PV module

Super Long Life Ni-MH battery system

ARTS Energy's PV module offers an ideal solution in extreme temperature environments for reliable, long-life and high-performance applications with cutting-edge Ni-MH technology.

The PV module integrates smart electronics, all in a robust plug-n-play battery design in aluminum casing. It is well suited for small off-grid photovoltaic (PV) applications, back-up power systems and professional electronics requiring unsurpassed long life energy storage.

Features

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

- Advanced Ni-MH chemistry providing very long calendar life, high charge efficiency, and excellent cycling capability in an extreme range of temperatures (- 40°C to + 70°C)
- Built-in BMS (Battery Management System) managing charge, discharge, SOC (State Of Charge) and SOH (State Of Health) based on proprietary algorithm
- Communication and remote control possible through the BPCI® (Battery Protection and Communication Interface) RS232 compatible serial bus
- Eco-designed product and RoHS compliant
- Designed for ease of parallel assembly
- Discharge current up to 10 A continuous
- Anodised aluminum casing to withstand shocks and vibrations
- IP54 rated for outdoor use

Benefits

- Very long service life, even in hot countries and with high daily DOD (Depth Of Discharge)
- Low total cost of ownership (TCO) especially for applications having high maintenance costs
- Innovative design for the customer device (slimmer battery)
- No sudden end of discharge nor sudden death thanks to the communication interface
- Reduction of energy consumption thanks to electronic management between the solar panel, the battery and the application
- Recyclability and respect for the environment

Configuration	20S	30S	10S2P	20S2P
Voltage (V)	24	36	12	24
Capacity (Ah)	10	10	20	20
Energy (Wh)	240	360	240	480
Mechanical characteristics				
Height (mm)	231	320	231	410
Length (mm)	185	185	185	185
Width (mm)	81	81	81	81
Weight (kg)	5,5	8,1	5,5	10,8
volume (liter)	3,5	4,8	3,5	6,1
Specific energy				
Specific energy (Wh/kg)	44	44	44	44
Energy density (Wh/liter)	69	75	69	78
Range of temperature				
Operating temperature range for charge and discharge (°C)	- 40°C to + 70°C			
Maximum temperature (reversible): thermostat	+ 75°C (+/- 5°C)			
Maximum temperature (non-reversible): thermofuse	+ 93°C (+ 0°C / - 5°C)			
Transport and storage	+ 5°C to + 25°C			
Maximum charge current				
That can be delivered to the module	15 A			
That is accepted by the module (regulation)	4 A			
Maximum discharge current				
continuous to termination	10 A			
during 1 minute	15 A			
Life time performance				
Hot country	7-8 years			
other countries	10-15 years			
Standards				
CEM compliance	EN 55014-1 / EN 55014-2 EN 61000-6-2 / EN 61000-6-3			
Safety compliance	IEC 61951-2 / EN 60950			

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Applications

- Standalone, small off-grid PV applications like street lighting, road signalling, buoys, water supply and irrigation, weather stations and environmental sensors, wireless local area networks and navigation aids, M2M networks
- Urban signalling as bus stops, billboards, lighting connected to the off-peak grid
- Professional applications such as portable measurement equipment, medical carts, cinematography and others
- Back-up and small stationary systems

Components

- Neutrik 4-pin Speakon® connector
- Main fuse: 15 A ATO
- Aluminum casing with ABS top and bottom covers

Options available

- Handle and mounting brackets for integration
- Colour anodization for aluminum casing
- Serial communication kit for PC access (with ARTS Energy's software)
- Cables and accessories available for system integration

Recommendations

- Recharge up to 12 months after full charge
- Storage temperature: + 5 to + 25° C
- Do not immerse into water

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.
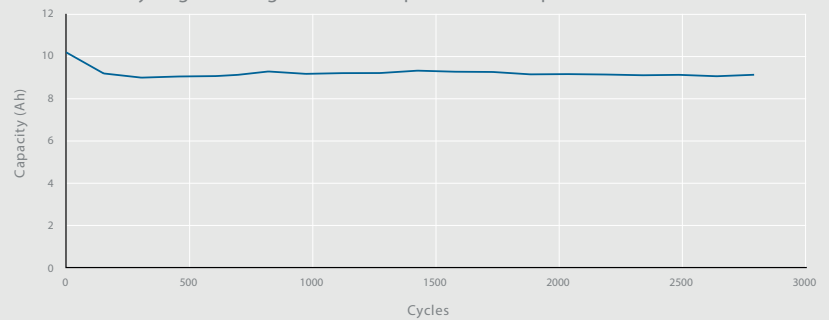
Charge 24h at C/20 at different temperatures
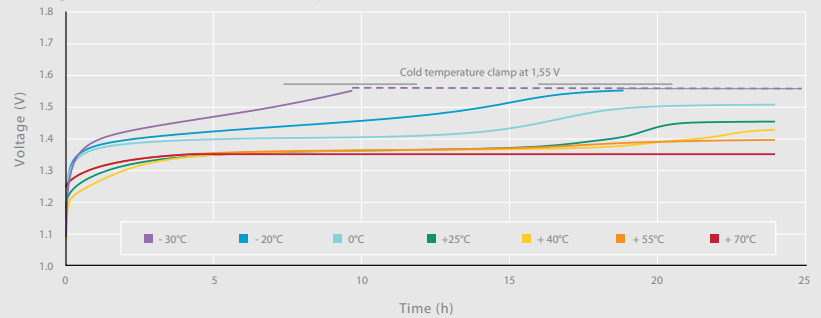
Discharge at C/10 at different temperatures after charge at C/10 at different temperatures
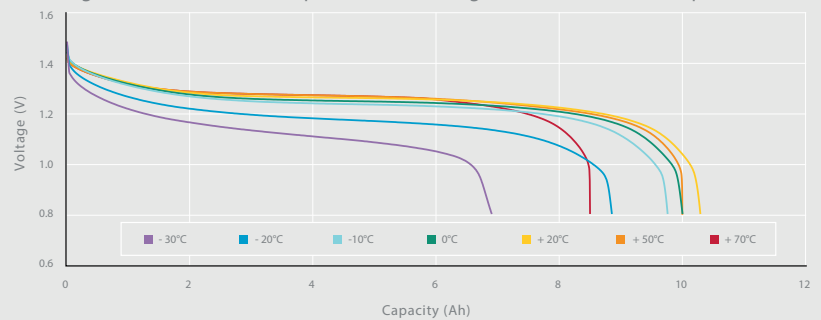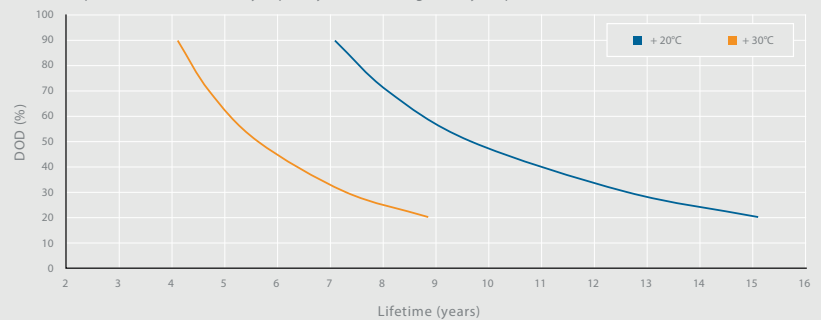

Photovoltaic cycling according IEC 61427 temperature + 40°C permanent

Life duration vs. depth of discharge at different battery temperatures
Life model prediction based on one cycle per day with an average battery temperature over life time

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