Uninterruptible Power Supply (UPS)
Rating: 60 kVA to 500 kVA

- Supports your critical load with advanced technologies & features
- Reduced Energy Consumption & ultimately Cost
- Capacity enhancement
- Highly Efficient IGBT based Inverter
- Microprocessor based Digital Control

Hitachi Australia Pty. Ltd.
Rating

- 60 kVA
- 80 kVA
- 100 kVA
- 120 kVA
- 160 kVA
- 200 kVA
- 250 kVA
- 300 kVA
- 400 kVA
- 500 kVA

Applications

It serves various applications in key industries like Processes Industries i.e. Plastic, Textile, Cable, Rubber, Glass, Paper, etc., Data centre, Telecom, Network Medical & Healthcare, Laboratories, Automobile, Transportation i.e. Rail, Airports, Shipping, Highways, Tunnels and many others.

Multi Protection & Green Power Design

- Multi-Protection
  - OVP - Over Voltage Protection
  - OCP - Over Current Protection
  - OTP - Over Temperature Protection
  - SCP - Short Circuit Protection

- Green Power
  - Green design converses more energy and induces lower power loss

- Input PF > 0.99
- Eco Mode
- Input current THD < 3%
Unit Parallel Connection Concept

Advanced Technologies & Features

Add as you need without taking a shutdown

Multiple UPS units can be added to enhance the UPS rating or achieve a parallel configuration even while the base units are running. No shutdown will not only ensure continuity of your critical operations but will also ensure peace of mind with clean continuous power to all your sensitive equipment.

- Up to 8 UPS Systems can be configured as a parallel redundant system
- Option to expand UPS units for future expansion at marginal cost and smaller dimensions
- N+1 redundancy can be achieved without external system bypass switch
- Install additional units or maintain an existing unit without affecting the load
- Configure a highly robust and reliable system with dual input/output

Compact, Light-weight And High Efficiency Design

A smaller installation foot-print means a larger space available for the customer’s system. Lower power loss means lower electricity cost and a smaller capacity required of the air-conditioning equipment.

The 415 V UPS input/output allows for larger capacity feeding with low power losses. Advanced circuit technology and the high speed IGBT switching technology eliminate the need for an inverter transformer, directly saves valuable installation space as well as reducing substantial weight of the system.

This enables the compact light weight system for quick positioning on site.

Long Life Parts

Frequent replacement of components is costly and recurring in terms of cost of the parts as well as charges payable to the personnel for the job. It will also call for a system shutdown lead to a major loss. Our i6* system is built with long life parts; contribute to substantial reduction in maintenance costs.
# Advanced Features

## Economical
**Nominal initial cost**
**Low running expenses**
- Power saving feature
- Reduced footprint
- Lower maintenance cost
- Short lead-time delivery
- Reduced installation cost

## Expandability
**Expansion without power interruption to the load**
- Expansion of UPS as load capacity increase
- Easy operation of UPS
- Area-free monitoring
- Guard against the full spectrum of power disturbances

## Maintainability
**Stable Power Supply**
- Supply of high-quality power
- Back-up system availability

## Innovation New Technologies
**Stable Power Supply**
- Reduce the effects for input power
- Low input current harmonics

## Reliability
**Stable Power Supply**
- Reduce the effects on the back up generator
- High input power factor

## i6 UPS Advanced Features

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<td>High-efficiency</td>
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<td>Light weight design</td>
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<td>Reduced installation cost</td>
<td>Transformer less Inverter 415V input / output</td>
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<td>Expansion of UPS as load capacity increase</td>
<td>Unit parallel connection design</td>
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<td>Easy operation of UPS</td>
<td>Operational status, Operation guidance, Trend information, Measurement etc.</td>
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<tr>
<td>Area-free monitoring</td>
<td>Support the on-line maintenance</td>
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<tr>
<td>Supply of high-quality power</td>
<td>Sine-Wave output</td>
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<tr>
<td>Guard against the full spectrum of power disturbances</td>
<td>150% overload capacity</td>
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<td>On-line double conversion</td>
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<td>IGBT converter</td>
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<td>High input power factor</td>
<td>Input current walk-in</td>
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<tr>
<td>Reduce the effects on the back up generator</td>
<td>Fully automatic transfer / re-transfer switch</td>
</tr>
<tr>
<td>Back-up system availability</td>
<td>N+1 redundancy</td>
</tr>
</tbody>
</table>

**Standards**
IEC 62040-1, 2 & 3

**Protection Class**
IP 20  (Optional IP31, IP41, IP42, IP43)

**Finish**
RAL 7035 (Other colours optional)

**Construction**
CRCA steel sheet

**Ventilation**
Forced air (Internal fans)

**Cable Entry**
Bottom (Top optional)

**Ambient conditions**

- Ambient temperature: 0 - 40 °C
- Relative humidity: 90% non-condensing

**Audible noise**
- <65 db A (60/80 KVA)
- < 72 db A (100 - 200 KVA)
- <75 db A (> 200 KVA)

**Atmosphere**
Non corrosive, Dust free, Freely ventilated

**Altitude**
1000 meters from MSL

**Enclosure**

- Protection Class:
  - IP 20  (Optional IP31, IP41, IP42, IP43)
- Finish:
  - RAL 7035 (Other colours optional)

**Utilization of floor wiring**

- Area-free monitoring
- Support the on-line maintenance
- LCD panel
- PFC for alarms

**IGBT inverter**

- Overall efficiency: 95%
- Load crest factor: 3 : 1
- Voltage
  - 415V (± 1%)
  - Voltage range:
    - Minimum: 396 V (cut off)
    - Maximum: 700 V (boost) max
  - Voltage regulation - steady state: < 1% RMS

**Internal oscillator accuracy (free run)**

- Frequency synchronization range: ± 6%

**Frequency synchronization range**

- Rated voltage:
  - 415 V three phase four wire
  - ± 1% 

- Rated load power factor:
  - 0.9 ± 5%

- Recovery time:
  - up to 98%

- Transient response 100% step load:
  - < 1 cycle
  - < 2%
  - < 5%
  - < 10%

- Internal oscillator accuracy:
  - Frequency synchronization range:
    - ± 6%

**Altitude**
1000 meters from MSL

**Enclosure**

- Protection Class:
  - IP 20  (Optional IP31, IP41, IP42, IP43)
- Finish:
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**Ventilation**
Forced air (Internal fans)

**Cable Entry**
Bottom (Top optional)
## Technical Specifications

**Supports Your Critical Load With Advanced Technologies & Features**

### i6® Uninterruptible Power Supply (UPS)

- **Nominal initial cost**
- **Low running expenses**
- **Power saving feature**
- **Reduced footprint**
- **Short lead-time delivery**
- **Reduced installation cost**
- **High-efficiency**
- **Small footprint**
- **Light weight design**
- **Minimum parts replacement**
- **Transformer less**
- **Inverter 415V input / output**
- **Components sourced from globally established vendors**
- **Long life fans and capacitors**
- **Expansion of UPS as load capacity increase**
- **Unit parallel connection design**
- **Configure parallel redundant system**
- **without external bypass switch**
- **Dual input / output system**
- **Easy operation of UPS**
- **Operational status, Operation guidance, Trend information, Measurement etc.**
- **LCD panel**
- **Area-free monitoring**
- **Support the online maintenance**
- **PFC for alarms**
- **Supply of high-quality power**
- **Sine-Wave output**
- **IGBT inverter**
- **150% overload capacity**
- **Online double conversion**
- **Guard against the full spectrum of power disturbances**
- **Reduce the effects for input power**
- **Low input current harmonics**
- **High input power factor**
- **IGBT converter**
- **Reduce the effects on the back up generator**
- **Back-up system availability**
- **Fully automatic transfer / re-transfer switch**
- **N+1 redundancy**
- **Parallel redundant system**
- **Expandability**
- **Expansion without power interruption to the load**
- **Maintainability**
- **Innovation New Technologies**
- **Reliability**
- **Stable Power Supply**
- **Lower maintenance cost**
- **System menu setting**
- **Ready for "on-floor" installation**
- **Standard specifications engineered**
- **Utilization of floor wiring**
- **Requirements**
- **Advanced Features**
- **Technical Specifications**

### Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage (specified)</td>
<td>415V (+) 10% &amp; (-) 10% three phase four wire</td>
</tr>
<tr>
<td>Voltage operational</td>
<td>415V (+) 10% &amp; (-) 40% three phase four wire</td>
</tr>
<tr>
<td>Rated frequency</td>
<td>50Hz / 60Hz</td>
</tr>
<tr>
<td>Frequency range</td>
<td>± 6%</td>
</tr>
<tr>
<td>Input power factor</td>
<td>0.9</td>
</tr>
<tr>
<td>Input current THD**</td>
<td>&lt; 3%</td>
</tr>
<tr>
<td>Voltage range</td>
<td>396 V (cut off) min to 700 V (boost) max</td>
</tr>
<tr>
<td>Maximum DC bus ripple</td>
<td>&lt; 1% RMS</td>
</tr>
<tr>
<td>Rated voltage</td>
<td>415 V three phase four wire</td>
</tr>
<tr>
<td>Voltage regulation - steady state</td>
<td>± 1%</td>
</tr>
<tr>
<td>Rated load power factor</td>
<td>0.9</td>
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<tr>
<td>Load crest factor</td>
<td>3 : 1</td>
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<td>Transient response 100% step load</td>
<td>± 5%</td>
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<tr>
<td>Recovery time up to 98%</td>
<td>&lt; 1 cycle</td>
</tr>
<tr>
<td>Voltage distortion</td>
<td>Linear load</td>
</tr>
<tr>
<td></td>
<td>Nonlinear load</td>
</tr>
<tr>
<td>Internal oscillator accuracy (free run)</td>
<td>0.1%</td>
</tr>
<tr>
<td>Frequency synchronization range</td>
<td>± 6%</td>
</tr>
<tr>
<td>Overload</td>
<td>110% for 60 minutes</td>
</tr>
<tr>
<td></td>
<td>125% for 600 seconds</td>
</tr>
<tr>
<td></td>
<td>150% for 60 seconds</td>
</tr>
<tr>
<td>Phase angle accuracy with 100% unbalance load</td>
<td>&lt; 3 degree</td>
</tr>
<tr>
<td>Overall efficiency</td>
<td>Up to 95%</td>
</tr>
<tr>
<td>Eco Mode efficiency</td>
<td>98%</td>
</tr>
<tr>
<td>Ambient temperature</td>
<td>0 - 40°C</td>
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<tr>
<td>Relative humidity</td>
<td>90% non condensing</td>
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<td>Audible noise</td>
<td>&lt;65 db A (60/80 KVA ) &lt; 72 db A (100 -200 KVA )</td>
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<td></td>
<td>&lt;75 db A ( &gt; 200 KVA )</td>
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</table>

** @ 100% rated load and nominal input voltage, with input voltage THD <1%
## Dimensions

<table>
<thead>
<tr>
<th>Rating (kVA)</th>
<th>Height (mm)</th>
<th>Width (mm)</th>
<th>Depth (mm)</th>
<th>Weight (kgs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>1800</td>
<td>700</td>
<td>800</td>
<td>270</td>
</tr>
<tr>
<td>80</td>
<td>1800</td>
<td>700</td>
<td>800</td>
<td>300</td>
</tr>
<tr>
<td>100</td>
<td>1800</td>
<td>900</td>
<td>900</td>
<td>380</td>
</tr>
<tr>
<td>120</td>
<td>1800</td>
<td>900</td>
<td>900</td>
<td>380</td>
</tr>
<tr>
<td>160</td>
<td>1900</td>
<td>1300</td>
<td>900</td>
<td>495</td>
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<tr>
<td>200</td>
<td>1900</td>
<td>1300</td>
<td>900</td>
<td>590</td>
</tr>
<tr>
<td>250</td>
<td>1900</td>
<td>1300</td>
<td>900</td>
<td>940</td>
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<tr>
<td>300</td>
<td>1900</td>
<td>2100</td>
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<tr>
<td>400</td>
<td>1900</td>
<td>2100</td>
<td>900</td>
<td>1160</td>
</tr>
<tr>
<td>500</td>
<td>1900</td>
<td>2100</td>
<td>900</td>
<td>1300</td>
</tr>
</tbody>
</table>

Note: Dimensions & weights are subjects to change.

## Block Diagram

![Block Diagram Image]

**MBS**

415V 3Ph/4Wire Bypass → PWM Rectifier → PWM Inverter → Battery → Static Switch → Load

Charger-Booster

## Options

- Parallel or Hot standby redundancy
- Input isolation transformer
- Output isolation transformer
- Bypass line regulator
- AC distribution panel
- PC based monitoring & recording unit
- RS - 485 communication port
- Monitoring on LAN through SNMP & Profibus
- Remote annunciator
- Automatic shutdown kit
- DCS connectivity through Modbus
- Individual Battery Health Monitoring Systems (BHMS)
- Emergency alerts via SMS
- Suitable for regenerative loads
- Back feed protection
Three Phase Industrial UPS Systems

Range: 10 to 500 kVA

In the spirit of continuous improvement, specifications are subject to change without notice.