

PROTECT^{PLUS} M400

Ultimate flexibility to protect mission critical applications

Modular UPS 10 to 40 kVA
Configurable as 3/3, 3/1 or 1/1



Scalable UPS architecture and compact footprint

Protect^{PLUS} M400 from AEG Power Solutions is a modular on-line (VFI-SS-111) UPS system with a high operating AC/AC efficiency and compact footprint. The Protect^{PLUS} M400 UPS system is designed to protect critical data and IT infrastructures with the ultimate on-line power protection.

The Protect^{PLUS} M400 is based on a 2U high 10 kVA/kW power module that can be housed in one of two frame sizes (20 kVA or 40 kVA) providing up to 40 kVA maximum capacity or 30 kVA N+1 configurations. Up to 4 frames can be operated in parallel for additional resilience or capacity.

The 20 kVA and 40 kVA frames can be installed into a 19 inch cabinet (1000 mm deep and weight dependent). The batteries are housed in a separate battery cabinet.

The Frame Plus provides a self-contained solution. The standard Frame Plus provides space for a 20 kVA or 40 kVA frame and internal battery shelves. Longer runtimes can be achieved using external battery cabinets.

Protect^{PLUS} M400 has one of the lowest Total Cost of Ownership (TCO) factors in its class. The operating efficiency in on-line mode is up to 95% and 98% in Eco Mode. The UPS delivers up to unity-power factor and the system can be configured for 1/1, 3/1 or 3/3 input/output connections at installation.

Protect^{PLUS} M400 features

- Up to 95% operating efficiency (on-line mode)
- Up to 98% operating efficiency (Eco Mode)
- 10 kVA 'hot-swappable' Power modules (2U high)
- 20 and 40 kVA UPS frame sizes
- Parallel up to 4 frames for additional resilience
- UPS modules incorporate 'idle mode' and cyclic operation
- Output PF up to unity
- Phase configuration options 1/1, 3/1 and 3/3
- Centralized static and manual bypass lines
- Centralized battery connection
- Built-in 'Intelligent Test Mode'

MODULAR UPS

ProtectPLUS M400

Our business is to make your power security easy

UPS systems from AEG Power Solutions ensure the continuous availability of power and safe operations for critical applications in all environments. AEG PS has a proven track record for developing solutions for highly demanding applications in all types of infrastructures.

Since its creation more than a century ago, the AEG name has stood for rugged reliability and world-class engineering, including 60 years' experience in UPS.

Our customers know that they can rely fully on us for innovative power solutions that protect their people, their investments, their data, their business.

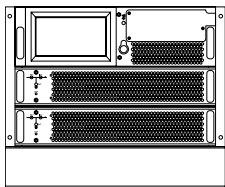
ProtectPLUS M400 combines a high operating efficiency value, with a compact footprint and modular architecture. The 20 and 40 kVA frames can be used as stand-alone units (on casters) or installed inside a 19" rack cabinet or in a Frame Plus UPS and battery cabinet.

The ProtectPLUS M400 UPS is designed to meet the power protection requirements of server racks, small-to-medium sized data centers, transportation, retail and other critical applications where power reliability, a compact footprint and operating efficiency are key factors.

The UPS is based around a 10 kVA power module and can be scaled up to 40 kVA capacity or 30 kVA N+1. The modules are hot-swappable and up to four frames can be operated in parallel to achieve a total power capacity of 160 kVA.

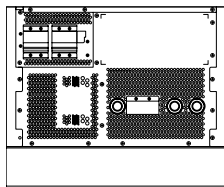
The 10 kVA power module uses the latest IGBT double conversion technology and has a low input THDi and almost unity input power factor (input PF > 0.99 and input THDi < 3%) even when a low percentage of load is applied. These features help the UPS to achieve a high operating efficiency, low total cost of ownership and a compact footprint. For long runtimes, the UPS can be installed with an optional 15A battery charger to ensure a fast recharge time.

Frame 20 kVA



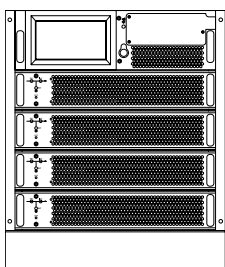
Front view

- ← Static Bypass Module
- ← 10kVA Power Module
- ← 10kVA Power Module



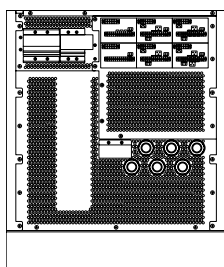
Back view

Frame 40 kVA



Front view

- ← Static Bypass Module
- ← 10kVA Power Module
- ← 10kVA Power Module
- ← 10kVA Power Module
- ← 10kVA Power Module



Back view



- ← UPS frame (20 or 40 kVA)
- ← Optional PDU
- ← Free space for batteries (40 or 80 blocks 9 or 12 Ah)

"Frame Plus" (UPS frame and batteries)

Green Modular Scalable UPS

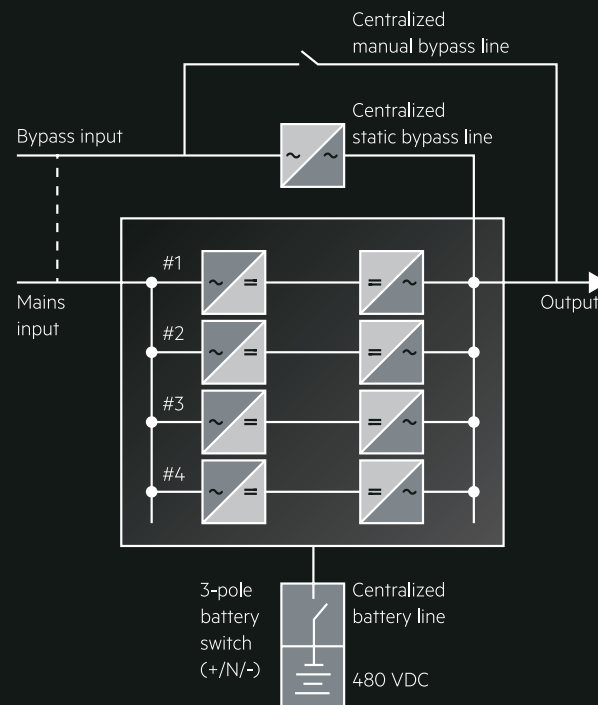
- Double Conversion (VFI-SS-111)
- Modular design with N+X built-in redundancy
- Transformer-less architecture
- Power capability up to 40 kVA
- 10 kVA power modules (2U height each) with independent LED status indications
- Hot-swappable modules
- ECO Mode up to 98% efficiency
- Idle Mode, to increase operating efficiency, even with low % of load
- Output PF up to 1
- Frequency converter mode
- 7" color Touch Screen graphic display
- Built-in 'Intelligent Test Mode'
- Centralized (static and manual) Bypass Module
- Centralized (external) battery connection
- Parallel capability up to 4 units

ProtectPLUS M400 is designed to provide stable and secure power for very demanding applications with either a 100% step load change, unbalanced or non-linear IT-type loads.

The UPS also provides exceptional performance with a Unity-rated output power factor when protecting leading or lagging power factor loads.

The modular architecture allows up to four power modules to be connected in parallel in a single frame cabinet (40 kVA).

With an operating efficiency up to 98% (Eco Mode), ProtectPLUS M400 is one of the most eco-friendly UPS systems available today.



Minimized costs and optimal protection

ProtectPLUS M400 is designed to maximize savings in terms of footprint (m²), power installed (kVA), electrical system (cabling and protection devices), security (MTTR and MTBF) and most importantly, power management (kW and cost). The scalable architecture reduces CAPEX and optimizes OPEX costs.

The installed capacity can easily be increased or decreased depending upon the connected load. Each power module has independent hardware and controllability, able to operate and coordinate with other modules within the system. The control of power modules connected in parallel is decentralized in the single 10 kVA device, increasing operational safety. The omission of the master/slave architecture eliminates any possibility of a problem due to the failure of a single power module.

The common frames are available in two different dimensions, able to house up to 2 or 4 power modules (including redundancy). The frames allow for input/output connections to the input electrical system (both with common or separated lines for rectifier and bypass inputs) and to the protected load, with centralized static and manual bypass lines. Both frame models can be connected in parallel up to 4 units.

Intelligent Test Mode

An AEG PS Service Engineer can set the Intelligent Test Mode, for full load test, without the need of a dummy load or wasting energy: the current that flows through the UPS can be equal to the current to the load connected.

- Energy-saving of more than 90% (only consumption of the UPS itself)
- Load free, an AEG Service Engineer can test the UPS system with different current rates without load connected
- Simple wiring, convenient for on site demonstrations and easy for factory and site testing

Easy installation, operation and maintenance

The ProtectPLUS M400 can be configured as a 1/1, 3/1 or 3/3 phase system upon installation. The 7" LCD touch-screen built into the frame's front panel provides access to a range of operating information for the entire UPS system as well as each individual power module including, historical logs, alarms, operating parameters, load and electrical system measurements.

The power modules can also be accessed from the front of the frame for easy removal and inspection.

The Mean Time To Repair (MTTR) is significantly low thanks to the hot swappable architecture. The models are held in place by four screws and slide into/out of their position in the UPS frame. Bottom and top cable entry are available for the frames.

User interface and accessories

- User-friendly interface
- Monitoring, managing and shutdown software
- RS232 serial port
- USB port
- EPO push button (on the front) and contact (for remote control)
- Modbus port available as standard
- SNMP card (optional)
- Larger Remote Panel (optional)
- Optional additional battery charger module (up to 15A), that extends the nominal charging current (3,5A per power module)

		NUMBER OF POWER MODULES					REUNDANCY
		1	2	3	4		
Frame for 2 Power Modules	kVA	10	20			N	
		-	10			N+1	
Frame for 4 Power Modules	kVA	10	20	30	40	N	
		-	10	20	30	N+1	

Specifications

FRAME MODEL	20	40
Maximum capacity (kVA/kW)	20/20	40/40
Maximum number of power modules connected	2	4
Dimensions W x D x H (mm)	485 x 697 x 398 (7U)	486 x 697 x 575 (11U)
Weight (kg)	42	51
Phase configuration	3/3; 3/1; 1/1	
IP protection degree	IP20	
Color of the frame and modules	RAL 7021	
POWER MODULE		
Parallel capability	Up to 4 frames	
Nominal power (kVA/kW)	10/10	
Dimensions W x D x H (mm)	438 x 590 x 85 (2U)	
Weight (kg)	15.3	
FRAME PLUS (CABINET FOR UPS FRAMES AND BATTERY STRINGS) INPUT		
Dimensions W x D x H (mm)	600 x 1000x1600	
Weight, empty (kg)	120 kg	
INPUT		
Phase	3 or 1 Phase + N + G	
Nominal voltage (V)	3 Phase: 380/400/415 1 Phase: 220/230/240	
Voltage range (V)	304 to 478 V (at full load) 228 to 304 V (with load decreasing linearly)	
Frequency (Hz)	50/60	
Frequency range (Hz)	40/70	
Power factor	> 0.99	
Input THDi	< 3% (with full linear load)	
OUTPUT		
Voltage (V)	3 Phase: 380/400/415 1 Phase: 220/230/240	
Output THDv (according to IEC EN 62040-3)	< 1% (with linear load) < 5.5% (with non linear load)	
Output PF	1	
Crest factor	3:1	
Frequency (Hz)	50/60	
Slew rate (Hz/s)	0.5 (standard); settable from 0.5 to 3	
Overload capacity	110% for 60 min 125% for 10 min 150% for 1 min > 150% for 200 ms	
AC/AC efficiency in double conversion	Up to 95%	
AC/AC efficiency in ECO Mode	Up to 98%	
BATTERY LINE		
Nominal DC voltage (VDC)	± 240 (with +/- connections)	
Quantity of lead acid batteries (12 V each)	40 (settable from 32 to 44)	
Recharge power	10% * System Power (nominal value); Settable: from 0 to 20% * System power	
USER INTERFACE		
Display	7" LCD touch screen (central) display	
Standard communication ports	RS232, RS485, Dry contacts, USB	
Optional communication ports	SNMP, Expansion Dry contact card	
ENVIRONMENTAL		
Operating temperature (°C)	0 to 40	
Storage temperature (°C)	-40 to 70	
Relative humidity	0 to 95%	
Noise at 1 m distance, each power module at 100% of load (dB)	58	
STANDARDS AND CERTIFICATIONS		
Safety	IEC EN 62040-1	
EMC	IEC EN 62040-2	
Test and Performance	IEC EN 62040-3	

AEG Power Solutions

Approach your local AEG Power Solutions representative for further support. Contact details can be found on: www.aegps.com