Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin
Nationales Metrologieinstitut

(1) EU-TYPE-EXAMINATION CERTIFICATE

(Translation)

(2) Equipment or Protective Systems Intended for Use in Potentially Explosive Atmospheres - **Directive 2014/34/EU**

(3) EU-Type Examination Certificate Number:

PTB 17 ATEX 2024 **Issue: 0**

(4) Product: Marine Grounding System, type SEK-3 with associated grounding clamp, type SKS-4A

(5) Manufacturer: H. Timm Elektronik GmbH

(6) Address: Humboldtstraße 29
21509 Glinde, Germany

(7) This product and any acceptable variation thereto is 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 17 of the Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres, given in Annex II to the Directive.

The examination and test results are recorded in the confidential Test Report PTB Ex 17-26093.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0:2012 + A11:2013 **EN 60079-5:2015** **EN 60079-7:2015** **EN 60079-11:2012**

(10) If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Specific Conditions of Use specified in the schedule to this certificate.

(11) This EU-Type Examination Certificate relates only to the design and construction of the specified product in accordance to the Directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

(12) The marking of the product shall include the following:

Ex II 2 G Ex eb ib q [ib] IIB T4 Gb (SEK-3) or
II 2 G Ex eb ib IIB T4 Gb (SKS-4A)

Konformitätsbewertungsstelle, Sektor Explosionsschutz Braunschweig, September 1, 2017
On behalf of PTB:

Dr.-Ing. F. Lienesch
Direktor und Professor

PHYSIKALISCH-TECHNISCHE BUNDESANSTALT 24

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(13) # SCHEDULE

(14) **EU-Type Examination Certificate Number PTB 17 ATEX 2024, Issue: 0**

(15) Description of Product

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

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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.

(16) Test Report PTB Ex17-26093

(17) Specific conditions of use

None

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.

(18) Essential health and safety requirements

Met by compliance with the aforementioned standards.

Konformitätsbewertungsstelle, Sektor Explosionsschutz Braunschweig, September 1, 2017
On behalf of PTB:

Dr.-Ing. F. Lienesch
Direktor und Professor