





Hitec QPS product range

**Continuous Power
Uninterrupted Power
Quality Power**



**POWER
TO RELY ON**

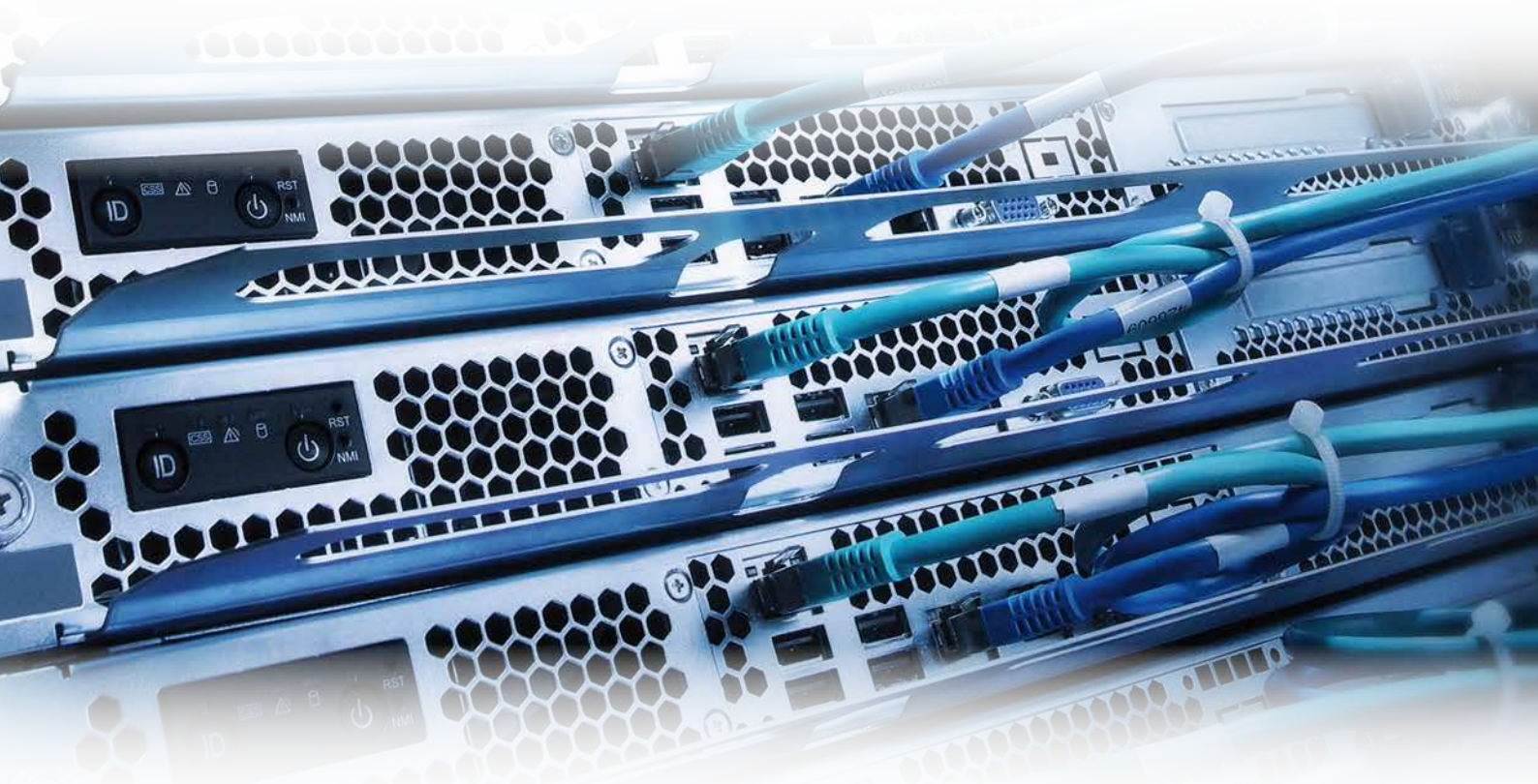


-  **Highest No-Break UPS Rating**
-  **Exceptional Power Density**
-  **Modular Design Approach**
-  **Best End-to-End Efficiency**
-  **Optimized Availability**

A reliable and resilient data center infrastructure mitigates the operational risk and thereby optimizes the availability of data processing. Functional design requirements, both for computing processes and supporting facilities such as cooling and power, must meet the business objectives and site management philosophy. The need for scalability of capital investments, modularity in the design approach and increasing power density influence the choice of the UPS system for providing conditioned, uninterruptible and continuous power supply to the IT equipment. The Hitec QPS product range meets all these requirements.

Exceptionally High No-Break UPS Ratings

The Hitec QPS product line is designed to reduce plant space by creating the highest power density per square meter in industry today. The Hitec QPS product is available with No-Break UPS ratings up to 2400 kW/3000 kVA in 50 Hz operation, and up to 2880 kW/3600 kVA at 60 Hz. The advantages of the higher ratings are many. Engineers can design the entire facility with No-Break UPS power. Mechanical loads no longer get interrupted when the mains fail. The Hitec QPS supports 100% of the facility on uninterruptible power, using fewer machines to support a given load, meaning the installation costs will be proportionately lower. Fewer machines also result in lower overall maintenance costs.



Industry-Best Total Cost of Ownership

The Hitec QPS has a unique combination of features that give our customers outstanding performance plus a significantly lower Total Cost of Ownership. It is optimized to meet energy efficiency demands with an end-to-end efficiency of up to 97%. The Hitec QPS product line is designed to reduce plant space by creating the highest power density. Each of these features has its own set of benefits. Together, they set the new standard of value in the Uninterruptible Power Supply industry.



Optimized for Highest Efficiency

The Hitec QPS has many innovations to improve its energy efficiency. The generator and reactor have been optimized to work together for lower losses. Controlled Energy Storage Optimization (ESO) mode automatically monitors the connected load and reduces flywheel speed in response to an extended period of partial loads; typical in a data center environment. This reduces standing losses during partial loads, but restores the flywheel to full speed as loads increase. Fanless cooling of the kinetic energy transfer module eliminates losses normally caused by forced-air cooling.



Hitec QPS System features

High energy efficiency (up to 97%)

**Low space requirements
(40-60% less than static UPS)**

**Integrated functionality combining UPS
and standby diesel generator**

No use of batteries

Customer benefits

- Lower operational cost
- Lower PUE
- Less waste heat
- High power density
- Reduce building costs
- Increase of available data floor area
- Robust, compact and modular design
- High system availability
- Active filter supplies conditioned power
- No battery replacement every 3-5 years
- No chemical waste
- Compact and simple
- Environmental Friendly

Versatile Hardware Configuration

The Hitec QPS concept is based on proven Hitec technology. The design combines different functionalities using pre-engineered modules and components are arranged to greatly enhance their usefulness. The diesel engine and generator can together function as a traditional genset even with the energy storage system disconnected. Another benefit is that the generator, ETM and flywheel can together function as a Rotary UPS even when the diesel is disabled for maintenance. Those elements can provide kVARs and harmonics mitigation, plus ride-through energy to support the total system.



Low-Stress Energy Storage Technology

The Hitec QPS energy storage system has two elements: an Energy Transfer Module (ETM) and a high-energy, low-speed flywheel. The ETM spins with the generator at 1500 rpm/50 Hz and at 1800 rpm/60 Hz. The flywheel spins at approximately 2900 rpm. This lower speed allows extended maintenance intervals.



The flywheel is available in different sizes, to match the required output power and autonomy time. With variable speed controls, the amount of energy stored can be controlled, to match the power need, hence increasing the overall system energy efficiency significantly, especially at partial loads.



The Energy Transfer Module (ETM) is the heart of the system. It transfers the kinetic energy stored in the flywheel to the generator, so guaranteeing an uninterrupted supply of power.





The freewheel clutch is a robust mechanical machine, self lubricating and with low maintenance requirements. It operates without any external control thereby ensuring a “shock-free” delivery of power.



The diesel engine is kept in optimal condition to enable a secure start and quick load acceptance. Emission optimized engines are available to comply with carbon emission standards like EPA or TA. Diesel Start Delay function is available to prevent a diesel start within the first two seconds of a supply out of tolerance occurring.



The generator is matched with the nominal load and reactor ensuring good dynamic system behaviour. Careful design of the exact characteristics of the generator and reactor provides an active filter to remove both utility and load-borne anomalies, like voltage spikes, frequency variations and harmonics distortions. Load and utility short circuits can be cleared, without the need to switch the load to bypass. The generator also enables power factor improvement achieving close to unity (>0.98).



Continuous Power Uninterrupted Power Quality Power

System Advantages

Reliability

A straightforward design with proven technology, a brushless system and low speed flywheel ensure high reliability.

Efficiency

The most efficient fully operational UPS system in the market, up to 97%.

Power factor improvement

The input power factor remains close to unity, so minimising reactive power charges from the utility provider.

Dynamic filter

The choke and generator act as rotating filter, filtering harmonics from both input and output.

Voltage regulation

The output voltage is controlled independent from the input voltage.

Small footprint

The footprint is 40 to 60% less when compared with static UPS systems.

Energy storage optimization mode

The standard energy storage optimization mode (ESO mode) reduced the accumulated flywheel energy to the level that is needed to guarantee the UPS function, thus saving energy.

Diesel start reduction

The diesel start reduction feature, makes a delayed start of the diesel possible, preventing the diesel from starting for short interruptions of the mains supply, so saving diesel.

	System Power (kW)	Rated Power (kVA)	Length (cm)	Width (cm)	Height (cm)	Weight (tons)
50 HZ	2000	2500	1050	193	255	30.5
	2400	3000	1130	193	255	33.5
60 HZ	2400	3000	1120	193	255	32.0
	2880	3600	1130	193	255	34.0

Technical system specification

System specification:

Allowable Power Factor	between 0,8 lagging and 0,9 leading
Rated Power Factor	1,0
Nominal voltage:	400/480V
Nominal frequency:	50/60 Hz

Input specifications:

Input mains-voltage fluctuations:	± 10 %
Input frequency tolerance:	± 1 %
Input power factor under nominal conditions:	~1,0
Max. reverse current during up-stream short circuit:	up to 2 * I _n

Output specifications:

Output voltage steady state:	± 1 %
Output voltage dynamic (during mains interruption):	± 5 %
Output voltage dynamic (during mains short circuit):	within ITI(CBEMA)

Output frequency mains operation:	as mains frequency
Output frequency diesel operation steady state:	± 0,5 %
Output frequency dynamic:	± 2.0 %
System voltage symmetry:	2 %
Radio interference level (EN 55.011):	Class A

Diesel engine:

Operating with diesel fuel corresponding:	Grade No.2D per ASTM D975
Engine power (standby power) corresponding:	DIN/ISO 3046

Ambient conditions:

Ambient temperature:	min. 5 and max. 50 °C
Humidity:	max. 85% non-condensing
Altitude:	max. 400 m

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Tailor made systems

Hitec Power Protection's QPS product can be fully integrated into a UPS system to meet the site specific design requirements. When combining units standard systems are available to offer:

- Growth scenarios to match capital investment and operational costs with revenues generated
- Maximum availability of processes to meet industry standards by creating redundancy and eliminating any single points of failure

- Designs in line with the most rigorous operating and maintenance scenarios
- Flexibility, with the ability to migrate power around in the data center
- Tailor made solutions using proven and tested designs
- Optimal cost control
- Fast speed of deployment
- Low/medium voltage systems



Remote monitoring, analysis and support system

Netprotect: Advance remote monitoring

Hitec Power Protection offers its NetProtect monitoring system allowing remote monitoring through secure and safe communication protocol. Information on system operation, history of incidents and trending data can be viewed and analyzed by experienced Hitec personnel. Monthly analysis of system behaviour and autocall functionality can be activated to provide pro-active service and to optimize planned maintenance. This gives the data center operator better understanding of required maintenance activities and so can help to minimize the impact of maintenance on the data center operation.



Global partner to rely on

Hitec Power Protection designs and manufactures high quality Diesel Rotary UPS systems. Our global installed base demonstrates our track record in the delivery of uninterruptible and continuous power supply for mission critical process. Worldwide customers that operate data centers rely on our proven UPS technology. Using the Hitec QPS product ensures a reliable data center power supply infrastructure, with a low component count

and technical lifetime of more than 20 years. Hitec Power Protection has its worldwide headquarters based in Almelo, The Netherlands and regional offices strategically placed throughout the world. Our global service organization, together with a worldwide network of qualified service partners, provides 24/7 helpdesk and (remote) support in line with the service level required by and agreed with the customer.



Global service network
Worldwide, World-class



-  Hitec Power Protection offices
-  partners



For contact details please visit www.hitec-ups.com