KOHLER®

UNINTERRUPTIBLE POWER

# KOHLER *MF* Series

Modular high power three-phase uninterruptible power supply

(250 - 1500 kVA/kW)
Scalable to 6000 kVA/kW

# Flexible *power*, efficient energy.

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

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

## KOHLER MF Series

- Online double conversion UPS
- 250 kW to 1500 kW - parallelable to 6000 kW
- Slide-in vertical modules
- Cable free internal connections
- Extra-long life wear parts
- Market leading 97.4% efficiency

Innovative vertical modules enable easy access whilst minimising physical footprint.

## 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.

PEP ecoPASSPORT

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

## 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

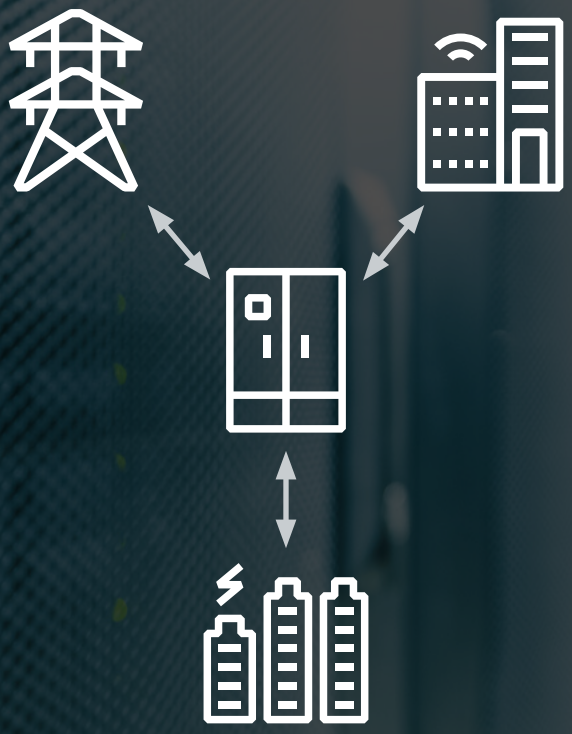
N+1, fault-monitored fan assembly housed in cable-free slide-out drawer for maximum reliability and easiest maintenance.

## 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.



## 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

## CSB - Centralised Static Bypass

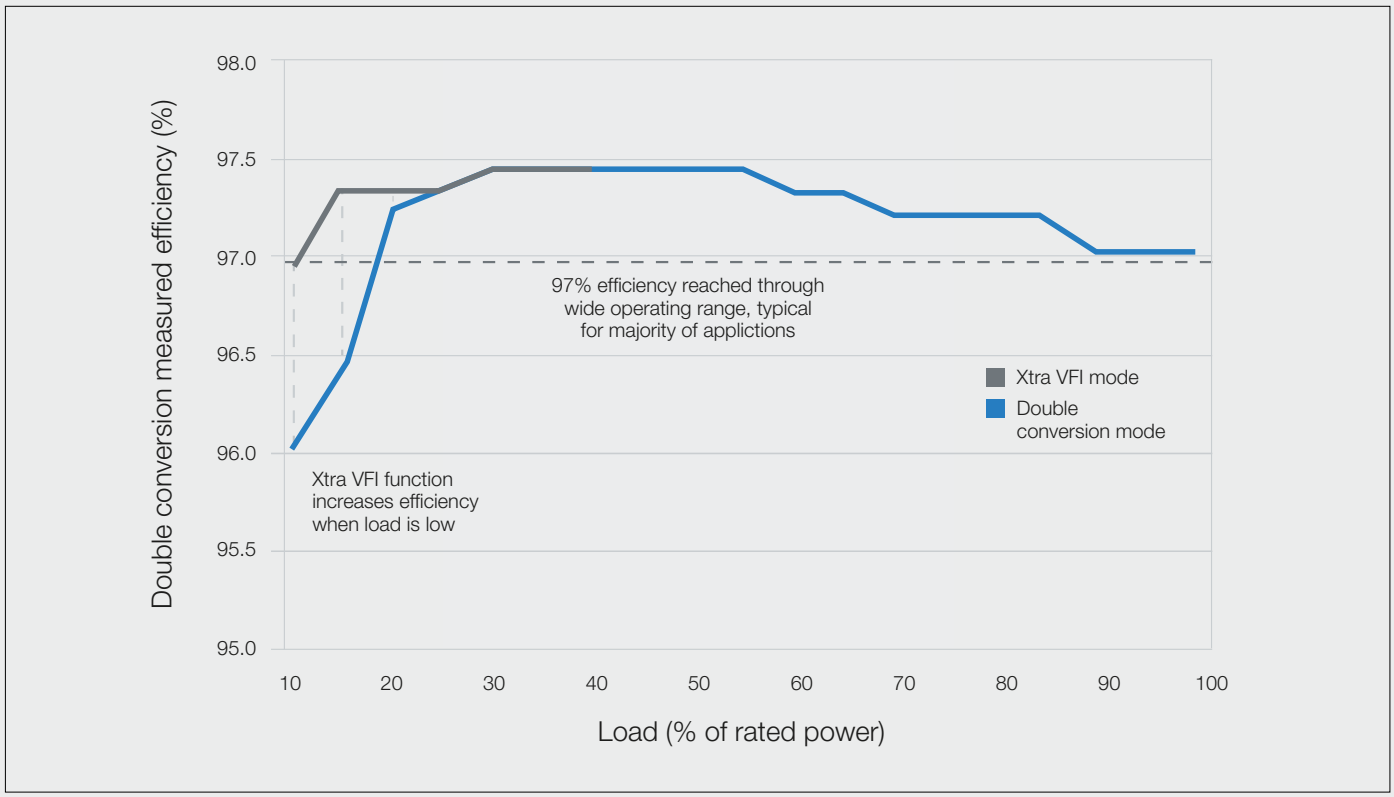
- The CSB variants of the MF Series balance high power, maximum availability and energy efficiency in UPS systems by providing a dual feed, scalable architecture with a relatively compact footprint, practical front access design and the highest VFI energy efficiency on the market (97.4%).
- The CSB variants have the same modules as the rest of the MF Series, with a centralised cabinet rated for the full system with separate switches per module so that the DPA (Distributed Parallel Architecture) is maintained. The central bypass is hosted in a separate cabinet and is sized to accommodate the overall power required.

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

*£0.23 cost per kWH

## 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%.

# KOHLER ***MF*** Series DPA frame formats

## 0.75 MW

RHS and LHS connections available

## 1.0 MW

RHS and LHS connections available

## 1.5 MW

## Up to 6.0 MW

1.0MW and 1.5MW frames and 250kW modules allow scaling to match your load, from 250kW to 6.0MW.

# Technical specification

| General Data | MF 750DPA | MF 1000DPA | MF 1250 DPA | MF 1500DPA | MF 1500DPA-CSB |
|---|---|---|---|---|---|
| System power range | 250 kVA/kW to 6 MVA/MW (Max. power 250 kVA/kW per module) | | | | |
| Max. modules per frame | 3 | 4 | 6 | | 6 |
| Max. frames in parallel | 6 (4.5 MW) | 6 (6.0 MW) | 4 (6.0MW) | | 3 (4.5MW) |
| Max power per frame | 750, 1000 or 1500 kVA/kW | | | | |
| Topology | Double conversion, transformer-free, modular, Decentralised Parallel Architecture | | | | |
| 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 | 3 x 380 / 220 V + N, 3 x 400 / 230 V + N, 3 x 415 / 240 V + N | | | | |
| 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 | 35–70 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 | ±1% at 400V | | | | |
| Voltage distortion THDv | <3% at linear load. <3% for non-linear load | | | | |
| 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** | | | | | |
| Number of 12V blocks / string | 40–50 12V blocks | | | | |
| 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 | | | | |
| **Compliancy** | | | | | |
| 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 | 1615 kg | 1950 kg | 2595 kg | 2945 kg | 3600 kg |
| Dimensions (mm) W x D x H | 1830 x 1000 x 2000 | 2235 x 1000 x 2000 | 3045 x 1000 x 2000 | 3045 x 1000 x 2000 | 3645 x 1000 x 2000 |

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


**Exceptional 24/7/365 Service Support**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