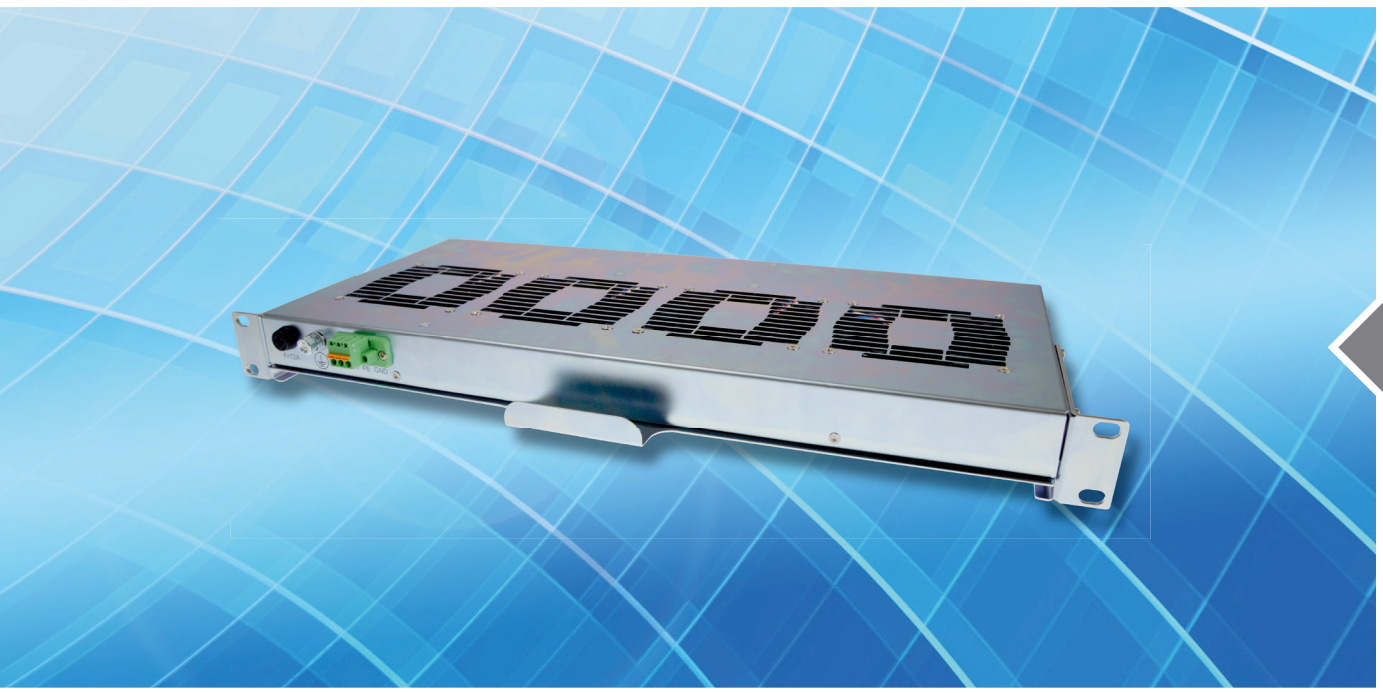
HEITEC
engineering solutions



Customized sub-rack extension for CPU ventilation

In order to guarantee a very high level of reliability, usually no rotating components are permitted in railway technology, so that possible causes of damage are minimized.

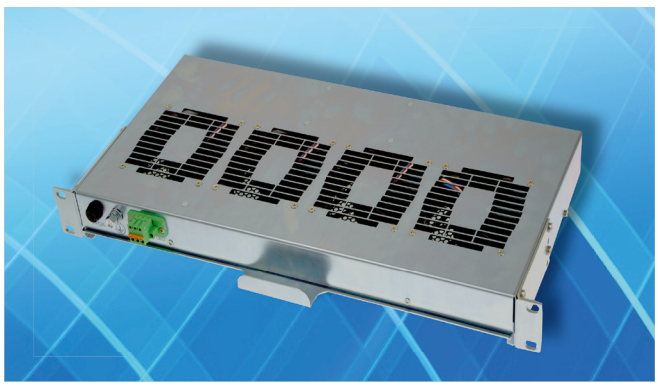
A HEITEC customer had planned the use of a more powerful CPU for one of its existing systems in the railway sector. This significantly more powerful CPU had to be cooled due to the high heat dissipation. For this purpose, fans were to be used that were not provided in the previous system.

As a solution HEITEC designed a cost-effective, 1U high sheet metal housing, which can be used as an extension of the existing system. This allowed the customer to continue to use his existing rack in its entirety. The housing offers space for four axial fans that cool the CPU sufficiently. For railway applications, there are a number of requirements that the system must meet. One of these is the high shock and vibration resistance of the system. But even in the extended temperature range from -40°C to +85°C, the system must function perfectly and fail-safe. The mechanical stability was achieved through an application specific design. The requirements regarding environmental temperature were met through selection of appropriate components and conformal coating of the boards.

But also a good maintainability of this subrack extension for easy handling during operation was a prerequisite. HEITEC implemented this with an innovative design. The fan housing consists of only three parts that are screwed together. In addition, the filter mat can be changed easily without tools.

In this application, it was also necessary to develop a circuit that included an integrated temperature switch, among other things. This makes it possible that at a temperature below -20°C the fans are no longer supplied with voltage and damage to the fans caused by cold is prevented.

Innovative Fan Concept



View of the housing cover with the four ventilation openings for the four axial fans

Front view of the fan cassette with screwable cage clamp, earthing bolt and fuse holder with fuse

Technical Summary

- Customer specific stainless steel housing (V2A)
- 4 axial fans 12 VDC
- L x W x H: 240 mm x 84 TE x 1 U
- Temperature switch-off for temperatures < -20°C
- Shock and vibration resistant according EN 50155
- Extended temperature range according EN 50155
- DC wide range voltage input 14,4 – 154 VDC

Customer benefits

- Tailor-made system
- High shock and vibration resistance
- Extended temperature resistance from -40°C to +85°C
- High reliability and service life
- Good maintainability due to the use of only a small quantity of parts and filter mat that can be replaced without tools
- Cost-optimized design
- Fully Railway certified reg. EN50155

HEITEC AG
Dr.-Otto-Leich-Str. 16
90542 Eckental, Germany

Phone: +49 9126 2934 0
Fax: +49 9126 2934 199

e-mail: electronics@heitec.de
Web: www.heitec-electronics.com