WS100

MULTI-STAGE VOLTAGE REGULATOR

MADE IN THE USA

BELLS AND WHISTLES ARE TERRIFIC...

"Dad always said that bells and whistles were an absolute essential (if you owned a train)," says Rick Jones, owner of Wakespeed® Offshore. "But, for most of us, too many complications just take the fun out of things."

When Rick Jones and smart-charging pioneer Michael Frost (the designer of some of the marine industry's most well-known voltage regulators) decided to create a new, less-complicated multi-stage voltage regulator, they agreed that the best solution was to go back to basics.That vision spawned the WS100.

"We wanted, most of all, to create a regulator that didn't require an engineering degree to program or install. At the same time, we wanted to ensure that we included all of the intelligence needed to provide optimal battery care."

The result of their design is the WS100, a simple, yet elegantly crafted voltage regulator.

The WS100 features just two user adjustments; a five-position battery program selector and a four-position field output control. Program selections include standard flooded/gel, standard AGM, carbon foam AGM, deep-cycle flooded and high-density AGM/TPPL charge profiles.

The second user adjustment provides the ability to manage alternator load at four different levels: 100%, 90%, 75% and 50% field output. Field limiting is designed to deliver user control even on the fly.

By adding optional alternator and battery temperature sensors, the user can enjoy even greater charging precision and safety.

Engineered and manufactured here in the USA, the WS100 makes perfect sense for the boater or RV owner that wants all the benefits of premium multi-stage voltage regulation with great quality, simplicity and a price that's well below the competition.

 360-299-1231

WS100
MULTI-STAGE VOLTAGE REGULATOR

System Voltage

12-Volt	Yes
24-Volt	Summer, 2019

Field Polarity

P-Type	For positive-excitation alternators

Regulation Capability

Provides positive field output current to control alternator output, based on battery system voltage

Voltage	Yes - Via power wire included in wiring harness.
Temperature	Charging voltage can be modified based on battery temperature when optional battery temperature is used. Field output can be reduced or discontinued when optional alternator or battery temperature sensor identifies over-temperature conditions at alternator or batteries.

Basic Configuration

Adjusted via turning knob	Selectable preset programs for five battery types.

Battery Preset Programs

Five selectable preset battery profiles	Standard flooded lead acid/Gel Standard (low voltage) AGM Carbon Foam (Firefly) Deep-cycle flooded lead acid High-density AGM/TPPL

Field Output Limit

Adjusted via turning knob	Limits field bandwidth by percent of output: 100% (no limiit), 90%, 75%, 50%.

Regulator Display

Onboard LEDs	Three red LEDs indicate Field Output Limit status. Five green LEDs indicate battery program selection and operational status while underway. Dash lamp emulation LED indicates high alternator temperature, high battery temperature, low battery voltage and high battery voltage conditions.

Charging Criteria

The WS100 multi-stage regulator provides an intelligent progression of time and voltage values to ensure that batteries are safely and effectively brought to a fully-charged state.

Charging Profile

Start Delay	Occurs when battery voltage is applied to the regulator's brown ignition wire. The regulator provides a small ghost signal to the alternator to provide enough output to create stator voltage to ensure a tachometer signal from engine start.
Soft Ramp	Field bandwidth slowly expands to increase charging output without unnecessary stress on the engine and drive belt.
Timed Charge	Field output will continue to increase until the charging reaches its target based on the program selected and stage of charging. At the end of an 18-minute time period, the regulator will advance to calculated charging mode.
Calculated Charge	When the regulator reaches the end of the timed period, it will continue to reach for target voltage. The regulator will continue to measure to determine if the system has reached its target value, and what percentage of field output is required to maintain target voltage. Once field output drops below a minimum threshold, the regulator will advance to the next charging stage.
Charging Stages in Order	Start Delay, Soft Ramp, Timed Bulk, Calculated Bulk, Ramp to Acceptance, Timed Acceptance, Calculated Acceptance, Ramp to Float, Timed Float, Calculated Float
Ramp Float to Acceptance	After the regulator has advanced to float charge, the regulator will monitor the voltage required to maintain the battery's float voltage value. The regulator will remain in float as long as the alternator can maintain its voltage output based on a maximum set field percentage. It the regulator falls below float target, or the field percentage exceeds its target, the regulator will ramp to the higher acceptance charging stage.

Temperature Sensing

Alternator Temperature Sensing	Requires optional alternator temperature sensor (WS100-ATS) connected to alternator case or ground terminal. Monitors for ambient temperature above optimal. Reduces field output when temperature at alternator exceeds limits.
Battery Temperature Sensing	Requires optional battery temperature sensor (WS100-BTS) connected to ground terminal nearest center of the battery bank being charged. Increases or decreases charging voltage from preset values based on ambient battery temperature. Discontinues charging output if battery exceeds safe operating temperature.
Internal Temperature Sensing	Protects charge controller's internal circuitry from damage due to out-of-range values.

WS100-ATS	Alternator Temperature Sensor (green Cat5E) to mounting lug
WS100-BTS	Battery Temperature Sensor (blue Cat5E) to mounting lug. Includes inline coupler to extend cable length.

Physical Data

Enclosure Dimensions	100mm x 65mm x 26mm 4-1/8"L x 2-5/8"W x 1-1/8"H
Footprint	120mm x 65mm 5-1/8"L x 2-5/8"W
Display	Color-coded LEDs
Enclosure	Extruded aluminum
Finish	Anodizing
Wiring Harness	58" 10A ATC fused harness with waterproof connector. Black (ground), Red (power), Brown (ignition), Blue (field), Orange (dash lamp)
Warranty	2-year limited warranty

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