CH201
12 V CHARGING REGULATOR

Optimized Power Performance

The CH201 is a microcontroller-based smart charge controller that is ideal for charging 12 Vdc VRLA batteries. The charger uses MPPT (maximum power point tracking) technology to safely manage amperage and voltage for optimal battery charging and longevity. It has dual inputs for use with a solar panel and/or any 15 to 50 Vdc charging source. The dual inputs provide the option for fail-safe charging. The CH201 also outputs various parameters to allow close monitoring of the battery and power usage via RS-232 or SDI-12.

In your system, use the CH201 to charge your battery and supply power to your peripherals and data logger. The 12 V output is regulated and switched, with the ability to charge a 12 V battery at a rate of 10 A.

Benefits and Features:

- Dual inputs for simultaneous charging, allowing a fail-safe if one source drops out
- Real-time measurements of charging source voltages, battery voltage, battery charging current, load current, charge state, and on-board temperature, plus a check-battery flag
- Efficient continuously adaptive MPPT (maximum power point tracking)
- Two-step constant voltage charging and temperature compensation to optimize battery charging and increase battery life
- Reverse battery protection
- Programmable LVD (low-voltage disconnect) to protect batteries
- DevConfig user interface to change system parameters or install a new OS
- Two 15 to 50 Vdc inputs to accommodate multiple solar panels
- Synchronous rectification in the switching regulator for increased DC/DC conversion efficiency
- Individually programmable current limits on both of two inputs
- Solid-state circuit breaker for automatic reset and more precise trip current
- DC-to-DC converter with built-in output current control
- Serial communication wiring through three terminals.

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Detailed Description:

The CH201 provides 10 A of charge current, making it ideal for systems with short periods of sun, or higher-current draw systems that require higher recharge rates. The CH201 has two input terminals that enable fail safe charging should one source drop out. It also incorporates an MPPT (maximum power point tracking) algorithm to maximize available solar. The CH201 has a programmable, low-voltage disconnect to help protect the battery. RS-232 and SDI-12 terminals allow the CH201 to be configured and to convey charging parameters to a data logger.

Compared to the CH200, the CH201 offers faster charging with the use of larger solar panels, up to 160 W. (Larger solar panels can be connected; however, when the system is running at full power, not all the current will be used.)

Compared to the SunSaver SS-10-12V, the CH201 offers:

• Dual inputs • Current monitoring via RS-232 and SDI-12 • Configurability

• Low-voltage disconnect (The SunSaver SS-10-12VL has LVD.) • Low current drain.

Technical Specifications

Operational Temperature	-40° to +60°C (VRLA battery manufacturers state that “heat kills batteries” and recommend operating batteries at less than 50°C.)
IP Rating	IP51
Dimensions	11.4 x 10.08 x 3.38 cm (4.49 x 3.97 x 1.33 in.)
Weight	226.8 g (0.5 lb)
SOLAR TERMINALS (SOLAR PANEL OR OTHER DC SOURCE)	
Note	Battery voltages below 8.7 V may result in less than 3.0 A current limit because of fold-back current limit.
Input Voltage Range	15 to 50 Vdc
BATTERY CHARGING	
Note	Two-step temperature-compensated constant-voltage charging for valve-regulated lead-acid batteries; cycle and float charging voltage parameters are programmable with the default values listed.
Maximum Charging Current	10 A
CYCLE Charging	Vbatt(T) = 14.70 V - (24 mV) x (T-25°C)
FLOAT Charging	Vbatt(T) = 13.65 V - (18 mV) x (T-25°C)
QUIESCENT CURRENT	
No Charge Source Present	300 µA maximum
No Battery Connected	Typical 5 mA at 40 Vdc
POWER OUT (+12 TERMINALS)	
Voltage	• Unregulated 12 V from battery • 4.6 A solid-state circuit breaker; self-resettable thermal
LVD (Low-Voltage Disconnect)	6 Vdc (default)
MEASUREMENTS	
Input Voltage	±(1% of reading + 15 mV)
Battery Voltage	±(2% of reading + 15 mV)
Load Current	±(2% of reading + 2 mA) Impulse-type changes in current may have an average current error of ±(10% of reading + 2 mA).
Battery Current	±(2% of reading + 10 mA) Impulse-type changes in current may have an average current error of ±(10% of reading + 2 mA).
Charger Temperature	± 2°C