



Operating Instructions

KBDi-DS102W-xxx

R. STAHL HMI Systems GmbH
Im Gewerbegebiet Pesch 14
50767 Köln

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Disclaimer

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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) or in the operating instructions included with the Keyboard applies.

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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.



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 94/9/EC. 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)	4
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
Directive 94/9/EC	
EN 60079-0 : 2012	General requirements
EN 60079-11 : 2012	Protection by intrinsic safety "i"

5 Certificates

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

Europe:

According to ATEX Directive 94/9/EC
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

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:	 0158
Testing authority and certificate number:	BVS 13 ATEX E 031 X IECEx BVS 13.0040X
Ex classification:	
ATEX guideline 94/9/EC	 II 2 G Ex ia IIC T4 Gb
IECEx	II 2 G 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

This chapter is a summary of the key safety measures. The summary is supplementary to existing rules which staff also have to study.

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.

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

- 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

Caution:

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.

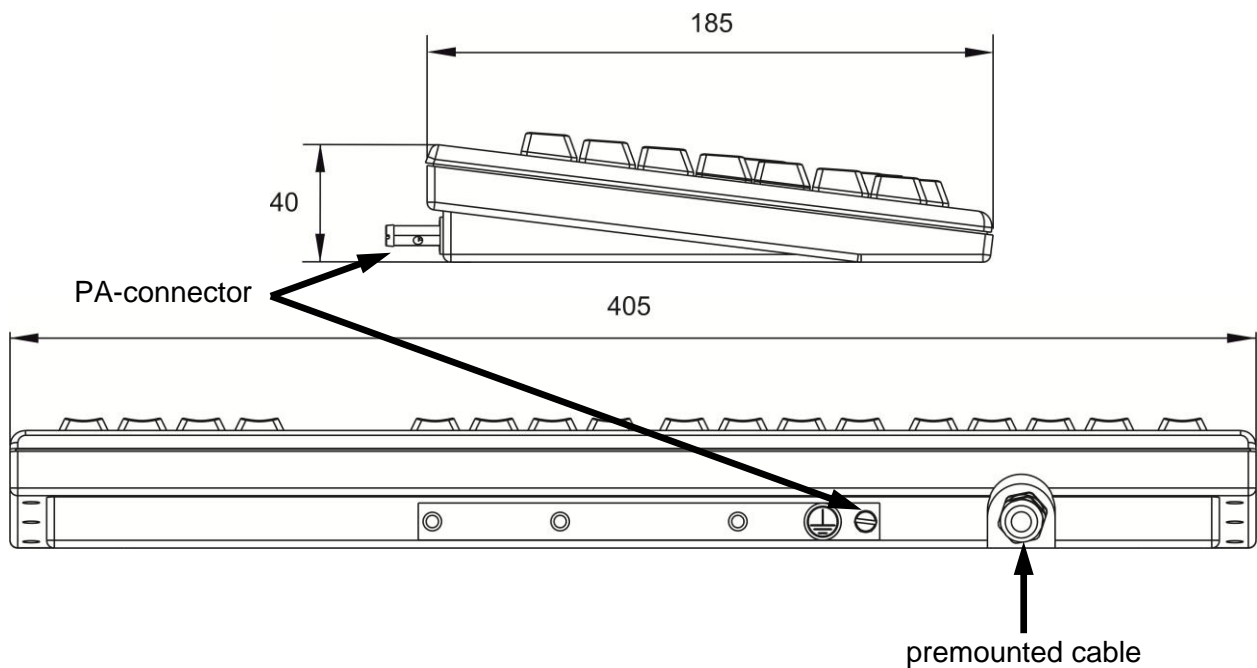
10 Mechanical dimensions

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

11.2 KBDi-DS102W-PS2*

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

12 Maintenance, service

Associated equipment is subject to maintenance, service and testing according to guidelines 1999/92/EC, IEC 60079-19, EN 60079-17 and BetrSichVer (Betriebssicherheitsverordnung - Occupational Safety and Health) !

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

Devices operated in hazardous areas must not be modified. Repairs may only be carried out by qualified, authorized staff specially trained for this purpose.

- ☞ 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 packaging and used parts is subject to regulations valid in whichever country the device has been installed.

The disposal of devices sold after August 13th, 2005, and installed in countries under the jurisdiction of the EU is governed by directive 2002/96/EC on waste electrical and electronic equipment (WEEE). Under this directive, keyboards are listed in category 9 (monitoring and control instruments).

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

14.1.1 ROHS directive 2002/95/EC

The prohibition of hazardous substances as detailed in directive 2002/95/EC (ROHS) does not apply to electronic equipment of categories 8 and 9, and is therefore not applicable to the equipment described in these operating instructions.

14.1.2 China ROHS labelling

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

For our keyboards, the following conditions apply:

Names and contents of toxic or hazardous substances or elements:

Part Name	Toxic or hazardous substances and elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr (VI))	Polybromi- nated Biphenyls (PBB)	Polybrominated diphenyl ethers (PBDE)
Housing	○	○	○	○	○	○
Display	○	○	○	○	○	○
all PCBs	X	○	○	○	○	○
Miscellaneous	○	○	○	○	○	○

- Indicates that this toxic or hazardous substance contained in all of the homogeneous materials for this part is below the limit requirements in SJ/T11363-2006.
- X Indicates that this toxic or hazardous substance contained in at least one of the homogeneous materials for this part is below the limit requirements in SJ/T11363-2006.

15 Certificates

15.1 Declaration of EC conformity

EG-Konformitätserklärung
EC-Declaration of Conformity
Déclaration de Conformité CE



R. STAHL HMI Systems GmbH • Im Gewerbegebiet Pesch 14 • 50767 Köln, Germany
erklärt in alleiniger Verantwortung, declares in its sole responsibility, déclare sous sa seule responsabilité,

dass das Produkt
that the product
que le produit

Keyboard
 Keyboard
 Clavier

Typ, type, type:

KBDi-DS102W-xxx*

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

Kennzeichnung, marking, marquage:

II 2G Ex ia IIC T4 Gb 0158

mit der EG-Baumusterprüfbescheinigung,
ausgestellt durch Benannte Stelle:
under EC-Type Examination Certificate,
issued by notified body:
avec Attestation d'examen CE de type,
exposé par organisme notifié:

BVS 13 ATEX E 031 X
 DEKRA EXAM GmbH (ID0158)
 Dinnendahlstraße 9
 44809 Bochum
 Germany

auf das sich diese Erklärung bezieht, mit den folgenden Normen oder normativen Dokumenten übereinstimmt
which is the subject of this declaration, is in conformity with the following standards or normative documents
auquel cette déclaration se rapporte, est conforme aux normes ou aux documents normatifs suivants

Bestimmungen der Richtlinie <i>Terms of the directive</i> <i>Prescription de la directive</i>	Nummer sowie Ausgabedatum der Norm <i>Number and date of issue of the standard</i> <i>Numéro ainsi que date d'émission de la norme</i>
94/9/EG: ATEX-Richtlinie 94/9/EC: ATEX Directive 94/9/CE: Directive ATEX	EN 60079-0: 2012 EN 60079-11: 2012
2004/108/EG: EMV-Richtlinie 2004/108/EC: EMC Directive 2004/108/CE: Directive CEM	EN 61000-6-2: 03-2006 EN 61000-6-4: 09-2007 EN 55011: 08-2003


Köln, 20.03.2013

Ort und Datum
Place and date
Lieu et date

J. Düren
 Technical Director


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:

 **II 2G Ex ia IIC T4 Gb**

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 3686-105 Fax +49 234 3686-110 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	U _i	DC	5.9	V
Max. input current	I _i		2.7	A
Max. internal capacitance	C _i		20	µF
Max. internal inductance	L _i		0.9	µH

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

4.2 Ambient temperature range

T _a	-20 °C .. +50 °C
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(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		
			

	<h2>IECEX Certificate of Conformity</h2>	
Certificate No.:	IECEX BVS 13.0040X	Issue No.: 0
Date of Issue:	2013-03-26	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
 Date of Issue: 2013-03-26
 Issue No.: 0
 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

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