

E-system (E-card) operating instructions

This operating manual is to be used in conjunction with the corresponding data sheets.

Types	ED2...Ex ...	24 V DC power supply, intrinsically safe circuit
	ED0...Ex ...	No separate power supply, intrinsically safe field circuit
	EGT-...	24 V DC power supply, intrinsically safe field circuit
	EGA-...	24 V DC power supply, intrinsically safe field circuit
	EG...	24 V DC power supply, intrinsically safe field circuit

Applications

- Used in the chemical, petrochemical and other industries involving hazardous areas with explosive atmospheres. The E-system galvanically isolates signals (e.g. 20 mA or 10 V standard signals) between the hazardous and safe areas, and supports intrinsically safe I/Os within hazardous areas. The interface module should always be installed within the safe area.
- The data sheets of the individual devices contain the electrical data stated in the EC-Type Examination Certificate and are a valid part of the instruction.
- E-system devices are not suitable for the isolation of signals in power engineering, unless this is specifically referred to in the respective data sheet.
- The respective statutory regulations and directives governing the application or intended use should be observed.
- Devices that were operated in general electric installations must not be used afterwards in electric installations that are in connection to explosive hazardous areas.
- Intrinsic safe circuits that were operated with circuits of other types of protection may not be used as intrinsic safe circuits afterwards.
- Circuits in type of protection "nL" that were operated with circuits of other types of protection (except intrinsic safe circuits) must not be used in type of protection "nL" afterwards.

Installation and commissioning in the safe area

(Commissioning and installation must be carried out by specially trained qualified personnel only.)

- E-cards must meet an IP20 rating, which can be attained with the BGT21/E... 19"-modular racks that meet DIN 41494, section 5. The cards require additional protection when installed in harsh environments.

- The E-cards must **always** be installed **outside** the explosive environment!
- For devices with intrinsically safe circuits, the protected circuit (light blue identification on the device) can be located in the hazardous area. It is especially important to ensure that all non-intrinsically safe circuits are safely isolated.
- The installation of the intrinsically safe circuits is to be conducted in accordance with the relevant installation regulations.
- The respective peak values of the field device and the associated device with regard to explosion protection should be considered when connecting intrinsically safe field devices with the intrinsically safe circuits of WE-/K-system devices (demonstration of intrinsic safety). Here EN 60079-14/IEC60079-14 is to be observed.
- If more channels of one device are to be connected parallel it must be ensured that the parallel connection is made directly at the terminals. For the demonstration of intrinsic safety the maximum values of the parallel connection are to be regarded.
- When intrinsically safe circuits are used in areas made hazardous by dust (Ex zone "D") only appropriately certificated field devices must be used.
- The EU certificates of conformity or EC-Type Examination Certificates should be observed. It is especially important to observe the "special conditions" where these are contained in the certificates.
- Special protective measures in accordance with VDE 0170/171, EN 50014 and EN 50020 must be taken during installation. A minimum distance of 50 mm must be maintained between intrinsically safe and non-intrinsically safe components. Dividing walls must be used for distances less than 50 mm, or use the Ex-TKS isolation chamber system from Pepperl+Fuchs. The connections z10, z12, b10, b12, d10, d12 of the female connectors may not be assigned. For EG8-T4-HF and EG8-T13-HF connections z18, z20, z22, z24, b18, b20, b22, b24, d18, d20, d22, d24 of the female connectors may not be assigned.
- The E-card pins and the modular rack slots are clearly marked for mounting intrinsically safe input and output circuits. The placement of the coded pin holes are determined by the manufacturer and are illustrated in the data sheets.

Repair and Maintenance

- The transfer characteristics of the devices remain stable, even over long periods of time, thus eliminating the need for regular adjustment. Maintenance is therefore not required.

Fault elimination

- No changes can be made to devices which are operated in hazardous areas. Repairs on the device are also not allowed.

Isolation coordinates for devices with Ex-certificate according to EN 50020

The devices are assessed for pollution degree 2 according to EN 50178.

Isolation coordinates for devices with Ex-certificate according to EN 50020

The devices of the E-system are installation devices respectively electronic equipment for the use in secluded electrical operating sites where only skilled personnel or electrically instructed personnel must have admission or access to.

The devices are assessed for pollution degree 2 according to EN 50178.

Ambient Conditions

Ambient temperature see data sheet and EC-Type Examination Certificate
 Storage temperature -25 °C... +60 °C (248 K ... 333 K)
 Humidity max. 75 % relative humidity without condensation

Mechanics

Design Simple Eurocards in the 100 mm x 160 mm (per DIN 41494) format; depending on version, using designs:
 Front panel 4 TE (20.32 mm) and certain functions with front panel 8 TE (40.64 mm)
 Front panels with 20 TE (101.6 mm) and 36 TE (182.6 mm) are available for power supply modules

Mounting Single mounting

Material Base material of the conductor plates is fiberglass resin.

Connection method Contact through indirect connection with plug connector per DIN 41612, series 2, type F. The standard contacts provided with 32-pin plug connectors are z and d.

Other The 19"-modular rack with 21 plug connections is available for installation of the cards.

Date of issue 08/08/05

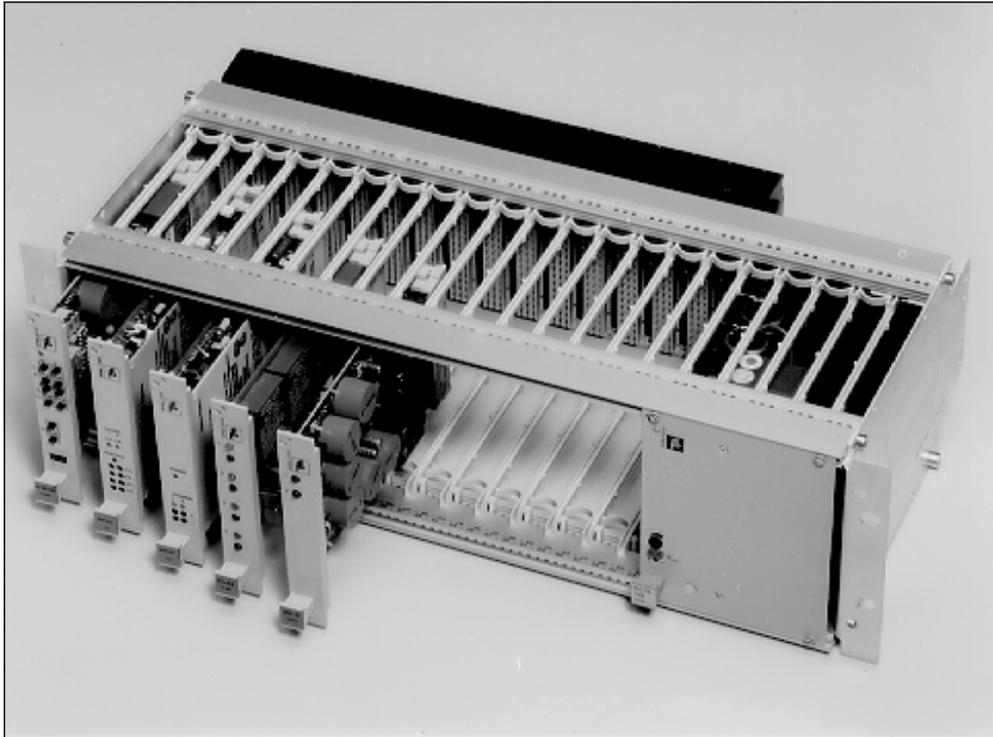
E-system assembly

When installing Eurocards per IEC 50029, a protection class of IP20 must be maintained. This protection class is achieved with the following assemblies:

1. Mounting of a modular rack with hole punched panels out side of the circuit environment.
2. Mounting a modular rack inside a switch cabinet.

Modular rack

19"-modular racks per DIN 41494, section 5 with the model number BGT21/E... are available for the installation of the Eurocards. The modular racks have a standard of 21 connection sites and are suited for installation in 19"-roller guides or 19"-racks with a row of mounting holes per DIN 41494 (special designs for wall mounts available upon request).



19"-modular rack

The following wiring techniques are available:

- HL = Hand Soldering technique
- WW = Wire Wrap technique (1 mm x 1 mm)
- ST = Standard Termipoint technique (1.6 mm x 0.8 mm)
- MT = Maxi Termipoint technique (2.4 mm x 0.8 mm)
- CSI = Crimp-on Snap-in technique

The model key on the data sheet is available for use in ordering modular racks.

We will gladly try to accomodate your specific needs in respect to modular racks that are not covered in this key. For example: modular racks with mixed female connectors, with integrated terminals or shorter version modular racks.

Isolation chamber system Ex-TKS

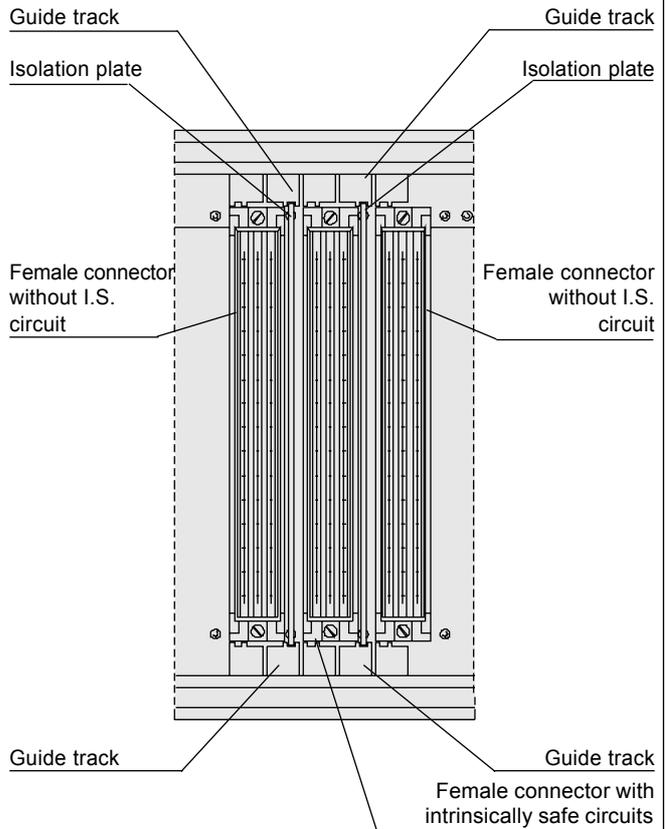
Separation is to be maintained and special "mechanical" protective measures are to be applied according to VDE 0170/171 or EN 50014 and EN 50020 with the use of electronic devices and transformer isolated amplifiers. Therefore, it is necessary to maintain distances of > 50 mm (thread dimension) or to place sufficiently sized isolation walls between intrinsically safe and non-intrinsically safe connections. Both measures are costly and require much rack space. These problems are solved through the Ex-TKS isolation chamber system cheaply, efficiently and in accordance with approvals. With these isolation chamber systems it is possible to equip all or individual connection sites in commercial 19"-modular racks per DIN 41494 so that they meet the appropriate regulations. A connection site that is equipped in such a way must be PTB Nr. Ex 82/202U approved.

A total approval of the card and the wired connection site must be accomplished in conjunction with the conformity certification of the transformer isolated amplifiers EG... and ED... .

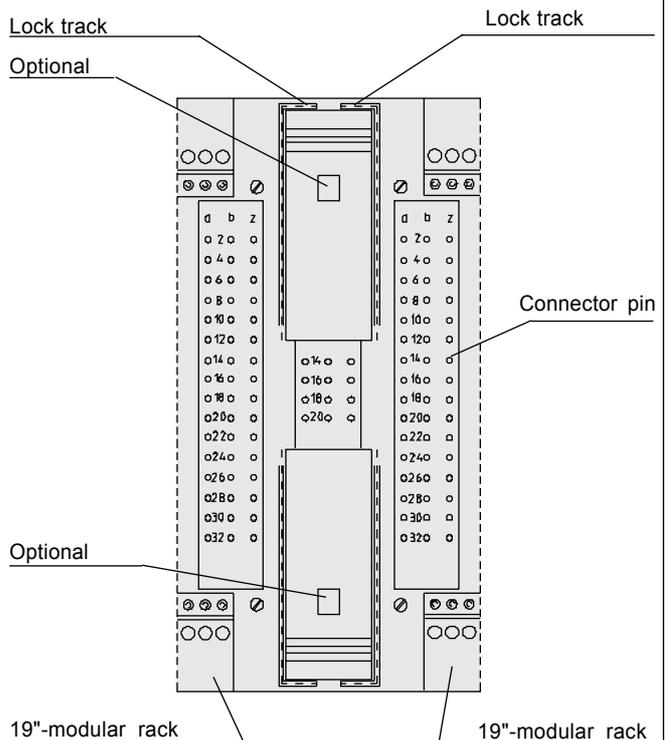
The isolation chamber system consists of the following components:

- Ex/TKS-1 An Ex-equipment set for **one** connection site in the BGT 21/E... modular rack.
The set consists of: isolation chamber with cover, locking track, screws and coding pin
- Ex/TKS-21 Ex-equipment set for **21** connection sites in the BGT 21/E... modular rack.
- Ex-TP Isolation board and guide track pair

Front view of a connection site for Transformer Isolated Amplifiers EG... and ED...

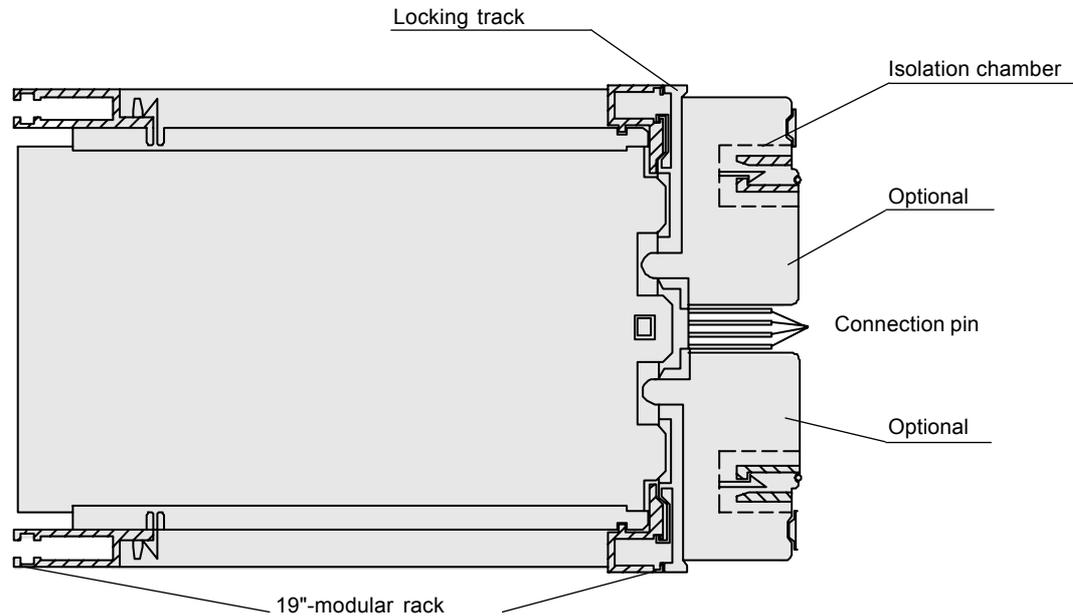


Back view of a connection site for Transformer Isolated Amplifiers EG... and ED...



Date of issue 08/08/05

Side view of a connection site for Transformer Isolated Amplifiers



Mounting the Ex-TKS isolation enclosure

The isolation enclosure is suited for all customary wiring methods. Modular racks with isolated enclosures are available fully assembled and on short notice from Pepperl+Fuchs. The mounting of the enclosure is very simple and can be done at any time.

Advantages of the isolation enclosure

The cover of the enclosure may be opened for test purposes with a 2 mm ... 4 mm screwdriver. The entire enclosure, as well as the isolation board, may be removed similarly.

No spacing units or connection sites are lost when mounting enclosures and dividing walls onto a 21 connection, modular rack with Eurocards having a front panel width of 4 TE (20.32 mm) and a component height of less than 15 mm.

With a component height of more than 15 mm, a space requirement of 1 TE (5.08 mm) for the isolation board exists in addition to the front panel width of 4 TE. In order to prevent this loss of space, one should take into account when using modular racks with mixed components (Ex/Non-Ex), that all Ex and non-Ex cards may be placed in a respective grouping in the modular rack. The Eurocards between one group of cards and the next group should have a component height of less than 15 mm in order to allow for the efficient installation of the Ex-TP isolation card.

The features and the connectors of Eurocards with non-intrinsic safety circuits and those with intrinsic safety circuits are identical. Ex-Eurocards must be coded in order to prevent confusing one type of card for the other and thereby not utilizing "intrinsic safety" measures when required.

This is easily accomplished by dual pin encoding at the female connector (see section "Eurocard Encoding"). The Ex-Eurocards are encoded at the factory. The modular racks provided by Pepperl+Fuchs are pre-coded when the card type is included in the purchase order.

Eurocard Encoding

The danger of mistaking one card for another during the installation or the replacement of Eurocards must be prevented. Therefore, the Eurocard plug connectors are also clearly encoded like the applicable female connectors in the modular rack. Coding holes in the plug connectors and insertable coding pins in the female connectors prevent the insertion of the card in the wrong position.

The coding pins (types Panduit, Souriau, Vero) can be inserted at the prescribed sites in the available holes of the female connector with an installation tool. The arrangement of the coding holes is determined at the factory and may be found in the data sheets of the respective types.

The Eurocards with intrinsically safe circuits are designed for

Example: Transformer Isolated Amplifier Type EG 4...

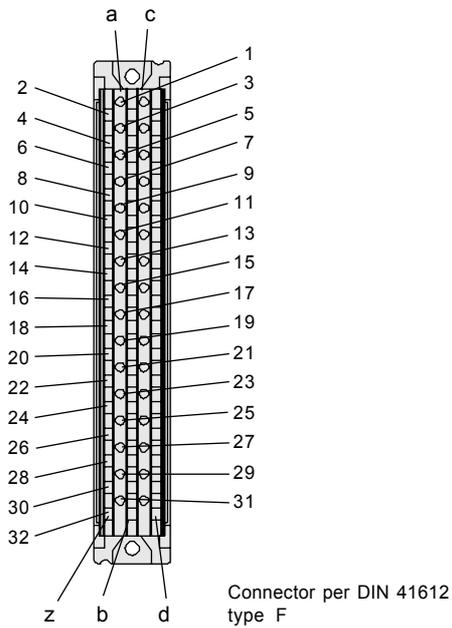
a3 / c7

a3: first coding

c7: second coding

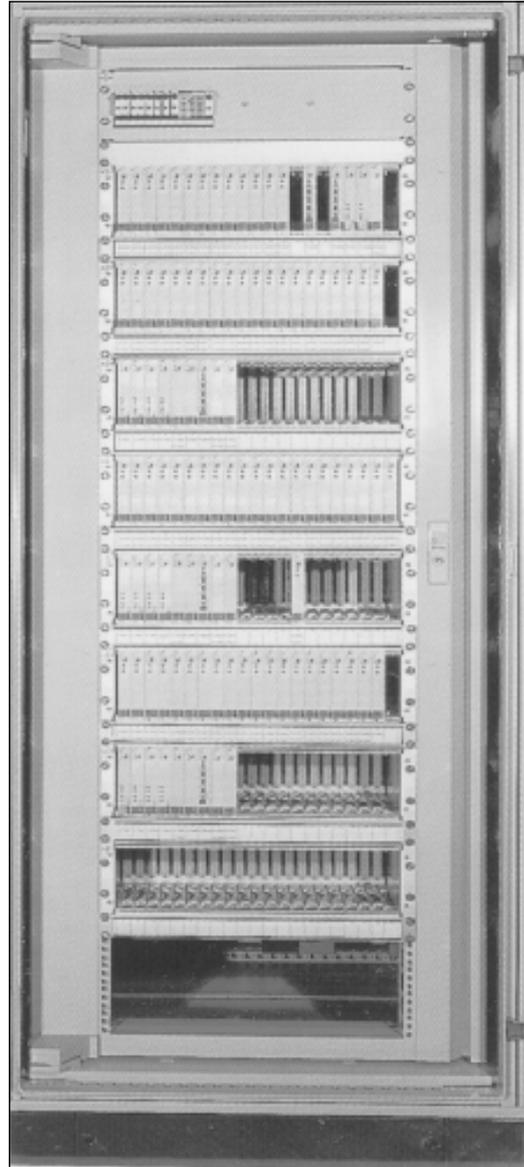
Date of issue 08/08/05

Front view of a female connector

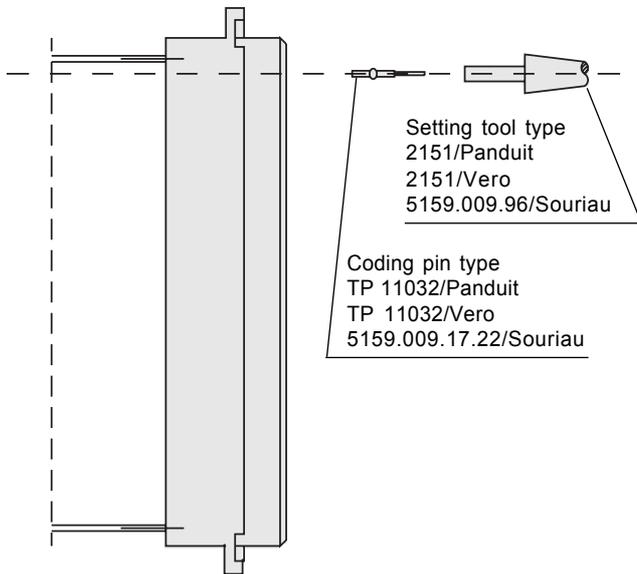


Switch cabinet assembly

The individual modular racks are arranged on top of each other by means of roller guides within the switch cabinet. Jumper and terminal connectors can be installed on the back of the switch cabinet which are compatible with the system and field cables.



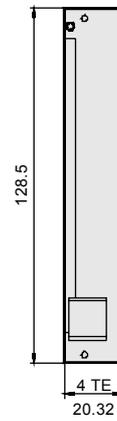
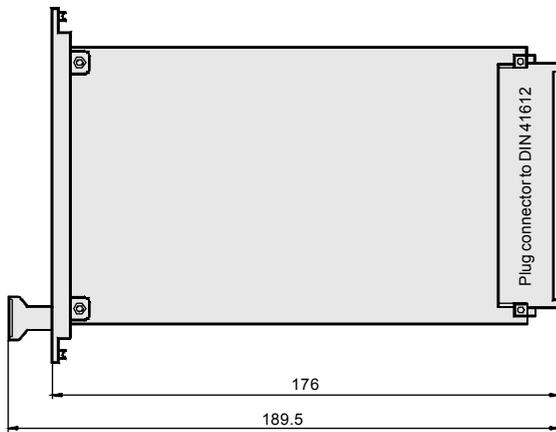
Side view of a female connector



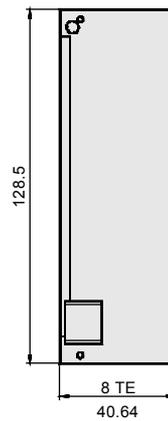
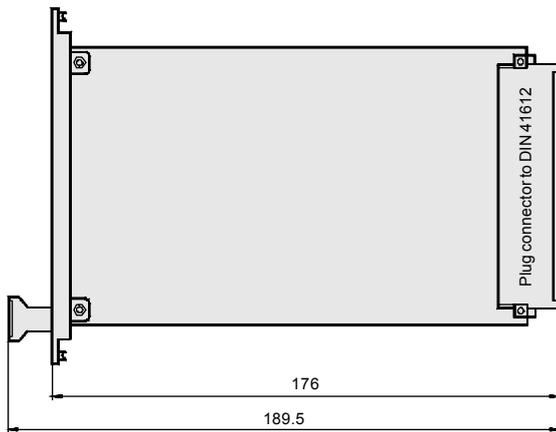
Mechanical dimensions

The following is an overview which shows all available designs with their dimensions.

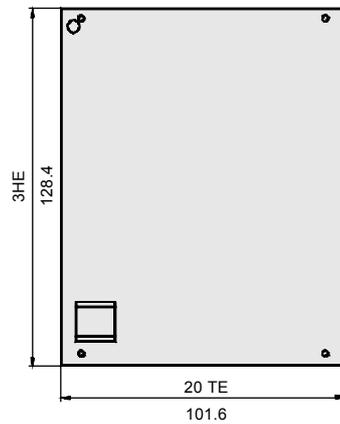
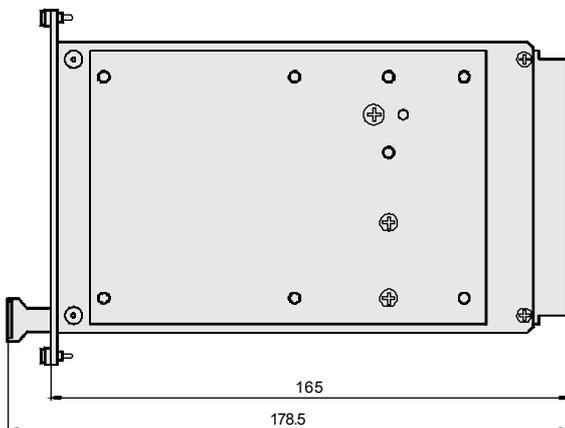
Type A



Type B

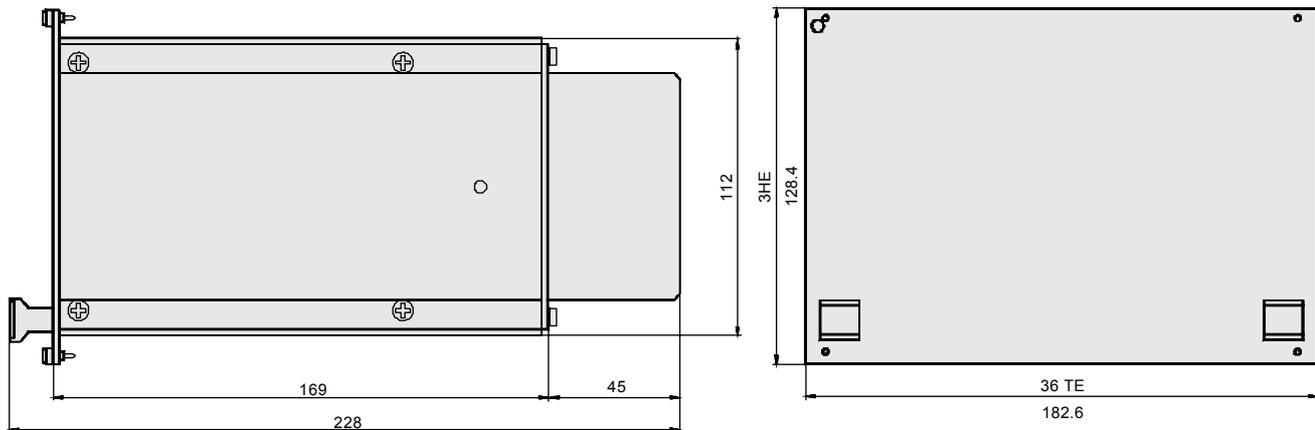


Type C



Date of issue 08/08/05

Type D



New Eurocard housing

New:

- Design
- Face plate optimally sectioned
- Labeling strip for:
device specifications (functions diagrams etc.)
customer specifications
- Isolation cards between the individual Eurocards are no longer necessary

Compatibility:

- meets the Eurocard standard DIN 41494
- Isolation cabinet system Ex-TKS may be installed
- Label carrier accessory is available for delivery

