IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.:	**IECEx PTB 17.0036**	Page 1 of 4	Certificate history:
Status:	**Current**	Issue No: 0	
Date of Issue:	2018-02-28		
Applicant:	**H. Timm Elektronik GmbH** Humboldtstraße 29, 21509 Glinde, Germany **Germany**		
Equipment:	**Marine Grounding System, type SEK-3 with associated grounding clamp, type SKS-4A**		
Optional accessory:			
Type of Protection:	**Increased Safety, Intrinsic Safety, Powder filling**		
Marking:	**Ex eb ib q [ib] IIB T4 Gb (SEK-3) or** **Ex eb ib IIB T4 Gb (SKS-4A)**		

Approved for issue on behalf of the IECEx Certification Body: **Dr.-Ing. F. Lienesch**

Position: **Head of Department "Explosion Protection in Sensor Technology and Instrumentation"**

Signature: (for printed version)

Date:

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting www.iecex.com or use of this QR Code.

Certificate issued by:

Physikalisch-Technische Bundesanstalt (PTB)
Bundesallee 100
38116 Braunschweig
Germany

Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin

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Certificate No.: **IECEx PTB 17.0036**

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Manufacturer: **H. Timm Elektronik GmbH**
Humboldtstraße 29, 21509 Glinde, Germany
Germany

Additional manufacturing locations:

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements.This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

STANDARDS :
The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

IEC 60079-0:2011 Explosive atmospheres - Part 0: General requirements
Edition:6.0

IEC 60079-11:2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

IEC 60079-5:2015 Explosive atmospheres –Part 5: Equipment protection by powder filling “q”
Edition:4.0

IEC 60079-7:2015 Explosive atmospheres – Part 7: Equipment protection by increased safety "e"
Edition:5.0

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:
A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Report:

DE/PTB/ExTR17.0042/01

Quality Assessment Report:

DE/TUN/QAR15.0008/01

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EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

The Marine Grounding System, type SEK-3 with associated grounding clamp, type SKS-4A is used for establishing and monitoring equipotential bonding between tankship and pier during loading of liquid flammable media and for the control of the loading process (release / blocking).

For more information refer to the annex.

SPECIFIC CONDITIONS OF USE: NO

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Additional information:
For thermal and electrical specifications as well as further information, reference is made to the annex.

Annex:

Annex to IECEx PTB 17.0036-issue-0.pdf

Applicant:	H. Timm Elektronik GmbH
Electrical apparatus:	Marine Grounding System, type SEK-3 with associated grounding clamp, type SKS-4A

The Marine Grounding System, type SEK-3 with associated grounding clamp, type SKS-4A is used for establishing and monitoring equipotential bonding between tankship and pier during loading of liquid flammable media and for the control of the loading process (release / blocking).

The system consistes of an external enclosure made of stainless steel where the LED-display-module (Ex i) is installed in its lid as well as the entire circuitry and connection technique inside of an internal plastic enclosure. This internal plastic enclosure is designed to type of protection Increased Safety “e”. It houses the connection terminals and an additional aluminum enclosure of type of protection Powder Filling “q” where the measuring and control electronics assembly is installed.

The associated grounding clamp is permanently connected to the system enclosure using a correspondingly dimensioned multicore cable (max. length: 50 m). This cable conducts the actual grounding circuit (Ex e) as well as intrinsically safe measuring, switching and display circuits. The clamp is provided with fixed and flexible brackets with limit switches, which – together with the measurement of the contact resistance – signalize and display correct mounting and contacting by two LED´s in the clamp´s enclosure.

Before and during mounting the clamp onto the ship the grounding circuit and hence the connection to the pier-sided equipotential bonding conductor is initially interrupted inside the control unit and the loading process is blocked. After the control unit has recognized correct mounting and contacting of the clamp it enables the equipotential bonding connection in its switching stage releasing the loading process. The respective status is signalled by LED displays in the lid of the enclosure. In addition the system recognizes possibly existing voltage sources (e.g. cathodic corrosion protection) and blocks the loading process by interrupting the equipotential bonding connection as long as the source remains active.

Switching outputs (Ex eb) and intrinsically safe (Ex ib) NAMUR-compatible signal outputs are available for the control of the loading process. The circuits of the display module located in the lid of the enclosure and the IO circuit board inside the Ex e enclosure as well as the clamp circuits are considered internal circuits of type of protection Intrinsic Safety. The operating elements on the IO circuit board serve for parameterization of the equipment. The additionally existing programming interface is used only by the manufacturer for test- and diagnostics- purposes.

The permissible range of the ambient temperature is T_{amb} = - 40 °C up to + 60 °C

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Electrical data

Voltage supply (terminals L, N, PE)	type of protection Increased Safety Ex eb IIB U_N = 110,120, 220, 230 V ± 10 %, 50 – 60 Hz, approx. 15 VA U_m = 253 V
Control outputs, relay contacts (terminals 1 – 10)	type of protection Increased Safety Ex eb IIB floating make-contact elements floating break-contact elements 2 floating changeover contacts Values for each contact circuit: U_N = 250 V AC, I_S = 3 A, P_S = 100 VA
Signal outputs (terminals 11/12, 13/14)	type of protection Intrinsic Safety Ex ib IIB Only for connection to certified intrinsically safe circuits 2 NAMUR-compatible transistor outputs Maximum values per circuit: U_i = 20 V I_i = 20 mA P_i = 400 mW L_i negligibly low C_i negligibly low
Programming interface (plug connector under coverplate IO- circuit board)	Connection shall be established only by the manufacturer to an intrinsically safe circuit or to passive equipment without internal power source.
Equipotential bonding circuit (PA- terminals)	type of protection Increased Safety Ex eb IIB Only for connection of the cable of the associated grounding clamp, type SKS-4A Maximum operating values: U_{max} = 1 V I_{max} = 25 A Max. length of the cable: L_{max} = 50 m
Clamp circuits (terminals 25 – 32)	type of protection Intrinsic Safety Ex ib IIB Only for connection of the cable of the associated grounding clamp, type SKS-4A Maximum values when considered a common circuit: U_o = 11.2 V I_o = 475 mA P_o = 1.34 W L_o = 1 mH (acc. to ISPARK, V6.1) **(*)** C_o = 2.7 µF (acc. to ISPARK, V6.1) **(*)** **(*)** applicable to common existence of both types of reactances

Display circuits (terminals 15 – 24) and IO-circuit board (plug connector)	internal circuits in type of protection Intrinsic Safety Ex ib IIB

The intrinsically safe circuits are safely electrically isolated from the non-intrinsically safe circuits up to a peak value of the nominal voltage of 375 V.

Notes for manufacture and operation:

The Marine Grounding System, type SEK-3 shall only be operated with the associated grounding clamp, type SKS-4A.

With the use of the grounding clamp, type SKS-4A due care shall be taken that sparks due to impact are not generated.

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