Operating Instructions

KBDi-DS102W-xxx Keyboard

STAHL

THE STRONGEST LINK.

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 / USB stick) or in the operating instructions included with the keyboard applies.

Trademarks
The terms and names used in this document are registered trademarks and / or products of the companies in question.

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

⚠	Caution ! In ambient temperatures exceeding +45 °C the surface of the devices may heat up. Caution when touching !

Table of contents

1   Preface

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

	All data relevant to explosion protection from the EC-type examination certificate were copied into these operating instructions.
ⓘ NOTICE	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 KDBi-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 KDBi-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	KDBi-DS102W-xxx*
Power supply	via PS2 or USB interface
Connections	via a fixed connected cable, max. length 1.8 m
Cable type	0.08 mm² / AWG28
Cable wire (numbers)	5 (4 + Screen)
Keyboard layout (standard)	German (QWERTZ), American (QWERTY), Frensh (AZERTY)
Operation force	0.65 N
Durability	> 10 million ops.
Ambiant conditions	
Ambient temperature range	0°C $\leq$ Ta $\leq$ +40°C
Storage temperature	−40°C $\leq$ Ta $\leq$ +70°C
Ingress protection	IP65
Dimensions [mm] (LxWxH)	405 x 185 x 40
Weight [kg]	1.5

4 Conformity to standards

The KDBi-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"
The product corresponds to requirements from:	
EN 60079-0 : 2018	General requirements
EMC directive 2014/30/EU	
EN 61000-6-2 : 2005	Immunity
EN 61000-6-4 : 2007 + A1 : 2011	Emission
EN 61326-1 : 2013	Electrical equipment for measurement, control and laboratory use (General requirements)
RoHS directive 2011/65/EU	
EN IEC 63000 : 2018	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

5 Certificates

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

Synonym	Scope	Certificate number	Comment
CE / ATEX	Europe	BVS 13 ATEX E 031 X	
IECEx	Global	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:	$C\epsilon$ 0158
Testing authority and certificate number:	BVS 13 ATEX E 031 X IECEx BVS 13.0040X
Ex classification:	
ATEX	⟨Ex⟩ 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 µF
			L_{Imax}	=	0.9 µH

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

8   Type code

KBDi-DS102W-xxx*

Interface (USB or PS2)

*   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 interface, 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.
① NOTICE	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.

⚠ CAUTION	The notes listed below in section 9.1 must be heeded to avoid injury and damage to equipment !

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. IEC/EN 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 propely.

- 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.
⚠ CAUTION	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	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:

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

PA-connector

premounted cable
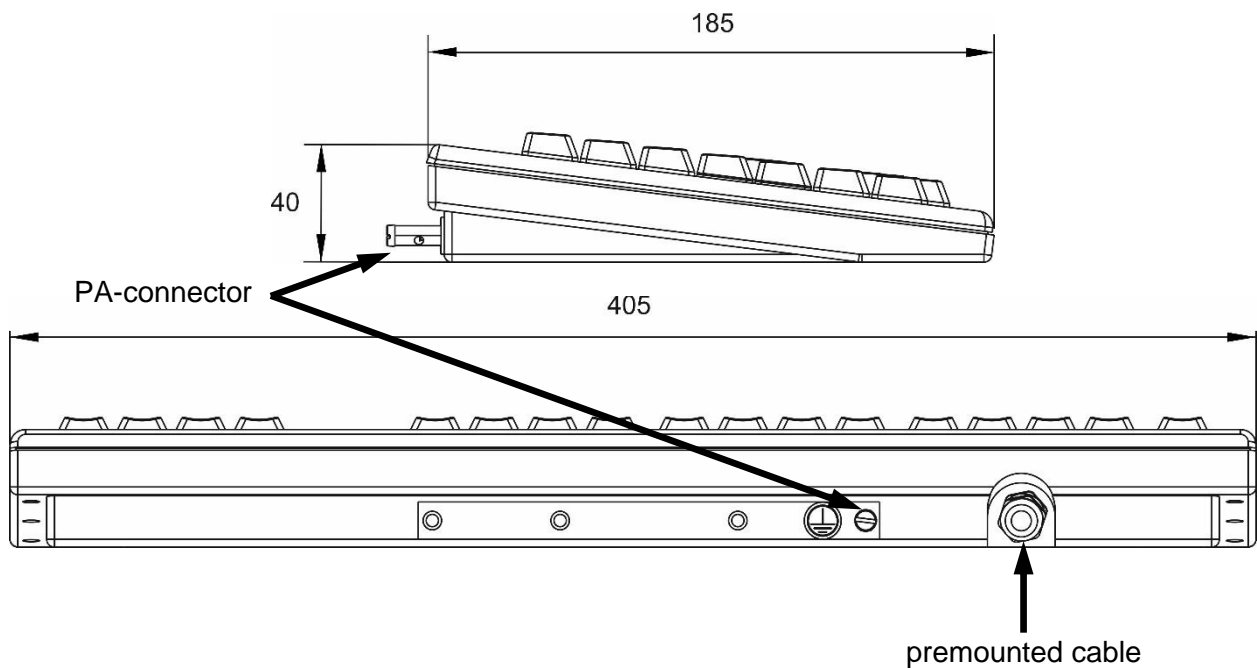
11 Connections Keyboard

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) !

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.
	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 / Restricted substances

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 devices are classified according to the table below:

Directive	WEEE II directive 2012/19/EU
Valid	from 2018-08-15
Category	SG5 Small equipment <50 cm

R. STAHL HMI Systems GmbH meets the requirements of directive 2012/19/EU (WEEE) and is registered under the number DE 15180083.

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

14.1 Declaration of substances and restricted substances

The present declaration is based on the procedure described in the international standard and directives as listed in the table below:

- IEC 62474 : 2018 (DIN EN IEC 62474 : 2019-09)

- (EG) Nr. 1907/2006 (REACH)

- Directive 2011/65/EU (RoHS)

- Resolution MEPC.269(68) "International Maritime Organization" (IMO); particularly "2015 Guidelines for the Development of the Inventory of the Hazardous Materials" (IHM)

14.1.1 Declarable substance groups

Component	Designation	Mass (g)	Declarable Substance Groups and Substances (IEC 62474 database)	CAS Nr.	Mass %	Exemption (acc. to directive)
-	-	-	No SVHC material existing	-	-	-

14.1.2 RoHS directive 2011/65/EC

The devices meet the requirements of RoHS Directive 2011/65/EU.

14.1.3 IMO Resolution MEPC.269(68)

The devices meet the requirements of the MEPC.269(68) Resolution of the "International Maritime Organization" (IMO), in particular the "2015 Guidelines for the Development of the Inventory of the Hazardous Materials" (IHM).

14.1.4 China RoHS labelling

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 Declaration of EC conformity

EU-Konformitätserklärung
EU Declaration of Conformity
Déclaration de Conformité UE

STAHL

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	Das Produkt entspricht Anforderungen aus:
ATEX Directive	*2014/34/EU*	EN 60079-11:2012	*Product corresponds to requirements from:*
Directive ATEX	*2014/34/UE*		*Produit correspond aux exigences:*
			EN IEC 60079-0:2018

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

CE 0158

EU-Baumusterprüfbescheinigung:	**BVS 13 ATEX E 031 X**
EU Type Examination Certificate:	
Attestation d'examen 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 61000-6-4:2007 + A1:2011
Directive CEM	*2014/30/UE*	EN 61326-1:2013

Produktnormen nach RoHS-Richtlinie (2011/65/EU):	EN IEC 63000:2018
Product standards according to RoHS Directive:	
Normes des produit pour la Directive RoHS:	

Für spezifische Merkmale und Bedingungen siehe Betriebsanleitung.
For specific characteristics and conditions see operating instructions.
Pour les caractéristiques et conditions spécifiques, voir le mode d'emploi.

Köln, 2020-12-15   i.V. *[signature]*   i.V. *[signature]*

Ort und Datum	J. Düren	A. Jung
Place and date	Technical Director	Ex Representative
Lieu et date		

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16 Release notes

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

Version 01.00.06

- Removal of previous release notes
- Changing layout cover
- Changing disclaimer, new mail addresses
- Adaption address field verso
- Adaption of "Conformity to standards"
- Renew declaration of conformity
- Changing section "Certificates" now tabular listing
- Adaption and changing of section "Disposal" and "Material declaration"
- Removal of certificates, taking over in separate document
- Formal changes

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