

PROTECT^{PLUS} S300

Technical Data

Protect^{PLUS} S300 10 kVA
Protect^{PLUS} S300 15 kVA
Protect^{PLUS} S300 20 kVA
Protect^{PLUS} S300 30 kVA
Protect^{PLUS} S300 40 kVA
Protect^{PLUS} S300 60 kVA
Protect^{PLUS} S300 80 kVA
Protect^{PLUS} S300 100 kVA
Protect^{PLUS} S300 120 kVA
Protect^{PLUS} S300 160 kVA
Protect^{PLUS} S300 200kVA



AEG Power Solutions GmbH, Warstein-Belecke

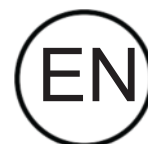
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Protect Plus S300				
UPS Rating	10 kVA	15 kVA	20 kVA	30 kVA
Operating Modes				
Performance criteria according to IEC EN 62040-3	VFI SS 111 (on line, double conversion, sinusoidal waveform)			
"ECO" mode operation (VFD)	Yes			
Possible input power scheme	TT / TN-S / TN-C / IT			
50/60 Hz Frequency adjustment	With automatic detection			
Automatic battery test	Yes (weekly, monthly, manually settable)			
Parallel operation for N+1 redundancy	Up to 7+1 units			
Parallel operation for power increase	Up to 8 units			
Chargers parallel operation (centralized battery)	Two or more UPS can operate with a common battery string			
Rectifier				
Input voltage (V)	380/400/415 (line to line)			
Input voltage window	+/- 20% (@ full load) -20%~-40%, power derating between 100% to 70%			
Input frequency (Hz)	50/60 (selectable)			
Input frequency window (Hz)	40-70			
Input connection	3Ph+N+PE			
Input power factor	>0.99			
Input THDi (at 400 Vac) @ 25% of load @ 50% of load @ 75% of load @ 100% of load	< 11% < 5.5% < 3.4% < 2.8%	< 11% < 5.5% < 3.4% < 2.8%	< 11% < 5.5% < 3.4% < 2.8%	< 10.9% < 7.0% < 5.0% < 3.6%
Type of rectifier	IGBT			
Input switch	MCB			
Nominal input current (A)	17	25	33	49
Maximum input current (A)	20	30	39	58
Inrush current	< I _n			
Rectifier walk-in (s)	5-30 s (programmable)			
Rectifier hold-off (s)	4-120 sec. (programmable)			
Bypass Line				
Bypass input connection	3Ph + N, separated and independent from mains line			
Bypass voltage (V)	380/400/415 (selectable)			
Bypass voltage window	+/- 20% (@ full load)			
Input frequency (Hz)	50/60 (selectable)			
Frequency window (Hz)	±3 (adjustable)			
Transfer mode	No break			
Overload Capability	Up to 150% Continuously Up to 180% @ 1 minute Up to 1000% @ 100 ms			
Backfeed protection (acc. To IEC 62040-1 par 5.1.4)	Included			

Battery Line				
Battery type	VRLA			
Number of cells	Internal: 60 blocks made of 2 strings with 30 blocks / 12 V each = 2 x 180 cells Settable up to 64 (2 x 32 blocks / 12 V each = 2 x 192 cells) External: multiple of 60 blocks (2 strings x 30 blocks / 12 V each = 2 x 180 cells) Settable up to 64 (2 x 32 blocks / 12 V each = 2 x 192 cells)			
Nominal Battery voltage (VDC)	720 (360+360) with + / N / -			
Floating voltage @ 25°C (V/cell)	2.25			
End of discharge voltage @ 25°C (V/cell)	1.67			
Charger current (A)	2	3	3.5	5.0
Charger voltage precision	1%			
Battery protection	Fuses (Internal or external)			
Battery test	Settable as: automatic / periodic / manual			
Inverter				
Inverter bridge	IGBT (Transformer-less)			
Output Power Factor (at 20°C)	0.9			
Output Power Factor (up to 40°C)	0.9			
Output connection	3 Ph + N			
Nominal output voltage (V)	380/400/415			
Output voltage stability	+/- 0.5% (balanced load) +/- 3% (unbalanced load)			
Output voltage stability with dynamic step load (20%-100%-20%)	+/- 2%			
Output voltage stability with dynamic step load (0%-100%-0%)	+/- 1.5%			
Output voltage recovery time (ms)	< 20			
Classification according to IEC EN 62040-3	Class 1			
Output THDv	With linear load: < 2% With non-linear load: < 5%			
Phase tolerance	120° ± 0.5° (with balance and unbalance load)			
Output Frequency	50/60 (also working as frequency converter)			
Frequency tracking range (Hz)	± 3 (adjustable)			
Frequency precision (free running)	± 0.01%			
Frequency slew rate (Hz/s)	Adjustable: 0.5 to 5			
Crest factor	3:1			
Nominal output current (at 380 V output) (A)	15	23	30	45
Output waveform	Sinusoidal			
DC/AC Efficiency @ 100% of load	>95.5%	>95.5%	>96.0%	>96.0%

Overload capability (through inverter line)	Up to 105%, long time operation 110%, with transfer to bypass after 1hour 125%, with transfer to bypass after 10 minutes 150%, with transfer to bypass after 1 minute >150%, with transfer to bypass after 100 ms			
Short circuit current	>180% and Vac (o/p) <22V rms (O/P current is limited for max.180 ms and if continues, UPS output is shut down) If >150% and Vac (o/p) <22V rms then Bypass is turned off immediately			
Overall				
AC/AC Efficiency (in double conversion with linear load) @ 25% of load @ 50% of load @ 75% of load @ 100% of load	≥ 89.7% ≥ 92.2% ≥ 93.3% ≥ 93.0%	≥ 89.7% ≥ 92.2% ≥ 93.3% ≥ 93.0%	≥ 89.7% ≥ 92.2% ≥ 93.3% ≥ 93.0%	≥ 90.0% ≥ 93.5% ≥ 93.6% ≥ 93.3%
AC/AC Efficiency in ECO Mode @ 100% of linear load	≥ 98%			
Display	LCD+LED, Touch screen and keyboard			
EMI	IEC62040-2			
EMS	IEC61000-4-2(ESD)			
	IEC61000-4-3(RS)			
	IEC61000-4-4 (EFT)			
	IEC61000-4-5 (Surge)			
Earth Leakage current (mA)	< 80 mA (with filter boards)			
Surge protection	Compliant with IEC 60664-1 class IV, endure surge of 1.2/50us + 8/20us higher than 6KV/3KA			
IP protection degree	IP20 (optional upon request: IP21, IP31, IP32, IP41)			
Interface (Communication Ports)	RS232, RS485, Dry contacts, SNMP card, EPO, Diesel Generator interface			
Installation/Connection	Bottom cable connection			
Operating temperature	0-40°C			
Storage temperature	-15°C to +70°C			
Relative humidity	0-95% (non-condensing)			
Noise (dB)	< 57			
Weight without internal batteries (kg)	87	87	91	100
Dimensions, W x D x H (mm)	400x815x1040			
Standard colour	RAL 9005			
Ventilation	Front to back Redundant fans			
Altitude	without derating: 1000 m with derating (according to IEC 62040-3): up to 3000 m			
Communication features				
User's interface	Touch screen TFT 4.3"			
Acoustic alarm	Buzzer (can be permanently disabled via setting)			
Number of events stored in the UPS memory	512 (45000 alarms or warnings totally stored)			

Protect Plus S300			
UPS Rating	40 kVA	60 kVA	80 kVA
Operating Modes			
Performance criteria according to IEC EN 62040-3	VFI SS 111 (on line, double conversion, sinusoidal waveform)		
"ECO" mode operation (VFD)	Yes		
Possible input power scheme	TT / TN-S / TN-C / IT		
50/60 Hz Frequency adjustment	With automatic detection		
Automatic battery test	Yes (weekly, monthly, manually settable)		
Output parallel operation for N+1 redundancy	Yes (up to 7+1 units)		
Output parallel operation for power increase	Yes (up to 8 units)		
Chargers parallel operation (central battery)	Two or more UPS can operate with a common battery string		
Rectifier			
Input voltage (V)	380/400/415 (line to line)		
Input voltage window	+/- 20% (@ full load)		
	-20%~40%, power derating between 100% to 70%		
Input frequency (Hz)	50/60 (selectable)		
Input frequency window (Hz)	40-70		
Input connection	3Ph+N+PE		
Input power factor	>0.99		
Input THDi (@ 400 Vac)	< 10.5%	< 9.3%	< 7.4%
	< 6.3%	< 5.1%	< 4.5%
	< 4.7%	< 4.0%	< 3.5%
	< 4.2%	< 3.5%	< 3.3%
Type of rectifier	IGBT		
Input protection	Fuses		
Nominal input current	66	97	129
Maximum input current	78	114	152
Inrush current	< I _n		
Rectifier walk-in (s)	5-30 s (programmable)		
Rectifier hold-off (s)	4-120 sec. (can be modified)		
Bypass Line			
Bypass input connection	3Ph + N, separated and independent from mains line		
Bypass voltage (V)	380/400/415 (selectable)		
Bypass voltage window	+/- 20% (@ full load)		
Input frequency (Hz)	50/60 (selectable)		
Frequency window (Hz)	±3 (adjustable)		
Transfer mode	No break		
Overload Capability	Up to 150% Continuously Up to 180% @ 1 minute Up to 1000% @ 100 ms		

Backfeed protection (acc. to IEC 62040-1 par 5.1.4)	Included		
Battery Line			
Battery type	VRLA		
Number of cells	Internal: 60 blocks made of 2 strings with 30 blocks / 12 V each = 2 x 180 cells Settable up to 64 (2 x 32 blocks / 12 V each = 2 x 192 cells) External: multiple of 60 blocks (2 strings x 30 blocks / 12 V each = 2 x 180 cells) Settable up to 64 (2 x 32 blocks / 12 V each = 2 x 192 cells)		
Nominal Battery voltage (VDC)	720 (360+360) with + / N / -		
Floating voltage @ 25°C (V/cell)	2.25		
End of discharge voltage @ 25°C (V/cell)	1.67		
Charger current (A)	7	10	14
Charger voltage precision	1%		
Battery protection	Fuses (Internal or external)		
Battery test	Settable as: automatic / periodic / manual		
Inverter			
Inverter bridge	IGBT (Transformer-less)		
Output Power Factor (at 20°C)	0.9		
Output Power Factor (up to 40°C)	0.9		
Output connection	3 Ph + N		
Nominal output voltage (V)	380/400/415		
Output voltage stability	+/- 0.5% (balanced load)		
	+/- 3% (unbalanced load)		
Output voltage stability with dynamic step load (20%-100%-20%)	+/- 2%		
Output voltage stability with dynamic step load (0%-100%-0%)	+/- 1.5%		
Output voltage recovery time (ms)	< 20		
Classification according to IEC 62040-3	Class 1		
Output THDv	With linear load: < 2.0% With non-linear load: < 5%		
Phase tolerance	120° ± 0.5° (balance and unbalance load)		
Output Frequency	50/60 (also working as frequency converter)		
Frequency tracking range (Hz)	±3 (adjustable)		
Frequency precision (free running)	± 0.01%		
Frequency slew rate (Hz/s)	Adjustable: 0.5 to 5		
Crest factor	3:1		
Nominal output current (at 380 V output) (A)	61	91	121
Output waveform	Sinusoidal		

DC/AC Efficiency @ 100% of load	> 96.5%	> 96.5%	> 96.5%
Overload capability (through inverter line)	Up to 105%, long time operation 110%, with transfer to bypass after 1hour 125%, with transfer to bypass after 10 minutes 150%, with transfer to bypass after 1 minute >150%, with transfer to bypass after 100 ms		
Short circuit current	>180% and Vac (o/p) <22V rms (O/P current is limited for max.180 ms and if continues, UPS output is shut down) If >150% and Vac (o/p) <22V rms then Bypass is turned off immediately		
Overall			
AC/AC Efficiency (in double conversion with linear load)			
@ 25% of load	≥ 91.0%	≥ 91.0%	≥ 91.9%
@ 50% of load	≥ 93.5%	≥ 93.8%	≥ 94.0%
@ 75% of load	≥ 94.1%	≥ 94.3%	≥ 94.5%
@ 100% of load	≥ 93.3%	≥ 94.8%	≥ 94.8%
AC/AC Efficiency (in ECO Mode @ 100% of load)	up to 98%		
Display	LCD+LED, Touch screen and keyboard		
EMI	IEC62040-2		
EMS	IEC61000-4-2(ESD)		
	IEC61000-4-3(RS)		
	IEC61000-4-4 (EFT)		
	IEC61000-4-5 (Surge)		
Earth Leakage current	< 3.5 mA (without filter boards)/(approx. 70-80mA with filter boards)		
Surge protection	Compliant with IEC 60664-1 class IV, endure surge of 1.2/50us + 8/20us higher than 6KV/3KA		
IP protection degree	IP20 (optional IP21, IP31, IP32, IP41 are welcome)		
Interface (Communication Ports)	RS232, RS485, Dry contacts, SNMP card, EPO, Diesel Generator interface		
Installation/Connection	Bottom cable connection		
Operating temperature	0-40°C		
Storage temperature	-15°C to +70°C		
Relative humidity	0-95% (non-condensing)		
Noise (dB)	< 62 dB		
Weight without internal batteries (kg)	173	197	209
Dimensions, W x D x H (mm)	515x855x1440		
Standard colour	RAL 9005		
Ventilation	Front to back Redundant fans		
Altitude	without derating: 1000 m with derating (according to IEC 62040-3): up to 3000 m		
Communication features			
User's interface	Touch screen TFT 4.3"		
Acoustic alarm	Buzzer (can be permanently disabled via setting)		
Number of events stored in the UPS memory	513 (45000 alarms or warnings totally stored)		

Protect Plus S300				
UPS Rating	100 kVA	120 kVA	160 kVA	200 kVA
Operating Modes				
Performance criteria according to IEC EN 62040-3	VFI SS 111 (on line, double conversion, sinusoidal waveform)			
"ECO" mode operation (VFD)	Yes			
Possible input power scheme	TT / TN-S / TN-C / IT			
50/60 Hz Frequency adjustment	With automatic detection			
Automatic battery test	Yes (weekly, monthly, manually settable)			
Output parallel operation for N+1 redundancy	Yes (up to 7+1 units)			
Output parallel operation for power increase	Yes (up to 8 units)			
Chargers parallel operation (central battery)	Two or more UPS can operate with a common battery string			
Rectifier				
Input voltage (V)	380/400/415 (line to line)			
Input voltage window	+/- 20% (@ full load)			
	-20%~-40%, power derating between 100% to 70%			
Input frequency (Hz)	50/60 (selectable)			
Input frequency window (Hz)	40-70			
Input connection	3Ph+N+PE			
Input power factor	> 0.99			
Input THDi (at 400 Vac) @ 25% of load @ 50% of load @ 75% of load @ 100% of load	< 6.4% < 3.6% < 2.6% < 2.3%	< 6.4% < 3.5% < 2.4% < 2.2%	< 6.5% < 4.8% < 3.1% < 2.7%	< 5.8% < 4.7% < 3.7% < 2.2%
Type of rectifier	IGBT			
Input protection	Fuses			
Nominal input current	161	191	258	319
Maximum input current	190	225	315	375
Inrush current	< I _n			
Rectifier walk-in (s)	5-30 s (programmable)			
Rectifier hold-off (s)	4-120 sec. (programmable)			
Bypass Line				
Bypass input connection	3Ph + N, separated and independent from mains line			
Bypass voltage (V)	380/400/415 (selectable)			
Bypass voltage window	+/- 20% (@ full load)			
Input frequency (Hz)	50/60 (selectable)			
Frequency window (Hz)	±3 (adjustable)			
Transfer mode	No break			

Overload Capability	Up to 150% Continuously Up to 180% @ 1 minute Up to 1000% @ 100 ms			
Backfeed protection (acc. to IEC 62040-1 par 5.1.4)	Included			
Battery Line				
Battery type	VRLA			
Number of cells	Internal: 60 blocks made of 2 strings with 30 blocks / 12 V each = 2 x 180 cells Settable up to 64 (2 x 32 blocks / 12 V each = 2 x 192 cells) External: multiple of 60 blocks (2 strings x 30 blocks / 12 V each = 2 x 180 cells) Settable up to 64 (2 x 32 blocks / 12 V each = 2 x 192 cells)			
Nominal Battery voltage (VDC)	720 (360+360) with + / N / -			
Floating voltage @ 25°C (V/cell)	2.25			
End of discharge voltage @ 25°C (V/cell)	1.67			
Charger current (A)	19	22	30	35
Charger voltage precision	1%			
Battery protection	Fuses (Internal or external)			
Battery test	automatic/periodic/manual			
Inverter				
Inverter bridge	IGBT (Transformer-less)			
Output Power Factor (at 20°C)	1			
Output Power Factor (up to 40°C)	1			
Output connection	3Ph+N			
Nominal output voltage (V)	380/400/415			
Output voltage stability	+/- 0.5% (balanced load) +/- 3% (unbalanced load)			
Output voltage stability with dynamic step load (20%-100%-20%)	+/- 2%			
Output voltage stability with dynamic step load (0%-100%-0%)	+/- 1.5%			
Output voltage recovery time (ms)	< 20			
Classification according to IEC EN 62040-3	Class 1			
Output THDv	With linear load: < 2.0% With non-linear load: < 5%			
Phase tolerance	120°±0.5° (balance and unbalance load)			
Output Frequency	50/60 (also working as frequency converter)			
Frequency tracking range	±3Hz, adjustable			
Frequency precision (free running)	±0.01%			
Frequency slew rate (Hz/s)	0.5 to 5 (adjustable)			
Crest factor	3:1			

Nominal output current (at 380 Vac) (A)	152	182	242	303
Output waveform	Sinusoidal			
DC/AC Efficiency @ 100% of load	> 96.5%	> 96.7%	> 96.5%	> 96.5%
Overload capability (through inverter line)	Up to 105%, long time operation 110%, with transfer to bypass after 1 hour 125%, with transfer to bypass after 10 minutes 150%, with transfer to bypass after 1 minute >150%, with transfer to bypass after 100 ms			
Short circuit current	>180% and Vac (o/p) <22V rms (O/P current is limited for max.180 ms and if continues, UPS output is shut down) If >150% and Vac (o/p) <22V rms then Bypass is turned off			
Overall				
AC/AC Efficiency (in double conversion)	> 91.9%	> 92.9%	> 93.2%	> 93.5%
	> 94.0%	> 94.9%	> 95.0%	> 95.1%
	> 94.5%	> 95.1%	> 95.1%	> 94.9%
	> 94.8%	> 95.6%	> 94.5%	> 95.3%
AC/AC Efficiency (in ECO Mode @ 100% of load)	up to 98%			
Display	LCD+LED, Touch screen and keyboard			
EMI	IEC62040-2			
EMS	IEC61000-4-2(ESD) IEC61000-4-3(RS) IEC61000-4-4 (EFT) IEC61000-4-5 (Surge)			
Earth Leakage current	< 3.5 mA (without filter boards)/(approx. 70-80 mA with filter boards)			
Surge protection	Compliant with IEC 60664-1 class IV, endure surge of 1.2/50 us + 8/20 us higher than 6 KV / 3 KA			
IP protection degree	IP20 (optional IP21, IP31, IP32, IP41 are welcome)			
Interface (Communication Ports)	RS232, RS485, Dry contacts, SNMP card, EPO, Diesel Generator interface			
Installation/Connection	Bottom cable connection			
Operating temperature	0-40°C			
Storage temperature	-15°C to +70°C			
Relative humidity	0-95% (non-condensing)			
Noise (dB)	< 64 dB		< 68 dB	
Weight without internal batteries (kg)	210	220	262	270
Dimensions - W x D x H (mm)	475 x 890 x 1440			
Standard colour	RAL 9005			
Ventilation	Front to back Redundant fans			
Altitude	without derating: 1000 m with derating (according to IEC 62040-3): up to 3000 m			
Communication features				
User's interface	Touch screen TFT 4.3"			
Acoustic alarm	Buzzer (can be permanently disabled via setting)			
Number of events stored in the UPS memory	514 (45000 alarms or warnings totally stored)			