

## Gen 5 Turntide NMC Battery Pack Range

Turntide's new lithium-ion modular battery solutions combine high-performance battery packs with system controllers for temperature, current, and voltage measurement, dissipative cell balancing, and application communication.

The Turntide battery solutions provide flexible and scalable energy storage solutions with nominal voltage of 44V in a standardized modular design. They are ideal for many applications including construction, agricultural, and material handling.



## Features

- Integrated charger controls
- Rated capacity of 4.5kWh (100Ah) and 6.8 kWh (150Ah)
- Scalable modular design, up to an 18 battery pack array can be controlled by one Controller
- High energy, an array can be configured achieve up to 81kWh / 122.4kWh of stored energy
- High voltage, connect in series up to 9 battery packs for systems up to 455V
- High capacity, connect in parallel up to 18 battery packs to provide up to 1800Ah / 2700Ah
- LED-visual indicator on the battery enclosure showing the battery status
- Robust aluminium enclosure with environmental protection rated to IP66
- Battery housing allows ease of mounting on 3 axis
- Validated long cycle-life at aggressive test regime – over 3,000 charge/discharge cycles
- Complies to latest CE requirements for lithium-ion battery packs
- UN38.3 certified – approved for global shipping
- NMC 44V/4.5kWh pack can be shipped by airfreight under IATA/ICAO regulations (maximum 35kg net weight per package)

## Applications



### TURNTIDE ELECTRIFICATION

*Turntide Technologies designs and manufactures breakthrough electric motors, power electronics and energy storage solutions that optimize performance, reliability, and efficiency in all things that move.*

Turntide Transport Ltd, Eighth Avenue, Team Valley Trading Estate, Gateshead, NE11 0QA, UK

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Details are correct at time of publishing

TTS-MAN-014  
V5.0 – 24/03/2025

## Specification

| Key Features  |  |                          |  |
|---|--|--------------------------|--|
| Nominal Vdc   | 44V/4.5kWh   |                          | 44V/6.8kWh   |
| Stored Energy (kWh)   | 4.5  |                          | 6.8  |
| Usable Energy (kWh)   | 4.2  |                          | 6.3  |
| Operating Voltage Range (V)   | 37.2 – 50.4  |                          | 37.2 – 50.4  |
| Nominal Capacity (Ah)   | 100  |                          | 150  |
| Continuous Charge Current (A)   | 100*   |                          | 150*   |
| 10s Peak Charge Current (A)   | 300*   |                          | 300*   |
| Continuous Discharge Current (A)  | 130*   |                          | 195*   |
| 10s Peak Discharge Current (A)  | 300*   |                          | 300*   |
| Gravimetric Energy Density (Wh/kg)                                      | 164  |                          | 168  |
| Volumetric Energy Density (Wh/l)  | 214  |                          | 222  |
| * Dynamically de-rated BMS message over CAN depending on cell condition |  |                          |  |
| Environmental   |  |                          |  |
| Operating cell temperature  | Charge: -10°C to +50°C   | IP Rating                | IP66   |
|   | Discharge: -15°C to +50°C  |                          |  |
| Storage Condition   | Temperature  | Humidity                 | Duration   |
|   | -30°C to +55°C   | <85 RH%                  | < 7 days   |
|   | -30°C to +30°C   | <85 RH%                  | < 6 months   |
| Safety and Compliance   |  |                          |  |
| Temperature   | <ul style="list-style-type: none"><li>• EN 60068-2-1</li><li>• EN 60068-2-2</li><li>• EN 60068-2-14</li><li>• EN 60068-2-30</li></ul>  | Shock & Vibration        | <ul style="list-style-type: none"><li>• EN 60068-2-64 (Random)</li><li>• EN 60068-2-6 (Sinusoidal)</li><li>• EN 60068-2-27 (Shock)</li></ul> |
| Transport   | <ul style="list-style-type: none"><li>• UN38.3</li></ul>   | EMC                      | <ul style="list-style-type: none"><li>• EN 61000-6-2</li><li>• EN 61000-6-3</li></ul>  |
| Road Electric Vehicles  | <ul style="list-style-type: none"><li>• ECE-R100</li></ul>   | Battery Regulation       | <ul style="list-style-type: none"><li>• CE marking</li><li>• EU 2023/1542</li></ul>  |
| Safety Requirements for industrial applications †                       | <ul style="list-style-type: none"><li>• EN62619</li></ul>  |                          |  |
| † Subject to final validation   |  |                          |  |
| Performance Data  |  |                          |  |
| Cycle life (Cell level)††   | <ul style="list-style-type: none"><li>• Over 3000 cycles up to 85% capacity retention</li></ul>  |                          |  |
| †† Conditions: 1C Step Charge & 1C Discharge 100% DOD, at 25°C          |  |                          |  |
| BMS   |  |                          |  |
| Battery Control Unit (BCU)  | <ul style="list-style-type: none"><li>• All battery systems require a Battery Control Unit (BCU)</li></ul> <p>BCU variants available:</p> <ul style="list-style-type: none"><li>• TMB-00-4439 (120V, CAN1)</li><li>• TMB-00-4390 (120V, CAN1/2, XIO)</li><li>• TMB-00-4367 (250V, CAN1)</li><li>• TMB-00-4873 (250V, CAN1/2, XIO)</li><li>• TMB-00-4862 (500V, CAN1)</li><li>• TMB-00-4874 (500V, CAN1/2, XIO)</li></ul> | Communications Protocols | <ul style="list-style-type: none"><li>• CAN J1939 compatible</li><li>• HDI CAN-protocol</li></ul>  |
|   |  | Connectors               | <ul style="list-style-type: none"><li>• M12 connectors between packs</li><li>• M12 to TE Ampseal connector to BCU</li></ul>                  |
| Enclosure   | <ul style="list-style-type: none"><li>• Aluminium enclosure</li><li>• IP66 rated</li></ul>   | Mounting Points          | <ul style="list-style-type: none"><li>• M8</li></ul>   |
| Mass and Dimensions   |  |                          |  |
|   | 44V/4.5kWh   | 44V/6.8kWh               |  |
| Weight (kg)   | 27.5   | 40.5                     |  |
| Length (mm)   | 461  | 461                      |  |
| Width (mm)  | 333  | 484                      |  |
| Height (mm)   | 137  | 137                      |  |

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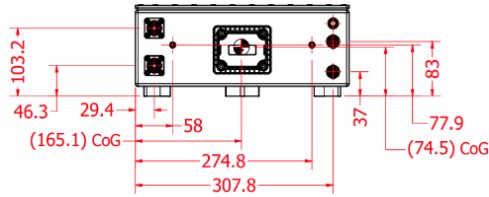
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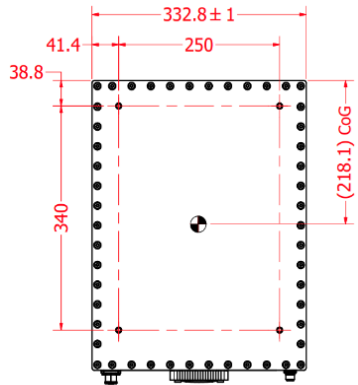
## Dimensions

44V/4.5kWh

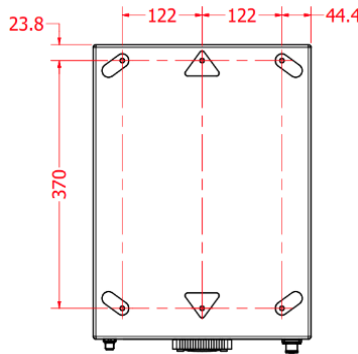
Front elevation



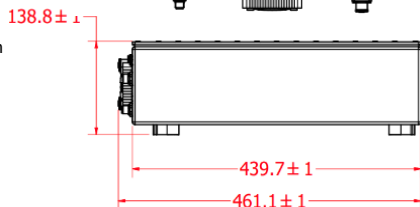
Plan (top)



Plan (bottom)

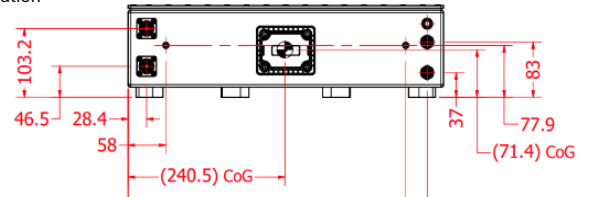


Side elevation

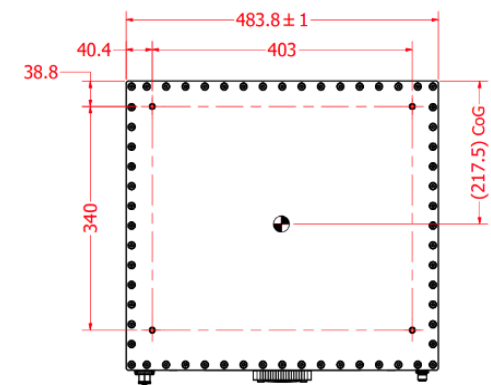


44V/6.8kWh

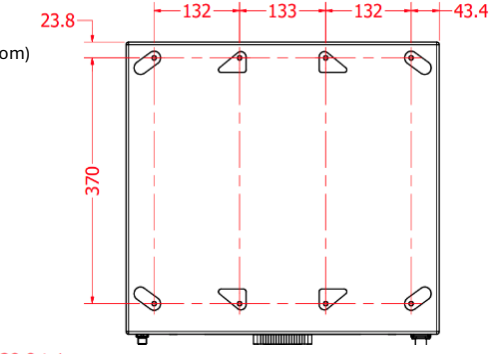
Front elevation



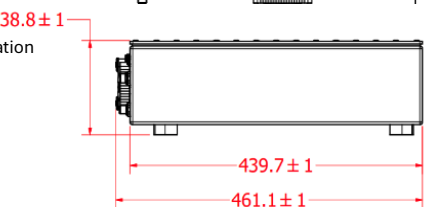
Plan (top)



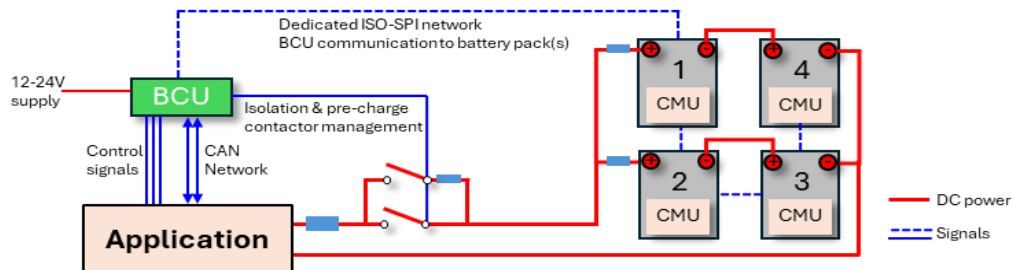
Plan (bottom)



Side elevation



## Installation Example



Typical 2s2p battery system arrangement with BCU (with isolation contactor on positive DC-bus line only). Turntide recommend a contactor on both the positive and negative DC-bus lines to isolate the circuit in the event of a welded contactor.

Turntide can provide advice to clients on system circuit design and battery pack / BCU integration.

For more information on this product or Turntide's range of inverters, motors, batteries, pumps and fans, please visit our web-site or contact our team of experts at [electrificationsales@turntide.com](mailto:electrificationsales@turntide.com).

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