

MC-614 Voltage Regulator



Product Features: Selectable Programs For

Battery Type

Factory Default (Universal)
Deep Cycle Flooded
Gel
Absorbed Glass Mat (AGM)
Spiral Wound (Optima)
Standard Flooded
Halogen (Voltage Sensitive)

Belt Load Manager

Reduces maximum field potential in nine total increments (approximate 3% reduction per step of reduction).

Display Type

Short Display (Default)
Long Display

Advisory Modes

Select between internal system failure criteria (high voltage, low voltage, high battery temperature), and/or stator voltage as indicator for charging failure.

Advanced Programming

Charge Delay Duration
High Voltage Limit
Voltage Compensation Limit
Bulk Voltage Value
Fixed Bulk Duration
Absorption Voltage Value
Fixed Absorption Duration
Float Voltage Value
Fixed Float Duration
Low Voltage Limit
Field Threshold (Bulk/Absorb)
Field Threshold (Float/Absorb)
Alternator Temp. Threshold
Battery Temp. Threshold
Slope Voltage Correction

Unlike the regulators found in automotive and OEM marine alternators, Balmar's smart, multi-stage Max Charge MC-614 voltage regulator uses its ability to modify charging voltage to meet the condition, technology and ambient temperature of large marine battery banks to ensure that those batteries charge quickly and safely. The MC-614 regulator starts the charging process with a user-adjustable start delay that allows the engine and belts to warm up before the alternator applies horsepower load to the system. The regulator then gently ramps up to bulk charging voltage.



The bulk charging mode is where the lion's share of aggressive charging output occurs. Once the requirements of the batteries being charged, the MC-614 regulator reduces charging voltage to absorption voltage, and later, to float voltage -- where the charging system is able to supply enough charging current to replace whatever electrical load the vessel demands.

The Max Charge uses a combination of timed and calculation-based segments to ensure that the regulator remains in each stage of charge for as little or as long is required in the bulk, absorption, and float stages. In other words, the regulator will remain in bulk charge for a minimum time period (12 minutes is standard). At the end of that 12 minutes, the regulator considers a number of criteria; whether target voltage has been achieved, if the regulator was able to maintain that voltage for a given time, and how hard the alternator has to work to maintain that voltage. When all criteria are met, the regulator will advance to the next charging stage. Like a smart shorepower charger, the MC-614 uses advanced software programming to provide individualized charging profiles, depending on the battery type being charged. By setting the regulator to the battery program for your battery type, you can rest assured that your batteries will receive optimal charging whenever your engine is running. See the *Regulator Specifications* on Page 2 for additional details.

MC-614 Charge Profile



1. Start Up / Start Delay
2. Soft Ramp To Bulk
3. Bulk Voltage (Timed/Calculated)*
4. Ramp To Absorption Voltage
5. Absorption Voltage (Timed/Calculated)*
6. Ramp To Float Voltage
7. Float Voltage (Timed/Calculated)**
8. Ramp To Absorption Voltage***
9. Absorption Voltage (Timed/Calculated)*
10. Ramp To Float Voltage
11. Float Voltage (Timed/Calculated)**
12. Shut Down

* Bulk and absorption time duration is a combination of set (12 min.) set and variable calculated time periods. **Float time duration is a combination of set (30 min.) and variable calculated time periods. ***During calculated float voltage segment, the regulator will ramp up to absorption voltage if demand exceeds the regulator's ability to meet voltage requirements during float charge.

Balmar

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MC-614 Regulator Specifications

Alternator Compatibility: 12-Volt, Positive Excitation

Regulation Type: Multi-Stage, User Programmable

Maximum Alternators Controlled: 2

Regulator Housing: Anodized aluminum heat sink

Selectable Programs: Seven

Battery Programs: Universal (default), Gel, Absorbed Glass Mat, Deep Cycle Flooded, Standard Flooded, Spiral Wound (Optima), Halogen (Voltage Sensitive)

Advanced Programming: Charge Delay Duration, High Voltage Limit, Voltage Compensation Limit, Bulk Voltage Value Fixed Bulk Duration, Absorption Voltage Value Fixed Absorption Duration, Float Voltage Value Fixed Float Duration, Low Voltage Limit, Field Threshold (Bulk/Absorb), Field Threshold (Float/Absorb) Alternator Temp. Threshold, Battery Temp. Threshold Slope Voltage Correction

Belt Load Manager: Nine level, user selectable field reduction program, ranging from 100% output to approximately 50% output. Selections range from B-0 (100%) to B-9 (50%)

Voltage Sensing: Dedicated Fused (1A) Circuit

Programming Mechanism: Magnetic Reed Switch. Magnetic tipped programming tool included with regulator

Regulator Display: Three-digit LED alphanumeric readout

Short Display Mode: Indicates regulator model, program selection, charging stage, belt load manager setting, battery voltage, target voltage, alternator temperature, battery #1 and battery #2 temperatures

Long Display Mode: Indicates regulator model, program selection, charging stage, belt load manager setting, battery voltage, target voltage, alternator temperature, battery #1 and battery #2 temperatures. In addition, long mode displays; field output percentage, software revision, set points for alternator and battery temperatures, slope, regulator hours, field thresholds and error/advisory codes

Regulator Wiring: Included with MC-614-H regulator model. Wiring harness includes Power, Field, Ignition, Stator, Ground wires, and fused sense wire pigtail. Measures 54" in length

Required Fusing: 10A on Power Wire, 1A on Sense Wire; included with Model MC-614-H regulator

Upgraded fusing: 15A when regulator is controlling dual alternators

Alternator Temperature Sensing: automatically reduces regulator field output when alternator temperature exceeds set limits. Over-temperature condition activates dash lamp circuit. Requires optional Alternator Temperature Sensor (MC-TS-A) to enable temperature sensing functions

Battery Temperature Sensing: Allows the MC-614 automatically adjust charging voltage to match the ambient temperature of the battery bank being charged, ensuring safe and optimal charging throughout the charge cycle. In addition, the regulator has the ability to shut down regulator field output if battery temperature exceeds set limits. Over-temperature condition activates dash lamp circuit. Requires optional Battery Temperature Sensor (MC-TS-B) to enable temperature sensing functions

Small Engine Mode: Reduces maximum field output by approximately 50%. Requires user-supplied ON/OFF switch mounted between positive and negative alternator temperature sensor terminals

Dash Lamp: Negative 500 mA circuit, activated when regulator detects low voltage, high voltage, high alternator temperature or high battery temperature. Can be toggled to activate when alternator fails to provide stator output

Aux. 2 Lamp: Negative 500 mA circuit, activated when regulator is in Small Engine Mode or regulator is delivering full field output

Adjustable Start Delay / Soft Ramp:

Maximum Safe Operating Temperature: 145 °F

Maximum Field Output: 15A Continuous

High Voltage Shutdown: 15.5 volts

Low Voltage Shutdown: 10.8 volts

Regulator Power Requirement: 480 mA

Regulator Dimensions: 4.8"L x 3.25"W x 1.5"H

Ship Weight: 1.5 lbs. (regulator only), 2.0 lbs. (MC-614-H)

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