AEG

POWER
SOLUTIONS

PROTECT PLUS M400

Maximum flexibility and efficiency to protect critical applications

Modular UPS from 10 to 90 KVA configurable as 3/3, 3/1 and 1/1

Compatible with **LI-ION**

COMPACT, MODULAR AND SCALABLE ARCHITECTURE

The PROTECT PLUS M400 family from AEG Power Solutions consists of modular On-Line Uninterruptible Power Supply Systems (VFI-SS-111) with high AC/AC operating efficiency and a very compact size. Designed to protect critical data and IT infrastructures with maximum security against any network incident.

MODULARITY

Technology based on 10/15 kVA/kW, 2U high, power modules that can be housed in various rack sizes providing up to 90 kVA maximum capacity including N+1 configurations. Up to 4 racks can be used in parallel to increase output power or redundancy.

All racks are compatible with 19 inch rack installation (1000 mm deep).

FULL SOLUTION

The "Cabinet Plus" option provides a complete solution that includes the pre-installed rack for the connection of the necessary UPS modules and in the lower area, space to install batteries. This cabinet could be completed with optional extras such as external manual bypass or power distribution unit (Optional).

External optional battery fuse protection boxes.

Thanks to the On-Line 3-level double conversion technology with IGBT it is possible to obtain a very high level of efficiency (95% Online Mode and 98% Eco Mode) to achieve the lowest Total Cost of Ownership (TCO) in this class.

The UPS is also capable of providing unity power factor and can be configured for different input/output phase configurations 1/1, 3/1 or 3/3 during the installation.

MAIN FEATURES

- 95% efficiency (on-line mode) / 98% (ECO mode)
- 10 kVA or 15 kVA hot-swappable power modules (2U high)
- Available in the following power frames:
  - 20, 40 and 60 kVA configurable 3/3, 3/1, 1/1 (10KVA module)
  - 30, 45 and 90 kVA configurable 3/3 (15 kVA module)
- Parallel installation of up to 4 power frames for increased power or redundancy
- The UPS modules incorporate standby mode and intelligent sleep mode.
- PF unit output: 1KVA=1KW
- Centralised static bypass
- Integrated battery test.
- Compatible with VRLA and LI-ION batteries
- 7" LCD colour display
- Optional 15A charger module compatible in power module slot

MODULAR UPS

ProtectPLUS M400

Our mission is to offer unbeatable power supply
At AEG Power Solutions, we are dedicated to ensure continuous power availability and safe operation in critical applications, regardless of the environment. With our vast experience, we are able to provide solutions for complex applications in the most demanding infrastructures.

With over a century of history, AEG has been synonymous to rugged reliability and world-class engineering, backed by 60 years of experience in uninterruptible power supplies (UPS).

Our customers rely on us for innovative energy solutions that protect their people, their investments, their data and their business.

High efficiency in a compact and modular design
The PROTECT PLUS M400 combines exceptional efficiency with compact size and modular architecture.

The racks can be used independently on castors, installed in a standard 19" rack, or in the AEG "Cabinet Plus".

Total protection for critical applications
This UPS is designed to meet the needs of small and medium data centres, transportation applications, IT and any critical infrastructure where electrical reliability, compact size and operational efficiency are essential

Hot-swappable and scalable power modules
10 kVA: Interchangeable in 20,40 & 60kVA power frames
15 kVA: Scalable up to 90 kVA in 30, 45 and 90 KVA power frames.
Parallel operation: Up to four racks for a maximum power of 360 kVA.

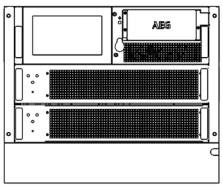
Decentralization
Each module incorporates its own filter, control, rectifier, battery charger and inverter, the battery charging power for each module is up to 20% of its power.

Independent control, without Master/Slave topology, which ensures load sharing operation in any situation.

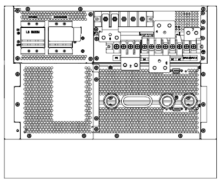
Compatibility with lithium ion batteries
The latest UPS development makes the PROTECT PLUS M400 lithium battery compatible, offering an even more compact, versatile and robust overall solution.

Compatible with **LI-ION**

Frame 2 slots

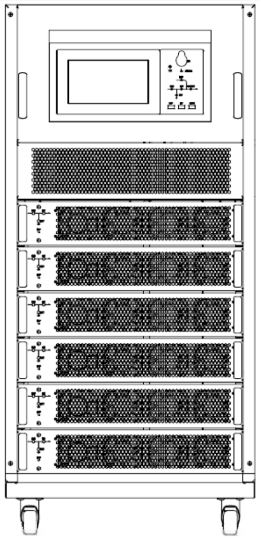


Front view

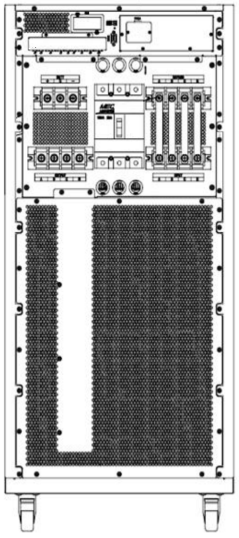


Back view

Frame 6 slots



Front view



Back view

"Cabinet Plus" (UPS frame and batteries)

Additional information:

PROTECT PLUS M400
Is a modular UPS system with centralised battery line, single control and a static bypass designed to provide reliable power protection for critical loads with scalability, redundancy and efficient maintenance.

Power Modules (10 and 15Kva):
These are the building blocks of the modular UPS system. Each module is capable of providing 10 or 15 kVA of power.

Up to 6 modules can be connected in parallel in one power frame to scale the total capacity of the UPS system.

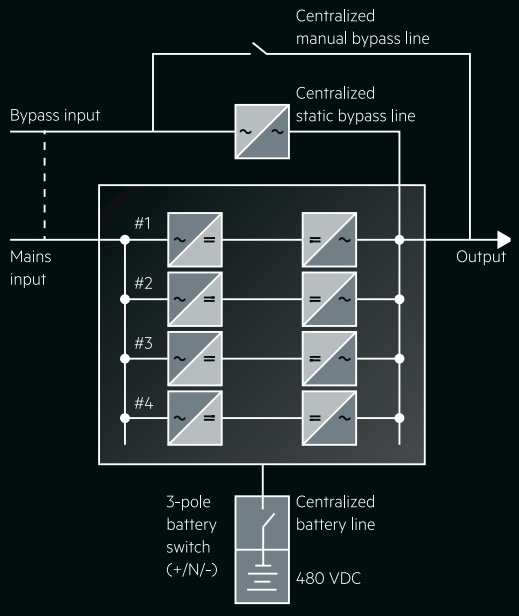
Centralised Battery Line:
Instead of each module having its own separate battery, a centralised battery system is used. The centralised battery bank is connected to all power modules, providing a unified power source during a power outage.

This configuration simplifies battery maintenance and improves battery management efficiency.

Centralised Control Unit:
The control unit manages the operation of all power modules, ensuring load balancing, redundancy and synchronisation.
Monitors the status of each module and the overall system, providing information on performance, load and any potential problems.

The control unit also handles the automatic transfer between different working modes and the charging of the batteries.

Static Bypass:
This switch allows uninterrupted transfer of the UPS load to the utility power in the event of an internal fault or overload in the UPS system. It operates without any interruption to the load, ensuring a continuous power supply.



Minimised costs and optimal protection
The Protect plus M400 UPS is designed to maximise savings in terms of space (m2) per installed power (kVA), installation (cabling and protection devices), safety (MTTR and MTBF) and, most importantly, energy management (kW and cost).

The scalable architecture reduces CAPEX and significantly optimises OPEX costs.

Scalability and management
The installed capacity can be easily increased or reduced by removing or installing additional modules, depending on the connected load.

The management of the connected power modules is decentralised in the module itself, which increases operational safety. The omission of the master/slave architecture eliminates any possibility of error due to the failure of a single power module.

Common racks are available in different configurations, capable of accommodating up to 6 power modules (redundancy included).

All Rack versions can be connected in parallel up to 4 units.

The connection can be made with independent or common input lines (Rectifier & Bypass).

Communication
The different communication interfaces available (RS-232, RS-485, USB or relays) make it possible to adapt to any remote monitoring need. In addition, different communication protocols can be optionally added by means of communication cards (optional).

Long backup times
For applications with long backup times where high capacity batteries are required, it is possible to install an additional charger with 15A for battery charging, which can be installed in any of the module slots.

Easy installation, management and maintenance
Protect plus M400 can be configured as a 1/1, 3/1 or 3/3 phase system at the time of installation.

Mean time to repair (MTTR) is significantly low thanks to the hot-swappable architecture. The models are fixed by four screws and slide in and out of position in the UPS rack. The racks feature top and bottom cable entry.

Available configurations:

			NUMBER OF POWER MODULES						
			1	2	3	4	5	6	
10KVA MODULE 3/3, 1/1, 3/1	Frame for 2 Power modules	KVA/KW	10	20					N
			-	10					N+1
	Frame for 4 Power modules		10	20	30	40			N
			-	10	20	30			N+1
	Frame for 6 Power modules		10	20	30	40	50	60	N
				10	20	30	40	50	N+1
			-	-	10	20	30	40	N+2
15KVA MODULE 3/3	Frame for 2 Power modules	KVA/KW	15	30					N
			-	15					N+1
	Frame for 3 Power modules		15	30	45				N
			-	15	30				N+1
	Frame for 6 Power modules		15	30	45	60	75	90	N
			-	15	30	45	60	75	N+1
			-	-	15	30	45	60	N+2

Specifications

FRAME MODEL	20KVA (30000232)	40KVA (30000234)	60KVA (30005005)	30KVA (30000233)	45KVA (30005857)	90KVA (30005004)
Compatible power module	10 kVA power module (30000231)			15 kVA power module (30000230)		
Maximum capacity (kVA/kW)	20/20	40/40	60/60	30/30	45/45	90/90
Maximum number of connected power modules	2	4	6	2	3	6
Dimensions W x D x H (mm)	485 x 697 x 398	486 x 697 x 676	485x761x1033	485 x 697 x 398	486x761x676	485x761x1033
Weight (kg)	42	51	70	42	55	70
Phase configuration	3/3; 3/1; 1/1			3/3		
IP degree of protection	IP20					
Frame and module colour	RAL 7021					
POWER MODULE						
Rated power (kVA/kW)	10/10			15/15		
Dimensions W x D x H (mm)	438 x 590 x 85 (2U)			438 x 590 x 85 (2U)		
Weight (kg)	15.3			15.5		
INPUT						
Phase	3 or 1 Phase + N + G			Three-phase + N + G		
Nominal voltage (V)	Three-phase: 380/400/415 Single-phase: 220/230/240			Three-phase: 380/400/415		
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					
THDi input	< 3 % (at full linear load)					
OUTPUT						
Voltage (V)	Three-phase: 380/400/415 Single-phase: 220/230/240			Three-phase: 380/400/415		
THDv output (according to IEC EN 62040-3)	< 1 % (with linear load) < 5,5 % (with non-linear load)					
Power Factor	1					
Crest factor	3:1					
Frequency (Hz)	50/60					
Slew rate (Hz/s)	0.5 (standard); adjustable 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	95%					
AC/AC efficiency in ECO mode	98%					
BATTERY LINE						
Nominal DC voltage (VDC)	± 240 (with +/N/- connections)					
Number of batteries	160 cells for Lihium / 40 VRLA (adjustable from 32 to 44)*.					
Charging power	10 % Total system power (nominal value); Configurable: from 0 to 20 %; Configurable: from 0 to 20 %. Expandable via additional charger (30000236)					
USER INTERFACE						
HMI	7" LCD touch screen (central) display					
Standard communication ports	RS232, RS485, dry contacts, USB					
Optional communication ports	SNMP, Expansion Dry contact card					
ENVIRONMENT						
Operating temperature (°C)	0 a 40					
Storage temperature (°C)	-40 a 70					
Relative humidity	0 a 95 %					
Noise at 1 m distance, each power module at 100 % load (DB)	58dB					
STANDARDS AND CERTIFICATIONS						
Security	IEC EN 62040-1					
EMC	IEC EN 62040-2					
Testing 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

AEG PS – ProtectPLUS M400 – EN – 09/2024 V4 – Technical data in this document does not contain any binding guarantees or warranties. Content only serves for information purposes and can be modified at any time. We will make binding commitments only upon receipt of concrete enquiries and customer notification of the relevant conditions. Due to the non-binding nature of these terms, we assume liability neither for the accuracy nor completeness of the data provided here. Product made in China. AEG is a registered trademark used under license from AB Electrolux.