



Grounding Control Devices EKx-3

For controlled grounding of tank trucks, railway tank wagons, containers and barrels.

When loading fuels or other non-conducting hydrocarbons into or from fuel-carrying vehicles, it is absolutely necessary to ground trucks and wagons in a safe way to divert electrostatic charges and to prevent a possible generation of sparks by an unintentional discharge which may cause an explosion.

Grounding Control Devices of the EKx-3 series are designed for carrying out a supervised grounding line to the object while loading fuels into road tank trucks, railway tank wagons, container or similar transport barrels.

With the Grounding Tester it is guaranteed that a loading is only possible in case of a sufficient low impedance grounding connection to the object. As soon as the correct grounding is detected, the far away visible signal lights and the potential-free control outputs for the controlling of the pumps and possible external signal lamps are switched over to release. If the grounding connection is interrupted, the device switches immediately back into the safe status.

The different types are modularly designed in the same way and differ alone by the built-in measuring oscillator, which is optimally adapted for the respective measuring function.

Device type EKS-3 serves particularly for the grounding of road tank trucks and can be used also for the grounding of sport airplanes. In contrast to type EKN-3 this device is in the position, to make a distinction between correct grounding at the tank truck and false operation, e.g. the attachment of the clamp at the loading gantry (accurate object recognition).

Resulting from this type EKS-3 responds only in case of a correct grounding at the tank truck,



The Grounding Control Devices of the EKx-3 family are certified in accordance with the European explosion prevention directive ATEX 95 for the operation in hazardous areas of zone 1.

and therefore also with the grounding clamp a compulsory grounding is possible.

Device type EKK-3 serves particularly for the grounding of railway tank wagons and in combination with a 2-wire grounding cable as well as a 2-pole grounding clamp it can be used also for the controlled grounding of barrels or containers.

Device type EKN-3 is universally applicable for the grounding of tank trucks and railway tank wagons, but however by use of a grounding clamp it is not in the position to detect whether the clamp was actually attached at the object which shall be grounded.

For that reason we recommend to use this type of device in combination with a standardized grounding socket TW 700 which is attached to an appropriate grounding pin at the tank truck (mechanical obligatory grounding).

Device type EKT-3 serves for the link of external special oscillators and e.g. is used in the Marine Grounding System SEK-2, which is used for carrying out the potential equalization of tankers.

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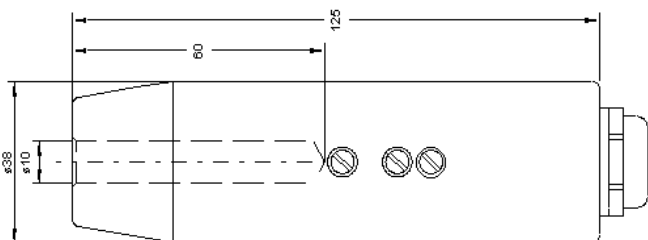
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Technical Details

All types of devices of the EKx-3 series do have certain features in common, which are described in detail as follows:

- The devices are certified in conformity with the European explosion prevention directive 94/9/E.C. (ATEX 95) for the operation in hazardous areas of zone 1.
- The devices comply with explosion protection category II2G EEx eq [ib] IIB T4 in accordance with European standards EN 50014 ff.
- The built-in control unit is available in different voltage versions for 230V AC as well as for 24V AC, 115V AC, 24V DC power supply.
- Water-jet protected aluminium housing (protection class IP 65).
- The devices are equipped with two potential-free switch over contacts as well as one NAMUR-compatible, potential-free Ex-i-output for the connection of certified intrinsically safe circuits of explosion category EEx ia/ib IIB/IIC for external control procedures.
- A far away visible two-colour signal light (red/green) shows the current switching status of the grounding tester.
- Use of a measuring oscillator for the monitoring of the grounding loop, which can be regarded as an ohm-capacitive resistance. The oscillator operates as limit value switch.
- The measuring oscillator is supplied with an intrinsically safe voltage, and therefore the adjustment of the switching level can be made under operating conditions while it is switched on operating voltage. The measuring oscillator is already pre-set by manufacturer and usually requires no further re-adjustment.

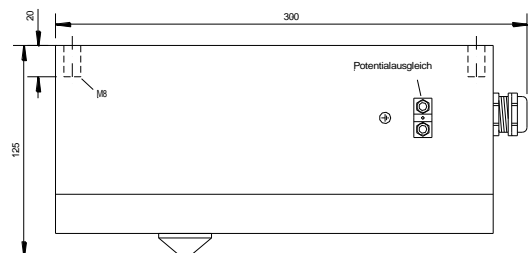
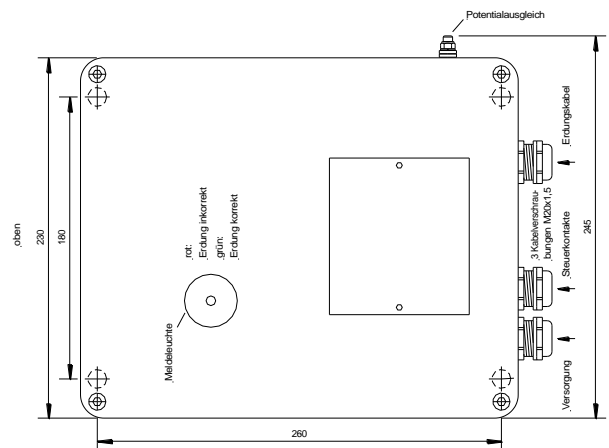


- The specific functional units are structured as encapsulated modules, whereby they are protected from adverse environmental influences and can be easily replaced in case of wear and failure.

Fields of Application

Our Grounding Control Devices are used for more than 30 years world-wide for the controlled discharge of static electricity during the loading of fuels, fuel oil, colours and lacquers within the area of the oil industry and the chemical industry:

- On tank farms and refineries for the safe grounding of tank trucks and railway tank wagons during loading with fuels, fuel oil or other petroleum products.
- During filling of inflammable liquids, colours and lacquers within hazardous areas of the chemical industry.





Operating data

- Explosion protection: EEx eq [ib] IIB T4 Protection category according to ATEX95: Ex II 2 G
- Power supply: 230 V AC (standard), 24 V DC, 24 V AC, 115 V AC (optionally)
- Output circuits:
 - a) Contact circuits: explosion protected by "Increased safety" EEx e 2 potential-free switch over contacts; maximum ratings: 250 V AC, 5 A, 100 VA or 250 V AC, 3 A, $\cos \varphi \geq 0,7$
 - b) Potential-free, NAMUR-compatible control output explosion protected by "Intrinsic safety" EEx ib IIC for the connection of certified intrinsically safe circuits of explosion category EEx ia/ib IIB/IIC with following maximum ratings: $U_i = 30 \text{ V}$, $I_i = 50 \text{ mA}$, $P_i = 130 \text{ mW}$
- Grounding circuit: explosion protected by "Intrinsic safety" EEx ib IIB only for the connection of the grounding clamp or socket; maximum ratings: $U_0 = 13,5 \text{ V}$, $I_0 = 35 \text{ mA}$
- Housing protection class: IP 65
- Operating temperature range: $- 25^\circ\text{C}$ to $+ 60^\circ\text{C}$
Option / Special version: $- 40^\circ\text{C}$ to $+ 60^\circ\text{C}$

Weight and dimensions

- Dimensions: 238 x 300 x 125 mm (l x h x d)
- Weight: approx. 6,2 kg (without cable)

Equipment

- Neoprene grounding cable 1 x 6 mm² with insulated 1-pole grounding clamp or insulated grounding socket TW 700.
- Optionally for container grounding in combination with type EKK-3: Neoprene cable 2 x 2,5 mm² with insulated 2-pole grounding clamp.

Maximum length of the grounding cable

- For device type EKS-3 = 10 m
- For device type EKK-3 = 30 m
- For device type EKN-3 = 6 m

Accessories

Grounding clamp

The grounding clamp for the grounding tester is very durable and available in two different versions. The standard version is performed 1-pole. The 2-pole version serves in combination with type of device EKK-3 type for the grounding of barrels and containers.



Cable-reel

The cable-reel for the grounding tester is spring-actuated and designed without sliprings. The grounding cable is not interrupted all the way down from the grounding tester to the grounding clamp. It runs neither over contacts nor sliprings. The process of winding is actuated by a coil spring connected with the winding arm that rotates around the fixed drum.





A pawl enables that the cable can be handled without strain.

The cable-reel is designed in conformity with the ATEX-directive 94/9/E.C. (ATEX 95) as well as with E.C. directive 2006/42/E.C., appendix II A, relating to the safety of machinery.



Coiled grounding cable

The coiled grounding cable type EWK22-16 is an economical alternative to the cable-reel. The extensible length is approx. 7 m. This cable has a high mechanical firmness and is stable against petroleum products.

Grounding socket TW 700

(see picture above, attached to the coiled cable) The grounding socket TW 700 is intended for the grounding of road tank trucks, which are equipped with an appropriate grounding pin. This pin can also be mounted directly to the grounding clamp, so that this combination of clamp with pin and socket can be used as cable protection guard in case the truck drives away without disconnected clamp.

The Grounding Control Device type EKS-3 for the controlled grounding of road tank trucks enables easy handling and recognizes whether the clamp is actually attached at the tank truck and not at the wrong object.



E.C.-type-examination Certificate

Physikalisch-Technische Bundesanstalt Braunschweig und Berlin		PTB
EC-type-examination Certificate (Translation)		
(1)	Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres - Directive 94/9/EC	
(2)	EC-type-examination Certificate Number:	
	PTB 97 ATEX 2180	
(4)	Equipment:	Earth tester type EK*-3
(5)	Manufacturer:	Timm Elektronik GmbH
(6)	Address:	Humboldtstr. 29, D-21509 Glinde
(7)	This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.	
(8)	The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.	
	The examination and test results are recorded in the confidential report PTB Ex 97-27273.	
(9)	Compliance with the Essential Health and Safety Requirements has been assured by compliance with: DIN EN 50014:1994-03 DIN EN 50017:1995-02 DIN EN 50019:1996-03 DIN EN 50020:1996-04 DIN EN 50014prA1:1996	
(10)	If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.	
(11)	This EC-type-examination Certificate relates only to the design and construction of the specified equipment in accordance with Directive 94/9/EC. Further requirements of this Directive apply to the manufacture and supply of this equipment.	
(12)	The marking of the equipment shall include the following: 	
	Zertifizierungsstelle Explosionsschutz By order	Braunschweig, 26.08.1997
	(signature)	3 pages, correct and complete as regards content. By order
	Dr.-Ing. U. Johannsmeyer Oberregierungsrat	
		sheet 1/3
<small>EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.</small>		
<small>Physikalisch-Technische Bundesanstalt • Bundesallee 100 • D-38116 Braunschweig</small>		

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