

# Power safety

## Protect 5

### Industrial inverters

**Protect 5.INV1 Single Phase output 230 V  
10kVA-60kVA**

**Protect 5.INV3 Three Phase output 400 V  
10kVA-60kVA**

#### Inverters

#### Designed for all industrial applications

- **Oil & Gas, Petrochemicals**  
Offshore, Onshore, Pipelines
- **Energy and Power**  
Generation, Transmission, Distribution
- **Transportation**  
Rail, Airports, Shipping
- **Water**  
Desalination, Treatment
- **Instrumentation & Process Control**  
Chemicals, Mining, Steel, Paper
- **All Industrial applications**

#### Engineering is our business

Inverter and UPS solutions engineered by AEG Power Solutions have been protecting Oil & Gas infrastructure, Power Stations and other industrial installations for more than 50 years.

Protect 5 INV is just part of the Protector Product Range of Inverters and UPS suitable for Industrial applications. See also our Protect 3, Protect 4 and Protect 5 range of UPS.

#### Robust and reliable

Protect 5 is extremely robust, both electrically and mechanically. It is custom-designed for use in harsh industrial environments.



>>

PERFECT IN FORM AND FUNCTION

**AEG**

# Protect 5

## Key Features

- **Full digital control**
  - High reliability (no potentiometers)
  - High flexibility (software controlled parameters)
  - Fast dynamic response
- **Ergonomic control unit with 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
  - **Output isolation transformer**
    - Standardized modules
    - Low maintenance
    - Short circuit resistant
    - More EMC robust than UPS Standard IEC 62040-2 by a factor of 2 to 3
  - **Redundant controls**
    - Separate microprocessors for Inverter, Static Switch and Communication
    - Separate and redundant power supplies for control cards
  - **Redundant and individually monitored fans**
  - **Floating 220V input voltage for linking to existing DC bus bars or batteries**
  - **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 (IP rating) possible**
  - Ready for harsh environment
- **Strong mechanical design**
  - Seismic proof (optional)
- **Remote monitoring and control capabilities (programmable)**
- **Capable of communicating with computer and control systems (SCADA, ESD, DCS, BMS)**
  - Modbus
  - Profibus
  - Monitoring software
  - Ethernet, SNMP...
- **System and alarm status via volt free contacts**
- **Complete system**
  - Protect 5 INV is an industrial Inverter classified as VFI SS 111 according to IEC 62040-3.
- **This outstanding Inverter range features**
  - Highly reliable operation ensuring permanent service microprocessor-driven control and command system to provide reliable power supply
  - A broad range of output power ratings, battery autonomies and options to meet the needs of complex industrial applications.
- **The Inverter offers a very high level of protection for users and connected equipment**
  - High intermittent overload capacity
  - High level short circuit strength
  - N-conductor with full loading capacity (3 phase systems)
  - Excellent dynamic response can easily handle high cyclic loads.

# Specification

## SINGLE PHASE OUTPUT

Model	P5.INV1-10	P5.INV1-20	P5.INV1-30	P5.INV1-40	P5.INV1-60
Nominal rating (at cos $\phi$ 0.8 lag) in kVA	10	20	30	40	60

## INVERTER UNIT

DC input	220V $\pm$ 20%				
Nominal AC voltage	230V (220V, 240V)				
Output voltage static response	< $\pm$ 1%				
Output voltage dynamic response	< $\pm$ 2%				
Recovery time	2 ms				
Frequency	50 / 60Hz				
Frequency tolerance without mains	$\pm$ 0.1%				
Frequency synchronisation range	$\pm$ 1% ( $\pm$ 2%, $\pm$ 3%)				
Allowable load power factor	0.0 lag to 0.0 lead				
Output phase current in A	43	87	130	174	261
Voltage wave form	sinusoidal				
Voltage distortion	$\leq$ 3%				
Crest factor	max. 3				
Overload response 1 min.	150%				
Overload response 10 min.	125%				
Max Short circuit current	3 x I nom				

## STATIC BYPASS SWITCH

AC voltage	230V (220V, 240V)				
Frequency	50 / 60Hz				
Nominal power in kVA	10	20	30	40	60

## GENERAL DATA

Efficiency - typical	>90%				
Noise level depending on rating	<55 - 70dB(A)				
EMC compatibility	EN60040-2				
Air cooling with redundant and monitored fans	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	1000m				
Protection degree per IEC 529 / EN 60529IP20 (standard system)	IP20				
Equipment colour	RAL 7035				

## WEIGHTS AND DIMENSIONS (approx)

Height standard Inverter (mm)	1810	1810	1810	1810	1810
Height with max. options (mm)	2015	2015	2015	2015	2015
Width (mm)	600	900	1200	1200	1200
Depth (mm)	860	860	860	860	860
Weight (Kg)	270	400	580	580	900

# Protect 5

## Specification

### THREE PHASE OUTPUT

Model	P5.INV3-25	P5.INV3-40	P5.INV3-60	P5.INV3-80	P5.INV3-100	P5.INV3-120
Nominal rating (at cos $\phi$ 0.8 lag) in kVA	25	40	60	80	100	120

### INVERTER UNIT

DC input	220V $\pm$ 20%					
Nominal AC voltage	3 x 400V (3 x 380, 3 x 415V)					
Output voltage static response	< $\pm$ 1%					
Output voltage dynamic response	< $\pm$ 2%					
Recovery time	2 ms					
Frequency	50 / 60Hz					
Frequency tolerance without mains	$\pm$ 0.1%					
Frequency synchronisation range	$\pm$ 1% ( $\pm$ 2%, $\pm$ 3%)					
Allowable load power factor	0.0 lag to 0.0 lead					
Output phase current in A	36	58	87	116	145	173
Voltage wave form	sinusoidal					
Voltage distortion	$\leq$ 3%					
Crest factor	max. 3					
Overload response 1 min.	150%					
Overload response 10 min.	125%					
Max Short circuit current	3 x I nom					

### STATIC BYPASS SWITCH

AC voltage	3 x 400V (3 x 380, 3 x 415V)					
Frequency	50 / 60Hz					
Nominal power in kVA	25	40	60	80	100	120

### GENERAL DATA

Efficiency - typical	>90%					
Noise level depending on rating	<55 - 70dB(A)					
EMC compatibility	EN60040-2					
Air cooling with redundant and monitored fans	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	1000m					
Protection degree per IEC 529 / EN 60529 (standard system)	IP20					
Equipment colour	RAL 7035					

### WEIGHTS AND DIMENSIONS (approx)

Height standard Inverter (mm)	1810	1810	1810	1810	1810	1810
Height with max. options (mm)	2015	2015	2015	2015	2015	2015
Width (mm)	900	900	1200	1200	2100	2100
Depth (mm)	860	860	860	860	860	860
Weight (Kg)	450	600	800	800	1350	1350

## Unique Design

### Parallel operation for capacity and performance

Flexible Multi Master Technology and CAN bus communication enables up to 8 Inverters to be connected in parallel for increased power, redundancy or system upgrade.

Parallel Inverters can be operated with separate or central battery.

### Two microprocessor control system

These microprocessors simultaneously monitor and control the inverter and static switch units. This control has been specially designed to provide a problem-free power supply.

## End to end solutions

### Two microprocessor control system

#### Possible Inverter configurations

- Parallel systems
- Other battery voltage (110V)

#### Additional system equipment

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

Compatible with all other AEG Power Solutions: Industrial DC systems, Telecom systems

#### Project Management

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

#### Customized documentation

- Text translations to any language
- Document numbering

## Batteries

AEG Power Solutions has considerable in-house knowledge in battery technology and is able to offer expert advice on the specifying, selection, operation and testing of batteries. Our total system solutions include a wide range of products using lead acid and nickel-cadmium batteries in vented and gas recombination technologies. Replacement batteries can be supplied and installed by our Global Service Team.

## Services

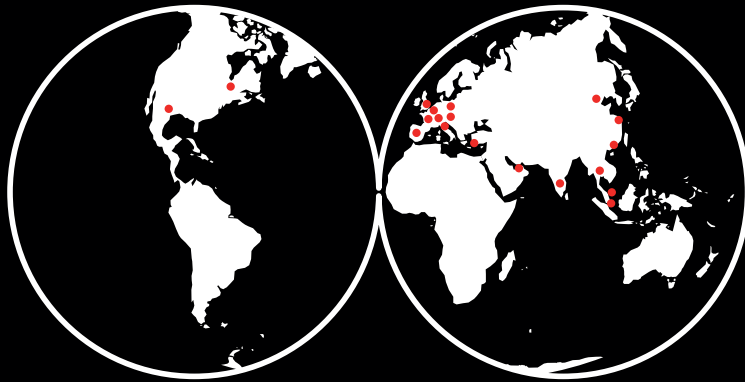
With over 60 years of expertise in power systems and solutions, AEG Power Solutions is renowned for its unparalleled services and technical support in critical application environments. As the world class system provider, you can rely on a global network of 20 Services Centers supported by over 150 field engineers and more than 100 certified service partners around the world. From the power solution selection to your process installation and commissioning, our certified experts go beyond your expectations by offering service excellence that will ensure the lowest operational cost for your mission-critical equipment. The reliability of your installed power solution is supported by a Global Service Team renowned for its short response time and trouble shooting efficiency. Choosing one of the Pro Care™ Preventive Maintenance Options gives you the ultimate peace of mind reassuring complete cost control, security and uninterrupted power supply in utmost critical situations.

You can also benefit from a full range of professional services that will protect and ensure the durability of your investment and will take over when you need it the most:

- Pro Care Preventive Maintenance Options
- Turnkey solutions
- Installation & commissioning
- Maintenance services
- E-Service / remote monitoring
- 24/7 hotline
- Onsite training
- Hot swapping
- Onsite battery replacement
- Battery monitoring
- Facility and equipment management
- 24/7 global onsite contracts
- Power quality assessment
- Load bank & site capacity analysis
- Trouble shooting and repair

Contact us to find out more about  
your premium power protection solution

Amsterdam  
Bangalore  
Beijing  
Budapest  
Cyprus  
Dallas  
Dortmund  
Dubai  
Guangzhou  
Hong Kong  
Kuala Lumpur  
Lannion



London  
Madrid  
Milan  
Moscow  
Paris  
Penang  
Prague  
Shanghai  
Singapore  
Tours  
Toronto  
Vitoria

[www.aegps.com](http://www.aegps.com)