

# Flatpack S 24/1000 HE

## Rectifier Module



### Compact high efficiency rectifier

The combination of innovative design, efficiency and reliability makes the Flatpack S a perfect choice for telecom and industrial applications. With a system depth of only 250mm the Flatpack S systems will fit in most cabinets.

This Flatpack S reduces losses by 30% compared to the current industry standard. The result is reduced total cost of ownership for the customers as well as contribution to reducing the global carbon emissions.

### 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.

#### Telecom Wireless, Fixed line and fiber networks

Increasing network speed demands flexible and expandable DC power solutions. The Flatpack S rectifiers are your key building blocks for future needs. The shallow system depth makes the same Flatpack S power core suitable for many various applications contributing to order standardization, thereby reducing delivery time and easing logistics.

#### Small and medium

Due to the high power density (26W/in<sup>3</sup>), 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

#### 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 HE 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.

# Flatpack S 24/1000 HE

## Additional Technical Specifications

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

Other Specifications	
Efficiency	Typically 93%
Isolation	3.0 kV <sub>AC</sub> – input to output 1.5 kV <sub>AC</sub> – input to earth 0.5 kV <sub>DC</sub> – output to earth
Alarms:	<ul style="list-style-type: none"> <li>o Low mains shutdown</li> <li>o High and low temperature shutdown</li> <li>o Rectifier Failure</li> <li>o Overvoltage shutdown on output</li> <li>o Fan failure</li> <li>o Low voltage alarm</li> <li>o CAN bus failure</li> </ul>
Warnings:	<ul style="list-style-type: none"> <li>o Rectifier in power derate mode</li> <li>o Remote battery current limit activated</li> <li>o Input voltage out of range, flashing at overvoltage</li> </ul>
Alarm output	<ul style="list-style-type: none"> <li>o Potential free relay contact</li> <li>o Normally activated; deactivated on Alarms and mains off</li> </ul>
Visual indications	<ul style="list-style-type: none"> <li>o Green LED: ON, no faults</li> <li>o Red LED: rectifier failure</li> <li>o Yellow LED : rectifier warning</li> </ul>
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 <sub>ambient</sub> : 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)

DC Output	
Voltage	26.7 V <sub>DC</sub> (adj. range: 21.5 – 29 V <sub>DC</sub> )*
Output Power	1000 W within nominal input, derates to 440W at 85 V <sub>AC/DC</sub>
Maximum Current	41.7 Amps at 24 V <sub>DC</sub> 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 <sub>DC</sub> at 1000W load
Ripple	< 150 mV peak to peak, 30 MHz bandwidth
Output Protection	<ul style="list-style-type: none"> <li>o Blocking Oring FET</li> <li>o Short circuit proof</li> <li>o High temperature protection</li> </ul>

\* pending, first revisions have 21.5 – 28V<sub>DC</sub>

Applicable Standards	
Electrical safety	IEC 60950-1/-3 <sup>rd</sup> edition UL 60950-1/-3 <sup>rd</sup> 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"> <li>o Temperature Cl. B</li> <li>o Humidity Cl. B</li> <li>o Vibration Cl. A</li> <li>o EMC Cl. B<sup>1)</sup></li> </ul>
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

<sup>1)</sup>Class B requires external filters on AC input

Specifications are subject to change without notice

Part no.	Description
241122.205	FlatpackS 24/1000 HE

241122.205.DS3 – v0C