

i4 Series UPS System

Single Phase Industrial UPS System

Range: 5 to 250 kVA



HITACHI

About i4 Series Single Phase Industrial UPS System

Hitachi Hi-Rel Power Electronics Private Limited is a recognized name for high quality, proven technology and custom engineered Back-up and Power Conditioning solutions for critical applications across all segments of the industry. Being the first UPS manufacturer in the country to receive ISO : 9001 certification in 1987, Hitachi Industrial UPS systems are also IEC 62040-3 approved.

i4 series UPS systems are specifically designed to provide secure power to mission critical loads in Refineries, Petrochemicals, Power Generation, Pipeline, Steel and Process Industries as well as for critical data processing applications.

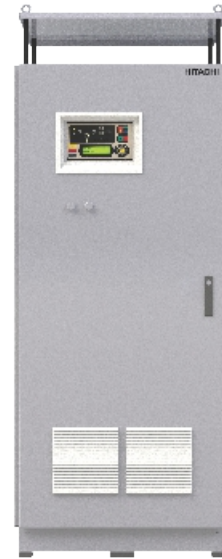
This Hitachi UPS system is true online industrial grade UPS for critical load. Use of DSP and latest technology offers maximum reliability and flexibility at the lowest operating cost. It is available in rating from 5 kVA to 250 kVA and is custom built to your exact specifications.

Highlights

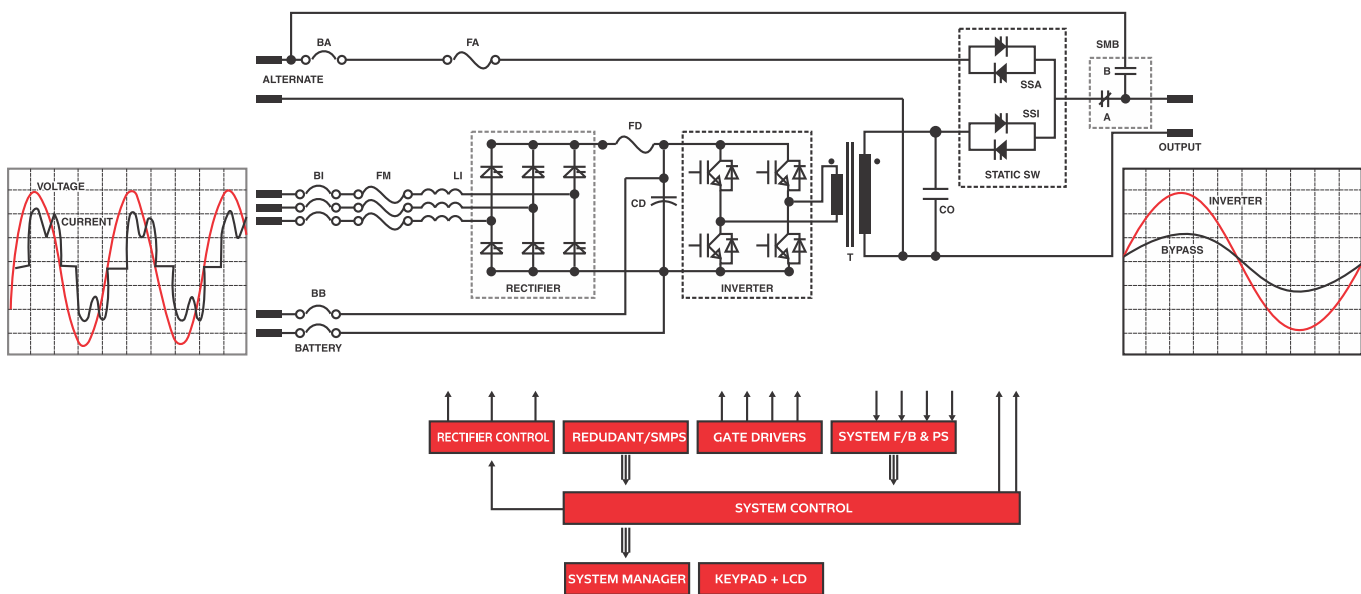
- Higher grade enclosure protection
- High frequency PWM based inverter
- Multiple rectifier options with controlled bridge configuration
- G3 conformal coating
- Full digital signal processing using the latest DSP technology
- User friendly HMI / display for monitor & control parameters
- Wide range of connectivity
- Full wave, full controlled SCR rectifier without any DC-DC converter.

Key Features

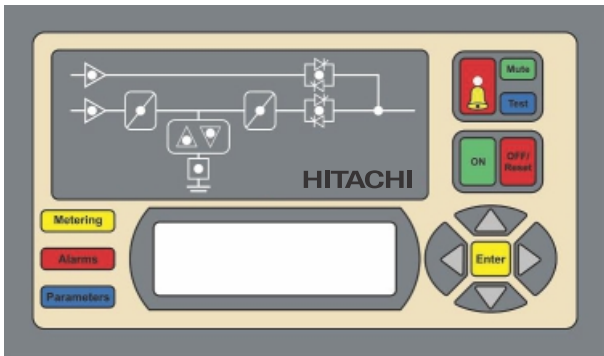
- Input reactors to minimize AC mains notching
- Automatic battery charging float / boost mode selection with current limit
- High efficiency : IGBT based inverter
- Specially designed output transformer for PWM operation
- Sinusoidal – PWM operation with direct AC feedback – handle nonlinear loads upto crest factor 3:1 with <5% THD
- High branch fast-acting fuse clearing capacity (upto 30% rated fuse)
- DSP based control redundant control power supplies
- Programmable static switch with upto $\pm 6\%$ synchronization window
- Comprehensive LED mimic and LCD + keypad enabled
 - Date – Time stamped event recording – last 999 events logged in non volatile memory
 - Programming & monitoring of various system parameters
- RS485 interface and programmable potential free contacts
- 50°C ambient in IP 41 / IP 42 enclosure
- Front access oriented layout
- PC based monitoring, control & reporting unit (Optional)
 - Monitors the system performance with automatic generation of daily weekly reports with fault and alarm log details.
 - Higher level connectivity with DCS/PLC through RTU for modbus TCP/IP.
 - Monitoring on LAN through SNMP
 - Intelligent Battery Monitoring System (BMS).
- A large array of options available including 12 pulse charger, parallel or hot standby redundancy, redundant cooling fans and more...



Block Diagram



LCD Display



METERS-DIGITAL-LCD DISPLAY	
VOLTAGE & CURRENT METERS	Mains
	Alternate
	Battery
	Inverter Load
FREQUENCY METERS	Alternate Inverter
TRIPS-TEXT READOUT-LCD DISPLAY	
End of Battery Discharge	
IGBT Fault	
Overload (Inverse Time)	
Over Temperature	
Communication Fail	

ALARMS-TEXT READOUT-LCD DISPLAY	
INPUT	Under Voltage Over Voltage
DC	Over Voltage
BATTERY	Discharging Under Voltage
INVERTER	Under Voltage Over Voltage Over Load Disconnected
ALTERNATE	Under Voltage Over Voltage Frequency out of Limit
STATIC SWITCH	Transfer to Alternate

Note: All Alarms and trips initiate an audible warning

Technical Specifications

MAINS INPUT	
Voltage	415 V +10% - 15% 3Ph 3W
Frequency	50 Hz ±10%
DC BUS	
DC Voltage Range	305V to 482V
Maximum DC Bus Ripple (without battery)	2% RMS
Max DC Bus Ripple (with battery)	1% RMS
OUTPUT	
Nominal AC Voltage	110/115/120/220/230/240 V
Load Power Factor - Rated	0.8
Load Power Factor - Range	0.6 to Unity
Voltage Regulation	
Steady State	±1%
100% Step Load	±5% Typical
Recovery Time to 98%	< 20 ms
Over Load	
110%	3600 Seconds
125%	600 Seconds
150%	60 Seconds
Branch Fuse Clearing Ability	30% of UPS rated current (fast acting semiconductor protection fuse)10% of UPS rated current (slow acting fuse)
Frequency	50 Hz
Bypass Synchronization Window	±1% to 6% (field programmable)
Internal Oscillator	±0.1%
Slew Rate	1 Hz/Sec
Total Harmonic Distortion	
Linear Load	<2.5%
Nonlinear Load (CF 3:1)	<5%
OPERATING CONDITIONS	
Ambient Temperature	50°C
Altitude	1000 Meter from MSL
Humidity	95% Non condensing
Atmosphere	Non Corrosive, Dust Free, Freely Ventilated
Audible Noise @ 1metre from Panel Front	60 dBA to 75 dBA (depending on system rating and configuration)
ENCLOSURES	
Construction	CRCA Steel Sheet
Protection Class	IP41 / IP42
Finish (Powder Coated)	RAL 7032 (other colours optional)
Ventilation	Forced air (internal fans)
Cable Entry	Bottom (top optional)

Note: Overall audible noise, heat generation etc. depend upon the system configuration and options required.

Dimensions

Rating (kVA)	Height (mm)	Width (mm)	Depth (mm)	Weight (Kg)
10	1400+100	660	660	300
20	1400+100	660	660	300
25	1800+100	660	660	350
30	1800+100	800	800	500
40	1700+100	1000	800	700
50	1700+100	1000	900	850
60	1700+100	1000+1000	900	950
75	1700+100	1000+1000	900	1150
100	2100+100	1200+1200	1000	1550
120	2100+100	1200+1200	1000	1650
130	2100+100	1200+1200	1000	1650
150	2100+100	1200+1200	1000	2000
180	2100+100	1200+1400	1000	2500
200	2100+100	1200+1400	1000	2500
225	2100+100	1200+1400	1000	2750
250	Dimensions on request			

Note:

Height of canopy and top fan box not included in the height dimension indicated above.

Dimensions & weights indicated are approximate.

Dimensions and weights are subject to change based on configurations and options selected.

Dimensions for 10 kVA to 50 kVA UPS systems are without I/P x'mer.

Optional Features

- Input isolation transformer
- Input harmonics filters
- Fan redundancy
- AC distribution panels
- PC based monitoring & recoding unit
- 60Hz product option
- Monitoring on LAN through SNMP
- Battery management system
- Remote annunciator
- Automatic server shutdown kit
- DCS connectivity through MODBUS / PROFIBUS protocol
- 110 VDC* / 220 VDC** / 360 VDC bus voltage
- Front accessible design
- Bypass line equipment isolation
Transformer / SCVS / SSVS / CVCF
- Temperature compensated battery charging.

* Up to 10 kVA & ** Up to 100 kVA



System Control Board of an i4 Series UPS -
The DSP based digital control advantage!

Serving Entire Gamut of Industries

Hitachi Hi-Rel has rich experience in supplying power electronics products for mission critical applications in various industries for critical data processing applications as well as back-up technology for demanding applications.



Power Generation &
Utility Industries



Petrochemicals & Refineries



Oil & Gas Production



Steel & Metal Industries



Cement Industry



Pulp & Paper Industry



Coal & Mining Industries



Chemical Industry



Fertilizer Industry



Pharmaceutical



Textile



Plastic

Customer Support

“Have peace of mind with flexible and nimble footed, 24 X 7 service”

Our Service program includes:

On Site Installation supervision and commissioning

- Provides Comprehensive check at user site to ensure trouble free installation of product
- Our technical experts give recommendations to the site engineer or electrical contractor and supervise the UPS installation before load power-up
- Offers commissioning services along with site acceptance test report



Training

- On Site Training for safe & efficient operation of equipment
- Training at Factory (Optional)
 - **Course-1** : Operation, system principle, hands on training, predictive and preventive maintenance 3 days training
 - **Course-2** : Predictive and preventive Maintenance, Hardware, Settings, UPS System panel & restoration services – 5 days training



Preventive Maintenance Services (AMC, CMAC & Extended warranty)

- Ensures safe and reliable operation
- Contracts includes cleaning, measurements of various parameters, calibrations, functional tests, event log and parameter validation, hardware and software upgrades supported by Field Service Report.
- Maintenance Plan is one of the most cost-effective actions that can preserve initial investment and ensures business continuity.
- Ensure optimal performance and to protect critical application from potential downtime.



Break Down Maintenance & EMERGENCY CALL

- In the event of an emergency call, our service expert, located as close to your site as possible, guarantees a quick intervention time with the help of 24x7-365 days.
- With the help of powerful diagnostics software, quick troubleshooting is possible by a service expert, which guarantees a short MTTR (Mean Time to Repair).
- Corrective actions are performed (Part replacement, adjustments and upgrades of software's etc.)
- Helpline Number for Service Support - (080) 6112 0800



*Service program is separate from equipment supply and subject to applicable terms and conditions.



The Sanand Manufacturing Works

State-of-the-Art Power Electronics Products Manufacturing Facility

About Hitachi Hi-Rel Power Electronics

High-Precision Manufacturing

Hitachi Hi-Rel Power Electronics (HHPE) stands as an essence of reliability and innovation within the power electronics domain, delivering comprehensive solutions for the most critical infrastructure and diverse industries. Established in 1983 as Hi-Rel Electronics Pvt. Ltd., our journey evolved significantly in 2015 when we became a 100% subsidiary of Hitachi, Japan, a Global Fortune 500 company. Today, Hitachi Hi-Rel empowers a diverse range of industries and organizations worldwide, enabling them to meet mission-critical applications demands through technologically superior, environmentally conscious and innovative power electronics products and solutions.

We are a pioneer with over four decades of unparalleled experience in power electronics and our vision, "To be recognized as the most trusted Power Electronics Company by supplying superior products and services," guides our operations. This vision has cultivated a significant level of trust within the Indian power electronics market and beyond. We are a leading manufacturer renowned for our specialized offerings Industrial UPS, IT & Infra UPS, Drives (VFDs), Solar Inverters and Railway Products.

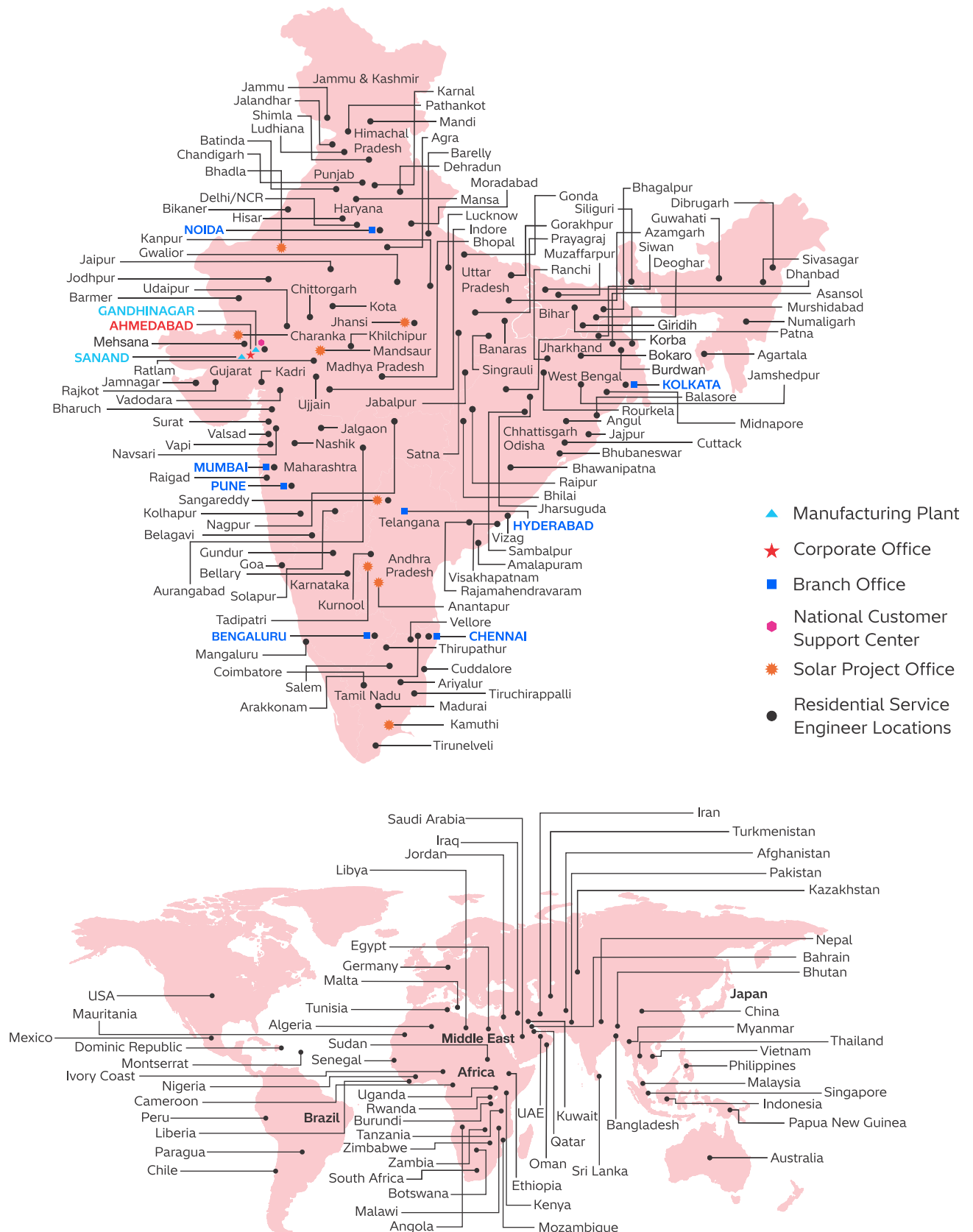
Our unwavering commitment to excellence is validated by approvals from leading consultants and EPC players. We operate a world-class, state-of-the-art manufacturing facility in Sanand, India, and our National Customer Support Centre in Gandhinagar, India ensures robust post-sales assistance and exceptional service uptime. Hitachi Hi-Rel is a testament to quality and operational excellence, holding ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 and ISO/IEC 27001:2022 certifications and recognized as a "Great Place to Work". Our extensive sales network and robust service infrastructure reach globally, establishing a strong presence in markets across South East Asia, the Middle East, Africa and Brazil.

Powering Continuity. Driving Sustainability.

Global Footprint and Reach

Delivering Critical Power Solutions Worldwide

We are a key manufacturing hub for global power electronics solutions, capable of meeting diverse international requirements. Our ability to supply specialized, high-reliability products to various industries across international territories reinforces our commitment to serve critical loads globally.



Hitachi Hi-Rel Power Electronics Pvt. Ltd.

Delivering Advanced Power Electronics Solutions that empower Industries and sustain Progress.

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