TechnoVision®
PRODUCTIVE SOLUTIONS

Celebrating 25 Years

INDUSTRIAL
BATTERY CHARGER

Substation, Oil & Gas
Defense, Industrial

FC, FCBC combinations

Thyristor based

Micro-controller based operation

~AC/DC—
POWER SOLUTIONS

CE UL

sales1@technovisionenergy.com
www.TechnoVisionEnergy.com
+91 93701 32710

Features

- Micro-controller based operation
- FC, FCBC combinations
- Redundancy options
- Advanced Protections
- Thyristor based
- VRLA, Tubular, NiCd, $LiFePO_4$, LTO
- Automatic change over from float to boost mode, boost to float mode.
- Equipped with visual indicators
- Design life > 15 years
- RS-485 interface

Advantages

- Reliability and redundancy
- Enhanced battery life
- Very low maintenance
- Long life

Applications

Substation

Defence

Industry

Oil and Gas

Mining

Power

Railways

Chemical

Fertilizer

Food Processing

Protections

DC Over Voltage

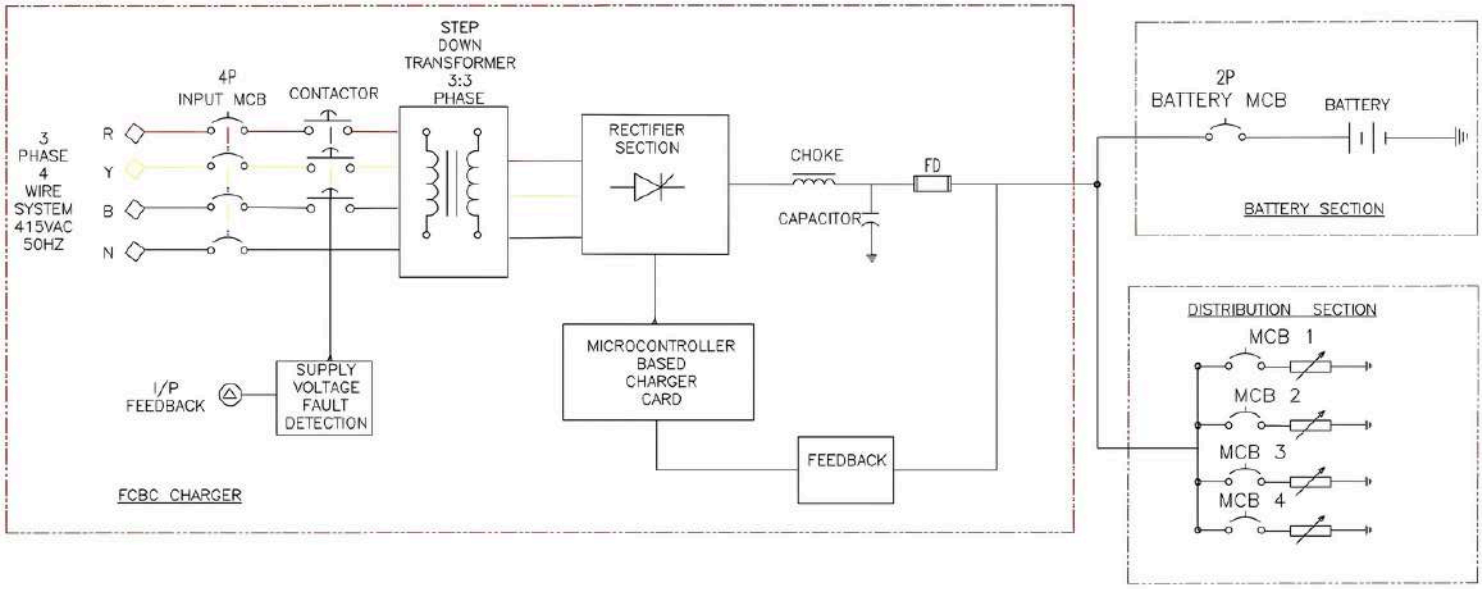
DC Over Load

DC Under Voltage

Introduction

TechnoVision's Float-Cum-Boost Charger (FCBC) is engineered for demanding industrial needs, combining float and boost modes for efficient battery management. It charges various batteries, especially lead-acid types, with optimal voltage and current. Boost mode delivers fast charging battery, while float mode maintains a trickle charge, enhancing battery life. The FCBC automatically switches modes based on battery demand, ensuring readiness and longevity for critical systems.

Working Principle



The battery charger circuit operates on the AC phase control principle using an SCR (Silicon Controlled Rectifier), a three-terminal device (Anode, Cathode, Gate). The SCR conducts when the gate current reaches a specified level, allowing control of the conduction point and output voltage. A potentiometer adjusts the voltage, and a shunt resistor monitors load current. If the current exceeds the limit, the output voltage reduces to protect the system. A bleeder resistor maintains SCR latching at no load, while a filter circuit minimizes ripple in the output.

Battery Charger

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- Input Voltage : 3Ø 415VAC ± 10%
- Output Voltage : As required
- Communication RS-485
- Input Frequency : 50 Hz
- Output Current : 50A - 2000A
- For dry locations only
- DC Over Voltage
- DC Over Load
- DC Under Voltage

Product Description :

"This high-performance battery charger is designed to efficiently charge a wide range of battery types. It features multiple safety mechanisms, including over-voltage, overload, and under-voltage protection. The charger provides precise voltage and current control, ensuring optimal battery health and performance. Its compact design makes it ideal for industrial applications. Rugged design makes it function in extreme conditions for mission critical applications."

General Specifications

Parameters	Ratings
Battery Charger Rating	From 100 W to 160 kW
Battery Charger Technology	ARM Cortex microcontroller (72 MHz) based Thyristor rectifier
Rectifier Specification	3 Phase Six Pulse full wave - controlled Bridge Circuit full wave rectifier
Charging Technology	CC/CV, Float-Boost Charger

Electrical Specifications

Parameters	Ratings
Input AC Voltage	Three Phase 415VAC ± 10%, 15%, 20%
Input Frequency Range	50 Hz ± 5%
Input Harmonics Filter	Low Pass C- Type
Output Voltage (Rated)	From 6 V, 12V, 24V, 48V, 110V, 220V to 360 VDC
Float Charge Voltage	2.25V/Cell Settable as per requirement.
Boost Charge Voltage	2.35V/Cell Settable as per requirement.
Output Charge Voltage Range	From 12 VDC to 220 VDC
Battery Charger Total Current Capacity	Upto 1000 A
Battery Charging Current	Boost Mode: 5A -800A Float Mode: 0-5A
Load Current	Upto 800A
Current Limit	103% of Battery Charging Current in Boost Mode
Current Regulation	± 2%
Output Ripple	⩽ 2% of RMS voltage at Resistive Load
Output Efficiency	85-90% At Maximum Output Power & Nominal AC voltage
Dynamic Response Time & Voltage Variation	<50msec, <+/-5% (for 10% – 100%, 100% – 10% step load change)
Insulation Class	Class F, Class H
Battery Chemistry	VRLA, VRLA Tubular, NiCd, Li-ion, $LiFePO_4$, LTO

Protections

Parameters	Specifications
Control Protection	DC Undervoltage, DC Overvoltage, DC Overload, Battery charging Overcurrent
Physical Protection	Input circuit breaker, Charger output fuse + Circuit breaker, Charger current limit, Load current limit

Environmental Specifications

Parameters	Ratings
Acoustic Noise Level from 1 m distance	⩽ 65 dB
Operating Temperature	-5 TO 50°C
Storage Temperature	-10 TO 60°C
Relative Humidity	Up to 95 % (Non-Condensing)
Altitude	< 3000 meter above sea level

Physical Specifications

Parameters	Ratings
Material of construction	Metal Sheet / CS, SS As per requirement
Thickness	Standard 1.6, 2mm can be customized
Enclosure Protection Grade	IP 20 - IP 42 As per requirement
Cooling	Forced Cooling
Colour	(Optional 7 Tank process) RAL 7032, 7035 120µm. Colour and Thickness are customizable.
Cable Entry	From Top or Bottom (Please Specify before Order)
Panel Access	Front & Back
Terminal Arrangement	ON front Side
DC DB	Inside the battery charger assembly if required.

Control and Monitoring Interface

Parameters	Ratings
Communication	RS-485
Current measurement	Digital (Hall effect Sensor, Individual for Battery Charging Current & Load Current) ±1A Accuracy
Alarms (Through Indication LED)	Charger Fail, DC High, Under/Over Voltage Trip
Metering	AC Input Voltage and Current, Charger Voltage, Charger Current, Load Voltage, Load Current
Magnetics	Isolation Transformer at Input DC Choke

Battery Charging Characteristics

Charging Phases: The Float Cum Boost charger operates in 2 phases:

1) Boost Mode (Constant Current): Supplies constant current until the battery reaches a set voltage.

2) Float Mode (Constant Voltage): Maintains a safe voltage level to prevent overcharging.

- The battery charges at 2.4 volts/cell in boost mode with a current of around 15% of battery Ah.
- Once charged in boost mode , it automatically switches to float mode at 2.25 volts/cell with a current of 1 - 5 amps.

Core Purpose

Protect Mission Critical Equipments Backed by Technology and Trust

Core Values

Responsive to Change

Growth through
- Merit and Hard Work
- Solution Oriented Approach

Human and Machine Safety

Customer Centricity

~AC/DC~
POWER SOLUTIONS

TechnoVision®
PRODUCTIVE SOLUTIONS

SINCE 2001
60,000+ Installations

OUR PRODUCTS

AC Solutions

- Industrial Inverters
- Static Voltage Stabilizers
- AVR 100 KVA to 2000 KVA
- Industrial UPS - 1KVA to 500KVA
- Isolation Transformer - 1KVA to 2000KVA
- Static Frequency Converter - 1KVA to 500KVA
- Servo Controlled Voltage Stabilizers - 1KVA to 300KVA

DC Solutions

- Battery Chargers – SCR /IGBT technology (10A to 1000A)
- Battery Chargers – SMPS technology (10 A to 500A)
- DC rails
- DC-DC converters
- Battery jump starters
- Solar Charge Controllers
- Lithium battery based Solutions

CONTACTS

www.TechnoVisionEnergy.com

93701 32709, 93701 32710, 93701 32711, 75070 53131

sales@technovisionenergy.com