# Ion'Drive® Motive 24 V

## 82 Ah and 164 Ah lithium-ion battery system

An innovative battery unit for electric Material Handling Equipment





The Ion'Drive® Motive 24 V 82 Ah and the Ion'Drive® Motive 24 V 164 Ah batteries, with high number of cycles, fast charging and minimum maintenance bring forklift performances to a premium level.

The batteries use standard **Modul'ion®**-14 24.82 MFe Super-Phosphate™ (SLFP)

- 1 **Modul'ion®**-14 is implemented in the 82 Ah version while 2 **Modul'ion®**-14 in parallel are embedded in the 164 Ah version
- 1 BMS - Battery Management System (composed of contactor, cell monitoring and balancing, communication software...). It insures that the battery operates within its limits in terms of voltage, temperature, current...

### Applications

- Material Handling Equipment: pedestrian and stand on pallet trucks, reach stacker...

### Features

- Quick and high recharge capabilities:
  - From 0 - 60% SOC, a 6 min break allows 10% of capacity charge
  - A 1h10 charge allows to reach (0 to) 90% SOC
- Minimal maintenance (no water topping up) and emission-free (zero gassing)
- CAN bus communication with host vehicle for accurate battery data/telemetry
- Robust construction withstanding industrial vehicle standards (IP rating, shock and vibrations, EMC...)

### Benefits

- Enhanced cycling performance improves TCO of vehicle
- Longer operating hours with constant performance
- Fast charging optimizes use of vehicle during its work shift
- Avoid battery swapping costs and time, additional battery, maintenance room and equipment
- Compatibility with telemetry enables optimized fleet management and planning
- Environmentally friendly


| Performances of each battery system | 24 V 82 Ah | 24 V 164 Ah |
|---|---|---|
| Modul'ion®-14 24.82 MFe | 1 | 2 |
| Voltage window (V) | 16.8 - 26.6 | |
| Nominal voltage (V) | 23.1 | |
| Rated capacity (C/5) (Ah) | 78 | 156 |
| Typical capacity (C/5) (Ah) | 82 | 164 |
| Typical energy (C/5) (Wh) | 1 894 | 3 788 |
| Charging time [1] | 1h30 | |
| Max continuous discharge current (A) | 100 | |
| Max pulse discharge current in 5 s (A) | 300 | |
| Max charge current (A): | | |
| • 0% - 60% SOC | 90 | 162 |
| • 60% - 100% SOC | 82 | 90 |
| Dimensions in mm (LxWxH) | 648 x 156 x 627 | |
| Weight (kg) | 51 | 71 |
| **Operating conditions** | | |
| System operating temperature | -20°C to +45°C (-4°F to 113°F) | |
| Temperature for transport and storage | -40°C to +50°C (-40°F to 122°F) | |
| Protection class of the battery box | IP65 | |
| **Electrical connections** | | |
| Communication protocol | CAN OPEN | |
| Electrical power connection | REMA, ANDERSON... | |

*[1] With appropriate charger*

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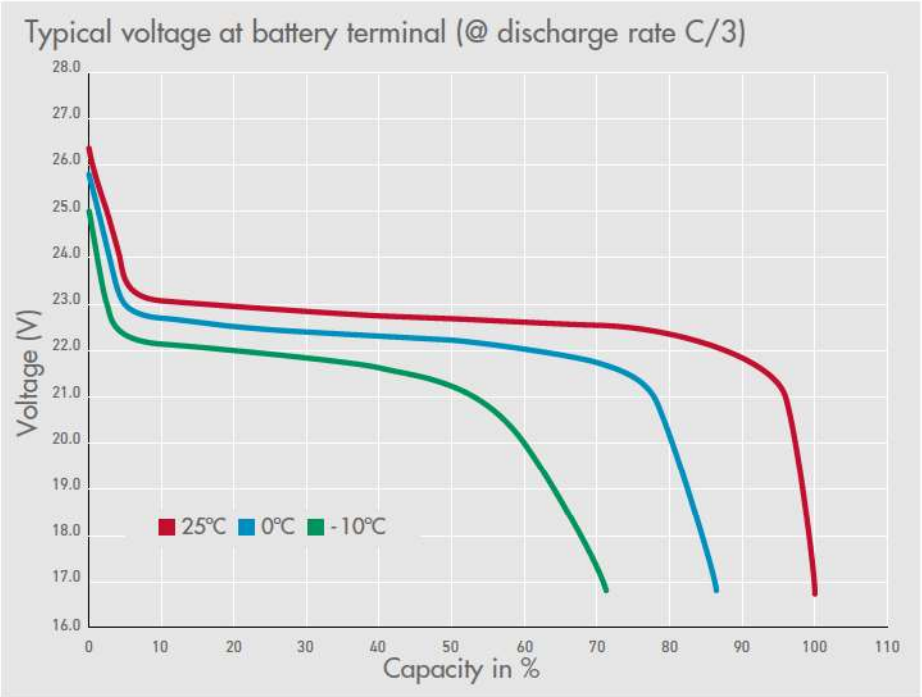
## BMS Battery Management System

- The BMS operates with CAN OPEN by default.
  Other communication protocols that can be implemented are CAN J1939, CANOPEN, MODBUS...
  Compatible with Modbus thanks to dedicated gateway
- Communication protocol carrying:
  - State Of Charge (SOC)
  - State Of Health (SOH)
  - Operating limits (Current in charge, discharge, voltage, peak or continuous)
  - Real time data (temperature, current...)

## Safety

- Stringent design rules and qualification
- Implementation of redundant safety features
  - at cell level (e.g. shutdown effect separator, mechanical vent)
  - at module level (e.g. electronic board, voltage and temperature monitoring, balancing) and
  - at battery level (e.g. electronic board, power switch, current sensor)

| Compliance to standards | |
|---|---|
| Cell safety | UL 1642 / UN 3480 Class 9 |
| Module safety | EN 50 178 |
| Shock and vibration | DIN EN 60068-2-27 / DIN EN 60068-2-6 |
| IP Protection | NF EN 60 529 |
| Electrical safety | DIN VDE V 0510-11 |
| EMC | DIN EN 61000-4-2<br>DIN EN 61000-4-3<br>DIN EN 61000-6-2<br>DIN EN 61000-6-3 |
| Transportation qualification | UN 3480 – Class 9 category II |




*Contact Technical Support for the performance of your specific configuration*
*Data are typical value, please consult Saft for battery sizing upon specific profile*

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