

Flatpack S 24/1000 SIL3 OVP

Rectifier Module



Compact high efficiency rectifier

The SIL3 rated output overvoltage protection makes this rectifier a suitable building block for IEC61508 Functional Safety systems for emergency shutdown, fire alarm and process monitoring and control applications.

This Flatpack S high efficiency reduces losses by 30% compared to the current industry standard. The Flatpack S systems are easy to integrate due to the low heat dissipation and small dimensions of the rectifier.

Applications

Offshore, Marine and Process Industry

Applications in these markets demand state of the art, reliable and safe DC power systems. Flatpack S delivers an industry leading power density in its segment, many safety functions, wide operating temperature range and superb reliability in its small housing.

Its small size makes it easier to install it into existing cabinets and new systems will occupy less space. The system controller supports a wide range of communication media and protocols, from plain alarm relays to SNMPv3 through Ethernet port, allowing integration with different customer control system environments.

Small and medium

Due to the high power density (26W/in³), high reliability and a highly flexible system communication interface, Flatpack S rectifiers are used in system solutions from 1kW to 10kW.

Product Features and Advantages

Extended SIL3 rated Output Over Voltage Protection

The Flatpack S 24/1000 SIL3 OVP has an extended overvoltage protection on the output with 3 barriers ensuring that the voltage will not exceed 30.0V. This protection is SIL3 rated, capable of handle double fail and has proof test interval exceeding 15years.

Flexibility and reliability

Extensive use of digital controllers has enabled advanced functionality to meet most customers' requirements. It also provides intelligent self-protective features like reduced output power at high temperatures or low mains.

Plug and play

Plug a new rectifier into the system, and it automatically logs on, gets an assigned ID, downloads the system set parameters from the control system and starts up with a minimum of installation time, and without interrupting the system or attached equipment. It also operates stand alone or in parallel with identical rectifiers without controller, still providing rectifier warning and alarms through relays.

Global compliance

Eltek Valere is among the market leaders in all regions in the world, and designs the core products to be compliant to all relevant standards and customer requirements. The Flatpack S 24/1000 SIL3 OVP rectifier is CE marked and UL recognized.

Patents pending

Flatpack S is a result of intensive research over many years. Several unique technical solutions are introduced, protected by patent applications.

See reverse side for specifications

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Additional Technical Specifications

AC Input	
Voltage	85-300 V _{AC/DC} (Nominal 185 – 275 V _{AC/DC})
Frequency	0 and 45 – 66 Hz
Maximum Current	5.9 A _{RMS} maximum at nominal input and full load
Power Factor	> 0.99 at 50% load or more
Input Protection	<ul style="list-style-type: none"> o Mains fuse o Disconnect above 300 V_{AC/DC}

Other Specifications	
Efficiency	Typically 92.5%
Isolation	3.0 kV _{AC} – input to output 1.5 kV _{AC} – input to earth 0.5 kV _{DC} – output to earth
Alarms:	<ul style="list-style-type: none"> o Low mains shutdown o High and low temperature shutdown o Rectifier Failure o Overvoltage shutdown on output o Fan failure o Low voltage alarm o CAN bus failure
Warnings:	<ul style="list-style-type: none"> o Rectifier in power derate mode o Remote battery current limit activated o Input voltage out of range, flashing at overvoltage
Overload warning*	o Loaded > 40% of maximum capacity. (Ensures redundancy in 1+1 system)
Alarm output	<ul style="list-style-type: none"> o Potential free relay contact o Normally activated; deactivated on Alarms, overload warning and mains off
Visual indications	<ul style="list-style-type: none"> o Green LED: ON, no faults o Red LED: rectifier failure o Yellow LED : rectifier & overload warning
Operating temp	-40 to +85°C (-40 to +185°F), output power de-rates linear from 1000W @ 45°C (113°F) to 400W @ 85°C(185°F)
Storage temp	-40 to +85°C (-40 to +185°F)
Cooling	Fan (front to back airflow)
Fan Speed	Temperature and output current regulated
MTBF	> 300,000 hours Telcordia SR-332 Issue I, method III (a) (T _{ambient} : 25°C)
Acoustic Noise	< 46dBA at nominal input and full load
Humidity	Operating: 5% to 95% RH non-condensing Storage: 0% to 99% RH non-condensing
Dimensions	72 x 41.5 x 210mm (wxhxd) (2.83 x 1.63 x 8.27")
Weight	<1 kg (2lbs)

* Overload Warning on rectifier yellow LED and alarm relay contact is only enabled when the rectifier operates without a controller. When the rectifier is connected to a controller, the controller will handle the load monitoring.

DC Output	
Voltage	26.7 V _{DC} (adj. range: 21.75-28 V _{DC})
Output Power	1000 W within nominal input, derates to 440W at 85 V _{AC/DC}
Maximum Current	41.7 Amps at 24 V _{DC} and nominal input
Current Sharing	±5% of maximum current from 10 to 100% load
Static voltage regulation	±0.5% from 10% to 100% load
Dynamic voltage regulation	±5.0% for 10-90% or 90-10% load variation, regulation time < 50ms
Hold up time	>20ms; output voltage > 21 V _{DC} at 1000W load
Ripple	< 150 mV peak to peak, 30 MHz bandwidth
Output Protection	<ul style="list-style-type: none"> o Blocking Oring diode o Short circuit proof o High temperature protection
Overvoltage protection	<ul style="list-style-type: none"> o SIL3 (SIL AC)* <ul style="list-style-type: none"> o Protection level: 30V o Proof test interval: 15 years o Handles dual component failure

Architectural Constraints (AC): Calculated values are within the range for hardware architectural constraints for the corresponding SIL but does not imply that all related IEC 61508 requirements are fulfilled.

Applicable Standards	
Electrical safety	IEC 60950-1/-3 rd edition UL 60950-1/-3 rd edition
EMC	ETSI EN 300 386 V.1.4.1 EN 61000-6-1 (immunity, light industry) EN 61000-6-2 (immunity, industry) EN 61000-6-3 (emission, light industry) EN 61000-6-4 (emission, industry) FCC Part 15 Subpart 109
Mains Harmonics	EN 61000-3-2
Marine	DNV-OS-D202, Ch.2 Sec. 4 (DNV 2.4) <ul style="list-style-type: none"> o Temperature Cl. B o Humidity Cl. B o Vibration Cl. A o EMC Cl. B*
Environment	ETSI EN 300 019-2-1 Class 1.2 ETSI EN 300 019-2-2 Class 2.3 ETSI EN 300 019-2-3 Class 3.2 ETSI EN 300 132-2 RoHS compliant

* Class B requires external filters on AC input

Specifications are subject to change without notice

Part no.	Description
241122.290	FlatpackS 48/1000 SIL3 OVP

241122.290.DS3 – v1