownership (TCO).

ecovolta has its own hardware and software development and system integration teams and cooperates with strong engineering partners. This simplifies the integration of the evoTractionBattery into prototypes and series products. We can also supply you with components such as cables or on-board charging equipment from a single source if required.

## Article eTB48-200-10 F

**Electrical data**

Battery configuration	14s60p
Number of cells	840 Pc.
Capacity per cell <sup>①</sup>	2,3 (net) / 3,1 (gross) Ah
Gross capacity <sup>②</sup>	192 Ah
Net capacity <sup>②</sup>	138 Ah
Gross energy	9946 Wh
Net energy	7148 Wh
Cell technology	Lithium-ion NMC (nickel manganese cobalt oxides)
Nominal voltage	51,8 V
Max. voltage	56 V
Min. voltage	39,2 V
Max. discharge current (10 s) <sup>③</sup>	288 A
Max. discharge current (1 s) <sup>③</sup>	432 A
Discharge current (continuous) <sup>③</sup>	144 A
Discharge voltage (recommended)	44,8 V
Charging method	CC / CV (constant current / constant voltage)
Charging end voltage	56 V
Charge shut-off (recommended)	0,015C: Current < 3 A
Precharge	Up to nominal voltage
Charging current (continuous) <sup>③</sup>	92 A
Energy consumption offline / standby per cell	0,015 $\mu$ A
Depth of discharge DoD	72 %
Performance guarantee <sup>④</sup>	up to 3'000 Cycles
Isolation voltage	>600 V
Insulation resistance	>1 MOhm

**Mechanical data**

Total weight	59 kg
Dimensions LxWxH	522x222x322 mm
Installation type	Standing (on feet) or lying down
Connections	Double pole Amphenol SURLOK PLUS 8,0MM
Operation	On-off button
Charging temperature range <sup>⑤</sup>	-10 °C to +50 °C
Discharge temperature range	-25 °C to +60 °C
Storage temperature	1 Month at 0 °C to +45 °C, 3 Months at 0 °C to +25 °C
Protection level	IP65 <sup>⑥</sup>
Colour	Yellow housing, anthracite upper cover
Recommended cable cross section	50 mm <sup>2</sup>

## Control

Communication	CAN bus
CAN bus connection <sup>⑥</sup>	<b>CAN-In:</b> Phoenix Contact M12-A-SPEEDCON; Signals: CAN_external, CAN_internal, 12V Enable, Interlock, HV Enable <b>CAN-Out:</b> Phoenix Contact M12-A-SPEEDCON; Signals: CAN_external, CAN_internal, 12V Enable, Interlock, HV Enable <b>Extern-Signal:</b> Phoenix Contact M12-A-SPEEDCON; Signals: display, LED, external on switch, IEC 62196 charge modes CC/CP, charge plug actuator control, vehicle unlock button
CAN properties	SoC (State of Charge), cell voltage, battery voltage, battery temperature, battery current, general status
Baud rate	500 kbit/s

## Safety

Battery Management System (BMS)	SIL2 level <sup>⑦</sup>
Balancing	Passive
Fuse	300 A
Interlock	HV connector monitoring, emergency stop
Safety functions	All-pole disconnection, over and under temperature shutdown, over and under voltage shutdown, redundant overcurrent shutdown, patented overcurrent protection for each cell, equipotential bonding on the battery housing
Certification	UN38.3, ECE-R 100, ECE-R 10
Conformity	RoHS, CE

## Integration

Interconnection	8 serial, up to 15 parallel <sup>⑧</sup>
Charging communication	CAN or IEC 62196 Type 2 / IEC 61851-1
Vehicle categories (not exhaustive)	L, M1, M1G, N1, N1G, T
Chargers	TC Charger, Xepics, ZIVAN SG3 & NG3, control via CAN bus and third-party devices possible

<sup>①</sup> When charging at 0.2 C, 25 °C / discharging at 0.2 C, 25 °C.

<sup>②</sup> Capacity is broken down into gross and net capacity. The gross capacity describes the total, physical energy content of the high-voltage battery. The capacity is technically limited to protect against self-discharge and to increase the service life. The actual usable capacity is indicated as net capacity.

<sup>③</sup> The figures refer to a SoC of 50 %, although these may vary depending on ambient conditions.

<sup>④</sup> 72 % DoD or 3.2V - 4.0V at 25 °C.

<sup>⑤</sup> Charging below 0 °C is not recommended. Between -10 °C and 0 °C, charging is only possible at 0.1 C.

<sup>⑥</sup> The full pin assignment can be found in the technical manual.

<sup>⑦</sup> Validation pending, underway.

<sup>⑧</sup> Project-specific, as required

