ENG

# 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 breakdown 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.

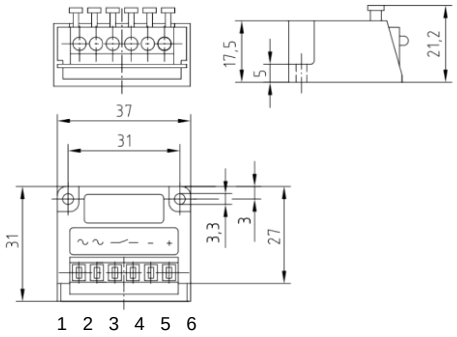
## Bridge Rectifier

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.

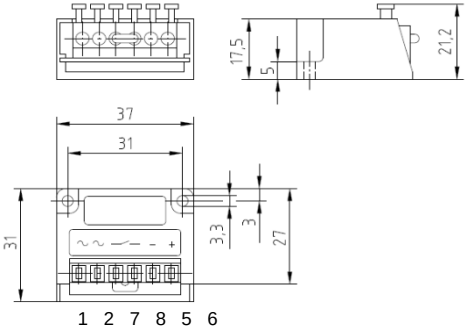
## Conclusion

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

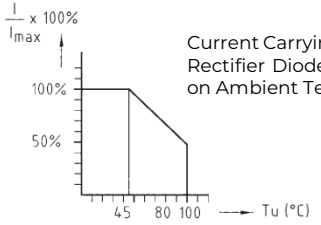



**AC-side Switching (Alternating Current)**
Figure 2




## 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

## 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** | mm² | 0,34 – 1,5 | 0,34 – 1,5 |
| **Ambient temperature** | °C | -20 bis +100 | -20 bis +100 |
| **Certification marks** | | CE | CE |

## 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 accordance 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.