# PROTECT 8

INDUSTRIAL UPS

Protect 8.31 Single Phase output 10 kVA - 80 kVA

Protect 8.33 Three Phase output 10 kVA – 120 kVA

> 400 VAC input 216 VDC link 384 VDC link



### Engineering is our business

UPS systems from AEG Power Solutions ensure the continuous availability of all global industrial requirements in oil & gas, petrochemical, power generation, transportation and other heavy industries.

#### Robust, efficient, reliable & flexible

The state-of-the-art, double-conversion topology and design of the Protect 8 is flexible, meets practically all conceivable customer requirements and is suitable for use in harsh environments.

With the Protect 8 you will benefit from a robust and easy to operate UPS meeting the relevant EMC and other international standards. It can be custom-designed for use in harsh industrial environments. With an expected lifetime of at least 20 years, the Protect 8 is a robust and cost-effective solution optimized for minimal operating costs. Designed for highly demanding applications, the Protect 8 will ensure safe operation of your critical loads, delivering total control wherever reliability, availability and maintainability are required.

### Designed for all industrial applications

- »Oil & Gas, Petrochemicals (offshore, onshore, pipelines)
- >> Energy and Power (generation, transmission, distribution)
- >> Transportation (rail, airports, shipping, highways, tunnels)
- >> Water (desalination, treatment)
- »Instrumentation & Process Control (chemicals, mining, steel, paper, emergency lightning)
- »All industrial production processes

### **KEY FEATURES**



### Full digital control

- » High reliability (no potentiometers)
- » High flexibility (software controlled parameters)
- » Fast dynamic response

Ergonomic control unit with high resolution graphical display.

### High efficiency even at low output power

- » Reduced operating costs
- » Reduced air conditioning requirements
- » Reduced battery AH requirements

### Oversized components

- » Higher reliability and MTBF
- >> High overload capacity
- >> Input isolation transformer (216 VDC version)
- »Output isolation transformer
- » Standardized modules
- »Low maintenance
- >> Short circuit resistant

#### Redundant controls

- Separate microprocessors for rectifier, inverter and static bypass switch
- Separate and redundant power supplies for control cards
- » Redundant and monitored fans

- Compatible with vented Lead Acid, Valve Regulated Lead Acid (VRLA) and Nickel Cadmium batteries
- Intelligent battery management, test and status diagnostics
- » Designed to operate with diesel generators

### High protection degree

- » Ready for harsh environment
- » IP rating possible up to IP43
- >>> Strong mechanical design
- >> Seismic proof (optional)

### Capable of communications with computer and control systems (SCADA, ESD, DCS, BMS)

- » Modbus / J-bus
- >> Profibus
- » Monitoring software
- >> Ethernet, SNMP...
- » Remote monitoring and control capabilities (programmable)
- >> System and alarm status via potential free contacts

#### Complete system

Protect 8 is a true on-line double conversion UPS classified as VFI SS 111 according to IEC 62040-3

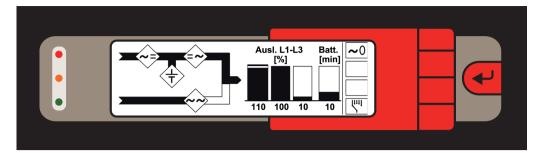
### The outstanding UPS range features

- On-line operation ensuring permanent service
- » Microprocessor-driven control and command system to provide reliable power supply
- »A battery management system that ensures life time and cuts operating costs
- »A broad range of output power ratings, battery autonomy times and options to meet the need of complex applications

# The UPS offers a very high level of protection for users and connected equipment

- » High intermittent overload capability
- >> High level short circuit strength
- »N-conductor with full loading capacity (3 phase systems)
- >> Excellent dynamic response can easily handle high loads

### UNIQUE DESIGN



## Parallel operation for capacity and performance

Protect 8 protects your processes even in cases of significantly greater power requirements or particularly exacting reliability requirements. This is ensured by a unique Flexible Multi-Master Technology (FMMT) in parallel mode. This technology is realized by high-speed, robust and redundant communication via the CAN bus which is now in widespread use in safety systems employed, for example, in the automotive industry. Two individual units continuously undertake master functions. Each individual unit can take over this master function instantaneously, if required, by a defined strategy on the basis of the situation in the overall system.

AEG PS parallel systems are characterized by their high levels of availability, robustness and reliability in industrial applications. Flexible Multi-Master Technology and CAN bus communication enables up to 8 UPS' to be connected in parallel for increased power, redundancy or system upgrade.

Parallel UPS' can be operated with a central battery.

### Three microprocessor control system

These microprocessors simultaneously monitor and control the rectifier, inverter and static switch units.

This control has been specially designed to provide a high reliable power supply.

### Display and Operating Unit

Intelligent Display and Operation Unit (DOU) with automatic system recognition, general status via colored LEDs, acoustic signals, multilingual menu display in 18 languages, simple operation by display buttons, display icons for the power flow, digital display values, unit status with text display, real-time clock, menu-driven system start-up and data logger for malfunction history with time stamp (750 events).

Battery test and system test can be activated by the menu.

### End to end solutions

Exact solutions engineered for each application

#### Possible UPS configurations

- >> Single systems
- » Parallel systems
- >> Inverter system

#### Additional system equipment

- » Bypass transformer
- >> Voltage stabilizers
- » Maintenance Bypass Switch
- »AC distribution panels
- » Battery cubicles
- >> Explosion proof battery circuit breaker enclosures

#### Project management

- » Quality plan
- >>> Project planning
- » Progress reviews
- » Manufacturing reviews
- >> Factory acceptance tests
- » Site acceptance test

#### **Customized documentation**

- Text translations to any language
- »Document numbering

PROTECT 8.31

SPECIFICATION
SIINGLE PHASE OUTPUT
216 VDC



MODEL	P8.31-10	P8.31-20	P8.31-30	P8.31-40	P8.31-60	P8.31-80			
Nominal rating (at cos φ 0.8 lag) in kVA	10	20	30	40	60	80			
RECTIFIER UNIT	-								
nput nominal voltage			3 x 400 V (3 x 3	380 V, 3 x 415 V)					
nput operating range (min. / max.)				– 460 V					
requency	50 / 60 Hz ±10 %								
nput current in A at nominal load	16	35	56	68	100	134			
Charging characteristic to IEC 478-10	10 33 30 00 100 134								
Nominal DC voltage				20 V					
Rectifier type Standard Optional	6 pulse Filter	6 pulse Filter	6 pulse 12 pulse	6 pulse 12 pulse	12 pulse	12 pulse			
NVERTER UNIT									
DC input			216 V	±20 %					
Nominal AC voltage			230 V (22	20 V, 240 V)					
Output voltage static response			< ±	±1 %					
Output voltage dynamic response			< ±	±2 %					
Recovery time			1	ms					
requency			50 /	60 Hz					
requency tolerance without mains			±0	.1 %					
Frequency synchronization range			±1 % (±2	2 %, ±3 %)					
Power factor range		Ca	apacitive to inductive	over entire cos φ-rang	ge				
Jnbalanced-load response		at 100 % unbalance	d load: voltage devia	ation <2 %; angle devia	ation <2 degrees el.				
Output phase current in A	43	87	130	174	261	348			
/oltage wave form	sinusoidal								
/oltage distortion			≤3	3 %					
Crest factor			ma	эх. 3					
Overload response 1 min.			15	0 %					
Overload response 10 min.			12	5 %					
Short circuit response		sh	ort circuit proof, shor	rt circuit current 2.7 x l	iom				
STATIC BYPASS SWITCH									
AC voltage			230 V (22	20 V, 240 V)					
Frequency			50 /	60 Hz					
Nominal power in kVA	10	20	30	40	60	80			
GENERAL DATA									
Efficiency (AC to AC) – typical			up to	90 %					
Noise level depending on rating	<55 – 70 dB (A)								
EMC compatibility			EN 62	2040-2					
Air cooling with redundant and monitored fans			Y	es es					
Operating temperature range nin. / max. (without de-rating)	−5°C/+40°C								
Storage temperature range min. / max.	- 30 °C / +75 °C								
Maximum altitude without de-rating			100	00 m					
Protection degree IEC 529/EN 60529 tandard system	IP20 / optional IP21, IP32, IP43								
Equipment color			RAL 7035 (other	colors on request)					
VEIGHTS AND DIMENSIONS									
leight standard UPS (mm)	1810	1810	1810	1810	1810	1810			
Height with max. options (mm)	1915	1915	1915	1915	2015	2015			
Vidth (mm)	600	600	900	900	1500	1500			
Depth (mm)	860	860	860	860	860	860			
Weight (kg) ~	350	500	700	700	1000	1200			

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SPECIFICATION
THREE PHASE OUTPUT
216 VDC



MODEL	P8.33-10	P8.33-20	P8.33-30	P8.33-40	P8.33-60	P8.33-80	P8.33-100	P8.33-120		
Nominal rating (at cos φ 0.8 lag) in kVA	10	20	30	40	60	80	100	120		
RECTIFIER UNIT										
Input nominal voltage	3 × 400 V (3 × 380 V, 3 × 415 V)									
Input operating range (min. / max.)	340 V – 460 V									
Frequency	50 / 60 Hz ±10 %									
Input current in A at nominal load	16	35	56	68	100	134	166	200		
Charging characteristic to IEC 478-10	IU									
Nominal DC voltage	220 V									
Rectifier type - Standard - Optional	6 pulse Filter	6 pulse Filter	6 pulse 12 pulse	6 pulse 12 pulse	12 pulse	12 pulse	12 pulse	12 pulse		
INVERTER UNIT										
DC input				216 V :	±20 %					
Nominal AC voltage				3 × 400 V (3 × 3	80 V, 3 x 415 V)					
Output voltage static response				< ±						
Output voltage dynamic response				< ±						
Recovery time				1 r	ns					
Frequency				50 / 6						
Frequency tolerance without mains				±0.	1 %					
Frequency synchronization range										
Power factor range	±1 % (±2 %, ±3 %)									
Unbalanced-load response	capacitive to inductive over entire cos φ-range at 100 % unbalanced load: voltage deviation <2 %; angle deviation <2 degrees el.									
Output phase current in A	14	29	43	58	87	116	145	173		
Voltage wave form	17	27	40	sinus	-	110	143	175		
Voltage distortion				≤3						
Crest factor				max						
Overload response 1 min.				150						
Overload response 10 min.				125						
Short circuit response			short ci	rcuit proof, short		7 v I				
STATIC BYPASS SWITCH			311011101	reart proor, snort	circuit current 2	/ nom				
AC voltage				3 x 400 V (3 x 3	80 V 3 v 415 VA					
Frequency				50 / 6						
Nominal power in kVA	10	20	30	40	60	80	100	120		
GENERAL DATA	10	20	30	40		00	100	120		
Efficiency (AC to AC) – typical				un to	90 %					
Noise level depending on rating	up to 90 %									
EMC compatibility	<55 – 70 dB (A) EN 62040-2									
Air cooling with redundant and				LIVOZ	.040-2					
monitored fans  Operating temperature range	Yes									
min. / max. (without de-rating)				-5 °C /	+40 °C					
Storage temperature range min. / max.	–30 °C / +75 °C									
Maximum altitude without de-rating	1000 m									
Protection degree IEC 529/EN 60529 standard system	IP20 / optional IP21, IP32, IP43									
Equipment color	RAL 7035 (other colors on request)									
WEIGHTS AND DIMENSIONS										
Height standard UPS (mm)	1810	1810	1810	1810	1810	1810	1810	1810		
Height with max. options (mm)	1915	1915	1915	1915	2015	2015	2015	2015		
Width (mm)	600	600	900	900	1500	1500	1500	1500		
Depth (mm)	860	860	860	860	860	860	860	860		
Weight (kg) ~	600	600	700	700	1100	1100	1700	1700		

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SPECIFICATION
SIINGLE PHASE OUTPUT
384 VDC



MODEL	P8.31-10	P8.31-20	P8.31-30	P8.31-40					
Nominal rating (at cos φ 0.8 lag) in kVA	10	20	30	40					
RECTIFIER UNIT									
nput nominal voltage		3 x 400 V (3 x 3	380 V, 3 x 415 V)						
nput operating range (min. / max.)	340 V – 460 V								
requency	50 / 60 Hz ±10 %								
nput current in A at nominal load	17	33	50	66					
Charging characteristic to IEC 478-10	17 33 IU								
Nominal DC voltage	384 V								
Rectifier type Standard Optional 12 pulse	6 pulse Mains filter	6 pulse Mains filter	6 pulse 12 pulse	6 pulse 12 pulse					
NVERTER UNIT									
DC input		384 V	±20 %						
Nominal AC voltage			0 V, 240 V)						
Output voltage static response			:1 %						
Output voltage dynamic response			= 1 % = 2 %						
Recovery time			ms						
requency			60 Hz						
requency requency tolerance without mains			.1 %						
requency synchronization range			2 %, ±3 %)						
Power factor range		·	over entire cos φ-range						
Jnbalanced-load response	at 100 %		ition <2 %; angle deviation <2 de	arees el					
Output phase current in A	43	87	130	grees ei. 174					
/oltage wave form	70		soidal	1/4					
/oltage distortion			3 %						
Crest factor			ax. 3						
Diverload response 1 min.			0 %						
·			0 % 5 %						
Overload response 10 min.									
Short circuit response		Short circuit proof, shor	t circuit current 2.7 x I <sub>nom</sub>						
STATIC BYPASS SWITCH		220 \ / /22	0.1/ 240.10						
AC voltage			0 V, 240 V)						
Frequency	10		60 Hz	40					
Nominal power in kVA	10	20	30	40					
GENERAL DATA			02.0/						
Efficiency (AC to AC) – typical		· · · · · · · · · · · · · · · · · · ·	92 %						
Noise level depending on rating	<55 – 70 dB (A)								
EMC compatibility  Air cooling with redundant and monitored fans	EN 62040-2 Yes								
Operating temperature range min. / max. (without de-rating)	-5 °C / +40 °C								
Storage temperature range min. / max.	–30 °C / +75 °C								
Maximum altitude without de-rating	1000 m								
Protection degree IEC 529/EN 60529 standard system	IP20 / optional IP21, IP32, IP43								
Equipment color	RAL 7035 (other colors on request)								
VEIGHTS AND DIMENSIONS									
leight standard UPS (mm)	1810	1810	1810	1810					
Height with max. options (mm)	1915	1915	1915	1915					
Width (mm)	600	600	900	900					
Depth (mm)	860	860	860	860					
Weight (kg) ~	275	325	375	550					

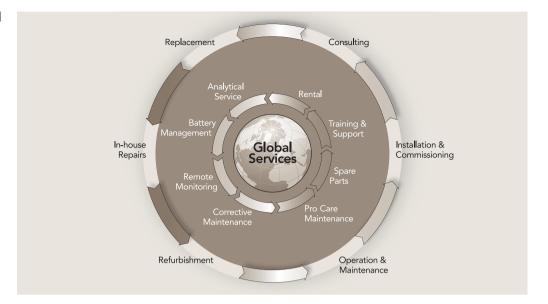
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SPECIFICATION
THREE PHASE OUTPUT
384 VDC



MODEL	P8.33-10	P8.33-20	P8.33-30	P8.33-40	P8.33-60	P8.33-80	P8.33-100	P8.33-120		
Nominal rating (at cos φ 0.8 lag) in kVA	10	20	30	40	60	80	100	120		
RECTIFIER UNIT	.0	20	00	10			100	120		
Input nominal voltage				3 x 400 V (3 x 3	80 V 3 x 415 V)					
Input operating range (min. / max.)	340 V – 460 V									
Frequency	50 / 60 Hz ±10 %									
Input current in A at nominal load	17	33	50	66	98	130	163	195		
Charging characteristic to IEC 478-10	1/ 33 30 00 70 130 103 173									
Nominal DC voltage	384 V									
Rectifier type										
- Standard - Optional 12 pulse	6 pulse Mains filter	6 pulse Mains filter	6 pulse 12 pulse	6 pulse 12 pulse	12 pulse	12 pulse	12 pulse	12 pulse		
INVERTER UNIT										
DC input				384 V	±20 %					
Nominal AC voltage				3 x 400 V (3 x 3	80 V, 3 x 415 V)					
Output voltage static response				< ±	1 %					
Output voltage dynamic response				< ±	2 %					
Recovery time				1 r	ns					
Frequency				50 / 6	60 Hz					
Frequency tolerance without mains				±0.	1 %					
Frequency synchronization range				±1 % (±2	%, ±3 %)					
Power factor range			capacit	ive to inductive		o-range				
Unbalanced-load response		at 100 %	•	d: voltage deviat			egrees el.			
Output phase current in A	14	29	43	58	87	116	145	173		
Voltage wave form				sinus	-					
Voltage distortion				≤3						
Crest factor				ma						
Overload response 1 min.				150						
Overload response 10 min.				125						
Short circuit response			short ci	rcuit proof, short		77 × 1				
STATIC BYPASS SWITCH			311011111	reare proof, short	circuit current 2	/ / nom				
AC voltage				400 V (380	) \/ \( \dagger{4} \) \( \dagger{4} \)					
Frequency				50 / 6						
Nominal power in kVA	10	20	30	40	60	80	100	120		
GENERAL DATA	10	20	30	40	00	80	100	120		
				un to	04.9/					
Efficiency (AC to AC) – typical Noise level depending on rating	up to 94 %									
	<55 – 70 dB (A)									
EMC compatibility  Air cooling with redundant and monitored fans	EN 62040-2 Yes									
Operating temperature range min. / max. (without de-rating)	_5°C/+40°C									
Storage temperature range min. / max.										
Maximum altitude without de-rating	_30 °C /+75 °C									
Protection degree IEC 529/EN 60529 standard system	1000 m IP20 / optional IP21, IP32, IP43									
Equipment color	RAL 7035 (other colors on request)									
WEIGHTS AND DIMENSIONS				AL 7000 (Other C	oiois oil reques	4				
	1910	1910	1910	1910	1010	1910	1910	1010		
Height standard UPS (mm)	1810 1915	1810 1915	1810 1915	1810 1915	1810 2015	1810 2015	1810 2015	1810 2015		
Height with max. options (mm)										
Width (mm)	600	600	900	900	1200	1200	1200	1200		
Depth (mm)	860	860	860	860	860	860	860	860		
Weight (kg) ~	350	370	450	470	550	800	900	900		

### YOUR POWER SERVICE PARTNER



### Rely on the experts to reduce failure costs and increase system availability

Global network of 20 Service Centers supported by over 150 field engineers and more than 100 certified service partners around the world. From power solution selection to process installation and commissioning, our certified experts exceed your expectations. Their excellent service helps you achieve the lowest operating cost for your mission-critical power solution.

A Global Service Team renowned for its short response times and trouble shooting efficiency ensures the reliability of your installed power solution.

### Pro Care<sup>™</sup> Start Commissioning

Ramp-up by the most experienced service experts and benefit from the manufacturer warranty. Commissioned in compliance with the latest local and international electronic norms, your system is carefully checked and optimized to meet specific on-site power needs, full operating training and hands-on advice.

### Pro Care™ Preventive Maintenance

It is well known that scheduled, recurring preventive maintenance performed by accredited service experts is the most cost effective way to secure the full performance of your Protect Power Solution at all times ensuring complete cost control, security and uninterrupted power supply for your most critical processes.

### **Pro Care™ Safe**

Annual scheduled on-site preventive maintenance program, to secure your system operations at all times. Over 50 functionality assessments and on-site numerical diagnostics to keep your system operating at peak performance.

#### Pro Care<sup>™</sup> Excel

Replacement and on-site installation of all defective parts at no additional cost (in addition to Pro Care<sup>TM</sup> Safe).

#### Pro Care™ Premium

Long-term peace of mind at a set price. Our service engineering team performs annual maintenance of your system and replaces all necessary parts and battery units at no additional cost.



#### **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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