

PROTECTPLUS M400

Technical Data

ProtectPLUS M400 10 kVA
ProtectPLUS M400 20 kVA
ProtectPLUS M400 30 kVA
ProtectPLUS M400 40 kVA



AEG Power Solutions GmbH, Warstein-Belecke
Department: PS R&D
Status: 01
Author: 15/09/2017 / Schenit
Checked: 15/09/2017 / Nalbone

Document no. 8000064580 TD, en



Model	Protect PLUS M400		
Type rating (kVA)	20	40	
Number of Power Modules	1 to 2	1 to 4	
Applicable standards			
General and safety requirements for UPS	IEC / EN 62040-1		
Electromagnetic compatibility (EMC)	IEC / EN 62040-2		
Performance and test requirements	IEC / EN 62040-3		
Performance criteria, acc. To IEC EN 62040-3	VFI SS 111		
Environmental properties			
Sound power level at 1 m (dB)	62	66	
Sound power level of the single power module at 1 m @ nominal load (dB)	56		
Max. altitude (m)	1000, up to 2000 m, load reduced by 1% per 100 m		
Relative air humidity (%)	0 to 95, non-condensing		
Operating temperature (°C)	0 to 40 (for UPS only), 20°C recommended for batteries		
UPS storage temperature (°C)	-20 to +70		
Mechanical properties			
Dimensions W x D x H (mm)	485 x 697 x 398 (7HU)	485 x 697 x 575 (11HU)	
Weight (empty cabinet; kg)	42	51	
Colour	RAL 7021		
Standard IPprotection degree	IP20		
Cable entry	Rear; top or bottom		
Ventilation	Front to back, no ventilation holes on the left and right side of the cabinet		
Parallel of frames	Up to 4 units		
Power Module properties			
Nominal output (kVA / kW)	10 / 10		
Dimensions W x D x H (mm)	436 x 590 x 85 (2HU)		
Weight (kg)	15.3		

Electrical properties (rectifier input)	3 phases (or 1 phase) + neutral + earth
AC nominal input voltage (V AC)	Three-phase, line to line: 380 / 400 / 415 Line to neutral: 220 / 230 / 240
Input connection	3Ph or 1Ph + N + earth
Possible input power scheme	TN-S / TN-C
Frequency (Hz)	50 / 60 NOTE: can be set as frequency converter
Input voltage range (V AC)	Standard setting: +/- 20% (@ full load) Special setting: -40% to +25% (with power de-rating)
Input frequency range (Hz)	40 to 70
Input power factor	0.99
THDi @ nominal linear load (%)	<3
Type of rectifier	Vienna bridge
Rectifier walk-in time (s)	Settable: 0; 3; 5; 10

Electrical properties (Battery line)	
Battery voltage, with +/N/- connections (V DC)	Nominal value: ± 240 , Settable range: ± 192 to ± 264
Number of lead batteries (12 V/block)	Nominal value: 40 blocks Settable range: from 32 to 44 blocks
Trickle charge voltage (V/cell VRLA)	2.25 (selectable: 2.2 to 2.35)
Temperature compensation (mV/°C)	-3.0 (selectable: 0 to -5.0)
Ripple voltage (%)	<1
Current ripple (%)	<5
Final discharge voltage (V/cell VRLA)	1.65 (selectable: 1.6 to 1.75) at 0.6C discharge current
	1.75 (selectable: 1.65 to 1.8) at 0.15C discharge current
Battery charge (V/cell)	2.4 (selectable: 2.3 to 2.45)
Battery charging power	10 % x UPS power (selectable: 0 to 20% x UPS power)
Battery test	Automatic battery maintenance (monthly or longer); manual battery test
Caution! The number of battery blocks is set to 40 by default. If there are a different number of battery blocks, make sure that the actual and set number of battery blocks are the same. If they are not, this will result in damage to the battery.	

Electrical properties (output)			
Nominal output (kVA)	10 to 20	10 to 40	
AC nominal voltage (V AC)	380 / 400 / 415		
Stationary voltage stability (%)	±1% with even load distribution ±1.5% with 100% uneven load distribution		
Frequency (Hz)	50 / 60		
Overload capacity, through inverter line (%)	110 % load, 60 min 125 % load, 10 min <150 % load, 1 min >150 % load, 200 ms		
Short circuit current (A)	41.4 for 240 ms		
Current carrying capacity of neutral conductor	170% of I _n		
Output power factor	Nominal value: 0.9 for capacitive or inductive load Maximum value: 1		
Synchronisation range (Hz)	Adjustable, ±1 to ±5, default: ±2		
Synchronisation speed (Hz/s)	Adjustable from 0.5 to 3, default: 0.5		
Output voltage THDu	<1.5% linear load <5.5% non-linear load		

Electrical properties (bypass mains input voltage) 3 phases + neutral			
AC nominal voltage (V AC)	380 / 400 / 415		
AC nominal current (A)	30 @ 380 V 29 @ 400 V 28 @ 415 V	60.6 @ 380 V 58 @ 400 V 55.5 @ 415 V	
Overload capacity (%)	<125 long-term operation <130 for 10 min <150 for 1 min >150 for 300 ms		
Nominal current of the neutral conductor (A)	1.7 x I _n		
Rated frequency (Hz)	50 / 60		
Switching time (bypass and inverter) (ms) between bypass and inverter	Synchronised switching: ≤1 ms		
Bypass voltage range (%) limit	Upper: +10, +15, +20, +25 default: +15		
	Lower: -10, -15, -20, -30, -40 default: -20		
Bypass frequency range (Hz)	Adjustable ±2.5, ±5, ±10, ±20 default: ±10		
Synchronisation range (Hz)	Adjustable, ±0.5 to ±5, default: ±2		

Display and interface	
Display	7" LCD colour touchscreen
Interface	Standard: RS232, RS485, USB, potential-free contacts
	Option: SNMP
Efficiency*	
Double conversion (VFI)	
@ 25% of linear load	93.6
@ 50% of linear load	94.9
@ 75% of linear load	95.1
@ 100% of linear load	94.9
ECO mode (VFD) @ 100% of load	98.0

* Values declared from the Factory