

TURCK editorial

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Industrial
Automation

Interface devices for simple project planning and maintenance
of process control installations

Convenient and Universally Applicable

Interface technology stands for separation, transforming, processing, converting and conditioning of signals in all fields of control and automation technology. Interface technology components must be suited for use in all sorts of plants and countries, thus meeting the most diverse requirements, i.e., they should be universally applicable. At the same time, they should contribute to reducing consequential costs, simplify planning and maintenance and enable fast retrofitting and expansion of existing installations.



TURCK's IM devices in a compact and space saving device for cabinet mounting: simple exchange of modules despite a high packing density

Turck's Interface Module Series

Turck's new generation of interface modules, called the IM series, incorporates versatile functions - ranging from isolating switching amplifiers through isolating transducers to relay couplers. The snap-on housing for hat-rail mounting is 110 mm deep, 18 or 27 mm wide and has removable terminal blocks. The series is constantly expanded and offers all the advantages of a universal power supply.

With Turck's IM series, planning of process control installations is significantly simplified. The project planner can thus fully concentrate on the system's functionality as the essential factor.

The new IM series features:

- a power supply with an integrated universal voltage supply unit
- removable terminal blocks
- 3 different transducer types
- an ASIC for Namur input circuits
- an open user interface called pactware for device parameterisation

In the scope of this article, we will take a closer look at the power supply and the removable terminal blocks.

The Universal Power Supply

The power supply is an essential factor in system planning, expansion and maintenance. National and regional line voltages have to be considered. Some of the common line voltages are:

- **100 VAC:** Japan, Korea
- **110 VAC:** Brazil, Jamaica, Columbia, Morocco, Peru and Taiwan
- **115 VAC:** Barbados, Bolivia, Cuba, El Salvador and Syria
- **120 VAC:** Ecuador, Guatemala, Cambodia, Canada, Columbia, Mexico, Nicaragua, Panama, Puerto Rico and USA
- **127 VAC:** Algeria, Brazil, Ecuador, Mexico, Spain and Vietnam
- **200 VAC:** Macao
- **220 VAC:** Egypt, Argentina, Bangladesh, Brazil, Chile, China, Hong Kong, Indonesia, Jordan, Korea; Pakistan, Peru, Spain, South Africa, Thailand, United Arab Emirates, Uruguay, Zaire
- **230 VAC:** Belgium, Denmark, Germany, Finland, France, Greece, Great Britain, India, Finland, Israel, Italy, Netherlands, Nigeria, Norway, Austria, Poland, Portugal, Romania, Russia and G.I.S States, Czech Republic, Sweden, Switzerland, Republic of Slovakia, South Africa, Spain, Sri Lanka, Turkey and Hungary

It must also be considered that the supply voltages differ in the various industrial sectors. These are for example: 24 VDC, 24 VAC, 36 VDC, 42 VDC; 48 VAC, 60 VDC, 60 VAC.

Another planning factor are special voltages that are provided constantly or temporarily by current generators.

These line voltages are usually not stabilised and feature tolerances that are several times higher than those of standard supply systems. Additionally, their curve may differ considerably from the sinusoidal shape.



The universal power supply unit of Turck's IM series helps reduce device inventories and prevents failures due to over-voltages.

When using interface devices with a standard power supply or the former universal voltage supply (85 VUC to 250 VUC) the planner must be informed in advance about the specific supply voltage conditions and construct every installation separately. Misinformation or system application in the borderland of two power supply nets can lead to power supply problems during set-up and operation. In addition, it is necessary to keep various voltage versions on stock, thus complicating planning and inventory management.

Explosion Protected Universal Power Supplies

The use of power supplies capable of working with all kinds of line voltages considerably facilitates the above mentioned tasks. Consequently, the company Turck developed a universal power supply unit covering a voltage range of 20 to 250 VUC.



Turck IM devices, as stand alone versions in mixed cabinets, save mounting space and time due to their compact design and removable terminal blocks.

The universal power supply unit is integrated in the interface modules of the IM series. A special characteristic of these universal power supply units is that they conform to explosion protection regulations without causing significant additional costs, as opposed to conventional power supply types. The patented development comprises a single step universal voltage input providing explosion protection.

The single step concept reduces the quantity of electronic components, saves space and expenses and increases the availability of power supply units.

Featuring an extremely efficient construction, the universal power supply is integrated both into the 18.5 and 25 mm wide housing style.

Removable Terminal Blocks

An important criteria of system planning and manufacture is the possibility of assembling the cable tree prior to mounting. This enables cost effective series productions, saves mounting costs and speeds up mounting times. Complex mounting and integration the cable tree into the system's mechanics is counter-productive.

Turck's IM devices have thus been equipped with removable terminal blocks. The terminal connectors are connected to the cable tree conductors, while their counterpart, the pre-wired plug-in socket, is on the IM device. The cable tree is connected to the IM devices by a simple plug-in connection.

With regard to the branch-specific preferences - particularly in view of system maintenance and service - the user has a choice of screw or cage clamp terminals. Versions with test sockets are also available.

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The author Arthur Rönisch, manager of the interface technology design department at Werner Turck GmbH & Co. KG, Halver:

"With the new interface modules, the TURCK group contributes to reducing their customers' expenses.

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