

AEG

Power supply systems

PROTECT 5 INDUSTRIAL INVERTERS

Protect 5.INV1-NA Single Phase output 120V 10kVA-60kVA
Protect 5.INV3-NA Three Phase output 208V 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 Supply Systems (a company of Saft

Power Systems) 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 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.



>> PROTECT 5 INDUSTRIAL INVERTERS

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 125V 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.



>> PROTECT 5 INDUSTRIAL INVERTERS

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

Exact solutions engineered for each application.

Possible Inverter configurations

- Parallel systems
- Other battery voltages (110V/120V, 220V/ 240V)
- ...

Additional system equipment

- Bypass transformer
- Voltage stabilizer
- 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 tests
- ...

Customized documentation

- Text translations to any language
- Document numbering
- ...

Compatible with all other Saft power systems solutions: Industrial DC systems, Telecom systems, ...



SPECIFICATION

SINGLE PHASE OUTPUT

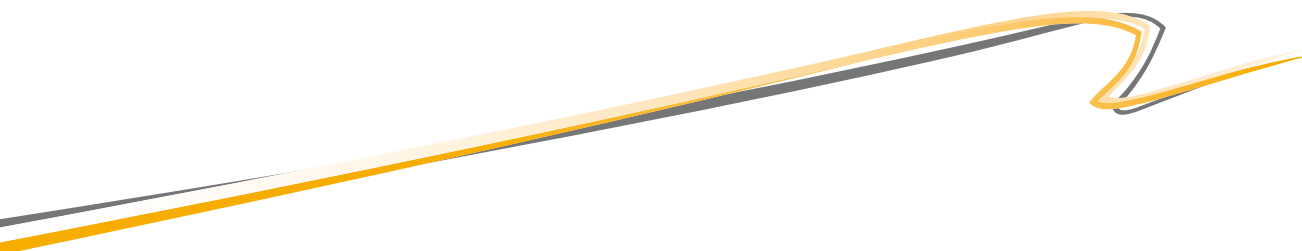
Model	P5.INV1-10-NA	P5.INV1-20-NA	P5.INV1-30-NA	P5.INV1-40-NA	P5.INV1-60-NA
Nominal rating (at $\cos \varphi$ 0.8 lag) in kVA	10	20	30	40	60

INVERTER UNIT

DC input	125V \pm 20%				
Nominal AC voltage	120V				
Output voltage static response	< \pm 1%				
Output voltage dynamic response	< \pm 2%				
Recovery time	1 ms				
Frequency	60/50Hz				
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	83	167	250	333	500
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	120				
Frequency	50 / 60Hz				
Nominal power in kVA	10	20	30	40	60



GENERAL DATA

Efficiency - typical	86%				
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)	23°F / 104°F		(- 5°C / +40°C)		
Storage temperature range min/max.	-22°F / 167°F		(-30°C / +75°C)		
Maximum altitude without de-rating	3280 ft		(1000m)		
Protection degree per IEC 529 / EN 60529 (standard system)	IP20				
Total losses at nominal load (typical) in W	1302	2605	3907	5209	7814
Total losses at nominal load (typical) in kBTU/hour	4.4	9	13	18	27
Equipment colour	RAL 7032				

WEIGHTS AND DIMENSIONS (lbs/inches) approx

Height standard Inverter (inches)	71"	71"	71"	71"	71"
Height with max. options (inches)	79"	79"	79"	79"	79"
Width (inches)	35"	47"	59"	83"	83"
Depth (inches)	34"	34"	34"	34"	34"
Weight (lbs)	882	1323	1719	2270	2866

WEIGHTS AND DIMENSIONS (Kg/mm) approx.

Height standard Inverter (mm)	1810	1810	1810	1810	1810
Height with max. options (mm)	2015	2015	2015	2015	2015
Width (mm)	900	1200	1500	2100	2100
Depth (mm)	860	860	860	860	860
Weight (Kg)	400	600	780	1030	1300



SPECIFICATION

THREE PHASE OUTPUT

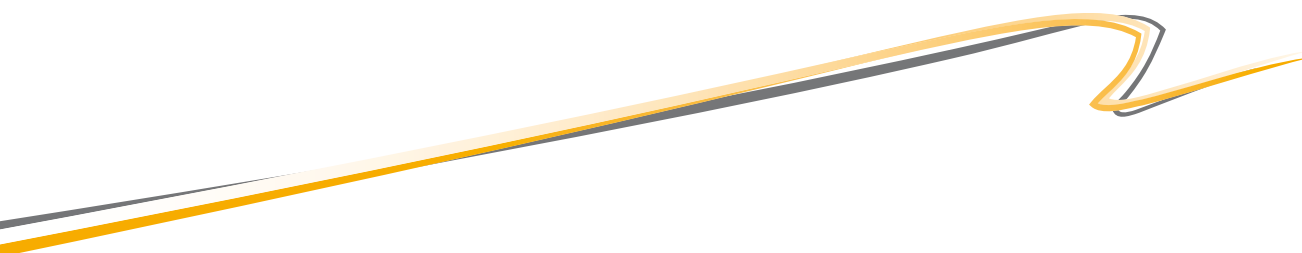
Model	P5.INV3-10-NA	P5.INV3-20-NA	P5.INV3-30-NA	P5.INV3-40-NA	P5.INV3-60-NA
Nominal rating (at $\cos \varphi$ 0.8 lag) in kVA	10	20	30	40	60

INVERTER UNIT

DC input	125V \pm 20%				
Nominal AC voltage	3 x 208V				
Output voltage static response	< \pm 1%				
Output voltage dynamic response	< \pm 2%				
Recovery time	1 ms				
Frequency	60/50Hz				
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	28	56	83	111	167
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 208				
Frequency	60 / 50Hz				
Nominal power in kVA	10	20	30	40	60



GENERAL DATA

Efficiency - typical	86%				
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)	23°F / 104°F		(- 5°C / +40°C)		
Storage temperature range min/max.	-22°F / 167°F		(-30°C / +75°C)		
Maximum altitude without de-rating	3280 ft		(1000m)		
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Width (inches)	35"	35"	47"	47"	83"
Depth (inches)	34"	34"	34"	34"	34"
Weight (lbs)	1257	1334	1455	1455	1973

WEIGHTS AND DIMENSIONS (Kg/mm) approx.

Height standard UPS (mm)	1810	1810	1810	1810	1810
Height with max. options (mm)	2015	2015	2015	2015	2015
Width (mm)	900	900	1200	1200	2100
Depth (mm)	860	860	860	860	860
Weight (Kg)	570	605	660	660	895



BATTERIES

Saft Power Systems 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.

SERVICE

Saft Power Systems Global Services offer the following Services to Support all Industrial Power Supply Products:

Product Services:

- Installation & Commissioning
- Preventative Maintenance
- Spare Part Kits
- Refurbishments
- Training
- Service Contracts – 24/7 Global Service Cover

Site Services:

- Battery Replacement
- Load Bank & Site Capacity Tests
- Power Quality Services
- Standby Generators and other essential equipment hire & supply
- E-Service/Remote Monitoring
- Battery Monitoring
- Facility & Equipment Management
- Design & Build - Turnkey Solutions

Power Systems
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For more information please refer to our website:
<http://www.powersupplysystems.com>

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