



WAVES
Quality power
to the point

WAVES INDUSTRIAL BATTERY CHARGERS



Approved by



Authorized system integrators of



Unit assisted by



Approved SABRe supplier to:



Rolls-Royce

About Waves

Waves Electronics Pvt. Ltd was founded in 1972 by Mr.C.P. Philipose and Mr.P.I Chacko. Today Waves is the market leader in the manufacture of Industrial Battery Chargers, Marine Control Systems, Navigation Light Control Panels, Generator Automation, and Automatic Power Factor Correction Control panels. We cater to the leaders in Indian industry and export to countries in Europe, South East Asia, the Middle East, and Africa. We produce high-quality performance tested and fully certified control systems that provide a stable operation over the complete life cycle.



WHAT IS SPECIAL ABOUT OUR BATTERY CHARGERS

Our Battery Chargers are designed to meet the requirements of the Utilities specially generating stations, defense, marine industry, and Metro Railways. This includes Vibration tests, Electro Magnetic Compatibility, and Electro Magnetic Interference tests.



WHY OUR PANELS ARE THE BEST?

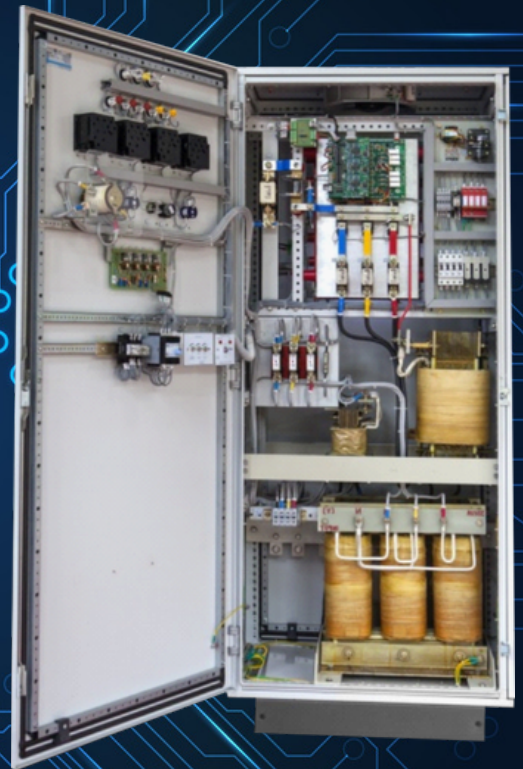
Through years of meeting the highest standards of the highly demanding Indian industry, we are equipped to meet the challenges. This expertise helped us to engineer systems to meet the requirements of the most demanding industry segments.



WAVES BATTERY CHARGERS

TRAITS

- Single and Dual Charger Designs
- SCR, IGBT, and Variac type Chargers.
- Suitable for Nickel-Cadmium and Lead-acid Batteries.
- Appropriate for both Marine and Land Applications.



WAVES MANUFACTURED MORE THAN THOUSAND BATTERY CHARGERS IN THE LAST 10 YEARS



OUR PRODUCTS ARE TESTED & CERTIFIED BY

- **ABS** (American Bureau of Shipping)
- **IRS** (Indian Register of Shipping)
- **BV** (Bureau of Veritas)
- **LRS** (Lloyds Register of Shipping)
- **DNV** (Det Norske Veritas)
- **DQAN** (Directorate of Quality Assurance (Indian Navy))
- **CPRI** (Central Power Research Institute)
- **CQAE** (Chief Quality Assurance Establishment (Warship Equipment))
- **ERDA** (Electrical Research and Development Association)
- **ERTL** (Electronics Regional Test Laboratory, Trivandrum)
- **SAMEER** (Society for Applied Microwave Electronics Engineering & Research)



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Waves Battery Chargers are an Ideal choice for all critical DC requirements

SCR BASED CHARGERS

Features

- ⚡ Available with different modes of operations (FLOAT, BOOST, AUTO, CONSTANT CURRENT AND IUoU)
- ⚡ Efficiency > 80%
- ⚡ Ripple < 1%
- ⚡ Micro controller based 3-Pulse/6- Pulse design
- ⚡ 5 types Alarms and 2 type of Indications(On customer request)
- ⚡ Built in protection for load, battery and charger
- ⚡ Suitable for initial/equalization charging(high voltage)
- ⚡ Ideal choice for all critical DC requirements

And many more...



110V 150A Dual battery charger for Generating Station

WEPL Manufactures Battery Charger as per **IEC Standard** and for Indian Navy as per **MILITARY Standard**



WAVES
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IGBT CHARGER & DISCHARGER

FEATURES

- DSP-based Digital Control
- Fully controlled IGBT-PWM-based control
- LED indications and buzzer for fault
- Natural/forced air cooling
- Power factor greater than 0.95
- Total Harmonic Distortion less than 6%
- Four modes of charging
Manual- Float, Boost, Current
Auto
- Two modes of discharging
Manual
Auto



110V, 70A IGBT charger for
BMRCL, Bangalore

SINGLE LINE DIAGRAM OF BATTERY CHARGERS

1: FLOAT CUM BOOST SINGLE CHARGER-SINGLE INPUT-SINGLE LOAD-SINGLE BATTERY

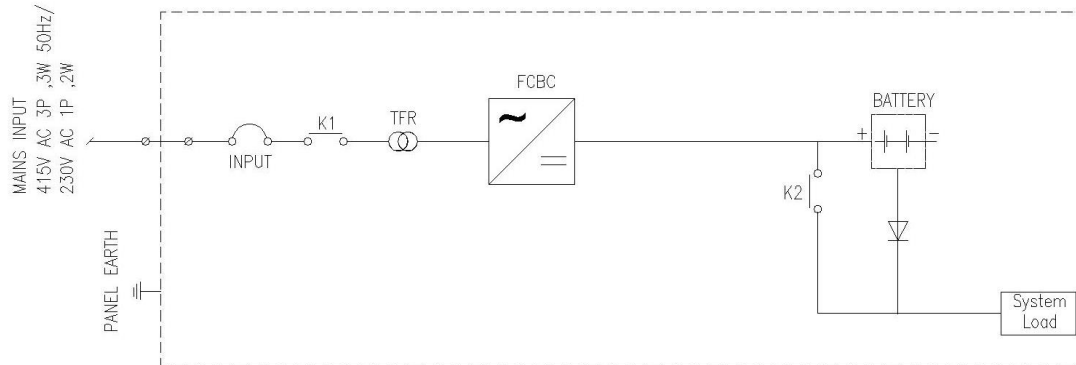


Figure 1

CONT-1 (K1)	FCBC	CONT-2 (K2)	BATTERY	LOAD
CLOSE	FLOAT	CLOSE	FLOAT	FLOAT
CLOSE	BOOST	CLOSE	BOOST	BOOST
OPEN	OFF	CLOSE	DISCHARGE	BATTERY

2: FLOAT CUM BOOST SINGLE CHARGER WITH DIODE DROPPER-SINGLE INPUT SINGLE LOAD-SINGLE BATTERY

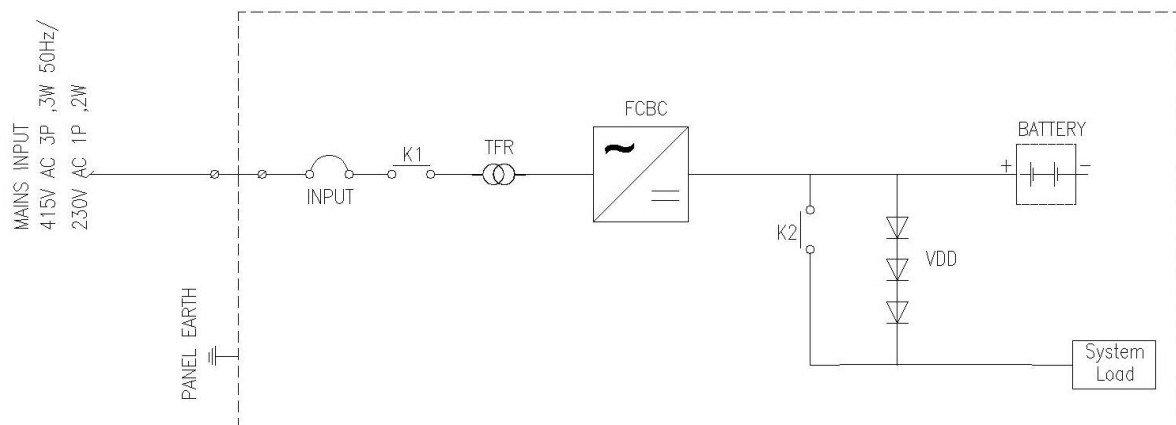


Figure 2

CONT-1(K1)	FCBC	CONT-2(K2)	BATTERY	LOAD	VDD
CLOSE	FLOAT	CLOSE	FLOAT	THROUGH K2	BYPASS
CLOSE	BOOST	OPEN	BOOST	THROUGH VDD	IN CIRCUIT
OPEN	OFF	CLOSE	DISCHARGE	BATTERY	BYPASS

3: FLOAT AND FLOAT CUM BOOST DUAL CHARGER–SINGLE INPUT-SINGLE LOAD-SINGLE BATTERY

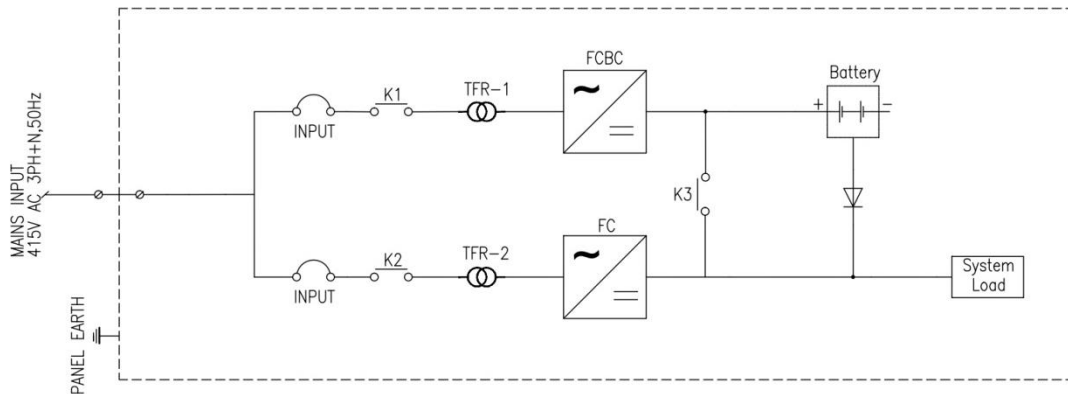


Figure 3

CONT-1(K1)	CONT-2(K2)	FC	FCBC	CONT-3(K3)	BATTERY	LOAD
CLOSE	CLOSE	FLOAT	FLOAT	CLOSE	FLOAT	FC/FCBC
CLOSE	CLOSE	FLOAT	BOOST	OPEN	BOOST	FC
CLOSE	OPEN	OFF	FLOAT	CLOSE #	FLOAT	FCBC
OPEN	CLOSE	FLOAT	OFF	CLOSE	FLOAT	FC
OPEN	OPEN	OFF	OFF	CLOSE	DISCHARGE	BATTERY

#BOOST OPERATION NOT ALLOWED

4: FLOAT AND FLOAT CUM BOOST DUAL CHARGER–DUAL INPUT-SINGLE LOAD-SINGLE BATTERY

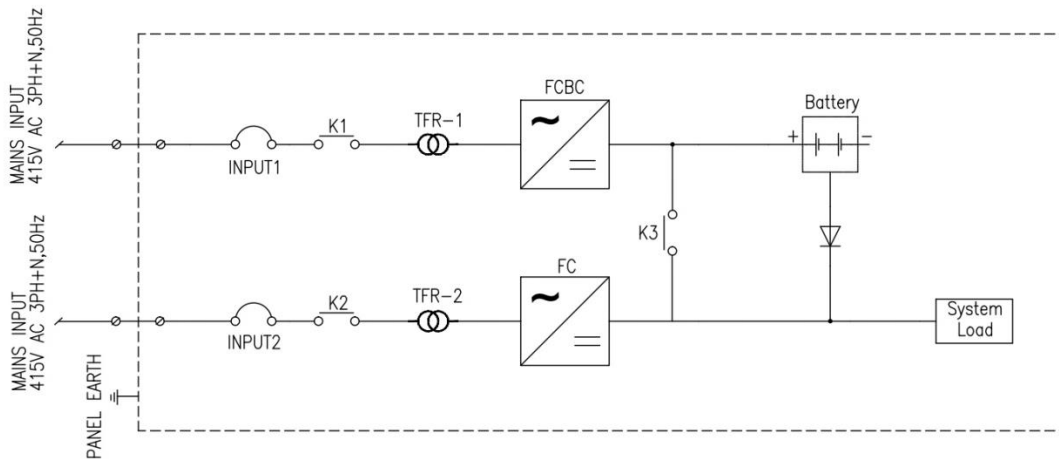


Figure 4

CONT-1(K1)	CONT-2(K2)	FC	FCBC	CONT-3(K3)	BATTERY	LOAD
CLOSE	CLOSE	FLOAT	FLOAT	CLOSE	FLOAT	FC/FCBC
CLOSE	CLOSE	FLOAT	BOOST	OPEN	BOOST	FC
CLOSE	OPEN	OFF	FLOAT	CLOSE #	FLOAT	FCBC
OPEN	CLOSE	FLOAT	OFF	CLOSE	FLOAT	FC
OPEN	OPEN	OFF	OFF	CLOSE	DISCHARGE	BATTERY

#BOOST OPERATION NOT ALLOWED

5: REDUNDANT FLOAT CUM BOOST CHARGER-SINGLE INPUT-SINGLE LOAD-SINGLE BATTERY

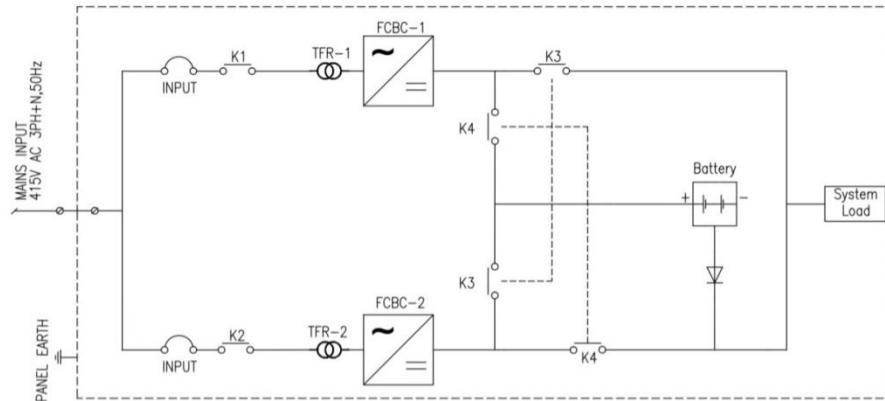


Figure 5

CONT-1(K1)	CONT-2(K2)	FCBC-1	FCBC-2	CONT-3(K3)	CONT-4(K4)	BATTERY	LOAD
CLOSE	CLOSE	FLOAT	FLOAT	CLOSE	CLOSE	FLOAT	FCBC-1/2
CLOSE	CLOSE	FLOAT#	BOOST	CLOSE	OPEN	BOOST	FCBC-1
CLOSE	CLOSE	BOOST	FLOAT#	OPEN	CLOSE	BOOST	FCBC-2
OPEN	CLOSE	OFF	FLOAT#	CLOSE	CLOSE	FLOAT	FCBC-2
CLOSE	OPEN	FLOAT#	OFF	CLOSE	CLOSE	FLOAT	FCBC-1
OPEN	OPEN	OFF	OFF	CLOSE	CLOSE	DISCHARGE	BATTERY

#BOOST OPERATION NOT ALLOWED

6: REDUNDANT FLOAT CUM BOOST CHARGER-DUAL INPUT-SINGLE LOAD-SINGLE BATTERY

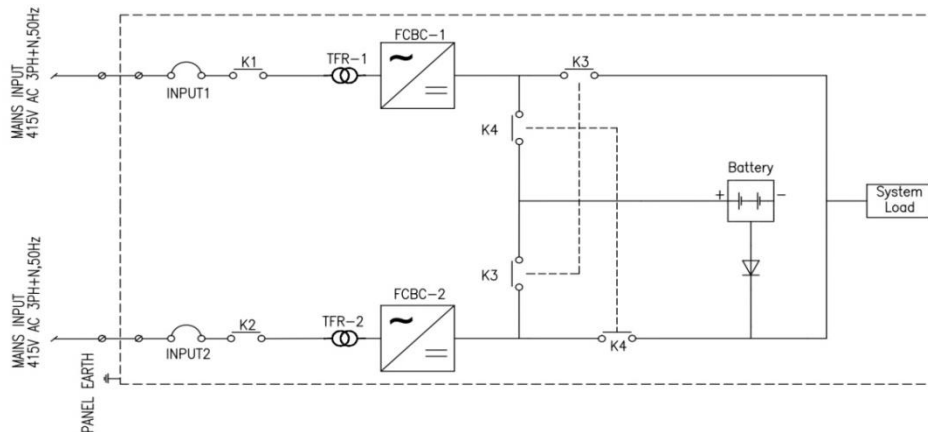


Figure 6

CONT-1(K1)	CONT-2(K2)	FCBC-1	FCBC-2	CONT-3(K3)	CONT-4(K4)	BATTERY	LOAD
CLOSE	CLOSE	FLOAT	FLOAT	CLOSE	CLOSE	FLOAT	FCBC-1/2
CLOSE	CLOSE	FLOAT#	BOOST	CLOSE	OPEN	BOOST	FCBC-1
CLOSE	CLOSE	BOOST	FLOAT#	OPEN	CLOSE	BOOST	FCBC-2
OPEN	CLOSE	OFF	FLOAT#	CLOSE	CLOSE	FLOAT	FCBC-2
CLOSE	OPEN	FLOAT#	OFF	CLOSE	CLOSE	FLOAT	FCBC-1
OPEN	OPEN	OFF	OFF	CLOSE	CLOSE	DISCHARGE	BATTERY

#BOOST OPERATION NOT ALLOWED

7: REDUNDANT FLOAT CUM BOOST CHARGER WITH DIODE DROPPER-SINGLE INPUT -SINGLE LOAD-DUAL BATTERY BANK

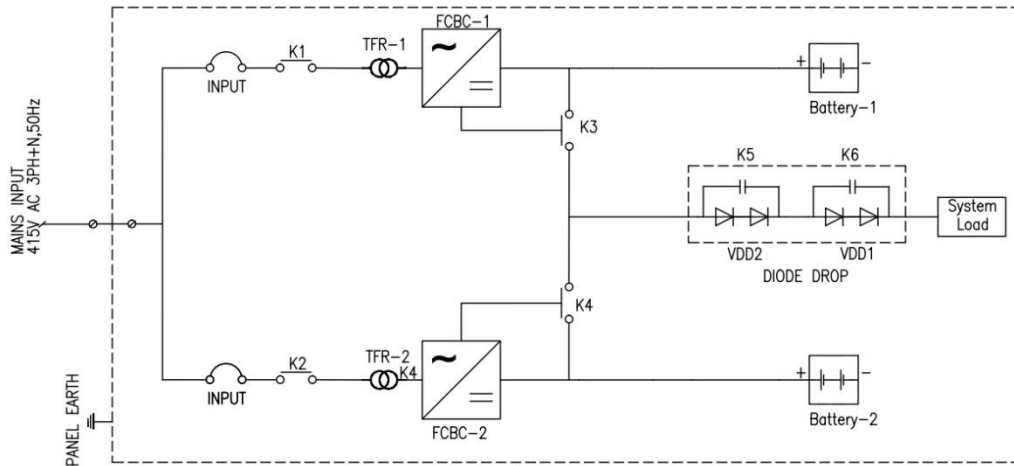


Figure 7

CONT-1(K1)	CONT-2(K2)	FCBC-1	FCBC-2	CONT-3(K3)	CONT-4(K4)	BATTERY-1	BATTERY-2	CONT-5(K5)	CONT-6(K6)	LOAD
CLOSE	CLOSE	FLOAT	FLOAT	CLOSE	CLOSE	FLOAT	FLOAT	OPEN	CLOSE	FCBC1,FCBC2
CLOSE	CLOSE	FLOAT	BOOST	CLOSE	OPEN	FLOAT	BOOST	OPEN	CLOSE	FCBC-1-VDD1
CLOSE	CLOSE	BOOST	FLOAT#	OPEN	CLOSE	BOOST	FLOAT	CLOSE	OPEN	FCBC-2-VDD2
OPEN	CLOSE	OFF	FLOAT#	CLOSE	CLOSE	FLOAT	FLOAT	CLOSE	OPEN	FCBC-2-VDD2
CLOSE	OPEN	FLOAT	OFF	CLOSE	CLOSE	FLOAT	FLOAT	OPEN	CLOSE	FCBC-1-VDD1
OPEN	OPEN	OFF	OFF	CLOSE	CLOSE	DISCHARGE	DISCHARGE	CLOSE	CLOSE	BATT-1/2

#BOOST OPERATION NOT ALLOWED

8: REDUNDANT FLOAT CUM BOOST CHARGER WITH DIODE DROPPER-DUAL INPUT -SINGLE LOAD-DUAL BATTERY BANK

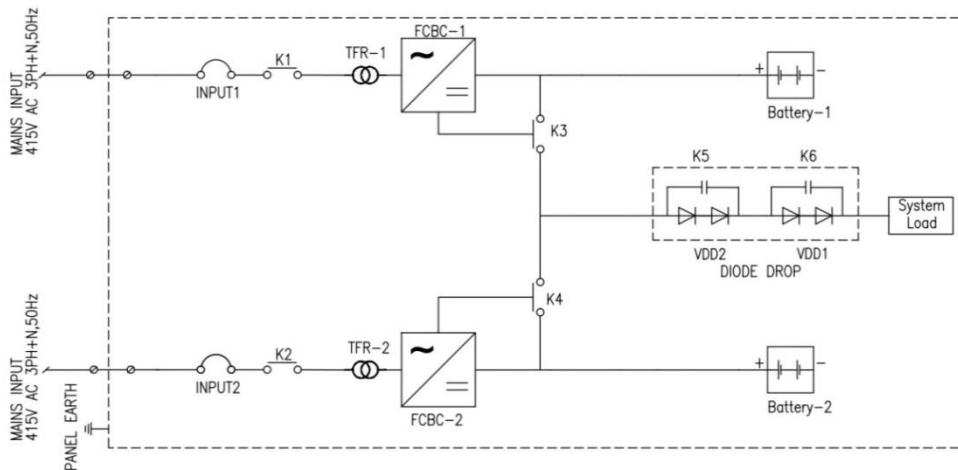


Figure 8

CONT-1(K1)	CONT-2(K2)	FCBC-1	FCBC-2	CONT-3(K3)	CONT-4(K4)	BATTERY-1	BATTERY-2	CONT-5(K5)	CONT-6(K6)	LOAD
CLOSE	CLOSE	FLOAT	FLOAT	CLOSE	CLOSE	FLOAT	FLOAT	OPEN	CLOSE	FCBC1,FCBC2
CLOSE	CLOSE	FLOAT	BOOST	CLOSE	OPEN	FLOAT	BOOST	OPEN	CLOSE	FCBC-1-VDD1
CLOSE	CLOSE	BOOST	FLOAT#	OPEN	CLOSE	BOOST	FLOAT	CLOSE	OPEN	FCBC-2-VDD2
OPEN	CLOSE	OFF	FLOAT#	CLOSE	CLOSE	FLOAT	FLOAT	CLOSE	OPEN	FCBC-2-VDD2
CLOSE	OPEN	FLOAT	OFF	CLOSE	CLOSE	FLOAT	FLOAT	OPEN	CLOSE	FCBC-1-VDD1
OPEN	OPEN	OFF	OFF	CLOSE	CLOSE	DISCHARGE	DISCHARGE	CLOSE	CLOSE	BATT-1/2

#BOOST OPERATION NOT ALLOWED

9: REDUNDANT FLOAT CUM BOOST CHARGER -SINGLE INPUT-SINGLE LOAD-DUAL BATTERY BANK

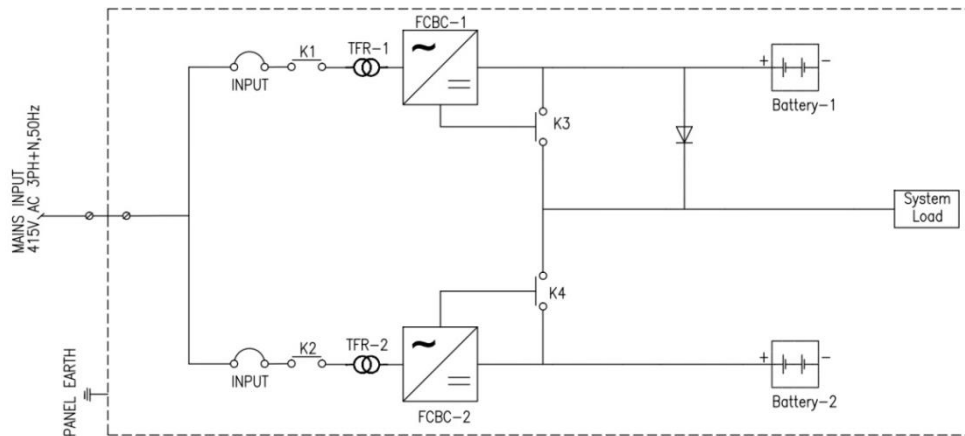


Figure 9

CONT-1(K1)	CONT-2(K2)	FCBC-1	FCBC-2	CONT-3(K3)	CONT-4(K4)	BATTERY-1	BATTERY-2	LOAD
CLOSE	CLOSE	FLOAT	FLOAT	CLOSE	CLOSE	FLOAT	FLOAT	FCBC1,FCBC2
CLOSE	CLOSE	FLOAT	BOOST	CLOSE	OPEN	FLOAT	BOOST	FCBC-1
CLOSE	CLOSE	BOOST	FLOAT#	OPEN	CLOSE	BOOST	FLOAT	FCBC-2
OPEN	CLOSE	OFF	FLOAT#	CLOSE	CLOSE	FLOAT	FLOAT	FCBC-2
CLOSE	OPEN	FLOAT	OFF	CLOSE	CLOSE	FLOAT	FLOAT	FCBC-1
OPEN	OPEN	OFF	OFF	CLOSE	CLOSE	DISCHARGE	DISCHARGE	BATT-1/2

#BOOST OPERATION NOT ALLOWED

10: REDUNDANT FLOAT CUM BOOST CHARGER -DUAL INPUT-SINGLE LOAD-DUAL BATTERY BANK

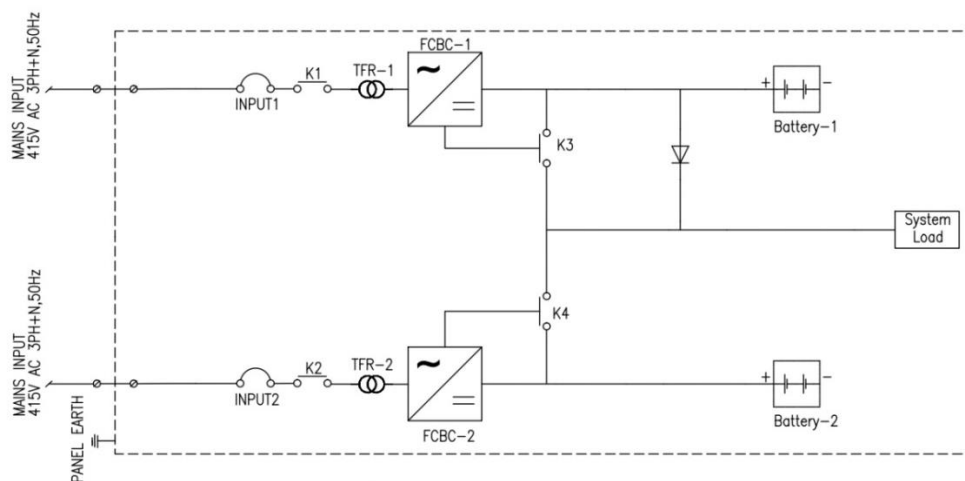


Figure 10

CONT-1(K1)	CONT-2(K2)	FCBC-1	FCBC-2	CONT-3(K3)	CONT-4(K4)	BATTERY-1	BATTERY-2	LOAD
CLOSE	CLOSE	FLOAT	FLOAT	CLOSE	CLOSE	FLOAT	FLOAT	FCBC1,FCBC2
CLOSE	CLOSE	FLOAT	BOOST	CLOSE	OPEN	FLOAT	BOOST	FCBC-1
CLOSE	CLOSE	BOOST	FLOAT#	OPEN	CLOSE	BOOST	FLOAT	FCBC-2
OPEN	CLOSE	OFF	FLOAT#	CLOSE	CLOSE	FLOAT	FLOAT	FCBC-2
CLOSE	OPEN	FLOAT	OFF	CLOSE	CLOSE	FLOAT	FLOAT	FCBC-1
OPEN	OPEN	OFF	OFF	CLOSE	CLOSE	DISCHARGE	DISCHARGE	BATT-1/2

#BOOST OPERATION NOT ALLOWED

11: FLOAT AND BOOST DUAL CHARGER -SINGLE INPUT-SINGLE LOAD-SINGLE BATTERY

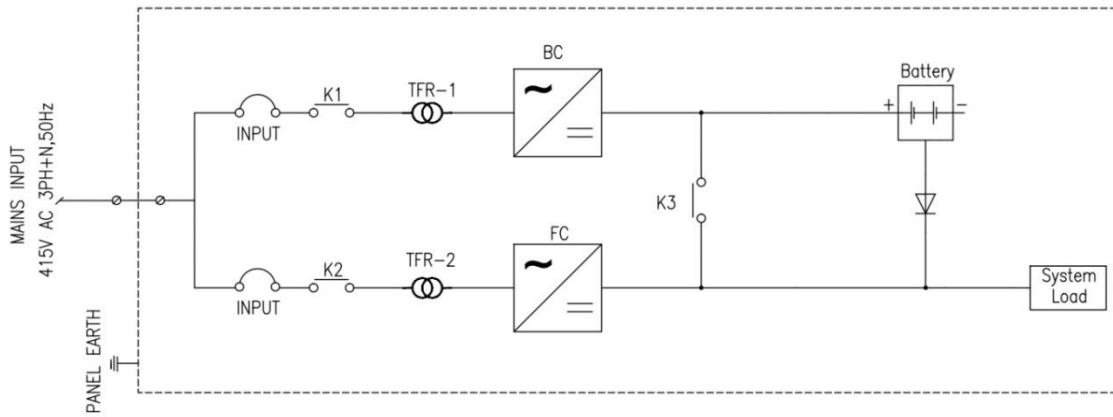


Figure 11

CONT-1(K1)	CONT-2(K2)	FC	BC	CONT-3(K3)	BATTERY	LOAD
CLOSE	CLOSE	ON	ON	OPEN	BOOST	FLOAT
OPEN	CLOSE	FLOAT	OFF	CLOSE	FLOAT	FC
CLOSE	OPEN	OFF	BOOST	OPEN	BOOST	TAP VOLT
OPEN	OPEN	OFF	OFF	CLOSE	DISCHARGE	BATTERY

12: FLOAT AND BOOST DUAL CHARGER -DUAL INPUT-SINGLE LOAD-SINGLE BATTERY

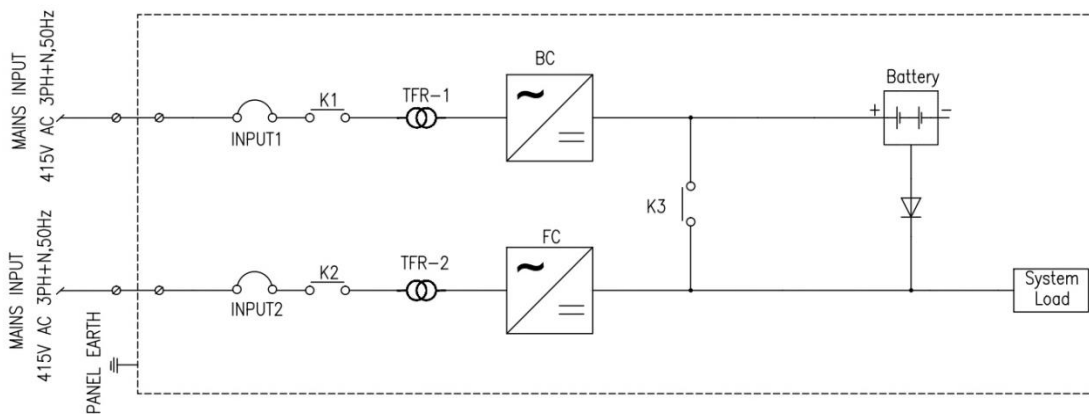


Figure 12

CONT-1(K1)	CONT-2(K2)	FC	BC	CONT-3(K3)	BATTERY	LOAD
CLOSE	CLOSE	ON	ON	OPEN	BOOST	FLOAT
OPEN	CLOSE	FLOAT	OFF	CLOSE	FLOAT	FC
CLOSE	OPEN	OFF	BOOST	OPEN	BOOST	TAP VOLT
OPEN	OPEN	OFF	OFF	CLOSE	DISCHARGE	BATTERY





BATTERY CHARGERS FOR MARINE APPLICATION

Model	WESBC30240065	WESBC30240080	WESBC30240100	WEDBC30240100
Specification	1. 	2. 	3. 	4. 
Product	24V 65A General Service Charger	24V 80A Float cum Boost Charger	24V 100A Float cum Boost Charger	24V 100A Float cum Boost and 100A Float Charger
Type	Single	Single	Single	Dual
Supply	3 phase,3 wire Normal supply 3phase 3 wire Emergency supply	3 phase,3 wire Normal supply 3phase 3 wire Emergency supply	3 phase,3 wire Normal supply 3phase 3 wire Emergency supply	3 phase,3 wire Normal supply 3phase 3 wire Emergency supply
Modes	Float Boost	Float Boost	Float Boost	Float Boost Auto
Voltage Adjustment	Float : 22-27 V Boost: 22-30 V	Float : 19-27 V Boost: 19-32 V	Float : 24-27 V Boost: 24-29V	Float : 24-27 V Boost: 24-29V
Ripple	< 1% RMS without battery	< 1% RMS without battery	< 1.5% RMS without battery	<1.5% RMS without battery
Efficiency (at Full load @ nominal AC Input)	Better than 80%	Better than 80%	Better than 80%	Better than 80%
Indications	4	2	3	4
Alarms	7	9	6	11
Protection	IP44	IP44	IP44	IP44
Mounting	Wall/Deck	Floor	Wall	Floor
Dimension	1870x840x400	1500x750x400	1500x600x475	1875x800x600
Refer Single Line Diagram	Figure 2	Figure 2	Figure 1	Figure 3

BATTERY CHARGERS FOR LAND APPLICATION

Model	WESBC10240010	WESBC10240020	WESBC10240020	WESBC10480035
Specification	1. 	2. 	3. 	4. 
Product	24V 10A Float cum Boost Charger	24V 20A Float cum Boost Charger	24V 20A Float cum Boost Charger	48V 35A Float cum Boost Charger
Type	Single	Single	Single	Single
Supply	Single phase 2 wire	Single phase 2 wire	Single phase 2 wire	Single phase 2 wire
Modes	Float Boost	Float Boost Voltage Auto	Float Boost	Float Boost Voltage Auto
Voltage Adjustment	Float : 20 V-26.7 V Boost: 20 V – 28.8 V	Float : 27.1 V Boost: 29.1 V Voltage: 20-30 V	Float : 20V-28V Boost: 20V-36V	Float : 54 V Boost: 57.6V Voltage:48V-58V
Ripple	< 1% RMS with battery	< 3% RMS without battery	< 3% RMS without battery	<3% RMS without battery
Efficiency (at Full load @ nominal AC Input)	Better than 75%	Better than 80%	Better than 75%	Better than 75%
Indications	3	4	2	6
Alarms	4	2	nil	4
Protection	IP22	IP22	IP22	IP42
Mounting	Floor	Floor	Table top	Floor
Dimension	930x640x500	595x495x345	380x210x380	875x600x400
Refer Single Line Diagram	Figure 1	Figure 1	Figure 1	Figure 1




BATTERY CHARGERS FOR LAND APPLICATION

Model	WEDBC31100010/0030	WESBC31100015	WEDBC31100020	WEDBC31100020/0020
Specification	5. 	6. 	7. 	8. 
Product	110V Dual 10A Float & 30A Boost Charger	110V 15A Battery Charger	110V 20A Dual Redundant Float cum Boost Charger	110V Dual 20A Float cum Boost and 20A Float Battery Charger
Type	Dual	Single	Dual	Dual
Supply	3 phase 4 wire	3 phase 4 wire	3 phase 4 wire	3 phase 4 wire
Modes	Float Boost Auto	Float Boost Auto Constant current	Float Boost Auto Current	Float Boost Auto
Voltage Adjustment	Float : 90 V- 127 V Boost: 90 V- 150 V	Float : 95V-127 V Boost: 95V-132 V	Float : 90V-127V Boost: 90V-132V	Float : 90 V- 127 V Boost: 90 V- 150 V
Ripple	< 1% RMS without battery	< 3% RMS without battery	< 3% RMS without battery	<1.5% RMS without battery
Efficiency (at Full load @ nominal AC Input)	Better than 80%	Better than 80%	Better than 80%	Better than 80%
Indications	14	2	3	4
Alarms	3	13	7	11
Protection	IP54	IP44	IP22	IP44
Mounting	Floor	Floor	Floor	Floor
Dimension	1875x800x600	1200x640x640	1875x800x600	1875x800x600
Refer Single Line Diagram	Figure 11	Figure 1	Figure 9	Figure 3

BATTERY CHARGERS FOR LAND APPLICATION

Model	WESBC31100030	WEDBC31100050	WESBC31100060	WEDBC31100060/0030
Specification	9. 	10. 	11. 	12. 
Product	110V 30A Float cum Boost Battery Charger	110V 50 Float cum Boost Dual Battery Charger	110V 60A Portable Float cum Boost Charger	110V 60A Float and 30A Boost Dual Battery Charger
Type	Single	Dual	Single	Dual
Supply	3 phase 3 wire	3 phase 4 wire	3 phase 4 wire	3 phase 4 wire
Modes	Float Boost Auto Current	Float Boost Auto	Float Boost Auto Current	Float Boost Auto
Voltage Adjustment	Float : 90 V- 127 V Boost: 90 V- 150 V	Float : 90V-127 V Boost: 90V-132 V	Float : 103V-113V Boost: 122V-150V	Float : 90 V- 127 V Boost: 90 V- 150 V
Ripple	< 1% RMS without battery	< 3% RMS without battery	< 3% RMS without battery	<1.5% RMS without battery
Efficiency (at Full load @ nominal AC Input)	Better than 80%	Better than 80%	Better than 75%	Better than 80%
Indications	3	7	8	3
Alarms	13	5	9	6
Protection	IP42	IP42	IP42	IP42
Mounting	Floor	Floor	Portable	Floor
Dimension	1275x700x400	1875x800x600	1200x840x600	2075x800x600
Refer Single Line Diagram	Figure 1	Figure 3	Figure 1	Figure 11

BATTERY CHARGERS FOR LAND APPLICATION

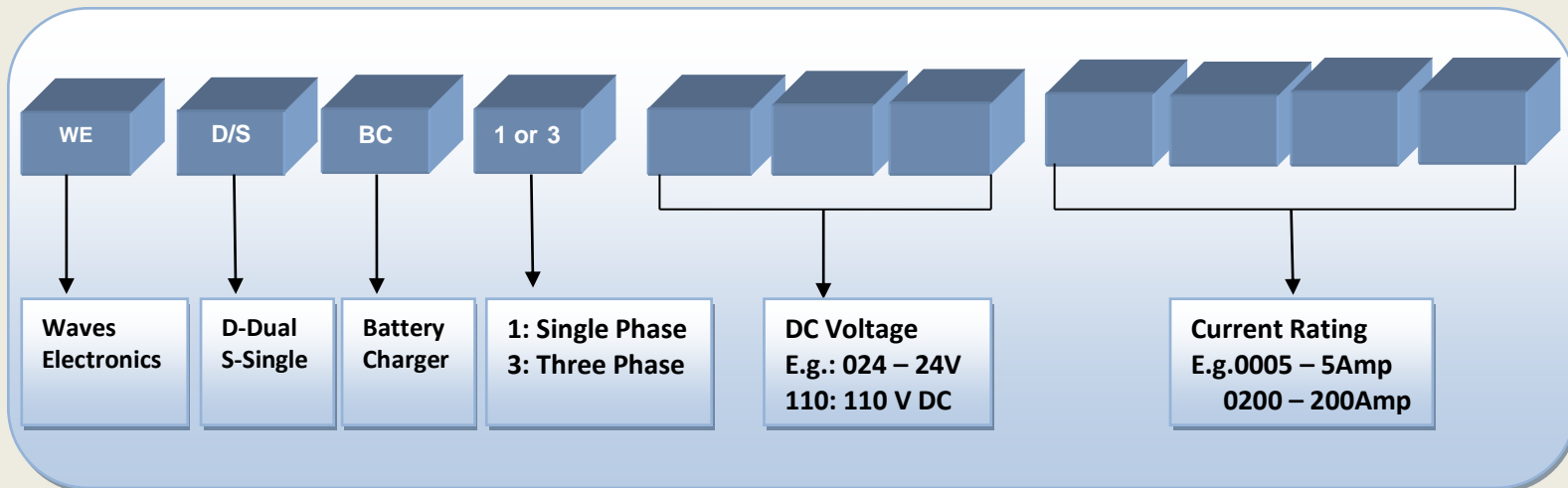
Model	WEDBC31100150	WESBC32200030	WESBC32200060
Specification	13. 	14. 	15. 
Product	110V 150A Float cum Boost Dual Battery Charger	220V 30 Float cum Boost Battery Charger	220V 60A Float cum Boost Charger
Type	Dual	Single	Single
Supply	3 phase 4 wire	3 phase 3 wire	3 phase 4 wire
Modes	Float Boost Auto Constant Current IUoU	Float Boost Auto Current	Float Boost Auto Current
Voltage Adjustment	Float : 90 V- 127 V Boost: 90 V- 152 V	Float : 220V-254 V Boost: 220V-300 V	Float : 180V-252V Boost: 180V-310V
Ripple	< 0.5% RMS without battery	< 5% RMS without battery	< 5% RMS without battery
Efficiency (at Full load @ nominal AC Input)	Better than 80%	Better than 80%	Better than 80%
Indications	5	3	2
Alarms	9	13	13
Protection	IP22	IP22	IP42
Mounting	Floor	Floor	Floor
Dimension	1975x1200x800	1875x800x600	1875x800x600
Refer Single Line Diagram	Figure 9	Figure 1	Figure 1

BATTERY CHARGER RATING

Current (Amp)	24V	48V	110V	220V
5	WED/SBC10240005	WED/SBC10480005	WED/SBC11100005	WED/SBC12200005
10	WED/SBC10240010	WED/SBC10480010	WED/SBC11100010	WED/SBC12200010
15	WED/SBC10240015	WED/SBC10480015	WED/SBC11100015	WED/SBC32200015
20	WED/SBC10240020	WED/SBC10480020	WED/SBC11100020	WED/SBC32200020
25	WED/SBC10240025	WED/SBC10480025	WED/SBC31100025	WED/SBC32200025
30	WED/SBC10240030	WED/SBC30480030	WED/SBC31100030	WED/SBC32200030
40	WED/SBC10240040	WED/SBC30480040	WED/SBC31100040	WED/SBC32200040
50	WED/SBC10240050	WED/SBC30480050	WED/SBC31100050	WED/SBC32200050
60	WED/SBC30240060	WED/SBC30480060	WED/SBC31100060	WED/SBC32200060
70	WED/SBC30240070	WED/SBC30480070	WED/SBC31100070	WED/SBC32200070
80	WED/SBC30240080	WED/SBC30480080	WED/SBC31100080	WED/SBC32200080
90	WED/SBC30240090	WED/SBC30480090	WED/SBC31100090	WED/SBC32200090
100	WED/SBC30240100	WED/SBC30480100	WED/SBC31100100	WED/SBC32200100
150	WED/SBC30240150	WED/SBC30480150	WED/SBC31100150	WED/SBC32200150
200	WED/SBC30240200	WED/SBC30480200	WED/SBC31100200	WED/SBC32200200

WAVES ELECTRONICS – TYPE - BATTERY CHARGER - PHASE - VOLTAGE - CURRENT

Selection Chart



Technical Specifications

Charger Type	Waves Battery Charger
Applicable Standard	IEC-62040-3
Charger Characteristics	Constant voltage / constant current with current limit
Control Technology	3/6 Pulse Charger
Input Voltage	415VAC +15% to - 20%, Three phase (Optional : Single Phase Input)
Input Frequency	50 Hz \pm 6%
Output Voltage	24VDC, 48VDC, 110VDC, 220VDC
Output Current	Up to 200 AMP
Output Voltage Regulation	\pm 1% of set value
Ripple Voltage	\pm 1% RMS with battery connected \pm 2% RMS without battery connected
Protection	Input Switch / MCCB with fuse Output MCB /MCCB Battery fuse / Switch / MCB / MCCB Current limit Soft start Overload protection Reverse polarity protection DC ground fault protection
Meters	Input voltmeter Output voltmeter Battery charging / discharging current meter Output Current Meter (Charger/Load)
Indication	Power ON Charger ON
Alarms	Mains Fail Charger Fail DC Low DC High DC earth fault
Operating Ambient Temperature	0 to 45°C
Altitude	Up to 1000 meter from MSL
Atmosphere	Non-corrosive, Dust free, Freely ventilated
Audible Noise @ 1 Meter From Panel Front	55 dBA to 70 dBA (depending on system rating & configuration)
Enclosure Protection	IP-41 / IP-42
Type Of Cooling	Natural air cooling or forced air cooling
Paint Shade	RAL-7035, Epoxy powder coated (standard) Other shades on request

Options

- Different Input Voltages
- Frequency : 60Hz
- Voltage Drop Diode
- DC Distribution Board
- 50°C Ambient Temp
- Redundant Cooling Fans

CUSTOMER SPACE....

Please specify your requirement

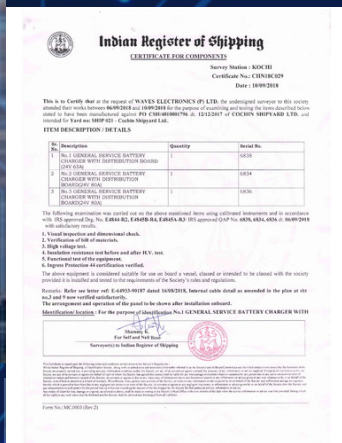
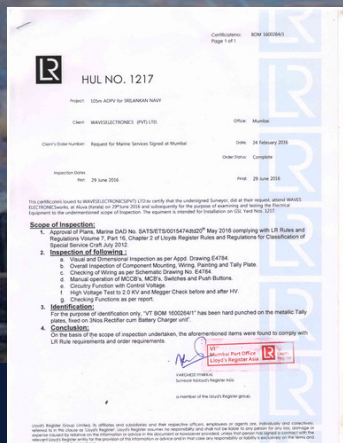
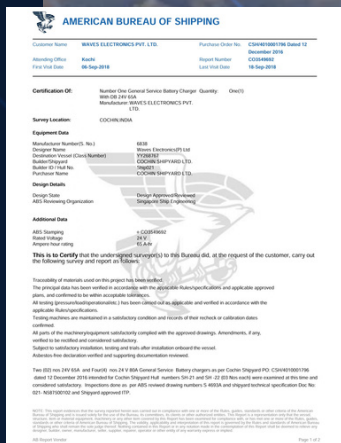
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Nominal Voltage	
Frequency	
<ul style="list-style-type: none"> DC Output 	
Voltage	
Float Voltage Adjustment	
Boost Voltage Adjustment	
Constant Current Control Adjustment	
Modes	<ul style="list-style-type: none"> • Float <input type="checkbox"/> • Boost <input type="checkbox"/> • Auto <input type="checkbox"/> • Current <input type="checkbox"/>
Current	
Current Limit Adjustment	
Boost charge current setting range	
Ripple	<1%rms without battery
Regulation	±1%
Efficiency	Full wave half controlled
Noise Level	Better than 80% at full load @ nominal AC input
Battery	<ul style="list-style-type: none"> • VRLA <input type="checkbox"/> • NON VRLA <input type="checkbox"/> • NI CAD <input type="checkbox"/>

Protection	<ul style="list-style-type: none"> • AC input circuit breaker <input type="checkbox"/> • Rectifier Input Fuses <input type="checkbox"/> • Fuse in series with capacitor <input type="checkbox"/> • Fuse at charger output <input type="checkbox"/> • Fuse at the Battery <input type="checkbox"/> • MCB at the main load bus <input type="checkbox"/> • MCB for DC output <input type="checkbox"/> • Against Single phasing <input type="checkbox"/> • AC under voltage ,AC over voltage <input type="checkbox"/> • Over load protection <input type="checkbox"/> • Short circuit protection <input type="checkbox"/>
<p>• Indications & Alarms</p>	
Indication & Alarms	<ul style="list-style-type: none"> • Charger supply on <input type="checkbox"/> • Supply main failure <input type="checkbox"/> • Rectifier failure <input type="checkbox"/> • Charger Fuse /MCB trip <input type="checkbox"/> • DC output high <input type="checkbox"/> • DC output low <input type="checkbox"/> • Charger on boost mode <input type="checkbox"/> • Battery Earth Leakage <input type="checkbox"/> • AC Under voltage - Over voltage <input type="checkbox"/> • Battery isolator open <input type="checkbox"/> • DC filter fuse failure <input type="checkbox"/> • Single phasing <input type="checkbox"/> • Fan failure <input type="checkbox"/>
<p>• Meters on the Instrument Panel</p>	
Meters on the Instrument Panel	<ul style="list-style-type: none"> • AC Voltage <input type="checkbox"/> • AC Current <input type="checkbox"/> • DC Charger/ Battery/ Load Voltage <input type="checkbox"/> • DC Charger/ Load Current <input type="checkbox"/>

	<ul style="list-style-type: none"> • DC Battery Current <input type="checkbox"/> • DC Earth Leakage Current <input type="checkbox"/> • DC Trickle Charge Current <input type="checkbox"/>
<ul style="list-style-type: none"> • Switches on the Instrument panel 	
Switches on the Instrument panel	<ul style="list-style-type: none"> • AC Voltmeter Selector <input type="checkbox"/> • DC Voltmeter Selector <input type="checkbox"/> • AC Ammeter Selector <input type="checkbox"/> • DC Ammeter selector <input type="checkbox"/> • Mode Selector (Float / Boost /Auto/Current) <input type="checkbox"/> • Charger ON /OFF <input type="checkbox"/> • Alarm accept, reset, test <input type="checkbox"/> <p>push buttons</p>
<ul style="list-style-type: none"> • General 	
Configuration*	<ul style="list-style-type: none"> • FCBC <input type="checkbox"/> • FC&BC <input type="checkbox"/> • FC&FCBC <input type="checkbox"/> • DFCBC <input type="checkbox"/>
Type of Charger	Current limiting constant voltage and constant current charger using thyristors as the regulating element
Features	<ul style="list-style-type: none"> • Robust Design • Industrial grade component • Concise and clear indication panel • High level of humidity protection • Soft start • Over load Protected • Short circuit Protected

*FCBC-Float cum Boost Charger
 FC -Float Charger
 BC- Boost Charger
 DFCBC-Dual Float cum Boost Charger

Our Customers



OUR PRODUCTS

- Battery Chargers
- Navigation Light Control Panel
- Main Switch Board
- Emergency Switch Boards
- Shore Connection Box
- Consoles
- EMI-EMC Enclosures
- Junction Box
- Distribution Board
- Starters/Motor Control Center
- Soft Starter Panels
- Variable Frequency Drive Panels
- Automatic Power Factor Correction Panel

and more ...

REACH US

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