PMEAF / PMBAF – Half-Wave and Bridge Rectifiers

with Avalanche Diodes and Spring-Clamp Terminals

Application

These compact modules are used to control electromagnetic clutches and brakes.
Avalanche diodes are capable of absorbing high voltages, as they are designed to safely dissipate energy up to a defined break-down voltage without sustaining damage.
In rectifier circuits, they provide protection against voltage spikes (transients) that could otherwise damage sensitive components.

Half-Wave Rectifier

Half-wave rectifiers convert alternating current (AC) into a pulsating direct current (DC) by utilizing only one half-cycle of the AC waveform.
Advantage: Simple design. Electromagnetic brakes often do not require perfectly smoothed DC voltage, which is why the basic technology of a half-wave rectifier is sufficient in many cases.

Bridge Rectifier

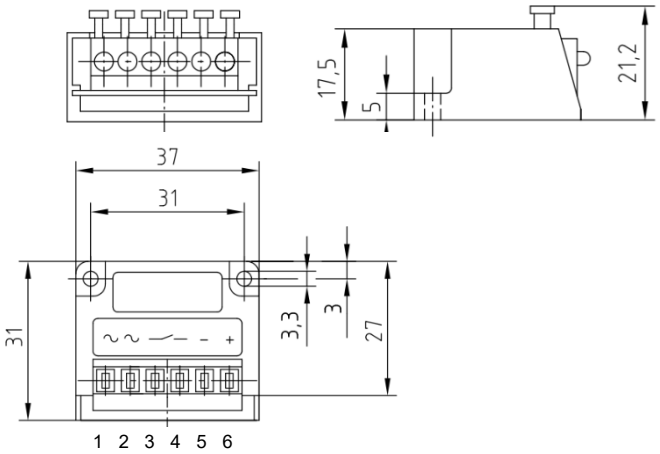
A bridge rectifier uses both half-cycles of the AC waveform to produce a nearly continuous DC voltage.
Bridge rectifiers are especially beneficial when a stable magnetic force is required for the brake — for example, in precision applications such as CNC machines or robotics, where voltage consistency is critical.

Conclusion

While half-wave rectifiers offer advantages in terms of simplicity and cost-efficiency, bridge rectifiers provide a smoother, more efficient, and power-friendly solution. These benefits often make them the preferred choice for demanding or performance-critical applications.

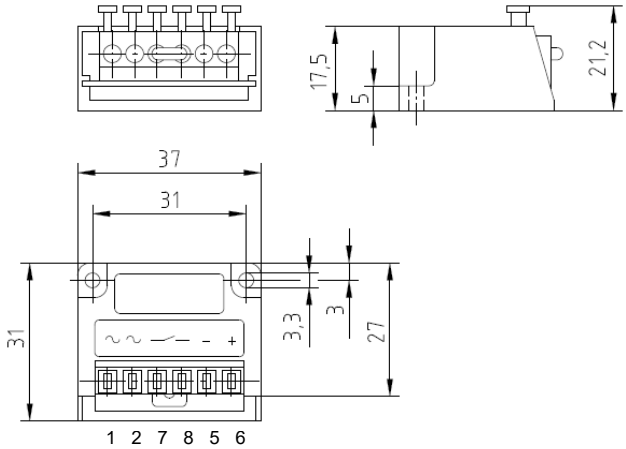
DC-side Switching (Direct Current)

Figure 1



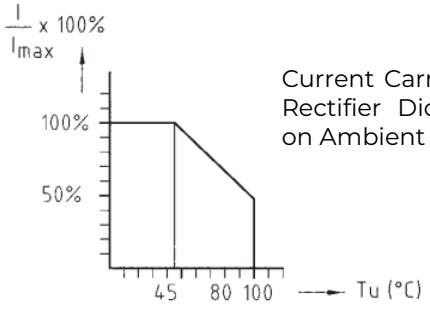
AC-side Switching (Alternating Current)

Figure 2



Electrical Connection (Terminals)

1, 2 – Input voltage [VAC]
3, 4 – DC-side switching [Figure 1]
5, 6 – Brake coil [VDC]
7, 8 – AC-side switching [Figure 2]
(Switch bypassed)



Current Carrying Capacity of Rectifier Diodes Depending on Ambient Temperature

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Rev. 1
03/2026

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Technical Data

		PMEAF 400-S	PMBAF 400-S
Maximum input voltage (+10%)	VAC	400	400
Output voltage	VDC	0,45 x UAC	0,9 x UAC
Maximum output voltage	VDC	180	360
Maximum output current	A	1	2
Peak reverse voltage	V	1500	1500
Terminal cross-section	mm^2	0,34 – 1,5	0,34 – 1,5
Ambient temperature	°C	-20 to +100	-20 to +100
Certification marks		CE	CE
Article number		18252	44687

Safety

Meaning of Safety and Warning Symbols

Danger — Indicates a risk of fatal injury due to electric shock.

Warning — Indicates a potential risk of fatal injury.

Validity

- The information provided in the technical documentation, as well as any application-specific advice, is given to the best of our knowledge and based on our understanding of the application. This also applies regarding potential infringement of third-party intellectual property rights.

Responsibility of the User — The use and application of our devices in end products are beyond our control and are therefore solely the responsibility of the user.

Qualification

- Installation, commissioning, and maintenance must only be carried out by qualified personnel (in accord ance with IEC 364 or VDE 0100).
- The power supply must be disconnected before installing or servicing the device.

Design modifications reserved. Please check the ordering data before placing an order.

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