

PROTECT^{PLUS} S500

Secure Power, Maximum Efficiency
and a Compact Footprint



Highly flexible and smart

The Protect^{PLUS} S500 from AEG Power Solutions is a transformer-less UPS that combines high AC/AC efficiency values with a compact footprint and flexible configurations. Using full IGBT double-conversion technology, Protect^{PLUS} S500 combines a low input THDI with a near to unity input power factor. It is the ideal solution for small and medium critical power applications where low power consumption, a compact footprint and ease of maintenance are important considerations.

Reduced overall cost of ownership through efficiency and optimized footprint

The Protect^{PLUS} S500 is a double conversion UPS (VFI SS 111), offering an AC/AC efficiency up to 95.5%. It can operate in ECO Mode, with efficiency up to 99%, thus reducing the utility costs associated with operating a device of this type. Moreover, it produces less heat waste resulting in minimized air conditioning costs. Up to 80 kVA, the Protect^{PLUS} S500 battery solutions may be integrated inside the UPS cubicle; up to 100 kVA including an input isolation transformer (as option), for full galvanic isolation, in the same cubicle.

Great flexibility and maintainability

Protect^{PLUS} S500 UPS provides easy access for maintenance and has a low Mean Time To Repair (MTTR) thanks to its use of removable power modules. The hot connection and disconnection of parallel units and the CAN bus based distributed control systems, ensures optimum load sharing and allows the system to be easily expanded.

Protect^{PLUS} S500 has a Dynamic Charging Mode (DCM). From 60 kVA, Protect^{PLUS} S500 UPS can be installed with a larger charger for use with higher capacity battery sets required for long autonomy times.

Protect^{PLUS} S500
3-phase UPS
30 – 200 kVA

ProtectPLUS S500 3-phase UPS

RELIABLE PROTECTION FOR CRITICAL LOADS

Suitable for any critical application, where power quality is a must

ProtectPLUS S500 from AEG Power Solutions, with its VFI SS 111 online double conversion topology, delivers fully conditioned pure sine-wave output. The UPS is designed to provide an excellent output voltage suitable for highly demanding applications with a 100% step load, unbalanced, nonlinear and modern IT loads. The UPS has exceptional performance: with a power factor up to 1 (from 60 kVA models) there is no need to de-rate the unit.

ProtectPLUS S500 offers advanced features based on state-of-the-art total digital control. This control incorporates dual DSP (Digital Signal Processing) and μ C (Micro controller) technologies for top performance and reliability. The status of the most critical components is constantly monitored to allow predictive maintenance operation, thereby avoiding unexpected failures. The UPS working state can be easily monitored by any Building Management System and via LAN/WAN.

Efficiency

ProtectPLUS S500 can reach the highest AC/AC efficiency levels, up to 95.5% in online double conversion mode (VFI SS 111). Its flat efficiency curve from 35% of load ensures maximum energy savings at every load percentage. Moreover, with a stable mains power supply and load condition, the UPS can achieve up to 99% efficiency in ECO mode.

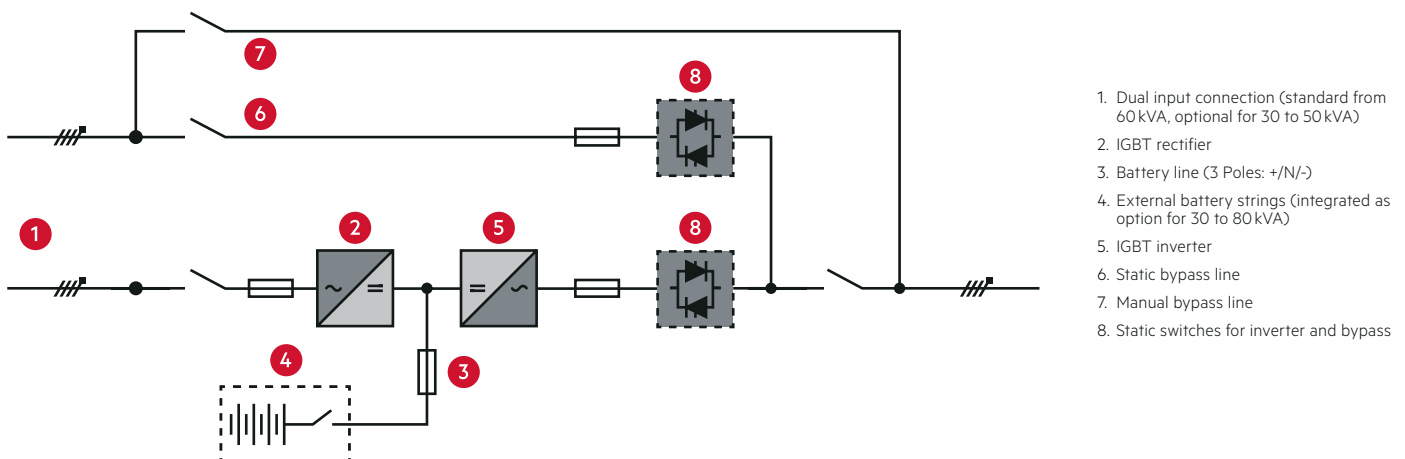
Battery Management

Batteries are electro-chemical devices, which store their charge chemically, as such their performance degrades over time. The ProtectPLUS S500 series offers a Battery Anti-Aging Control (BAAC) that works with the connected battery manufacturer's requirements. Following a UI characteristic curve, the rectifier charges at a constant current appropriate for the battery type used, to prevent damage from excess overcharging. In addition to the float voltage level, a boost charge can be set, optimizing recharge time for when there is the possibility of consecutive power outages within a short time period.

Double conversion architecture

- Product range: 30 to 200 kVA
- Transformer-less architecture
- Full IGBT Double Conversion (VFI-SS-111)
- ECO mode (VFD)
- Free space for internal batteries (up to 80 kVA) or Isolation transformer (up to 100 kVA)
- Life-prolonging Battery Management
- Parallel capability: up to 6 modules, with CAN bus loop
- Load Bus Synchronization (1+1 or 3+3)
- Full compatibility with generators
- Many optional features

BAAC also reduces the residual ripple current (one of the causes of premature battery failure), as well as protecting the battery from deep discharge damage. An automatic battery temperature compensation charge voltage can also be activated to help increase battery life.



1. Dual input connection (standard from 60 kVA, optional for 30 to 50 kVA)
2. IGBT rectifier
3. Battery line (3 Poles: +/N/-)
4. External battery strings (integrated as option for 30 to 80 kVA)
5. IGBT inverter
6. Static bypass line
7. Manual bypass line
8. Static switches for inverter and bypass



From 60 kVA power models, ProtectPLUS S500 also offers a DCM (Dynamic Charging Mode) function: for very long battery autonomy, the UPS can achieve the nominal recharge time required, by increasing the recharge current up to 100 A of the recharging current. This is achieved using an intelligent charging function that can operate when the load is drawing less than the maximum power output of the inverter. An integrated periodic battery testing function tests and monitors battery health, providing advanced warning to guide the application of preventive maintenance.

Parallel Control System for easy upgrade to connected UPS

The ProtectPLUS S500 UPS solution offers parallel options for both redundancy and capacity modes, providing the possibility for extra system resilience and increased capacity. The parallel control circuitry associated with these units is fully digital and acts on both active and reactive power on each of the three output phases. This allows accurate load current sharing among the UPS units even during transient conditions. Up to 6 UPS units (of the same power rating) can be connected in parallel.

Feature Rich Intelligence

Parallel control is distributed between all units and communication is achieved through the use of a CAN bus connection loop. This has the effect of producing a highly reliable system with “no single points of failure”. Intelligent design of system connections, allows for easy installation and future field upgrades. In a parallel configuration, UPS can be added or removed without load disturbance or the need to switch to bypass thanks to the ‘hot’ connection design.

The Smart Parallel function can automatically switch off the UPS when the total load connected can be met by the remaining powered UPS. This is known as “load based shutdown” and maximizes the overall efficiency of the complete system by maintaining the load of each UPS at an optimum level.

The AEG PS ProtectPLUS S500 can be installed near walls or next to other cabinets as cooling air is expelled through fans on the top of the unit. This design gives the user a significant savings in floor use and makes the ProtectPLUS S500 UPS an ideal solution where space is at a premium. Despite its modern compact design, all critical components are accessible from the front of the unit; this improves accessibility to allow regular maintenance and reduced Mean Time to Repair (MTTR).

User interface and accessories

- User-friendly interface
- Monitoring, managing and shutdown software
- Front access for all maintenance operations
- 10" color touch-screen display (for 200 kVA models)

Communication options

- RS232 serial port (standard)
- USB port (standard)
- Web/SNMP
- ModBus
- Relays
- Remote panel

Options

- Remote EPO
- External manual bypass status
- Diesel Mode (Optional from 30 to 50 kVA; standard for 60 to 200 kVA on models)
- Parallel kit for increasing capacity or redundancy (up to 6 units)
- Load-sync control for dual feed systems
- Input isolation transformer (inbuilt up to 100 kVA models)
- Inbuilt battery solutions (up to 80 kVA)
- External battery cabinets
- External manual bypass box (wall-mounted)
- Battery switch box
- Battery thermal probe
- Top cable entry
- Back-feed protection (contactor up to 50 kVA; internal tripping coil from 60 to 200 kVA)

Information and communication technology

- Data centers
- Server farms
- Communication rooms
- Broadcast and Networking
- Financial environments
- Critical electrical engineering
- Industrial controls
- Manufacturing machinery
- Process equipment
- Transportation
- Building automation
- Health and medical

ProtectPLUS S500 > Specifications

POWER RATING MODEL	30	40	50	60	80	100	125	160	200	
Nominal Apparent Power [kVA]	30	40	50	60	80	100	125	160	200	
Nominal Active Power [kW]	27	36	45	60	80	100	125	160	200	
Dimensions W x D x H [mm]	505 x 940 x 1505			560 x 940 x 1800						850 x 953 x 1976
Weight (without batteries) [kg]	140	150	190	250	300	320	360	380	720	
MAINS INPUT (RECTIFIER)										
Phase	3Ph + N + G									
Nominal Voltage [V]	380 / 400 / 415									
Voltage Range [V]	-20 % / +15 %									
Frequency [Hz]	50 / 60									
Frequency Range	±10%									
Power Factor	> 0.99									
Input THDi (at rated voltage and THDv < 0.5 %)	< 3 % (with full linear load)									
BYPASS INPUT										
Nominal Bypass Input Voltage [V]	380 / 400 / 415									
Bypass Input Voltage Range	±10%									
Bypass Input Frequency [Hz]	50 / 60									
Bypass Frequency Range [Hz]	Nominal: ±10%									
Overload Capacity on Bypass Line	150 % continuously up to 1000% for 20 ms									
OUTPUT (INVERTER)										
Voltage [V]	380 / 400 / 415									
Output THDv (according to IEC EN 62040-3)	< 1 % (with linear load) < 5 % (with non linear load)									
Transient Response	±5 % for dynamic step load (20 % – 100 % – 20 %)									
Transient Recovery (after step load)	< 20 ms									
Output PF	up to 0.9			up to 1						
Crest Factor	3:1									
Frequency [Hz]	50 / 60									
Slew Rate [Hz/s]	< 1									
Overload Capacity through Inverter Line	< 125 % for 10 min < 150 % for 30 s > 150 % for 100 ms									
Short Circuit Current [A]	78	104	130	200	264	331	414	531	720	
AC/AC Efficiency in Double Conversion	> 95 % (at nominal load)									
AC/AC Efficiency in ECO mode	> 98 % (at nominal load)									
BATTERY										
Nominal DC Voltage [VDC]	±360 (with +/N/- connections)									
Quantity of Lead Acid Batteries (12 V each)	60 (settable from 60 to 62)									
Recharge Current	10 A	8 A	15 A	15 A (at rated load) 50 A (with DCM)	15 A (at rated load) 50 A (with DCM)	15 A (at rated load) 50 A (with DCM)	20 A (at rated load) 50 A (with DCM)	20 A (at rated load) 50 A (with DCM)	30 A (at rated load) 100 A (with DCM)	
USER INTERFACE										
Display	LCD display								10" color touch-screen display	
IP Protection Degree	IP20 (standard); other values upon request									
Standard Communication Ports	RS232, USB									
Optional Communication Ports	SNMP, dry contact relay card, Modbus									
GENERAL										
Protection Degree	IP 20									
Color	RAL 9005									
Operating Temperature [°C]	0 to 40									
Storage Temperature [°C]	-10 to 70									
Relative Humidity	0 to 95 %									
Altitude (above sea level) [m]	< 1000 (with power derating of 0.5 % every 100 m up to 2000 m, according to IEC EN 62040-3)									
Noise at 1 m distance [dB]	< 52	< 52	< 57	< 60	< 60	< 60	< 60	< 60	< 65	
STANDARDS AND CERTIFICATIONS										
Marking and Certifications	CE									
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

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