Σ-Ahr PWM Controller

The charge controller is the beating heart of any solar energy system. The desire for perfection at TSS has resulted in the most solid and most efficient pulse width modulation (PWM) charge controller for stand-alone solar and solar hybrid energy systems. It is designed to have exceptional performance and last longer especially in the most harsh environments.

Efficiency 99.75%

This reduces your overall system cost.

Ultimate reliability

The multi array input eliminates a single all-or-nothing connection. Fully solid state. No mechanical relays. No cooling fans.

Remote monitoring

Controller is equipped with an industry standard Modbus TCP/IP interface for easy and reliable remote monitoring.

Datalogging

10 key system parameters are daily logged and stored for maximum 60 days.

Triple redundancy

The analogue fall back mode kicks in should the processor ever fail. More than one voltage and temperature measurement can be incorporated for maximum reliability. Two completely independent voltage measurements are monitored against high and low voltage.

Small and large systems

A modular design allows for expansion when larger systems are required.

In-field diagnostics

With pushbuttons the main function of the controller can be tested in the field.

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Electrical specifications	Σ-Ahr PWM Controller 24V	Σ-Ahr PWM Controller 48V
Nominal system voltage	24 Vdc	48 Vdc
Independent solar array inputs	3	3
Nominal total array input current	134 Adc	134 Adc
Max. array input current	3x 50 Adc	3x 50 Adc
Max. array input voltage	105 Vdc	105 Vdc
Max. continuous battery current	134 Adc	134 Adc
Max. battery input voltage	65 Vdc	65 Vdc
Independent load outputs	2	2
Nominal output current to load	2 x 45 Adc	2 x 45 Adc
Maximum output current to load	2 x 60 Adc (1 minute)	2 x 60 Adc (1 minute)
Peak output current to load	2 x 90 Adc (10 seconds)	2 x 90 Adc (10 seconds)
Operating efficiency solar input	99.75 %	99.75 %

Typical settings	Lead Acid	Nicd (19 cells)	Lead Acid	Nicd (38 cells)
Load disconnect / high system voltage (alarm)	30.5 Vdc	31.5 Vdc	61.0 Vdc	63.0 Vdc
Load re-connect high voltage	28.8 Vdc	28.5 Vdc	57.6 Vdc	57.0 Vdc
Boost @ 25˚C level	28.8* Vdc	N.A.	57.6* Vdc	N.A.
Float @ 25˚C level	28.2* Vdc	28.5 Vdc	56.4* Vdc	57.0 Vdc
Low battery voltage *(alarm, non-essential load disconnect)*	23.6 Vdc	23.0 Vdc	47.2 Vdc	46.0 Vdc
Non-essential load re-connect voltage	25.0 Vdc	25.0 Vdc	50.0 Vdc	50.0 Vdc
Load disconnect low voltage *(alarm, essential load disconnect)*	23.0 Vdc	21.85 Vdc	46.0 Vdc	43.7 Vdc
Essential load re-connect voltage	24.5 Vdc	24.5 Vdc	49.0 Vdc	49.0 Vdc
Temperature compensation	-3mV/˚C/cell	N.A.	-3mV/˚C/cell	N.A.

* Boost and float voltage for Lead Acid are temperature dependent

Monitoring and logging	
Key system parameters logged	10
Logging interval	Daily
Maximum storage time	60 days
Communication (external)	Modbus TCP/IP (slave)

General specifications	
Operating temperature	-20˚C to +85˚C
Storage temperature	-30˚C to +85˚C
Humidity	100% non-condensing
Mounting	Indoor
Dimensions (H x W X D)	16.0 x 8.0 x 14.6 cm
Unit weight	0.98 kg
Communication	RS-485 *(between Σ-Ahr units)*
Analogue input	2x 100mV shunt (for external current measurement)
Digital output	3x open drain
Approvals	CE
Standards	IEC 61000-6-2, IEC 61000-6-4, IEC 60950-1