

PROTECT RCS

OUTDOOR PLUS

Thyristor controlled, premium
industrial rectifier & battery charger

Input:
400/480 VAC 3-phase

Output:
24 VDC; 50 – 250 A



AEG Power Solutions' rectifiers assure **the permanent availability of all demanding industrial applications** including oil, gas & petrochemical, power generation, transportation as well as other infrastructure in the toughest environmental conditions.

Protect RCS is designed to provide high reliability power supply and battery charging capability. The **Outdoor Plus version** provides the same level of protection to your equipment and processes and **complies with the stringent protection standards according to IEC 60529** (IP 65). Protect RCS is a thyristor-controlled rectifier suitable for charging nickel-cadmium or lead-acid batteries while supplying DC loads. It can also be used without batteries as a direct power supply. The rectifier is built from independent building blocks and can be supplied with optional equipment as required.

Cabinets are floor mounted. The batteries are installed in a separate cabinet from the rectifier. The **Outdoor Plus version** has been designed to have a **natural cooling process**, which **simplifies maintenance** and **decreases total cost** of ownership.

Features & Benefits

- » Heavy duty design
- » Natural cooling
- » Outdoor cabinet (IP 65 compliant according to IEC 60259)
- » Proven microprocessor-controlled thyristor technology
- » Building block design
- » High MTBF and low MTTR
- » Built-in protection
- » Digital processing and setting of all parameters
- » Monitoring of all parameters via the front panel display
- » Built-in intelligent battery management
- » Temperature-compensated charge voltage regulation
- » Manual or automatic high rate charge
- » Parallel operation
- » Alarm and event logger, including a date and time-stamped event log memory
- » Ease of installation, start-up and maintenance
- » International service support

PROTECT RCS OUTDOOR PLUS

TECHNICAL DATA



PROTECT RCS STANDARD CONFIGURATION

INPUT

Nominal input voltage	Three phase 400/480 V $\pm 10\%$ (+15 % – 20 % functional)
Frequency	50 Hz or 60 Hz, $\pm 6\%$
Power factor	0.75 typical
Current harmonics	<15 % (12-pulse rectifier), 33% (6-pulse rectifier)

OUTPUT

Voltage (UDC)	24 VDC
DC voltage settings range	Floating charge – 75 % – 125 % of UDC nominal at full load and nominal mains voltage ($\pm 10\%$) High-rate charge – 75 % – 135 % of UDC nominal at full load and nominal mains voltage (0/+10%) Commissioning charge – 75 % – 140 % of UDC nominal at half load and nominal mains voltage (0/+10%)
Static voltage regulation	$\pm 0.5\%$ at float voltage, 0 – 100 % DC load variations, input nominal voltage $\pm 10\%$, frequency $\pm 6\%$, temp. range 0 °C to +40 °C, higher temperatures with derating
Dynamic voltage regulation	10 – 90 %, 90 % – 10 % load step – deviation 15 % without battery
DC ripple voltage	<1 % rms of UDC nominal with battery not connected
DC current	50 – 250 A
Current settings range	0 – 100 %
DC current regulation	0 / +2 % of current limit
Long-term stability	0.15 % per 1000 hrs
Temperature coefficient	<0.02 % per °C
Charging characteristic	Constant current / constant voltage (I/U as per IEC 478 1) during float charge
Insulation resistance	>200 M Ω / 500 VDC
Input / output isolation	2,500 V AC between input / output and electrical earth

MECHANICAL

Degree of protection	IP65 according to IEC 60529
Cabinet material	316 L Stainless steel, color natural, finish sanded
Dimensions & weight	According to range
Acoustic noise @ 1 m	<50 dB(A)
Connections	Bottom

ENVIRONMENTAL

Type of cooling	Natural convection
Operating temperature	0 °C to +40 °C and higher temperatures up to 56 °C with derating
Operating humidity	10 % to 100 % R H Non-Condensing
Installation height	0 to 1,000 m – De-rating @ 1 % per 100m above 1,000 m up to 3,000 m

STANDARDS

Safety	IEC/EN 62040-1 / EN 50178
EMC	IEC/EN 61000-6-2, -4 / IEC 62040-2
Approvals & certification	CE-Label, NFC 58-311

PROTECT RCS – THREE PHASE RANGE

Cabinet height	2000 mm	2000 mm
Cabinet depth	700 mm	700 mm
Cabinet width	600 mm	1200 mm
Charger current	Up to 150 A at 40 °C Up to 120 A at 56 °C	Up to 250 A at 40 °C Up to 200 A at 56 °C

STANDARD CONFIGURATION AND OPTIONS



Standard system

Protect RCS range has been preconfigured with a number of the most commonly requested features built-in as standard. These systems are available "off-the-shelf" with standard drawings and standard user documentation.

Standard configuration

- » Internal rectifier input switch Q1
- » 6/12-pulse rectifier bridge with input isolation transformer
- » Digital control
- » Rectifier F1 fuse and rectifier shunt R2
- » Blocking diode V21
- » Multi-functional LCD with 2 LEDs indicate the system status
- » Tropicalized control electronics boards
- » Common fault remote alarm
- » Power and control cable marking
- » Detailed 3-D layout and component marking presented on rear door
- » Door able to open to 120° with nine key locks
- » Bottom cable entry
- » Input/battery/output terminals X1, X2 and X3
- » Standard labeling/nameplate

Options

As needed, the standard system can be enhanced by the additional options available. System specific drawing packages and user documentation will be automatically generated to reflect the actual options configured.

To provide exact solutions for each application, we offer a wide range of options:

System

- » Parallel redundant configuration with load sharing
- » Special mains input voltages (180 – 690 V) and frequency 60 Hz
- » Rectifier input MCB or fuse
- » Battery MCB, fuse or switch in rectifier
- » Battery MCB or fuse box
- » Load MCB, fuse or switch
- » Diode dropper
- » DC distribution

Alarms/signaling/measurement

- » LED alarm indicators in front panel
- » Relay cards 2x8 free contacts
- » Additional analog meters
- » Low electrolyte level alarm
- » Audible alarm
- » Temperature charging compensation sensors & cables
- » Temperature alarm
- » High DC ripple voltage alarm
- » Cable drop compensation
- » Battery circuit failure alarm
- » Ground fault alarm
- » High rate interlock

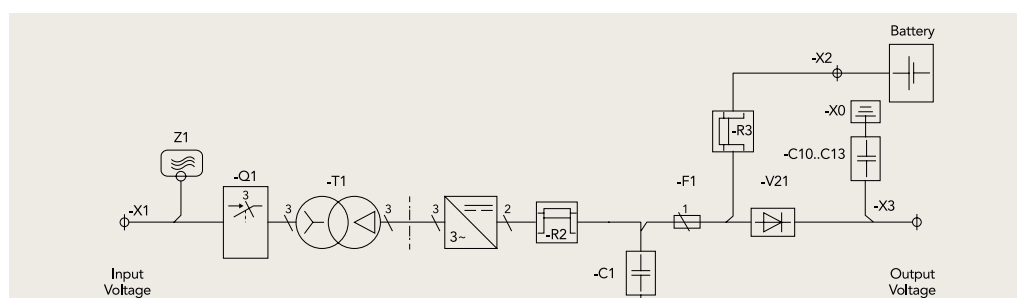
Remote control options

- » Rectifier shutdown command
- » Forced floating charge command
- » Alarm reset
- » High rate charge command

Communication

- » RS232/RS485 interface
- » RS232/RS485 Modbus protocol
- » TCP/IP interface
- » Protocol converters (Profibus DP, J-bus DNP3, IEC 61850)
- » Monitoring and management software
- » Modem

Additional options are available upon request.



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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 systems' 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 a 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 most:

- » Pro Care™ preventive maintenance options
- » Turnkey solutions
- » Installation and 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 and site capacity analysis
- » Trouble shooting and repair



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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