

Innovative SPE solution through strong partnership

TERZ Industrial Electronics relies on Single Pair Ethernet – together with Dacom West and Taimag for an innovative SPE solution

TERZ Industrial Electronics GmbH is a modern company that efficiently and reliably networks all industrial automation applications.

As a manufacturer of industrial Ethernet-based network components and industrial data storage technologies, they handle the design, development, production and distribution of their products.

The TERZ GmbH product range includes highly optimised and powerful industrial Ethernet switches that enable reliable operation even under the harshest electromagnetic, climatic or mechanical interference conditions.

Networking industry – TERZ as a driver of modern communication technologies

With a focus on factory automation and robotics as well as rail and road operations, key cross-market technologies from Industry 4.0, Mobility 4.0 and the Industrial Internet of Things (IIoT) are bundled here in products that are both robust and flexible in their application.

Ethernet switches for mobile machines, such as those used in agricultural technology, rail transport, warehouse logistics and the construction sector, are among the successful standard products in TERZ's portfolio. Until now, these machines have often been based on CAN bus connections. However, Oliver Opl, one of the co-founders and managing directors of TERZ, closely monitors the market and recognised early on the advantages of replacing this conventional technology, which has its limitations in terms of low speed and restricted bandwidth, with the more modern Single Pair Ethernet (SPE) communication. SPE is already being used in the automotive sector to replace analogue sensor applications or industrial bus systems, thus enabling a uniform communication platform. Data transmission and power supply to end devices are carried out via the same cable, requiring only one pair of wires instead of the previous four pairs. This saves material, space and weight. Further advantages of SPE technology include a high maximum data rate of up to 1 Gbit/s (e.g. with 1000BASE-T1) as well as high transmission speeds and bandwidths – around 100 Mbit/s with 100BASE-T1 or 10 Mbit/s over up to 1000 metres with 10BASE-T1L – combined with simple, single-pair installation.





Tristan Friend, managing director Dacom West, Volker Klanke, managing director TERZ Industrial Electronics GmbH
(photo: private)

Long-standing partnership as the key to success

„Unfortunately, the market did not offer a standard solution for our design at that time, as it does not today, because Single Pair Ethernet is still in its infancy, despite its well-known immense advantages. So, I got in touch with Tristan Friend, my contact at Dacom West GmbH – our long-standing distribution partner, from whom we already purchase industrial LAN transceivers from Taimag and some storage solutions," recalls Volker Klanke, the second of three founders and managing directors of TERZ. Together, the two of them first drew up a requirements profile, which Tristan Friend then took to Taimag, the manufacturer of the connectors used to date. „Although the requirements were demanding – the size had to remain compact, loss-free signal transmission had to be ensured despite the integration of a common-mode choke in the transformer, and, of course, industrial use requires maximum reliability, even in extended temperature ranges and extreme environmental conditions – Taimag was very receptive to my ideas," reports Tristan Friend. The joint project to develop a proprietary SPE transformer for TERZ Industrial Electronics was born.

It is no coincidence that the cooperation and communication between Dacom and both partners went so smoothly. Since the founding of the family-run specialist distributor 40 years ago, it has been part of the company's philosophy to cultivate long-standing and trusting business relationships with the selected manufacturers in its portfolio. Dacom has been under contract with the Taiwanese manufacturer Taimag (see info box) since 2008 and the relationship is correspondingly good. Taimag has already proven itself to be a flexible and customer-oriented company in the past. In addition, they are progressive in the development of new single-pair Ethernet components.

Technical requirements and innovative solutions

Special challenges for the new product included the size, which had to remain compatible and comply with standards, as well as ensuring loss-free signal transmission and stability, even in extended temperature ranges and extreme environmental conditions.



T1P – Single Pair Ethernet Switch
(source: terz-ie.com)

From the outset, the collaboration was characterised by efficiency and precision. First, various conventional transformer models from Taimag were tested. Taimag then made the customer-specific adjustments and integrated the CMC directly into the transformer – an innovative solution that saves space without changing the size or compromising insulation distances. The usual market players often rely on discrete solutions with so-called CHIP-LAN transformers, which have very small insulation distances and are much more difficult to handle in PCB assembly. But thanks to regular coordination and close cooperation between Dacom West as an intermediary, Taimag and TERZ, customer requests could always be considered promptly and adjustments implemented quickly. The customer was therefore directly involved in the development process. “Taimag impressed me with its responsiveness – the samples were provided at short notice, and the performance curves met all requirements. Communication via Dacom West was always smooth and proactive,” enthuses Volker Klanke.

In addition to technical improvements, particularly increased bandwidth and higher speeds, TERZ also benefits from practical advantages: the integration of SPE not only reduces sources of error through easier installation, but also reduces the number of components, thus saving both space and costs. The large insulation distances and good SMD mountability are real advantages for TERZ. “With the new SPE solution, TERZ is optimally positioned for Industry 4.0,” says Tristan Friend, delighted for his customer.

About Taimag:

Taimag was founded in 1977. Initially, the company mainly developed, produced and sold conventional linear transformers and rectifiers. With the advent of computer networks and changing market requirements, Taimag gradually focused on the development and manufacture of network-related components and registered its own brand, 'Taimag®', in 1996. The company is based in Kaohsiung, Taiwan. Taimag's main products include network transformers (filters), RJ45 network connectors, pulse transformers and DC-DC transformers. Taimag is certified to ISO 9001 and ISO 14001.

Find out more about the three companies mentioned under:

www.terz-ie.com

www.taimag.com

www.dacomwest.de

