

Power Safety

PROTECT MIP

Modular, redundant and scalable system for all industrial applications.



Input:

220/230/240V 1 phase
380/400/415V 3 phase

Output:

24V	50 – 450A
48V	40 – 360A
110V	15 – 135A
220V	9 – 81A

Designed for All Industrial Applications

The Protect MIP offers a new way of achieving reliable and cost-efficient protection for all Industrial market applications including Oil & Gas, Power Generation, Transportation and other Infrastructure.

A modular and scalable design with hot-swappable rectifier modules assures low Mean Time to Repair, reduction in the service cost and meets changing needs and future expansion.

The rectifier system is available with one, three rectifier configurations in wall mounted cabinets and nine rectifier configuration in stand alone cabinet.

The Protect MIP is suitable for charging many types of batteries including: vented lead acid, valve regulated lead-acid (VRLA) or nickel-cadmium batteries. It can also be used as a direct power supply without batteries.

Features & Benefits

- Compact design and low weight
- High power density
- Sinusoidal input current
- High efficiency
- High availability with n+1 internal redundancy
- Low MTRR due to modular design
- High MTBF
- Flexibility of scalable power
- Simplicity of use
- Easy maintenance

Power Safety

Protect MIP Modular, redundant and scalable switch mode rectifier system for all industrial applications.

Protect MIP – Modular Industrial Power

The Protect MIP DC System has been developed and designed to provide high reliability power supply and battery charging capability.

The Protect MIP DC System is a switch mode controlled rectifier suitable for charging nickel-cadmium or lead-acid batteries while supplying DC loads.

The range of DC Systems is available in the three configurations:

- **Standard 1** - rectifier wall or rack mounted system with a built-in rectifier and compact set of options and alarms,
- **Standard 3** - rectifier wall mounted system with up to 3 rectifier modules to increase the power and with set of basic options,
- **Configured 9** - **rectifier stand alone system** as flexible DC and Mixed DC & AC Solution with large set of options to comply with special customer requirements.

Standard system configuration – 1 & 3 rectifier systems

The range of standard Protect MIP Systems have been pre-configured with a number of the most commonly requested features built-in as standard. The systems are available "off-the-shelf" with standard drawings and standard user documentation.

A Standard Rectifier Systems options provides a very cost effective and short lead time solution.

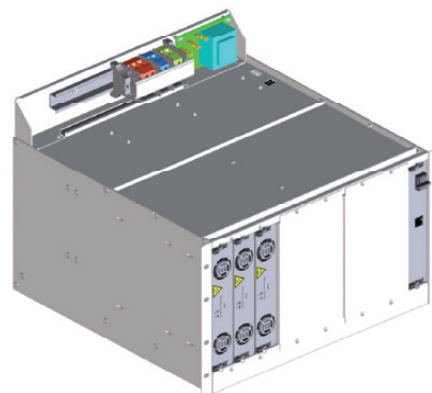
Configured system configuration – 9 – rectifier system

The Protect MIP as configured 9-rectifier solution has been developed to meet the most demanding requirements. The system contains the standard set of main components for the operation of the rectifiers and flexible set of standard and engineering options. It can be configured as DC or DC & AC Solution including the configuration with batteries inside the cabinet.



System features and basic options 9 – rectifier system:

- Input voltage 220/230/240V AC Single phase or 380/400/415V AC Three phase
- 19" sub-rack with up to 9 hot swappable rectifier modules
24V- max 9 x50A (450A), 48V- 9 x 40A (360A), 110V- 9x15A (135A),
220V - 9x9A (81A)
- Hot swappable GCAU control card
- Commissioning switch to disable commissioning until manual switch operation
- Front LCD display and keypad
- AC power supply for GCAU control controller
- Load and battery shunts
- Industrial cabinet in RAL 7035 colour with IP21 protection as standard
- Bottom cable entry



SPECIFICATION - 1 Rectifier System

PART NUMBER	24V	48V	110V	220V
Wall mount system	600006617	600006615	600006618	600008008
Rack mount system	800029681	800029682	800029683	800029684
INPUT				
Nominal Input Voltage	230V ±20% (+20% -60% functional)			
Frequency	50 Hz or 60 Hz, ±5%			
Current	7,5A	10A	10A	10A
Inrush Current	1,5 nominal peak current			
THDI	< 5%			
Power factor float	0,99			
OUTPUT SPECIFICATION				
Nominal Voltage	24V	48V	120V	220V
Maximum Output Current	50A	40A	15A	9A
Rectifier Module	PM24-50	PM48-40	PM120-15	PM220-9
Commissioning Voltage:	33V	66V	166V	302V
System Earth	Floating or connected to earth			
MANAGEMENT				
Common Alarm Connection	1 Form C relay contact – Rating 60VAC @ 2A, 24VDC @ 2A & 60VDC @ 0.1A			
Control Panel	Multi-functional LCD with 2 LEDs indicate the system status			
PROTECTION				
Input/Battery/Load	Circuit Breaker			
Soft Start	Yes			
Output Power Limit	Yes			
Over Current & Short-Circuit	Yes			
Power De-rating	Yes - automatic with temperature			
Thermal Overload	Yes - protection with automatic restart			
Decoupling Fuse	Yes - within rectifier			
PHYSICAL				
Dimensions(HxWxD)	Wall mount - 520x480x210mm (20,5x18,9x8,27 inches); Rack mount 176x482x380mm (6,9x18,9x15 inches)			
Weights	approx 19kg (42 lb)			
Ingress Protection	IP21			
Colour	RAL 7035, Powder coated, textured paint			
Cable Entry	Bottom			
Acoustic Noise @ 1m	<55dBA			
STANDARDS				
Safety	EN 60950-1			
EMC	EN 55022 Level B, EN 61000.6-1,2,3,4, EN 61000.3-2, EN 61000.3-3, EN21000, IEC 60146-1-1 Class B 2kV			
Approvals	CE			
ENVIRONMENTAL				
Operating temperature	0°C (32°F) to +40°C(104°F) with a de-rating of 2.25%/°C between 40°C (104°F) and 55°C (131°F)			
Storage temperature	-25°C (-13°F) to +70°C (158°F)			
Operating Humidity	10% to 95% R H Non-Condensing			
Operating Altitude	0 to 1000m (3281ft) - De-rating @ 1% per 100m (328ft) above 1000m (3281ft) up to 3000m (9843ft)			
Type of cooling	Rectifier module is forced air-cooled			
Standards	ROHS Compliant			
OPTIONS				
Batteries: Lead Acid, VRLA, NiCd	Yes			
Service Option	Yes			

PROTECT MIP				
PART NUMBER	24V	48V	110V	220V
System with input switch only	600006619	600006622	600006625	
System with breakers protection	600006621	600006624	600006627	600008009
System with fuses protection	600006620	600006623	600006626	-
INPUT				
Nominal Input Voltage	230V $\pm 20\%$ (+20% -60% functional)			
Frequency	50 Hz or 60 Hz, $\pm 5\%$.			
Current	Depends on configuration			
Inrush Current	1,5 nominal peak current			
THDI	< 5%			
Power factor float	0,99			
OUTPUT				
Nominal Voltage	24V	48V	120V	220V
Maximum Output Current	3 x 50A	3 x 40A	3 x 15A	3 x 9A
Rectifier Module	up to 3 x PM24-50	up to 3 x PM48-40	up to 3 x PM120-15	up to 3 x PM220-9
Commissioning Voltage:	33V	66V	166V	302V
System Earth	Floating or connected to earth			
MANAGEMENT				
Common Alarm Connection	1 Form C relay contact - Rating 60VAC @ 2A, 24VDC @ 2A & 60VDC @ 0.1A			
Control Panel	Multi-functional LCD with 2 LEDs indicate the system status			
PROTECTION				
Input/Battery/Load	Depends on configuration			
Soft Start	Yes			
Output Power Limit	Yes			
Over Current & Short-Circuit	Yes			
Power De-rating	Yes - automatic with temperature			
Thermal Overload	Yes - protection with automatic restart			
Decoupling Fuse	Yes - within rectifier			
PHYSICAL				
Dimensions(HxWxD)	932x432x425mm (36,7x17x16,7 inches)			
Weights	approx 45kg (95 lbs) (including 3 rectifier modules)			
Ingress Protection	IP21			
Colour	RAL 7035, Powder coated, textured paint			
Cable Entry	Bottom			
Acoustic Noise @ 1m	<55dBA			
STANDARDS				
Safety	EN 60950-1			
EMC	EN 55022 Level B, EN 61000.6-1,2,3,4, EN 61000.3-2, EN 61000.3-3, EN21000, IEC 60146-1-1 Class B 2kV			
Approvals	CE			
ENVIRONMENTAL				
Operating temperature	0°C (32°F) to +40°C(104°F) with a de-rating of 1.25%/°C between 40°C (104°F) and 55°C (131°F)			
Storage temperature	-25°C (-13°F) to +70°C (158°F)			
Operating Humidity	10% to 95% R H Non-Condensing			
Operating Altitude	0 to 1000m (3281ft) - De-rating @ 1% per 100m (328ft) above 1000m (3281ft) up to 3000m (9843ft)			
Type of cooling	Rectifier module is forced air-cooled			
Standards	ROHS Compliant			
OPTIONS				
Batteries: Lead Acid, VRLA, NiCd	Yes			
Distribution	Yes			
Communication interface	RS232/RS485 - Modbus/Profibus/TCP IP			
Service Option	Yes			

Power Safety

Protect MIP Modular, redundant and scalable switch mode rectifier system for all industrial applications.

SPECIFICATION - 9 Rectifier System

System	24V	48V	110V	220V
INPUT				
Nominal Input Voltage	230V $\pm 20\%$ (+20% -60% functional) or 400V $\pm 10\%$ (+15% -20% functional)			
Frequency	50 Hz or 60 Hz, $\pm 5\%$.			
Current	Depends on configuration			
Inrush Current	1,5 nominal peak current			
THDI	< 5%			
Power factor float	0,99			
OUTPUT				
Nominal Voltage	24V	48V	120V	220V
Maximum Output Current	9 x 50A	9 x 40A	9 x 15A	9 x 9A
Rectifier Module	up to 9 x PM24-50	up to 9 x PM48-40	up to 9 x PM120-15	up to 9 x PM220-9
Commissioning Voltage:	33V	66V	166V	302V
System Earth	Floating or connected to earth			
Static voltage regulation	< 1%			
Dynamic voltage regulation	Load change 10-90%, 90%-10% - deviation 5%			
Current regulation	0 to +6%			
Ripple voltage	Max. 0,2% rms of nom. DC voltage, provided battery Ah capacity is 5 times the charger nom. rating (battery connected). Max. 0,2% rms typical (max. 5%) on rectifier output, battery not connected.			
MANAGEMENT				
Common Alarm Connection	1 Form C relay contact - Rating 60VAC @ 2A, 24VDC @ 2A & 60VDC @ 0.1A			
Control Panel	Multi-functional LCD with 2 LEDs indicate the system status			
PROTECTION				
Input/Battery/Load	Depends on configuration			
Soft Start	Yes			
Output Power Limit	Yes			
Over Current & Short-Circuit	Yes			
Power De-rating	Yes - automatic with temperature			
Thermal Overload	Yes - protection with automatic restart			
Decoupling Fuse	Yes - within rectifier			
PHYSICAL				
Dimensions(HxWxD)	1800x600x800mm - (Other cabinets as option)			
Weights	Depends on configuration			
Ingress Protection	Standard IP21, optional IP42 (other protection as option)			
Colour	RAL 7035, Powder coated, textured paint (Special colours as option)			
Cable Entry	Bottom (Top cable as option)			
Acoustic Noise @ 1m	<55dBA			
STANDARDS				
Safety	EN 60950-1			
EMC	EN 55022 Level B, EN 61000.6-1,2,3,4, EN 61000.3-2, EN 61000.3-3, EN21000, IEC 60146-1-1 Class B 2kV			
Approvals	CE			
ENVIRONMENTAL				
Operating temperature	0°C (32°F) to +40°C(104°F) with a de-rating of 1.25%/°C between 40°C (104°F) and 55°C (131°F)			
Storage temperature	-25°C (-13°F) to +70°C (158°F)			
Operating Humidity	10% to 95% R H Non-Condensing			
Operating Altitude	0 to 1000m (3281ft) - De-rating @ 1% per 100m (328ft) above 1000m (3281ft) up to 3000m (9843ft)			
Type of cooling	Rectifier module is forced air-cooled			
Standards	ROHS Compliant			
OPTIONS				
Batteries: Lead Acid, VRLA, NiCd	Yes			
additional electrical,mechanical	Wide range of option available on request			
Communication interface	RS232/RS485 - Modbus/Profibus/TCP IP			
Service Option	Yes			

9 – RECTIFIER SYSTEM OPTIONS

Protections

- AC Input protection – switch, fuses, breakers
- Input contactor with external door switch
- DC Load protection – switch, fuses or breakers, including AC & DC distribution panels/cabinets
- Inverters and converters for alternative AC and DC outputs
- AC and DC surge arrestors

Alarms / Signalling / Measurement

- Relay card, LED Box
- Alarms on protection devices
- Analog meters for AC and DC measurements
- Remote commands via analog and digital inputs, eg boost charge, battery room fan, remote shutdown,

Communications

- EIA232, EIA485 with Profibus
- SNMP/TCP IP

Battery options

- Battery protection – switch, fuses, breakers,
- Low Voltage disconnect (LVD)
- Battery shunt for battery measurement
- Matching Battery cabinets
- Battery temperature probe

Mechanical options

- Protection IP42 cabinet
- Anti-condensation heater
- Interior light
- Special wiring eg low smoke, halogen free
- Special colour
- Special markings

Additional options are available on request

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

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AEG Power Solutions

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PERFECT IN FORM AND FUNCTION

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