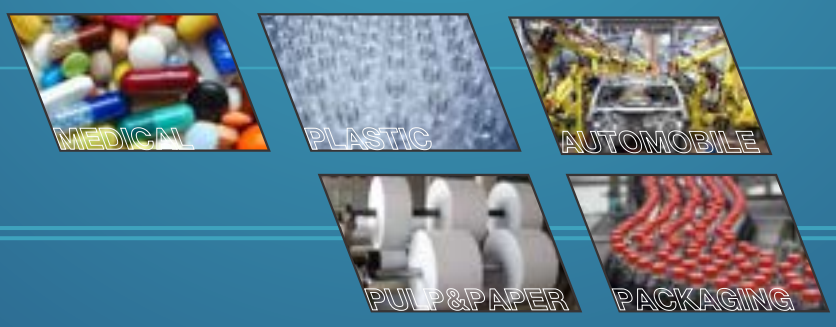
HITACHI
Inspire the Next

Three Phase UPS Systems

Range: 10 to 500kVA UL Series



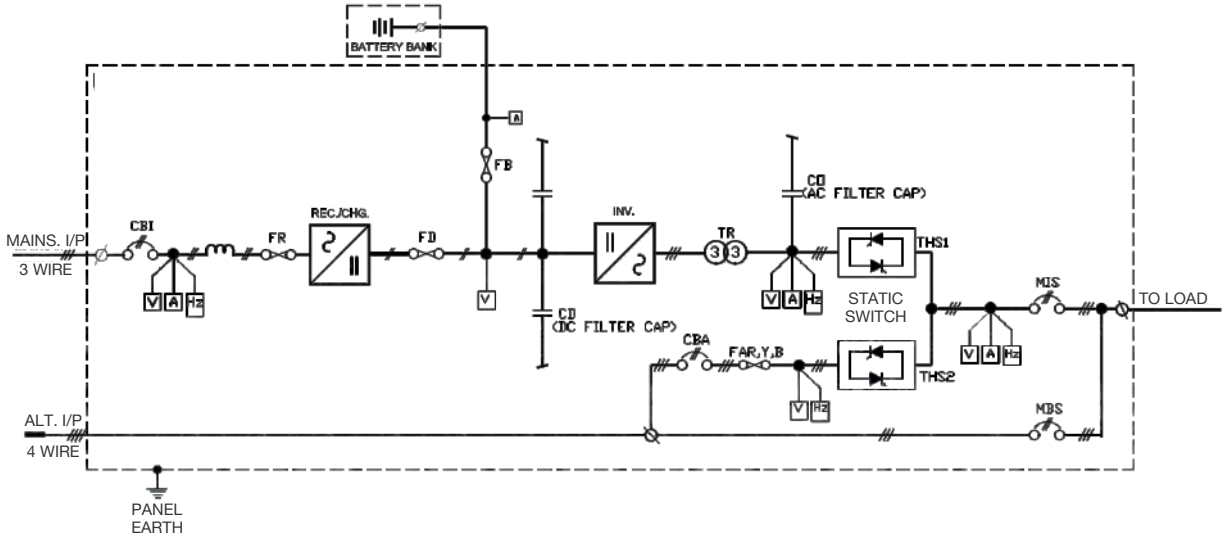
Three Phase UPS Systems

Hitachi Hi-Rel Power Electronics Pvt. Ltd. is in the business of Industrial UPS Systems since 1987 and has rich experience in supplying power back-up and power quality solutions for mission critical applications in refineries, petrochemicals, power generation, steel & metals, process industries as well as for critical data processing applications.

Hitachi Hi-Rel Power Electronics Pvt. offers high quality power back-up technology and complete customized system solutions for demanding applications.

i6s three phase UPS systems are specifically designed to provide power quality and back-up for applications in Chemicals, Textiles, Pharmaceutical, Pulp & Paper, Printing & Packaging, Glass, Food & Beverages, Automotive, and Data Processing.

Single Line Diagram



Design Philosophy

i6s series UPS systems have been designed to perform under extreme operating conditions that normally exist in industrial environments. The use of Digital Signal Processors (DSP) has made the control loop of the UPS system very stable, drift free and with better HMI for monitoring, control and precise settings of parameters. High speed CAN bus interfaced sections make the system response very fast to handle the extreme transient load conditions. Intelligent power device with sandwich bus architecture makes the systems highly efficient and reliable.

Digital Signal Processors based Control

Latest generation IGBT modules.

Digital Signal Processing (DSP) based control board

Standard Features

- IGBT – based PWM inverter
- Internal interface on high speed CANbus
- DSP – based system control
- Fiber optic data communication
- Redundant control power supply
- Latest generation power devices
- True power measurement
- High resolution LCD display
- LED mimic system diagram
- Six pulse thyristors based rectifier/charger
- Capable to handle 100% unbalance load
- Eco mode configurable
- Charger compatible to all types of battery
- Fully rated make before break type maintenance bypass switch
- High branch fuse clearing capacity
- Industrial grade enclosures
- RS 485 link for external communication
- Event log (with date & time) last 999
- Built in battery management system
- Insensitive to phase rotation
- Industrial compatible power terminals

Digital Signal Processors based Control

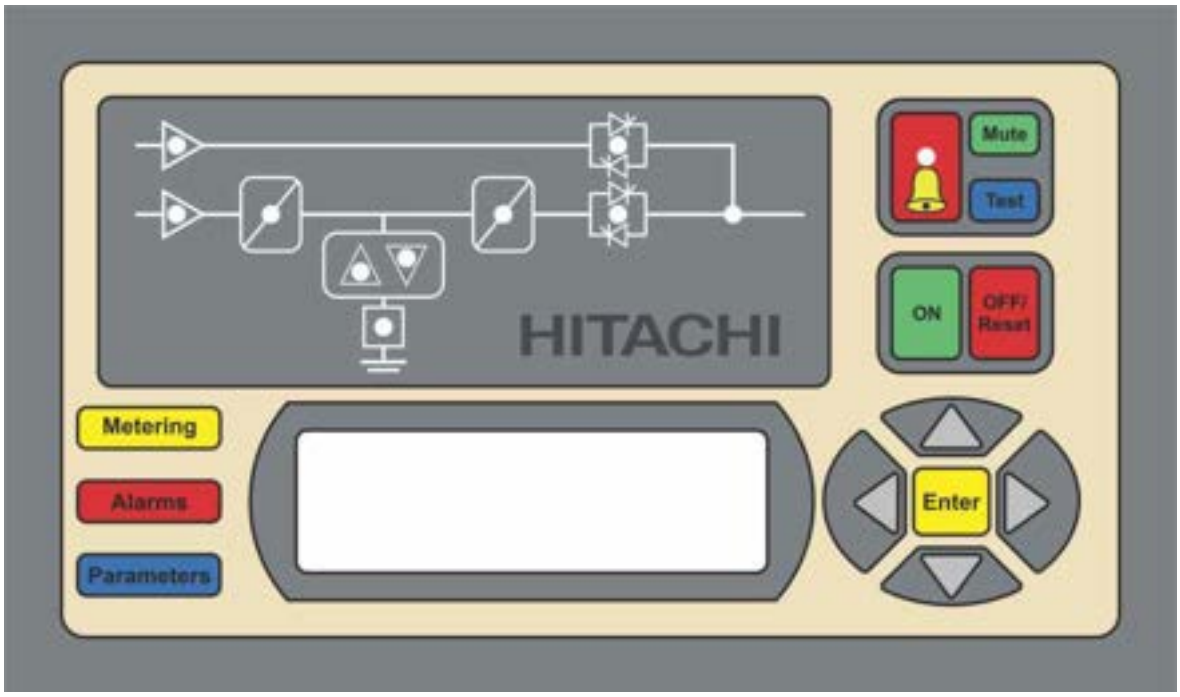
Options

- 12 pulse rectifier
- Input isolation transformer
- Input harmonics filter
- PC based monitoring and recording
- Common battery bank
- SNMP, Profibus, Modbus communication protocols
- Parallel redundant / hot standby configuration
- Bypass line regulator
- 360 VDC / 240 VDC DC bus
- UL listing

Battery Management System

Battery monitoring system is an on-line built-in feature to check the battery open / weak status automatically at a pre-defined period. It also indicates the residual time, AH, balance life in terms of years /cycles.

Digital Control Panel



Alarms, Indications and Metering

LED No.	Parameter	Status	LCD Indication
1	Mains Input	Absent Within Range Out of Range	OFF Green Blinking Green
2	Bypass Input	Absent Within Range Out of Range	Red Green Red
3	Charger Operation	ON OFF Trip	Green Red Blinking Red
4	Battery Discharge	On Battery Operation	Red
5	Battery Operation	Equalise Charge Float Charge Discharge	Red Green OFF
6	Battery MCCB	ON OFF	Green Blinking Red
7	Inverter Operation	ON OFF Trip	Green Red Blinking Red
8	Load on Inverter	Inverter SSW ON Inverter SSW OFF	Green OFF
9	Load on Bypass	Bypass SSW ON Bypass SSW OFF	Red OFF
10	Synchronization	Synch. No Synch.	Steady Yellow Blinking Yellow
11	Common Alarm Indication	Any Alarm Present	Blinking Red

LCD Display

METERS-DIGITAL-LCD DISPLAY	
VOLTAGE METERS	Mains Alternate Battery Inverter Load
FREQUENCY METERS	Mains Alternate Output
Metering with true RMS measurement	
CURRENT METERS	Mains Battery Load
POWER METERS	Load kVA Load kW Load Power Factor

MAJOR ALARMS-TEXT READOUT-LCD DISPLAY	
INPUT	Under Voltage Over Voltage
DC	Over Voltage
BATTERY	Discharging Under Voltage End of Battery Discharge
INVERTER	Under Voltage Over Voltage IGBT Limb Fault Over Load Over Load Trip (Inverse Time) Over Temperature
ALTERNATE	Under Voltage Over Voltage Frequency out of Range
STATIC SWITCH	Transfer to Bypass

Exceptional Safeguard against Power Disruption

Technical Specifications

MAINS INPUT	
Rectifier Input Voltage	480 VAC 3 Phase 3 Wire
Voltage Tolerance	+10%, -10%
Input Power Factor	0.8 @ Full Load
Frequency	50Hz / 60Hz ±6%
Bypass Supply	480 VAC, 3 Phase, 4 Wire
DC BUS	
DC Bus Charger Voltage	357 VDC to 476 VDC, [Optional: 240 VDC (189 - 282 VDC)]
Battery Charger Current Capacity	(kVA x 0.65) A
Minimum End Cell Voltage	357 VDC
Maximum DC Bus Ripple With Battery	< 1%
Maximum DC Bus Ripple Without Battery	< 2%
Recommended No. of Cells :-	
SMFB	204
LATB	204
DC Voltage Regulation	±1%
UPS OUTPUT	
Normal UPS Rating	At 0.8 PF
Voltage	208 / 120 VAC, Three Phase + Neutral
Voltage Tolerance:-	
Steady State	±1%
100% Step Load	±5%
Recovery Time	< 20 mSec
Power Supply Interruption and Restoration	±1%
Overload:-	
Inverter 1 min	150%
Inverter 10 min	125%
Inverter 60 min	110%
Frequency	50 Hz / 60 Hz
Frequency Stability, Free Running	±0.1%
Synchronization Range	±6% (±1 to ±6% Field Programmable)
Slew Rate Single Unit	1 Hz / Second
Wave Form	Sinusoidal
Distortion Factor:-	
Linear Load	< 2.5%
Non-linear Load	< 5%
Admissible Output Crest Factor	3:1
Branch Fuse Clearing Ability	30% Rated (Semiconductor Type Fuse)
Output Voltage Adjustment Range Step Less	±10%
Static Switch Transfer Time in Sync Mode	< 4 mSec
Static Switch Transfer Time in Async Mode	< 20 mSec
Maintenance Bypass	Make Before Break
OPERATING CONDITIONS	
Ambient Temperature Range for Storage	0-60°C
Ambient Temperature Range for Operation	0-45°C
Altitude Above Sea Level	1000 Meters From MSL
Allowable Air Humidity	95% Non Condensing
Atmosphere	Non Corrosive, Dust Free, Freely Ventilated
Audible Noise @ 1meter From Panel Front	55 dBA to 74 dBA (Depending on System Rating and System Configuration)
ENCLOSURES	
Construction	CRCA Steel Sheet
Protection Class	NEMA 1
Finish (Powder Coated)	Industrial Gray
Ventilation	Forced Air (Internal Fans)
Cable Entry	Bottom
STANDARDS	
Standard Compliance	UL 1778, NEMA PE1 (2012), ANSI

Hitachi Hi-Rel
Worldwide

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