

KOHLER®

UNINTERRUPTIBLE
POWER



Product & Service
Catalogue

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About KUP

What makes us different?

Our aim is simple – to be the best power protection company there is.

Together with our parent company, Rehlko, the new name for Kohler Energy, Kohler Uninterruptible Power (KUP) is a driving force within the power protection industry offering pioneering product technology, service excellence and global reach, to provide resilient and reliable backup power solutions for mission-critical applications.

Best in class power protection solutions

Central to our product portfolio is a range of the highest quality, class-leading single-phase and three-phase uninterruptible power supplies, designed to offer the highest levels of efficiency, availability, scalability and flexibility to our customers. Leveraging Rehlko's technical leadership in global power protection, the full power protection portfolio includes:

- | Uninterruptible power supplies (UPS)
- | Medical IT systems
- | Standby generators
- | Battery systems
- | Emergency lighting static inverters
- | Switchgear
- | Software and ancillaries
- | Exceptional service and support

KUP has built an outstanding reputation for service excellence through our unrivalled pre and post sales support. Our wide range of services includes:

- | Initial site surveys
- | System design
- | Installation and commissioning
- | Preventative maintenance
- | Training
- | Remote monitoring and technical support.

With 24/7 availability, all these services are delivered by a dedicated and extensive network of trained service engineers and service support staff - ensuring lifelong and reliable operation of the power protection solutions we provide.

Quality management and certifications

KUP's quality management system is certified to BSI ISO 14001 and 45001, its environmental procedures to ISO 14001 and its health & safety procedures to OHSAS 18001. KUP is also certified under the SafeContractor scheme. These certifications guarantee that all our customer obligations under health and safety and environmental legislation are met.

Why choose us?

KUP takes a comprehensive, end-to-end approach to meeting our customers' specific and comprehensive requirements. From initial contact through to installation, service, maintenance and disposal, we provide our customers with an unrivalled partner for complete peace of mind.

We understand that every client is different and each has its own specific opportunities to consider and challenges to overcome. The key, we believe, is to spend the time required to truly understand the business and how it operates. Only then can we apply our comprehensive product range, combined with our broad support services offering, to provide power protection solutions which exceed expectations.

This also means KUP continuously invests in product and system development, the talent of its employees, broadening its range of services, and improving its service delivery. By doing so, KUP expertly meets the present and future needs of its customers and achieves its objective – to be a leader of power protection solutions and services.

Customer satisfaction

At KUP, we take customer satisfaction very seriously. In order for us to ensure all of our procedures, policies, products and services meet or exceed our customers' expectations, we undertake regular customer satisfaction benchmarked via a respected, independent partner. All survey forms are regularly reviewed by senior management and the contents of such surveys are treated with the strictest of confidence.

Rehlko

Originally part of Kohler Co., established in 1873, Rehlko builds on a long pedigree of quality, innovation and resilience. In 1920, it launched the world's first engine powered electric generator. Since then, it has been developing products for every aspect of critical load protection and is one of the world's largest power protection equipment manufacturers with products in use on every continent.

Kohler Energy became a stand-alone entity in May 2024 and officially rebranded as Rehlko in September that year. Rehlko operates a broad portfolio of leading businesses including Power Systems, Engines, Home Energy, Clarke Energy, Curtis Instruments and Heila Technologies.

Together, Rehlko is focused on creating an energy resilient world for a better future.

Built on innovation, quality and service excellence

For over 25 years, KUP has led the UK in terms of power protection innovation. Today, the company is recognised as one of the industry's most innovative organisations – thanks in part to the success of its class-leading products and services, and the introduction of game-changing technologies to the UK market – several of which are now considered almost ubiquitous within the power protection industry.

Harnessing the best technologies and innovative engineering, the majority of KUP's UPS products are produced by a single manufacturing partner in Switzerland, while our generators, monitoring systems, batteries and emergency lighting inverters are manufactured by other high quality and long established partners. This consistency and close cooperation benefits our clients in many ways, from production scheduling to specialist support.



The KUP *mission*

To continuously delight our customers through the provision of industry-leading power protection solutions and support services.



Product overview: Industry-leading products

KUP's product portfolio contains some of the most technologically advanced power protection products. At the core of its product portfolio is a range of high quality and reliable single-phase and three-phase uninterruptible power supplies.

- | Single-phase UPS from 1–20 kVA, parallelable up to 80 kVA
- | Three-phase transformerless UPS from 10–500 kVA scalable up to 6 MVA
- | Standby generators
- | Battery systems
- | Switchgear
- | Emergency lighting static inverters
- | Software and ancillaries

Service overview

- | 24/7 onsite service
- | Initial site survey
- | System design
- | Installation
- | Commissioning
- | Preventative maintenance
- | Repair
- | Battery maintenance, replacement and testing
- | Capacitor replacement
- | Remote monitoring
- | Load bank testing
- | Witness testing
- | Disposal

We are also proud to offer service support and maintenance contracts on other UPS equipment, emergency lighting inverters and generators.

Market overview

From financial services and Cloud providers to retail and manufacturing giants, KUP's products are being utilised in a broad range of markets, supporting an even broader range of applications.

Regardless of whether you need a multi-MVA system to support a tier 4 data centre or a 10 kVA UPS to support an emergency lighting system, KUP has the perfect solution. Our teams of sales managers and engineers have extensive experience in developing tailor-made solutions, specifically designed to meet your particular challenges and ensure that any requirement can be satisfied, no matter the business or area of operation.

“KUP’s team presented its latest product development to us, the PW9500DPA, and thankfully it answered all of our needs. Its ability to support a load of 400 kVA within a single frame, whilst still offering N+1 redundancy, was a big advantage over competitors’ products.”

Phil Jones, Business Manager, Natwest

Testimonials

“The purchase, installation and subsequent maintenance has been smooth and without fault. The process of purchasing the communications card was easy and the support provided before the purchase was made was very informative.”

Richard McLennan, The Law Society

“The Trust has been a KUP customer for a number of years. The UPS sits in the corner of the data centre and does the job. Any minor power interruptions have been handled without an issue. Service, support and preventative maintenance have always been handled in a professional manner with the engineers being knowledgeable and friendly.”

Mark Caines, The Ipswich Hospital NHS Trust

“KUP gives us the peace of mind we need, knowing we’re protected and that professionals are on hand to ensure everything always goes smoothly.”

Conleth McCallan, Datanet

“I am always told when the engineers will arrive on site; the service I receive is outstanding. If anything was to change in my service visits I am always notified in good time.”

Mo Knott, Tesco Stores Ltd

“After 30 years plus of working in the building services, and past service contracts with you, I have always had a reliable service, with emergencies always being resolved without dramas.”

Gary Sturges, Wren Environmental Ltd

“A quick response to initial enquiry with quotation and technical information. Delivery and commissioning all as detailed. Overall excellent service.”

Darryl Behn, Fenner Nash Electrical Ltd

“The engineer who attends our site is very competent, answers any questions and leaves you feeling that your building is covered in all eventualities.”

William McGuiggan, John Lewis

Product Range

KUP's product portfolio contains some of the most technologically advanced power protection products. At the core of our product portfolio is a range of high quality and reliable single-phase and three-phase uninterruptible power supplies.





Single-Phase UPS

KOHLER MINIPowerPLUS

Modular single-phase uninterruptible power supply

(1.25 kVA to 10 kVA)



Modular *protection*, compact footprint.

The KOHLER MINIPowerPLUS offers the benefits of scalable, modular UPS architecture for single-phase power protection applications up to 10 kVA.

KOHLER MINIPowerPLUS is ideal for smaller critical applications where reliable power must be balanced with space constraints.

A true, continuous online, double conversion voltage and frequency independent (VFI) UPS, its modular format enables N+1 redundancy to be achieved in a highly compact tower or 19" rack footprint

This makes it one of the most resilient and reliable single-phase UPS available.

KOHLER MINIPowerPLUS

- | Expandable in 1.25 kVA modular steps to 10 kVA
- | Online double conversion technology for a clean and protected supply
- | Internal N+1 Parallel Redundancy for high availability and reliability
- | Easy-to-use LCD interface for programming, status reporting and diagnostics
- | Expandable up to 8 hours battery autonomy
- | Tower or 19" rack-mounted configurations
- | On-site, flexible upgrade capability
- | Near unity input power factor at partial and full loads



Total flexibility

Key benefits

- | Ability to 'rightsized' the system then 'invest as you grow'
- | Simple installation of new UPS modular power boards
- | Reduced total cost of ownership

Total flexibility is a key benefit of the KOHLER MINIPowerPLUS. It is possible to simply add UPS power boards – in cost-effective incremental steps – as the critical load requirement grows. This ensures the UPS is 'rightsized' to the critical load at initial installation. This 'rightsizing' reduces initial costs, optimises operating efficiency and helps reduce the total cost of ownership. Adding or replacing existing boards also enables easy system upgrades or repairs.

Battery autonomy is similarly flexible, and can be customised using battery kits. These can be standalone or integrated with the UPS power boards. Full-load battery standby time of up to eight hours is available with a rapid recharge capability. Battery redundancy can also be built-in for guaranteed continuity of supply.



KOHLER MINIPowerPLUS Tower



KOHLER MINIPowerPLUS rack mounted

The right solution

The KOHLER MINIPowerPLUS is available in two different versions:

- | KOHLER MINIPowerPLUS Tower
- | KOHLER MINIPowerPLUS Rack

KOHLER MINIPowerPLUS Tower systems deliver up to either 5 kVA (MINIPowerPLUS 5000) or 10 kVA (MINIPowerPLUS 10000) in a compact unit measuring only 270 x 475 x 570mm.

The KOHLER MINIPowerPLUS 5000 uses the space saving single tower to accommodate up to four 1.25 kVA UPS power boards and four strings of batteries. Battery autonomy can be increased by adding a separate battery cabinet.

The KOHLER MINIPowerPLUS 10000 allows four to eight 1.25 kVA UPS power boards to be accommodated in one tower to provide a maximum output of 10 kVA. Up to ten strings of batteries can be housed in a separate cabinet.

The KOHLER MINIPowerPLUS rack mounted version uses 6U of a standard 19" rack. With four UPS power boards, this version provides up to 5 kVA in capacity or 3.75 kVA in parallel redundant (N+1) mode. Batteries are internal. Autonomy can be extended simply by mounting additional batteries in a separate rack-mounted battery unit.

Features of both the tower and rack mounted MINIPowerPLUS include automatic bypass, battery test function, load/temperature dependant fan speed and an RS232 port allowing the use of diagnostic or autosutdown software.

Maximised protection

- | Internal N+1 parallel redundancy

If one of the modules stops working, the others will all continue supplying the load without any interruption, redistributing the percentage of load that was previously supplied by the module now out of order. This redundancy ensures continuous uptime.

KOHLER *PW* 1000

Standalone tower or rack mount single-phase uninterruptible power supply with internal or external batteries

(1-10 kVA)



Compact, convenient, *dependable* power.

For server, network, laboratory, distribution and retail applications – combining high reliability with low upfront costs to make it the perfect solution for mission critical applications.

Designed for single-phase uninterruptible power supply requirements.

Manufactured with the flexibility to meet the demands of today's critical applications, the KOHLER PW 1000 can be used as a standalone UPS device or installed into a standard 19" rack configuration, with connectivity options available for each.

The UPS completely regenerates the utility power to correct power disturbances in the mains and provides clean AC power, with voltage and frequency independency from the mains power supply (VFI).

KOHLER PW 1000

- | Compact, innovative design enables use in either tower or 19" rack format (with optional slides)
- | True online double conversion, Class 1 VFI-SS-111 topology with additional modes: VFD Eco-mode and CVCF frequency conversion mode
- | Range of output options for additional peace of mind including USB, RS232, RS485 and SNMP
- | Autonomies to suit your application via internal batteries (1-3 kVA models) or matching external battery cabinets (all models)



Advanced design

- Innovative electronic design with wide input voltage and frequency ranges provides both high efficiency and increased battery life. In addition, end-discharge voltage management prevents damaging deep discharge of batteries during a power failure.
- Protect sensitive loads via continuous online VFI mode or if required use continuous voltage continuous frequency (CVCF) mode for applications requiring frequency conversion.

Easy installation, Convenient connectivity

- PW 1000 1-3 kVA models are supplied via a standard 13A plug, whilst power output is through configurable IEC output sockets
- PW 1000 6 and 10 kVA models require a hardwired supply, with output through simple hardwired terminal block connections.

User-friendly operation

- An easy-to-read LCD display provides a real-time view of all major system parameters and current status including load level, battery level, operating mode and programmable output status.
- Audible alarms and dedicated LEDs indicate key system alerts.

Full system support

- KOHLER PW 1000 models are backed by Kohler Uninterruptible Power's commitment to quality, reliability and personalised support.
- Our local design teams can develop a system customised to your needs and supported by a maintenance contract tailored to your specific requirements.

KOHLER *PW* 3000/P1

High-efficiency single-phase uninterruptible power supply

(10 & 20 kVA)

Parallelable up to 80 kVA/kW



Compact and advanced, the PW 3000/P1 leads the way for single-phase UPS energy efficiency.

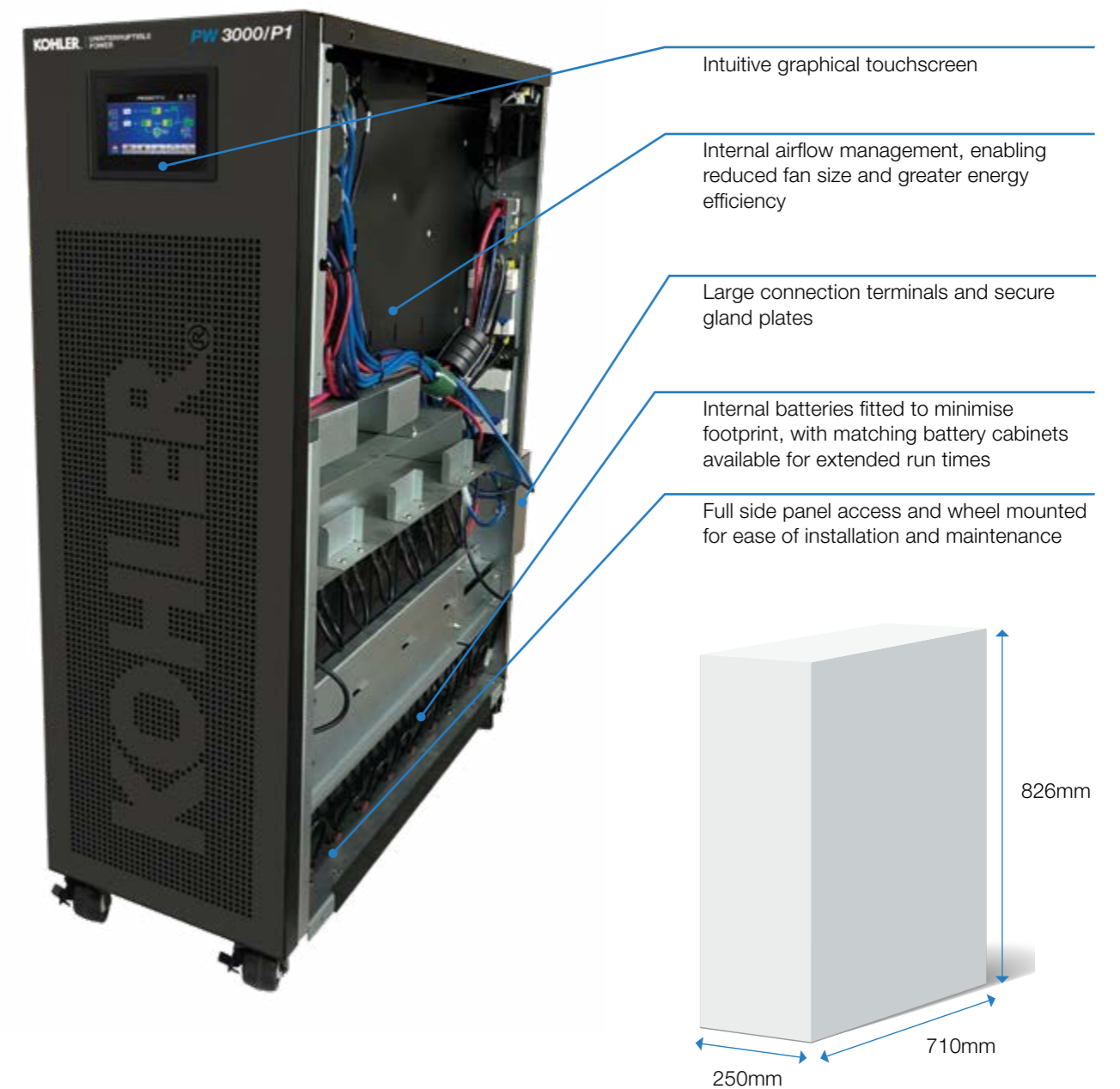
The KOHLER PW 3000/P1 solves the problem of providing economic-to-run, dependable critical power protection for higher load single-phase applications such as vital servers, networks and telecommunications.

Compact, easy to install and operate, with an advanced intuitive touchscreen display, the KOHLER PW 3000/P1 is available in 10 kW and 20 kW models. Up to four units can be paralleled, enabling support of loads up to 80 kW.

With a 1.0, or “unity” output power factor and outstanding energy efficiency of 96.6% in continuous online, double conversion VFI mode, this makes the KOHLER PW 3000/P1 an ideal choice for those wanting to invest in advanced, reliable and environmentally-conscious protection of critical loads.



Features



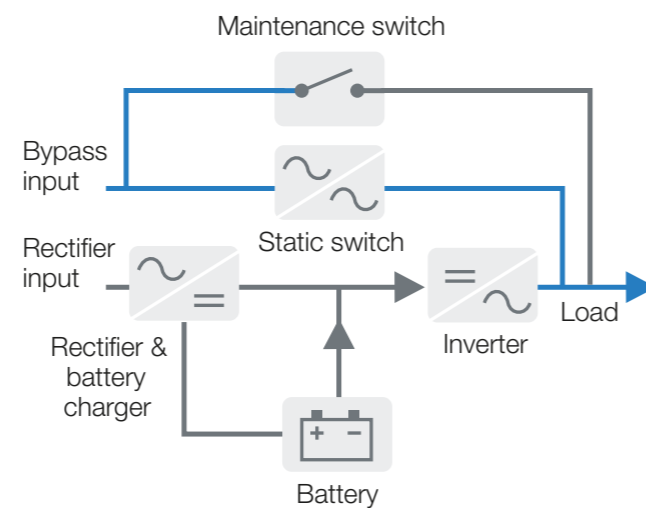
With the class leading KOHLER PW 3000/P1, KUP is responding to key market trends including:

- Energy cost and carbon emissions concerns rising
- Rising loads but restricted space

In addition, KUP recognises many IT and FM professionals depend on high quality guidance and support to select appropriate, modern and cost-effective solutions. A highly experienced, UK-based engineering team is therefore available should you require pre or post sale assistance.

Dual input system principle diagram

Online double conversion continuously provides filtered and stabilised waveform and frequency



Key features

- Outstanding 96.6% VFI-mode energy efficiency
- Unity power factor
- Overall footprint of 0.1775 m²
- Communications interface: Network interface SNMP card, dry-contact, RS232
- Single or dual input feed compatible

- External maintenance bypass switch connection
- Alarm history data log (500 events)
- 4.3" Graphical touch screen display – easy to use, advanced interface
- Premium quality EnerSys brand batteries as standard
- Intelligent charging system able to support additional battery cabinets for extended autonomies

10 kVA / 20 kVA

- Weight without batteries 43 kg / 44 kg
- Dimensions 250mm W x 710mm D x 826mm H



Three-Phase UPS

KOHLER *PW* 5000/TP

Three-phase uninterruptible power supply

(10-50 kVA)

Parallelable up to 400 kVA / 360 kW



Enhanced power protection in a compact format.

Three-phase UPS for midsize server rooms, networks, telecommunication systems, life-safety applications and industrial processes.

A true online, double conversion, VFI (voltage frequency independent) UPS that provides enhanced power protection in a compact format.

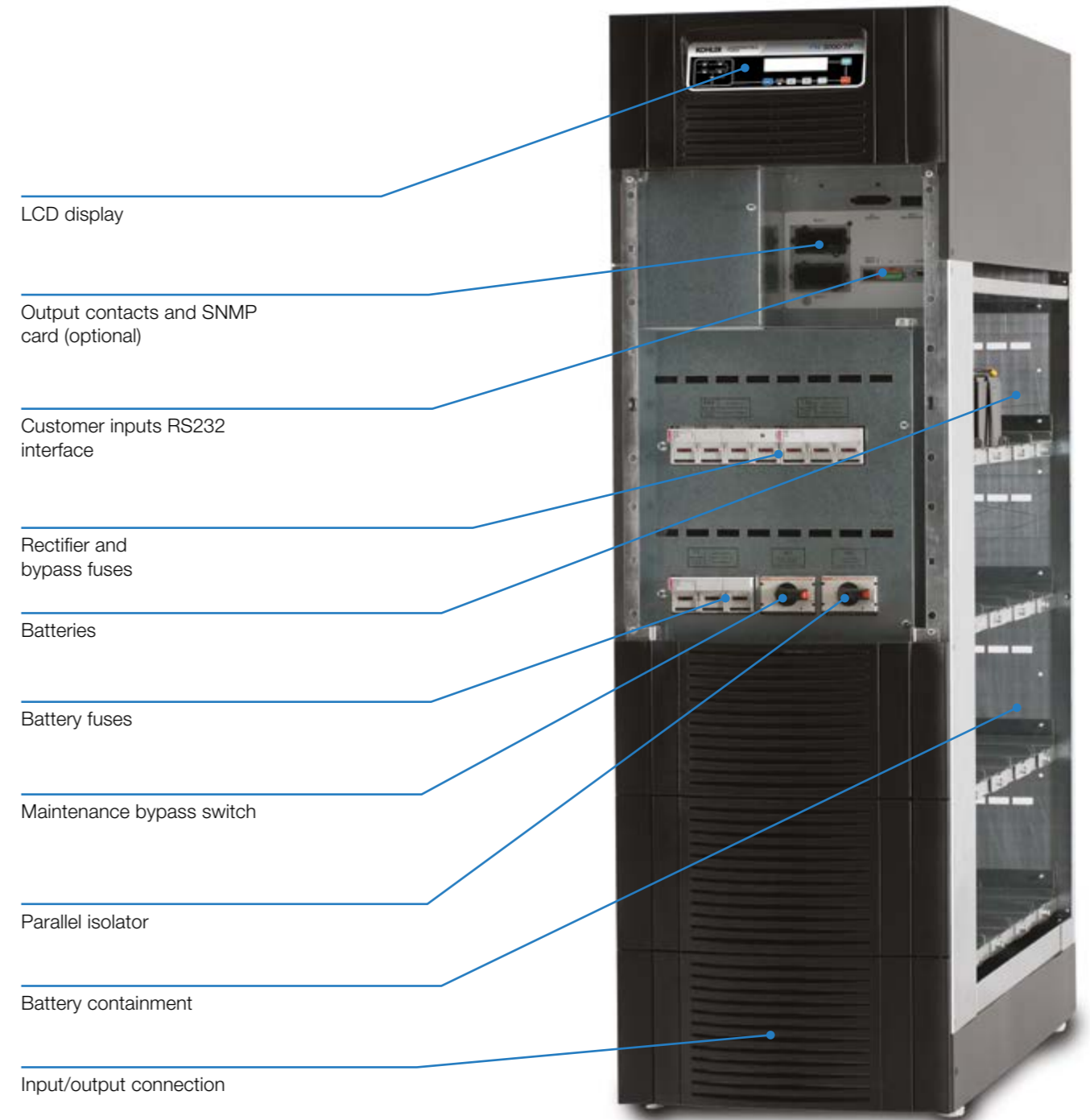
An outstanding combination of reliability, performance and price, backed by KUP's system design and support capabilities, have made the KOHLER PW 5000T/P a widely proven and trusted solution.



The KOHLER PW 5000/TP

- | Capacities from 10 kVA to 50 kVA
- | Parallel capability of up to 20 units
- | Online double conversion technology for high reliability and optimised output
- | Transformerless design for high efficiency, small footprint and low weight
- | High efficiency across a wide load range
- | Low input harmonic distortion (THDi) reduces associated installation costs
- | Choice of internal batteries or extended autonomy via matching external battery cabinets
- | Adjustable automatic battery test function for increased confidence / early fault diagnosis plus battery management system to extend life

Features



LCD display

Output contacts and SNMP card (optional)

Customer inputs RS232 interface

Rectifier and bypass fuses

Batteries

Battery fuses

Maintenance bypass switch

Parallel isolator

Battery containment

Input/output connection

Space saving

With a footprint of only 0.4m² at 50 kVA, the KOHLER PW 5000/TP has a power density of up to 100 kW/m². As a result, substantial and valuable space savings are achieved even at the highest power ratings.

Wheeled A or B cabinets (see over) further reduce footprint by enabling units to be easily pulled forward for service access when fitted with suitable cabling.



The KOHLER PW 5000/TP range

**UPS cabinet A
(10–20 kVA)**



Dimensions (W x D x H)
345 x 710 x 720 mm

Weight without battery

10 kVA: 60 kg
15 kVA: 62 kg
20 kVA: 64 kg

Weight with 48 x 7/9 Ah battery

10 kVA: 180 kg
15 kVA: 182 kg
20 kVA: 184 kg

**UPS cabinet B
(10–25 kVA)**



Dimensions (W x D x H)
345 x 710 x 1045 mm

Weight without battery

10 kVA: 88 kg
15 kVA: 90 kg
20 kVA: 92 kg
25 kVA: 94 kg

Weight with 96 x 7/9 Ah battery

10 kVA: 328 kg
15 kVA: 330 kg
20 kVA: 332 kg
25 kVA: 334 kg

**UPS cabinet C
(25–50 kVA)**



Dimensions (W x D x H)
440 x 910 x 1420 mm

Weight: 7/9 Ah cabinet without battery

25 kVA: 151 kg
30 kVA: 160 kg
40 kVA: 165 kg
50 kVA: 170 kg

Weight: 28 Ah cabinet without battery

25 kVA: 135 kg
30 kVA: 145 kg
40 kVA: 150 kg
50 kVA: 155 kg

Weight with 144 x 7/9 Ah battery

25 kVA: 540 kg
30 kVA: 550 kg
40 kVA: 555 kg
50 kVA: 560 kg

Weight with 48 x 28 Ah battery

25 kVA: 605 kg
30 kVA: 615 kg
40 kVA: 620 kg
50 kVA: 625 kg

Available in three different cabinet sizes



Cabinet A: 10 – 20 kVA
Cabinet B: 10 – 25 kVA
Cabinet C: 25 – 50 kVA

Flexible battery configuration

- Optimal sizing of battery capacity
- 10–50 kVA with different sized cabinets
- Extended autonomy with matching battery cabinets

The KOHLER PW 5000/TP is available in three cabinet sizes, enabling you to choose the ideal capacity and required autonomy for your critical load. The smaller 10-25 kVA units are available in two cabinet sizes, dependent on the required level of autonomy, with the larger units (25–50 kVA) available in a third cabinet size, which can house both 7/9 Ah and 28 Ah batteries.

Easily add extra protection

- Parallel functionality for creating systems with built-in redundancy
- Paralleled systems are designed to ensure availability by significantly increasing system redundancy. In the case of a power failure, should a UPS unit fail, the remaining units are still able to continue to support the critical load.
- Redundant paralleled systems also enable regular maintenance to be carried out on the system without any requirement to remove the critical load from conditioned power.

Engineered for low lifetime costs

- High efficiency at partial and rated loads
 - Charging control system extends battery life
- Advanced, transformerless design and Energy Saving Inverter Switching (ESIS) technology enable the KOHLER PW 5000/TP to deliver high efficiency from partial up to full rated load. This reduces both electrical and cooling costs.
- Ripple-free temperature controlled battery chargers protect batteries and extend the lifetime performance, further reducing running costs.
- These benefits combine to make the KOHLER PW 5000/TP highly cost effective and eco-friendly to operate.

KOHLER *PW* 6000

Medium to high power three-phase uninterruptible power supply

(60-500 kVA)

Parallelable up to 6-10 units



Clean power, *dependable* resilience.

An advanced, transformerless medium to high power three-phase UPS combining energy efficiency, proven reliability and compact footprint.

Three-phase monolithic UPS with unity power factor delivering a leading combination of reliability, energy efficiency, performance and ownership costs in a compact footprint, backed by KUP's exceptional support and service.

Innovative design and electronics result in dependable, clean power with a minimised, and often class-leading physical and environmental footprint.

KOHLER PW 6000

| Exceptional active power density

An active power density of up to 407 kW/m² is achieved through electronics that deliver an output power factor of 1.0 (unity) and a compact physical footprint. Frequently offering the best power / footprint ratio in its class, without compromising efficiency, this makes the KOHLER PW 6000 an ideal solution for space-constrained installations.

| Leading parallel capability

Facilitates configurations requiring built-in redundancy eg N+N and easy expansion as load grows.

Scale up on your timescale to operate up to ten 60-300 kW models in parallel or six 400-500 kW units.



KOHLER PW 6000 range

60–120 kVA



Dimensions
W x D x H (mm)
60-80 kVA: 615 x 480 x 1954
100-120 kVA: 615 x 480 x 1978
Footprint 0.30m²

160–200 kVA



Dimensions
W x D x H (mm) 850 x 750 x 1820
Footprint: 0.64 m²

Lowering your cost of ownership

- | Bespoke configuration
- | Reduced running costs
- | Extended battery life

Choosing from the wide range available, KUP's expert team will select the right size KOHLER PW 6000 and combine it with a battery system that is bespoke to your requirements, avoiding expensive over-sizing and increased running costs.

Running costs are reduced again by ripple-free and temperature controlled chargers that protect batteries and extend lifetime. This can be extended further, typically up to 30%, with individualised battery charge control via the optional PowerNSURE Battery Management System.

Proven performance

- | Externally validated specification
- | Large installed base
- | Best-in-class service performance

The specifications and performance of the KOHLER PW 6000 have been independently verified, whilst its large installed base is testament to its reliability.

Add to that, the exceptional customer scores given to KUP for service performance and you can be confident in your choice of UPS solution.

250–300 kVA



Dimensions
W x D x H (mm) 1100 x 750 x 1920
Footprint: 0.82 m²

400–500 kVA



Dimensions
W x D x H (mm) 1650 x 850 x 1994
Footprint: 1.40 m²

Understanding efficiency and power



Blade friendly

- Supports high powered servers such as blade servers
- Supports leading power factors

Blade servers typically have a leading power factor and this can present problems to those UPS systems that are not designed to manage such loads. The KOHLER PW 6000 is designed to power all types of electrical loads, including high-powered servers. It can provide fully rated output power to power factors from 0.9 leading to 0.9 lagging.

Service friendly

- Front-only service access
- Remote monitoring compatible

Designed so all service operations can be carried out with only front access, installation and service times are minimised and availability maximised.

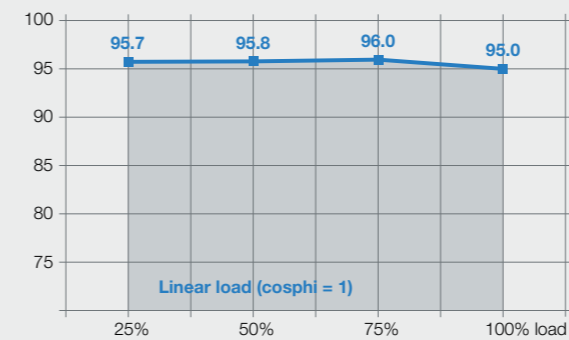
To improve peace of mind and accelerate time to repair in the event of an issue, the KOHLER PW 6000 is fully compatible with KUP's PowerREPORTER remote monitoring system.

Connectivity

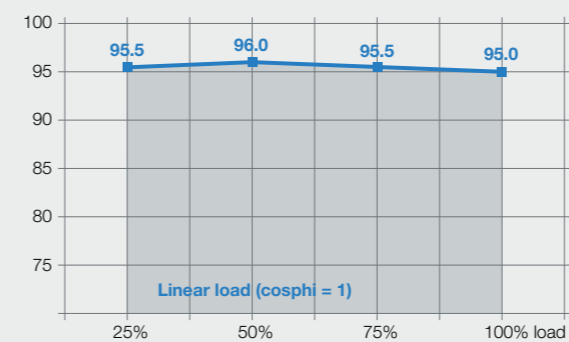
- Multiple interface options
- Supports monitoring and control

The KOHLER PW 6000 is equipped with multiple interfaces that can be used for local network connectivity, status signalling, control, maintenance and firmware upgrade.

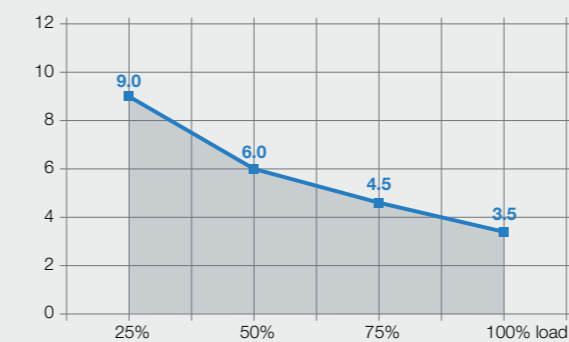
AC-AC efficiency (60–120)



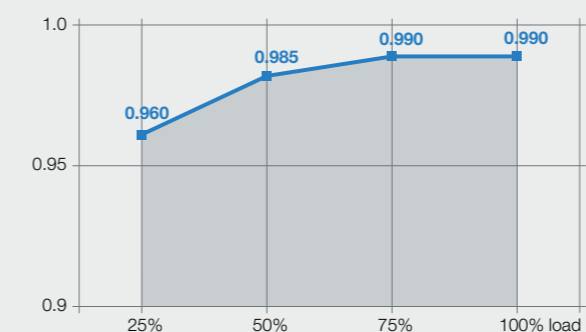
AC-AC efficiency (160–500)



Input current total harmonic distortion, THDi (160-500)



Input power factor versus load



Top-of-market efficiency in double conversion mode, (eg up to 96.2% for latest 500 kW model), reduces running costs without compromising reliability. This UPS has a very flat efficiency curve so high efficiency is reached at low load levels.

With a transformerless design and Energy Saving Inverter Switching (ESIS) technology, the KOHLER PW 6000 delivers high efficiency at partial and full load in double conversion online mode. This dramatically reduces the total cost of ownership of the UPS system during its life cycle.

The KOHLER PW 6000 actively manages the input current total harmonic distortion (THDi) at a low level. Unique technology neutralises the emission of harmonics at the input of the UPS system, providing greater reliability of operations for circuit breakers and extending the overall service life of the equipment.

Low harmonic distortion saves unnecessary oversizing of gensets, cabling and circuit breakers, avoids extra heating of input transformers and extends the overall service life of all upstream components.

Thanks to the near-to-unity input power factor of 0.99, the KOHLER PW 6000 reduces the input installation costs by enabling the use of smaller cables. Furthermore, it avoids the unnecessary use of additional phase compensating devices, which consequently keeps the overall UPS efficiency high.

KOHLER *PW* 8000DPA

Modular three-phase uninterruptible power supply

(10–200 kVA/kW)

Parallelable up to 400 kVA/kW



Flexible power, *proven* dependability.

The KOHLER PW8000DPA is a modular three-phase UPS designed for low to medium load critical power applications.

High efficiency, low cost of ownership and a compact footprint give a combination proven in a wide range of critical applications.

The KOHLER PW 8000DPA is a leading-edge modular designed UPS using proven Decentralised Parallel Architecture (DPA) technology. The PW 8000DPA excels by offering broad load-range energy efficiency, “Six nines” 99.9999% availability and flexible scalability in either a tower or rack-mountable solution.

The right solution – KOHLER PW 8000DPA is available in two versions

The KOHLER PW 8000DPA ST (tower) - is available for high-density applications requiring a standard power protection solution including frame, UPS, battery and communication. This solution delivers power protection from 10–200 kVA/kW (180 kVA/kW N+1) in 10 kVA/kW or 20 kVA/kW modular steps to provide a maximum power density of 472 kW/m². The PW 8000DPA cabinets can be paralleled horizontally to increase the capacity up to 400 kVA/kW.

The KOHLER PW 8000DPA RI (19” rackmountable) solution includes UPS, battery and communication, which can be integrated into any 19” rack (independent of manufacturer) and provides up to 80 kVA/kW (60 kVA/kW N+1) making it ideal for integrated IT, telecom or other applications.

Features

KOHLER PW 8000DPA ST (tower)

Up to 10 UPS modules

Slot for optional SNMP card

Customer inputs and volt-free outputs / RS232 serial interface

Maintenance bypass switch

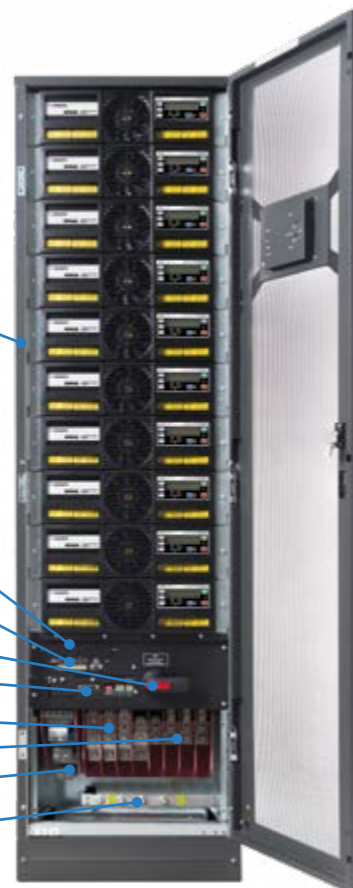
Parallel interface

AC input terminals

AC output terminals

Battery terminal rail

Earth bar



KOHLER PW 8000DPA RI (19" rack-mountable)

UPS modules

Internal battery storage

RS232 serial interface

Customer inputs and volt-free outputs

Maintenance bypass switch

Slot for optional SNMP card

Battery fuses



Advanced Decentralised Parallel Architecture (DPA)

- | Distributed control and power
- | Independent hot-swap modules
- | No single points of failure

Decentralised Parallel Architecture (DPA) means each UPS module contains all the hardware and software required for full-system operation. They share no common components so a DPA parallel system offers extremely high availability.

In addition, potential single points of failure are eliminated and system uptime is maximised. KOHLER PW 8000DPA UPS modules can be paralleled to provide redundancy (parallel redundancy) or to increase the system's total capacity.

High reliability

- | Reliability maximised
- | Automatic parallel redundant operation

The KOHLER PW 8000DPA is designed to automatically operate as a parallel redundant system, ensuring that the critical load always receives the highest level of power protection.

Generator friendly

- | Generator compatible
- | Soft start – introduces the generator load in steps

The KOHLER PW 8000DPA offers a highly effective solution when introducing a generator to the critical load. If the load exceeds 50 per cent of the generator's standby rating, switching the load in a single step presents a number of dangers. To negate this, each of the 'hot-swap' modules within the KOHLER PW 8000DPA's modular frame come equipped with 'soft start' capability. This allows the modules to be switched over sequentially, introducing the generator to the load in more manageable steps.

Easy to replace 'hot-swap' modules

- | Pay-as-you-grow scalability
- | Replace or add modules with no downtime
- | Simple power upgrade
- | Future proof investment

True 'hot-swap' modularity enables the safe removal and/or insertion of UPS modules into a KOHLER PW 8000DPA system without risk to the critical load and without the need to either transfer the critical load onto raw mains or remove power from the critical load. This directly addresses today's requirements for continuous uptime and reduced mean time to repair (MTTR).

Blade friendly

- | Supports blade servers
- | Supports leading power factors

Blade servers typically have a leading power factor, which can present problems to UPS systems, particularly if they are not designed to power such loads. The KOHLER PW 8000DPA is designed to power all types of electrical loads, including blade servers. It can provide fully rated output power to power factors in the range of 0.9 leading to 0.8 lagging.

High energy efficiency – low total cost of ownership

- | High operating efficiency
- | Reduced installation and upgrade costs
- | Near unity input power factor and low input (THDi) – reduces running costs

The KOHLER PW 8000DPA's high energy efficiency of up to 95.5% is delivered across a wide load range, significantly reducing system running costs and site air conditioning costs.

Additionally, the PW 8000DPA has a near unity input power factor at full load (and even partial loads) reducing the size of the input cable and fuses, thereby saving on materials and costs.

Input current total harmonic distortion (THDi) of less than 3% virtually eliminates harmonic distortion of the mains supply. This saves unnecessary oversizing of gen-sets, cabling and circuit breakers; avoids extra heating of input transformers; and extends the overall lifetime of all input components.

KOHLER PW 8000DPA ST

ST tower range – 10–200 kVA/kW



ST 40 – 2 modules

Dimensions W x D x H:
550 x 770 x 1135 mm

No. of internal batteries:
2 x 40 x 7.2/9Ah
Total 80 blocks



ST 60 – 3 modules

Dimensions W x D x H:
550 x 770 x 1975 mm

No. of internal batteries:
3 x (2x40) x 7.2/9Ah
Total 240 blocks



ST 80 – 4 modules

Dimensions W x D x H:
550 x 770 x 1135 mm

External battery ONLY



ST 120 – 6 modules

Dimensions W x D x H:
550 x 770 x 1975 mm

External battery ONLY



ST 200 – 10 modules

Dimensions W x D x H:
550 x 770 x 1975 mm

External battery ONLY

KOHLER PW 8000DPA RI

19" rack-mountable range – 10–80 kVA/kW



With batteries RI 11 – 1 module

Dimensions W x D x H:
448 x 735 x 487 mm (11 HU)

Number of batteries: 40



RI 12 – 1 module

Number of batteries: 80



RI 22 – 2 modules

Dimensions W x D x H:
448 x 735 x 665 mm (15 HU)

Number of batteries: 80



RI 24 – 2 modules

Dimensions W x D x H:
448 x 735 x 798 mm (18 HU)

Number of batteries: 160



Without batteries RI 10 – 1 module

Dimensions W x D x H:
448 x 735 x 310 mm (7 HU)



RI 20 – 2 modules

Dimensions W x D x H:
448 x 735 x 440 mm (10 HU)



RI 40 – 4 modules

Dimensions W x D x H:
448 x 735 x 798 mm (18 HU)

KOHLER *PW* 9250DPA

Modular three-phase uninterruptible power supply

(50–300 kVA/kW)

Parallelable up to 1500 kVA/kW



Flexible power, *outstanding* efficiency.

A true modular three-phase UPS for medium power applications in critical, high-density computing environments such as small to medium-sized data centres, plus industrial automation processes and healthcare facilities.

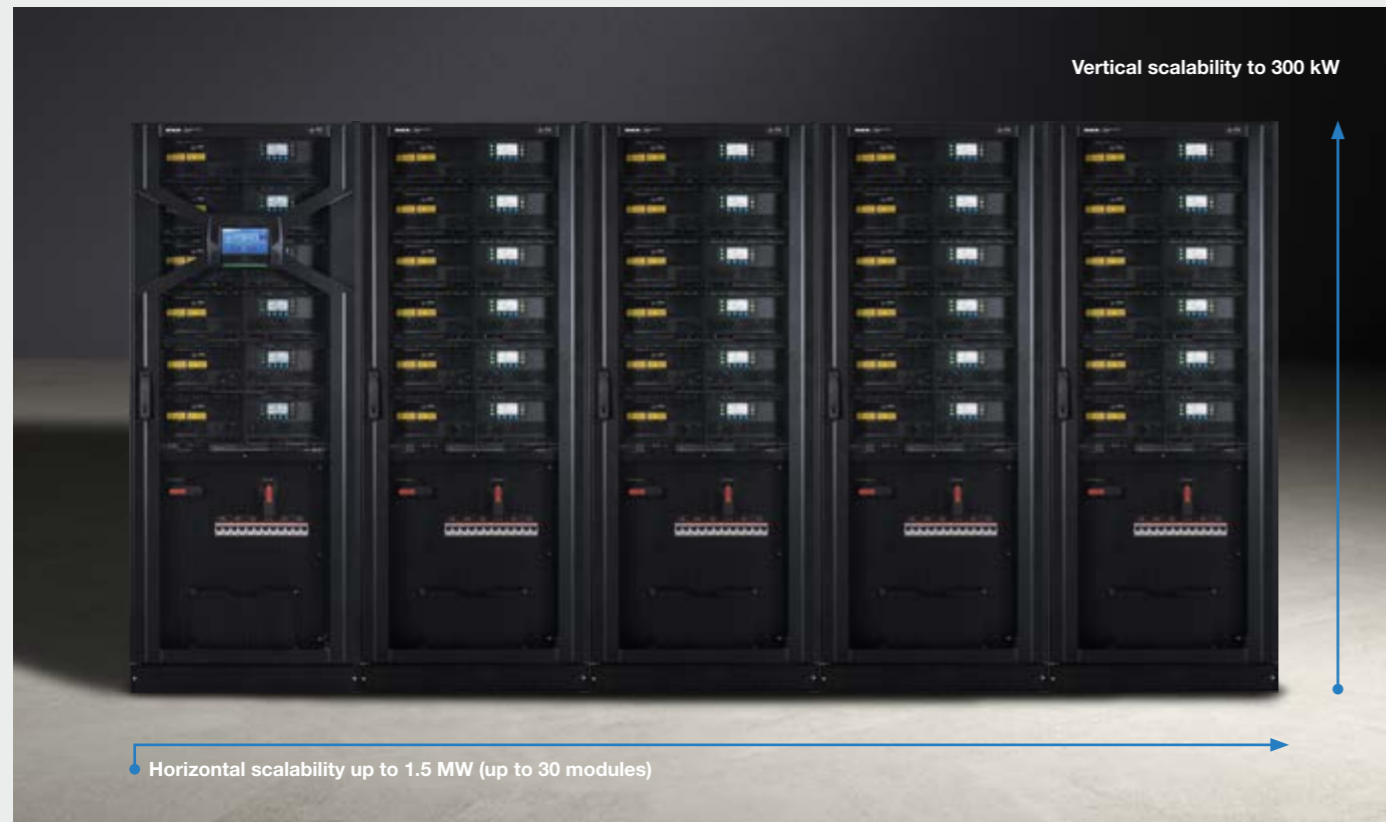
The KOHLER PW 9250DPA's highly efficient modular architecture offers the best reliability for environmentally conscious organisations that need zero downtime and low cost of ownership.

The PW 9250DPA sets the standard for the next generation of UPS with advanced features such as transformer-free IGBT converters that include three-level topology and interleaving controls to enable market leading efficiency of 97.4%.

It also supports Xtra VFI, a smart mode which further minimises power consumption by intelligently configuring the number of modules required to support the current critical load. When Xtra VFI is enabled, the number of active modules required will adjust accordingly, with modules not needed switching to a standby state of readiness but primed to become active again if the load increases.

KOHLER PW 9250DPA

50kW - 300kW UPS, parallelable to 1500kW



50-300 kW uninterrupted power in a single frame

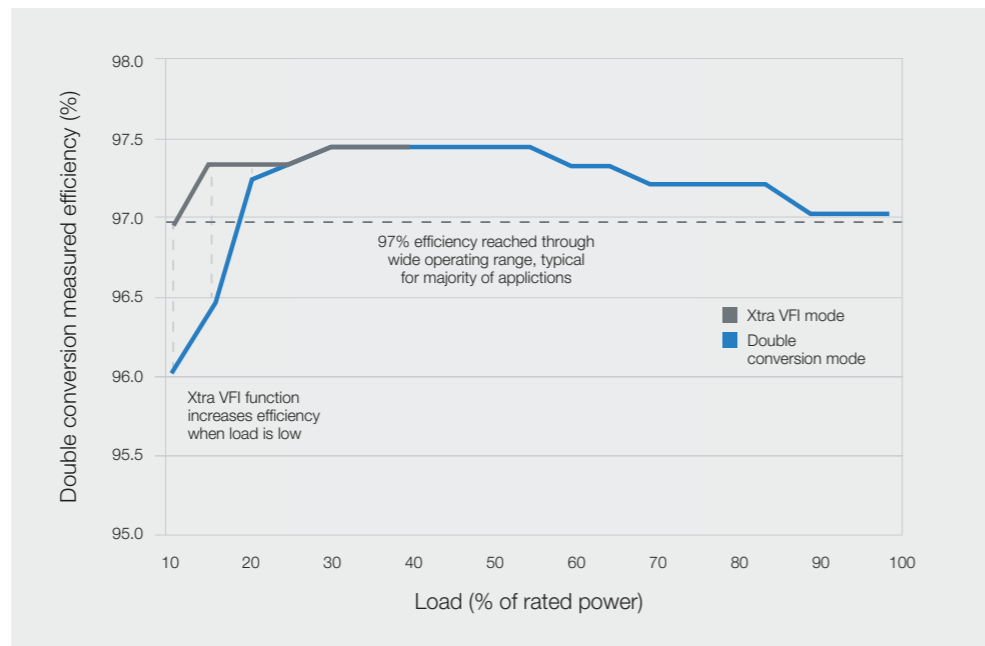
The use of DPA™ (Decentralised Parallel Architecture) ensures each module has all the hardware and software needed for autonomous operation: rectifier, inverter, battery converter, static bypass switch, back-feed protection, control logic, display and mimic diagram for monitoring and control. If one module is lost, the others take up the load, meaning that the system is fault tolerant and there are no single points of failure.

Put simply, uptime and availability are maximised.



Featuring superior 97.6% UPS module efficiency and 97.4% system efficiency, the PW 9250DPA reduces energy losses that increase electricity costs and costs for cooling.

Thanks to three-level interleaved IGBT technology the PW 9250DPA achieves an efficiency of over 97% in a wide operating range, when the load is between 25% and 75% of nominal capacity.



Compact, scalable reliability, maximum availability

- Exceptional power density allows provision of 300 kW of protection within a UPS footprint of only 0.73m²
- Pay-as-you-grow: Easily add modules and frames as demand grows, from 50 kW to 1.5 MW
- Hot-swappable, front access DPA™ modules with an optimised electrical and mechanical design with virtually no wiring enable easy servicing and reduce mean time to repair (MTTR), increasing availability

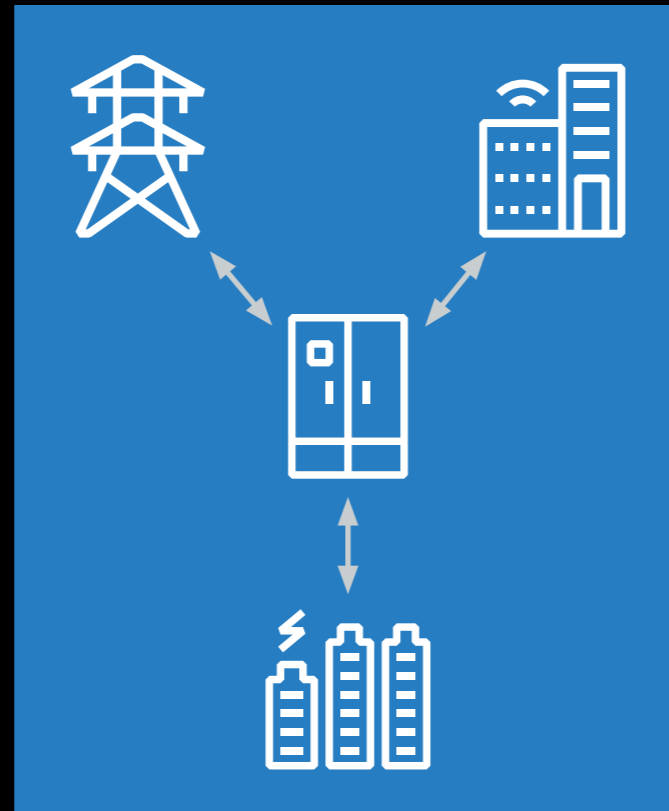
Wiring options secure compliancy for any site installation need

- Supports top or bottom cable entry
- Supports single or dual input feed
- Common battery per frame or dedicated for each UPS module
- Robust ring-bus communication for increased reliability

Integrated switchgear completes the system

- Output isolation switch to disconnect the UPS output from downstream distribution
- Optional maintenance bypass switch for enhanced serviceability

Engineered for maximum performance



Easy to monitor and manage

- | Intuitive, graphical system user interface
- | Each module features a dedicated display for module specific data access
- | Robust ring-bus communication for increased reliability

Energy storage

- | Compatible with lithium-ion, VRLA and NiCd battery types

Future-ready with Grid Support functionality

The KOHLER PW 9250DPA is able to interact with the mains grid and external systems to provide:

- | Input power reduction or increase
- | Backfeed to grid
- | Fast Frequency Response
- | Island Mode operation

Capabilities will also depend on local standards and battery systems – please consult KUP for details.

Features

DC (battery) breakers

DC breakers for energy storage connection on each module separately in distributed battery systems.

Maintenance bypass (optional)

Integrated MBS is available as an option for enhanced serviceability with single frame installations.

I/O section and DC wiring

Wiring area designed with service and installation in mind. Single and dual input feed supported as well as common or separate battery. Top or bottom cable entry supported.

Up to 6 x 50 kW UPS modules

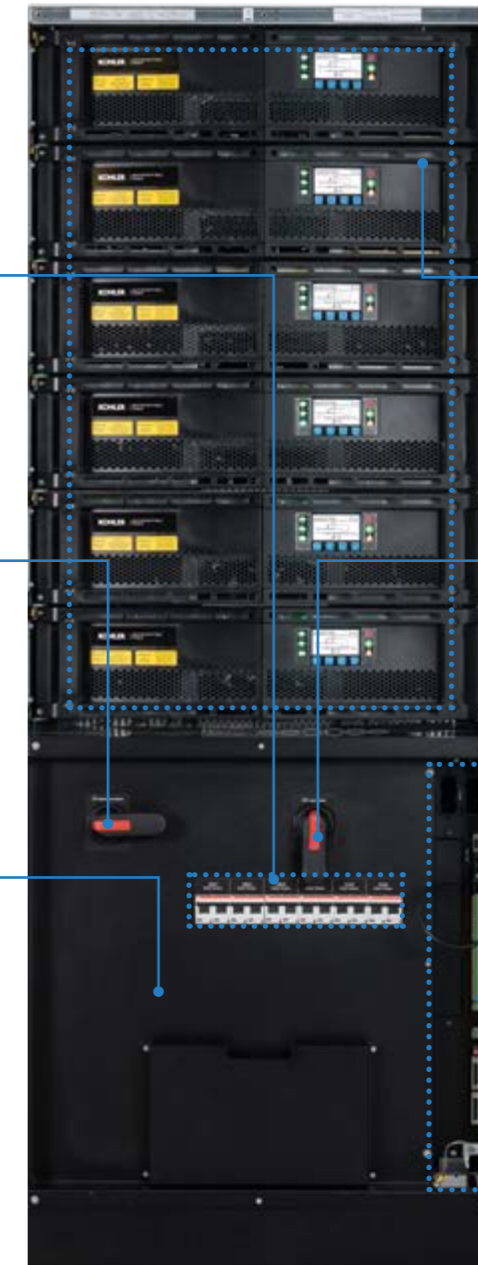
Integrated UPS module with all essential functions: rectifier, inverter, static bypass, control logic and display.

Output isolation switch

Included in the standard configuration to allow disconnection of complete UPS cabinet from load supply.

Connectivity section

Two slots for connectivity cards, e.g. SNMP web card and relay board. USB and RS-232 communication ports. Building alarm inputs/relay outputs. Connection point for parallel system communication cable.



User interface

System graphical display

- | Touch screen interface – one per system
- | Interactive mimic diagram
- | Coloured and graphical display
- | Integrated buzzer for alarms
- | 18-languages selection
- | Extended events log (1,000 events)

- | Clear system overview, measurements and system status
- | Navigation into module level, module level measurements and status
- | System level commands

DPA module display

- | 240 x 128 pixel graphical display
- | Five-line menu
- | Capacitive buttons/key
- | Status LED RG/RGB
- | Allows for easy module level data access and module management

KOHLER *PW* 9500DPA

Modular three-phase uninterruptible power supply

(100–500 kVA/kW)

Parallelable up to 3 MVA/MW



Flexible power, *trusted* performance.

500 kVA/kW three-phase modular UPS, designed with high efficiency, maximum resilience and optimum flexibility at its core.

The KOHLER PW 9500DPA boasts an impressive track record for providing resilient, flexible power protection with a low total cost of ownership.

Leading levels of online VFI energy efficiency, made available across a broad load range, significantly reduce system running and cooling costs, whilst also helping reduce an organisation's carbon footprint.

Modular, scalable DPATM architecture delivers maximum availability whilst also allowing systems to be right-sized now and incrementally expanded as load grows.

Innovative electronic design allows savings on input cable and fuses, via input power factor, whilst a low THDi extends the life of input components and avoids unnecessary over-sizing of generators, cabling and circuit breakers or extra heating of input transformers.

KOHLER PW 9500DPA

Scalable up to 3 MVA/MW



Total vertical and horizontal scalability using hot swap

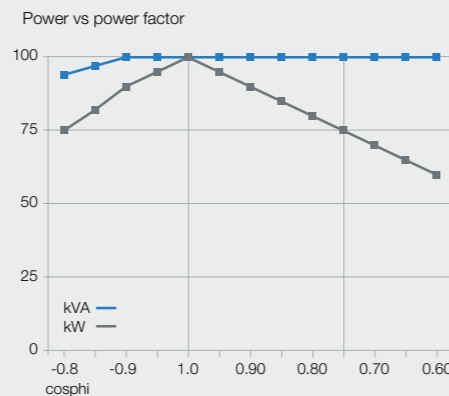
Scalable up to 3 MVA/MW

- Vertical and horizontal scalability
- Cost effective 'right sizing'

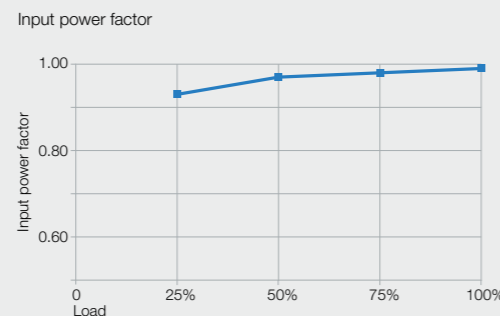
The KOHLER PW 9500DPA can be scaled vertically in 100 kVA/kW modular steps to provide up to 500 kVA/kW of power in a single frame. This enables power to be added as requirements grow, without the impact on footprint.

Horizontal scalability is also possible, with up to six frames in parallel, to increase total power up to 3 MVA/MW. This two-dimensional scalability means that there is no need to overspecify the original configuration, as modules and/or frames can be added to optimise the power requirements and increase/decrease power to meet future requirements.

Input and output characteristics



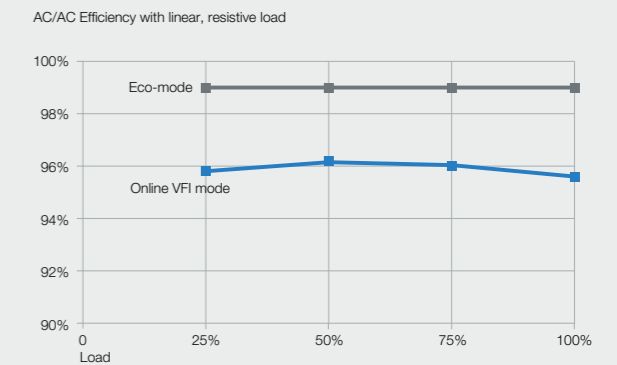
No derating in the range 0.9 leading to 0.6 lagging



Near unity input power factor, at partial and full load, reduces the required size of the input cable and fuses, thereby reducing the materials (and costs) associated with the system's electrical installation.

KOHLER PW 9500DPA UPS 500 kVA/kW

- Broad range online VFI efficiency, up to 96.1%
- Eco-mode efficiency $\geq 99\%$
- Cost effective scalability to 'right size' system
- Unity power factor and low input THDi
- Transformerless technology
- Hot swappable 100 kVA/kW modules
- Low total cost of ownership
- 99.9999% (six nines) availability
- Small footprint/high power density
- Unity power factor (kW = kVA)
- Low input harmonic distortion (THDi <3.5%)
- Top and bottom cable entry
- Graphical touchscreen system display
- Xtra VFI mode: maximum efficiency even when underloaded
- Grid support functionality



Advanced Decentralised Parallel Architecture (DPA)

- Distributed control and power
- Independent hot-swap modules
- No single points of failure

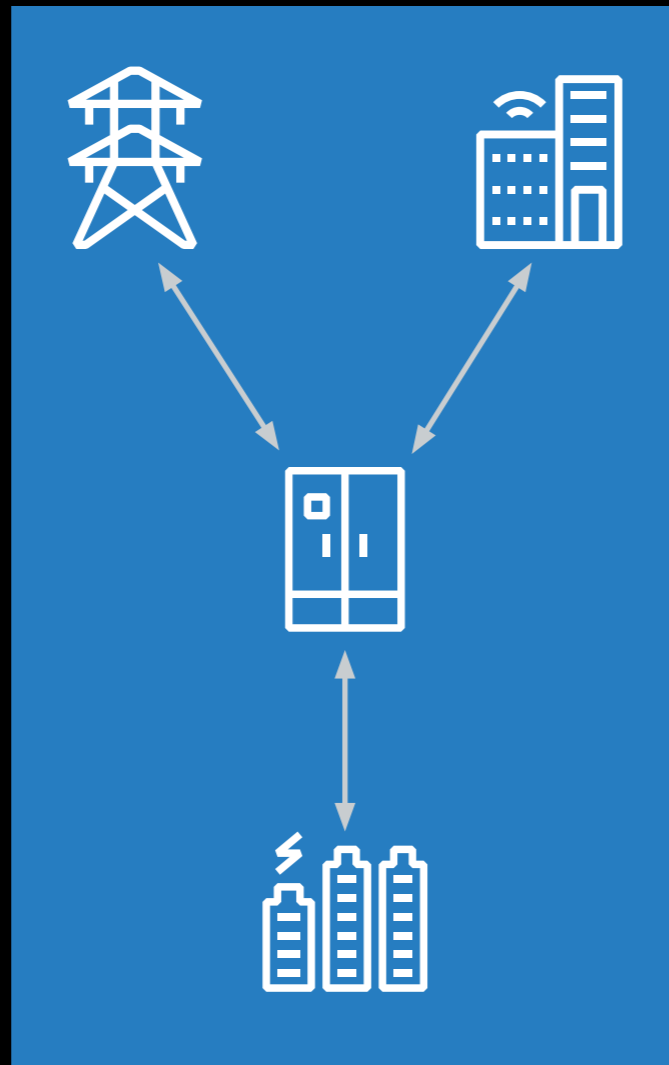
Decentralised Parallel Architecture (DPA) means each UPS module contains all the hardware and software required for full system operation. They share no common components or potential points of failure so a DPA parallel system offers extremely high availability and uptime.

As modules can be added or removed without switching to bypass this facilitates easy maintenance and changes in system capacity.

Energy efficient protection

- Continuous online (VFI) efficiency up to 96.1%
- Smart XtraVFI mode for secure low load efficiency

Advanced components and electronic design delivers exceptional energy efficiency. This is extended even to lower loads with XtraVFI functionality, an intelligent mode that maintains online protection while balancing load across modules to achieve optimum efficiency.



Efficient, resilient protection



- Top cable entry
- Local LCD display and keypad
- Smart connection interface
- Optional inbuilt maintenance bypass switch
- Individual module isolator
- Inbuilt backfeed protection
- Bottom cable entry

Six nines availability

| 99.9999% availability

By combining the benefits of Decentralised Parallel Architecture, parallel redundancy and hot swap modularity, the KOHLER PW 9500DPA has a high mean time between failure (MTBF) and a much reduced mean time to repair (MTTR). This means the KOHLER PW 9500DPA can provide 99.9999%, or 'six-nines' availability - the standard required by modern data centres and other demanding applications seeking zero downtime.

To further improve peace of mind and accelerate time to repair in the event of an issue, the KOHLER PW 9500DPA is fully compatible with KUP's PowerREPORTER remote monitoring system.

Future-ready with Grid Support functionality

The KOHLER PW 9500DPA is able to interact with the mains grid and external systems to provide:

- | Input power reduction or increase
- | Backfeed to grid
- | Fast Frequency Response
- | Island Mode operation

Capabilities will also depend on local standards and battery systems – please consult KUP for details.

Clear and easy communications

- | System level 7" colour touchscreen display
- | Individual LED and LCD displays per module
- | Comprehensive output and connectivity options

The large touchscreen system display provides a clear overview of status and performance, whilst each module also has its own individual display to increase resilience and allow easier local interrogation whilst the cabinet door is open.

Output ports include RS232, USB and dry contacts as standard, while an optional SNMP card enables simple integration with a local network and 24/7 remote monitoring by KUP can provide ultimate peace of mind.

Flexible energy storage options

- | Compatible with VRLA, NiCd and lithium-ion battery types
- | Separate or common battery configuration

KUP's expert team will design a resilient, cost-effective energy storage solution specific to your autonomy, redundancy, space and floor loading needs.

Systems can be based upon matching black (RAL 9005) battery cabinets or racks, which may be open or cladded, and optionally fitted with KUP's PowerNSURE VRLA battery management system. Unlike traditional battery monitoring systems, PowerNSURE also actively manages the charge of each individual battery. As a result service life is dramatically increased, reducing costs, maintenance visits and environmental footprint.

KOHLER *MF* Series

Modular high power three-phase uninterruptible power supply

(250 - 6000 kVA/KW MF DPA Series)

(1500 - 4500 kVA/KW MF DPA-CSB Series)



Flexible *power*, efficient energy.

Exceptionally resilient, flexible and scalable high power modular UPS offering best-in-market VFI mode energy efficiency.

Available in distributed or centralised static bypass (CSB) configurations.

Redefines lifetime cost for data centres and other high density applications without compromising reliability.

KOHLER MF Series

- | Online double conversion UPS
- | DPA 250 kW to 1500 kW - parallelable to 6000 kW
- | DPA-CSB 1500 - 2000 kW - parallelable to 4500 kW
- | Slide-in vertical modules
- | Cable free internal connections
- | Single feed and dual feed options
- | Market leading 97.4% efficiency

Footprint savings of

45%

VFI system efficiency in 250-2000 kW frames of up to

97.4%

Plug-in design makes it easy and safe to hot swap for

Continuous uptime

through concurrently maintainable power modules

KOHLER *MF* Series frame formats



0.75 MW
RHS and LHS connections available



1.0 MW
RHS and LHS connections available



1.5 MW



1.5 MW (DPA-CSB)



2.0 MW (DPA-CSB)

Engineered. Inspired. Informed.

- | Designed for ease of use from the first moment of installation, module cabinets are easily transported to the UPS and slide into place on integrated wheels
- | To make them easy, safe and error free, wired connections are entirely eliminated by use of slide-in modules and innovative, pre-engineered power and distribution frames
- | Advanced design maximises life of consumables, eg fans and capacitors, with replacement only once in a 15-year period
- | Recognising pressure on space, intelligent physical design delivers a power density of up to 493 kW/m², some 45% better than traditional approaches, without compromising access
- | An advanced visual interface and display allows an operator to observe performance, events and alarms onscreen, including battery voltage, UPS output and critical component status

- | Comprehensive control and monitoring keeps operators and service teams fully informed. Information can be accessed remotely via SNMP, Modbus TCP/IP or Modbus RS-485 and integrated with associated systems, e.g.

BMS, DCIM or EPMS

Additional control and monitoring features include:

- | I/O dry ports
- | Remote shutdown
- | Castell interlock function
- | Battery temperature input

plus compatibility with Kohler's PowerNSURE battery management and PowerREPORTER 24/7 monitoring systems



N+1, fault-monitored fan assembly housed in cable-free slide-out drawer for maximum reliability and easy maintenance.

Innovation with purpose

Designed with a clear goal to define that reliability does not require excess, and high power can exist alongside efficient use of energy, the KOHLER MF Series modular UPS system combines proven DPA™ technology with the latest advances in components and software.

Innovative, vertical slide-in modules enable resilient, high power density protection by reducing UPS footprint up to 45% over traditional approaches, without compromising access for installation and maintenance.

That protection is achieved with best-in-market 97.4% VFI energy efficiency, reducing environmental impact, optimising PUE measures and delivering significant financial savings in energy and cooling costs.





A 1.5MW KOHLER MF Series with a central connections cabinet flanked by six 250kW modules, each containing all elements of a UPS.

KOHLER *MF* DPA-CSB Series

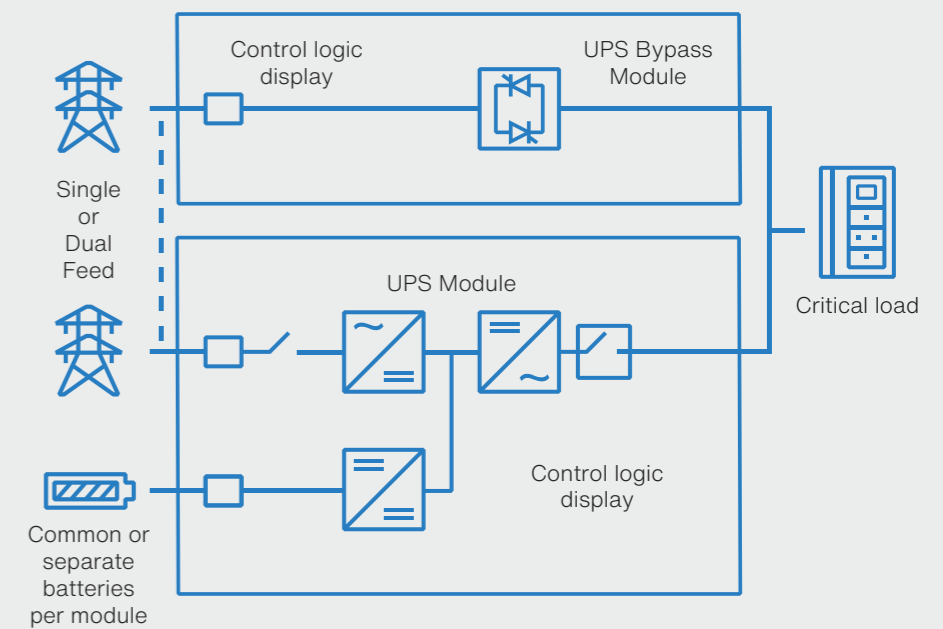
The KOHLER MF DPA-CSB Series is a dual feed double conversion online modular UPS with a centralised static bypass and innovative DPA.

- | Centralised static bypass switch
- | Each UPS module can operate autonomously
- | Redundant critical components and paths serving the load; no single points of failure
- | UPS modules can be online-swapped without impacting the load
- | Redundant power configuration (N+1) with common or separate batteries
- | Smart load sharing between the active UPS modules
- | Continuous and redundant control and monitoring on module and system level

The new centralised static bypass (CSB) uses multiple thyristor blocks as a central static bypass, which is sized for the total combined UPS module capacity. The bypass switching devices use N+1 thyristors, which means the bypass itself has redundancy and the higher MTBF allows the UPS to function when one of the thyristors has failed. Equal current sharing between the thyristor elements is achieved using a unique, patented magnetic coupling system (externally certified).

The CSB features a higher I2t energy let-through capability.

On the CSB variant, separate or common input feeds to the rectifier and static bypass can be implemented.



DPA™ - Resilient. Reliable. Flexible.

- | Decentralised Parallel Architecture (DPA™) products contain all the essential components of a UPS within each module, including the static switch, allowing independent operation
- | DPA™ modules can be hot-swapped without affecting the rest of the system, easing maintenance, reducing system repair times to minutes and dramatically increasing availability
- | With 750kW, 1000 kW and 1500 kW standard DPA frame size options and 250 kW modules, systems can be sized for an initial load and scaled up or down depending on future requirements
- | For flexibility and additional resilience, each DPA™ module can be fed from an independent or common battery system



Innovative vertical modules enable easy access whilst minimising physical footprint.



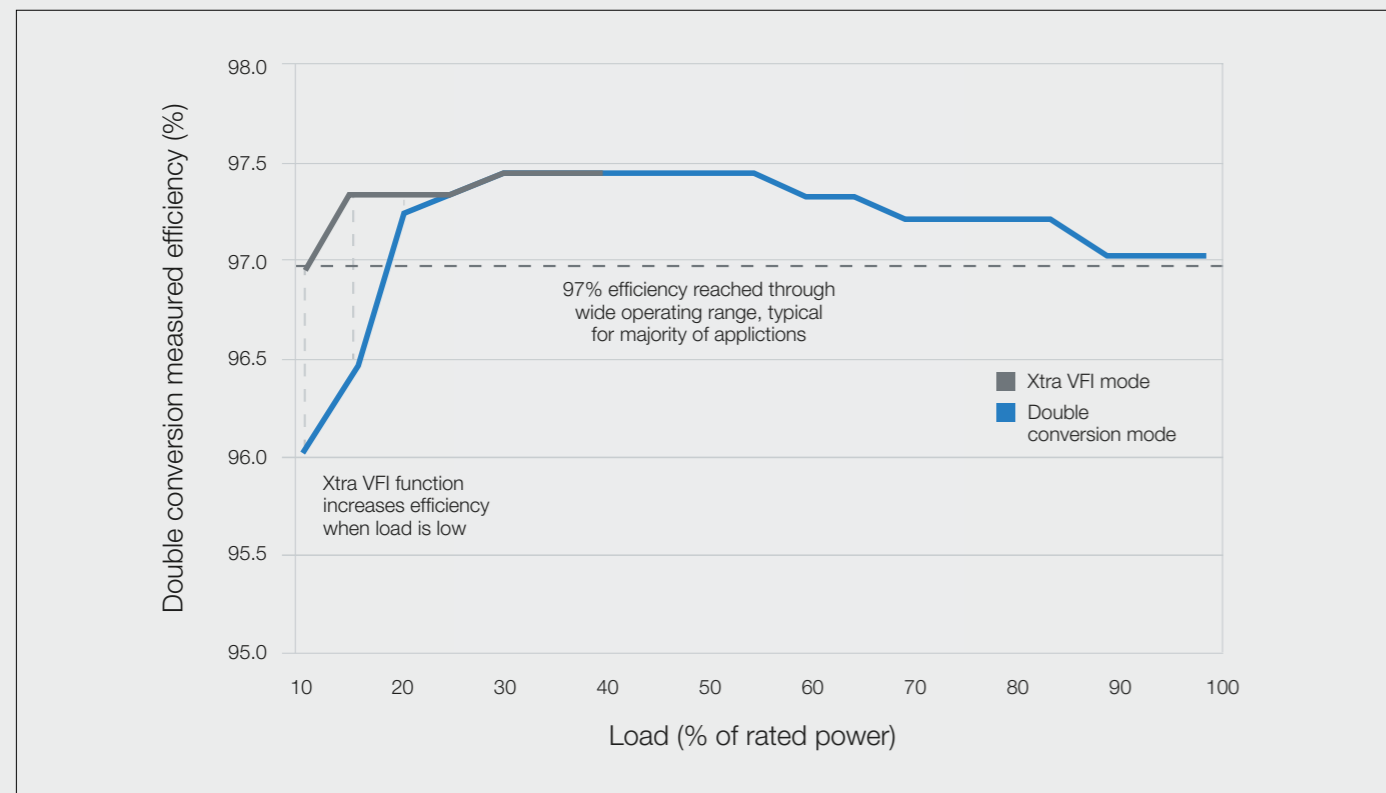
A 2.0MW DPA-CSB MF Series with a central connections cabinet and CBS module, flanked by eight 250kW DPA modules.

Effective efficiency

Advanced components enable the KOHLER MF Series to deliver the best energy efficiency in its class, up to 97.4% at system level in VFI mode (i.e. Voltage and Frequency Independent, the most commonly used and most protective mode)

Plus, design focus to ensure efficiency can be effectively used, means 97.4% efficiency is not solely delivered in a narrow sweet spot but across a wide, practical load band

Effective use of energy efficiency is enhanced further by Xtra VFI mode functionality. Often when load falls below 25%, UPS efficiency rapidly deteriorates. By automatically adjusting the number of active modules according to load and redundancy requirements, and reverting unneeded modules to standby, Xtra VFI avoids this. Intelligent switching rotates active modules, equalising aging and extending service life



Xtra VFI mode maintains high efficiency even when load drops below 25%.



In a 1.5 MW installation, over 10 years the 0.7% extra efficiency of the KOHLER MF Series vs a competitor at 96.7% can save over £360k* in electrical and cooling costs.

*£0.23 cost per kWh

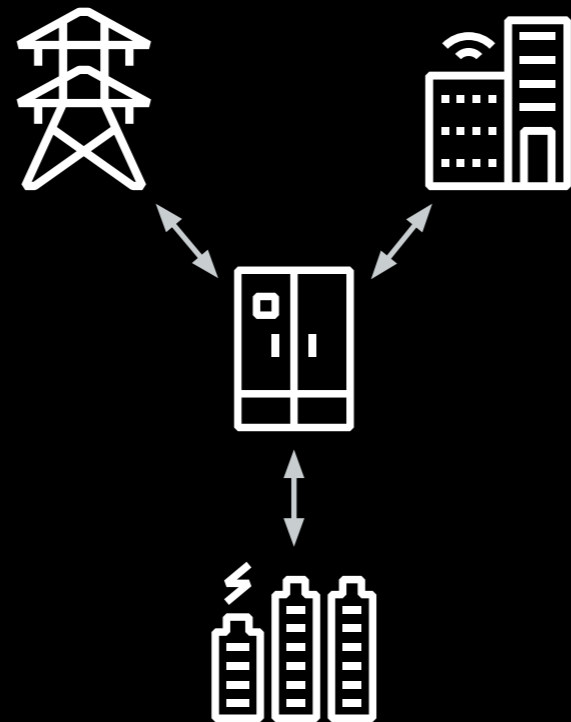


Future-ready with Grid Support functionality

The MF Series is able to interact with the mains grid and external systems to provide:

- | Input power reduction
- | Input power increase
- | Backfeed to grid

Supported functions include Fast Frequency Response and Island Mode operation. As system capabilities will also depend on local standards and battery selection, please consult KUP for more details.



KOHLER MIPS

Medical Isolated Power Supply for Electrical Medical IT Systems



Innovative design, *trusted* support.

Premium quality, high specification isolated power supply (IPS) designed for medical electrical IT systems.

Easily integrates with Kohler's UPS and generator systems, and backed by its best-in-class* support.

*Verified 2018–2021 via Satmetrix survey and benchmarking. Satmetrix is a trademark of NICE Ltd.

The KOHLER MIPS system delivers patient safety and power availability backed by the reliability and support synonymous with KUP.

Our core business is the design, installation and maintenance of critical power protection systems.

We offer the most comprehensive and cost-effective service plans available, ensuring your power protection systems are expertly maintained on a regular basis and ready to support your critical load.



Main System Cabinet - Outer and Indicators

Input fuse protection

Transfer relay

The MIPS system can be supplied by two different power sources. The transfer system allows for quick changeover between sources.

Insulation monitor

The MIPS system is fitted with an insulation monitor and earth fault detection system.

Output breakers

The output distribution can be ordered as 12, 18 or 24 way double-pole MCBs.

Input source indicators

Indicates input from independent sources

Maintenance bypass switch

The MIPS system is provided with a rotary break before make Maintenance Bypass Switch (MBS). The MBS allows the output to be connected to the ATS, or directly to the primary supply or the secondary supply, the switch also allows the output to be isolated OFF.

IP41 Construction

The MIPS cabinet is provided with IP41 dust filtration system at the bottom of the door with easily maintained filters.



KOHLER MIPS

Built in the UK and designed from the outset to fully meet or exceed the requirements of UK HTM-06-01 for use in Medical Group 2 locations, the KOHLER MIPS system isolates supplies from earth, ensures continuity of power in the event of a first fault, and monitors the system for abnormal conditions. Status and alarms are reported through a range of modern, highly featured but easy to use monitoring and control panels.

Engineered to complement the many KOHLER UPS and KOHLER generator systems installed in hospitals and other healthcare facilities, systems may be configured with four different levels of power distribution (6, 12, 18 or 24 MCBs), giving flexibility of use across locations including:

- | Operating rooms
- | Recovery rooms
- | Intensive care rooms
- | Therapy rooms
- | MRI suites

Main System Cabinet - Interior

Easy installation

Top entry cable glands provide easy access to the terminals for all power, load and monitoring cable infrastructure.

Fault detection system (FDS)

Insulation fault detection device with integrated current transformers is used for detecting insulation faults in IT systems. Insulation faulty detection system consists of test device, control and indicator device, fault evaluator and current transformer.

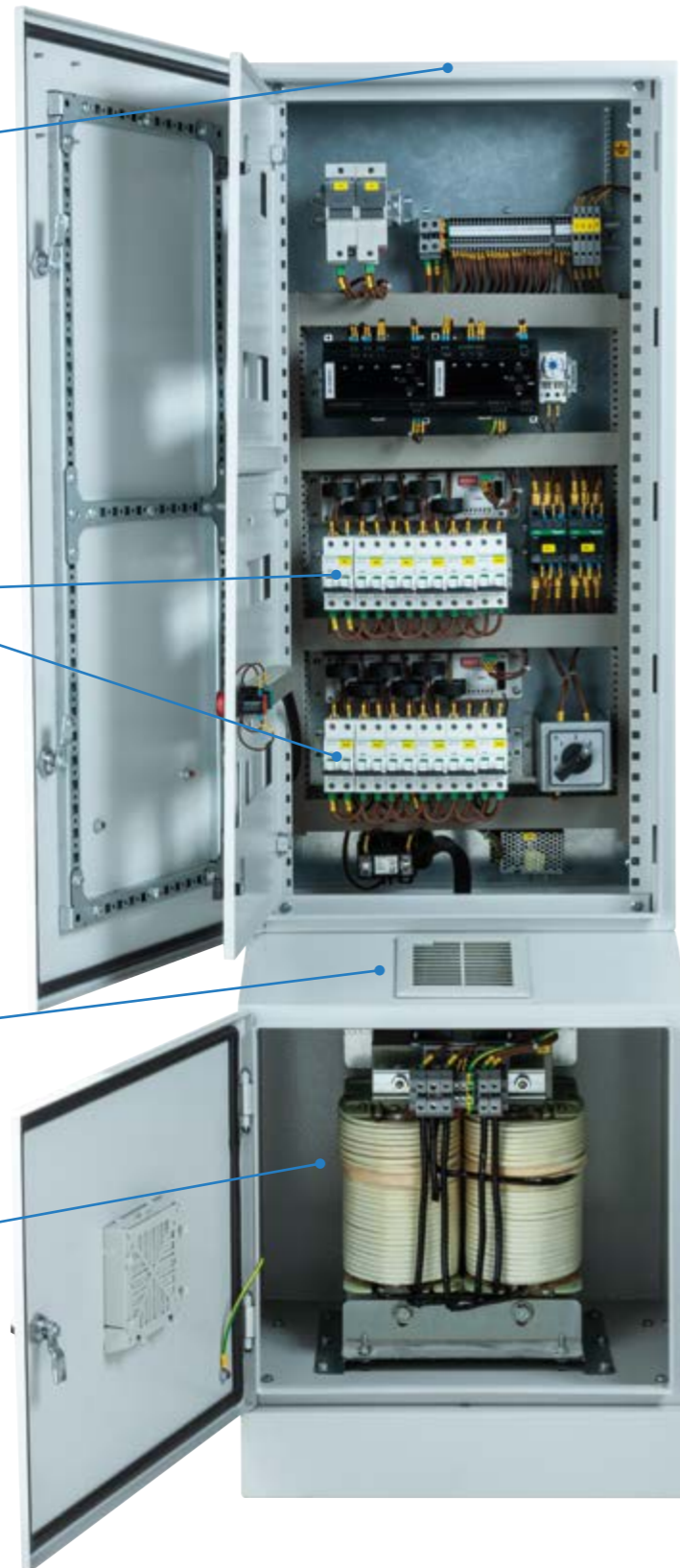
Air circulation

Segregated fan assembly improves the overall efficiency of the system and advances independent component heat dissipation

Transformer

Medical Isolating Transformer produced to comply with EN 61558-2-15 Standards for supplying critical loads. A static screen placed between the primary and secondary windings is isolated from the fixed angle transformer core. Insulation Class F, 230V/230V design with built in temperature PTC thermistor for connection to Insulation Monitor and Earth Fault Detection System.

Preinstalled in the lower section and QC tested before despatch, assuring easy on-site commissioning



KOHLER MIPS System Overview

Main Unit

- | Control electronics in upper section
- | Transformer in lower section



4" or 7" Local Alarm Panels



Wall or Flush-mounted Central Alarm Panel



Landscape or Portrait Operating Room Control Panels



Modes



Xtra VFI: maximum *efficiency* – even when underloaded.

Eco-mode

In Eco-mode, power is fed directly from the utility mains to the load during normal operation, so removing the rectifier and inverter inefficiencies. If a mains problem is detected, the critical load is switched to the UPS's inverter output.

While Eco-mode's efficiency can reach 99% or more, it exposes the load to any incoming mains problems throughout most of its operational life. Additionally, it relies on the load's IT equipment power supplies having sufficient capacitance to 'ride through' the switch between mains and inverter, and vice versa, and prevent the UPS supplying a transient inrush current to restore lost energy after an outage. Otherwise, line impedance between the UPS and power supplies may cause this current to create a significant power supply input voltage drop.

For these reasons, users should consider the benefits of increased operating efficiency vs the extra requirements and risk associated with operating in Eco-mode.

When a UPS is operating significantly under capacity, its energy efficiency can be negatively impacted. With KOHLER PW 9500DPA, featuring Xtra VFI, this problem is solved.

Key benefits

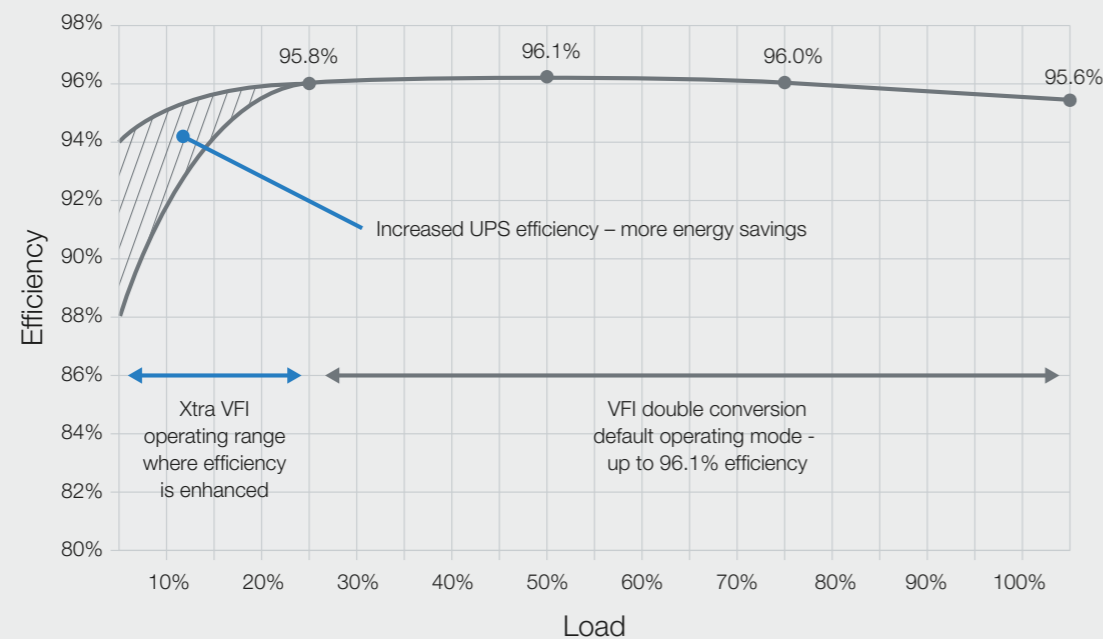
- | Xtra VFI scales the UPS module active capacity according to the load to maximise efficiency
- | The system calculates the optimal % value for maximum efficiency, taking into account desired redundancy
- | The redundancy level for active capacity and the highest expected load step can be configured by the user to guarantee highest protection level
- | In case of mains failure or alarm, Xtra VFI gets deactivated automatically all modules switch to 'Active' status
- | Module rotation between active and standby extends the service life and stabilises aging

With Xtra VFI mode enabled, the KOHLER PW 9500DPA automatically adjusts the number of active modules according to the load requirements. Modules that are not needed are switched to standby but remain in state of readiness, primed to kick in and transfer to active mode if the load increases or the mains fails. The efficiency improvements achieved by this mode of operation are especially significant when the load is less than 25% of full UPS system capacity.

In addition, Xtra VFI has the added benefit of rotating modules between active and standby, therefore extending the service life of the UPS.

Xtra VFI

- | Maximum load 800 kW
- | Redundancy N+2
- | 2 x 500 kW frames (10 x 100 kW)
- | Load power 200 kW
- | No. of active modules 4
- | Active capacity 400 kW
- | Standby capacity 600 kW



KOHLER Lithium-ion Batteries



3 x Samsung SDI cabinets in parallel

Reliable, lightweight and compact.

Reliable, lightweight and compact UPS energy storage for critical applications such as data centres, healthcare, building infrastructures, transportation, and manufacturing.

Capable of high density energy storage with much lower weight and space requirements than VRLA batteries, lithium-ion battery systems now offer a proven alternative.

Approved for use with KUP UPS systems and selected for their reliability, performance, safety and cost-effectiveness, KUP offers lithium-ion UPS battery solutions from leading manufacturers Samsung SDI and Vision Group.

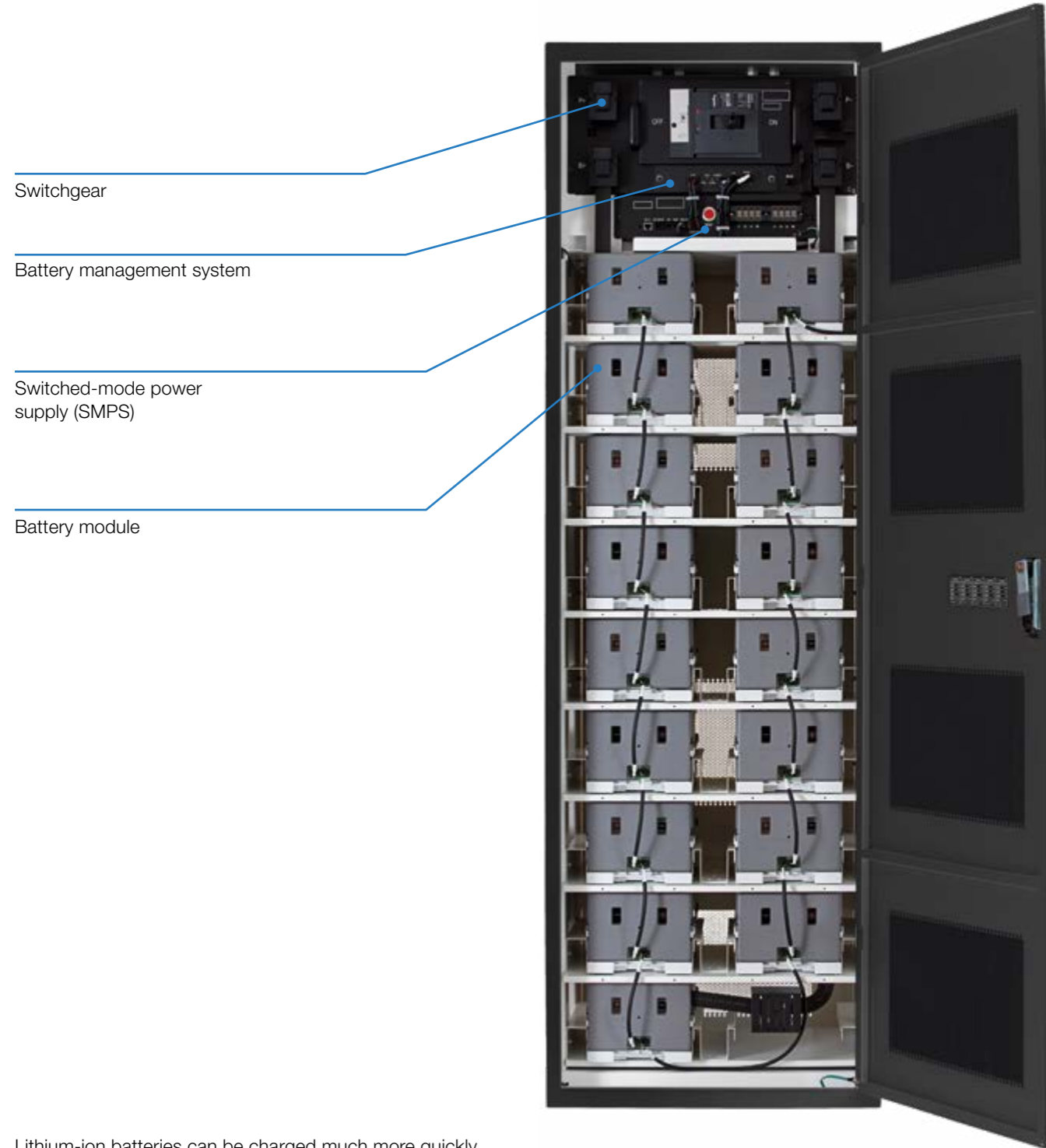
Introducing lithium-ion batteries

Though Valve-Regulated Lead Acid (VRLA) batteries have for a long time been the mainstay in UPS systems, recent developments in lithium-ion battery technology now make it an attractive option to consider, especially where high energy density and low weight are important. Using lithium-ion designs specifically for UPS applications, advantages such as longer lifespan, smaller size and weight, shorter recharging times and falling prices only add to their appeal.

Additionally, lithium-ion UPS batteries typically have a wider operating temperature range than VRLA equivalents. This means significant reductions in cooling can be achieved, saving energy and costs..

- | Longer service life than VRLA
- | Reduced footprint and volume (approx. 50% vs VRLA)
- | Lightweight (approx. 50% less than VRLA)
- | Fast charge and discharge rate
- | Reduced need for cooling
- | Increased power density
- | Battery monitoring as standard
- | UPS specific, high safety designs

Samsung Battery Features



Lithium-ion batteries can be charged much more quickly than conventional batteries, so after use they can be charged back up to full strength in a shorter time. This means full availability in less time.

Lithium-ion batteries also provide higher power density and efficiency, especially under heavy discharge rates. This means that no battery oversizing is needed.

Low weight (60–80 percent less than VRLA) means reduced civil engineering overheads and easier physical installation.



KOHLER Generators

Industrial Generators

(6 kVA - 4,500 kVA)

Single and three-phase standby generators.

Access the highest level of performance.

No longer simply a back-up plan, critical power protection is an essential requirement of every business. If critical applications must be available at all times, without downtime, then a standby generator is the only practical source for long-term power protection during an extended mains outage.

KOHLER power generators provide a reliable source of energy for critical applications that must never be without power - no matter what happens.

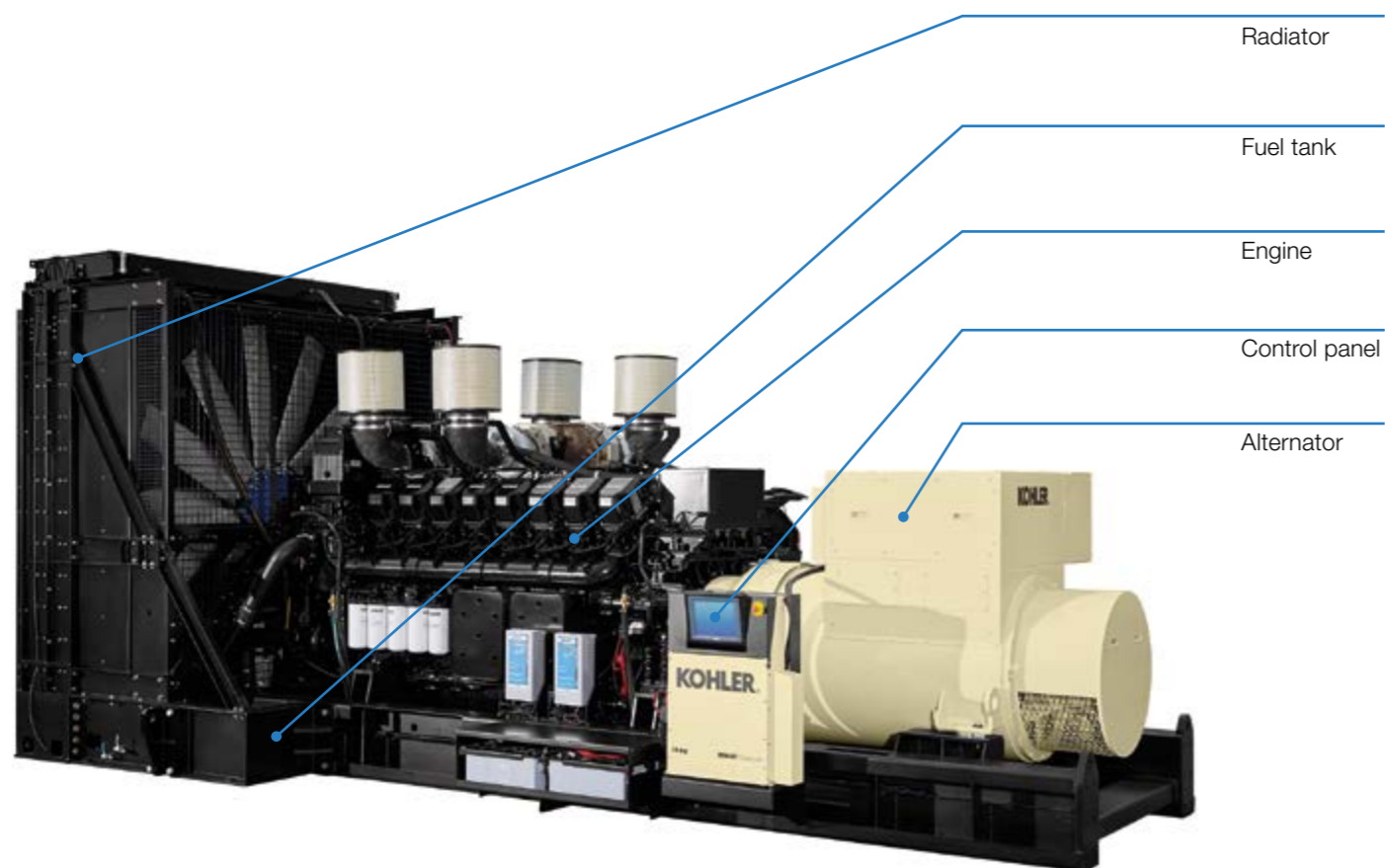
KOHLER generators are also compatible with hydrotreated vegetable oil (HVO) as a genuinely renewable energy source to reduce carbon by up to 90% and support customers on their journey to net zero emissions.

KOHLER generators

- | Standby generators for total power protection
- | Integrated KOHLER generators and UPS systems
- | Fully matched solutions for true, 'no-break', total power protection
- | Single source turnkey installation, technical support and service
- | Certified as standard for sustainable HVO fuel



Features



Standalone generator

Whether it's a standalone generator or a generator and UPS combined as a total standby power solution, KUP supplies products engineered to the highest specifications for today's commercial environments.

The KOHLER generator brand stands for high reliability, low cost and durability. Whether you buy a single generator or a complete solution, all products have the backing of comprehensive technical support, commissioning and maintenance services with excellent service delivery.

One-stop-shop – installation and services ‘turnkey’ solution

KUP's turnkey UPS and generator package guarantees both systems are fully matched, which ensures a true no-break supply in the event of a power failure. Turnkey supply and project management ensures the correct sizing of the generator set with respect to the UPS and critical load. Our fully trained service engineers will test the complete installation to verify system integrity, removing the problem of demarcation between different suppliers.

Reliability and durability

KOHLER generators are highly reliable. We only supply products that we know are going to be with you a long time and which will reliably provide you with back-up power when you need it. KOHLER generators offer leading edge control panel technology, versatility, durability, operation and maintenance. Weatherproof enclosures, for example, and protective coverings for vital parts, reduce wear and tear and aid longevity.

Acoustic enclosures

- | Noise compliant to latest EC directive 2000/14/EC
- | Integral bunded fuel tanks

KUP's range of acoustic enclosures has been designed to withstand even the harshest and most extreme climate conditions. Their compact design has been developed specifically to save space and costs – a plus for today's streamlined business environments. They are highly transportable, easy to install and due to their integrated cooling system, sound attenuation and silencers are completely self-contained.

Bulk fuel tanks

- | Environment Agency PPG02 compliant
- | Content gauges and overflow alarms

'Bunding', in a fuel tank, minimises the risk of spillage and offers total security alongside compliance with Environment Agency PPG2 regulations for the storage of diesel fuel. We can provide a wide range of bunded fuel tanks, ready to use. All our tanks are available in different specifications, depending on customer and site requirements. The correct installation of bunded fuel tanks is just as important as the quality of the tank itself. Using single or double-skinned pipework, our team of experts install and test bunded fuel tanks to ensure they are fully compliant with applicable regulations and in complete working order.

Bespoke acoustic packages

- | Plantroom attenuation
- | Acoustic enclosures/containers

Every installation is different and some require bespoke acoustic engineering. At KUP, we've made it our business to design solutions around the customer and this is evidenced by our ability to customise acoustic packages that include container design, plantroom design, groundworks, mechanical installation, cabling, pipework and associated works required to meet the exact requirements of the installation.

KOHLER T Series

- | Single-phase (8–17 kVA)
- | Three-phase (11–22 kVA)

Powerful series of standby generators available in six models for single and three-phase business applications. Each generator is built with a high performance Mitsubishi engine for reduced noise pollution and improved fuel efficiency. Available as an 'open' generator or within an acoustic enclosure to further minimise noise emissions. Standard and DW24 tank options.

KOHLER J Series

- | Three-phase (22–250 kVA)

Series of three-phase UPS generators providing power from 22 to 250 kVA. Each generator is powered by a John Deere engine for reliable backup during power failures. Bunded fuel tank minimises diesel spillage, with additional fuel tank capacity to extend run time. Models available for commercial and industrial use. Standard, DW24 and DW48 tank options.

KOHLER D Series

- | Three-phase (275–830 kVA)

Power products generating set, equipped with a DOOSAN engine. Standard and DW24 tank options.

KOHLER K Series

- | Single-phase (6–26 kVA)
- | Three-phase (9–44 kVA)

Reliable series of single and three-phase standby generators from 6 kVA to 44 kVA. Each generator is built with a high performance Kohler engine to help you achieve more. Available as an 'open' generator or within an acoustic enclosure to further minimise noise emissions.

KOHLER V Series

- | Three-phase (275-700 kVA)

High specification range of UPS generators providing 'turnkey' backup power with APM control panels fitted as standard. Each generator is powered by a Volvo engine. Built-in fault-finding tools and remote operation for a reliable power supply during mains failures. Available 'open' or within a weatherproof enclosure for added protection from the elements. Standard and DW24 tank options.

All sets available open or canopied.

Your choice of control

Most generators supplied by KUP have a choice of control panel options. Generators these days are extremely reliable with almost all enabling both automatic and manual operation. The choice of an appropriate control panel is therefore down to how much additional monitoring is desired. A more advanced control panel offers enhanced userfriendliness and diagnostics capability. It does all this with a reduced number of buttons, thus simplifying operation.

Changeover panels

KUP provide a choice of two high quality automatic changeover panels – the VERSO 100 and 200 – to enable automatic start-up of the standby generator and safe, fast transfer of the load in the event of a mains power cut. When mains power is restored, these changeover panels will automatically disconnect the generator and connect the load back to the mains.

The VERSO 100 is rated for applications from 35 to 160 amp.

The VERSO 200 is rated for higher applications from 200 to 1600 amp and has the additional benefit of an LCD, allowing the voltage and frequency parameters on both the mains and generator sides to be simultaneously displayed.



APM 303 control panel

- | Entry level control panel
- | LCD screen for basic engine and alternator operational parameters
- | LED alarm and fault indication

Our entry level product is the APM 303 panel. APM 303 is fitted as standard on all KOHLER T and J series standby generators. It provides both manual and automatic operational control of the generator and provides a basic indication of operational parameters, as well as alarm and fault indication via its standard LCD screen. Additionally, LED indication of alarms and faults are also provided.



APM 403 control panel

- | Control panel for remote monitoring
- | Graphical LCD Screen
- | Messages for alarms and faults

The APM403 panel is fitted as standard on all KOHLER V and D Series standby generators. This control panel is designed for low voltage industrial diesel generator sets and its remote management and supervision functions allows monitoring and even operation at anytime, anywhere. The APM403 control panel is simple to use and comes with built in intuitive configurations to cater to different backup system setups.



APM 802 control panel

- | Advanced control panel
- | Large colour graphical touch display
- | Continuous 24-hour data logging

The APM802 panel is fitted as an option on KOHLER V and D Series standby generators. This advanced control panel provides system monitoring, and system diagnostics for optimum performance. It uses software logic to manage alternator thermal overload protection features normally requiring additional hardware.



KOHLER *PW* EL Series

(Single-phase 500 VA - 24 kVA
Three-phase 10 - 160 kVA)



Efficient power for emergency lighting and safety equipment.

The KOHLER PW EL range addresses the need for a range of high performance static inverters manufactured using state-of-the-art technology to give your operation the peace of mind it needs.

Boasting true double conversion and PWM technology, the entire KOHLER PW EL range is simple and easy to install with front access.

KOHLER PW EL Series

- | Designed to fully comply with European Standard EN 50171
- | True double conversion and PWM technology
- | Capable of 120% continuous overload to meet European emergency lighting regulations
- | Large charger for faster recharge of batteries
- | Unique inverter design to suit high inrush lighting loads
- | Bypass to load (changeover mode) user selectable
- | LCD panel providing accurate detailed information about load, batteries and inverter with advanced diagnostics
- | SNMP, RS 232 and dry contacts for communication and remote monitoring

Common applications

- | Emergency lighting systems
- | Central power supply systems
- | Fire alarm and safety systems

Used within:

- | Hospital and medical systems
- | Cinemas and entertainment venues
- | Retail
- | Transportation
- | Museums



PW EL 100XA series

- | High performance static inverter (500–3000 VA)
- | Wall-mounted and floor-standing options
- | Allows for an internal self-contained battery system capable of supplying standard emergency lighting for 3 hour autonomies
- | Inverter comes with an internal output distribution board

PW EL 300 DSP series

- | Three-phase input and output static inverter (10–160 kVA)
- | Solution for higher power, three-phase loads
- | IP41 as standard: suitable for harsher environments
- | Maintenance bypass, for complete isolation of the inverter during maintenance
- | BS1 kitemark certified to BS EN 50171

PW EL MOD series

- | High performance emergency lighting inverter (4–24kVA)
- | 1/1 and 3/1 configuration via display
- | Hot-swap power module
- | Output configurable to three modes of operation (changeover/inverter/non-maintained)
- | Front access for maintenance and repair



Service Solutions



Service *support* you can rely on.

At KUP, our core business is the design, installation and maintenance of critical power protection systems. Delivered by committed, trained engineers and support staff, we are proud to be consistently rated at the very top by our customers*.

We offer the most comprehensive and cost-effective service plans available, ensuring your power protection systems are expertly maintained on a regular basis and ready to support your critical load.

*As surveyed via NICE Satmetrix, 2015-Present

Service solutions

Maintenance

- | UPS maintenance contracts
- | Generator maintenance contracts
- | Emergency lighting maintenance contracts

Monitoring

- | PowerREPORTER remote UPS monitoring
- | PowerNSURE active battery management
- | Generator monitoring

Onsite

- | Site audits for resilience, efficiency and obsolescence
- | Installation and commissioning
- | Black building testing
- | Load bank testing
- | UPS relocation and disposal

Batteries

- | Battery replacement and upgrade
- | Load bank testing
- | Impedance testing
- | VRLA, Lithium-ion and NiZn standby battery systems
- | PowerNSURE active battery management
- | Battery disposal

Maintenance

UPS maintenance contracts

KUP's maintenance plans offer the flexibility to choose the level of service needed to ensure that risks and costs are minimised. They all provide regular maintenance visits and you can choose the level of service time you need to suit your business requirements. To maximise the reliability of your UPS, a service plan from KUP also ensures critical component degradation is identified and that repairs or replacements are carried out before a fault occurs. Immediate spares availability is assured through our extensive spares inventory.

Features

- | Routine inspection and preventative maintenance
- | Emergency call-out options including guaranteed speed of response, 24 hours a day, 365 days a year
- | Remote monitoring (optional)
- | Battery maintenance
- | A range of cover available

Key benefits

- | Comprehensive plans competitively priced optimising UPS availability – with no unscheduled budgetary surprises
- | Guaranteed response times to site – we're there when we say we'll be there
- | 24/7 telephone support for an instant response to your service needs
- | Extensive network of trained field service engineers
- | Service for a wide range of UPS brands
- | Support contracts tuned precisely to each installation, so you only pay for the service level you need
- | Remote monitoring options to complement telephone support

Centralised emergency lighting system maintenance contracts

Building on our expertise in maintaining UPS and battery systems, KUP offers similar maintenance plans for the battery and static inverter systems of centralised emergency lighting systems.

Generator maintenance contracts

KUP offers a comprehensive and cost effective range of service plans to ensure your standby generator is ready to perform when it is needed most. Our standby generator service plans cover all key components including engine, alternator, control system, fuel, exhaust, cooling and air handling systems.

Since generators are usually inoperative for long periods, regular service is needed to ensure that they are fully functional and able to supply power when required. All our service plans offer the flexibility to choose the level of service needed to ensure that risks and costs are minimised. They all provide regular maintenance visits and you can choose the level of response time you need to suit your business requirements.

Features

- | Inspection and cleaning
- | Electrical, hydraulic and lubricant checks
- | Engine maintenance and repair
- | Battery checks and maintenance
- | Fuel checks and replenishment
- | Oil sampling and changing, air and water filter replacement
- | 24/7 emergency support
- | Load bank testing (optional)
- | Identification of critical component degradation
- | Immediate spares availability

We will communicate with you right through the service process, proactively managing your service visits and organising the best time to visit to minimise any disruption.

All this not only ensures your power protection system will guarantee your business continuity but assures your peace of mind.

Mixed Fleet UPS Service

KUP offers comprehensive service and maintenance contracts for fleets of mixed UPS, emergency lighting and generator brands.

We are able to provide capacitor and fan replacements on a range of UPS brands, as well as being able to offer annual maintenance contracts for their upkeep and thanks to our strong partnerships with leading lead-acid, lithium-ion and nickel-zinc battery manufacturers, we can offer tailored battery replacements to meet diverse requirements.

Our skilled team of coordinators and engineers take the hassle out of your power protection maintenance requirements, meaning that we can support all of your needs in one place with our best-in-class service support.



On-site

Site survey

KUP's experienced team of engineers are able to provide a free site survey, to offer you a choice of power protection solutions tailored to your requirements and budget.

The free survey is offered during normal working hours within our service area. Out-of-hours or more extensive surveys can also be quoted for.

A typical UPS site survey will last around 1-2 hours depending on the size of the installation. Full recommendations and quotations will be provided after the survey has been completed.

KUP endeavours to assess the following areas during the survey:

- | Load size
- | Physical location and environment
- | Suitability for existing UPS and battery installation
- | Obsolescence risks
- | Delivery route and logistics requirements
- | Remote monitoring requirements
- | Ongoing maintenance and technical support requirements
- | General programme of works and preferred installation timeframe

Installation and commissioning

UPS, centralised battery systems and generators must each be properly installed and commissioned to ensure a long and trouble-free working life. Whilst smaller UPS systems simply plug into a standard mains socket, larger UPS, like emergency lighting centralised battery systems, must be electrically installed and commissioned by skilled and qualified professionals who can also give handover training to site operators.

Likewise with generators, as a leading supplier we see the importance of larger systems being installed and commissioned by specialists who can also ensure proper integration with UPS and all other power equipment needed for continuous power to be guaranteed.

Our project team will work closely with you, from start to finish, ensuring your installation is commissioned safely, on time and with minimal disruption to your operations. Working in accordance with factory-issued commissioning procedures and written method statements, our factory-trained field service engineers will provide full commissioning certification for warranty validation.

Key benefits

- | Full project management including site assessment, delivery and positioning
- | Organisation of any electrical and mechanical work required
- | Extensive network of trained field service engineers
- | Certification to BSI EN ISO 9001, environmental procedures ISO 14001, health & safety procedures OHSAS 18001 and SafeContractor scheme

Black building testing

KUP's trained service engineers can be on hand to monitor your UPS systems during your annual IST (Integrated System Test) black building testing.

Black building tests are normally carried out to test for high availability, performance, business continuity plans and recovery capabilities in a disaster like scenario. For example, the testing will result in the electrical power to the entire building being shut off imitating a street power outage.

Black building tests tend to be carried out to:

- | Simulate a total power failure – leading to a complete power shutdown in a facility
- | Test the functionality of generators, simulating a total (external) power outage, replaced by generator provided energy. This does not touch any equipment except generators, thus not causing any disruption to systems

Why is the test important?

Equipment loss of power can result in compromised:

- | Safety
- | Product and equipment protection
- | Data
- | Staff / client services

Key benefits

- | KUP offers skilled and qualified engineers to attend site during the test period to monitor the UPS systems
- | Fully documented, procedures ensuring full traceability of all test events and actions
- | 'Safe method of work' covering the power down and power up of a UPS / generator / centralised battery EL system
- | KUP's ISO procedures and certifications assure quality of service and compliance with health and safety legislation

Load bank testing

Comprehensive commissioning procedures and the regular testing and maintenance of UPS systems and batteries go a long way towards ensuring the integrity of a power protection system. However, there is only one certain way of establishing that all the components of the system will function correctly together and perform as intended when required – load bank testing.

Fully loading the power support system stresses all components. It is clearly preferable to identify potential weaknesses under controlled conditions rather than to wait until the system is supporting a critical load. It is also cost effective to acquire this service and the expertise and experience of a professional, specialist service provider.

Load bank testing is the provision and connection of an electrical load to a power supply, often a UPS, in order to simulate the client's load and prove the integrity of the overall system.

Load bank testing ascertains the performance of the UPS, and of the entire electrical supply infrastructure including cabling, switchgear, generator and fuses. A load bank can also be used to discharge batteries as an effective and relatively low cost method of determining battery autonomy.

Key benefits

- | Mobile AC/DC load banks of any size
- | Engineer-controlled tests carried out to individual requirements
- | Battery autonomy and integrity testing
- | Out-of-hours testing to suit the client's operational requirements

Relocation and disposal

Relocation

If you have a requirement for a UPS to be relocated either to a different room within the same building or to a brand new location, KUP can assist you.

The relocation of a UPS involves the decommissioning, safe transportation and recommissioning of the UPS, associated batteries and electrical switchgear. Using trained engineers and our highly experienced logistics team, KUP can assist with this. Should you require help with the associated electrical works, we can accommodate this using one of our electrical contractor service partners.

Similarly we can also assist you with relocation of centralised battery systems for emergency lighting.

Disposal

KUP is able to safely remove and dispose of UPS and emergency lighting centralised battery systems from a wide range of brands.

Using trained engineers and our highly experienced logistics team, we will ensure that the system is safely decommissioned and then palletised before arranging for transportation and disposal / recycling.



Monitoring

PowerREPORTER remote UPS monitoring

PowerREPORTER is specifically designed to ensure your business' critical load is protected by dedicated trained personnel, even when your facility is unmanned.

See pages 100–103.

Battery monitoring

UPS and emergency lighting systems rely on the integrity of batteries to protect critical loads in the event of a power failure. KUP can undertake routine manual monitoring of battery health but also offers the PowerNSURE active battery management system, including remote condition monitoring.

See pages 104–109.

Generator monitoring

Modern Remote Monitoring Systems are much more than just a piece of communication hardware fitted to your generator. KUP's Remote Monitoring System is an industry-leading, monitoring, management and fault rectification system integrating GSM communications technology with the best 24/7 generator support personnel anywhere in the world.

Once a week, the system automatically starts your generator and runs it for 10 minutes, checking vital operating parameters such as voltage, frequency, oil and water temperature, battery condition, emergency stop and fuel levels. After the test, a full condition report is sent to the remote monitoring centre via phone line or GSM upload. You can also choose to receive SMS or voicemail reports sent to nominated numbers.

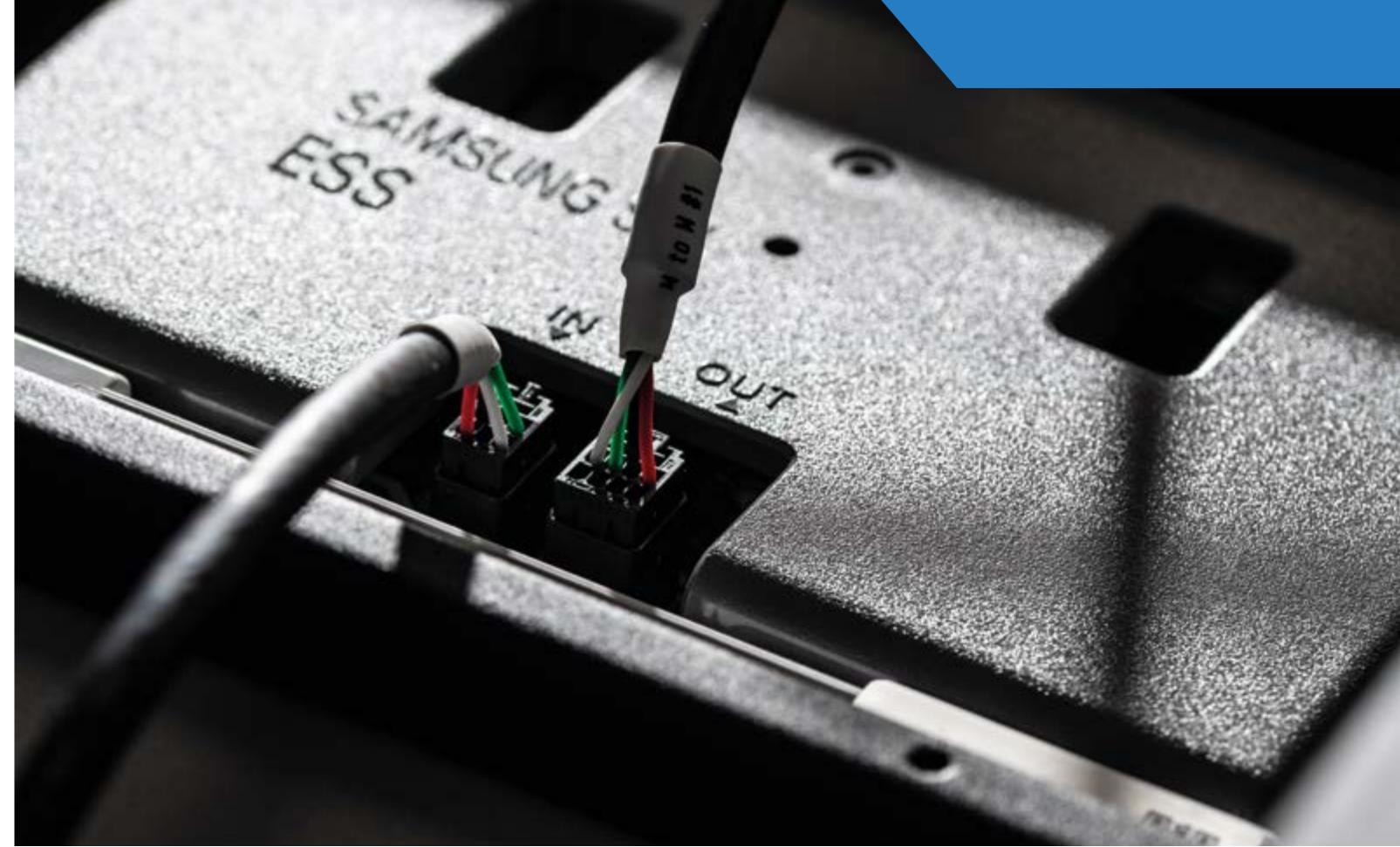
If your standby generators are in action, or you're using prime power generators equipped with the latest monitoring system, you get 24-hour monitoring, 365 days a year.

Features

- | Fully automatic operation 24/7
- | Continuous monitoring of generator conditions
- | Notification of mains failure and generator operation
- | Confirmation of a successful test run
- | Automatic low fuel warning

Based on a common platform, the monitoring system can be fitted to new or existing generators and programmed to monitor a huge range of parameters including:

- | Electrical – voltage, current, frequency of generator and mains power
- | Mechanical – engine data including speed, oil pressure, and temperature
- | Physical – location of the generators using the GPS network
- | Remote control – test running, fuel levels, alarms and alerts
- | Site specific requirements – intruder alarms, fire alarm, etc.



Batteries

Battery replacement and upgrade

We supply and fit batteries of all types into all models of UPS and secure power systems. KUP also offers a battery replacement programme for a wide range of battery supported products. We can supply a replacement UPS battery compatible with your AC UPS, DC equipment, emergency lighting and generator starting batteries.

A key benefit of regular battery maintenance is the early detection of weak battery blocks. As they are such a critical part of a power protection system, replacement of weak battery blocks should therefore take place before they fail. If a replacement battery is not purchased, a weak or faulty battery will compromise the integrity of the whole power protection system.

Impedance testing

Almost any battery problem will lead to an increase in internal impedance. Recorded at regular intervals, impedance testing will track battery condition and enable end-of-working-life prediction for individual cells, so batteries can be replaced before they cause a critical power protection failure.

An electrical current is passed through each battery in turn and a measurement taken. The internal impedance of each battery is then calculated, logged in a table and plotted on a graph.

A report will be provided after the batteries have been tested detailing the status of each bank and advising which, if any, will need to be replaced. This service is included as part of the PowerNSURE system or can be purchased separately.

Battery disposal

We manage the safe and environmental disposal of batteries and replacement UPS and centralised emergency lighting batteries in line with Hazardous Waste Regulations. As a registered carrier of such waste, KUP ensures that all the legal requirements associated with the removal, transportation and disposal of waste batteries are fully complied with.



KOHLER PowerREPORTER

24/7/365 Expert Remote Monitoring



A *virtual* power engineer on your site 24 hours a day.

KOHLER PowerREPORTER is specifically designed to ensure your business' critical load is protected by dedicated, trained personnel, even when your facility is unmanned.

The system provides 24/7/365 expert monitoring of your system for maximum protection combined with monthly status reports for optimum peace of mind.

Via secure one-way alerts, KUP engineers arrive informed of critical event details, accelerating resolution and are able to arrive onsite with the correct spares for the work.

How PowerREPORTER works

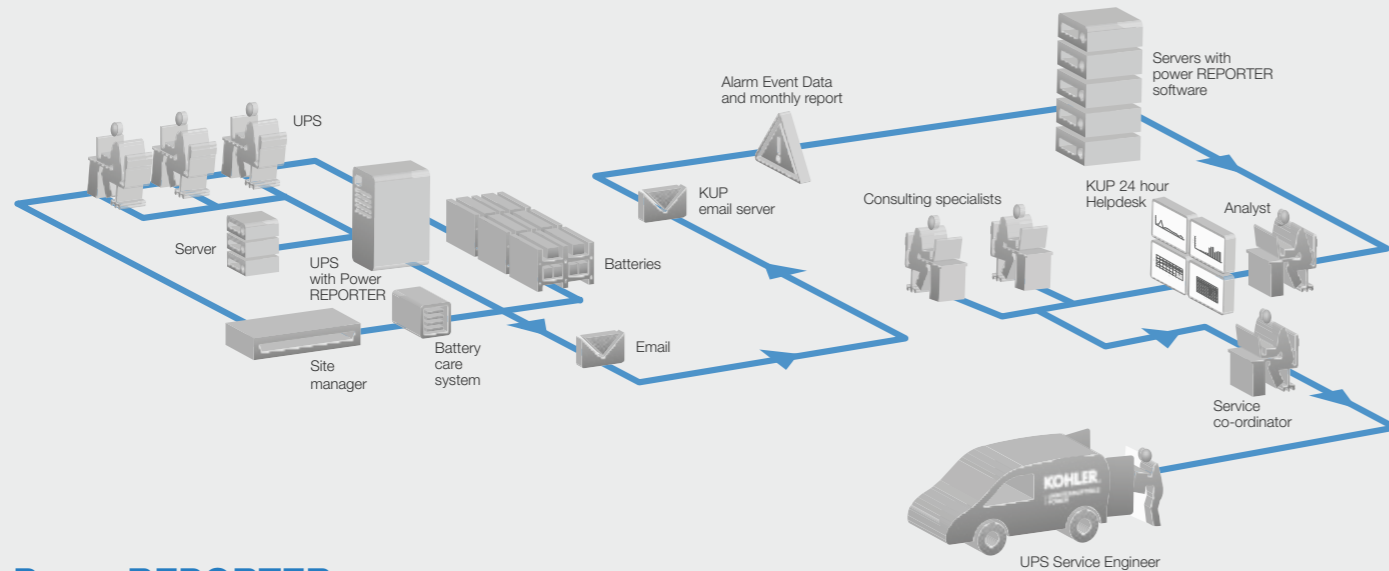
PowerREPORTER communicates constantly with your UPS system in order to automatically detect any error or alarm messages. In the event of an incident being detected, PowerREPORTER automatically connects with KUP's Service Centre network via email, transmitting a status message and providing any available details relating to the fault, as well as a device identification string.

KUP's Service Centre personnel are then able to liaise with the company's field service team who can interrogate and manage the UPS, performing all necessary remote diagnostics before reaching the facility within the contracted service agreement timeframe.



Monthly KUP Status Report

Example screenshots of power outages from a client site



PowerREPORTER

Specifically designed to ensure your business' critical load is protected by dedicated, trained personnel, even when your facility is unmanned.

PowerREPORTER benefits

- | Continuous monitoring and management of your UPS
- | Ideal for mission-critical systems and unmanned sites
- | Alarm-triggered interrogation of UPS parameters for remote diagnosis
- | Prevention and early fault detection
- | Dedicated KUP Support Centre – manned 24/7/365 to 'collect, assess and respond'
- | Combined with a maintenance contract, PowerREPORTER improves service levels, enabling an engineer to arrive onsite with the correct spares
- | Complete assurance of continuous availability

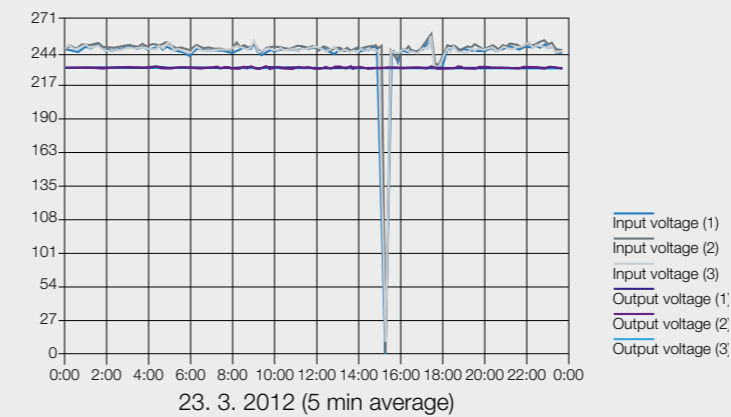
Your fully customised monitoring solution

- | Installation and maintenance of your power surveillance system
- | Email connectivity
- | Real-time email notification sent in response to alarm/critical events directly to KUP Support Centre
- | Monthly KUP status report detailing trends and alarms
- | Optional battery monitoring via PowerNSURE – measuring battery parameters to help prevent battery failure

“PowerREPORTER provides valuable eyes and ears in our server room during weekends, out of hours and unmonitored periods with engineer backup. We have previously been called by the engineer, out of hours, and the problem rectified before the next working day. PowerREPORTER communicates securely and further provides the capability for us to monitor the system's web front-end, plus it has a remote power-off capability.”

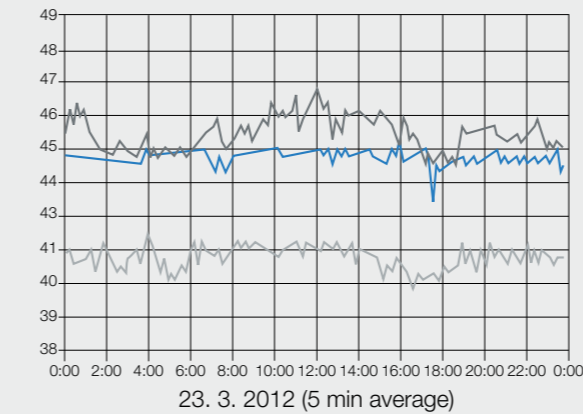
A London-based Hedge Fund organisation

Input and output voltage



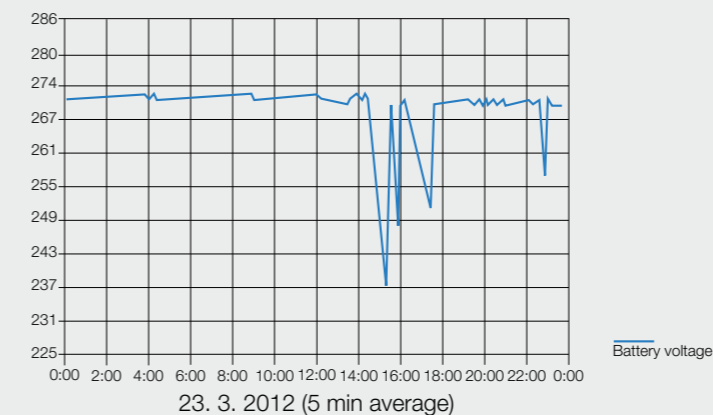
The input voltage data on this graph clearly shows the first major power cut. The output voltage is unaffected and steady on all 3 phases throughout.

Load



This graph demonstrates how the load was supplied throughout the mains failures.

Battery voltage



This graph clearly shows the battery voltage discharge and recovery as the charger returns after each mains failure.

KOHLER PowerNSURE

Active battery management and monitoring



Battery design, installation and *continuous care.*

The battery plays a key role in the overall reliability and availability of a power protection system. It supplies the energy required by the critical load in the event of a mains utility failure or when the input mains voltage and frequency are outside the acceptable values. Moreover, the battery represents an important share of the total cost of the UPS, and therefore battery care and management are of paramount importance when a UPS is designed.

Battery services overview

In addition to designing a battery system that meets your specific needs, KUP offers a range of products and services to maximise its performance and life.

- | Advice on battery system design
- | 'Made to measure' battery installation service
- | Battery impedance testing to track battery condition
- | Inspection, cleaning and maintenance options to ensure battery working life is optimised
- | Battery replacement programme for a wide range of battery supported products
- | Safe battery disposal
- | Monitoring and regulation of batteries to extend battery life and prevent unexpected failure using PowerNSURE



PowerNSURE Active Management

The PowerNSURE system from KUP is the most advanced product on the market today, providing an ethernet network integrated battery monitoring and management system. Using web-management technology, it checks the internal resistance, temperature and voltage of every single battery sequentially. Through the equalisation process, the system corrects the charging voltage operating range. This prevents gassing, dry-out and thermal runaway. The constant monitoring and controlling of the individual charging voltages for each battery guarantees the availability of the battery at all times.

- | Extends battery life by equalisation
- | Monitors and regulates the battery charging process and avoids undercharging
- | Indicates battery problems before failure
- | Monitors condition of every battery individually including temperature

Extending service life through equalisation

In a traditional VRLA battery system of multiple battery blocks in series, every battery block is charged with an average voltage.

However, as the chemistry of each block varies differently from manufacturing and ageing this results in the internal impedance being slightly different causing some blocks to be overcharged, causing dryout, and some blocks to be undercharged, causing sulphation. Both of these cause premature ageing and the weakest block defines the reliability of the system.

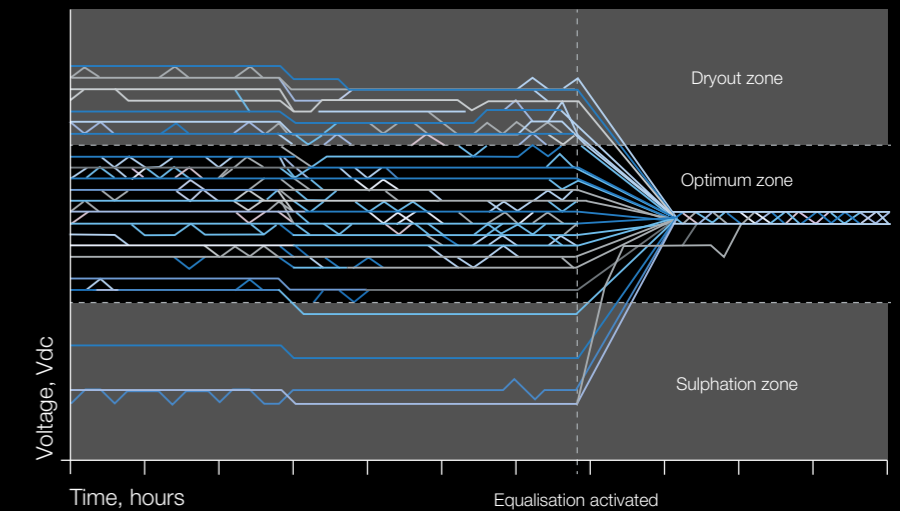
Using a sensing and management module per block, PowerNSURE delivers a balanced voltage to each, dramatically extending service life and reliability.

PowerNSURE reporting

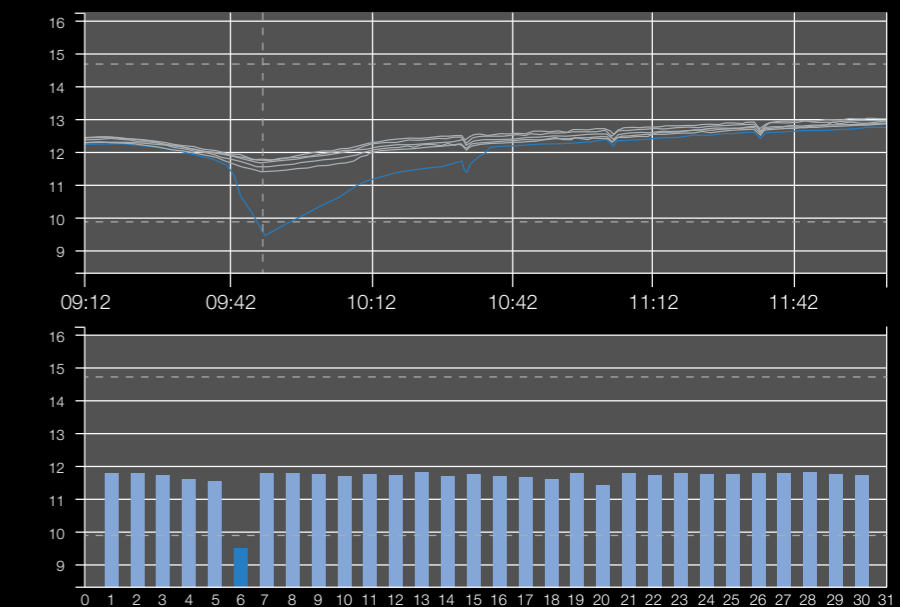
In addition to battery management, PowerNSURE reports on the status of all batteries, enabling issues to be resolved before they can put the system at risk.

Change in temperature, voltage and impedance is displayed and stored. Reports can be run and viewed on-site, providing an early warning when attention is required. For example, in the chart to the right, battery 6 is identified as weak after 30 minutes of discharge into a 45 minute run, enabling it to be flagged for replacement.

Individual voltages of a battery string



Power vs Power Factor



Battery Services

PowerNSURE is backed by the resources of the KUP field service team. Regular maintenance visits will include a review of PowerNSURE data and proactive supplementary measures such as cable and cabinet condition checks, visual inspection (for symptoms such as swelling or corrosion) and, upon agreement, replacement of weak cells.

KUP can also offer safe, quality-assured upgrade and disposal of existing battery systems for most major UPS brands.



Inspection, cleaning and maintenance

Regular maintenance optimises the working life of a battery installation and ensures early detection of weak or faulty battery blocks. If not replaced, a compromised battery would threaten the integrity of the whole power protection system. Routine battery maintenance provided by our skilled team of specialist engineers includes:

- | Checking the open circuit battery and UPS float voltages
- | Inspecting the physical condition of batteries, terminals and connections
- | Environmental checks – ambient temperature of battery room
- | Checking the cleanliness of equipment
- | Assessing the condition of battery cabinets
- | Performing a detailed examination of individual cells for post and interconnector corrosion
- | Taking voltage readings – block and string voltages

Impedance testing

Our impedance testing provides a means of assessing the internal condition of batteries. Almost any battery problem will lead to an increase in internal impedance. Recorded at regular intervals, impedance testing will track battery condition and enable end-of-working-life prediction. This service is included as part of the PowerNSURE system or can be purchased separately.

Replacement and upgrade

We supply and fit batteries of all types into all models of UPS and secure power systems. Additionally, KUP offers a battery replacement programme for a wide range of battery supported products. These include AC UPS, DC-equipment, emergency lighting units and generator starting batteries.

Disposal

Batteries are classed as hazardous waste and, in the UK and Ireland, must be disposed of in line with the Hazardous Waste Regulations 2005. As a registered carrier of such waste (registration number TWE/675610), KUP ensures that all the legal requirements associated with the removal, transportation and disposal of waste batteries are fully complied with.

Quality guaranteed

Our quality assurance, health and safety and environmental procedures are NQA EN ISO 9001, OHSAS 18001 and ISO 14001 certified. We are also certified under the SafeContractor scheme (www.safecontractor.com). These certificates ensure that all of your obligations under health and safety legislation are fully met. All battery maintenance visits and activities are fully documented.



Technical Specifications



Technical specification KOHLER MINIPowerPLUS

General Data

Input

Input voltage (nominal)	230 V
Input frequency	50/60Hz ±2% autosensing
Input voltage range	184 to 264 V at 100% load, 100 to 264 V at 50% load
Input power factor	>0.99
Input current total harmonic distortion	<3%

Output

Output voltage	230 V ± 1%
Output frequency	50/60Hz synchronised

Overload capacity

Online Modes	150% for 30s, 200% for 5s, 300% for 1s
Battery Modes	160% for 15s
Protection degree	IP 21
Standards	EN62040-1, EN50091-2, EN62040-3
Batteries	3 x 12 V 9 Ah sealed lead-acid, maintenance-free batteries per board as standard Up to several hours available on request

MINIPowerPLUS tower

	5000				10000				
Rated power kVA	1.25	2.5	3.75	5.0	5.0	6.25	7.5	8.75	10.0
Active power kW	0.875	1.75	2.625	3.5	3.5	4.375	5.25	6.125	7.0
Dimensions mm (WxHxD)	270 x 475 x 570				270 x 475 x 570				
Weight (kgs)	23.5	34	43	53	24	26.5	29	31.5	34
Battery	Internal (External optional)				External, via additional cabinets				

MINIPowerPLUS rack

	5000			
Rated power kVA	1.25	2.5	3.75	5.0
Active power kW	0.875	1.75	2.625	3.5
Dimensions mm (WxHxD)	485.5 x 266 x 600			
Weight kg	23.5	34	43	53
Battery	Internal (External optional)			

KOHLER MINIPowerPLUS

Modular single-phase uninterruptible power supply

(1.25 kVA to 10 kVA)

Technical Specification



KOHLER *PW* 1000

Standalone tower or rack mount single-phase uninterruptible power supply with internal or external batteries

(1-10 kVA)

Technical Specification

Technical specification KOHLER PW 1000 (1-3 kVA)

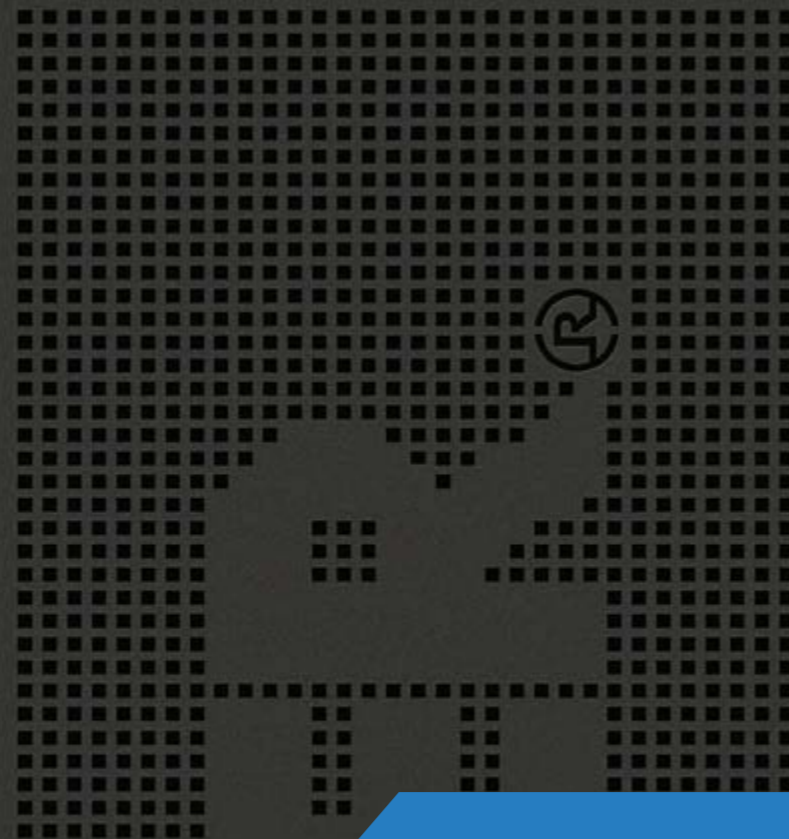
Capacity	1 kVA	2 kVA	3 kVA
Input			
Nominal voltage	110-300 VAC		
Frequency	44-66 Hz		
Phase	Single-phase		
Power factor	>0.99		
Output			
Voltage	200/208/220/230/240 VAC		
Voltage distortion	<3% with linear load, <7% with non-linear load		
Capacity	1000 VA / 900 W	2000 VA / 1800 W	3000 VA / 2700 W
Power factor	0.9		
Wave form	Pure sine wave		
Frequency	50-60 Hz (selectable) with stability ±1 Hz or ±3 Hz (selectable)		
Output sockets	3 x 10A IEC C13	6 x 10A IEC C13	6 x 10A IEC C13, 1 x 16A IEC C19
Crest factor	3:1		
Efficiency	Online mode (AC-AC), VFI: Up to 92%		Eco-mode, VFD: Up to 97%
Internal battery autonomy, mins	14 at 50% load, 5 at 100% load	15 at 50% load, 5 at 100% load	12 at 50% load, 4 at 100% load
Cold start from battery	Yes		
Battery			
Type	Sealed lead acid maintenance free (VRLA)		
Capacity	7.2 Ah	9.0 Ah	
Internal Quantity (pcs)	3	6	6
Matching external battery cabinet enables expansion of battery system for increased autonomies. Consult KUP for details.			
User Interface			
LEDs, LCD and function keys	Easy access to functions and parameters including: voltage, frequency, load percentage, battery voltage, output voltage, programmable outlet 1 and 2, self test, overload function, estimated uptime and UPS temperature		
On / Off / Alarm Function	Separate on / off keys. Alarm silence function		
Self-diagnostics	Upon power on and software control		
Protection			
Overload AC mode & backup mode (delay before switching to bypass)	<105% continuously. >106%-120% for 30 seconds transfer to bypass. >121%-150% for 10 seconds transfer to bypass. >150% immediately transfer to bypass. Buzzer continuously alarms		
Emergency Power Off, EPO	2-pole, initiates immediate UPS shut down		
Alarms			
Audible & visual	Mains power failure, low battery, bypass transfer and UPS fault		
Physical			
Dimensions (mm) W x D x H	440 x 405 x 88 (2U)	440 x 600 x 88 (2U)	
Net weight (Kg) with batteries	18.0	34.4	39.6
Ingress protection	IP20		
Environment			
Operating temperature	0°C - 40°C		
Altitude	<1000 m with no power derating, >1000 m with 1% derating for every 100 m		
Humidity	90% RH maximum, non-condensing		
Environment - heat dissipation (approx)	150 W	275 W	415 W
Noise	≤50 dBA at 1m		
Connectivity			
Communication ports	USB (type B), RS232, EPO and additional slots for optional cards		
Optional connectivity accessories	Cards: SNMP, RS485 ModBus and dry contact relays		
Standards			
Regulatory	ISO 9001 manufacture; IEC EN 62040-1; IEC EN 62040-2; and IEC EN 62040-3		
Marking	CE, UKCA		

Technical specification KOHLER PW 1000 (6–10 kVA)

General Data	6 kVA	10 kVA
Input		
Nominal voltage	110-280 VAC (176-280 VAC without derating)	
Frequency	45-70 Hz	
Phase	Single-phase	
Power factor	>0.99 at 100% linear load	
Output		
Voltage distortion (THD)	<2% with linear load, <7% with non-linear load	
Voltage	200/208/220/230/240 VAC selectable	
Voltage regulation	+/-1% (until low battery warning)	
Capacity (1.0 rated power factor)	6000 VA/6000 W	10000 VA/10000 W
Wave form	Pure sine wave	
Crest factor	3:1	
Efficiency	Online mode (AC-AC), VFI: Up to 94%	Eco-mode, VFD: Up to 98%
Cold start from battery	Yes	
Input/output connection	Hardwired via terminal block	
External battery cabinet		
Type	Sealed lead acid maintenance free	
Capacity	12 V/9 AH	
User Interface		
LEDs, LCD and function keys	Easy access to functions and parameters including: voltage, frequency, load percentage, battery voltage, output voltage, programmable outlet 1 and 2, self test, overload function, estimated uptime and UPS temperature	
On / Off / Alarm Function	Separate on / off keys. Alarm silence function	
Self-diagnostics	Upon power on and software control	
Alarms		
Audible	Mains power failure, low battery, bypass transfer and UPS fault	
Protection		
Overload, inverter supply	Sliding scale: 105% continuous, 125% 30 secs, 150% 160 ms, >150% immediate transfer to bypass	
Physical		
Dimensions (mm) W x D x H	440 x 680 x 88 (2U)	440 x 680 x 132 (3U)
Net weight (kg)	18.5	21.5
Ingress protection	IP20	
Environment		
Operating temperature	0°C – 40°C (UPS only. For effective operation / max service life, advised batteries to be 20-25°C)	
Altitude	<1000 m with no power derating, >1000 m with 1% derating for every 100 m	
Humidity	0-90% (non-condensing)	
Heat dissipation (100% linear load)	<450 W	<650 W
Noise	≤60 dBA at 1 m	
Connectivity		
Communication ports	USB (Type B), EPO / Remote On / Off Contact and additional slots for optional cards	
Optional connectivity accessories	Cards: SNMP, RS232, RS485 ModBus, dry contact relays	
Standards		
Regulatory	ISO 9001 manufacture; IEC EN 62040-1; IEC EN 62040-2; and IEC EN 62040-3	
Marking	CE, UKCA	
External battery bank (up to six per UPS)		
Type	Sealed lead acid maintenance free (VRLA)	
Capacity	12 V/9 Ah x 20 pcs connected in a single string	
Weight and Dimensions	11 kg excl batteries; 61 kg incl. 20 batteries. W440 mm x D685 mm x H132 mm (3U)	
Regulatory	ISO 9001 manufacture; IEC EN 62040-1; IEC EN 62040-2; and IEC EN 62040-3	
Autonomy at 75% load – 1 cabinet	12 mins	5 mins
Autonomy at 75% load – 2 cabinets	30 mins	15 mins
Autonomy at 75% load – 3 cabinets	51 mins	19 mins
Autonomy at 75% load – 6 cabinets	108 mins	60 mins



KOHLER
UNINTERRUPTIBLE
POWER



KOHLER PW 3000/P1

High-efficiency single-phase uninterruptible power supply

(10 & 20 kVA)

Parallelable up to 80 kVA/kW

Technical Specification

Technical specification KOHLER PW 3000/P1

General data	10 kVA Model, PW3P1/10/31/11/0	20 kVA Model, PW3P1/20/31/11/0
Topology	True online double conversion	True online double conversion
Parallel configuration	Up to 4 units (derate power output to 90% when configuring as a parallel unit system)	
Input		
Nominal input voltage	220/230/240V (Ph-N); 380/400/415V (Ph-Ph)	
Input voltage tolerance	176-276V Ph-N	
Input current THD	<=4% at 100% linear load	
Frequency range	46-54 Hz for 50 Hz systems / 56-64 Hz for 60 Hz system	
Power factor	≥0.99 at 100% load	
Output		
Output rated power	10 kW	20 kW
Output power factor	1.0 (single unit)	
Rated output voltage	220/230/240 VAC (Ph-N)	
Voltage distortion	≤2% at 100% linear load, ≤5% at non-linear load	
Overload capability (linear load)	AC and battery mode: 100-110% = 60 min; 110-125% = 10 min; >125-150% = 1 min; >150% immediately to bypass	
Nominal frequency	50 or 60 Hz ± 0.1 Hz	
Crest factor	3:1	
Efficiency		
Overall efficiency	AC mode: >96.6%; Battery mode: >95.5%	
In eco-mode configuration	99.0%	
Environment		
Protection rating	IP 20	
Storage temperature	-15 to +60°C for UPS, 0 to -35°C for battery	
Operating temperature	0-40°C	
Relative humidity	0-95 % (non-condensing)	
Altitude (above sea level)	1,000 m without derating NB: Over 1,000 m the power derating is 1% every 100 m	
Acoustic noise (at 1 metre)	55 dB	58 dB
Batteries		
Type	12 V/9 Ah	
Numbers	20 pcs (up to 2 strings internal – 40 pcs)	32-40 pcs (up to 40 pcs internal batteries)
Recharge time	9 hours recovery to 90% capacity	
Charging current (max)	1.0 to 12.0 A (adjustable via display)	
Communications		
User interface	Touchscreen LCD display	
Communication cards (option)	Emergency Power Off (EPO), USB (for monitoring connection) and RS 232 (engineer use only) as standard. Slot for optional SNMP or dry contact card.	
Standards		
Safety	IEC / EN 62040-1	
Transportation	ETS 300019-2-2 class 2.3	
Ingress protection	IP20	
Weight /Dimensions		
Weight excluding batteries	43 kg	44 kg
Dimensions (mm) W x D x H	250 x 710 x 826	
Battery cabinets		
	Battery cabinet 40	Battery cabinet 80
Weight excluding batteries	22 kg	46 kg
Dimensions (mm) W x D x H	250 x 592 x 576	250 x 805 x 836



KOHLER *PW* 5000/TP

Three-phase uninterruptible power supply

(10–50 kVA)

Parallelable up to 400 kVA / 360 kW

Technical Specification

Technical specification KOHLER PW 5000/TP

General Data	10 kVA	15 kVA	20 kVA	25 kVA	30 kVA	40 kVA	50 kVA
Topology	True online double conversion, Class 1 VFI-SS-111						
Parallel configuration	Up to 20 units						
Integral batteries	Yes, plus optional matching expansion cabinets						
Input							
Nominal input voltage	3 x 380 / 220 V + N, 3 x 400 V / 230 V + N, 3 x 415 / 240 V + N						
Voltage tolerance (ref to 3 x 400/230 V)	(-10% / +15%) 3 x 360/207 V to 3 x 460/264 V for <100% load						
Input distortion THDi	<3.0% at 100% load						
Frequency range	35–70 Hz						
Power factor	0.99 at 100 % load						
Output							
Output rated power	9 kW	13.5 kW	18 kW	22.5 kW	27 kW	36 kW	45 kW
Output power factor	0.9						
Rated output voltage	3 x 380 / 220 V + N, 3 x 400 / 230 V + N, 3 x 415 / 240 V + N						
Voltage tolerance	<±1% static, <±4% dynamic						
Voltage distortion	< 2% with linear load, < 4% with non-linear load						
Overload capability (0.9 p.f)	110% load 5 mins, 125% load 20 seconds				110% load 10 mins, 125% load 1 min		
Nominal frequency	50 or 60 Hz						
Crest factor	3:1						
Efficiency							
Overall efficiency, VFI mode	94.5% at 25% load; 95.0% at 50% load; 95.5% at 75-100% load						
In eco-mode (VFD) configuration	Up to 98%						
Environment							
Protection rating	IP 20						
Operating temperature	0°C–40°C for UPS. 20-25°C recommended for batteries						
Input and output power cabling accessibility	Cabled at the rear (A and B cabinets only)				-		
	-				Cabled at the front (C cabinets only)		
Relative air humidity	Up to 95% (non-condensing)						
Noise, dBA at 50% / 100% load (1 m)	61 / 55		71 / 65				
Communication							
Standard ports	RS232, Remote shut down / EPO, GEN-ON, 1 x programmable, battery temp. input						
Batteries							
Min/max number of 12 V blocks per string, depending on effective system load	24-50	30-50	28-50	26-50	18-50	20-50	34-50
Charging current	4 A				6 A		
Battery type	Maintenance free VRLA or NiCd						
Compliance							
Standards	Safety IEC/EN 62040-1, IEC/EN 60950-1; EMC IEC/EN 62040-2; Performance IEC/EN 62040-3						
Marking	CE, UKCA						

Options

- | Parallel connection kit – enables operation of several units in parallel for increased resilience
- | RS232 on USB port – for remote signalling and automatic computer shutdown
- | SNMP card – allows integration into management network
- | Battery temperature sensing – provides input to aid charging
- | Relay and USB card – includes 5 output dry ports
- | PowerREPORTER remote monitoring – ideal for unmanned sites

KOHLER
UNINTERRUPTIBLE
POWER



KOHLER *PW* 6000

Medium to high power three-phase uninterruptible power supply

(60–500 kVA)
Parallelable up to 6-10 units

Technical Specification

Technical specification KOHLER PW 6000

General Data	60 kVA	80 kVA	100 kVA	120 kVA	160 kVA	200 kVA	250 kVA	300 kVA	400 kVA	500 kVA	
Topology	True online double conversion, Class 1 VFI-SS-111, standalone / monolithic										
Parallel configuration	Up to 10 units								Up to 6 units		
Cable entry	Bottom front, single or dual input feed for rectifier and bypass										
Input											
Nominal input voltage	3 × 380 / 220 V + N, 3 × 400 / 230 V + N, 3 × 415 / 240 V + N										
Voltage tolerance	Load <100%	-10%, +15%			-23%, +15%			-10%, +15%			
(ref. to 3 × 400 / 230 V)	Load <80%	-20%, +15%			-30%, +15%			-20%, +15%			
	Load <60%	-30%, +15%			-40%, +15%			-30%, +15%			
Input distortion THDi	≤4% at 100% load					≤3.5% at 100% load					
Frequency	35–70 Hz										
Power factor	0.99 at 100% load										
Output											
Output power max, PF 1.0	60 kW	80 kW	100 kW	120 kW	160 kW	200 kW	250 kW	300 kW	400 kW	500 kW	
Rated output voltage	3 × 380 / 220 V + N, 3 × 400 / 230 V + N, 3 × 415 / 240 V + N								3 × 400/230V + N		
Voltage distortion	< 2% with linear load, <4% with non-linear load (IEC 62040-3)										
Frequency	50 or 60 Hz										
Overload capability on inverter	110% 20 min 125% 5 min 150% 0.5 min			110% 10 min 135% 1 min			110% 30 min 125% 10 min 150% 1 min				
Permissible unbalanced load	100%										
Crest factor	3:1										
Efficiency											
Max. efficiency, VFI mode	96.0%	96.0%	96.0%	96.0%	95.5%	95.8%	95.3%	95.4%	96.0%	96.2%	
In eco-mode configuration, VFD	≥99.0%				99.0%						
Environment											
Storage temperature	-25°C to +70°C (Max +55°C recommended to maximise capacitor life)										
Operating temperature	0°C to +40°C for UPS system. (+20-25°C recommended for VRLA battery systems)										
Altitude configuration	1000 m without derating										
Product certification	CE, UKCA										
Battery											
Battery type	VRLA, NiCd, Li-ion				VRLA, NiCd			VRLA, NiCd, Li-ion			
Communications											
Display	LCD				LCD, 7" touchscreen optional			7" touchscreen			
Standards											
Safety	IEC/EN 62040-1										
Electromagnetic compatibility (EMC)	IEC/EN 62040-2										
Performance	IEC/EN 62040-3										
Protection rating	IP 20										
Manufacturing	ISO 9001, ISO 14001										
Weight/Dimensions											
Weight (without batteries)	198 kg	206 kg	228 kg	230 kg	370 kg	390 kg	540 kg	580 kg	970 kg	970 kg	
Dimensions (mm) W x D x H	615 x 480 x 1954		615 x 480 x 1978		850 x 750 x 1820		1100 x 750 x 1920		1650 x 850 x 1994		



KOHLER *PW* 8000DPA

Modular three-phase uninterruptible power supply

(10–200 kVA/kW)
Parallelable up to 400 kVA/kW

Technical Specification

Technical specification KOHLER PW 8000DPA ST

General Data	ST40	ST60	ST80	ST120	ST200
System power range	10–400 kVA/kW				
Max power per module	10–20 kVA/kW				
Max power per frame	40 kVA/kW	60 kVA/kW	80 kVA/kW	120 kVA/kW	200 kVA/kW
Number of UPS modules per cabinet	1 to 2	1 to 3	1 to 4	1 to 6	1 to 10
Max number of inbuilt batteries (7/9 Ah)	80	240	-	-	-
Topology	Online double conversion, Class 1 VFI-SS-111				
Max number of parallel cabinets	4			3	2
UPS type	Modular (Decentralised Parallel Architecture)				
Input					
Nominal input voltage	3 × 380 / 220 V + N, 3 × 400 / 230 V + N, 3 × 415 / 240 V + N				
Voltage tolerance (referred to 3 × 400/230 V)	For loads <100% (-20% / +15%), <80% (-26% / +15%), <60% (-35% / +15%)				
Input distortion THDi @ 100% load	<4.5% (10 kW module), <3.0% (20 kW module)				
Frequency	35–70 Hz				
Power factor	0.99 at 100% load				
Output					
Output power factor	1.0				
Rated output voltage	3 × 380 / 220 V + N, 3 × 400 / 230 V + N, 3 × 415 / 240 V + N				
Voltage distortion (referred to 3 × 400/230 V)	<1.5% linear load, <3% non-linear load (EN62040-3:2001)				
Frequency	50 Hz or 60 Hz				
Overload capability	1 min: up to 150% / 10 min: up to 125%				
Unbalanced load	100% (all three phases regulated independently)				
Crest factor	3:1 (load supported)				
Efficiency					
Overall efficiency, VFI mode	95.5% at 75–100% load, 95.0% at 50% load, 94.5% at 25% load				
In eco-mode configuration, VFD mode	98%				
Environment					
Storage temperature	–25°C to +55°C (cabinet), –20°C to +40°C (batteries)				
Operating temperature	0°C to +40°C				
Altitude configuration	1000 m without derating				
Communications					
LCD	Yes (per module); system display optional (graphical touch screen display)				
LEDs	LED for notification and alarm				
Communication ports	USB, RS-232, SNMP slot, potential-free contacts				
Standards					
Safety	IEC / EN 62040-1, EN 60950-1				
Electromagnetic compatibility (EMC)	IEC / EN 62040-2				
Performance	IEC / EN 62040-3				
Product certification	CE, UKCA				
Manufacturing	ISO 9001, ISO 14001, OHSAS18001				
Degree of protection	IP20				
Weight/Dimensions					
Weight (with modules/without batteries)	Up to 136 kg	Up to 238 kg	Up to 169 kg	Up to 263 kg	389 kg
Dimensions (mm) W x D x H	550 x 770 x 1135	550 x 770 x 1975	550 x 770 x 1135	550 x 770 x 1975	550 x 770 x 1975

Technical specification KOHLER PW 8000DPA RI

General Data	RI10	RI11	RI12	RI20	RI22	RI24	RI40
Max power per module	10–20 kVA/kW						
Max power per frame	20 kVA/kW	20 kVA/kW	20 kVA/kW	40 kVA/kW	40 kVA/kW	40 kVA/kW	80 kVA/kW
UPS modules	1	1	1	1 to 2	1 to 2	1 to 2	1 to 4
Max number of inbuilt batteries (7/9 Ah)	-	40	80	-	80	160	-
Output power factor	1.0						
Topology	Online double conversion, Class 1 VFI-SS-111						
UPS type	Modular (Decentralised Parallel Architecture)						
Input							
Nominal input voltage	3 × 380 / 220 V + N, 3 × 400 / 230 V + N, 3 × 415 / 240 V + N						
Voltage tolerance (referred to 3 × 400/230 V)	For loads <100% (-20% / +15%), <80% (-26% / +15%), <60% (-35% / +15%)						
Input distortion THDi @ 100% load	<4.5% (10 kW module) <3.0% (20 kW module)						
Frequency	35 –70 Hz						
Power factor	0.99 at 100% load						
Output							
Output power factor	1.0						
Rated output voltage	3 × 380 / 220 V + N, 3 × 400 / 230 V + N, 3 × 415 / 240 V + N						
Voltage distortion	<1.5% linear load, <3% non-linear load (EN62040-3:2001)						
Frequency	50 Hz or 60 Hz						
Overload capability	1 min: up to 150% / 10 min: up to 125%						
Unbalanced load	100% (all three phases regulated independently)						
Crest factor	3:1 (load supported)						
Efficiency							
Overall efficiency, VFI mode	95.5% at 75-100% load, 95.0% at 50% load, 94.5% at 25% load						
In eco-mode configuration, VFD mode	98%						
Environment							
Storage temperature	–25°C to +55°C (cabinet) / -20°C to +40°C (batteries)						
Operating temperature	0°C to +40°C						
Altitude configuration	1000 m without derating						
Communications							
LCD	Yes (per module)						
LEDs	LED for notification and alarm						
Communication ports	USB, RS-232, SNMP slot, potential-free contacts						
Standards							
Safety	IEC / EN 62040-1, EN 60950-1						
Electromagnetic compatibility (EMC)	IEC / EN 62040-2						
Performance	IEC / EN 62040-3						
Product certification	CE, UKCA						
Manufacturing	ISO 9001, ISO 14001, OHSAS18001						
Weight/Dimensions							
Weight (with modules/without batteries)	≤42 kg, incl 1 module	≤62 kg, incl 1 module	≤78 kg, incl 1 module	≤68 kg, incl 2 modules	≤104 kg, incl 2 modules	≤136 kg, incl 2 modules	≤136 kg, incl 4 modules
Dimensions (mm) W x D x H	448 x 565 x 310 (7 HU)	448 x 735 x 487 (11 HU)	448 x 735 x 665 (15 HU)	448 x 565 x 440 (10 HU)	448 x 735 x 798 (18 HU)	448 x 735 x 1153 (26 HU)	448 x 735 x 798 (18 HU)





KOHLER *PW* 9250DPA

Modular three-phase uninterruptible power supply

(50–300 kVA/kW)

Parallelable up to 1500 kVA/kW

Technical Specification

Technical specification KOHLER PW 9250DPA

General Data	
System power range	50–1,500 kVA
Nominal power per module	50 kW
Nominal power / frame	300 kW or 250kW (N+1)
Number of UPS modules	6
Topology	Online double conversion, Class 1 VFI-SS-111
Parallel configuration	Up to 30 modules
Cable entry	Top or bottom
Output power factor	1.0
Serviceability	Front access
Back-feed protection	Built-in as standard
Input	
Nominal input voltage	380/400/415 VAC
Voltage tolerance % (applicable for 400 V nominal voltage)	Load ≤ 100% (-10%, +15%), Load ≤ 80% (-20%, +15%), Load ≤ 60% (-30%, +15%)
Current distortion THDi	<3% linear load, <4% non-linear load
Frequency range	35–70 Hz
Power factor	0.99 at 100% rated load
Walk in/soft start	Yes
Output	
Rated output voltage	380/400/415 VAC
Voltage tolerance (referred to 400 V)	±1.0%
Voltage distortion THDU	<2.0%
Frequency	50 or 60 Hz (selectable)
Output power factor	1.0
Efficiency	
Module efficiency	Up to 97.6% (VFI)
Overall system efficiency	Up to 97.4% (VFI)
In eco-mode	Up to 99.2% (VFD)
Environment	
Protection rating	IP 20 (IP 21 optional)
Storage temperature	-25°C to +70°C (Max +55°C recommended to maximise capacitor life)
Operating temperature	0°C to +40°C
Altitude (above sea level)	1,000 m w/o derating
Batteries	
Types	VRLA, NiCd and Li-Ion
Battery charger	Decentralised charger per module
Communications	
User interface	Graphical touch screen (one per frame as standard) Decentralised LCD and mimic diagram (one per module as standard)
Communication ports	Communication ports USB, RS-232, potential-free contacts, SNMP (optional)
Customer interface	Remote shutdown, gen-set interface, external bypass contact
Compliance	
Safety	IEC / EN 62040-1
EMC	IEC / EN 62040-2
Performance	IEC / EN 62040-3
Manufacturing	ISO 9001:2015, ISO 14001:2015, OHSAS18001
Weight/Dimensions	
Weight (without modules/without batteries)	270 kg
Weight (per module)	66 kg
Dimensions (mm) W x D x H	795 x 943 x 1978



KOHLER *PW* 9500DPA

Modular three-phase uninterruptible power supply

(100–500 kVA/kW)

Parallelable up to 3 MVA/MW

Technical Specification

Technical specification KOHLER PW 9500DPA

General Data	
System power range	100 kVA/kW – 3 MVA/MW
Max power per module	100 kVA/kW
Max power per frame	500 kVA/kW
Topology	Modular, transformerless, online double conversion, Class 1 VFI-SS-111
Parallelability, as Decentralised Parallel Architecture	Up to 5 modules in one frame (500 kW)/up to 6 frames in parallel (3 MW)
Cable entry	Bottom or top as standard
Serviceability	Fully front serviceable
Back-feed protection	Built-in as standard
Input	
Nominal input voltage	3 x 380 / 220 V + N, 3 x 400 / 230 V + N, 3 x 415 / 240 V + N
Voltage tolerance, referred to 400 / 230 V	Load <100% (-10%, +15%); <80% (-20%, +15%); <60% (-30%, +15%)
Input distortion THDi	< 3.5% at 100% load
Frequency range	45 - 70 Hz
Power factor	0.99 at 100% load
Walk in/Soft start	Yes
Output	
Output power factor	1.0
Rated output voltage	3 x 380 / 220 V + N, 3 x 400 / 230 V + N, 3 x 415 / 240 V + N
Output voltage variation, referred to 400 / 230 V	<±1% with static load, <±4% with step load
Voltage distortion	< 2% with linear load < 4% with non-linear load
Frequency	50 or 60 Hz (selectable)
Efficiency	
AC – AC, VFI mode	96.1%
In eco-mode, VFD	≥ 99%
Environment	
Protection rating	IP 20
Storage temperature	-25°C to +70°C (Max +55°C recommended to maximise capacitor life)
Operating temperature	0°C to +40°C
Altitude (above sea level)	1000 m without de-rating
Batteries	
Number of 12V blocks / string	Flexible number from 40–50 blocks
Types	VRLA, vented lead-acid, NiCd, Lithium-Ion
Battery charger	Decentralised charger per module
Communications	
User interface	Graphical touch screen (one per frame as standard) Decentralised LCD + mimic diagram (one per module as standard)
Communication ports	USB, RS-232, voltage-free contacts, SNMP (optional)
Customer interface	Remote shutdown, gen-set interface, external bypass contact
Compliance	
Safety	IEC / EN 62040-1
EMC	IEC / EN 62040-2
Performance	IEC / EN 62040-3
Manufacturing	ISO 9001, ISO 14001 OHSAS 18001
Marking	CE, UKCA
Weight/Dimensions	
Weight	Approx. 975 kg (500 kW system without batteries)
Dimensions (mm) W x D x H	1580 x 940 x 1975

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KOHLER *MF* Series

Modular high power three-phase uninterruptible power supply

(250 - 6000 kVA/KW MF DPA Series)

(1500 - 4500 kVA/KW MF DPA-CSB Series)

Technical Specification

Technical specification KOHLER MF Series

General Data	MF 750DPA	MF 1000DPA	MF 1250 DPA	MF 1500DPA	MF 1500DPA- CSB	MF 2000DPA- CSB
System power range	250 kVA/kW to 6 MVA/MW (Max. power 250 kVA/kW per module)				1500 kVA/kW to 4.5 MVA/MW	
Max. modules per frame	3	4	6		8	
Max. frames in parallel	6 (4.5 MW)	6 (6.0 MW)	4 (6.0MW)		3 (4.5MW)	2 (4MW)
Max power per frame	750, 1000 or 1500 kVA/kW				1500 kVA/kW	2000 kVA/kW
Topology	Double conversion, transformer-free, modular, centralised static bypass, DPA					
Cable entry	Bottom or top as standard					
Serviceability	Frontal access for power frame and connection frame, removeable power module with 360° access					
Back-feed protection	Built-in as standard					
Input						
Nominal input voltage	380, 400 or 415 VAC (Phase to Phase), 220, 230 or 240 VAC (Phase to Neutral)					
Voltage tolerance (at 40°C)	At 400V, Load ≤100%: -10%, +15% Load ≤60%: -30%, +15%					
Input distortion THDi	<3% at 100% linear load					
Frequency range	40Hz or 70Hz*(nominal Frequency +_10Hz)					
Power factor	0.99 at 100% load					
Walk in/Soft start	Yes					
Output						
Output power factor	1.0					
Rated output voltage	380, 400 or 415 VAC (Phase to Phase), 220, 230 or 240 VAC (Phase to Neutral)					
Output voltage variation	+/- 2% or 4% selectable (Synchronised with mains, allowing for transfer to static bypass)					
Voltage distortion THDv	<2%					
Frequency	50 or 60 Hz (selectable)					
Efficiency						
Overall efficiency	97.4% (VFI mode at 50% load)					
In eco-mode	Up to 99%					
Environment						
Protection rating	IP 20					
Storage temperature	-25°C to +55°C					
Operating temperature	0°C to +40°C					
Altitude (above sea level)	1000 m without de-rating					
Batteries						
Quantity of cells per string	Lithium ion: 136 cells / 17 modules max 6 frames of 17 modules per string VRLA 12V: 40-50 blocks/ 240-300 cells* NiCd: 400-500 cells					
Types	VRLA, NiCd, Lithium-Ion					
Battery charger	Decentralised charger per module					
Communications						
User interface	1 x decentralised graphical LCD touch screen, plus additional LCD display with navigation buttons and status LEDs per module					
Communication ports	USB, RS-232, voltage-free contacts, SNMP (optional)					
Customer interface	Remote shutdown, gen-set interface, external bypass contact					
Compliance						
Safety	IEC / EN 62040-1					
EMC	IEC / EN 62040-2					
Performance	IEC / EN 62040-3					
Manufacturing	ISO 9001:2015, ISO 14001:2015, OHSAS 18001					
Weight/Dimensions						
Weight (with power modules)	1615 kg	1950 kg	2420 kg	2945 kg	3566 kg	4600 kg
Dimensions (mm) W x D x H	1830 x 1000 x 2000	2235 x 1000 x 2000	2645 x 1000 x 2000	3045 x 1000 x 2000	3645 x 1000 x 2000	4830 x 1000 x 2000

Note: For reference, in selected territories the KOHLER MF Series DPA is sold badged as the ABB MegaFlex DPA.



Technical specification KOHLER MIPS

Model	MIPS-10-12	MIPS-10-18	MIPS-10-24
Power rating	10 kVA	10 kVA	10 kVA
Input			
Output voltage	230 VAC		
Frequency range	50 Hz / 60 Hz		
Isolation level	3 kV / 1 min		
Output			
Output protection	Miniature Circuit Breaker (MCB)		
Output distribution	12 way	18 way	24 way
Alarm output	Insulation fault / Overload / Over temperature		
Functional test	Advanced insulation fault		
Enclosed leakage current	<0.5 Ma		
Isolation fault detection period	<1 second		
General			
Cabinet protection	IP 41		
Operating temperature	0°C to +50°C		
Storage temperature	-15°C to +70°C		
Ventilation	Dual fan		
Management software	Isolation resistance by LCD screen		
Transfer system	Automatic Transfer Switch (ATS) via contactor		
Transfer time	<5 ms		
Response rate	50 – 500 kΩ		
Overall heat dissipation	<500 W		
Finish colour	RAL9003 (signal white)		
Dimensions, W x D x H	500 x 400 x 1600mm	500 x 400 x 1825mm	500 x 400 x 2050mm
Net weight	TBC		

KOHLER MIPS

Medical Isolated Power Supply for Electrical Medical IT Systems

Technical Specification



KOHLER Lithium-ion Batteries

Technical Specification

Technical specification Vision Revo 2.5 Lithium-ion Battery Systems

System specific data	TP100	TP110	TP120	TP200	TP220	TP240
General Specifications						
Nominal energy (kWh)	25.6	28.2	30.7	51.2	56.3	61.4
Rated capacity (Ah)	50			100		
Number of modules	10	11	12	10	11	12
Cell type	3.2V 50Ah					
Rated voltage (Vdc)	512	563.2	614.4	512	563.2	614.4
Charging current (A)	10-25			20-50		
Discharge cut off voltage (V)	448.0	492.8	537.6	448.0	492.8	537.6
Charge voltage (V)	544.0 552.0	598.4 607.2	652.8 662.4	544.0 552.0	598.4 607.2	652.8 662.4
Cabinet dimensions WxDxH (mm)	600 x 1000 x 2000				600 x 1000 x 2300	
Cabinet weight with batteries (kg)	550	580	620	900	970	1040
General data						
Battery type	LFP (lithium iron phosphate) lithium ion					
Cycle life	>2500 cycles (at 25°C, 1C/1C, 100% depth of discharge)					
Operating temperature	Charging 0°C to + 50°C Discharging 20°C to +65°C					
Operating humidity	<95% RH, non condensing					
Ingress Protection (IP) rating	IP 21					
Storage temperature (recommended)	20°C to + 35°C at 35-85% RH, non-condensing					
Thermal management	Air cooling					
Status indication	Standard: LED status indicators			Optional: Additional LCD screen		
External communication	RS 485					
Dry contact	Yes					
Fire suppression	Standard: LED status indicators Optional: Additional LCD screen					
Product compatibility						
PW 9250DPA	Yes					
PW 9500DPA	Yes					
MF Series	Yes					
PW6000 (60-120 kVA and 400-500 kVA)	Yes					

Revo version 2.5 system enhanced features:

- | Enhanced performance eg +2X higher discharge rate
- | Laser welded (vs manually crimped) cell connections improve reliability and reduce resistance
- | Module level fire protection as standard – perfluorohexanone fire extinguishing agent activated within 10 seconds of fire starting, plus optional second-generation cabinet level fire extinguisher
- | Battery module structure includes improved insulation and corrosion resistant polycarbonate material tray
- | Module level fuse protection - can be activated by the battery management system, protecting against serious faults such as short circuit or insulation failures / damage
- | Improved, better protected and more robust routing of fan and sampling cables
- | Integrated bus-bar for simpler, more reliable screw and cable-free cell connections
- | Improved user interface

Technical specification Samsung SDI Lithium-ion Battery System

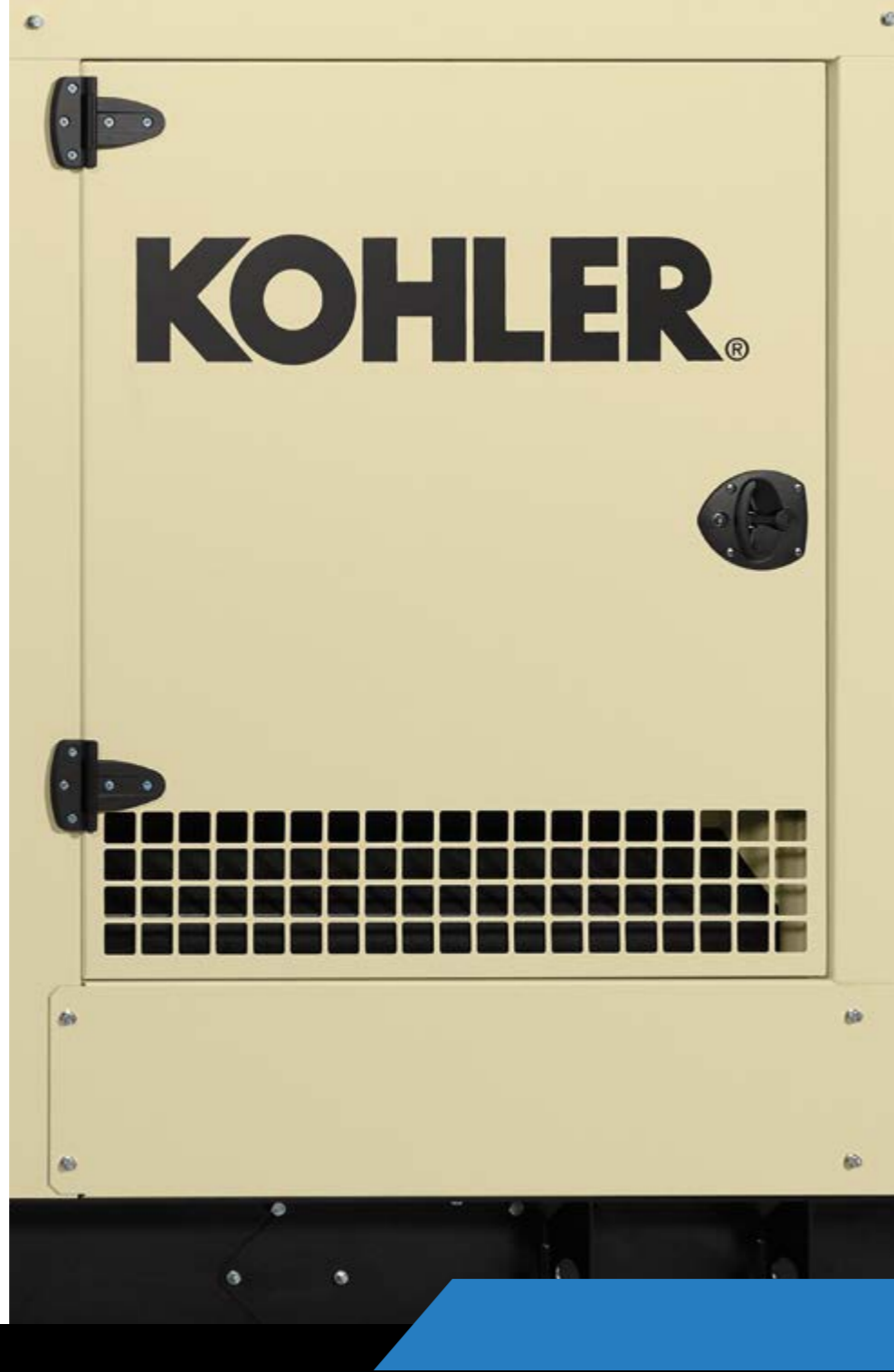
General data	
Nominal energy (kWh)	34.6
Capacity (Ah)	67
Open circuit voltage (V)	516.8
Number of modules	17
Operating temperature (recommended)	+18°C to +28°C (+25°C)
Maximum cell temperature	67°C
Minimum discharge	470A (60 sec) 600A (1 sec)
Communication	RS485-TCP/IP – dry contact
Connection type	2 wires/top cable entry
Maximum parallel cabinets	To be confirmed
Product compatibility	
PW 9250DPA	Yes
PW 9500DPA	Yes
PW 6000 (60–120 kVA and 400-500kVA)	Yes
MF Series	Yes
Batteries	
Type	LMO-NMC (Lithium manganese oxide – nickel manganese cobalt) lithium ion
Weight	
Weight with batteries (kg)	510
Module weight (kg)	17
Dimensions	
Dimensions WxDxH (mm)	650 x 530 x 2055

Samsung SDI Lithium-ion battery system enhanced features:

- | Cell construction provides a safety function layer to prevent the possibility of an electrical short between the anode and cathode
- | Multilayer separator prevents overcharging by blocking the passage of lithium ions
- | Safety vent allows gas venting in case of internal overpressure



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KOHLER Generators

Industrial Generators

(6 kVA - 4,500 kVA)

Technical Specification

Technical specification KOHLER Generators - Canopied units

T Series generating sets from 8.6–12 kVA (single-phase) or 11.5–16 kVA (three-phase) with weatherproof/acoustic enclosure

Single-phase (230 V) Mitsubishi engine	Standby rating kVA (0.8pf)	Prime rating (kVA @ 0.8pf)	Base tank options	Dimensions L x W x H (mm)	Dry weight (kg)	Run time @ 100% prime load (hours)	Run time @ 75% prime load (hours)	Enclosure reference	Acoustic pressure level dB(A) @ 1 m
T9KM	8.6	7.8	Standard day tank (50L)	1750 x 775 x 1230	544	16	20	M126	71
			DW24 tank option (93L)	1797 x 775 x 1391	625	30	37	M126 DW	71
T12KM	12	10.9	Standard day tank (50L)	1750 x 775 x 1230	630	11	14.5	M126	72
			DW24 tank option (93L)	1797 x 775 x 1391	668	21	27	M126 DW	71
Three-phase (400/230 V)	Standby rating kVA (0.8pf)	Prime rating (kVA @ 0.8pf)	Base tank options	Dimensions L x W x H (mm)	Dry weight (kg)	Run time @ 100% prime load (hours)	Run time @ 75% prime load (hours)	Enclosure reference	Acoustic pressure level dB(A) @ 1 m
T12K	11.5	10.5	Standard day tank (50L)	1750 x 775 x 1230	530	16	20	M126	71
			DW24 tank option (93L)	1797 x 775 x 1391	615	30	37	M126 DW	71
T16K	16	14.5	Standard day tank (50L)	1750 x 775 x 1230	554	11	14.5	M126	72
			DW24 tank option (93L)	1797 x 775 x 1391	633	21	27	M126 DW	71

V Series generating sets from 275 kVA to 700 kVA with weatherproof/acoustic enclosure

Three-phase (400/230 V) Volvo engine	Standby rating kVA (0.8pf)	Prime rating (kVA @ 0.8pf)	Base tank options	Dimensions L x W x H (mm) *includes additional 300 mm for bund	Dry weight (kg)	Run time @ 100% prime load (hours)	Run time @ 75% prime load (hours)	Enclosure reference	Acoustic pressure level dB(A) @ 1 m
V275C2	275	250	Standard day tank (390L)	4004 x 1380 x 2445*	3130	7	9	M227	78
			DW24 tank option (950L)	4056 x 1380 x 2340	3850	17.5	22	M227 DW	77
V350C2	350	318	Standard day tank (470L)	4475 x 1410 x 2430	4035	7	9.5	M228	77
			DW24 tank option (1368L)	4527 x 1410 x 2700	4558	21.5	28	M228 DW	80
V400C2	390	355	Standard day tank (470L)	4475 x 1410 x 2730*	4082	6.5	8.5	M228	77
			DW24 tank option (1368L)	4527 x 1410 x 2700	4612	19	25.5	M228 DW	80
V440C2	440	400	Standard day tank (470L)	4475 x 1410 x 2730*	4080	5.5	7	M228	78
			DW24 tank option (1368L)	4527 x 1410 x 2700	4740	16	21.5	M228 DW	81
V500C2	500	455	Standard day tank (470L)	4475 x 1410 x 2730*	4360	5	6.5	M228	78
			DW24 tank option (1368L)	4527 x 1410 x 2700	4910	14.5	19.5	M228 DW	81
V550C2	550	500	Standard day tank (500L)	5031 x 1560 x 2735*	4870	4.5	6.5	M229	76
			DW24 tank option (1770L)	5083 x 1560 x 2700	5590	17	23.5	M229 DW	76
V650C2	650	591	Standard day tank (610L)	5031 x 1690 x 2972*	5300	5	7	M230	80
			DW24 tank option (1950L)	5083 x 1690 x 2932	5910	16.5	22.5	M230 DW	80
V700C2	700	650	Standard day tank (610L)	5031 x 1690 x 2972*	5410	4.5	6	M230	85
			DW24 tank option (1950L)	5083 x 1690 x 2932	6140	13.5	18.5	M230 DW	85

Based on manufacturer's information; may be subject to change.

Technical specification KOHLER Generators - Canopied units

K Series generating sets from 6–26 kVA (single-phase) or 9–44 kVA (three-phase) with weatherproof/acoustic enclosure									
Single-phase (230 V) Kohler Engine	Standby rating kVA (0.8pf)	Prime rating (kVA @ 0.8pf)	Base tank options	Dimensions L x W x H (mm)	Dry weight (kg)	Run time @ 100% prime load (hours)	Run time @ 75% prime load (hours)	Enclosure reference	Acoustic pressure level dB(A) @ 1 m
K6M	6.4	5.8	Standard day tank (50L)	1482 x 760 x 1030	390	20	26	M125	67
K10M	9	8.2	Standard day tank (50L)	1750 x 775 x 1230	520	15	20	M126	67
			DW24 tank option (93L)	1797 x 775 x 1391	670	28	37	M126 DW	66
K12M	11.8	10.7	Standard day tank (50L)	1750 x 775 x 1230	610	10	13.5	M126	74
			DW24 tank option (93L)	1797 x 775 x 1391	760	18.5	25	M126 DW	74
K17M	15.5	14.1	Standard day tank (50L)	1750 x 775 x 1230	700	11	15	M126	71
			DW24 tank option (93L)	1797 x 775 x 1391	850	20.5	28	M126 DW	71
K26M	26	23.6	Standard day tank (100L)	2100 x 938 x 1285	809	13	17.5	M137	76
			DW24 tank option (240L)	2100 x 932 x 1486	1018	32	42	M137 DW24	75
			DW48 tank option (470L)	2100 x 932 x 1539	1025	62.5	82	M137 DW48	75
Three-phase (400/230 V) Kohler engine	Standby rating kVA (0.8pf)	Prime rating (kVA @ 0.8pf)	Base tank options	Dimensions L x W x H (mm)	Dry weight (kg)	Run time @ 100% prime load (hours)	Run time @ 75% prime load (hours)	Enclosure reference	Acoustic pressure level dB(A) @ 1 m
K9	8.9	8.1	Standard day tank (50L)	1482 x 760 x 1030	390	20	26	M125	67
K12	12	10.9	Standard day tank (50L)	1750 x 775 x 1230	510	15	20	M126	67
			DW24 tank option (93L)	1797 x 775 x 1391	660	28	37	M126 DW	66
K16	16.5	15	Standard day tank (50L)	1750 x 775 x 1230	580	10	13.5	M126	74
			DW24 tank option (93L)	1797 x 775 x 1391	730	18.5	25	M126 DW	74
K22	21.5	19.5	Standard day tank (50L)	1750 x 775 x 1230	660	11	15	M126	71
			DW24 tank option (93L)	1797 x 775 x 1391	800	20.5	58	M126 DW	71
K27	26.5	24.1	Standard day tank (50L)	1750 x 775 x 1230	710	8	11	M126	76
			DW24 tank option (93L)	1797 x 775 x 1391	860	15.5	21	M126 DW	76
K33	33	30	Standard day tank (100L)	2100 x 938 x 1285	773	13	17.5	M137	76
			DW24 tank option (240L)	2100 x 932 x 1486	982	32	42	M137 DW	75
			DW48 tank option (470L)	2100 x 932 x 1539	989	62.5	82	M137 DW48	75
K44	44	40	Standard day tank (100L)	2100 x 938 x 1285	806	10.5	14	M137	76
			DW24 tank option (240L)	2100 x 932 x 1486	1015	25.5	33.5	M137 DW	76
			DW48 tank option (470L)	2100 x 932 x 1539	1022	50	66	M137 DW48	75

Technical specification KOHLER Generators - Canopied units

J Series generating sets from 22–250 kVA with weatherproof/acoustic enclosure									
Three-phase (400/230 V) John Deere Engine	Standby rating (kVA @ 0.8pf)	Prime rating (kVA @ 0.8pf)	Base tank options	Dimensions L x W x H (mm) *includes additional 300 mm for bund	Dry weight (kg)	Run time @ 100% prime load (hours)	Run time @ 75% prime load (hours)	Enclosure reference	Acoustic pressure level dB(A) @ 1 m
J22	22	20	Standard day tank (100L)	2080 x 960 x 1415	980	14	20	M127	75
			DW24 tank option (230L)	2160 x 966 x 1582	1160	32.5	46	M127 DW	74
			DW48 tank option (420L)	2160 x 966 x 1631	1124	60	84	M127 DW48	74
J33	33	30	Standard day tank (100L)	2080 x 960 x 1415	980	14	20	M127	75
			DW24 tank option (230L)	2160 x 966 x 1582	1160	32.5	46	M127 DW	74
			DW48 tank option (420L)	2160 x 966 x 1631	1165	60	84	M127 DW48	74
J44K	44	40	Standard day tank (100L)	2080 x 960 x 1415	1040	10	13	M127	74
			DW24 tank option (230L)	2160 x 966 x 1582	1227	23	30.5	M127 DW	74
			DW48 tank option (420L)	2160 x 966 x 1631	1215	42.5	56	M127 DW48	74
J66K	66	60	Standard day tank (180L)	2300 x 1060 x 1680	1432	11	15	M128	73
			DW24 tank option (390L)	2344 x 1060 x 1900	1679	24	32.5	M128 DW	72
			DW48 tank option (700L)	2344 x 1060 x 1989	1709	43.5	58	M128 DW48	72
J77K	77	70	Standard day tank (180L)	2300 x 1060 x 1680	1548	11	15	M128	74
			DW24 tank option (390L)	2344 x 1060 x 1900	1735	24	32.5	M128 DW	73
			DW48 tank option (700L)	2344 x 1060 x 1989	1765	43.5	58	M128 DW48	73
J88K	88	80	Standard day tank (180L)	2300 x 1060 x 1680	1508	9	12.5	M128	76
			DW24 tank option (390L)	2344 x 1060 x 1900	1695	20	27.5	M128 DW	75
			DW48 tank option (700L)	2344 x 1060 x 1989	1725	35.5	50	M128 DW48	75
J110K	110	100	Standard day tank (190L)	2554 x 1150 x 1680	1587	8	11.5	M129	78
			DW24 tank option (505L)	2602 x 1150 x 1900	2006	21	30.5	M129 DW	77
			DW48 tank option (825L)	2602 x 1150 x 1948	2012	35	50	M129 DW48	77
J130K	132	120	Standard day tank (340L)	3508 x 1200x 2130*	2088	13	18	M226	75
			DW24 tank option (868L)	3560 x 1200 x 2182	2488	33	46.5	M226 DW	74
			DW48 tank option (1630L)	3560 x 1200 x 2364	2656	62.5	88	M226 DW48	74
J165K	165	150	Standard day tank (340L)	3508 x 1200x 2130*	2168	10	13.5	M226	75
			DW24 tank option (868L)	3560 x 1200 x 2182	2561	25.5	34.5	M226DW	74
			DW48 tank option (1630L)	3560 x 1200 x 2364	2816	48.5	65	M226 DW48	74
J200K	200	182	Standard day tank (340L)	3508 x 1200x 2130*	2320	8	10.5	M226	76
			DW24 tank option (868L)	3560 x 1200 x 2182	2713	21	27.5	M226DW	76
			DW48 tank option (1630L)	3560 x 1200 x 2364	2978	39.5	52	M226 DW48	76
J220C2	220	200	Standard day tank (340L)	3508 x 1200x 2130*	2366	7.5	10	M226	77
			DW24 tank option (868L)	3560 x 1200 x 2182	2736	19	25.5	M226DW	77
			DW48 tank option (1630L)	3560 x 1200 x 2364	2994	36	47.5	M226 DW48	77
J250K	250	227	Standard day tank (340L)	3508 x 1200x 2130*	2400	7	9	M226	82
			DW24 tank option (868L)	3560 x 1200 x 2182	2740	18	24	M226DW	82
			DW48 tank option (1630L)	3560 x 1200 x 2364	2800	34.5	45	M226 DW48	82

Based on manufacturer's information; may be subject to change.

Technical specification KOHLER Generators - Canopied units

D Series generating sets from 275–830 kVA with weatherproof/acoustic enclosure									
Three-phase (400/230 V) Doosan engine	Standby rating (kVA @ 0.8pf)	Prime rating (kVA @ 0.8pf)	Base tank options	Dimensions L x W x H (mm) *includes additional 300 mm for bund	Dry weight (kg)	Run time @ 100% prime load (hours)	Run time @ 75% prime load (hours)	Enclosure reference	Acoustic pressure level dB(A) @ 1 m
D275	275	250	Standard day tank (390L)	4004 x 1380 x 2445*	3160	6.5	8.9	M227	83
			DW24 tank option (950L)	4056 x 1380 x 2340	3600	16	21.5	M227 DW	83
			DW48 tank option (2130L)	4056 x 1380 x 2618	3960	36.5	48.5	M227 DW24	83
D300	300	273	Standard day tank (390L)	4004 x 1380 x 2445*	3250	6.5	8.9	M227	83
			DW24 tank option (950L)	4056 x 1380 x 2340	3690	16	21.5	M227 DW	83
			DW48 tank option (2130L)	4056 x 1380 x 2618	4050	36.5	48.5	M227 DW24	83
D330	330	300	Standard day tank (470L)	4475 x 1410 x 2730*	3540	7	10	M228	81
			DW24 tank option (1368L)	4527 x 1410 x 2700	4060	21.5	29	M228 DW	81
D440	440	400	Standard day tank (500L)	5031 x 1560 x 2735*	4090	5.5	7.5	M229	85
			DW24 tank option (1770L)	5083 x 1560 x 2700	4750	19.5	27	M229 DW	85
D550	550	500	Standard day tank (500L)	5031 x 1560 x 2735*	4262	4	6	M229	84
			DW24 tank option (1770L)	5083 x 1560 x 2700	5044	15	21	M229 DW	84
D630	630	573	Standard day tank (610L)	5031 x 1690 x 2972*	5381	4.5	6	M230	88
			DW24 tank option (1950L)	5083 x 1690 x 2932	6099	15.5	20.5	M230 DW	88
D700	694	634	Standard day tank (610L)	5031 x 1690 x 2972*	5381	4	5.5	M230	88
			DW24 tank option (1950L)	5083 x 1690 x 2932	6099	14	18.5	M230 DW	88
D830	825	750	Standard day tank (610L)	5031 x 1690 x 2972*	5670	3.5	5	M230	88
			DW24 tank option (1950L)	5083 x 1690 x 2932	6370	12	16	M230 DW	88

Based on manufacturer's information; may be subject to change.

Technical specification KOHLER Generators - Open units

T Series generating sets from 8.6–12 kVA (single-phase) or 11.5–16 kVA (three-phase)							
Single-phase (230 V) Mitsubishi engine	Standby rating (kVA @ 0.8pf)	Prime rating (kVA @ 0.8pf)	Base tank options	Dimensions L x W x H (mm)	Dry weight (kg)	Run time @ 100% prime load (hours)	Run time @ 75% prime load (hours)
T9KM	8.6	7.8	Standard day tank (50L)	1405 x 715 x 1053	396	16	20
T12KM	12	10.9	Standard day tank (50L)	1405 x 715 x 1053	406	11	14.5
Three-phase (400/230 V) Mitsubishi engine	Standby rating (kVA @ 0.8pf)	Prime rating (kVA @ 0.8pf)	Base tank options	Dimensions L x W x H (mm)	Dry weight (kg)	Run time @ 100% prime load (hours)	Run time @ 75% prime load (hours)
T12K	11.5	10.5	Standard day tank (50L)	1405 x 715 x 1053	387	16	20
T16K	16	14.5	Standard day tank (50L)	1405 x 715 x 1053	406	11	14.5
K Series generating sets from 6–26 kVA (single-phase) or 9–44 kVA (three-phase)							
Single-phase (230 V) Kohler engine	Standby rating (kVA @ 0.8pf)	Prime rating (kVA @ 0.8pf)	Base tank options	Dimensions L x W x H (mm)	Dry weight (kg)	Run time @ 100% prime load (hours)	Run time @ 75% prime load (hours)
K6M	6.4	5.8	Standard day tank (50L)	1220 x 700 x 920	290	20	26
K10M	9	8.2	Standard day tank (50L)	1410 x 720 x 1020	350	15	20
K12M	11.8	10.7	Standard day tank (50L)	1410 x 720 x 1020	440	10	13.5
K17M	15.5	14.1	Standard day tank (50L)	1410 x 720 x 1080	530	11	15
K26M	26	23.6	Standard day tank (100L)	1700 x 896 x 1200	621	13	17.5
Three-phase (400/230 V) Kohler engine	Standby rating (kVA @ 0.8pf)	Prime rating (kVA @ 0.8pf)	Base tank options	Dimensions L x W x H (mm)	Dry weight (kg)	Run time @ 100% prime load (hours)	Run time @ 75% prime load (hours)
K9	8.9	8.1	Standard day tank (50L)	1220 x 700 x 920	290	20	26
K12	12	10.9	Standard day tank (50L)	1410 x 720 x 1020	340	15	20
K16	16.5	15	Standard day tank (50L)	1410 x 720 x 1020	410	10	13.5
K22	21.5	19.5	Standard day tank (50L)	1410 x 720 x 1080	490	11	15
K27	26.5	24.1	Standard day tank (50L)	1410 x 720 x 1080	540	8	11
K33	33	30	Standard day tank (100L)	1700 x 896 x 1200	585	13	17.5
K44	44	40	Standard day tank (100L)	1700 x 896 x 1200	618	10.5	14

Technical specification KOHLER Generators - Open units

J Series generating sets from 22–250 kVA

Three-phase (400/230 V) John Deere engine	Standby rating (kVA @ 0.8pf)	Prime rating (kVA @ 0.8pf)	Base tank options	Dimensions L x W x H (mm) *includes additional 300 mm for bund	Dry weight (kg)	Run time @ 100% prime load (hours)	Run time @ 75% prime load (hours)
J22	22	20	Standard day tank (100L)	1700 x 896 x 1221	750	14	20
J33	33	30	Standard day tank (100L)	1700 x 896 x 1221	750	14	20
J44K	44	40	Standard day tank (100L)	1700 x 896 x 1221	820	10	13
J66K	66	60	Standard day tank (180L)	1870 x 994 x 1360	995	11	15
J77K	77	70	Standard day tank (180L)	1870 x 994 x 1360	1128	11	15
J88K	88	80	Standard day tank (180L)	1870 x 994 x 1360	1088	9	12.5
J110K	110	100	Standard day tank (190L)	1950 x 1084 x 1330	1187	8	11.5
J130K	132	120	Standard day tank (340L)	2370 x 1114 x 1780*	1498	13	18
J165K	165	150	Standard day tank (340L)	2370 x 1114 x 1780*	1578	10	13.5
J200K	200	182	Standard day tank (340L)	2370 x 1114 x 1780*	1716	8	10.5
J220C2	220	200	Standard day tank (340L)	2398 x 1114 x 1835*	1766	7.5	10
J250K	250	227	Standard day tank (340L)	2398 x 1114 x 1835*	1800	7	9

V Series generating sets from 275–700 kVA

Three-phase (400/230 V) Volvo engine	Standby rating (kVA @ 0.8pf)	Prime rating (kVA @ 0.8pf)	Base tank options	Dimensions L x W x H (mm) *includes additional 300 mm for bund	Dry weight (kg)	Run time @ 100% prime load (hours)	Run time @ 75% prime load (hours)
V275C2	275	250	Standard day tank (390L)	2900 x 1300 x 1890*	2200	7	9
V350C2	350	318	Standard day tank (470L)	3160 x 1340 x 2105*	3103	7	9.5
V400C2	390	355	Standard day tank (470L)	3160 x 1340 x 2105*	2972	6.5	8.5
V440C2	440	400	Standard day tank (470L)	3160 x 1340 x 2105*	3110	5.5	7
V500C2	500	455	Standard day tank (470L)	3160 x 1340 x 2105*	3250	5	6.5
V550C2	550	500	Standard day tank (500L)	3470 x 1500 x 2343*	3620	4.5	6.5
V650C2	650	591	Standard day tank (610L)	3470 x 1630 x 2395*	3780	5	7
V700C2	700	650	Standard day tank (610L)	3470 x 1630 x 2350*	4020	4.5	6

D Series generating sets from 275–830 kVA

Three-phase (400/230 V) Doosan engine	Standby rating (kVA @ 0.8pf)	Prime rating (kVA @ 0.8pf)	Base tank options	Dimensions L x W x H (mm) *includes additional 300 mm for bund	Dry weight (kg)	Run time @ 100% prime load (hours)	Run time @ 75% prime load (hours)
D275	275	250	Standard day tank (390L)	2900 x 1300 x 1970*	2310	6.5	8.9
D300	300	273	Standard day tank (390L)	2900 x 1300 x 1970*	2400	6.5	8.9
D330	330	300	Standard day tank (470L)	3160 x 1340 x 1892*	2440	7	10
D440	440	400	Standard day tank (500L)	3470 x 1500 x 2129*	2910	5.5	7.5
D550	550	500	Standard day tank (500L)	3470 x 1500 x 2115*	3220	4	6
D630	630	573	Standard day tank (610L)	3470 x 1630 x 2462*	3700	4.5	6
D700	694	634	Standard day tank (610L)	3470 x 1630 x 2462*	3700	4	5.5
D830	825	750	Standard day tank (610L)	3470 x 1630 x 2485*	4080	3.5	5





KOHLER *PW* EL Series

(Single-phase 500 VA – 24 kVA
Three-phase 10 – 160 kVA)

Technical Specification

Technical specification KOHLER PW EL 100XA

Model	EL1005XA	EL1012XA	EL1030XA
Nominal Input Voltage	230 VAC 1 phase + N		
Input Voltage Range	140 - 310 VAC		
Input Frequency Range	47-55 Hz		
Max Input current (A) @ 100% resistive load, No charge current	2.3A	5.2A	12.6A
Max Input current (A) @ 100% resistive load, Full charge current	6A	9A	24.6A
Input Power Factor	>0.99		
Output			
Frequency	50Hz		
Frequency tolerance	± 3%		
- Free running	± 10%		
- Line synchronized			
Overload capability	120% Load: Continuous 125-150% Load: 1 min >150% Load : By pass		
Harmonic distortion	<5%		
Crest factor	3.0/1.0		
Nominal Output Rating (CosØ : 0.8) kVA	0.5kVA	1.25kVA	3kVA
Nominal Output Rating (CosØ : 1) W	400 Watts	1000 Watts	2400 Watts
Efficiency (Load dependant)	Upto 83% Inverter Mode / Up to 98% Changeover Mode		Upto 86% Inverter Mode / Upto 98% Changeover Mode
Batteries			
Type	Sealed Lead Acid - maintenance free		
Number of blocks	4 x 12V Batteries		
Battery Instalation	Internal		
Charger Max (A)	15A	15A	45A
Battery protection	Polarity Protection / Short Circuit Protection / Fuses		
Battery test	Standard every 6 days		
General			
Ambient operating temperature / altitude	0-40°C <1000 metres (Above sea level)		
Standards	EN 62040-1, EN 62040-2, EN 61000-2-2, EN 61000-3-2, EN 61000-4-2 EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8 EN 50171		
Ventilation	Forced		
Heat dissipation	100	250	600
Dimensions (mm) W x D x H	750 x 250 x 850	750 x 250 x 1250	750 x 400 x 1250
Weight (without battery) kgs	35	40	50
Protection level	IP20		

Technical specification - KOHLER PW EL 300 DSP

Model	EL310	EL320	EL330	EL340	EL360	EL380	EL3100	EL3120
General Specifications								
Nominal Output Rating (CosØ : 0,8) kVA	10	20	30	40	60	80	100	120
Nominal Output Rating (CosØ : 1) kW	9	18	27	36	54	72	90	108
Audible Noise	<57 dB	<62dB		<64dB		<62dB		
Efficiency (Load Dependant)	Upto 94% Inverter Mode / Upto 98% Changeover Mode							
Operating Temperature (Ambient)	0-40 °C							
Altitude	<1000 meters (Above sea level)							
Ventilation	Forced							
Relative Humidity	< 90%							
Protection Degree	IP 20							
Standards	EN 62040-1, EN 62040-2, EN62040-3, EN 60950-1 EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 60529, EN50171, ICEL1009							
Transport	Packaged and On Pallet							
Rectifier Specifications								
Nominal Input Voltage	380 / 400 VAC 3 phase + N,+20 - 25%							
Max Input current (A) per phase @100% resistive load, no charge current.	31	46	62	92	123	154	185	246
Max Input current (A) per phase @100% resistive load, Full charge current.	34	49.6	66.8	99.8	134	167	200	264
Input Frequency Range	50 Hz, +/- 5%							
Input Power Factor	>0.99							
Input Voltage distortion	<10 %							
Input THDi	<5%							
Input Protection	Fuses, Voltage & Frequency tolerance, Input power limit, Input PFC							
Battery Specifications								
Battery Type	Sealed Lead Acid VRLA / Ni-Cad							
Number of Blocks	60 Batteries (+/-30)							
Number of Cells	360							
Float voltage	810Vdc (+/-405 Vdc)							
Battery Cut Off voltage	600Vdc (+/-300 Vdc)							
Charger Max (A)	5.5	13	14	20	27	40.5	54	72
Battery Installation	External							
Battery Test Automatic	Standard every 72 Hours (Adjustable)							
Battery Protection	Polarity Protection/ Short Circuit Protection /Automatic Circuit Breaker / Fuses							
Inverter Specifications								
Inverter Bridge	IGBT Technology							
Nominal Output Voltage	380 / 400 VAC 3 phase + N							
Nominal Output Current	13A	26A	39A	52A	78A	104A	130A	156A
Output Frequency	50 Hz (60 Hz On Request)							
Output Frequency Tolerance								
- Free Running	± 0,2 %							
- Line Synchronized	± 2 %							
Overload Capability	120% Load : Continuous, 120-150% Load: 10 min, 150%-180%: 1 min, >180% Load: By pass							
Harmonic Distortion								
- Linear Load	< 2 %							
- Non Linear Load	< 5 %							
Crest Factor	3/1							
Output Waveform	Sine Wave							
Short Circuit Protection	Electronic Short Circuit Protection							
Bypass Specifications								
Primary Components	Electronic SCR Switch							
Nominal Voltage - V	380 / 400 VAC 3 phase + N							
Nominal Frequency - Hz	50 Hz ± 5%							
Retransfer: Static By-Pass to Inverter	Automatic And Manual							
Overload Capability	150 – 200% Continuously							
Manual By-Pass	Without Interruption							

Technical specification - KOHLER PW ELMOD

Model	ELM-04	
Power module		
Capacity	4 kVA	
Input / Output mode	Single-phase input/output	
Input PF	≥0.99	
THDI (%)	≤3%	
Overload ability	Comply to system overload requirement	
Charging power	1600W	
Weight (kg)	7kg	
System cabinet Mains / bypass input		
	Single-phase Input	Three-phase Input
Input Mode	1-phase +N +E	3-phase +N +E
Input voltage	220V / 230V / 240V ±25%	380V / 400V / 415V ±25%
Input frequency	50Hz±10%, 60Hz±10%	
Input Current	26A ~ 156A (26A per fitted power module)	78A (12 kVA system) 156A (24 kVA system)
Power walk-in (Sec.)	60 secs	
THDI (%)	<3%	
Input PF	≥0.99	
DC input		
Rated DC Input voltage	±240VDC	
DC Input voltage tolerance	±216V ~ ±246VDC	
DC Input current	10A ~ 60A (10A per fitted power module)	30A (12 kVA system) 60A (24 kVA system)
Battery charging		
Charging current limited	Yes	
Charging ability	12 hours (3 hours back up)	
Stability of charging voltage	±1%	
AC output		
Maximum Power	4 kVA to 24 kVA in 4 kVA steps (1 to 6 Power modules fitted)	12 kVA (3 modules fitted) OR 24 kVA (6 modules fitted) only
Power factor	0.9	
Output voltage	220 / 230 / 240VAC	
Output frequency	50 Hz / 60 Hz nominal	
Output frequency sync	Nominal ±4%; ±0.2% (on battery)	
Output current	19.2~ 115.2A (19.2A per fitted module)	57.6A (12 kVA system) 115.2A (24 kVA system)
Output voltage stability	±1%	
Output voltage recovering time	20ms (load 0 ~ 100% change)	
Overload ability	120% Continuous, 150% for 10mins, 175% for 1 min	
Transfer from mains to battery supply	0ms	
Transfer from bypass to inverter supply	<1ms	
Peak factor	3:1	
Waveform distortion	≤1% (linear load), ≤3%(non-linear load)	
Overall efficiency	≥93% (AC~AC), ≥98% (DC~AC)	
Load share precision	≤5%	
Output Short Circuit	3 x Output Current for 120ms	
Environmental		
Ambient temperature	-25°C ~ 60°C	
Operating temperature	-5°C ~ 40°C	
Maximum operation altitude	≤1500m	
Relative humidity	≤ 95% non-condensing	
Protection degree	IP30	
Cooling	Fan-assisted air cooling (front entry / rear exhaust)	
Applicable safety standards	EN62040-1-1:2003 IEC60950-1:2001 EN50171	
Electromagnetic compatibility	EN62040-2:2006	
Acoustic noise	≤55 dBA	
Heat dissipation	Changeover mode: 120W (per power module), Inverter mode: 280W (per power module) Non-maintained mode: 120W (per power module)	
Communications		
External Interface	RS232, RS485, 2 dry contact, TCP/IP adapter	
Display	LCD/LED	
Communications		
Cabinet dimensions (W x D x H)	510 x 850 x 1340 mm	
Cabinet weight	100kg cabinet + 7 kg for each power module (i.e. 107 kg with one power module up to 142 kg with six modules)	

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