



Operating Instructions

KBDi-DS102W-xxx

R. STAHL HMI Systems GmbH
Adolf-Grimme-Allee 8
D 50829 Köln

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Disclaimer

Publisher and copyright holder:

R. STAHL HMI Systems GmbH
Adolf-Grimme-Allee 8
D 50829 Köln

Registered place of business: Cologne
Court of registration: District court Cologne, HRB 30512
VAT number: DE 812 454 820

Phone: (switchboard) +49 (0) 221 76 806 - 1000
(hotline) - 5000
Fax: - 4100
E-mail: (switchboard) office@stahl-hmi.de
(hotline) support@stahl-hmi.de

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Any warranty claims are limited to the right to demand amendments. Liability for any damage that might result from the content of this description or all other documentation is limited to clear cases of premeditation.

We reserve the right to change our products and their specifications at any time, provided it is in the interest of technical progress. The information in the current manual (in the internet and on CD / DVD / USB stick) or in the operating instructions included with the keyboard applies.

Trademarks


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Specific markings


The markings in these operating instructions refer to specific features that must be noted.


In detail, these are:


 DANGER	This sign alerts users to hazards that will result in death or serious injury if ignored !
---	---

 WARNING	This sign alerts users to hazards that may result in death or serious injury if ignored !
--	--

 CAUTION	This sign alerts users to hazards that may damage machinery or equipment or result in injury if ignored !
--	---

 ATTENTION	Information highlighted by this symbol indicates measures for the prevention of damage to machinery or equipment !
--	--

 NOTICE	Information highlighted by this symbol indicates important information of which particular note should be taken !
---	---

 DOCUMENTATION	Information highlighted by this symbol refers to a different chapter or section in this manual or other documentation or a web-page !
--	---

Warnings



	<p style="text-align: center;">Caution !</p> <p>In ambient temperatures exceeding +45 °C the surface of the devices may heat up. Caution when touching !</p>
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Table of contents

	Description	Page
	Disclaimer	2
	Specific markings	3
	Warnings	3
	Table of contents	4
1	Preface	5
2	Device function	5
3	Technical Data	5
4	Conformity to standards	5
5	Certificates	6
5.1	ATEX	6
5.2	IECEX	6
6	Marking	6
7	Permitted maximum values	7
7.1	Intrinsically safe values KBDi-DS102W-xxx*	7
8	Type code	7
9	Safety Advice	8
9.1	Installation and operation	8
9.2	Special conditions	9
9.3	Cautionary note	9
10	Mechanical dimensions	10
11	Connections Keyboard	10
11.1	KBDi-DS102W-USB*	10
11.2	KBDi-DS102W-PS2*	10
12	Maintenance, service	11
12.1	Servicing	11
13	Troubleshooting	11
14	Disposal	11
14.1	RoHS directive 2011/65/EC	11
14.1.1	China RoHS labelling	11
15	Certificates	12
15.1	Declaration of EC conformity	12
15.2	ATEX certification	13
15.3	IECEX certification	16
16	Release notes	19

1 Preface

These Operating Instructions contain all aspects relevant to explosion protection for the KBDi-DS102W keyboards types (USB and PS2). They also contain information on the connection and installation (etc.) of these devices.

 NOTICE	All data relevant to explosion protection from the EC-type examination certificate were copied into these operating instructions.
	For the correct operation of all associated components please note, in addition to these operating instructions, all other operating instructions enclosed in this delivery as well as the operating instructions of the additional equipment to be connected !

2 Device function

The type KBDi-DS102W-xxx* keyboards are used to enter data, commands etc. on PCs and similar devices in hazardous areas. They are available with a USB or PS2 - interface.

The type KBDi-DS102W-xxx* keyboards are explosion-protected equipment for installation in hazardous areas and can be installed in zones 1 and 2 according to ATEX directive. The keyboards may be connected to intrinsically safe PS2 or USB interfaces. Power supply and data communication takes place via their interfaces. The keyboards are fitted with a fixed cable. Various keyboard versions are available that differ in their keyboard layout (German, English, French, etc.).

3 Technical Data

Function / Equipment	KBDi-DS102W-xxx*
Power supply	via PS2 or USB interface
Connections	via a fixed connected cable, max. length 1.8 m
Cable type	0.08 mm ² / AWG28
Cable wire (numbers)	5 (4 + Screen)
Keyboard layout (standard)	German (QWERTZ), American (QWERTY), French (AZERTY)
Operation force	0.65 N
Durability	> 10 million ops.
Ambiant conditions	
Ambient temperature range	0°C ≤ Ta ≤ +40°C
Storage temperature	-40°C ≤ Ta ≤ +70°C
Ingress protection	IP65
Dimensions [mm] (LxWxH)	405 x 185 x 40
Weight [kg]	1.5

4 Conformity to standards

The KBDi-DS102W-xxx* keyboards comply with the following standards and directives:

Standard	Classification
ATEX Directive 2014/34/EU	
EN 60079-0 : 2012	General Requirements
EN 60079-11 : 2012	Intrinsic Safety "i"
EMC Directive 2014/30/EU	
EN 61000-6-2 : 2005	Immunity
EN 61000-6-4 : 2011	Emission

5 Certificates

The KBDi-DS102W-xxx* keyboards are certified for installation in the following areas:

Europe:

According to ATEX Directive
for installation in zones 1 and 2

International:

IECEX (International Electrotechnical Commission System for Certification to Standards for Electrical Equipment for Explosive Atmospheres)

5.1 ATEX


The ATEX certificate is listed under the following certification number:

Certificate number: BVS 13 ATEX E 031 X


5.2 IECEX

The IECEX certificate is listed under the following certification number:

Certificate number: IECEX BVS 13.0040X

 DOCUMENTATION	You can access all IECEX certificates on the official website of the IEC under their certificate number. http://iecex.iec.ch/iecex/iecexweb.nsf/welcome?openform .
--	---

6 Marking

Manufacturer	R. STAHL HMI Systems GmbH
Type code	KBDi-DS102W-xxx*
CE classification:	CE 0158
Testing authority and certificate number:	BVS 13 ATEX E 031 X IECEX BVS 13.0040X
Ex classification:	
ATEX guideline	 II 2 G Ex ia IIC T4 Gb
IECEX	Ex ia IIC T4 Gb

7 Permitted maximum values

7.1 Intrinsically safe values KBDi-DS102W-xxx*

Output parameters:			Input parameters:		
U_{Omax}	=	U_{Imax}	U_{Imax}	=	5.9 V
I_{Omax}	=	I_{Imax}	I_{Imax}	=	2.7 A
P_{Omax}	=	P_{Imax}	P_{Imax}	=	not limited
			C_{Imax}	=	20 μ F
			L_{Imax}	=	0.9 μ H

U_{Omax} is identical with U_{Imax} ,
 I_{Omax} is identical with I_{Imax}

8 Type code

KBDi-DS102W-xxx*





* any alphanumeric or symbolic characters, without relevance for explosion protection

Product type:

Product key structure	Description
	Type with
KBDi-DS102W-USB-DE	USB interface, keyboard layout German (QWERTZ)
KBDi-DS102W-USB-US	USB interface, keyboard layout American (QWERTY)
KBDi-DS102W-USB-NO	USB interface, keyboard layout Norwegian (QWERTY)
KBDi-DS102W-PS2-US	PS2 interfac, keyboard layout American (QWERTY)

9 Safety Advice

 NOTICE	<p>This chapter is a summary of the key safety measures. The summary is supplementary to existing rules which staff also have to study.</p>
	<p>The safety of persons and equipment in hazardous areas depends on compliance with all relevant safety regulations. Thus, the installation and maintenance staff carry a particular responsibility, requiring precise knowledge of the applicable regulations and conditions.</p>

 CAUTION	<p>The notes listed below in section 9.1 must be heeded to avoid injury and damage to equipment !</p>
--	---

9.1 Installation and operation

Please note the following when installing and operating the device:

- The national regulations for installation and assembly apply (e.g. EN/IEC 60079-14).
- The keyboard may be installed in zones 1 or 2.
- The intrinsically safe circuits must be installed according to applicable regulations.
- Cables for intrinsically safe wiring have to pass a test voltage of AC 500 V / DC 750 V. Use the values 200 pF/m and 1 µH/m at unknown cable properties. Do not use the premounted interface cable of the KBDi-DS102W-xxx* keyboards in Zones 0 or 20.
- The equipotential bonding connection of the device must be connected to the equipotential bonding conductor of the hazardous area. The earthing cable must have a minimum cross section of 4 mm² and be fitted properly.
- When the interface of intrinsically safe devices/partial intrinsically safe devices was or is connected to not intrinsically safe interfaces, the license will become void and it must be operated as a not intrinsically safe device. If the device was operated on an intrinsically safe interface with a lower level of international protection (e.g. a Ex ia device on a Ex ib interface), it must not be operated afterwards in applications for a higher level of international protection (e.g. Ex ia).
- Cable glands are factory installed by the manufacturer and shall not be changed by customers.
- Interconnecting several active devices in an intrinsically safe circuit may result in different safe maximum values. This could compromise intrinsic safety !
- The safe maximum values of the connected field device(s) must correspond to the values listed on the data sheet or the EC type examination certificate.
- During assembly and operation of the Keyboard electrostatic surface charging must not exceed that caused by manual rubbing.
- National safety and accident prevention rules.
- Generally accepted technical rules.
- Safety instructions contained in these operating instructions.

- Any damage may compromise the explosion protection !


Use the device for its intended purpose only (see "Device Function").

Incorrect or unauthorized use and non-compliance with the instructions in this manual will void any warranty on our part.


No changes to the device that compromise its explosion protection are permitted !

The device may only be installed and operated in an undamaged, dry and clean condition !

9.2 Special conditions

 CAUTION	The intrinsically safe circuits are connected to earth; along the intrinsically safe circuits potential equalization must exist.
	The keyboard has a conductive coating to prevent electrostatic charges / discharges. If this coating is damaged, the keyboard must be removed from the hazardous area.
	To prevent electrostatic charges / discharges, the keyboard enclosure must be earthed.

9.3 Cautionary note

 ATTENTION	<p>This is an EN 55022 Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.</p>
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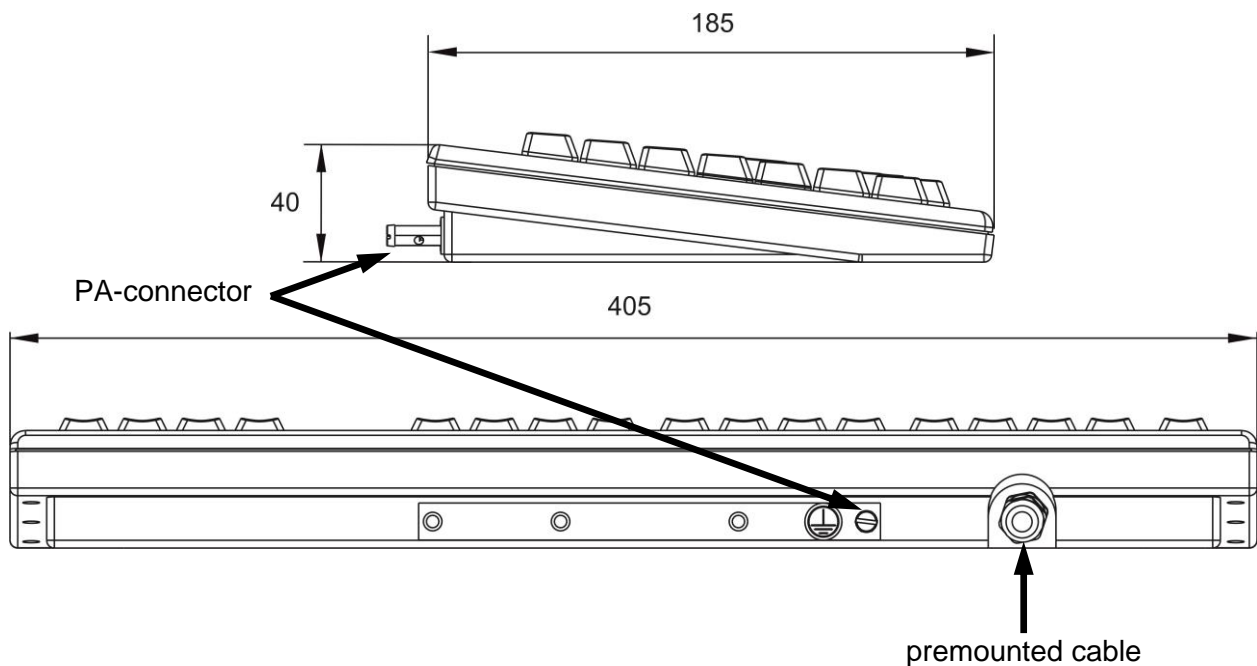
10 Mechanical dimensions

View:



Dimensions in mm

405 x 185 x 40 (L x W x H), without PA-connector, cable gland and cable



11 Connections Keyboard

The keyboards are fitted with a fixed cable which is 1.8 metres long.


11.1 KBDi-DS102W-USB*

Cable	Colour	Signal name	Definition
1	Red	U	Power supply input
2	White	D-	Data D-
3	Green	D+	Data D+
4	Black	GND	GND
5	Black	Screen	Screen

11.2 KBDi-DS102W-PS2*

Cable	Colour	Signal name	Definition
1	Red	U	Power supply input
2	Yellow	DATA	Data
3	Green	CLK	Clock
4	Black	GND	GND
5	Black	Screen	Screen

12 Maintenance, service



 NOTICE	Associated equipment is subject to maintenance, service and testing according to guidelines 1999/92/EC, IEC/EN 60079-14, -17, -19 and BetrSichVer (Betriebssicherheitsverordnung - Occupational Safety and Health) !
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Because the transmission of the devices remains reliable and stable over long periods of time, regular adjustments are not required.

12.1 Servicing

In accordance with IEC 60079-19 and EN 60079-17, operators of electric plants in hazardous areas are obliged to have them serviced by qualified electricians.

13 Troubleshooting

 NOTICE	Devices operated in hazardous areas must not be modified. Repairs may only be carried out by qualified, authorized staff specially trained for this purpose.
 NOTICE	Repairs may only be carried out by specially trained staff who are familiar with all basic conditions of the applicable user regulations and – if requested – have been authorized by the manufacturer.

14 Disposal

Disposal of old electric and electronic devices, packaging and used parts is subject to regulations valid in whichever country the device has been installed. For countries under the jurisdiction of the EU the corresponding WEEE directive applies.

The keyboards are classified according to the table below:

	old	new
Directive	WEEE I Directive 2002/96/EC	WEEE II Directive 2012/19/EU
Valid	until 14.08.2018	from 15.08.2018
Category	9 Monitoring and control devices	SG5 Small equipment <50 cm

We shall take back our devices according to our General Terms and Conditions.

14.1 RoHS directive 2011/65/EC

The revised version of the RoHS (restriction of hazardous substances) 2002/95/EC directive, directive 2011/65/EC, extends its area of application to all electric and electronic products.

The keyboards conform with the requirements from RoHS directive 2011/65/EU, dated 03.01.2013.

14.1.1 China RoHS labelling

According to new Chinese legislation in force since 01.03.2007, all devices containing hazardous substances must be labeled accordingly.

The part of all toxic or hazardous substance contained in the homogeneous materials of the HMI devices is below the limit stipulated in SJ/T11363-2006.

15 Certificates

15.1 Declaration of EC conformity

EU-Konformitätserklärung
EU Declaration of Conformity
Déclaration de Conformité UE



R. STAHL HMI Systems GmbH • Adolf-Grimme-Allee 8 • 50829 Köln, Germany

erklärt in alleiniger Verantwortung, *declares in its sole responsibility, déclare sous sa seule responsabilité,*

dass das Produkt: **Keyboard**
that the product: **Keyboard**
que le produit: **Clavier**

Typ(en), *type(s), type(s):* **KBDi-DS102W-xxx***

*=any alphanumeric or symbolic characters, without relevance for explosion protection

mit den Anforderungen der folgenden Richtlinien und Normen übereinstimmt.
is in conformity with the requirements of the following directives and standards.
est conforme aux exigences des directives et des normes suivantes.

Richtlinie(n) / Directive(s) / Directive(s)		Norm(en) / Standard(s) / Norme(s)
ATEX-Richtlinie	2014/34/EU	EN 60079-0: 2012
ATEX Directive	2014/34/EU	EN 60079-11: 2012
Directive ATEX	2014/34/UE	

Kennzeichnung, *marking, marquage:*  **II 2 G Ex ia IIC T4 Gb**

CE 0158

EG/EU-Baumusterprüfbescheinigung: **BVS 13 ATEX E 031 X**
EC/EU Type Examination Certificate:
Attestation d'examen CE/UE de type:

DEKRA EXAM GmbH (ID0158)
 Dinnendahlstraße 9
 44809 Bochum
 Germany

EMV-Richtlinie	2014/30/EU	EN 61000-6-2: 2005
EMC Directive	2014/30/EU	EN 61000-6-4: 2011
Directive CEM	2014/30/UE	

Produktnormen nach RoHS-Richtlinie (2011/65/EU): **EN 50178: 1997**
Product standards according to RoHS Directive: **EN 61010-1: 2001+ Corrigendum / Errata**
Normes des produit pour la Directive RoHS:

Köln, 2016-04-22

Ort und Datum
Place and date
Lieu et date


i.V.

J. Düren
 Technical Director

i.V.


W. Bertges
 Quality Manager

15.2 ATEX certification



Translation EC-Type Examination Certificate

- (1) **EC-Type Examination Certificate**
- (2) Equipment and protective systems intended for use in potentially explosive atmospheres - Directive 94/9/EC
- (3) No. of EC-Type Examination Certificate: **BVS 13 ATEX E 031 X**
- (4) Equipment: **Keyboard type KBDi-DS102W-xxx***
- (5) Manufacturer: **R. STAHL HMI Systems GmbH**
- (6) Address: **Im Gewerbegebiet Pesch 14, 50767 Köln, Germany**
- (7) The design and construction of this equipment and any acceptable variation thereto are specified in the appendix to this type examination certificate.
- (8) The certification body of DEKRA EXAM GmbH, notified body no. 0158 in accordance with Article 9 of the Directive 94/9/EC of the European Parliament and the Council 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 test and assessment report BVS PP 13.2062 EG.
- (9) The Essential Health and Safety Requirements are assured by compliance with:
 - EN 60079-0:2012 General requirements**
 - EN 60079-1:2011 Intrinsic safety „I“**
- (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 appendix to this certificate.
- (11) This EC-Type Examination Certificate relates only to the design, examination and tests of the specified equipment in accordance to 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.
- (12) The marking of the equipment shall include the following:



DEKRA EXAM GmbH
Bochum, dated 20th march 2013

Signed: Simanski

Certification body

Signed: Dr. Eickhoff

Special services unit

Page 1 of 3 to BVS 13 ATEX E 031 X
This certificate may only be reproduced in its entirety and without change.
DEKRA EXAM GmbH Dinnendahlstrasse 9 - 44609 Bochum Phone +49 234 3696-105 Fax +49 234 3696-110 zs-exam@dekra.com



(13) Appendix to:

(14) **EC-Type Examination Certificate**
BVS 13 ATEX E 031 X

(15) 15.1 Subject and type

Keyboard type KBDi-DS102W-xxx*

The keyboard is available in the following variants:

KBDi-DS102W-USB*

KBDi-DS102W-PS2*

In the complete denomination, the asterisk is replaced by alphanumeric or symbolic characters without relevance for explosion protection.

15.2 Description

The Keyboard type KBDi-DS102W-xxx* is an intrinsically safe apparatus for connection to intrinsically safe interfaces. It is supplied via a permanently connected cable with max. 1,8 m length.

15.3 Parameters

4.1 Intrinsically safe power supply and data input in level of protection „Ex ia IIC“
Wires (1,2,3)-4

Max. input voltage	Ui	DC	5.9	V
Max. input current	Ii		2.7	A
Max. internal capacitance	Qi		20	µF
Max. internal inductance	Li		0.9	µH

The maximum internal capacitance and inductance respect a length of 1,8 m for the permanently connected cable.

Max. output voltage	Uo		5.9	V ¹⁾
Max. output current	Io		2.7	A ²⁾

¹⁾ Uo identical with Ui

²⁾ Io identical with Ii

4.2 Ambient temperature range Ta -20 °C .. +50 °C

(16) Test and assessment report

BVS PP 13.2062 EG as of 20th march 2013

(17) Special conditions for safe use

The intrinsically safe circuits are connected to earth; along the intrinsically safe circuits potential equalization must exist.

The keyboard has a conductive coating to prevent electrostatic charging/discharging hazards. If the conductive coating is damaged, the keyboard has to be removed from the hazardous area.

The enclosure of the keyboard has to be earthed to prevent electrostatic charging/discharging hazards.



We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

DEKRA EXAM GmbH
44809 Bochum, 20th march 2013
BVS-Le/Ma A 20121286




Certification body




Special services unit

15.3 IECEx certification

		<h2 style="margin: 0;">IECEx Certificate of Conformity</h2>	
<p>INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification Scheme for Explosive Atmospheres <small>for rules and details of the IECEx Scheme visit www.iecex.com</small></p>			
Certificate No.:	IECEx BVS 13.0040X	issue No.:	0
Status:	Current	Certificate history:	
Date of issue:	2013-03-26	Page 1 of 3	
Applicant:	R. STAHL HMI Systems GmbH Im Gewerbegebiet Pesch 14 50767 Köln Germany		
Electrical Apparatus: Optional accessory:	Keyboard Type KBDi-DS102W-xxx*		
Type of Protection:	Equipment protection by intrinsic safety "I"		
Marking:	Ex ia IIC T4 Gb		
Approved for issue on behalf of the IECEx Certification Body:	H.-CH. Simanski		
Position:	Head of Certification Body		
Signature: (for printed version)			
Date:	26/3/2013		
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 the Official IECEx Website:			
Certificate issued by:			
DEKRA EXAM GmbH Dinnendahlstrasse 9 44809 Bochum Germany		DEKRA EXAM GmbH	

	<h2>IECEX Certificate of Conformity</h2>	
Certificate No.:	IECEX BVS 13.0040X	
Date of Issue:	2013-03-26	Issue No.: 0
		Page 2 of 3
Manufacturer:	R. STAHL HMI Systems GmbH Im Gewerbegebiet Pesch 14 50767 Köln Germany	
Additional Manufacturing location (s):		
<p>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.</p>		
STANDARDS: The electrical apparatus 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 Edition: 6.0	Explosive atmospheres - Part 0: General requirements	
IEC 60079-11 : 2011 Edition: 6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"	
<p><i>This Certificate does not indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.</i></p>		
TEST & ASSESSMENT REPORTS: <i>A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in</i>		
<u>Test Report</u> DE/BVS/ExTR13.0041/00		
<u>Quality Assessment Report</u> DE/BVS/QAR06.0007/06		



IECEx Certificate of Conformity

Certificate No.:	IECEx BVS 13.0040X	Issue No.: 0
Date of Issue:	2013-03-26	Page 3 of 3

Schedule

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

Subject and Type
Keyboard type KBDi-DS102W-xxx*
The keyboard is available in the following variants:
KBDi-DS102W-USB*
KBDi-DS102W-PS2*
In the complete denomination, the asterisk is replaced by alphanumeric or symbolic characters without relevance for explosion protection.

Description
The Keyboard type KBDi-DS102W-xxx* is an intrinsically safe apparatus for connection to intrinsically safe interfaces. It is supplied via a permanently connected cable with max. 1,8 m length.

Parameters

1 Intrinsically safe power supply and data input in level of protection "Ex ia"

Wires (1,2,3)-4

Max. input voltage	U_i DC	5,9 V
Max. input current	I_i 2,7	A
Max. internal capacitance	C_i	20 μ F
Max. internal inductance	L_i	0,9 μ H

The maximum internal capacitance and inductance respect a length of 1,8 m for the permanently connected cable.

Max. output voltage	U_o	5,9 V ¹⁾
Max. output current	I_o	2,7 A ²⁾

¹⁾ U_o identical with U_i
²⁾ I_o identical with I_i

2 Ambient temperature range Ta -20 °C ... +50 °C

CONDITIONS OF CERTIFICATION: YES as shown below:

The intrinsically safe circuits are connected to earth; along the intrinsically safe circuits potential equalization must exist.

The keyboard has a conductive coating to prevent electrostatic charging/discharging hazards. If the conductive coating is damaged, the keyboard has to be removed from the hazardous area.

The enclosure of the keyboard has to be earthed to prevent electrostatic charging/discharging hazards.

16 Release notes

The chapter entitled "Release Notes" contains all the changes made in every version of the Operating Instructions.

Version 01.00.00

- First edition, for approval

Version 01.00.01

- Including all relevant information from approval
- Including mechanical drawings
- Including declaration of EC conformity
- Including certificates
- Addition of technical data
- Correction of cable wiring
- Text and layout corrections

Version 01.00.02

- Revision of "Disclaimer"
- Change of address and telephone numbers
- Addition of Warning re. surface temperature
- Revision of "Conformity to standards"
- Adaption section "RoHS directive" with device conformity
- Replacement of Declaration of EC Conformity
- Text and layout corrections

Version 01.00.03

- Addition of section "Specific markings"
- Changing of all markings according to the new definition
- Deleting old ATEX directive
- Correction IECEx marking
- Changing of colour from wires at KBDi-DS102W-PS2* variant
- Correction WEEE directive
- Text and layout corrections

Version 01.00.04

- Adaption of section "Disposal" according to the current WEEE directive
- Formal changes

Version 01.00.05

- Changing of colour from wires at KBDi-DS102W-PS2* variant
- Changing of "Technical Data"
- Formal changes

R. STAHL HMI Systems GmbH
Adolf-Grimme-Allee 8
D 50829 Köln

Phone: (switchboard) +49 (0) 221 76 806 - 1000
(hotline) - 5000

Fax: - 4100

E-mail: (switchboard) office@stahl-hmi.de
(hotline) support@stahl-hmi.de

www.r-stahl.com
www.stahl-hmi.de

