

Mobility module

Super High Energy Ni-MH battery system

ARTS Energy's smart VH module offers an ideal solution for personal electric vehicles to professional appliances i.e. for any applications where power and long autonomy are required.

Smart VH module integrate smart electronics, all in a robust plug-n-play battery design in aluminum casing.

Features

Basic configuration : 24 V, 36 V battery systems including :

- Built-in BMS (Battery Management System) managing charge, discharge and state of charge based on proprietary algorithm.
- Anodised aluminum casing to withstand shocks and vibrations.
- LED display for fuel gauge and battery status.
- Communication and remote control possible through the BPCI® (Battery Protection and Communication Interface) bus.
- Robust main connector and specific connector for charge. Energy recovery (regenerative charge) during use is possible depending on the battery status.
- Auto-sleep mode and on/off key to protect the battery when unused or short-circuited.
- Designed for ease of parallel assembly.
- State-of-health indicator.
- Discharge current up to 40 A continuous.
- 2 years/500 cycles smart warranty.

Benefits

- Ready for intensive use.
- Plug-and-play design.
- Autonomy on demand thanks to plug-and-play parallel assembly.
- Robust and easy connecting.
- Remote on/off control HMI (Human Machine Interface) possible.
- Protection against common mishandling (high temperature, short-circuit...).
- Electrical desactivation in sleep mode.
- Compatible with a wide range of constant current power supplies (CCPS).
- Preventive maintenance thanks to state-of-health feature.
- Recyclability and respect for the environment.



| Electrical characteristics | VH D | | | VH F | | |
|---|-------------------------------|-----|-----|------|-------|-------|
| | 20S | 30S | 20S | 30S | 10S2P | 20S2P |
| Minimum voltage (V) | 24 | 36 | 24 | 36 | 12 | 24 |
| Typical capacity (Ah) | 9 | 9 | 15 | 15 | 30 | 30 |
| Energy (Wh) | 216 | 324 | 360 | 540 | 360 | 720 |
| Specific energy (Wh/kg) | 44 | 49 | 55 | 56 | 55 | 59 |
| Energy density (Wh/l) | 85 | 95 | 104 | 113 | 102 | 117 |
| Mechanical characteristics | | | | | | |
| Height (mm) | 170 | 228 | 231 | 320 | 235 | 410 |
| Length (mm) | 185 | 185 | 185 | 185 | 185 | 185 |
| Width (mm) | 81 | 81 | 81 | 81 | 81 | 81 |
| Weight (kg) | 4.9 | 6.6 | 6.5 | 9.6 | 6.5 | 12.3 |
| Volume (dm ³) | 2.5 | 3.4 | 3.5 | 4.8 | 3.5 | 6.1 |
| Operating conditions | | | | | | |
| Operating temperature range for charge and discharge (°C) - min / max | - 10 / + 40 | | | | | |
| Extended temperature range for discharge(°C) - min / max | - 20 / + 60 | | | | | |
| Transport and storage temperature range (°C) - min / max | + 5 / + 25 | | | | | |
| Typical charge time | | | | | | |
| 95 % of capacity (h) | VH D | | | VH F | | |
| Balancing time to 100% of capacity typical use (h) | 3 | | | 5 | | |
| Balancing time to 100% of capacity after long storage (h) | 48 | | | | | |
| Maximum discharge current | | | | | | |
| Maximum peak current (A) - 0.1 s (0°C / + 20°C) | up to 120 / 150 | | | | | |
| Maximum peak current (A) - 1 s | up to 80 | | | | | |
| Maximum peak current (A) - 10 s | up to 60 | | | | | |
| Maximum discharge current (A) - 1 min | up to 40 | | | | | |
| Maximum one shot full discharge current (A) - continuous | up to 30 (starting at + 20°C) | | | | | |



Advanced Rechargeable Technology and Solutions



Smart warranty

- 2 years or 500 cycles (70% depth of discharge) at +20°C.
- Integrated memory recording operating and storage conditions.
- Computer-based software to access data.

Applications

- Electric bicycles, scooters, wheelchairs and other light electric vehicles.
- Caddies, robotics and other material handling devices.
- Professional applications.

Components

- Neutrik 4-pin Speakon® connector for discharge.
- Neutrik 4-pin XLR connector for charge and BPCI® communication.
- Charge fuse : 15 A ATO.
- Discharge fuse : 40 A ATO.
- Aluminum casing with ABS top and bottom covers.

Options available

- Waterproof casing (IP54).
- Handle and mounting brackets for integration.
- Color anodization for aluminum casing.
- Serial communication kit for PC access (with ARTS Energy's software).

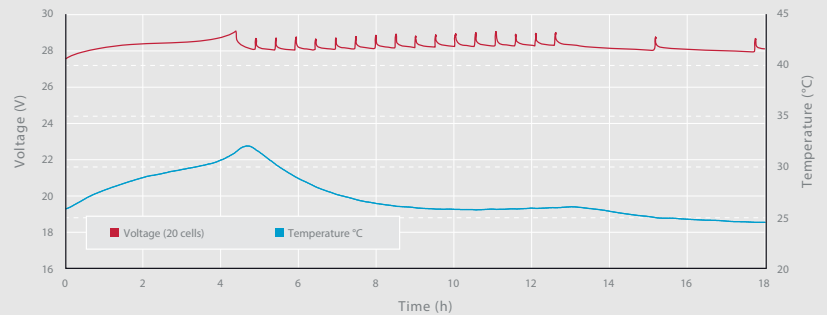
Recommendations

- Recharge up to 6 months after full charge.
- Storage temperature : +5 to +25°C.
- Do not immerse into water.
- CCPS and accessories available for system integration.

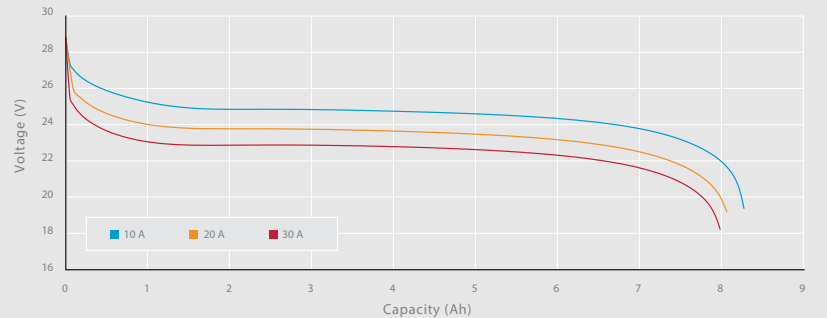
Data are given for single cells. Please consult ARTS Energy for utilization of cell outside this specification.

Data in this document are subject to change without notice and become contractual only after written confirmation by ARTS Energy.

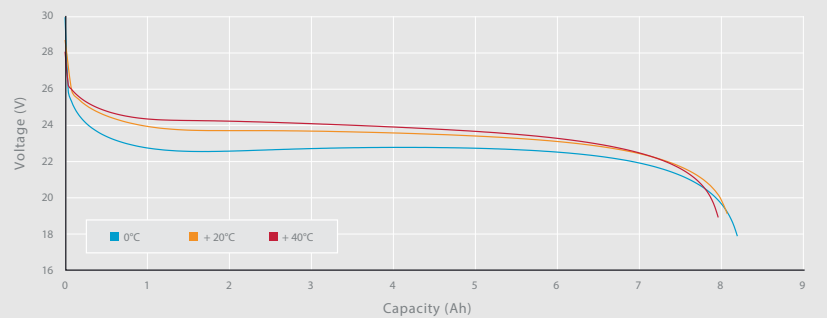
Charge at 3 A at room temperature with ARTS Energy integrated charge controller (example for a 20S VH F module)



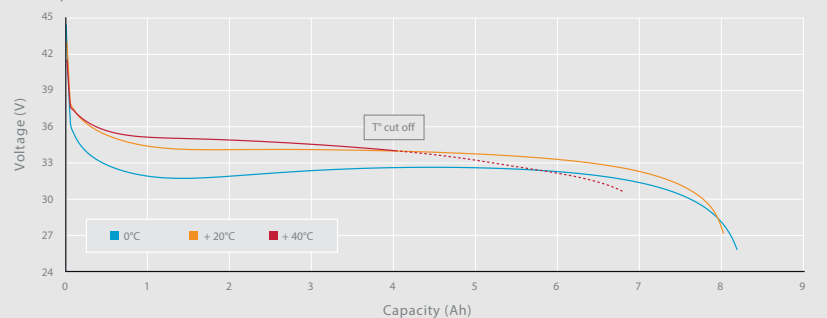
Discharge at room temperature at different rates after charge with ARTS Energy integrated charge controller (example for a 20 VH D 9500 XP)



Discharge at 20 A and different temperatures after charge with ARTS Energy integrated charge controller (example for a 20S VH D 9500 XP)



Discharge at 30 A and different temperatures after charge with ARTS Energy integrated charge controller (example for a 30S VH D 9500 XP)



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