

# HITACHI

Inspire the Next

## Battery Charger - DC UPS System

Range: Up to 1200 AMP



Stallion  
Battery Charger



Exceptional safeguard against Power Disruption

## About Battery Charger / DC UPS

The Stallion series of advanced battery chargers deploy Thyristor based technology and Digital Signal Processing Control (DSP) to achieve the desired DC output. Power required is adjusted by using phase control technology actuated by the DSP based control card. The DSP based control system enables user-friendly setting via the keypad on the front of the panel.

Stallion series battery chargers are designed for compatibility with all types of batteries-like-VRLA, NiCd, Plante, Lead acid tubular, Gel etc.

Hitachi Hi-Rel has supplied DC UPS /FC & FCBC charger for Power plant, process plant, hydro carbon industry and offshore projects and drivers other segments and applications.

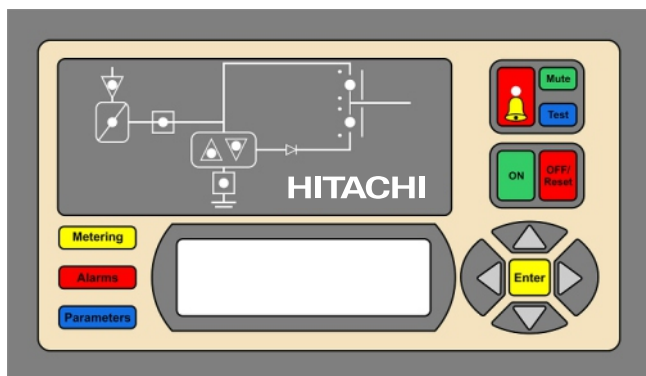
## Design Philosophy

Proven Thyristor phase angle DC voltage control. It consists of transformer, semiconductor bridge rectifier, filters & load cut-off circuit.

The AC mains voltage is transformed to a suitable level and fed to the rectifier bridge which rectifies the AC input and feeds controlled DC output to the battery and load, through filter circuit.

Digital Signal Processor (DSP) based control for voltage and current.

## Human Interface Module



### AC to DC conversion :

The AC to DC Conversion element of the system is typically configured from Thyristor or switch mode technology depending on the performance and size constraints.

The range of Thyristor based systems are highly rugged industrial systems, suitable for the most demanding of environmental and operating conditions. The Thyristorised range of single phase and three phase input charger products capable of operating on 24 V to 240 V DC nominal voltage with output current up to 1200 AMP.

## Salient Features

- DSP based Digital control
- LCD Display + Keypad interface
- Comprehensive LED mimic
- Single or Parallel Redundant battery charger
- Auto temperature compensated battery charging
- Three mode of battery charging :
  - Auto float/ boost
  - Manual float / boost
  - Timer based boost
- Independent battery & load current limit
- Wide range of battery charger in standard and customized State of the art design and high quality standards ensure absolute reliability of the equipment
- Battery charger finds usage in mission critical applications like, process control, power station, switchgear protection, telecommunication etc.
- User friendly components layout for easy operation and maintenance date – time stamp event recording - last 999 events logged in non – volatile memory
- Battery charger is suitable with variety of battery types like, SMF, VRLA, Tubular, Plante, NiCad & Li-ion batteries
- Inbuilt Modbus, RS 232, RS 485 communication/ Facility.
- Conformal Coating on PCB's make the Charger ultra rugged and failure - free due to gaseous, corrosive, dusty environment.
- Monolithic SCR Based design achieves much higher Reliability and Uptime Availability than modular SMPS - MOSFET based design.
- True Three Phase design ensures precisely balanced loading of Utility by Charger all time.
- Isolation Transformer right at the Input of the Rectifier ensures Galvanic Isolation of complete Rectifier Charger System

## Technical Specifications

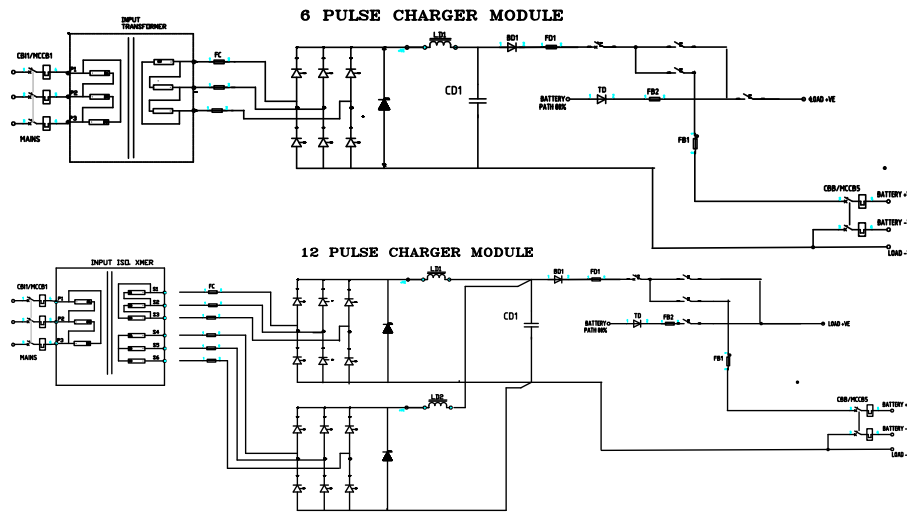
Charger Type	Stallion Battery Charger
Applicable Standard	IEC 60146
Charger Characteristics	Constant voltage / constant current with current limit
Control Technology	DSP based digital control, 6-Pulse charger
Input Voltage	415VAC, +10%, -15% Three phase (optional : Single phase input)*
Input Frequency	50 Hz $\pm$ 6%
Output Voltage	24VDC, 48VDC, 110VDC, 120VDC, 220VDC, 240VDC, 360VDC
Output Current	Up to 1200AMP
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
Meters	Reverse polarity protection
	DC ground fault protection
	(on LCD) Input voltmeter
	Input current meter
	Input frequency meter
	Output voltmeter
Indication	Battery charging / discharging current meter
	Load current
	Input ON
	Charger ON
	Battery charging
	Battery discharging
Alarms	Battery breaker ON
	Mains low
	Mains high
	Charger Fail
	DC Low
	DC High
Operating Ambient Temperature	DC earth fault
	Battery on float mode
	Battery on boost mode
	Charger over temperature
	0 to 50°C
	1000 Meter from MSL
Altitude	Non-corrosive, Dust free, Freely ventilated
Atmosphere	55 dBA to 70 dBA (depending on system rating & configuration)
Audible Noise @ 1 Meter From Panel Front	IP-41 (IP-42**)
Enclosure Protection	Natural air cooling or forced air cooling
Type Of Cooling	RAL-7032, Epoxy powder coated (standard)
Paint Shade	Other shades on request
Dimensions	On request

\*Available up to 8kW output. | \*\* Optional.

## Options

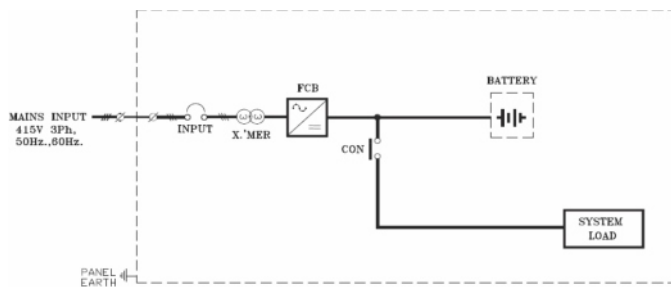
- 12-Pulse Battery Charger
- Different Input Voltages
- Frequency : 60Hz
- RS-485, MODBUS, SNMP
- Paint shade : Other shades on request
- Redundant Cooling Fans
- DC Distribution Board
- Voltage Drop Diode

## Single Line Diagram of Battery Charger



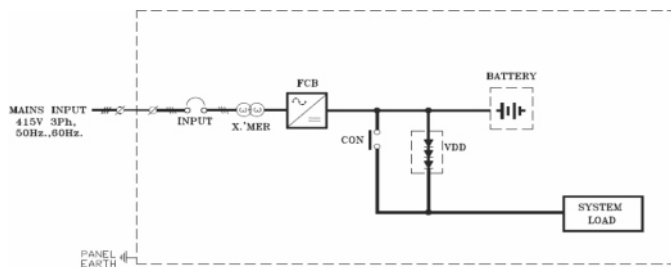
## Mode of Operation

### Battery Charger-Single Load-Single Battery



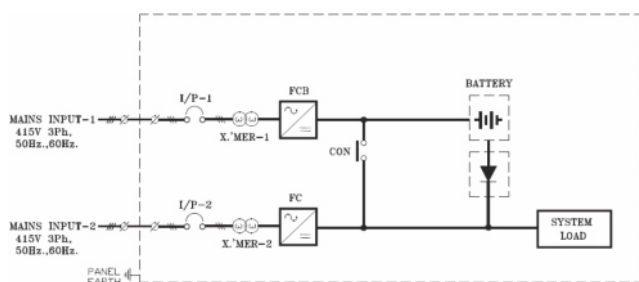
INPUT	FCB	CON	BATT.	LOAD
ON	FLOAT	CLOSE	FLOAT	FLOAT
ON	BOOST	CLOSE	BOOST	BOOST
OFF	OFF	CLOSE	DISCH	BATT.

### Battery Charger with Diode Dropper-Single Load-Single Battery



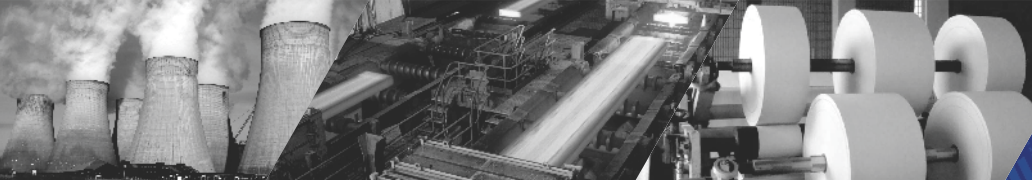
INPUT	FCB	CON	BATT.	LOAD	VDD
ON	FLOAT	CLOSE	FLOAT	FLOAT	BYPASS
ON	BOOST	OPEN	BOOST	BOOST-VDD	IN CIRCUIT
OFF	OFF	CLOSE	DISCH	BATT.	BYPASS

### Float and Float Cum Boost Charger-Single Load-Single Battery

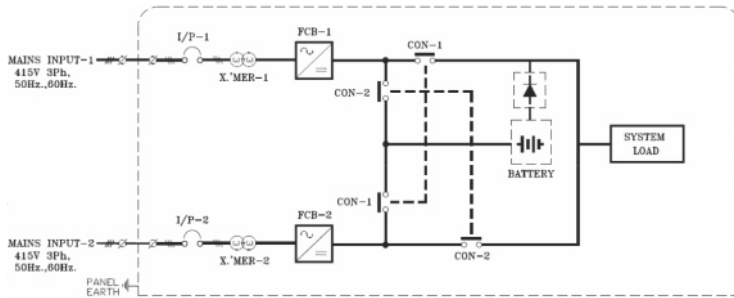


INPUT-1	INPUT-2	FC	FCB	CON	BATT.	LOAD
ON	ON	FLOAT	FLOAT	CLOSE	FLOAT	FC/FCB
ON	ON	FLOAT	BOOST	OPEN	BOOST	FC
ON	OFF	OFF	FLOAT#	CLOSE	FLOAT	FCB
OFF	ON	FLOAT	OFF	CLOSE	FLOAT	FC
OFF	OFF	OFF	OFF	CLOSE	DISCH	BATT.

# BOOST OPERATION NOT ALLOWED



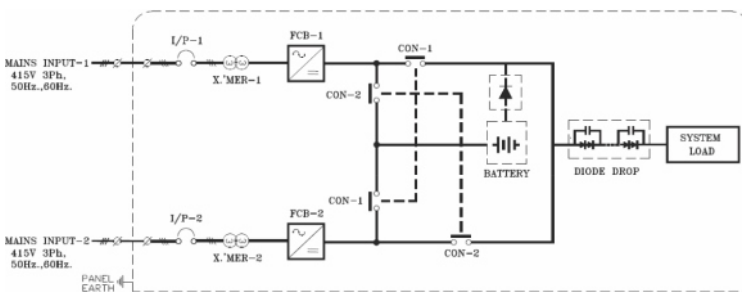
### Redundant Float Cum Boost Charger-Single Load-Single Battery



INPUT-1	INPUT-2	FCB-1	FCB-2	CON-1	CON-2	BATT.	LOAD
ON	ON	FLOAT	FLOAT	CLOSE	CLOSE	FLOAT	FCB-1/2
ON	ON	FLOAT#	BOOST	CLOSE	OPEN	BOOST	FCB-1
ON	ON	BOOST	FLOAT#	OPEN	CLOSE	BOOST	FCB-2
OFF	ON	OFF	FLOAT#	CLOSE	CLOSE	FLOAT	FCB-2
ON	OFF	FLOAT#	OFF	CLOSE	CLOSE	FLOAT	FCB-1
OFF	OFF	OFF	OFF	CLOSE	CLOSE	DISCH	BATT.

# BOOST OPERATION NOT ALLOWED

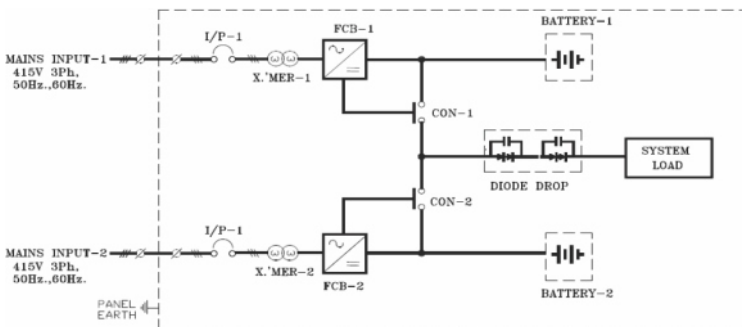
### Redundant Float Cum Boost Charger with Diode Dropper-Single Load-Single Battery



INPUT-1	INPUT-2	FCB-1	FCB-2	CON-1	CON-2	BATT.	LOAD
ON	ON	FLOAT	FLOAT	CLOSE	CLOSE	FLOAT	FCB-1/2
ON	ON	FLOAT#	BOOST	CLOSE	OPEN	BOOST	FCB-1
ON	ON	BOOST	FLOAT#	OPEN	CLOSE	BOOST	FCB-2
OFF	ON	OFF	FLOAT#	CLOSE	CLOSE	FLOAT	FCB-2
ON	OFF	FLOAT#	OFF	CLOSE	CLOSE	FLOAT	FCB-1
OFF	OFF	OFF	OFF	CLOSE	CLOSE	DISCH	BATT.

# BOOST OPERATION NOT ALLOWED

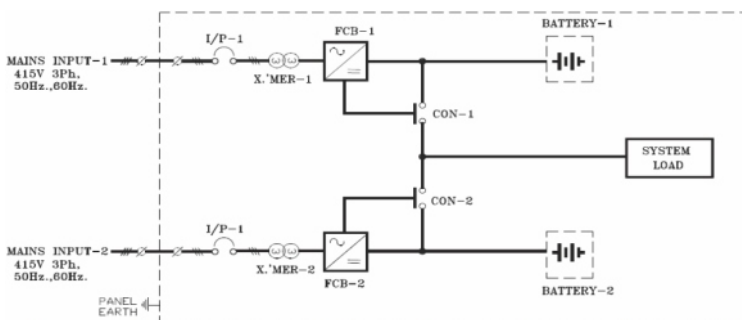
### Redundant Float Cum Boost Charger with Diode Dropper-Single Load-Dual. Battery Bank



INPUT-1	INPUT-2	FCB-1	FCB-2	CON-1	CON-2	BATT.-1	BATT.-2	LOAD
ON	ON	FLOAT	FLOAT	CLOSE	CLOSE	FLOAT	FLOAT	FCB-1/FCB-2
ON	ON	FLOAT	BOOST	CLOSE	OPEN	FLOAT	BOOST	FCB-1
ON	ON	BOOST	FLOAT#	OPEN	CLOSE	BOOST	FLOAT	FCB-2
OFF	ON	OFF	FLOAT#	CLOSE	CLOSE	FLOAT	FLOAT	FCB-2
ON	OFF	FLOAT	OFF	CLOSE	CLOSE	FLOAT	DISCH	FCB-1
OFF	OFF	OFF	OFF	CLOSE	CLOSE	DISCH	DISCH	BATT.-1/2

# BOOST OPERATION NOT ALLOWED

### Redundant Float Cum Boost Charger-Single Load-Dual. Battery Bank



INPUT-1	INPUT-2	FCB-1	FCB-2	CON-1	CON-2	BATT.-1	BATT.-2	LOAD
ON	ON	FLOAT	FLOAT	CLOSE	CLOSE	FLOAT	FLOAT	FCB-1/FCB-2
ON	ON	FLOAT	BOOST	CLOSE	OPEN	FLOAT	BOOST	FCB-1
ON	ON	BOOST	FLOAT#	OPEN	CLOSE	BOOST	FLOAT	FCB-2
OFF	ON	OFF	FLOAT#	CLOSE	CLOSE	FLOAT	FLOAT	FCB-2
ON	OFF	FLOAT	OFF	CLOSE	CLOSE	FLOAT	DISCH	FCB-1
OFF	OFF	OFF	OFF	CLOSE	CLOSE	DISCH	DISCH	BATT.-1/2

# BOOST OPERATION NOT ALLOWED

## Communication Feature

- 2 lines with 16 characters (standard version for English characters) and 12 keys (the function is described for each operating mode) using LCD.
- MCR is a DC UPS Monitoring Software which supports the multiple DC UPS connected in the RS-485 network to the local computer system.
- MCR will automatically search & Monitor the DC UPS devices connected in the network.
- MCR can provide the overview details of all the DC UPS connected in network with the same window provides all information at glance.
- MCR can provide detailed view about all information of the DC UPS such as main's Input, Output, Inverter, Load, Battery data. The information is shown in the same window.
- The functionality of collecting all the information about Alarms occurs in DC UPS and alerting by giving Alarm when it comes. These alarms come with instant information like their date, time and other properties too.
- With the functionality of data logging (DC UPS metering parameter) MCR provides last 30 days data of each DC UPS.

## Event Log

Sr. No.	Date	Time	Event Name
1	12/11/2008	13:16:43	MANUAL BOOST
2	12/11/2008	13:16:00	BATT DISCHARGE*
3	12/11/2008	13:14:36	LOW BATT*
4	12/11/2008	13:13:58	LOW BATT TRIP*
5	12/11/2008	13:13:12	MAINS FREQ O TOL*
6	12/11/2008	13:12:11	I/P PHASE OUT*
7	12/11/2008	13:07:43	MAINS LOW*
8	12/11/2008	13:06:56	MAINS FAIL*
9	12/11/2008	13:05:11	LOW BATT TRIP
10	12/11/2008	13:03:13	LOW BATT
11	12/11/2008	13:02:25	BATT DISCHARGE
12	12/11/2008	13:02:11	CHG OFF
13	12/11/2008	12:13:49	MAINS FAIL
14	12/11/2008	12:13:33	MAINS FREQ O TOL
15	12/11/2008	12:13:21	I/P PHASE OUT
16	12/11/2008	12:12:50	MAINS LOW

## Metering Display Information

### Main's Input

	Voltage	Current	Frequency
R-Y Phase	385 Volt	40 AMP	49.85 Hz
Y-B Phase	385 Volt	40 AMP	49.85 Hz
B-R Phase	385 Volt	40 AMP	49.85 Hz

### Output

DC	Current
220 Volt	1000 AMP

### Battery

Current	Status	Mode
0.2 AMP	Charging	Float

### Load

In AMP	Load(%)
10 AMP	10%

## Applications

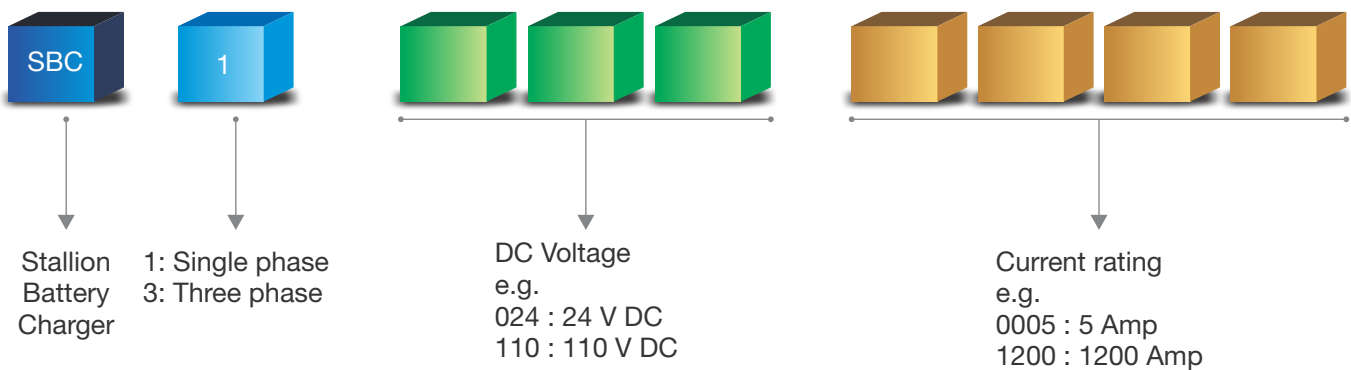
- Telecommunication Systems.
- Power Plant (Generation, Transmission, Distribution).
- Manufacturing Industries.
- Railways.
- Critical DC Requirements.
- Oil & Gas Industries.
- Fertilizer and Petrochemical Industries.

## Battery Charger Rating

Current (Amp)	24 V	48 V	110 V	220 V	360 V
40	SBC10240040	SBC30480040	SBC31100040	SBC32200040	-
50	SBC10240050	SBC30480050	SBC31100050	SBC32200050	-
60	SBC30240060	SBC30480060	SBC31100060	SBC32200060	-
70	SBC30240070	SBC30480070	SBC31100070	SBC32200070	-
80	SBC30240080	SBC30480080	SBC31100080	SBC32200080	-
90	SBC30240090	SBC30480090	SBC31100090	SBC32200090	-
100	SBC30240100	SBC30480100	SBC31100100	SBC32200100	-
150	SBC30240150	SBC30480150	SBC31100150	SBC32200150	-
200	SBC30240200	SBC30480200	SBC31100200	SBC32200200	-
250	SBC30240250	SBC30480250	SBC31100250	SBC32200250	-
300	SBC30240300	SBC30480300	SBC31100300	SBC32200300	-
350	SBC30240350	SBC30480350	SBC31100350	SBC32200350	-
400	SBC30240400	SBC30480400	SBC31100400	SBC32200400	-
450	SBC30240450	SBC30480450	SBC31100450	SBC32200450	-
500	SBC30240500	SBC30480500	SBC31100500	SBC32200500	-
550	SBC30240550	SBC30480550	SBC31100550	-	-
600	SBC30240600	SBC30480600	SBC31100600	-	-
650	SBC30240650	SBC30480650	SBC31100650	-	-
700	SBC30240700	SBC30480700	SBC31100700	-	-
800	SBC30240800	SBC30480800	SBC31100800	-	-
1000	SBC30241000	-	-	-	-
1200	SBC30241200	-	-	-	-

STALLION BATTERY CHARGER(SBC) - PHASE - VOLTAGE - CURRENT

## Selection Chart



## About Hitachi Hi-Rel Power Electronics

Founded & established in 1983 as Hi-Rel Electronics Pvt. Ltd., which later on in year 2015 had become the 100% subsidiary company of Hitachi, Japan which is one of the Global fortune 500 companies with a new name as Hitachi Hi-Rel Power Electronics Private Limited, which is being recognized as one of the pioneers in power electronics domain. Hitachi Hi-Rel, today, is a leading manufacturer of Industrial UPS, IT & Infra UPS, Medium & Low Voltage Variable Frequency Drives, Grid Tied Solar Inverters, Air Compressors and Railway Inverters.

Hitachi Hi-Rel has state-of-the art manufacturing facility at Sanand near Ahmedabad in Gujarat-India. Hitachi Hi-Rel is helping a wide array of industries and organizations to meet the mission critical demands through technologically superior, low polluting and innovative products Solutions and continue to offer world class power electronics products, value added services & customized solutions.

With a vision of “To be recognized as the most trusted Power Electronics Company by supplying superior products and services”, Hitachi Hi-Rel has garnered a significant level of trust in Indian power electronics market segment wherein it serves the entire gamut of Industries, particularly in mission critical applications for Refineries, Petro-Chemicals, Power Generation, Steel & Metals, and Process Industries as well as Critical Data Processing Applications. Besides offering greater energy efficiency & lower carbon footprint, each of the company product streams bears the hallmark of excellence with company accreditations. Hitachi Hi-Rel is an ISO 9001:2015, ISO 14001:2015 & ISO 45001:2008 certified company having export house status. Hitachi Hi-Rel sales network & service infrastructure expands out to the world & with this network, we have made strong inroad in Global markets like South East Asia, Middle East, Africa and Brazil. Also, with a presence of strategically located skilled service engineers in India helps us to score high in terms of customer expectations on service deliverables & uptime of the product.

Hitachi Hi-Rel's UPS and power conditioning back-up systems, the flagship product, works as an exceptional safeguard against power disruption and reflects the industry's ultimate in advanced technology with proven track record in mission critical applications. Its variable frequency drives represent the most energy efficient means of process control and reflect the best in

process control. Hitachi Hi-Rel's Grid Tied Solar Inverters are based on the contemporary technology of Hitachi Ltd, Japan. Currently Hitachi branded Solar Inverters are generating more than 5.5 GW renewable power in Global Solar Domain as well as more than 3 GW+ renewable power in Indian Solar Domain.

Sprawling across an area of 26,000 sq. meter and modelled on Hitachi's Omika Works in Japan, Hitachi Hi-Rel's Sanand manufacturing works is the world class and one of the most modern power electronics manufacturing facility in India. All aspects of manufacturing, testing and quality assurance are supported by highly experienced Japanese Expats stationed at the facility. Sanand Works employs Hitachi Omika Works (Japan) based software tools for engineering and manufacturing and has one of the most advanced product testing facilities in the country. Innovation through research & development has been rooted in its DNA. Hitachi Hi-Rel also has an additional facility at Gandhinagar near Ahmedabad in Gujarat which is sprawled across an area of 5,000 sq. meter. Its new products are developed by the R&D team which are on par with global standards. Along with indigenisation of products from Hitachi, original design of UPS and railway products are done regularly by the in-house R&D team.

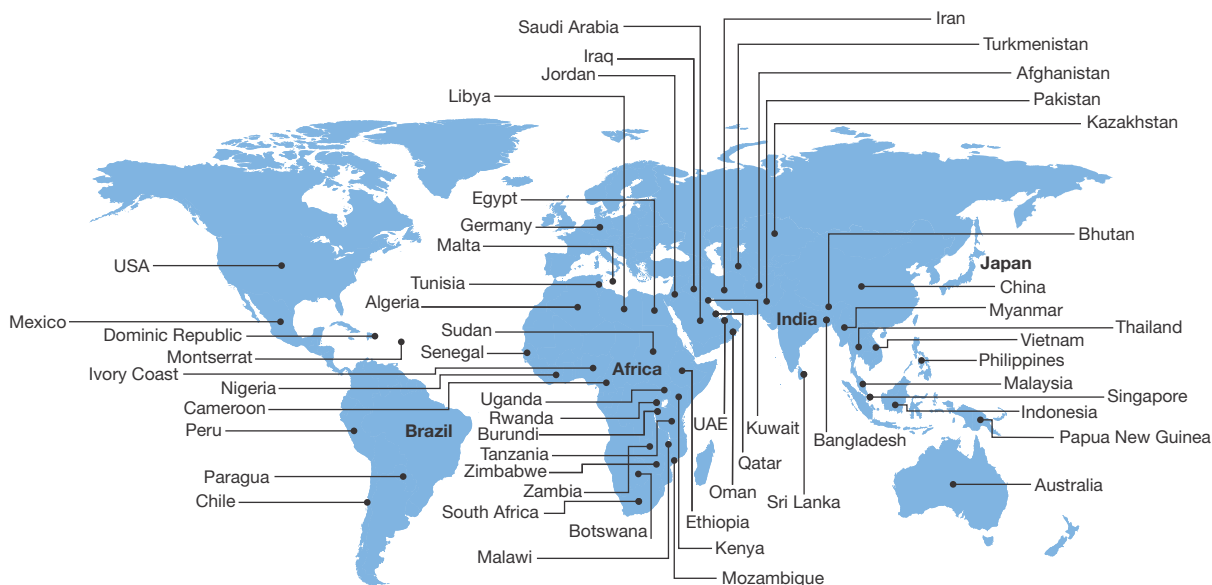
With expertise, experience and an efficient product line, Hitachi Hi-Rel will always try to be your power electronics partner. When you choose to do business with Hitachi Hi-Rel, you are partnering with a company who cares.







## Worldwide Presence



## Pan India Presence



## Contact us

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