

# Battery Chargers and Equipment

QUICK USA

## Quick

- Three stage IUoU battery charging
- Multiple outputs in order to charge more groups of batteries
- Charge settings for open or sealed liquid electrolyte, GEL, or AGM batteries
- Integrated output fuses inside the battery chargers (for each output)
- Low residual fluctuation on output
- Capacity of supplying full power with low AC network supply voltage
- Quick smart fan system for optimized management of the cooling fans
- Automatic and manual power derating
- CAN BUS interface for data transfer
- Short circuit, overloading, output overvoltage and overheating protection



SBC CHARGER

Item Number	Max Output Current Amps	Output Volts	Banks	Price
<b>Mini &amp; Low Power</b>				
<b>Dimensions in"(mm) H x W x D: 9.92(252) x 4.48(114) x 2.8(71), 83-264 Volts, 45-66 Hz.</b>				
SBC 140 NRG	12 *H: 7.36(187)	12	2	\$360.00
SBC 250 NRG	25	12	3	\$480.00
SBC 300 NRG	30	12	3	\$610.00
<b>Medium Power</b>				
<b>Dimensions in"(mm) H x W x D: 18.86(179) x 9.56(243) x 4.56(116), 161-264 Volts, 45-66 Hz.</b>				
SBC 500 NRG	40 *H: 14.84(377)	12	3	\$1,050.00
SBC 700 NRG	60	12	3	\$1,250.00
SBC 750 NRG	30	24	3	\$1,230.00
SBC 950 NRG	40	24	3	\$1,600.00
SBC-1100 NRG	80	12	3	\$1,700.00
<b>High Power</b>				
<b>Dimensions in"(mm) H x W x D: 21-59/64(557) x 9-9/16(243) x 4-9/16(116), 161-264 Volts, 45-66 Hz.</b>				
SBC 1200 NRG	100	12	3	\$2,200.00
SBC 1450 NRG	60	24	3	\$1,900.00
SBC 2450 NRG	100	24	3	\$3,150.00

List pricing in catalog is subject to change without notice.

# Battery Chargers and Equipment

BLUE SEAS SYSTEMS + MASTERVOLT

## Pacific Gen. 2 Series

- Universal line voltage 90-265 volt AC 45-65 Hz.
- Field serviceable AC input power protection
- Selective float moves each battery individually to float voltage ending absorption period to prevent overcharging
- Charge coordination works with Blues Seas Systems ACRs to properly charge batteries with shore power at the dock or alternator power underway
- Extensive suite of diagnostic screens
- UL 1236 marine
- CE marked and CSA C22.2 No.107.2-01 standards
- Ignition protected: SAE 1455, SAEJ1171 and ISO 8846
- 5 year manufacturer warranty



7531



7520

Item Number	Amps	Volts DC	Output	Dimensions in" (mm) HxWxD	Price
7531	25	12	3	13.03(330.96) x 8.46(214.88) x 4.30(109)	\$549.97
7532	40	12	3	13.03(330.96) x 8.46(214.88) x 4.30(109)	\$699.97
Item Number	Description	Volts DC	Dimensions in" (mm) HxWxD	Price	
<b>Charger Options</b>					
7520	Battery charge (LED) remote display	12	3.01(76.45) x 4.15(105.41) x .95(24.13)	\$119.96	

## Charge Master Series

- The 3 step charging technology guarantees fast and complete charging
- The cos phi 1 regulation gets the most out of limited generator capacity
- CE, E-mark, ABYC A-31, SAE J1171/ ISO 8846 ignition protected
- -25°C to 60°C, derating >40°C
- IUoUo, automatic three step charge for Gel/ AGM/ Wet/ Lithium Ion
- 2 year manufacturer warranty



12 VOLT



24 VOLT

Item Number	Battery Outlets	Output Rating Amps	Battery Capacity (Ah)	Dimensions in" (mm) HxWxD	Weight in lbs. (kg.)	Price
<b>* denotes 180-265V ONLY, 90-265V, 50/60 Hz.</b>						
<b>12V Systems</b>						
43011000*	1	10	25-100	7.1(180) x 4.8(121) x 2(50)	2.2(1)	\$257.00
44010250	3	25	50-250	9.2(234) x 5.2(132) x 2.4(60)	4(1.8)	\$348.00
44010350	3	35	70-350	11.5(291) x 8.3(210) x 5.2(132)	9(4)	\$516.00
44010500	3	50	100-500	11.5(291) x 8.3(210) x 5.2(132)	9(4)	\$635.00
44010700	1+2@10A	70	140-700	14.3(362) x 11(277) x 5.9(150)	16(7)	\$1,314.00
44011000	1+2@10A	100	200-1000	14.3(362) x 11(277) x 5.9(150)	16(7)	\$1,703.00
<b>24V Systems</b>						
44020200	3	20	40-200	11.5(291) x 8.3(210) x 5.2(132)	9(4)	\$565.00
44020300	3	30	60-300	11.5(291) x 8.3(210) x 5.2(132)	9(4)	\$741.00
43020600*	1	6	25-70	7.1(180) x 4.8(121) x 2(50)	2.2(1)	\$315.00
44020400	1+2@10A	40	80-400	14.3(362) x 11(277) x 5.9(150)	16(7)	\$1009.00
44020600	1+2@10A	60	120-600	14.3(362) x 11(277) x 5.9(150)	16(7)	\$1,392.00
44020800	1+2@10A	80	160-800	17(432) x 11(277) x 5.9(150)	18(8)	\$2,014.00
44021000	1+2@10A	100	200-1000	17(432) x 11(277) x 5.9(150)	18(8)	\$2,606.00

Images are representative of products listed and may not be actual product.

# Battery Chargers and Equipment

MASTERVOLT

## Mass Series

- Designed for the most difficult conditions
- Suitable for every type of battery, also charges entirely empty batteries
- Full power at temperatures of up to 45°C
- Reliable charger/supply for GMDSS
- Certified by Germanisch Lloyd, Lloyd, Bureau Veritas, connections in accordance with CE, ABYC A-31 and IEC60945
- Type approval for application in safety zones A, B, and C
- Supplies your system without battery (except model 43011000)
- IUoUo, automatic three step charge for Gel/ AGM/ Wet/ Lithium Ion
- Nominal Input Voltage: 230 volt, 50/60 Hz.
- 2 year manufacturer warranty



24 VOLT MASS SERIES



TOUCH SCREEN



MASTERBUS



COMMUNICATION PORT



MASTERLINK

Item Number	Battery Outlets	Output Rating Amps	Battery Capacity (Ah)	Dimensions in" (mm) HxWxD	Weight in lbs. (kg.)	Price
<b>24V Systems</b>						
40020256	1+1@3Amp	25	50-250	12.8(325) x 8.7(220) x 4.4(111)	7.3(3.3)	\$1,172.00
40020506	1+1@3Amp	50	100-500	13.4(340) x 10.3(261) x 5.1(130)	10.1(4.6)	\$1,659.00
40020756	1	75	150-750	16.5(420) x 12.5(318) x 5.1(130)	17(7.7)	\$2,527.00
40021006	1	100	200-1000	16.5(420) x 12.5(318) x 5.1(130)	17(7.7)	\$3,269.00

Item Number	Descriptions	Price
<b>Charger Options</b>		
77010305	Masterview Easy 3.5" touchscreen control panel	\$375.00
77020100	MasterBus integrated shunt, with detailed information on the status of your batteries for optimized charging process, including voltage, current remaining time and consumption capacity in percentage 500A, includes fuse	\$452.00
77030100	Communication port between MasterBus and the USB port of your PC; makes possible reading and configuration of your MasterBus system on PC when combined with Masterview System software	\$196.00
70403105	MasterLink MICC inverter/charger advanced battery monitor	\$694.00

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## Marinco

- 28210 has: Sense-Send senses the power needs of each battery and sends correct charge regardless of serial or parallel output connections
- Waterproof with an IP65 rating
- 2 LED charge indicator
- Ignition and short circuit protected
- 90-265 volt, 50/60 Hz.
- 12 or 24 volt DC output
- Meets UL, CSA, ABYC, USCG, FCC & new CEC regulations



28210



28220

Item Number	Banks	Amps	Battery Type	Dimensions in "(mm) HxWxD	Price
28210	2	10	Flooded and AGM	5.5(14.0) x 7.8(19.7) x 2.4(6.2)	\$222.50
28220	2	20	Gel, AGM, Flooded	7(17.8) x 9.6(24.4) x 2.9(7.4)	\$394.08

## PT Series

### PT Series

- Smart circuitry provides three stage charging: bulk, absorption, and float
- Gel-Cell/ Flooded Lead-acid/ AGM battery type switch selects optimum charge/float voltages
- Multiple isolated output banks: ammeter indicates total output current
- Current limiting prevents damage from overloading
- Charger status clearly displayed with LED and/or audible indicators or optional remote panel
- Can power loads without a battery in line
- CE Certified & EN 60335-2-29/ EN 60335-I
- Ignition protected: USCG CFR 183.410
- 2 year manufacturer parts and labor warranty



PT SERIES

Item Number	Output Volts	Input VAC (50-60 Hz.)	Amp/ Amp Hours	Dimensions in "(cm) HxWxD	Compliance Ref.	Price
<b>PT Series</b>						
PT-14W	12	85-264	14/ 28-140	11.2(28.4) x 7.7(19.6) x 4.8(12.2)	CG, CE, ABS	\$495.00
PT-25W	12	90-132 OR 180-264	25/ 50-250	11.2(28.4) x 7.7(19.6) x 4.8(12.2)	CG, ABS	\$604.00
PT-40U	12	90-264	40/ 80-400	13.9(35.2) x 9.5(24.1) x 4.8(12.2)	CG, CE, ABS	\$949.00
PT-80	12	90-264	80/ 160-800	17.5(44.4) x 12(30.4) x 7.2(18.2)	CE, ABS	\$1,625.00
PT-24-13W	24	90-132 OR 180-264	13/ 26-130	11.2(28.4) x 7.7(19.6) x 4.8(12.2)	CG, ABS	\$625.00
PT-24-20U	24	85-135 OR 170-270	20/ 40-200	13.85(35.2) x 9.6(24.1) x 4.8(12.2)	CG, CE, ABS	\$999.00
PT-24-45U	24	90-264	45/ 90-450	14.8(37.6) x 9.6(24.4) x 5.4(14.2)	EN, CE, ABS	\$1,625.00
PT-24-60W	24	207-253	60/ 120-600	17.5(44.5) x 12(30.5) x 7.2(18.3)	EN, CE, ABS	\$2,195.00
PT-24-95U	24	90-264	95/ 180-950	17.5(44.5) x 12(30.5) x 7.2(18.3)	EN, CE, ABS	\$2,495.00
PT-32-25W	32	104-125	25/ 50-250	13.8(35) x 9.9(24.9) x 5(12.7)	EN, CE, ABS	\$1,950.00

Item Number	Description	Price
<b>Accessories</b>		
RP	Remote Panel, works on all PT chargers except: PT-24-60W and PT-32-25W	\$125.00
TCS-12/24	Temperature Sensor for all PT chargers except: PT-7, PT-24-60W, PT-32-25W 7 PT-24-95W, P, F (ONLY FOR U)	\$85.00
TP	Temperature sensor for PT-24-60W, PT-32-25W, and PT-24-95W ONLY	\$115.00

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# Battery Chargers and Equipment

NEWMAR + VICTRON

## PTMP Series

### PTMP Series

- User selection of preprogrammed charge profiles for multiply battery types, plus full customization for special requirements
- On screen status and system diagnostics with audio alarm
- Independent temperature sensors, 3 battery banks
- 3 step charging for longer battery life
- Equalization program
- Remote status monitoring via Form C relay contacts
- ABS type approval battery charger and power supply, with multiple modules qualifies as redundant ABS essential device
- Easy front panel access to plug in models for quick field service
- IP45 solids and water ingress protected
- ABS type approval



PTMP SERIES

Item Number	Output Amps @24V	Input Amps @115/230 VAC	Dimensions in "(cm) HxWxD	Price
<b>PTMP Series</b>				
PTMP-24-100	100	26/17	24(610) x 10(254) x 7(178)	\$4,340.00
PTMP-24-150	150	42/24	24(610) x 12(305) x 7(178)	\$5,600.00

## Skylla & Centaur Series

### Skylla

- Charge voltage can be precisely adjusted to suit any sealed or unsealed battery system
- Charging process takes place in accordance with IUoUO characteristic and charges more rapidly than other processes
- Can be used as a power supply
- 2 isolated outputs, the second limited to approximately 4 amp and with a slightly lower output voltage, intended to top up a starter battery
- Voltage sense facility so the battery always receives the correct charge voltage
- Input voltage: 230 volt AC voltage range: 185-264 volt DC

### Centaur

- Universal 90-265 volt AC, 45/65 Hz. input voltage range
- Three outputs that each can supply the full output current
- Three stage charging, with temperature compensation
- Charges at bulk rate until the output has reduced to 70% of the rated amp, at which a 4 hour timer begins; after the timed period the charger switches to float rates
- Dip switch available to select the optimum charge/float voltages for flooded lead acid, gel-cell or AGM batteries



SKYLLA SERIES



CENTAUR SERIES

Item Number	Output Volts	Amps	Dimensions in "(mm) HxWxD	Battery Capacity	Price
<b>Skylla Series</b>					
TG24/50	24	50	14.4(365) x 9.9(250) x 5.8(147)	150-500	\$1,079.00
SKI024100002	24	100	16(405) x 9.9(250) x 5.9(150)	500-100	\$2,206.00
<b>Centaur Series</b>					
Centaur 12/20	12	20	14(355) x 8.5(215) x 4.3(110)	80-200	\$373.00
Centaur 12/30	12	30	14(355) x 8.5(215) x 4.3(110)	120-300	\$427.00
Centaur 12/40	12	40	16.8(426) x 9.4(239) x 5.3(135)	160-400	\$527.00
Centaur 12/50	12	50	16.8(426) x 9.4(239) x 5.3(135)	200-500	\$559.00
Centaur 12/60	12	60	16.8(426) x 9.4(239) x 5.3(135)	240-600	\$601.00
Centaur 12/80	12	80	19.9(505) x 10(255) x 5.2(132)	320-800	\$982.00
CENTAUR12/100	12	100	19.9(505) x 10(255) x 5.2(132)	400-1000	\$1,265.00
Centaur 24/40	24	40	19.9(505) x 10(255) x 5.2(132)	160-400	\$951.00
Centaur 24/60	24	60	19.9(505) x 10(255) x 5.2(132)	240-600	\$1,087.00

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## FR Series

- Reliable Ferro-Resonant technology
- Full cutoff when full charge reached – no “trickle” charge
- No boiling or dehydration
- Models available for 50/60 Hz
- Designed for quiet operation
- Drip proof cabinet
- Current limited and ignition protected
- Input 120 or 240 volt AC
- Automatic reset DC breaker
- AC fuse protection
- Front panel controls and indicators
- Indicators/controls include ammeter, manual/automatic selector switch, full charge and “On” indicator lights
- J in item number denominates 50/60 Hz
- 2 year manufacturer warranty



FR SERIES

Item Number	Amps	Banks	Dimensions in "(mm) HxWxD	Output Volts	Price
FR1240/3X	40	3	14.5(368.3) x 13.75(336.5) x 6(152.4)	12	\$2,270.00
FR1260/3X	60	3	16.25(412.7) x 13.75(349.2) x 7.25(184.2)	12	\$2,320.00
FR2440/3X	40	3	14.5(368.3) x 13.75(349.2) x 7.25(184.2)	24	\$2,355.00
FR2440/3XJ	40	3	16.25(412.7) x 3.75(349.2) x 7.75(196.9)	24	\$2,955.00
FR2460/3XJ	60	3	16.25(412.7) x 3.75(349.2) x 7.75(196.9)	24	\$2,960.00
FR2460/4XJ	60	4	16.25(412.7) x 3.75(349.2) x 7.75(196.9)	24	\$3,160.00
FR3230/3X	30	3	16.25(412.7) x 3.75(349.2) x 7.75(196.9)	32	\$2,590.00

Item Number	Description	Price
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### FR Series Replacement Parts

4030575	Cooling fan for FR1220, FR1240, FR1260, FR2425	\$65.00
40904-00	Fuse holder A.C.	\$15.00
42101-00	115VAC pilot light amber	\$6.00
42102-00	115VAC pilot light red	\$6.00
40403-03	Resonant capacitor 3 MFD	\$90.00
40403-05	Resonant capacitor 5 MFD	\$24.00
40403-10	Resonant capacitor 10 MFD	\$24.00
FR12NX	Control 4-Bank 115/230 12V	\$260.00
FR24NX	Control 4-Bank 115/230 24V	\$260.00
FR32NX	Control 4-Bank 115/230 32V	\$285.00

## True Charge2 Series

- Wide voltage range operation (90-135 volt AC, 47-63 Hz)
- Parallel stacking feature allows two chargers to work together to combine the output current
- Drip proof design
- Settings for AGM, flooded or gel lead-acid batteries
- Power factor corrected, temperature compensated during charging
- Automatic 21 day top-up program
- Durable and corrosion resistant chassis
- CSA E60335-2-29, CE Marked
- Ignition protected rated UL1564 and UL1236, including the Marine Supplement, drip test
- Ingress protection rated IP32 per EN/IEC 60529
- 2 year manufacturer warranty



TRUE CHARGE2 SERIES



REMOTE PANEL

Item Number	Banks	Amps	Dimensions in "(mm) HxWxD	Output Volts	Price
804-1220-02	3	20	2.8(70) x 6.7(170) x 9.8(250)	12	\$370.00
804-1240-02	3	40	2.8(70) x 6.7(170) x 9.8(250)	12	\$475.00

Item Number	Description	Price
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### Accessories

808-0232-01	Temperature sensor	\$42.00
808-8040-01	Remote panel	\$100.00

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# Battery Chargers and Equipment

DOLPHIN

## Premium Series

- New robust and compact casing
- 3 completely isolated battery outputs
- Digital management with up-to-date microcontroller
- 4 charging programs including one for lithium ion iron phosphate with integrated BMS
- Full power at temperatures up to 50° C
- Automatic weekly equalisation for all charging programs
- Automatic 115/230 volt switchover (12 volt 25 amp, 12 volt 40 amp & 24 volt 20 amp only)
- Night mode: silent-without fan (12 volt 25 amp, 12 volt 40 amp & 24 volt 20 amp only)
- Conformal coating of PCB to prolong the life of the battery charger



PREMIUM SERIES

Item Number	Output	Battery Capacity	Dimensions in"(mm) HxWxD	Price
<b>Premium Series</b>				
99020	12V-25A	50-250 Ah	4.75(120.65) x 13.875(352.42) x 3.75(95.25)	\$489.00
99030	12V-40A	80-400 Ah	4.75(120.65) x 13.875(352.42) x 3.75(95.25)	\$759.00
99040	24V-20A	40-200 Ah	4.75(120.65) x 13.875(352.42) x 3.75(95.25)	\$839.00
99050	12V-60A	n/a	9.44(240) x 4.21(107) x 10.79(274)	\$905.00

## Dolphin Series

- Can operate up to 65° C without de-rating
- Internal diode isolator without voltage drop
- Solid casing in aluminum, mounting by 4 easily accessible screws
- Integrated control panel, LED display indicating the charging curve as well as anomalies and faults
- Automatic switchover: equipped with three isolated outputs, automatic switchover 115 volt / 230 volt / 60Hz.
- Conformal coating of PCB to prolong the life of the charger
- Using built in CAN BUS J1939 interface



PRO SERIES

Item Number	Output	Battery Capacity	Dimensions in"(mm) HxWxD	Price
<b>Pro Series</b>				
99501	12V- 90A	180-900 Ah	13.4(340.36) x 14.2(360.68) x 4.9(124.46)	\$1,602.00
99502	24V- 40A	80-400 Ah	13.4(340.36) x 14.2(360.68) x 4.9(124.46)	\$1,278.00
99503	24V- 60A	120-600 Ah	13.4(340.36) x 14.2(360.68) x 4.9(124.46)	\$1,373.00
99504	24V- 100A	200-1000 Ah	13.4(340.36) x 14.2(360.68) x 7.5(190.50)	\$2,461.00
99507	12V-70A	120-70 Ah	16.72(358) x 16.17(346) x 5.98(128)	\$1,221.00

Item Number	Description	Price
<b>Accessories</b>		
99047	Temperature sensor adjusts the charging voltage depending on battery temperature	\$34.00

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## Pro Nautic Series

- Automatically senses and distributes up to full capacity to any one bank or combination of all banks
- Up to 12 performance & precision 4 stage charging profiles: charge, condition, auto maintain, and recondition
- Automatic dockside power mode for 12 volt DC lighting and appliances
- Conservation energy mode
- Automatically programs conditioning time based on discharge state of batteries
- Remote temperature probe included
- Meets marine spec ULc 1236, CE marked, CTick, FCC class B, CEDC, and ABYC approved



DIGITAL DISPLAY AND CONTROL REMOTE



PRONATIC P SERIES

Item Number	Amps	AC Input Voltage	Amperage@ 100/240V AC	Dimensions LxWxH in "(cm)	Weight lbs(kg)	Price
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### Pro Nautic P Series

#### 100-260 Autoarranging AC input Voltage, 50/60 cycle, 3 banks

63120	12	20	<5.0/<2.5	10.25(26.03)x8.50(21.59)x3.50(8.89)	5(2.2)	\$434.87
63130	12	30	<6.0/<3.0	10.25(26.03)x8.50(21.59)x3.50(8.89)	5(2.2)	\$531.94
63140	12	40	<7.0/<3.5	10.25(26.03)x8.50(21.59)x3.50(8.89)	5(2.2)	\$571.97
63150	12	50	<10.0/<5.0	12.25(31.12)x8.50(21.59)x3.50(8.89)	7(3.1)	\$732.42
63160	12	60	<11.0/<5.5	12.25(31.12)x8.50(21.59)x3.50(8.89)	7(3.1)	\$904.34
63170	24	20	<7.0/<3.5	10.25(26.03)x8.50(21.59)x3.50(8.89)	5(2.2)	\$585.93
63180	24	30	<11.0/<5.5	12.25(31.12)x8.50(21.59)x3.50(8.89)	7(3.1)	\$917.59

Item Number	Description	Price
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#### Accessories

63106	Remote temperature sensor	\$13.71
63100	Digital display and control remote	\$14.42



# Battery Chargers and Equipment

REGULATORS + CENTERFIELDER

## Balmar

- Dual models can control two alternators on single engine
- Presets for gel, AGM, and flooded types
- Advanced time & voltage adjustments
- Amp manager & equalization functions
- Bright LED alphanumeric display and easy to navigate programming mode increase user friendliness

- Belt load manager allows user to reduce maximum regulator field output in 5% increments to ensure that belts are protected from undue wear
- MC regulators have special programming for systems with voltage sensitive halogen lighting
- ARS items designed for single alternator use
- MC units designed to specifically control two alternators



ARS



MC-TS-B



MC-TS-A

Item Number	Amps	Volts	Bat. Eq.	Dual Alt.	Dimensions in "(mm) HxWxD	Price
<b>Alternator Regulators</b>						

**H item numbers come equipped with harness**

ARS-5-H	9	12	No	No	4.1(104.14) x 3.2(81.28) x 1.5(38.10)	\$418.00
MC-612 -DUAL-H	15	12	Yes	Yes	4.8(121.92) x 3.2(81.28) x 1.5(38.10)	\$526.00
MC-614-H	15	12	Yes	Yes	4.8(121.92) x 3.2(81.28) x 1.5(38.10)	\$459.00
MC-624-H	15	24	Yes	Yes	4.8(121.92) x 3.2(81.28) x 1.5(38.10)	\$540.00

Item Number	Sensor Type	Price
<b>Temperature Sensors</b>		

MC-TS-B	Battery	\$67.99
MC-TS-A	Alternator	\$53.99

## Centerfielder

- For use with max charge regulators only
- Eliminates alternator "chatter" by unifying power output to a single battery bank
- Provides field current from a single regulator to both port and starboard alternators when both engines are in use
- Adjustable for 12 volt or 24 volt operation
- NOT suitable for systems utilizing internally regulated alternators
- 1 year limited manufacturer warranty



CENTERFIELDER

Item Number	Volts	Fusing	Wiring Included	Price
CF-12/24-II	12/24	15A ATC	Fused 12 AWG power wires (2)	\$310.00

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The following definitions are derived from the American Boat and Yacht Council standards and are meant to be for reference only.

**Bulk Charge:** This is initiated at power up and provides the charger's full-rated current to the battery bank until a predetermined voltage level is attained and/or a certain time has passed. This mode provides a rapid recharge.

**Absorption Charge** (also called acceptance charge): This stage immediately follows the bulk charge mode. It maintains the battery voltage at the bulk charge voltage level; the current decreases as the battery accepts its final charge. This mode continues for a given time or until a predetermined current level is reached.

**Float Charge:** This stage is designed to hold the battery at a safe, lower voltage while providing up to the charger's full-rated amperage to accommodate DC load requirements. Most units will remain in this mode until the AC power is cycled off and then on again, or battery voltage drops to a predetermined level due to excessive load.

**Equalization:** This feature can be found in some linear and multi-stage chargers. It is important that the voltage and time of this cycle be very well controlled so that its primary purpose of removing residual sulfate, bringing all flooded battery cells to an equal potential and mixing of the electrolyte occurs without damaging the battery. This mode of charging is not recommended for SVR batteries.

**Note:** Different manufacturers have different philosophies regarding the operation of these four stages. This includes the amount of time the charger stays in the bulk mode or if a certain DC load demand will trigger the charger to return to the bulk mode. Careful consideration should be given to these important characteristics, based on the anticipated application. Due to the frequencies involved, electrical interference can be an issue and may show up in radios or televisions if the charger is not properly installed.