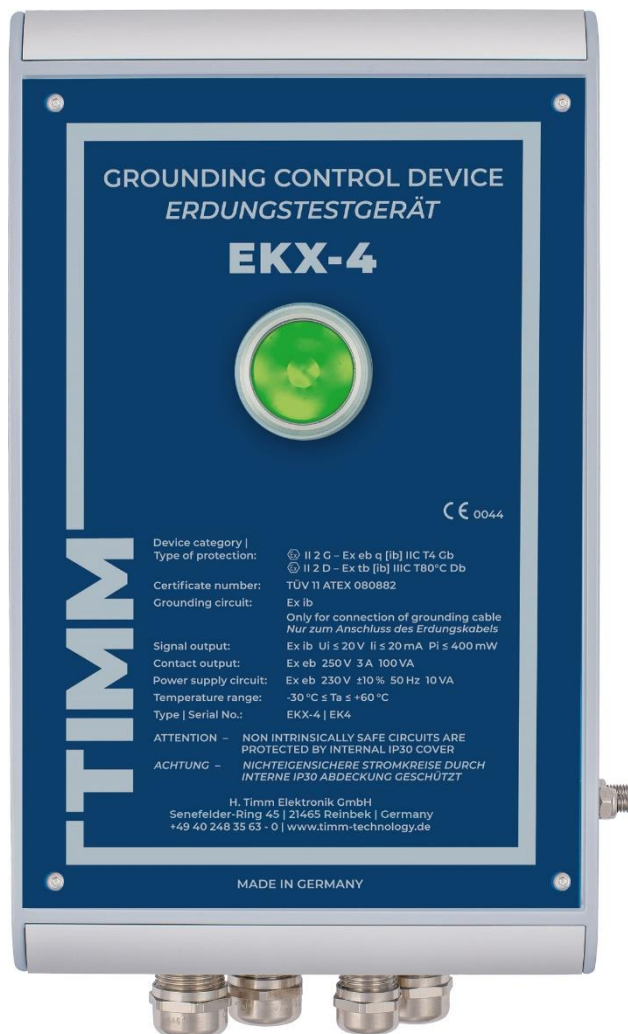


GROUNDING CONTROL DEVICE EKX-4

OPERATING INSTRUCTIONS | ENGLISH



Grounding Control Device EKX-4

Operating instructions and technical data

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Safety Note: This explosion-proof device complies with the requirements of the European Standard series EN IEC 60079 and is an electrical apparatus of equipment category **II 2 G** for use in potentially explosive areas of **zone 1** and as an electrical apparatus of equipment category **II 2 D** approved for use in **zone 21**.

The explosion protection type designation is:



Ex eb q [ib] IIC T4 Gb and Ex tb [ib] IIIC T80°C Db

The intrinsically safe circuit of the grounding wire is grounded.

The installation and commissioning must be performed by authorized and qualified personnel only.

Ordinances on industrial safety, applicable guidelines and regulations for setting up explosion protected operating equipment have to be followed at any time, e.g. EN 60079-14 / VDE 165 Part 1 and DGUV Regulation 113-001 (EX-RL).



The safety information and technical data of this instruction as well as the national safety and accident prevention regulations must be observed during all work on the grounding control unit.

Use this unit only for its intended purpose in an undamaged and proper condition.

If the cable lead-in and the cable glands are not properly fitted, **IP 65** as minimum degree of protection will not be ensured.



The Grounding Control Device EKX-4 is certified according to EN 61508:2010 to SIL 2 for use in safety-related systems. The safety characteristics for functional safety can be found in [chapter 8.2](#).



Table of Contents

- 1. Functional Principle..... 3
- 2. Installation | Mounting..... 5
- 3. Commissioning and Configuration 7
 - 3.1. Setting configuration switch S4 | Object to be grounded 7
 - 3.2. Checking the cable capacitance 9
 - 3.3. Checking for interfering voltages 9
 - 3.4. Checking the limit values of the object recognition 9
- 4. Operation of Grounding Control Device 10
 - 4.1. Status (Full display) 10
 - 4.2. Operational use | Grounding 11
- 5. Optional Settings..... 12
 - 5.1. Settings elements (buttons, LED display) 12
 - 5.2. Measured value display 12
 - 5.2.1. Analyzing the upper limit of object recognition 13
 - 5.2.2. Analyzing the lower limit of object recognition 14
 - 5.2.3. Display the object impedance type | phase angle 15
 - 5.2.4. Display the cable capacitance 16
 - 5.2.5. Display the interfering voltage level in the grounding circuit..... 17
 - 5.3. Limit value adjustment..... 17
 - 5.3.1. Adjusting the upper limit value of object recognition 18
 - 5.3.2. Adjusting the lower limit value of object recognition 18
 - 5.3.3. Adjusting the limit value for interfering voltage supervision 19
 - 5.3.4. Reset the limit value adjustment..... 20
 - 5.4. Error codes (Detailed display)..... 21
- 6. Maintenance..... 22
 - 6.1. Accessories and spare parts 22
 - 6.2. Periodical function test (Proof-test) 24
- 7. Return and Disposal 25
- 8. Technical Annex 26
 - 8.1. Technical specifications 26
 - 8.2. Safety characteristics for functional safety 27
 - 8.3. Drawings 28
 - 8.4. EC Type Examination Certificate 31
 - 8.5. Certificate of functional safety 34
 - 8.6. EU Declaration of Conformity 38

1. Functional Principle

The Grounding Control Device type EKX-4 is intended to provide and monitor electrostatic grounding of objects such as road tank trucks, railway tank wagons, IBC, drums and other containers while filling with products that can form an explosive dust and gas atmosphere. The dissipation of the static electricity happens via the grounding cable.

In case the objects to be grounded do not have a measurable electrical capacitance against reference ground potential, like for instance drums on an isolating pallet, the device variation EKX-4 2-pole shall be used.

The grounding control device is able to detect automatically if an object is connected and monitors continuously the quality of the grounding connection. For this object recognition function, the electrical properties of the connected object are measured (the electrical resistance and/or capacitance of the object) and must be within the permissible range.

In this respect, the upper limit of the object impedance is decisive and must not be exceeded.

In addition, the device is able to distinguish between proper grounding of an object and misuse by attaching the grounding clamp to the filling frame (short-to-ground) instead. For this function, the lower limit of the object impedance is important. If the evaluation of the lower limit is activated, it may not be fallen below this limit value for 'filling release'.

At the device configuration 'road tank truck' the object recognition is available with evaluation of upper and lower limit value. At the configuration 'railway tank wagon', misuse by short-to-ground connection is not recognizable.

Once the proper recognition and contacting of the object has been detected, the device issues 'filling release' and compulsive grounding will be possible. The signal light switches to green, the switching contacts of the Release Outputs K1 and K2 are closed and the Electronic Release Output T1 is put into the conducting or oscillating state. The Auxiliary Output K3 closes the contact between terminals 5 and 7. The connection diagram ([section 8.2, figure 1](#)) shows the rest position of the contacts. Simultaneously with giving 'filling release', the evaluation of the lower limit of the object recognition is disabled. Thus, conductive connections between the loading station/skid and the grounded object can be made, e.g. such as done by attaching the filling hoses.

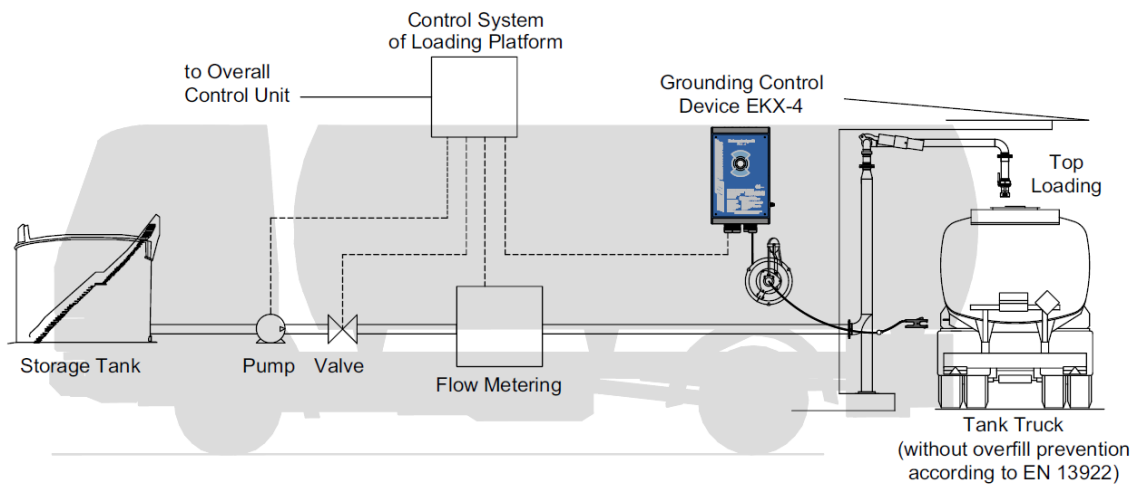


Figure 1: Scheme of monitored electrostatic grounding of a road tank truck

The **safety function** of the grounding control device EKX-4 is to switch off the safety relay contacts when the maximum permissible limit for the impedance of a connected object and the earthing connection is exceeded, thereby interrupting a filling or discharging process (no release).

The **safe status** of the device is to switch off the control outputs (safety relay contacts 1-2 and 3-4), thereby interrupting a filling or discharging process (no release).

2. Installation | Mounting

Install the grounding control device vertically with the cable glands pointing downwards. An appropriate mounting must be provided by the executor of construction work for this purpose. For hole distances see dimensional drawing ([section 8.2, figure 2](#)).

Use four M5 cylinder head or hexagon socket screws to mount the device. To access the screw holes, the snap-on covers at the upper and lower side of the front panel have to be removed. This does not require to open the housing. **The device must be enduringly installed and the installation site should be free from oscillation and vibrations.**



The electrical installation must be realised in accordance with EN 60079-14 (VDE 0165 Part 1) and the relevant national and local regulations applicable for the installation of electrical equipment in hazardous areas, e.g. DGUV Regulation 113-001 (EX-RL) in Germany.

Switch off power before making any connections to not intrinsically safe circuits.

To connect the power supply, the control lines and the grounding cable to the control device, the housing has to be opened. Remove the snap-on covers at the upper and lower side of the front panel. The front panel is attached to hinges. Loose the four screws (see [section 8.2, figure 3](#)), pull the front panel slightly forward and swing it to the left.

Connect the conductors according to the connecting diagram ([section 8.2, figure 1](#)). The permissible diameter of the connecting cables must be observed. The permissible cable cross section for the cable gland M20 x 1.5 is 7 to 13 mm. To connect the intrinsically safe Electronic Output T1, use cable gland M16 x 1.5 with a permissible cross section of 4.5 to 10 mm. Not used cable glands have to be sealed by blind plugs.

According to the permissible terminal area of the terminal block, cables with a wire diameter of 0.5 to 2.5 mm² (AWG 20 to 12) must be used only. To connect the individual wires, the connector ends must be stripped off insulation by 10 mm. We recommend the use of solid copper lines. When using wire end ferrules, they must have the shape of a non-insulated conductor.

To connect the power supply and the control lines to the grey connecting terminals in type of protection Ex eb (increased safety) at the left side, the terminal cover has to be unscrewed and removed ([see section 8.2, figure 3](#)). Prior to commissioning, the terminal cover must be mounted again and attached securely with the appropriate screw nuts.

The temporary removal of the flat plug X2 at the circuit board eases removing and attaching the terminal cover. Care should be taken that prior to commissioning the plug got locked in place properly.



For filling release, only the closing contacts K1 and K2 (connecting terminals 1-2 or 3-4) or the electronic signal output T1 (connecting terminals 8-9) must be used.

The intrinsically safe, NAMUR-compatible transistor output T1, which can be set statically or dynamically (oscillating, 10 Hz, duty cycle 1: 1) by means of switch S4.4, may be connected to associated NAMUR isolating switching amplifiers according to DIN EN 60947-5-6: 2000 that are installed in the safe area.

To integrate the grounding control device EKX-4 into a safety-related system, the following safety-relevant interfaces are provided:

Connecting terminals 1-2 (contact release output K1) und 3-4 (contact release output K2)
The Release Contact Outputs (K1, K2) are duplicated, mechanically linked, redundant by serial relays each and continuously monitored by return signal. The Electronic Release Output T1 generates a failsafe, dynamic release signal (oscillating signal). In connection with an adapted signal evaluation at the control system, a reliable supervision of the signal transmission is possible. The changeover contact K3 is an auxiliary output, e.g. for external indicator lamps, and should not be used for safety-related control functions.



The outer earth conductor terminal (PA) must be connected to the closest equipotential bonding.

The outer earth conductor terminal is situated at the right outer housing panel. To achieve external potential equalization, lines with a diameter of 4 to 16 mm² can be used. With flexible stranded wires it is absolutely necessary to use wire end ferrules.



The grounding/measuring circuit is galvanically connected to ground potential. Potential equalisation has to exist in the complete course of the erection of the intrinsically safe grounding/measuring circuit.

A two-conductor cable is used as Grounding Cable:

The grounding connection is realized with one conductor (terminal 10). The second conductor is used to determine the self-impedance of the grounding cable (cable capacitance, terminal 11). It is connected insulated inside the grounding clamp/socket. Due to the special assembly of the ground cable only original cables with grounding clamp or grounding socket manufactured by TIMM should be used ([see section 6.1](#)):

3. Commissioning and Configuration

Check all electrical connections carefully before first switching-on power supply. For the electronic release output TI, only connections to intrinsically safe circuits with allowed limit values are permitted. During commissioning, it is recommended to check the safety function to ensure the expected behavior of the control outputs. For this purpose, the described procedure of the recurring function test ([see section 6.1](#)) can be performed.

When using the Grounding Control Device in zone 1 (device category II 2 G, gas explosion protection) all settings may be performed during normal operation while the primary housing is open.



Within zone 21 (device category II 2 D, dust explosion protection) the primary housing is the basis for the type of protection Ex t (protection by enclosure) and may only be opened if there is no explosive dust atmosphere present

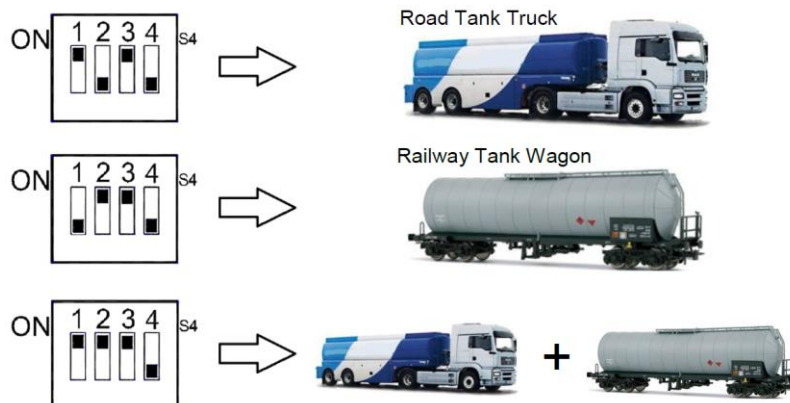
3.1. Setting configuration switch S4 | Object to be grounded

The quad configuration switch S4 is used for the adjustment of the device to the wanted grounding application. It is situated in the upper left corner of the circuit board. To access switch S4, the device housing has to be opened. The single switches of S4 are named from left to right as S4.1, S4.2, S4.3 and S4.4. Selectable switch positions are ON (up) and OFF (down).

Note: The device has to be switched off power to apply the configuration of switch S4. This can be done easily by unplugging the flat plug X2 at the circuit board for a short duration. The grounding clamp may not be connected to the object to be grounded that time.

Step 1: Setting the object to be grounded (Measuring range of the object recognition)

Depending on the type of objects to be grounded, the measurement range for the object recognition has to be selected (switches S4.1 and S4.2):



At the configuration for grounding road tank trucks (#1) the object recognition function is activated with upper and lower limit.



At the configuration for grounding railway tank wagons (#2) and at the configuration for grounding of road tank trucks AND railway tank wagons (#3), the evaluation of the lower limit of the object recognition is deactivated.

Switch S4.1 determines the evaluation of the upper limit of the object impedance.

S4.1 = ON Limit value for road tank trucks is activated

S4.1 = OFF Limit value for railway tank wagons activated

Switch S4.2 determines the evaluation of the lower limit value of the object impedance. If the evaluation is activated, a misuse by attaching the grounding clamp to the filling frame (short-to-ground) is recognized by the grounding control device. If the evaluation of the lower limit is deactivated, a conductive connection of the object to be grounded at the moment of contact to grounded parts of the loading platform is allowed, e.g. like usually being the case at railway tank wagons.

S4.2 = ON Short-to-ground contact permitted (the lower limit is not evaluated)

S4.2 = OFF Short-to-ground not permitted (evaluation of the lower limit is active)

Step 2: Setting the cable compensation function

Switch S4.3 activates the cable compensation. If the cable compensation is activated, a continuous measurement of the grounding cable capacitance ensures that its disturbing influences during the object recognition are eliminated. By default, the compensation of the cable capacitance should be enabled. Only in special cases, for instance if the compensation function is explicitly not required or if the installation does not permit the use of a two-core grounding cable, the cable compensation function must be switched off.

S4.3 = ON Cable compensation activated

S4.3 = OFF Cable compensation deactivated

Step 3: Setting the operating mode of the Electronic Release Output T1

The operating mode of the electronic signal output T1 (terminals 8 and 9) must be adjusted to the requirements of the external evaluation electronics. The release signal can either be static (the output transistor is conductive during the release (the output internal resistance is then 1 kOhm). Or the release signal it is dynamically modulated, meaning the output transistor oscillates and the impedance of the output alternates between 1 kOhm and 11 kOhm with a cycle time of 100 ms and duty cycle of 1:1.

S4.4 = ON Release signal oscillating

S4.4 = OFF Release signal static

3.2. Checking the cable capacitance

The capacitance of the grounding cable depends on the type of installation. A check should be done to assess whether the capacitance of the grounding cable is in the permissible range for the cable compensation function being performed correctly. For this, the whole cable length must be unwound and spread as this is common with object contacting.

The test must be performed with the help of the cable capacitance - measurement indication ([refer to section 5.2.4](#)). If the maximum cable capacitance is exceeded, the cable length must be reduced and/or the cable installation must be corrected.

3.3. Checking for interfering voltages

Next, it must be ensured that the correct functioning of the Grounding Control Device is not affected by electro-magnetic influences from other system components. For this purpose, the grounding cable should be completely unwound and spread out. The interfering voltage level can be checked using the indicating function described in [section 5.2.5](#). If the permissible limit is exceeded, the source of interference must be found and the interferences must be reduced by appropriate measures.

3.4. Checking the limit values of the object recognition

The configuration of the object recognition should be checked with several objects to be grounded, e.g. different tank trucks etc.

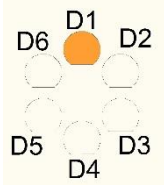
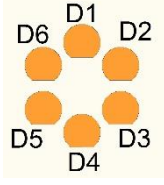
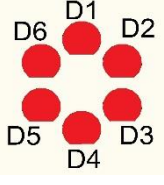
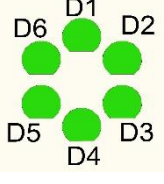
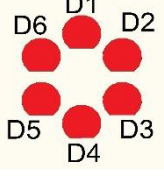
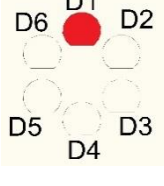
The factory settings of the object recognition limit values result from long standing experiences and assure an unproblematic and safe operation for all standard grounding applications. However, in exceptional cases an adaption to specific system or object characteristics may become necessary. For the adjustment of the limit values see [section 5](#)

.

4. Operation of Grounding Control Device

4.1. Status (Full display)

The status display is situated at the front of the device. It is read as a large display.

Status Display	Operating State	Meaning
	LED D1 orange pulsating	Device Initialization (after power-on)
	Full display orange pulsating	Activated Cable Compensation (Ready for Operation)
	Full display continuous red light	No Release
	Full display continuous green light	Release
	Full display red flashing	No Release, Short-to-ground
	Single LEDs red flashing	Error indication by automatic diagnosis system

Note:
During initialisation, the grounding cable may not be connected to the object to be grounded. Otherwise, the initialisation procedure cannot be completed and the device remains in this state

The device is ready for use with activated cable compensation function

Insufficient contacting of the grounding clamp

Contacted object outside the release range of the upper limit value of the object recognition

Proper grounding of the object detected, filling release issued

Short-to-ground (misuse) detected

Contacted object outside the release range of the lower limit value of the object recognition

Error Codes
see [section 5.4](#)

4.2. Operational use | Grounding

The following operation sequence must be followed:



Ground first - then connect hoses or insert filling arm!

Step 0: Grounding Control Device ready for use

Full display orange pulsating (this indicates readiness when cable compensation function is activated)

or

Full display continuous red light (this indicates readiness / no release when cable compensation function is deactivated)

Step 1: Establish Grounding Connection

Connect the grounding clamp / socket to the grounding lug / pin of the object to be grounded. Attention should be paid to ensure a proper contacting.

Step 2: Device issues filling release

As soon as the proper object recognition and contacting has been detected, the device issues 'filling release'. The full display switches to green and the outputs to release state.

Step 3: Filling

The filling hoses can get connected and the filling process can be started.

5. Optional Settings

Note: With the configuration ([section 3](#)) and the preset limit values of the object recognition, the grounding control device is fully operational.

However, in exceptional cases an alternative setting or cause analysis might become necessary, e.g. when the objects to be grounded are not detected repeatedly.



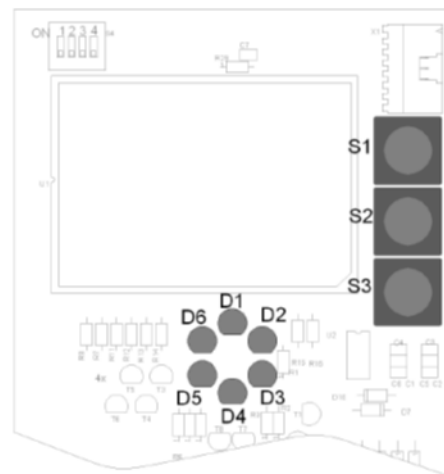
For all settings of the device, section 2 of this instructions (Installation) and section 3 (Commissioning and Configuration) must be observed. Special attention has to be paid to the security advices!

5.1. Settings elements (buttons, LED display)

The device is equipped with a LED multifunction display. It consists of six individual LEDs (D1 to D6) with a circular arrangement. Depending on the current display mode, the LEDs are switched on either all at the same time as a large/ full display or individually as a detailed display.

In case of the detailed display, the shown designation of the individual LEDs D1 to D6 applies.

The LEDs illuminate in red, green or orange. The switching of the display functions and the setting of the limit values and parameters are done with the push buttons S1 to S3 at the right side.



5.2. Measured value display

The display can be switched to a measured value display by using the buttons S1 to S3. The following measured values can be displayed:

- Measured value in relation to the current upper limit value of the object recognition
- Measured value in relation to the current lower limit value of the object recognition
- Type of the object impedance (ohmic / capacitive)
- Capacitance of the grounding cable
- Interfering voltage level in the grounding circuit

By pressing button S3 briefly, the respective measured value display ends and the standard operating status display is activated again.

5.2.1. Analyzing the upper limit of object recognition

The grounding clamp must be connected to the object to be grounded.

Step 1: Press button S1 briefly.

Step 2: LED D1 illuminates orange. It represents the center of the measured value display (measured value is equal to current limit value). Depending on the type of object to be grounded, indications described in the following table may be present.

Step 3: Press button S3 briefly to exit measured value display.

Display	Measured value	Meaning	
	<p>Green LEDs indicate Release</p> <p>Measured value inside release range (in this example by 3 steps)</p>	<p>Measured object capacitance is above the limit value (high enough for release state)</p>	<p>The capacitance of the object determines the measuring as is common for example with road tank trucks</p>
	<p>Red LEDs indicate No Release</p> <p>Measured value outside release range (in this example by 2 steps)</p>	<p>Measured object capacitance is too low</p>	
	<p>Green LEDs indicate Release</p> <p>Measured value inside release range (in this example by 4 steps)</p>	<p>Measured object resistance is below the limit value</p>	<p>The resistance of the object determines the measuring as is common for example with railway tank wagons</p>
	<p>Red LEDs indicate No Release</p> <p>Measured value outside release range (in this example by 3 steps)</p>	<p>Measured object resistance is too high</p>	

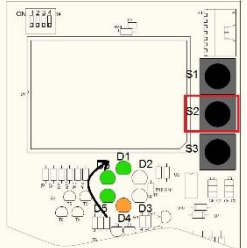
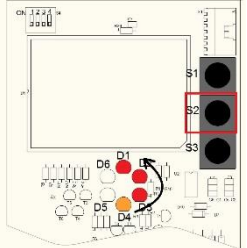
5.2.2. Analyzing the lower limit of object recognition

The grounding clamp must be connected to the object to be grounded.

Step 1: Press button S2 briefly.

Step 2: LED D4 illuminates orange. It represents the center of the measured value display (measured value is equal to current limit value). Indications described in the following table may be present.

Step 3: Press button S3 briefly to exit measured value display.

Display	Measured Value	Meaning	
	<p>Green LEDs indicate Release</p> <p>Measured value inside release range (in this example by 3 steps)</p>	<p>Measured object resistance is above the limit value</p>	<p>The evaluation of the lower limit is a resistance measurement</p>
	<p>Red LEDs indicate No Release</p> <p>Measured value outside release range (in this example by 3 steps)</p>	<p>Measured object resistance is too low</p>	<p>At the configuration for railway tank wagons the lower limit is not evaluated</p>

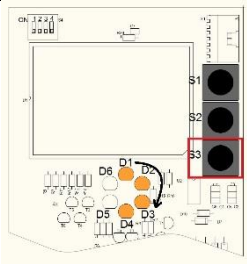

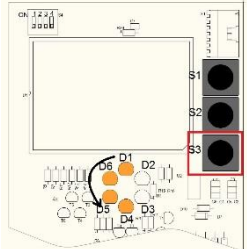

5.2.3. Display the object impedance type | phase angle

The grounding clamp must be connected to the object to be grounded.

Step 1: Press button S3 briefly.

Step 2: The display is realized with orange LEDs. LED D1 is the center of the measured value display (phase angle 45°). With a capacitive object impedance, further LEDs are illuminated clockwise. If the object is recognized as a resistor, further LEDs are illuminated counter-clockwise.

Step 3: Press button S3 briefly to exit measured value display.

Display	Measured value	Meaning	
	<p>Orange LEDs clockwise: The object has a capacitive impedance</p>	<p>The example shows a connected tank truck on a dry concrete road. The object impedance is in the capacitive range with a phase angle of 70°.</p>	<p>as is common for example with road tank trucks</p> 
	<p>Orange LEDs counter-clockwise: The object is detected as a resistor</p>		<p>as is common for example with railway tank wagons</p> 

5.2.4. Display the cable capacitance

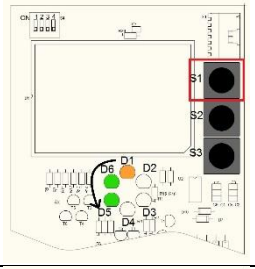
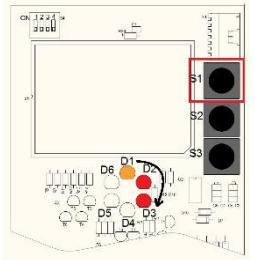
The grounding clamp must not be connected to the object to be grounded and the cable compensation function must be activated (configuration switch S4.3 set to ON).

The grounding control device is in operational state 'Activated Cable Compensation / Ready for Operation' (full display orange pulsating) or the full display indicates sporadically red light. The whole grounding cable must be unwound and spread as is common for object contacting.

Step 1: Press button S1 briefly.

Step 2: LED D1 illuminates orange. It represents the center of the measured value display. Indications described in the following table may be present.

Step 3: Press button S3 briefly to exit measured value display.

Display	Measured value	Meaning
	<p>Green LEDs counter-clockwise: Cable capacitance within the permitted range</p>	<p>The measured cable capacitance shows a permissible value. In this example it is two steps below the limit value.</p>
	<p>Red LEDs clockwise: Cable capacitance not in the permitted range</p>	<p>The measured cable capacitance is too high. Reasons could be an unfavorable cable laying or a too large cable length.</p>

Note: In case the grounding control device shows continuous red light with activated cable compensation function and not attached grounding clamp to an object to be grounded, thus, pressing button S1 will not enter the here described display of the cable capacitance, but instead the analysis of the upper limit value of the object recognition function (see [section 5.2.1](#)). The same applies for devices with deactivated cable compensation function.

5.2.5. Display the interfering voltage level in the grounding circuit

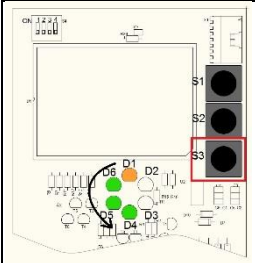
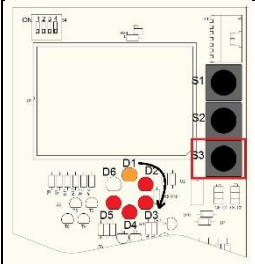
Potential equalization has to exist in the complete course of the erection of the intrinsically safe grounding circuit. It must be ensured that there are no interfering voltages which might lead to electro-magnetic influences or to unregulated stray currents.

The display of the interfering voltage level can be activated independently from the current operational mode of the grounding control device.

Step 1: Press button S3 long (about 3 seconds)

Step 2: LED D1 illuminates orange. It represents the center of the measured value display (measured value is equal to current limit value). Depending on the measured value, indications described in the following table may be present.

Step 3: Press button S3 briefly to exit measured value display.

Display	Measured value	Meaning
	Green LEDs counter-clockwise: Interfering voltages within the permitted range	Example: there are no interfering voltages measurable in the grounding circuit
	Red LEDs clockwise: Interfering voltages not in the permitted range	The permitted limit value is exceeded. The source of interference must be found and the interferences must be reduced by appropriate measures.

5.3. Limit value adjustment

The limit values for object recognition and interfering voltages are stored permanently in the internal data memory. The following limits can be changed and thereby adjusted to the characteristics of the system or the objects to be grounded:

- Upper limit value of object recognition
- Lower limit value of object recognition
- Limit value of permissible interfering voltages

Note: LED D1 or LED D4 respectively mark the center of the limit value setting range. The marked center value represents the factory-set limit value, so that limit setting is possible +/- 4 adjusting steps regarding factory-set limit value.

5.3.1. Adjusting the upper limit value of object recognition

Brief instruction:

1. Press button S1 long (about 3 s) to switch display to setting mode
2. Press button S1 briefly to increase upper limit value by one step
3. Press button S2 briefly to decrease upper limit value by one step
4. Press button S3 briefly to store the set limit value and to enter measured value display
5. Press button S3 briefly to exit measured value display

Note: 1 push for the button = 1 adjusting step, max. +/- 4 steps possible!

Precise Explanation: To set the upper limit of object recognition, button S1 has to be pressed (about 3 seconds) until the display changes to setting mode. Thus, LED D1 flashes orange and is the center of the setting range. The limit can be moved by +4 to -4 steps around this point.

Pressing button S1 briefly increases the limit, so that objects with a higher resistance or smaller capacitance are accepted. Increasing the limit value is indicated by another LED lighting up clockwise.

Pressing button S2 briefly decreases the limit, so that objects with smaller resistance or larger capacitance are accepted. This is indicated for values at the right side of the center LED D1 by reducing the illuminated LEDs by one, and for values below the center LED D1 by lighting up more LEDs in counter-clockwise order.

The change of the limit values affects the evaluation of the measurement and the issuing of filling release directly. If the currently measured value is outside the release range, the LEDs are illuminated red. If the adjustment of the limit values leads to the release state, the LEDs change to green light.

Pressing button S3 briefly exits the setting mode and switches to the measured value display. The setting is immediately accepted and stored permanently, even after the device has been switched off. Pressing button S3 again switches to the main status display.

5.3.2. Adjusting the lower limit value of object recognition

Brief instruction:

1. Press button S2 long (about 3 s) to switch display to setting mode
2. Press button S1 briefly to increase lower limit value by one step
3. Press button S2 briefly to decrease lower limit value by one step
4. Press button S3 briefly to store the set limit value and to enter measured value display
5. Press button S3 briefly to exit measured value display

Note: 1 push for the button = 1 adjusting step, max. +/- 4 steps possible!

Precise Explanation: To set the lower limit of object recognition, button S2 has to be pressed (about 3 seconds) until the display changes to setting mode. Thus, LED D4 flashes orange and is the center of the setting range. The limit can be moved by +4 to -4 steps around this point.

Pressing button S1 briefly increases the limit, so that a higher resistance of the object is required for filling release. Increasing the limit value is indicated by another LED lighting up clockwise.

Pressing button S2 briefly decreases the limit, so that objects with a lower resistance are accepted. This is indicated for values below the center LED D4 by lighting up more LEDs in counter-clockwise order.

The change of the limit values affects the evaluation of the measurement directly. Filling release is indicated by green lighted LEDs. If the currently measured value is still below the limit, the LEDs light red.

Pressing button S3 briefly exits the setting mode and switches to the measured value display. The setting is immediately accepted and stored permanently. Pressing button S3 again switches to the main status display.

5.3.3. Adjusting the limit value for interfering voltage supervision

Brief instruction:

1. Press button S3 long (about 3 s) to enter interfering voltage display mode
2. Press button S3 again for long, to enter setting mode; LED D1 flashes orange
3. Press button S1 briefly to increase permissible interfering voltage level by one step (LEDs are lighted up clockwise)
4. Press button S2 briefly to decrease permissible interfering voltage level by one step (LEDs are lighted up counter-clockwise)
5. Press button S3 briefly to store the setting and to enter the interfering voltage display mode
6. Press button S3 again briefly to exit interfering voltage display mode

Note: 1 push for the button = 1 adjusting step, max. +/- 4 steps possible!

Precise Explanation: First of all the measured value display of the interfering voltage level has to be activated. For this, press button S3 for long; see section 5.2.5 too.

Thereon, pressing button S3 for long once again, activates the setting mode for the limit value. LED D1 now flashes orange and represents the center of the setting range. The limit can be moved by +4 to -4 adjusting steps around the center value.

Pressing button S1 briefly increases the limit, so that a higher level of interfering voltages is accepted. Increasing the limit value is indicated by another LED lighting up clockwise.

Pressing button S2 briefly decreases the limit. The supervision of the interfering voltages becomes more sensitive in order to increase the accuracy of measurement of the object recognition. Below the center LED D1 another LED lights up counter-clockwise.

Pressing button S3 briefly exits the setting mode and switches to the measured value display. The setting is stored permanently now. Pressing button S3 again switches to the main status display.

5.3.4. Reset the limit value adjustment

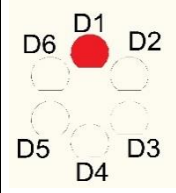
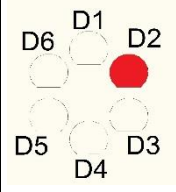
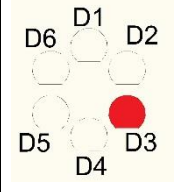
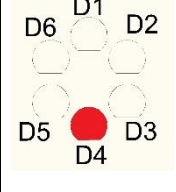
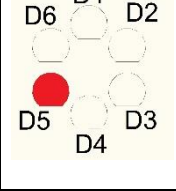
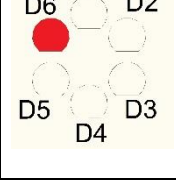
The limit values of the object recognition and the interfering voltage supervision can be set back to factory setting:

Procedure:

1. De-energize the measuring module by unplugging flat plug X2 at the bottom of the circuit board
2. Press and hold button S3 while plug again X2 into its plug housing
3. LED D1 lights up green, then after about 1 second release button S3

5.4. Error codes (Detailed display)

The automatic diagnosis system indicates error states at the detailed display. To read the detailed display, the device housing has to be opened. Moreover, the indications of the full display as described in [section 4.1](#) have to be observed.

Status display	Indicated errors	Error correction
 <p>D1 red flashing</p>	<p>Invalid setting of configuration switch S4 (S4.1 = OFF and S.4.2 = OFF)</p>	<p>Set configuration switch S4 according to section 3.1</p>
 <p>D2 red flashing</p>	<p>Invalid limit values The device failed to load valid limits of object recognition after switching on</p>	<p>Reload standard limit values by pressing button S3 for long until the error indication ends.</p>
 <p>D3 red flashing</p>	<p>Invalid cable capacitance</p>	<p>Check cable capacitance (section 3.2, section 5.2.4)</p>
 <p>D4 red flashing</p>	<p>Invalid interfering voltage level</p>	<p>Check and eliminate nearby interfering voltage sources (section 3.3, section 5.2.5)</p>
 <p>D5 red flashing</p>	<p>Device malfunction measuring module</p>	<p>Contact supplier / manufacturer</p>
 <p>D6 red flashing</p>	<p>Device malfunction relay monitoring</p>	<p>Contact supplier / manufacturer</p>

6. Maintenance

Repairs of the functional modules of the device must be performed by the manufacturer only. The supply module is sand-capsuled in the aluminum profile housing, closed permanently and **must not be opened**.

Within regular device testing, e.g. according to German Health and Safety at Work Regulations (BetrSichV), we recommend verifying the intactness of the housing as well as of the grounding cable and grounding clamp. In doing so, check also:

- Proper sealing of the cover gasket
- Tighten condition of cable connections / cable glands (necessary for type of housing protection IP65)

However, a regular check or re-adjustment of the switching thresholds (limit values) of the measuring module is not necessary and should only be performed when a malfunction is detected.

Do not use aggressive and abrasive cleaning agents to clean the housing or other petroleum-like substances since this can affect the characteristics of the housing gasket. If heavily soiled, we recommend using denatured alcohol as cleaning agent.

6.1. Accessories and spare parts

The Grounding Control Device EKX-4 has a variety of rugged, UV and oil resistant straight and coiled grounding cables in various designs and lengths, with or without a cable reel. Due to the special configuration of the grounding cables for the cable compensation measurement, only TIMM original cables with grounding clamp or grounding socket should be used. You will find an overview of the available accessories for the grounding control device EKX-4 in our online shop at <https://www.timm-technology.com/en/shop-2/>. On demand, we will also send you our accessories overview.



Straight neoprene grounding cable with clamp EZ-1



Coiled grounding cable with clamp EZ-1



Cable reel with neoprene grounding cable

The following items are available as replacement parts for the EKX-4 that can be exchanged by the customers:



Operating board with measuring module

(item number: LPB11-352 (when ordering, please specify whether intended for EKX-4 or EKX-4 2-pole)



Mounting plate with power supply module

(without operating board with measuring module, without Ex i output line, item number: EKX4MPSB)



Mounting plate with power supply module incl. operating board with measuring module and complete cable set

(item number: EKX4MPSBMM, when ordering, please specify whether intended for EKX-4 or EKX-4 2-pole)

6.2. Periodical function test (Proof-test)

The periodical function test conduces to check the safety function of the device. The functionality must be checked at appropriate intervals and must not exceed an interval of 5 years. The choice of the type of inspection is the responsibility of the operator.

Required equipment: Testing equipment TQ2

The periodical test (functional test) must be carried out in accordance with the procedure for carrying out the test as described in the operating instructions for the testing equipment TQ2.

If the functional test is negative, the device must be taken out of operation and, if necessary, other measures taken to maintain the safe status of the safety-related system.



Testing Equipment TQ2

7. Return and Disposal

Only for customers located within the European Community:

According to the Waste Electrical and Electronic Equipment Directive 2002/96/EC (WEEE) and the German act 'Gesetz über das Inverkehrbringen, die Rücknahme und die umweltverträgliche Entsorgung von Elektro- und Elektronikgeräten (ElektroG) / Act governing the Sale, Return and Environmentally Sound Disposal of Electrical and Electronic Equipment' of March 16th 2005, used electrical equipment must be collected separately and disposed of in an environmentally-friendly manner. This measure is intended to protect the environment and contributes to reducing the amount of waste and preventing pollution by recycling the devices and the associated components and raw materials.



Waste electronic and electrical equipment used in private households (known as B2C equipment) must therefore be submitted at the designated collection centers of the municipal public waste management authorities (e.g. recycling centers).

B2C devices are characterized by the crossed-out waste bin. In contrast to this, the devices and equipment manufactured by Timm are, however, professional control and measurement devices which are intended exclusively for commercial and industrial use (so-called B2B devices).

For these devices, identified by a type plate with the brand name TIMM, a serial number and date of delivery, H. Timm Elektronik GmbH handles the proper disposal of waste as long as such devices were introduced to the market after August 12th 2005. This is the reason our devices are **not** labelled with the symbol of a crossed-out rubbish bin. All devices manufactured by Timm Elektronik must therefore not be submitted to the collection centers of the public disposal companies, but must be sent back to us for disposal.

For the free-of-charge return shipment of waste electrical and electronic equipment, the shipment must be marked with the note "**waste equipment for disposal**" and send to the following address:

Timm Technology GmbH
Senefelder-Ring 45
21465 Reinbek
GERMANY

Please note that we do not accept shipments without proper postage. Also, no waste electrical and electronic equipment (WEEE) delivered prior to August 13th 2005 will be accepted for disposal. The user himself is responsible for the proper disposal of old electrical equipment supplied prior to that date.



8. Technical Annex

8.1. Technical specifications

Device category – type of protection:	<p>⊕ II 2 G – Ex eb q [ib] IIC T4 Gb</p> <p>⊕ II 2 D – Ex tb [ib] IIIC T80°C Db</p>
EC Type Examination:	TÜV 11 ATEX 080882
Power Supply:	
Type of protection:	Ex eb
Supply voltage:	230 V ±10%, 50 Hz, about 10 VA
Measuring circuit:	Only for connecting the grounding cable
Type of protection:	Ex ib / ibD
Maximum values:	U _o = 6.7 V I _o = 68 mA P _o = 114 mW
Maximum line length:	50 m (Ex-related specification, functional limitations must be observed)
Note:	The measuring circuit is grounded.
Contact Release Output:	2 potential-free closing contacts, internally monitored
Type of protection:	Ex eb
Switching power max.:	250 VAC 3 A 100 VA
Auxiliary Output:	potential-free changeover contact, not monitored
Type of protection:	Ex eb
Switching power max.:	250 VAC 3 A 100 VA
Electronic Release Output:	1 NAMUR-compatible transistor output
Type of protection:	Ex ib
Switching power max.:	U _i = 20 V I _i = 20 mA P _i = 400 mW
	Inner capacitances C _i negligibly small
	Inner inductances L _i negligibly small
Internal resistance:	1 kΩ or 11 kΩ
Modulation:	10 Hz, duty factor 1:1
Cable glands:	
Cable gland M16 x 1.5 (KLE 3):	permissible cable diameter = 4.5 - 10 mm, Tightening torque = 7 Nm
Cable gland M20 x 1.5 (KLE 1, 2, 4):	permissible cable diameter = 7 - 13 mm, Tightening torque = 12 Nm
Ambient operating temperature:	- 30 °C to +60 °C
Protection of enclosure:	IP 65
Dimensions: (H x W x D):	306 mm x 190 mm x 110 mm
Weight:	4.5 kg

8.2. Safety characteristics for functional safety

The following table shows the relevant parameters and values for evaluating the functional safety of the device.

System	Parameters and values acc. to IEC 61508					
	λ_{SD} [1/h]	λ_{SU} [1/h]	λ_{DD} [1/h]	λ_{DU} [1/h]	PFD	SFF [%]
EKX-4 total	9,46E-07	1,00E-07	5,16E-07	1,68E-08	3,72E-04	96,98 %

Lambda λ (Failure rate)

- λ_{SD} : Failure rate for safe, detectable failures
- λ_{SU} : Failure rate for safe, unrecognisable failures
- λ_{DD} : Failure rate for dangerous, detectable failures
- λ_{DU} : Failure rate for dangerous, unrecognisable failures

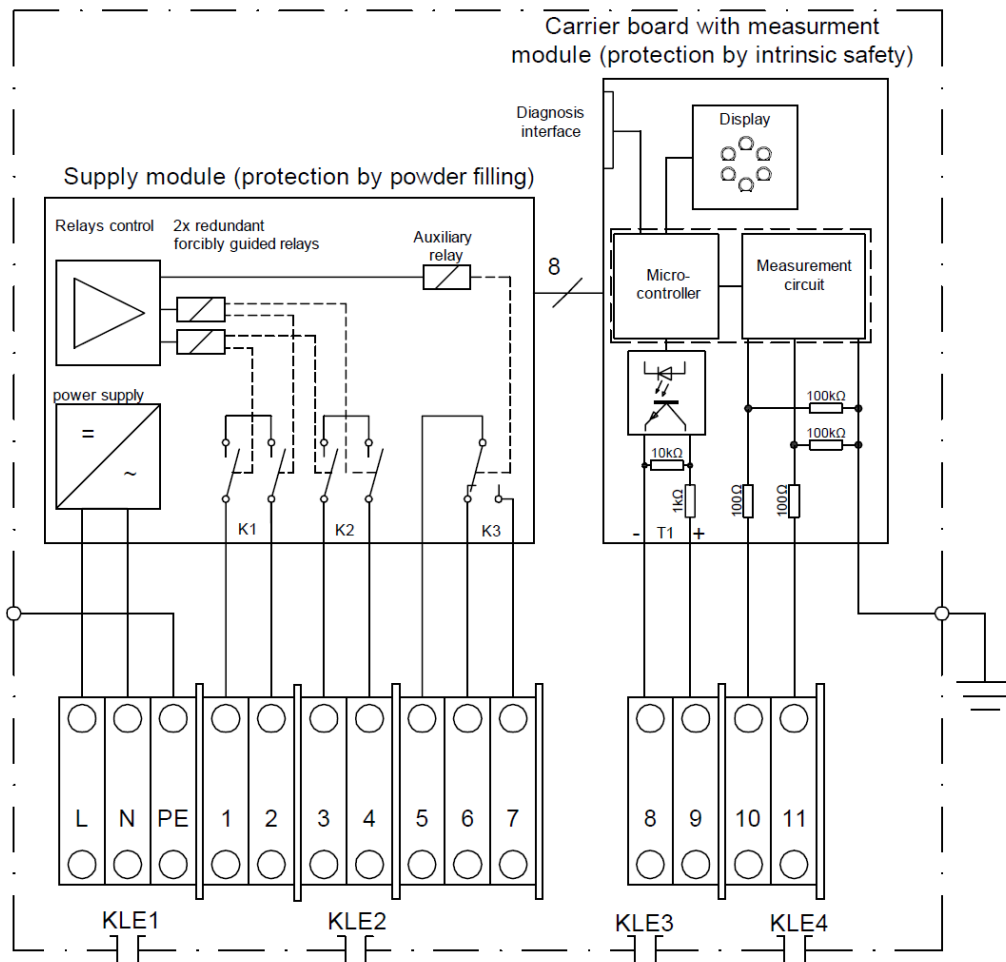
PFD (Probability of Failure on Demand)

Probability of failure of a safety function at a low request rate

SFF (Safe Failure Fraction)

Proportion of safe failures in the total number of failures

8.3. Drawings

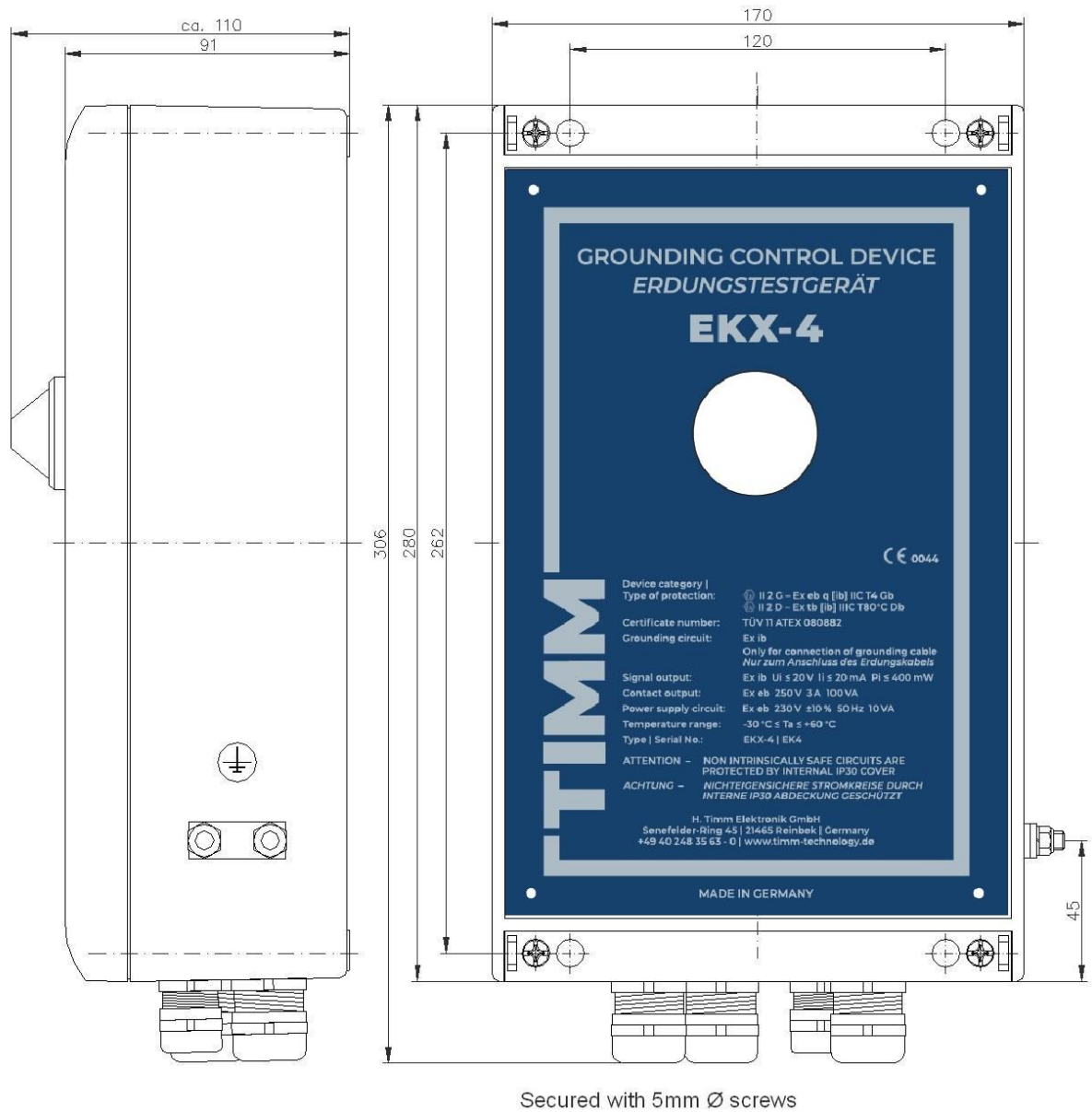


- L, N, PE: Power supply 230V ($\pm 10\%$) 50Hz, ca. 10VA
- 1 - 2: Potential-free relays-contacts 1: N/O (internally monitored output)
- 3 - 4: Potential-free relays-contacts 2: N/O (internally monitored output)
- 5 - 7: Potential-free relays-contacts 3 (auxiliary relay)
- Contact rating (terminal 1-7): max. 250VAC, 3A, 100VA
- 8 - 9: Potential-free Ex-i transistor output, NAMUR-compatibel
Maximum values: $U_i=20V$, $I_i=20mA$, $P_i=400mW$
- 10: Grounding cable connection terminal No.10
- 11: Grounding cable compensation terminal No.11
Use only cables with a wire diameter of 0.5 - 2.5 mm² (AWG 20 to 12)

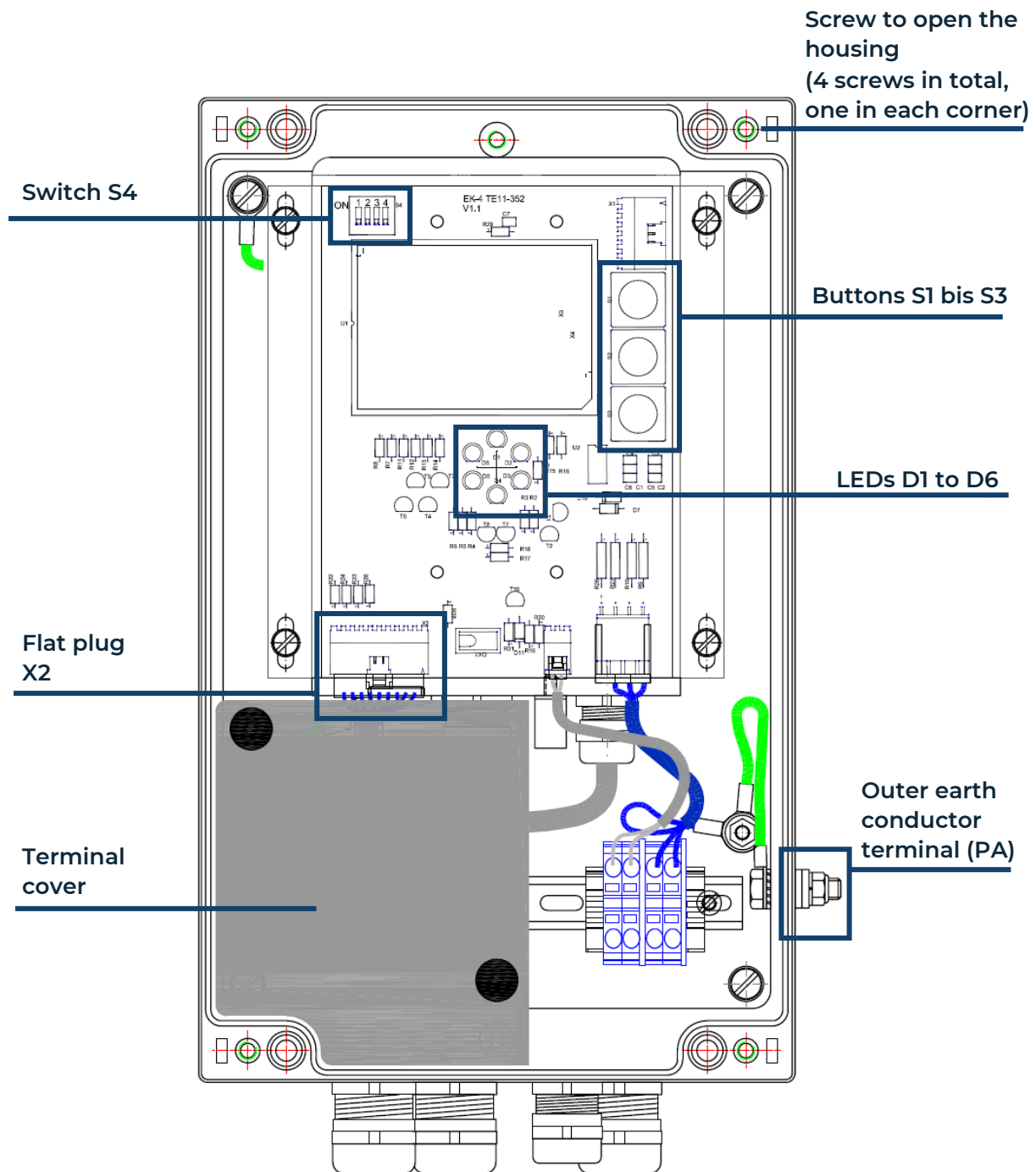
Cable and cabel glands:

- KLE1 (M20) Power supply cable diameter 7-13mm
- KLE2 (M20) Contact outputs cable diameter 7-13mm
- KLE3 (M16) NAMUR transistor output cable diameter 4.5-10mm
- KLE4 (M20) Grounding cable diameter 7-13mm

Drawing 1: Connection diagram





Drawing 2: Dimensional drawing



Drawing 3: Connection diagram

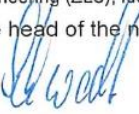
8.4. EC Type Examination Certificate

<p>Translation</p> <p>(1) EC-Type-Examination Certificate</p> <p>(2) Equipment and protective systems intended for use in potentially explosive atmospheres, Directive 94/9/EC</p> <p>(3) Certificate Number TÜV 11 ATEX 080882</p> <p>(4) for the equipment: Grounding Control Device type EKX-4</p> <p>(5) of the manufacturer: H. Timm Elektronik GmbH</p> <p>(6) Address: Humboldtstrasse 29 21509 Glinde Deutschland</p> <p>Order number: 8000394236</p> <p>Date of issue: 2012-02-21</p> <p>(7) The design of this equipment or protective system and any acceptable variation thereto are specified in the schedule to this EC-Type-Examination Certificate and the documents therein referred to.</p> <p>(8) The TÜV NORD CERT GmbH, notified body No. 0044 in accordance with Article 9 of the Council Directive of the EC of March 23, 1994 (94/9/EC), certifies that this equipment or protective system 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 No. 11 203 080882.</p> <p>(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:</p> <table border="0"> <tr> <td>EN 60079-0:2009</td> <td>EN 60079-5:2007</td> <td>EN 60079-7:2007</td> </tr> <tr> <td>EN 60079-11:2007</td> <td>EN 60079-31:2009</td> <td>EN 61241-11:2006</td> </tr> </table> <p>(10) If the sign "X" is placed after the certificate number, it indicates that the equipment or protective system is subject to special conditions for safe use specified in the schedule to this certificate.</p> <p>(11) This EC-type-examination certificate relates only to the design, examination and tests of the specified equipment in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.</p> <p>(12) The marking of the equipment or protective system must include the following:</p>	EN 60079-0:2009	EN 60079-5:2007	EN 60079-7:2007	EN 60079-11:2007	EN 60079-31:2009	EN 61241-11:2006	 
EN 60079-0:2009	EN 60079-5:2007	EN 60079-7:2007					
EN 60079-11:2007	EN 60079-31:2009	EN 61241-11:2006					

⊕ II 2 G Ex e q [ib] IIC T4 Gb bzw. II 2 D Ex t [ibD] IIC T80°C Db

TÜV NORD CERT GmbH, Langemarckstraße 20, 45141 Essen, notified by the central office of the countries for safety engineering (ZLS), Ident. Nr. 0044, legal successor of the TÜV NORD CERT GmbH & Co. KG Ident. Nr. 0032

The head of the notified body



Schwedt

Hanover office, Am TÜV 1, 30519 Hanover, Fon +49 (0)511 986 1455, Fax +49 (0)511 986 1590

This certificate may only be reproduced without any change, schedule included.
Excerpts or changes shall be allowed by the TÜV NORD CERT GmbH

P17-F-011 06-11 page 1/3



(13) **SCHEDULE**

(14) **EC-Type-Examination Certificate No. TÜV 11 ATEX 080882**

(15) Description of equipment

The grounding control device type EKX-4 together with the connected grounding cable with grounding clamp is intended for the supervision of the electrostatic grounding of containers or tank trucks during the decanting or loading with products which can form explosive gas or dust atmospheres.

Implemented into the device is a power supply unit which is inserted in an additional enclosure and realized in type of protection "powder filling". The connection of the supply voltage occurs with serial terminal blocks in type of protection "increased safety" together with three potential free switch contacts. The inserted electronics is carried out in type of protection "intrinsic safety" and provides, likewise via terminal blocks, the measuring circuit for the connection of the grounding cable and the electronic signal output (NAMUR). The enclosure is realized with a degree of protection IP65 and type of protection "dust ignition protection by enclosure".

The device is intended for the installation in zone 1 or zone 21 and corresponds as a device of the group II to the equipment protection level Gb respectively as a device of the group III to the protection level Db.

Technical data

Permissible ambient temperature range:	-30°C ≤ T _a ≤ +60 °C
Power supply (terminals L and N)	in type of protection Ex e 230V ±10% 50Hz appr. 10VA
Permissible outputs (terminals 1 and 2 resp. 3 and 4)	2 isolated make contacts in type of protection Ex e Switching power max. 250VAC, 3A, 100VA
Controlling output (terminals 5, 6 and 7)	1 isolated two-way contact in type of protection Ex e Switching power max. 250VAC, 3A, 100VA
NAMUR signal output (terminals 8 and 9)	in type of protection „Intrinsic safety“ Ex ib IIC only for the connection to certified intrinsic safe circuits. Maximum values: U _i = 20 V I _i = 20 mA P _i = 400 mW
	The effective inner capacitances and inductances are negligibly small.



Schedule EC-Type Examination Certificate No. TÜV 11 ATEX 080882

Measuring circuit in type of protection „Intrinsic safety“ Ex ib IIC
(terminals 10 and 11) resp. Ex ibD IIIC

only for the connection of the ground cable with a maximum length of 50m.

Maximum values: $U_o = 6,7 \text{ V}$
 $I_o = 68 \text{ mA}$
 $P_o = 114 \text{ mW}$

Note:

The measuring circuit is galvanically connected to ground potential. Potential equalization has to exist in the complete course of the erection of the intrinsically safe measuring circuit.

(16) Test documents are listed in the test report No. 11 203 080882

(17) Special conditions for safe use

none

(18) Essential Health and Safety Requirements

no additional ones



8.5. Certificate of functional safety



ZERTIFIKAT CERTIFICATE

Hiermit wird bescheinigt, dass das unten beschriebene Produkt der Firma
This certifies that the product mentioned below from company

H. Timm Elektronik GmbH
Humboldtstraße 29
21509 Glinde
Deutschland

die Anforderungen der folgenden Prüfunterlage(n) erfüllt.
fulfills the requirements of the following test regulations.

Geprüft nach <i>Tested in accordance with</i>	EN 61508:2010 (SIL 2)
Beschreibung des Produktes (Details s. Anlage 1) <i>Description of product (Details see Annex 1)</i>	Erdungstestgerät <i>Grounding Control Device</i>
Typenbezeichnung <i>Type Designation</i>	EKX-4
Bemerkung <i>Remark</i>	Siehe Anlage 1 <i>See Annex 1</i>

Dieses Zertifikat bescheinigt das Ergebnis der Prüfung an dem vorgestellten Prüfgegenstand. Eine allgemein gültige Aussage über die Qualität der Produkte aus der laufenden Fertigung kann hieraus nicht abgeleitet werden.
This certifies the result of the examination of the product sample submitted by the manufacturer. A general statement concerning the quality of the products from the series manufacture cannot be derived there from.

Registrier-Nr. / Registered No. 44 799 16129102	Gültigkeit / Validity
Prüfbericht Nr. / Test Report No. 3523 6180	von / from 2019-04-03
Aktenzeichen / File reference 8003000147	bis / until 2024-04-02



Zertifizierungsstelle für
TÜV NORD CERT GmbH

Essen, 2019-04-03

TÜV NORD CERT GmbH Langemarckstraße 20 45141 Essen www.tuev-nord-cert.de technology@tuev-nord.de

Bitte beachten Sie auch die umseitigen Hinweise
Please also pay attention to the information stated overleaf

Hinweise zum TÜV NORD- Zertifikat

Hints to the TÜV NORD - Certificate

Dieses TÜV NORD - Zertifikat gilt nur für die umseitig bezeichnete Firma und das angegebene Produkt. Es kann nur von der Zertifizierungsstelle auf Dritte übertragen werden.

This TÜV NORD - certificate only applies to the firm stated overleaf and the specified product. It may only be transferred to third parties by the certification body.

Notwendige Bedienungs- und Montageanweisungen müssen jedem Produkt beigelegt werden.

Each product must be accompanied by the instructions which are necessary for its operation and installation.

Jedes Produkt muss deutlich einen Hinweis auf den Hersteller oder Importeur und eine Typenbezeichnung tragen, damit die Identität des geprüften Baumusters mit den serienmäßig in den Verkehr gebrachten Produkten festgestellt werden kann.

Each product must bear a distinct indication of the manufacturer or importer and a type designation so that the identity of the tested sample may be determined with the product launched on the market as a standard.

Der Inhaber des TÜV NORD - Zertifikates ist verpflichtet, die Fertigung der Produkte laufend auf Übereinstimmung mit den Prüfbestimmungen zu überwachen und insbesondere die in den Prüfbestimmungen festgelegten oder von der Zertifizierungsstelle geforderten Kontrollprüfungen ordnungsgemäß durchzuführen.

The bearer of the TÜV NORD - Certificate undertakes to regularly supervise the manufacturing of products for compliance with the test specifications and in particular properly carry out the checks which are stated in the specifications or required by the test laboratory.

Bei Änderungen am geprüften Produkt ist die Zertifizierungsstelle umgehend zu verständigen.

In case of modifications of the tested product the certification body must be informed immediately.

Bei Änderungen und bei befristeten Zertifikaten ist das Zertifikat nach Ablauf der Gültigkeit urschriftlich an die Zertifizierungsstelle zurückzugeben. Die Zertifizierungsstelle entscheidet, ob das Zertifikat ergänzt werden kann oder ob eine erneute Zertifizierung erforderlich ist.

In case of modifications and expiration of validity the original certificate must be returned to the certification body immediately. The certification body decides if the certificate can be supplemented or whether a new certification is required.

Für das TÜV NORD - Zertifikat gelten außer den vorgenannten Bedingungen auch alle übrigen Bestimmungen des allgemeinen Vertrages. Es hat solange Gültigkeit, wie die Regeln der Technik gelten, die der Prüfung zu Grunde gelegt worden sind, sofern es nicht auf Grund der Bedingungen des allgemeinen Vertrages früher zurückgezogen wird.

In addition to the conditions stated above, all other provisions of the General Agreement are applicable to the TÜV NORD - Certificate. It will be valid as long as the rules of technology on which the test was based are valid, unless revoked previously pursuant to the provisions of the General Agreement.

Dieses TÜV NORD - Zertifikat verliert seine Gültigkeit und muss unverzüglich der Zertifizierungsstelle zurückgegeben werden, falls es ungültig wird oder für ungültig erklärt wird.

This TÜV NORD - Certificate will become invalid and shall be returned to the certification body immediately in the event that it shall expire without delay when it has expired or revoked.



ANLAGE ANNEX

Anlage 1, Seite 1 von 2
Annex 1, page 1 of 2

zum Zertifikat Registrier-Nr. / to Certificate Registration No. 44 799 16129102

Produktbeschreibung:
Product description:

Das Erdungstestgerät EKX-4 wird verwendet, um eine sichere temporäre elektrostatische Erdungsverbindung eines Objektes herzustellen und diese permanent zu überwachen (Sicherheitsfunktion). Beim Überschreiten eines maximal zulässigen Grenzwertes für die Impedanz eines angeschlossenen Objektes und der Erdungsverbindung, wird der sichere Zustand durch das Abschalten der Sicherheits-Relaiskontakte (1-2 und 3-4) eingeleitet.

The Grounding Control Device EKX-4 is used to build up a safe, temporary electrostatic ground connection of an object and to monitor the impedance of this connection permanently (safety function). In case of exceeding a max. admissible threshold of the impedance of the connected object and the ground connection, the safe state is entered by switching off the safety related relay contacts (1-2 and 3-4).

Technische Daten:
Technical data:

Versorgungsspannung: <i>Supply Voltage:</i>	230 V ± 10 % 230 V ± 10 %
Sicherheits-Relaiskontakte: <i>Safety related relay contacts:</i>	2 Schließerkontakte, 250 VAC, 3 A 2 NO contacts, 250 VAC, 3 A
Umgebungstemperatur im Betrieb: <i>Operational ambient temperature range:</i>	-30 °C ... 60 °C -30 °C ... 60 °C
Gehäuseschutzart: <i>Ingress Protection Level:</i>	IP 65



Zertifizierungsstelle für
TÜV NORD CERT GmbH

Essen, 2019-04-03

TÜV NORD CERT GmbH Langemarckstraße 20 45141 Essen www.tuev-nord-cert.de technology@tuev-nord.de





ANLAGE ANNEX

Anlage 1, Seite 2 von 2
Annex 1, page 2 of 2

zum Zertifikat Registrier-Nr. / to Certificate Registration No. 44 799 16129102

Hinweise zur sicheren
Verwendung:
Notes for safe use:

1. Für die vollständige Beurteilung der funktionalen Sicherheit einer Sicherheitsfunktion müssen alle Anforderungen der EN 61508 auf die gesamte Sicherheitsfunktion angewendet werden, in der das Erdungstestgerät EKX-4 zur Anwendung kommt.

For a complete functional safety assessment of a safety function, all requirements of EN 61508 have to be applied to the complete safety function in which the Grounding Control Device EKX-4 is used.

2. Die Gültigkeit der Prüfergebnisse ist nur für die folgenden Versionen gegeben:
The validity of the assessment is only given for the following versions:

Hardware:

Versorgungsplatine: LPB11-345BV1.0
Trägerplatine: LPB11-342BV1.1
Messmodul: LPB11-338V1.0
LPB11-339AV1.0

Software: EKX-4 v.1.31

Md5-Checksum:

Variante 1-polig: f6200748db8ba64e3f90abf6605d6fd3
Variante 2-polig: d9cf1ce03666a36693171d3deddc855d



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8.6. EU Declaration of Conformity



EU-Konformitätserklärung

EU Declaration of Conformity

Timm Technology GmbH | Senefelder-Ring 45 | 21465 Reinbek | Germany

Erklärt als Hersteller in alleiniger Verantwortung, dass das Produkt |
declares in its sole responsibility as manufacturer that the product

Erdungstestgerät Typ EKX-4

Grounding Control Device type EKX-4

mit den Anforderungen der folgenden EU-Richtlinien und harmonisierten Normen
übereinstimmt | *is in conformity with the requirements of the following EU directives
and harmonised standards:*

EU Richtlinien <i>EU Directives</i>	Normen <i>Standards</i>
EMV-Richtlinie 2014/30/EU <i>EMC Directive 2014/30/EU</i>	EN 55011:2016 + A1:2017 + A11:2020 + A2:2021 EN 61326-1:2013
ATEX-Richtlinie 2014/34/EU <i>ATEX Directive 2014/34/EU</i>	EN IEC 60079-0:2018 EN 60079-5:2015 EN IEC 60079-7:2015/A1:2018 EN 60079-11:2012 EN 60079-31:2014
RoHS-Richtlinie 2011/65/EU <i>RoHS Directive 2011/65/EU</i>	EN IEC 63000:2018

ATEX-Kennzeichnung | *ATEX-Marking:*

II 2 G Ex eb q [ib] IIC T4 Gb
 II 2 D Ex tb [ib] IIIC T80°C Db 0044

EG-Baumusterprüfbescheinigung |
EC Type Examination Certificate:

TÜV 11 ATEX 080882
(TÜV NORD CERT GmbH, Geschäftsstelle
Hannover, Am TÜV 1, 30519 Hannover)

Reinbek, 12.10.2022

Ort und Datum |
Place and date

Dr. Thomas Overbeck
 Geschäftsführer | *General Manager*

(Fortsetzung Seite 2 | *continue page 2*)

info@timm-technology.de
 www.timm-technology.de

12.10.2022 | V1.5 | EKX-4 Konformitätserklärung 221012
1 | 2



Seite 2 der EU-Konformitätserklärung zum Erdungstestgerät Typ EKX-4

Page 2 of EU Declaration of Conformity for the Grounding Control Device type EKX-4

Anlagen: |

Enclosures:

EG-Baumusterprüfbescheinigung TÜV 11 ATEX 080882 |
EC-Type-Examination Certificate TÜV 11 ATEX 080882

Herstellereklärung zur Übereinstimmung der genannten
Normenstände vom 12.10.2022 |
*Manufacturer's Declaration on the compliance of the stated standards,
dated 12/10/2022*

Anerkennung des Qualitätssicherungssystems TÜV 98 ATEX 1362Q |
Production quality assessment notification TÜV 98 ATEX 1362Q





Herstellererklärung zur Übereinstimmung der genannten Normenstände als Anlage zur EU-Konformitätserklärung vom 12.10.2022

Manufacturer's Declaration on the compliance of the stated standards as enclosure to EU Declaration of Conformity dated 12/10/2022

Timm Technology GmbH | Senefelder-Ring 45 | 21465 Reinbek | Germany

bestätigt auf der Grundlage eigenverantwortlich durchgeführter Bewertungen die Übereinstimmung der in den folgenden, in der EG-Baumusterprüfbescheinigung TÜV 11 ATEX 080882 aufgeführten Europäischen Normen | *confirms on basis of assessments under our manufacturer's responsibility the compliance of the following standards listed in the EC-Type-Examination Certificate TÜV 11 ATEX 080882*

EN 60079-0:2009	Explosionsfähige Atmosphäre - Teil 0: Geräte - Allgemeine Anforderungen <i>Explosive atmospheres - Part 0: Equipment - General requirements</i>
EN 60079-5:2007	Explosionsfähige Atmosphäre - Teil 5: Geräteschutz durch Sandkapselung "q" <i>Explosive atmospheres - Part 5: Equipment protection by powder filling "q"</i>
EN 60079-7:2007	Explosionsfähige Atmosphäre - Teil 7: Geräteschutz durch erhöhte Sicherheit "e" <i>Explosive atmospheres - Part 7: Equipment protection by increased safety "e"</i>
EN 60079-11:2007	Explosionsfähige Atmosphäre - Teil 11: Geräteschutz durch Eigensicherheit "i" <i>Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"</i>
EN 61241-11:2006	Elektrische Betriebsmittel zur Verwendung in Bereichen mit brennbarem Staub - Teil 11: Schutz durch Eigensicherheit "iD" <i>Electrical apparatus for use in the presence of combustible dust - Part 11: Protection by intrinsic safety "iD"</i>
EN 60079-31:2009	Explosionsfähige Atmosphäre - Teil 31: Geräte-Staubexplosionsschutz durch Gehäuse "t" <i>Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"</i>

festgelegten Anforderungen an die Konzeption und die Bauart des | *referring the requirements related to the design and construction of the*

Erdungstestgerätes Typ EKX-4
Grounding Control Device type EKX-4

mit den Anforderungen, der zum Zeitpunkt der Ausstellung dieser EU-Konformitätserklärung im Amtsblatt der Europäischen Union genannten Normausgaben: | *with the requirements of the EN standards stated in the Journal of the European Union at the date of the issue of this EU Declaration of Conformity:*

(Fortsetzung Seite 2 | continue page 2)



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12.10.2022 | V1.5 | EKX-4 Herstellererklärung 221012
1 | 2





Seite 2 der Herstellererklärung zur Übereinstimmung der genannten Normenstände als Anlage zur EU-Konformitätserklärung vom 12.10.2022

Page 2 of the Manufacturer's Declaration on the compliance of the stated standards as enclosure to EU Declaration of Conformity dated 12/10/2022

EN IEC 60079-0:2018	Explosionsgefährdete Bereiche - Teil 0: Betriebsmittel - Allgemeine Anforderungen Explosive atmospheres - Part 0: Equipment - General requirements
EN 60079-5:2015	Explosionsgefährdete Bereiche - Teil 5: Geräteschutz durch Sandkapselung "q" Explosive atmospheres - Part 5: Equipment protection by powder filling "q"
EN IEC 60079-7:2015/A1:2018	Explosionsgefährdete Bereiche - Teil 7: Geräteschutz durch erhöhte Sicherheit "e" Explosive atmospheres - Part 7: Equipment protection by increased safety "e"
EN 60079-11:2012	Explosionsgefährdete Bereiche - Teil 11: Geräteschutz durch Eigensicherheit "i" Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
EN 60079-31:2013	Explosionsfähige Atmosphäre - Teil 31: Geräte-Staubexplosionsschutz durch Gehäuse "t" Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"

Diese Erklärung wird verantwortlich für den Hersteller abgegeben durch: |

This declaration is given under the sole responsibility of the manufacturer by:

Reinbek, 12.10.2022

Ort und Datum |
Place and date



Dr. Thomas Overbeck
Geschäftsführer | General Manager

