Operating Instructions

KB2 Device versions, incl. enclosure

KB2 Keyboards
PD2 Pointing device
KB2-HSG / PD2-HSG Assemblies

STAHL

THE STRONGEST LINK.

Operating Instructions Version:	**01.00.06**
Issue:	**07.06.2024**
Order number:	**292654**

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1 General information

1.1 Manufacturer

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1.2 Legal notice

1.2.1 Trademark

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

1.2.2 Disclaimer

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

We reserve the right to amend our products and their specifications at any time, provided it is in the interest of technical progress. The information in the current manual (online or on CD / DVD / USB-stick) or in the Operating Instructions included in the delivery applies.

1.3 About these Operating Instructions

1.3.1 Target group

These Operating Instructions are intended for the following groups of people:

Project engineers

Electricians and installers

Operators

Operating staff

Maintenance staff

1.3.2 How to use this manual

Read these Operating Instructions, especially the safety notes, carefully before use.

Take note of all other applicable documents (see also chapter 1.4 Further documents).

Keep the Operating Instructions throughout the service life of the devices.

Make the Operating Instructions accessible to operating and maintenance staff at all times.

Pass the Operating Instructions on to each subsequent owner or user of the devices.

Update the Operating Instructions every time R. STAHL issues an amendment.

1.3.3 Application

Operating Instructions version:	01.00.06
Hardware revision:	-

The following Operating Instructions apply to the following systems:

KB2 Keyboards	KB2 Keyboards PD2 Pointing device
Assemblies	KB2-*-HSG-* PD2-*-HSG-*

The original instructions are the German edition.
They are legally binding in all legal affairs.

1.4 Further documents

Certificate Compilation KB2 (CE_Keyboards_KB2)

Operating Instructions UB03 (OI_UB03)

Installation manual KB2 at IT-xx7 Non-Ex device (IM-KB2-an-IT-xx7)

2023348000_1-Arbeitsanweisung KB2 Desktop Binderstecker.pdf

For documents in other languages, see r-stahl.com.

1.5 Conformity with standards and regulations

1.5.1 Certificates

	Certificates: r-stahl.com
	The devices have IECEx approval. See IECEx homepage: https://www.iecex-certs.com/#/home to view the certificate
	Further national certificates can be downloaded via the following link: https://r-stahl.com/en/global/support/downloads/

1.5.2 Approvals

The following approvals are valid for all devices:

Synonym	Scope of validity	Valid until	Certificate number	Comment
KB2 / PD2 - Z1 (Zone 1, 21 devices)				
CE	Europe	unlimited		According to directive 2014/30/EU
ATEX	Europe	unlimited	BVS 20 ATEX E 078 X	Issue 00
IECEx	Global	unlimited	IECEx BVS 20.0065X	Issue 00
CCC	China	07.05.2026	2021312309000474	
CNEx		16.06.2026	CNEx21.1931X	
BIS	India	22.05.2026	R-41226106	
PESO		31.12.2026	A/P/HQ/TN/104/6230 (P541910) P541910/2 P541910/3	
FM	USA	unlimited	FM21US0031X	
	Canada	unlimited	FM21CA0022X	
KB2 / PD2 - Z1-*-HSG*00* / *U3* (Zone 1, 21 devices in enclosure)				
CE	Europe	unlimited		According to directive 2014/30/EU; 2014/35/EU; 2014/53/EU
ATEX	Europe	unlimited	BVS 20 ATEX E 106 X	Issue 00
IECEx	Global	unlimited	IECEx BVS 20.0084X	Issue 00
CCC	China	13.05.2026	2021312309000476	
CNEx		16.06.2026	CNEx21.1934X	
FM	USA	unlimited	FM21US0031X	
	Canada	unlimited	FM21CA0022X	

The following approvals only apply to devices with a DE (German) and US (American) keyboard layout and the "No coating" enclosure option:

Synonym	Scope of validity	Valid until	Certificate number	Version
KB2 / PD2 - Z1 (Zone 1, 21 devices)				
KCC	Korea	unlimited	R-R-RSE-KB2-Z1-USB-TB	Trackball
			R-R-RSE-KB2-Z1-USB-TP	Touchpad
			R-R-RSE-KB2-Z1-USB-JS	Joystick
KB2 / PD2 - Z1 (Zone 1 devices)				
KCS	Korea	unlimited	21-KA4BO-0773X	
KB2 / PD2 - Z1 (Zone 21 devices)				
KCS	Korea	unlimited	21-KA4BO-0774X	
KB2 / PD2 - Z1-*-HSG*00* (Zone 1 devices inside enclosure)				
KCS	Korea	unlimited	21-KA4BO-0777X	
KB2 / PD2 - Z1-*-HSG*00* (Zone 21 devices inside enclosure)				
KCS	Korea	unlimited	21-KA4BO-0778X	
KB2 / PD2 - Z1-*-HSG*U3* (Zone 1 devices inside enclosure, UB03)				
KCS	Korea	unlimited	21-KA4BO-0779X	
KB2 / PD2 - Z1-*-HSG*U3* (Zone 21 devices inside enclosure, UB03)				
KCS	Korea	unlimited	21-KA4BO-0780X	

The importer have to use exception documents which are applied in Korea rule for Korea.
A corresponding example document, the so-called "Customer confirmation letter", is included in the CE_Keyboards_KB2 certificate compilation of the devices.

1.5.3 Summary of applied standards

1.5.3.1 ATEX / IECEx

1.5.3.1.1 KB2 device versions

Standard ATEX directive 2014/34/EU	Classification
EN IEC 60079-0 : 2018	General requirements
EN 60079-11 : 2012	Protection by intrinsic safety "i"

1.5.3.1.2 KB2-HSG / PD2-HSG assemblies

Standard ATEX directive 2014/34/EU	Classification
EN IEC 60079-0 : 2018	General requirements
EN 60079-5 : 2015	Protection by powder filling "q"
EN IEC 60079-7 : 2015 + A1 : 2018	Protection by increased safety "e"
EN 60079-11 : 2012	Intrinsic safety "i"
EN 60079-15 : 2010	Protection by type of protection "n"
EN 60079-31 : 2014	Protected by enclosures "t" (dust)

1.5.3.2 EMC directive 2014/30/EU

1.5.3.2.1 KB2 device versions

Standard	Classification
EN 61326-1 : 2013	Electrical equipment for measurement, control and laboratory use - General requirements
EN IEC 61000-6-2 : 2019	Immunity
EN IEC 61000-6-4 : 2020	Emitted interference

1.5.3.2.2 KB2-HSG / PD2-HSG assemblies

Standard	Classification
EN IEC 61000-6-2 : 2019	Immunity
EN IEC 61000-6-4 : 2020	Emitted interference

1.5.3.3 Low voltage directive 2014/35/EU

Only for versions with "U3".

Standard	Classification
EN 62368-1 : 2014 + AC : 2015 + A11 : 2017	Audio / video, information and communication technology equipment - Safety requirements

1.5.3.4 Radio equipment directive 2014/53/EU

Only for versions with "U3".

Standard	Classification
EN 300330 V2.1.1	Short range devices (SRD)
EN 301489-1 V2.2.3	Electromagnetic compatibility - Standard for radio equipment and services - Common technical requirements
EN 301489-3 V2.1.1	Electromagnetic compatibility and radio spectrum matters (ERM) - Electromagnetic compatibility standard for radio equipment and services - Specific conditions for short range devices (SRD)

1.5.3.5 RoHS directive 2011/65/EU

Standard	Classification
EN IEC 63000 : 2018	Technical documentation for the assessment of electrical and electronic equipment with regard to the restriction of hazardous substances

1.5.3.6 FM USA

Standard	Classification
FM Class 3600: 2022	Electric equipment for use in hazardous areas - general requirements
FM Class 3610: 2021	Intrinsically safe apparatus and associated apparatus for use in Class I, II, and III, Division I, hazardous (classified) locations
FM Class 3611: 2021	Nonincendive electrical equipment for use in Class I and II, Division 2 and Class III, Divisions 1 and 2 hazardous (classified) locations
FM Class 3616: 2022	Dust explosion protection electric equipment - general requirement
FM Class 3810: 2021	Electric equipment for the operation of measuring, control and laboratory equipment
ANSI/UL 50: 2020	Enclosures for electrical equipment, non-environmental considerations
ANSI/UL 50E: 2020	Enclosures for electrical equipment, environmental considerations
ANSI/UL 60079-0: 2019	General requirements
ANSI/UL 60079-5: 2016	Protection by powder filling "q"
ANSI/UL 60079-7: 2016	Protection by increased safety "e"
ANSI/UL 60079-11: 2014	Protection by intrinsic safety "i"
ANSI/UL 60079-15: 2013	Type of protection "n"
ANSI/UL 60079-31: 2015	Protected by enclosures "t" (dust)
ANSI/IEC 60529: 2004 (R2011)	Degrees of protection provided by enclosure (IP code)
ANSI/UL 121201: 2017	Nonincendive electrical equipment for use in Class I and II, Division 2 and Class III, Divisions 1 and 2 hazardous (classified) locations

1.5.3.7 FM Canada

Standard	Classification
C22.2 No. 0.4-17: 2017	Bonding of electrical equipment
C22.2 No. 0.5-16: 2016	Threaded conduit entries
C22.2 No. 25-17: 2017	Enclosures for use in Class II, Division 1, Groups E, F, and G hazardous locations
C22.2 No. 94.1-15: 2015	Enclosures for electrical equipment, non-environmental considerations
C22.2 No. 94.2-15: 2015	Enclosures for electrical equipment, environmental considerations
C22.2 No. 213-17: 2017	Nonincendive electrical equipment for use in Class I and II, Division 2 and Class III, Divisions 1 and 2 hazardous (classified) locations
CAN/CSA-C22.2 No. 60079-0: 2019	General requirements
CAN/CSA-C22.2 No. 60079-5: 2016	Protection by powder filling "q"
CAN/CSA-C22.2 No. 60079-7: 2016	Protection by increased safety "e"
CAN/CSA-C22.2 No. 60079-11: 2014	Protection by intrinsic safety "i"
CAN/CSA-C22.2 No. 60079-15: 2018	Type of protection "n"
CAN/CSA-C22.2 No. 60079-31: 2015	Protected by enclosures "t" (dust)
CAN/CSA-C22.2 No. 60529: 2016	Degrees of protection provided by enclosure (IP code)
CAN/CSA-C22.2 No. 61010-1-12: 2012 (R2017)	Safety regulations for electric measuring, control and laboratory equipment – general requirements

2 Explanation of symbols

2.1 Symbols used in these Operating Instructions

Symbol	Meaning
	Useful hint for making work easier, important note
	Reference to another chapter, another section, another documentation or another web page.

2.2 Warning notes

DANGER	Dangerous situation which can result in fatal or severe, life-changing injuries if the safety measures are not complied with.
WARNING	Dangerous situation which can result in severe injuries if the safety measures are not complied with.
CAUTION	Dangerous situation which can result in minor injuries if the safety measures are not complied with.
NOTE	Dangerous situation which can result in material damage if the safety measures are not complied with.

Symbol	Meaning
	Heat hazard
	Electrostatic discharge hazard

2.3 Symbols on the device

Symbol	Meaning
	Device certified for hazardous areas according to ATEX directive.
	Device marking according to EU directive
0158	ID number of monitoring body
	Marking according to WEEE directive 2012/19/EU
	Warning - important information
	Warning of hazardous voltage
	Connection for equipotential bonding

3 Safety

The devices have been manufactured according to the state of the art of technology while observing recognised safety-related rules. When using the devices, it is nevertheless possible for hazards to occur to life and limb of the user or third parties or for the devices, environment or material assets to be compromised.

Only use the devices under the following conditions:

- If they are not damaged
- As intended, while remaining aware of safety and hazards
- In accordance with these Operating Instructions

3.1 Intended use

The type KB2 device versions are used to enter data, commands etc. on PCs and similar devices in hazardous areas.

They are explosion-protected equipment for use and installation in hazardous areas of Zones 1, 2, 21 and 22. They must be connected to intrinsically safe USB interfaces. Power supply and data communication takes place only via this USB interface.
The KB2 and PD2 device versions are connected via the cables provided.
Various keyboard versions are available that differ in their layout (German, English, French etc.) and in their design (PC keyboard with trackball, touchpad or with joystick).

The KB2 devices are available in the following versions:

- KB2 Keyboards
- PD2 Pointing device

The KB2 and PD2 device versions are installed in a type HSG enclosure, which then represents the assembly of the complete system.
In addition to KB2 and PD2 devices, the UB03-* device can also be installed in this enclosure.

3.2 Predictable improper use

The device may only be installed and connected by specifically trained personnel.

3.3 Personnel qualification

Qualified specialist personnel is required to perform the activities described in these Operating Instructions. This primarily applies to work in the following areas:

- Product selection and project engineering
- Mounting / dismounting the device
- Installation
- Commissioning
- Maintenance, cleaning

Specialists who perform these tasks must have a level of knowledge that meets applicable national or equivalent country-specific standards and regulations. Additional knowledge is required for any activity in hazardous areas !

R. STAHL recommends having a level of knowledge equal to that described in the following standards:

IEC/EN 60079-14 (Electrical installations design, selection and erection)

IEC/EN 60079-17 (Inspection and maintenance of electrical installations)

IEC/EN 60079-19 (Equipment repair, overhaul and reclamation)

3.4 Special conditions of use

The devices (including their connection cables) may only be installed in areas where there are absolutely no intensive electrostatic loading processes.

If the devices are to be used in areas with dust-explosion hazard, they need to be installed in a suitable enclosure to achieve at least IP64 (acc. to EN IEC 60079-0).

If the device is supplied with a current of over 250 mA in an area with dust-explosion hazard, this must be via an ia current (linear characteristic).

Additional requirements for KB2 / PD2 only

When the devices are used in gas hazardous areas they have to be installed in a suitable enclosure so that at least IP20 is achieved (acc. to IEC 60529).

The KB2 and PD2 device versions are suitable for installation into the cut-out of an enclosure with IP64 (acc. to EN IEC 60079-0), or into the cut-out of an enclosure with degree of protection EX eb / ec or Ex tb / tc or Ex p. In this case, they fulfil the respective enclosure requirements.

Additional information for KB2 with pointing device and KB2-HSG only

The connection cable of the devices contains two separate intrinsically safe circuits. The device must be installed in such a way that there is no mechanical impact (tensile force) onto the cable. The cable must be fixed and effectively protected against damage.

Additional information for installation in HSG enclosure

As a minimum, the installed device must have the same IP degree of protection as the enclosure, and must also be separately certified for this IP degree of protection.

The enclosure must be connected to ground potential, and this connection must not exceed 1 MΩ against the ground. Where appropriate, assembly components or the ground connection of the installed devices may be used.

Additional information for HSG enclosures with "U3" device version only

For the connection of the UB03 device a cable must be used that has an insulation of at least 0.5 mm between conductor and outer coating.

The cable must be installed inside the enclosure with a minimum distance of 50 mm to bare, conductive parts of the keyboard / pointing device.

3.5 Installation safety information

- Only use suitable tools for the installation.
- When keyboards and pointing devices are installed into the cut-out of closed enclosures, the nuts used to fix them must be tightened with a tightening torque of at least 1 Nm.
- The connection cable is approx.. 2.4 m long.
- The connection cable must not be extended or replaced by the customer.
- We recommend you use screened cables with the keyboards and pointing devices. Routing of the cable may reduce performance.
- The shield of the connection cable must be grounded with a maximum of 1 MΩ against the ground.
- The D+ and D- USB data conductors must be twisted right up to the terminals.

	Once the devices have been connected to and operated in circuits with ia, ib or ic level of protection or Non-Ex circuits, they must no longer be operated in areas that require circuits with higher levels of protection ! When installed and wired ex factory, the type plate of the keyboards will indicate the applicable level of protection. For Non-Ex circuits, the type plate will indicate "Industrial use only when supplied with non Ex i circuits". If a device is being replaced, the person responsible for the replacement of the old and / or operation of the new device must ensure that the type plate of the new device indicates the level of protection according to the connected circuit.

Additional information for KDB2-HSG / PD2-HSG

- The back cover of the enclosure must be fixed with a tightening torque of 3.4 Nm (+0.6 / - 0 Nm).
- Cable that come into contact with conductive parts must be mechanically protected and / or securely installed to avoid damage to the insulation.
- Make sure you are using the correct insulation / distance to achieve safe cable installation with regard to the standards applicable for degrees of protection "i" and "e".
- All Ex e and Ex i circuits must be completely de-energised before the keyboards and pointing devices are connected. Do not open the lid of the enclosure if the devices are energised.

3.6 Safety information for operation

- Only operate the devices if they are clean and undamaged. If a device is in any way damaged, do not touch it to avoid injury. In the case of any damage that may compromise ingress protection (e.g. cracks, holes or broken components) the devices must be taken out of commission immediately. Before the device is recommissioned the damaged components must be replaced.
- If the devices are to be used in category 2D/3D or EPL Db/Dc dust deposits thicker than 5 mm must be removed. You must ensure that no high-energy loading mechanisms at the operating surface of the keyboards and pointing devices (e.g. pneumatic particle transport) occur during operation. Do not use the keyboards and pointing devices in environments where propagating brush discharges may occur.
- In case of non-compliance with or contravention of the above explosion-protection is no longer guaranteed and all warranty claims shall be null and void.

3.7 Residual risks

3.7.1 Explosion hazard

Despite the device's state-of-the-art design, explosion hazards cannot be entirely eliminated in hazardous areas.

Perform all work steps in hazardous areas with the utmost care at all times !

Possible hazards ("residual risks") can be categorised according to the following causes:

Mechanical damage

The device may become damaged during transport, mounting or commissioning. This kind of damage may, for example, render the device's explosion protection partially or completely ineffective. This may result in explosions causing serious or even fatal injury.

Do not commission a damaged device.

Only transport the device in special transport packaging that reliably protects the device from external influences. Take ambient conditions into account when selecting the transport packaging (see chapter 16.1 Technical data).

Do not place any loads on the device.

Check the packaging and the device for damage. Immediately report any damage to R. STAHL.

Store the device ideally in its original packaging in a dry place (with no condensation), and make sure that it is stable and protected against the effects of vibrations and knocks.

Do not damage the device or seals during its installation.

Excessive heating or electrostatic charge

Operate the device only within the prescribed operating conditions (see chapter 4.4 Markings on the device and chapter 16.1 Technical data).

Mount and install the device in such a way that it is always operated within the permissible temperature range.

Do not use the device in strong charge-generating environments.

Avoid friction and flow of particle streams.

Regularly inspect the device for a material change. If you spot any changes, test or replace the device.

- Only the manufacturer may paint / coat the devices with a special, conductive paint.

No other person is permitted to paint / coat the device or to touch up its paint / coating. Any repairs must be carried out by the manufacturer only.

Comply with the area specification of EN/IEC 60079-0 when fitting additional plastic adhesive labels.

Clean the device with a damp cloth only.

Improper mounting, installation, commissioning, maintenance or cleaning

Basic work such as installation, commissioning, maintenance or cleaning of the device must always be performed in accordance with the applicable national regulations of the country of use and only by qualified persons. Otherwise, the explosion protection may be rendered ineffective. This may result in explosions causing serious or even fatal injury.

Have the assembly, installation, commissioning and maintenance work performed by qualified and authorised persons only (see chapter 3.3 Personnel qualification).

Prior to commissioning, check the device is correctly mounted (see chapter 7 Mounting and installation).

Electrical circuits with Ex i type of protection may no longer be operated as electrical circuits with this type of protection after having been operated with electrical circuits with other types of protection.

Only connect the device to equipment which does not carry voltages higher than 250 VAC (50 - 60 Hz).

Connect Ex i devices only to intrinsically safe terminals.

In hazardous areas, always switch the electrical circuits and devices to a de-energised state before disconnecting or connecting and when mounting / dismounting.

Do not change or modify the device.

Any repair on the device is to be performed by R. STAHL only.

Gently clean the device with a damp cloth only – do not use scratching, abrasive or aggressive cleaning agents or solutions.

Never clean the device with a strong water jet, such as a pressure washer !

3.7.2 Risk of injury

Falling devices or components

The device or components can fall during transport and mounting, causing injury to persons in the form of bruises and contusions.

Use transporting and lifting equipment suitable for the size and weight of the device when transporting and mounting it.

Observe the weight and the maximum load-bearing capacity of the device; see specifications on the shipping label or on the packaging.

Use suitable mounting materials for mounting.

Electric shock

During operation and maintenance, high voltage is at times applied to the device. Because of this, the device must be de-energised during installation. Persons coming into contact with electrical lines carrying excessively high voltage can suffer severe electric shocks and, consequently, injuries.

Only connect electrical circuits to suitable terminals.

3.7.3 Device damage

As a result of unsuitable operating conditions or careless contact the device or individual components may be damaged so significantly that the device does not operate correctly or fails completely.

Do not subject the device to external heat sources or direct sunshine. Ensure that the maximum ambient temperature is never exceeded.

4 Function and device design

4.1 Features and versions

4.1.1 Options

The type KB2 device versions are used to enter data, commands etc. at PCs and similar devices. Usually, the devices are connected to operating devices with device platforms MANTA (xx7), SHARK (xx8) and ORCA (ORCA01*) from R. STAHL. Depending on which version they are, they perform the following tasks:

Technology	Task
KB2 Keyboards	Keyboard with pointing device for entering data and commands
PD2 Pointing device	Separate pointing device to operate menu structures and to pass on commands

4.1.2 Keyboards

The keyboards are available with the following options:

- Pointing device: trackball, touchpad or joystick
- Keyboard layout: German (QWERTZ), American (QWERTY), French (AZERTY), Spanish, Swiss German, Nordic (Swedish, Finnish, Norwegian, Danish), Slovenian, Japanese Hungarian, Ukrainian (see chapter 24.1 Keyboard layouts)

4.1.3 Enclosure

The KB2 and PD2 device versions are installed in a type HSG enclosure, which then represents the assembly of the complete system.

- Enclosure material: Stainless Steel V2A (SS304, 1.4301) or V4A (SS316L, 1.4404)

	For device platform SHARK only V4A (SS316L, 1.4404)

- Enclosure versions: Keyboard enclosure for Operator station MANTA and ORCA01* (with support arms for FR / CFR / BD enclosure and ORCA OFR)
  Keyboard enclosure for Operator station SHARK (with support arms for Yokemount)
  Desktop enclosure with keyboard for Non-Ex applications

	Mounting a KB2 keyboard at the wall mounting bracket of the SHARK device platform requires the optional HSG-xx8-V4A-KB-MOUNT-W mounting kit (adapter kit for mounting an xx8 keyboard at the wall bracket - SAP no. 267451). This mounting kit is not part of the delivery and must be ordered separately.

- Enclosure option: additional installation of UB03-*

	Not for device platform SHARK

	For UB03 documentation, see r-stahl.com.

4.1.4 Keyboard versions

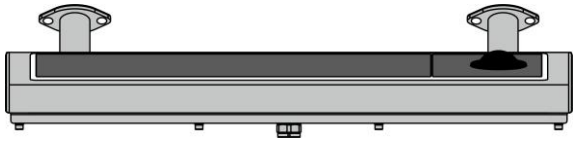
KB2 Keyboard with trackball

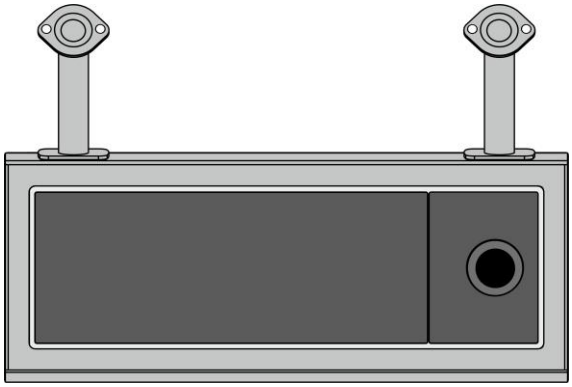
KB2 Keyboard with joystick

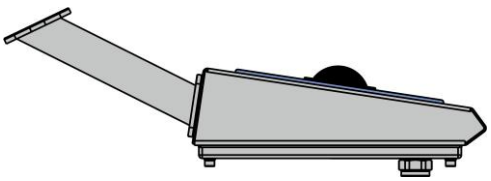
KB2 Keyboard with touchpad

4.1.5 Enclosure versions

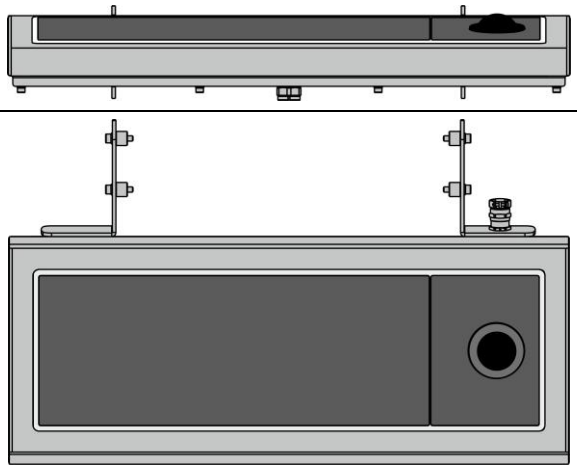
with support arms for FR / CFR / BD enclosure / ORCA OFR

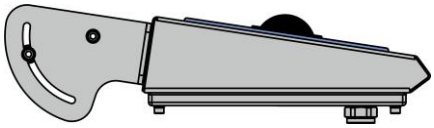




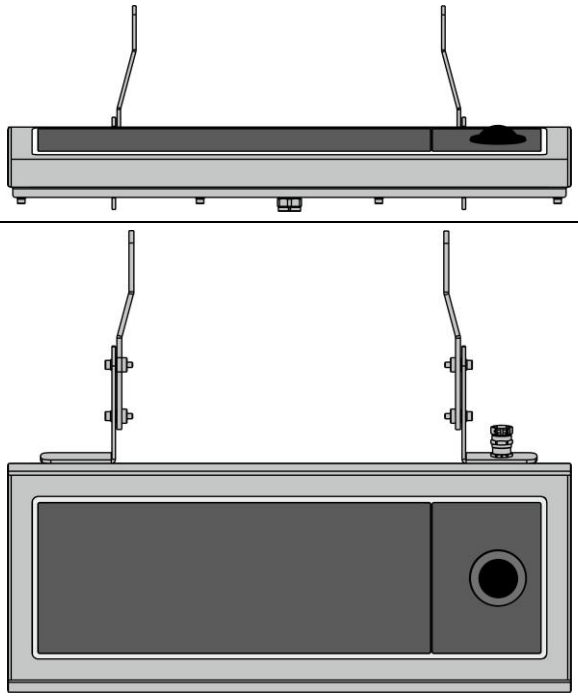


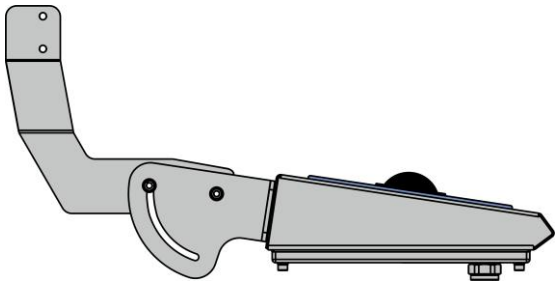
with support arms for Yokemount



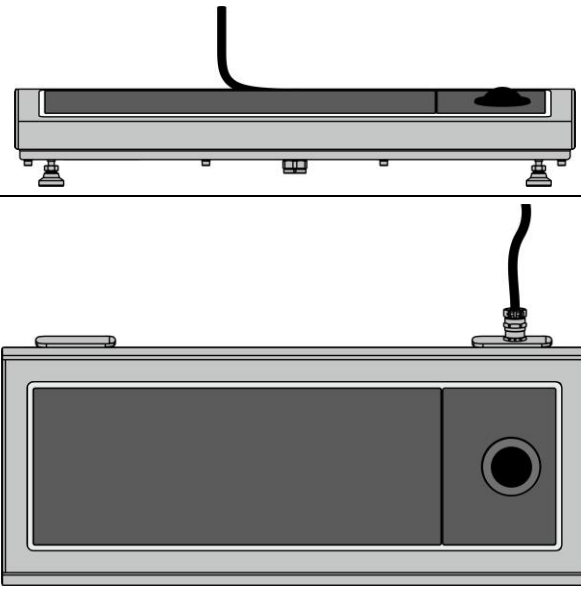


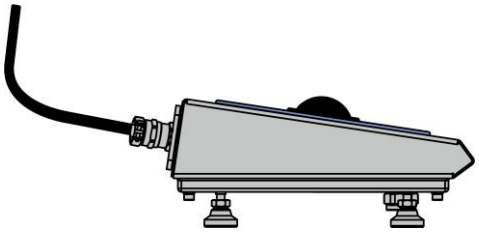
with adapter kit for wall mounting bracket at device platform SHARK



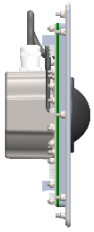
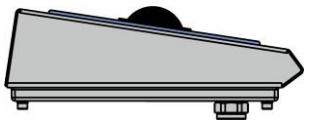
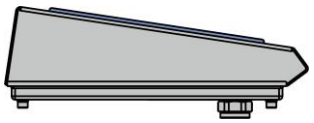
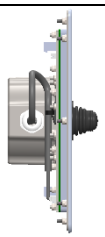
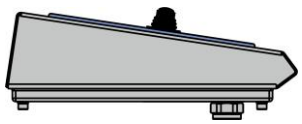


Desktop enclosure





4.1.6 Pointing device

Trackball side view	Side view with trackball inside enclosure
	
Touchpad side view	Side view with touchpad inside enclosure
	
Joystick side view	Side view with joystick inside enclosure
	

4.1.7 Scope of delivery

a) Complete delivery

- KB2 keyboard with pointing device installed inside HSG enclosure and attached to the xx7 operating device, at the yoke of the xx8 operating device or at the ORCA01* Operator Station fully wired and operational
- Suction cup for trackball cleaning

or

b) KB2-HSG assemblies

- KB2 keyboard with pointing device installed inside HSG enclosure with attached cable (as repair replacement or retrofit).
- Fastening material for mounting at field enclosure for xx7 or fastening material for mounting at yoke for xx8
- Grounding material in bag as loose parts
- Suction cup for trackball cleaning

or

c) KB2 device versions

- KB2 keyboard with pointing device, with attached cable (as repair replacement)
- Grounding material in bag as loose parts
- Suction cup for trackball cleaning

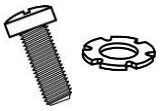
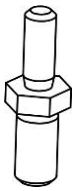
or

d) KB2-Desktop assemblies

- KB2 keyboard with pointing device built into desktop enclosure with connected cable
- Binder material consisting of: cable socket, cable plug, contact sockets, contact pins
- Grounding material in bag as loose parts
- Suction cup for trackball cleaning

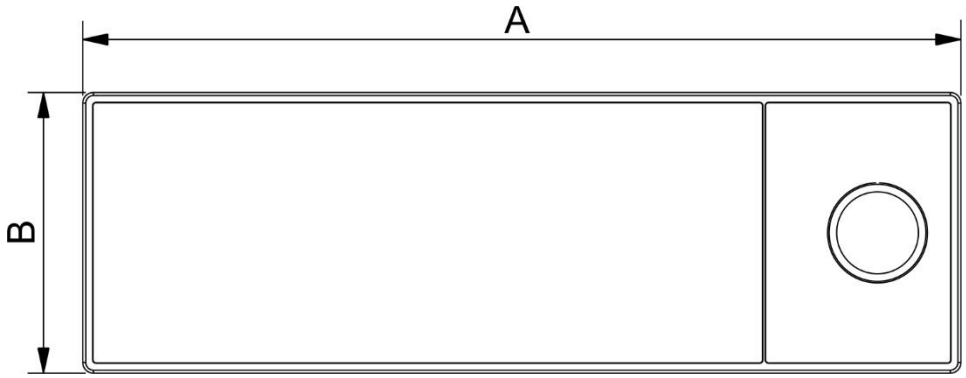
Fastening material for xx7 / ORCA01*		**Fastening material for xx8**	
Designation	**Number**	**Designation**	**Number**
Mushroom head screw M6 x 20	4	Allen screw M6 x 25	4
Wave washer M6	4	Washer 6.4	4
Hexagon nut M6 self-locking	4	Spacer	4
Flange seal EPDM	2	-	

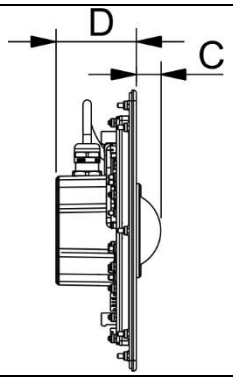
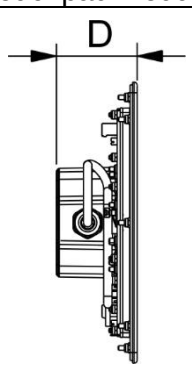
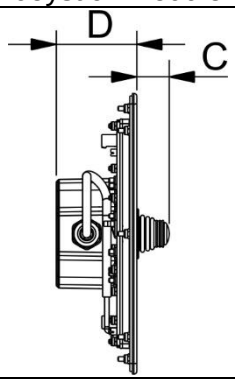
The earthing material in the accessory bag is complete for all device variants. For using the individual earthing components, see earthing material table.

Earthing material				
Description	**Picture**	**Using (quantity)**		
		xx7	**xx8**	**ORCA01***
Distance bolt ii M3 x 12		1x	-	-
Distance bolt IA M3 x 12 (SW 5.5)		-	1x	-
Combined screw with tooth lock washer M3 x 6		1x	1x	-
Tooth lock washer M3		1x	1x	2x
Distance bolt A-A M3 x 8 auf M4 x 8 (SW 5.5)		-	-	1x
Nut M3		-	-	1x
Spring lock washer M3		-	-	1x
Washer		-	-	2x

4.2 Dimensions

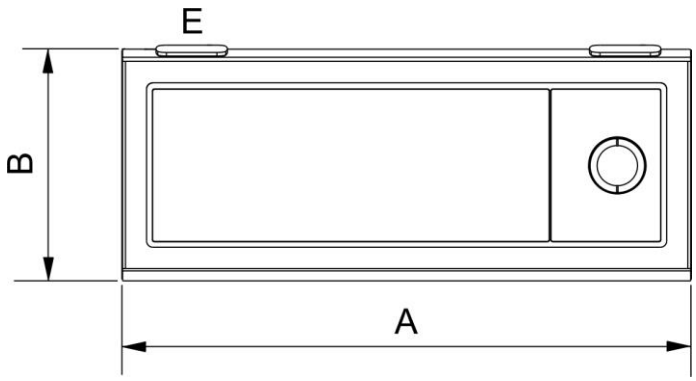
4.2.1 Keyboard with pointing device

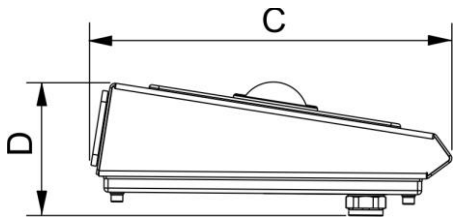


Trackball module	Touchpad module	Joystick module
		

	Dimensions [mm]		
Item	**KB2 with TB**	**KB2 with TP**	**KB2 with JS**
A	580		
B	185		
C	16.1	-	21.3
D	53		

4.2.2 Keyboard with pointing device inside HSG

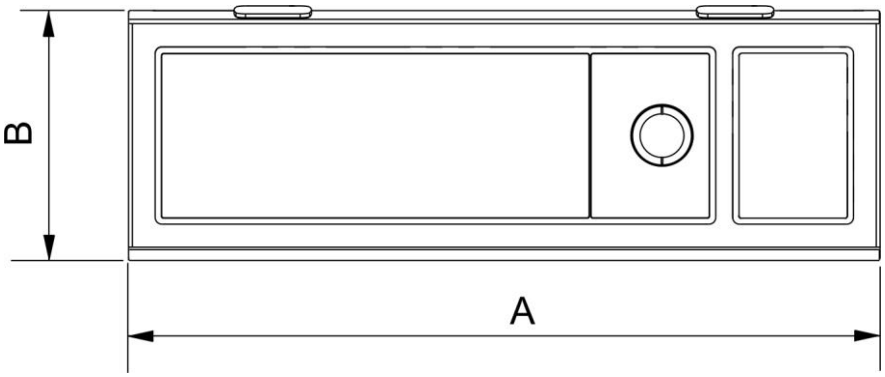




Item	Dimensions [mm]
A	635
B	254
C	258
D	92
E	4 *

* The blind plate E has a thickness of 4 mm.

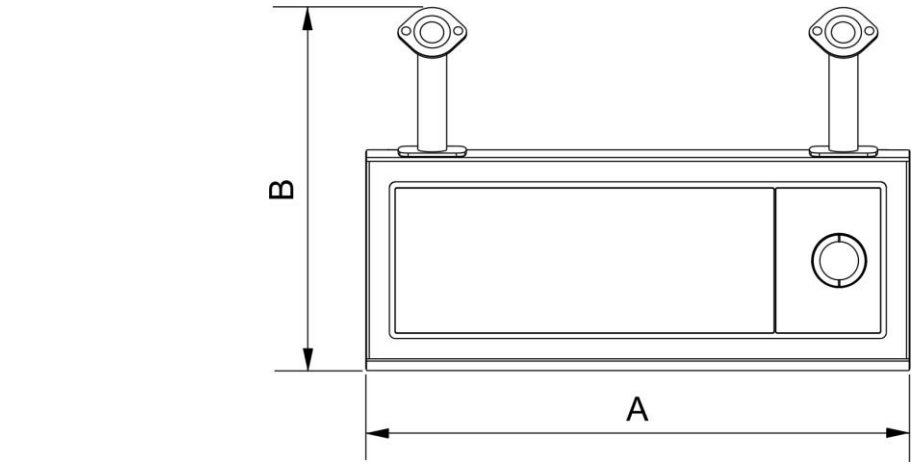
4.2.3 Keyboard with pointing device and UB03 inside HSG

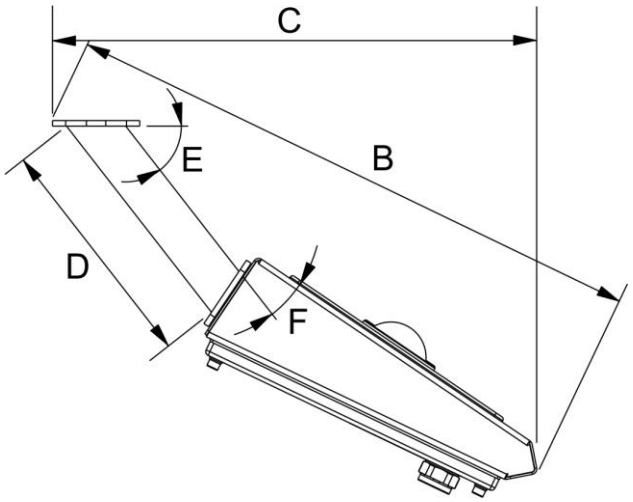


Item	Dimensions [mm]
A	778
B	254

The dimensions of the side view are identical to the enclosures without UB03.

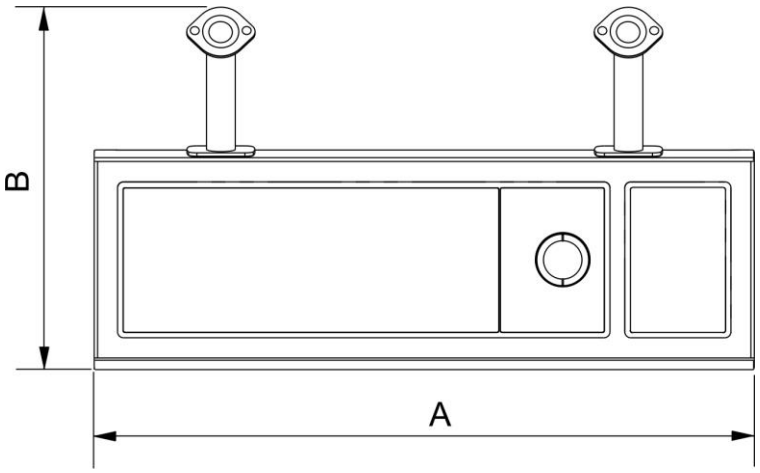
4.2.4 Keyboard with pointing device inside HSG, support arms for FR / CFR / BD / ORCA OFR





Item	Dimensions [mm]
A	635
B	424
C	350
D	170
E	52°
F	18°

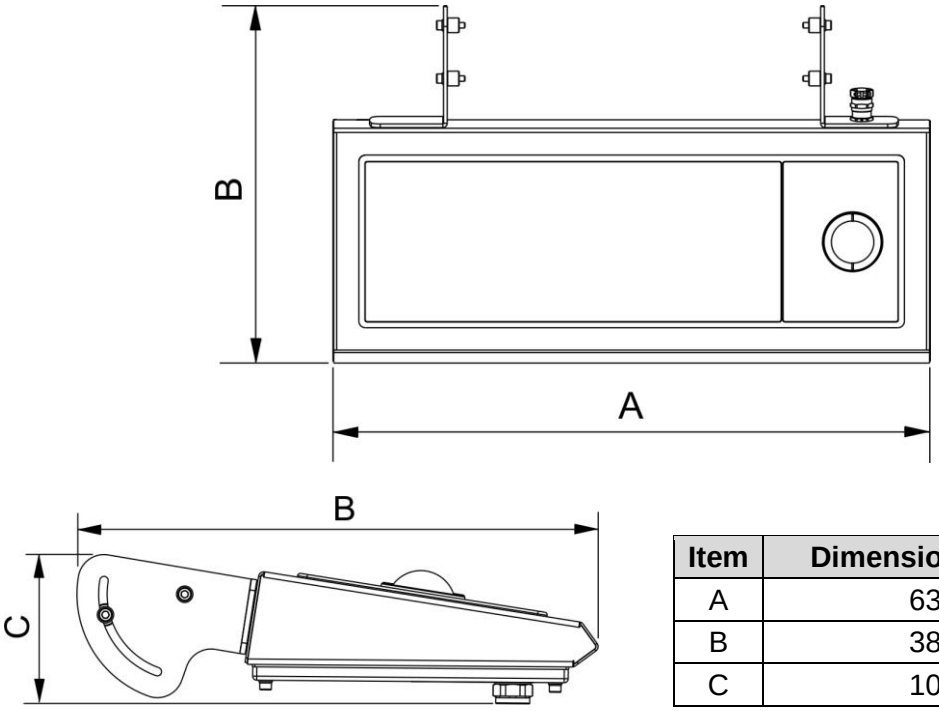
4.2.5 Keyboard with pointing device and UB03 inside HSG, support arms for FR / CFR / BD / ORCA OFR



Item	Dimensions [mm]
A	778
B	424

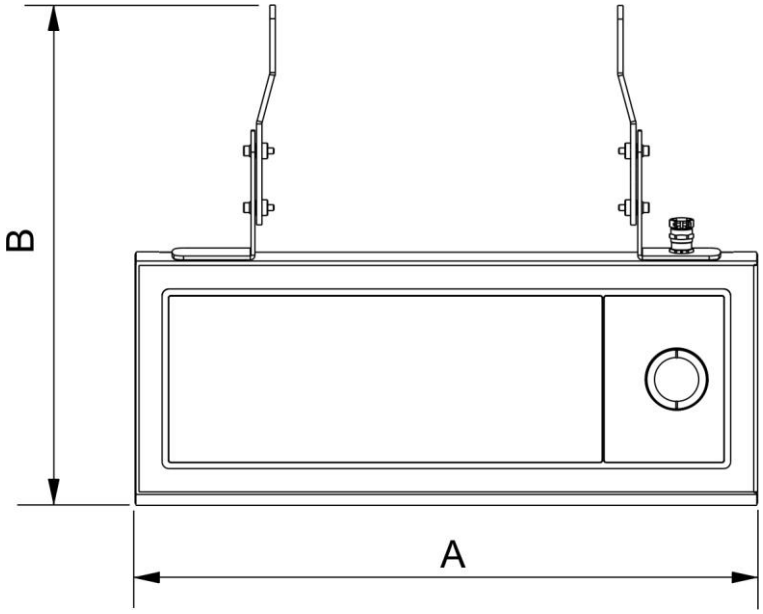
The dimensions of the side view are identical to the enclosures without UB03.

4.2.6 Keyboard with pointing device inside HSG, support arms for Yokemount

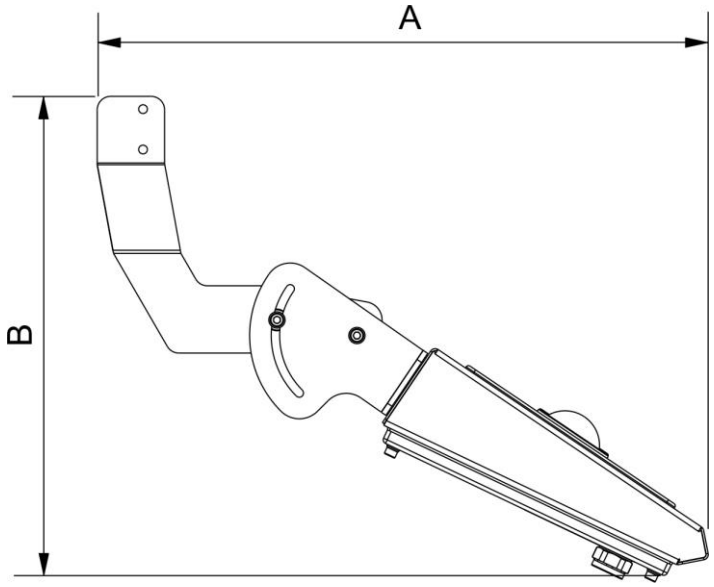


Item	Dimensions [mm]
A	635
B	382
C	105

4.2.7 Keyboard with pointing device inside HSG for SHARK wall mounting

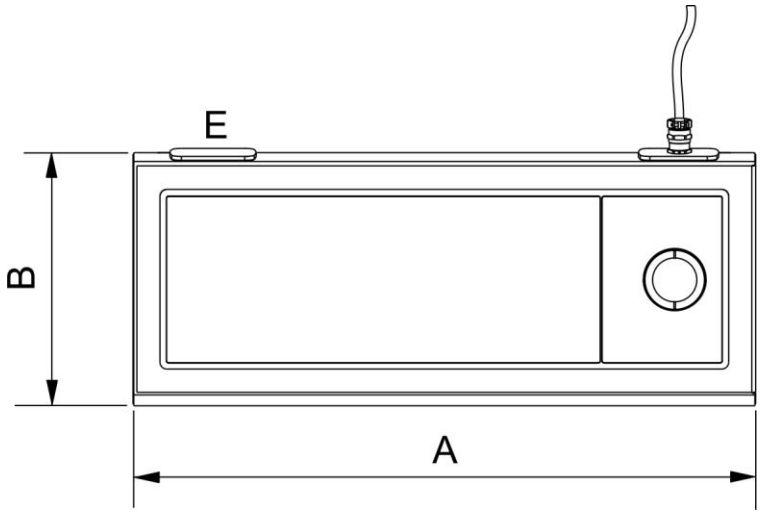


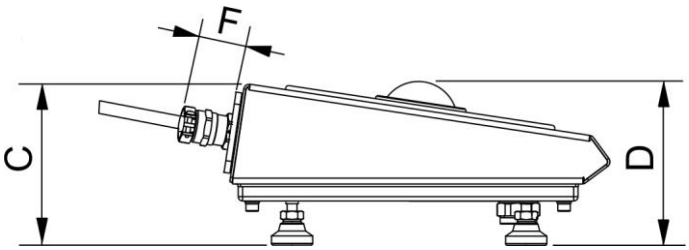
Item	Dimensions [mm]
A	635
B	557



Item	Dimensions [mm]
A	449
B	351

4.2.8 Keyboard with pointing device desktop mounting





Item	Dimensions [mm]
A	635
B	254
C	105
D	109
E	4 *
F	30

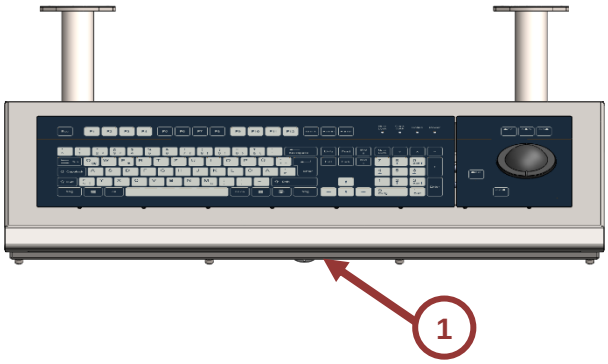
* The blind plate E has a thickness of 4 mm.

4.3 Operating elements

Item	Designation
1	Key allocation according to keyboard layout German (QWERTZ), American (QWERTY), French (AZERTY), Spanish, Swiss German, Nordic (Swedish, Finnish, Norwegian, Danish), Slovenian, Japanese, Hungarian, Ukrainian (see chapter 24.1 Keyboard layouts)
2	LEDs for NumLock, CapsLock, Scrolling, Power
3	Mouse keys left, centre, right
4	Mouse keys left, right

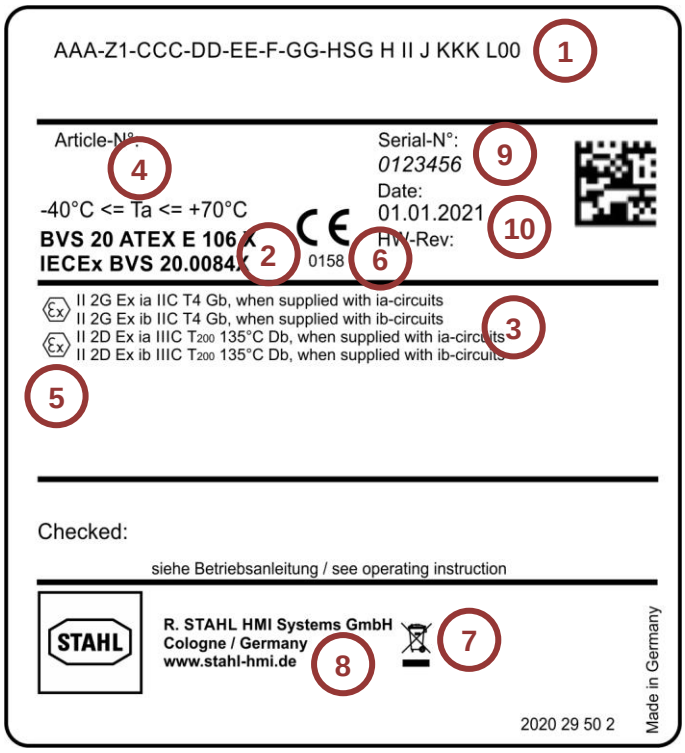
4.4 Markings on the device

4.4.1 Position



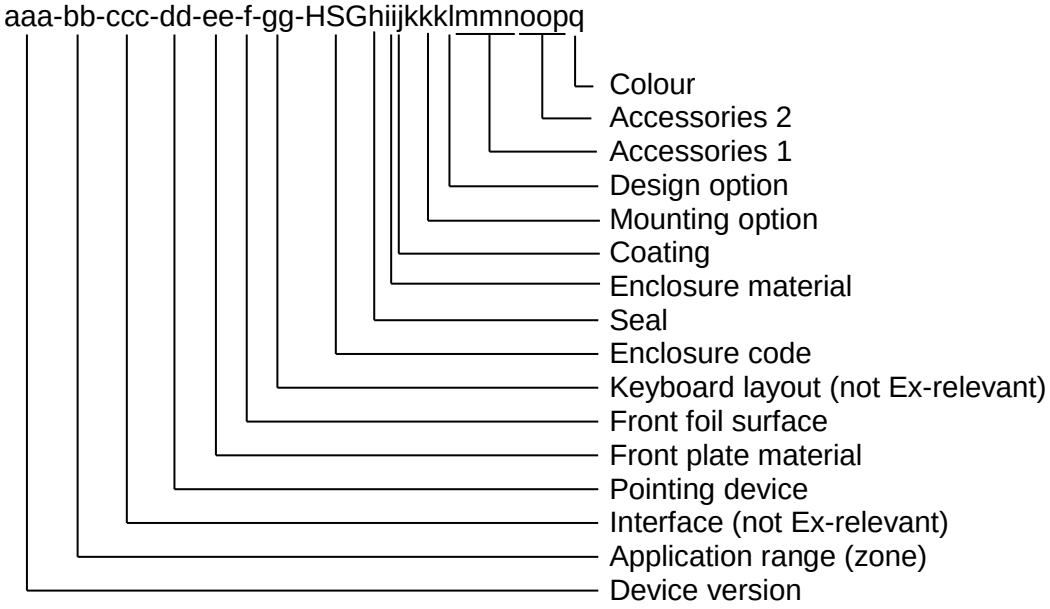
Item	Designation
1	Type label on back cover, position bottom centre

4.4.2 Design of a type label



Item	Designation
1	Type key code, see chapter 4.4.3 Type key code layout)
2	Testing authority and certificate number
3	Ex marking
4	Operating temperature range
5	Ex symbol
6	CE classification
7	WEEE symbol
8	Manufacturer
9	Serial number
10	Production date

4.4.3 Type code layout



Characters a to g of the type code are also used as a separate type code of the KB2 device versions.

Type code digit	Possible value	Description
aaa	KB2	Keyboard with / without pointing device
	PD2	Pointing device (separate)
	KM2	Keyboard matrix *(future realisation)*
bb	Z1	Devices for Zone 1, Zone 21, EPL Gb, Db
	Z2	Devices for Zone 2, Zone 22, EPL Gc, Dc
	NX	Devices for Non-Ex
ccc	USB	Interface (not Ex-relevant)
dd	00	no pointing device
	TB	Trackball
	TP	Touchpad
	JS	Joystick
ee	AP	Aluminium, coated
f	P	Polyester foil
gg	DE	German keyboard layout (QWERTZ)
	US	American keyboard layout (QWERTY)
	FR	French keyboard layout (AZERTZ)
	CH	Swiss German keyboard layout
	ES	Spanish keyboard layout
	SI	Slovenian keyboard layout
	ND	Nordic keyboard layout (Swedish, Finnish, Norwegian, Danish)
	JP	Japanese keyboard layout
	HU	Hungarian keyboard layout
	UA	Ukrainian keyboard layout

HSG	HSG	Enclosure
h	1	*not used*
	2	Silicone foam seal
ii	V2	V2A Stainless steel, SS304, 1.4301
	V4	V4A Stainless steel, SS316L, 1.4404
j	N	No coating (natural or anodic)
	P	Coating
	M	Metal coating
kkk	M00	Desktop version
	M01	Supporting arms for FR / CFR
	M02	Supporting arms for SHARK
	M03	Supporting arms for ORCA OFR
	M04	Customer specific mounting
	C00	Supporting arms for non-Ex
l	S	Standard
mmn	00	no accessories 1
	U3R	Cut-out for UB03, right side
oop	000	no accessories 2
q	0	no colour

4.4.4 Type key code KB2 device versions

Product type:

Product key structure	Description
	Variant
KB2-Zb-USB-**TB**-AP-P-gg	Keyboard with integrated trackball
KB2-Zb-USB-**TP**-AP-P-gg	Keyboard with integrated touchpad
KB2-Zb-USB-**JS**-AP-P-gg	Keyboard with integrated joystick
PD2-Zb-USB-**TB**-AP-P	Pointing device, trackball
PD2-Zb-USB-**TP**-AP-P	Pointing device, touchpad
PD2-Zb-USB-**JS**-AP-P	Pointing device, joystick

The lower case letters of the version key stand for the values from the type key table, with which they are replaced as applicable.

4.4.5 Type key code KB2-HSG assemblies

Product type

Product key structure	Description
	Variant
KB2-Zb-USB-**TB**-AP-P-gg-HSG2ViNkkkS0000000	Keyboard with integrated trackball, installed inside a standard keyboard enclosure
KB2-Zb-USB-**TP**-AP-P-gg-HSG2ViNkkkS0000000	Keyboard with integrated touchpad, installed inside a standard keyboard enclosure
KB2-Zb-USB-**JS**-AP-P-gg-HSG2ViNkkkS0000000	Keyboard with integrated joystick, installed inside a standard keyboard enclosure
KB2-Zb-USB-dd-AP-P-gg-HSG2ViNkkkS**U3R**0000	Keyboard with pointing device, installed inside a standard keyboard enclosure with cut-out for UB03, right side

The lower case letters of the version key stand for the values from the type key table, with which they are replaced as applicable.

4.4.6 Ex classification ATEX / IECEx

Ex marking ATEX / IECEx according to IEC 60079-0 and ATEX directive 2014/34/EU.

Versions **KB2 / PD2 -Z1**
KB2 / PD2 -Z1-*-HSG*00*

Version	2014/34/EU prefix	Ex marking	
Gas	Ⓔx II 2 G	Ex ia IIC T4 Gb	for supply with ia circuits
	Ⓔx II 2 G	Ex ib IIC T4 Gb	for supply with ib circuits
	Ⓔx II 3 G	Ex ic IIC T4 Gc	for supply with ic circuits
Dust	Ⓔx II 2 D	Ex ia IIIC T_{200} 135°C Db	for supply with ia circuits
	Ⓔx II 2 D	Ex ib IIIC T_{200} 135°C Db	for supply with ib circuits
	Ⓔx II 3 D	Ex ic IIIC T_{200} 135°C Dc	for supply with ic circuits

Versions **KB2 / PD2 -Z1-*-HSG*U3***

Version	2014/34/EU prefix	Ex marking	
Gas	Ⓔx II 2 G	Ex eb ia q IIC T4 Gb	for supply with ia circuits
	Ⓔx II 2 G	Ex eb ib q IIC T4 Gb	for supply with ib circuits
	Ⓔx II 3 G	Ex eb ic q IIC T4 Gc	for supply with ic circuits
Dust	Ⓔx II 2 D	Ex ia tb IIIC T135°C Db	for supply with ia circuits
	Ⓔx II 2 D	Ex ib tb IIIC T135°C Db	for supply with ib circuits
	Ⓔx II 3 D	Ex ic tb IIIC T135°C Dc	for supply with ic circuits

4.4.7 Ex classification CCC / CNEx

Chinese Ex classification CCC and CNEx according to GB/T 3836.1-2021 and GB/T 3836.4-2021.

Versions **KB2 / PD2 -Z1**

Version	Ex marking	
Gas	Ex ia IIC T4 Gb	for supply with ia circuits
	Ex ib IIC T4 Gb	for supply with ib circuits
	Ex ic IIC T4 Gc	for supply with ic circuits
Dust	Ex ia IIIC T_{200} 135°C Db	for supply with ia circuits
	Ex ib IIIC T_{200} 135°C Db	for supply with ib circuits

Chinese Ex classification CCC and CNEx according to GB/T 3836.1-2021, GB/T 3836.3-2021, GB/T 3836.4-2021, GB/T 3836.7-2017 and GB/T 3836.31-2021.

Versions KB2 / PD2 -Z1-*-HSG*00*

Version	Ex marking	
Gas	Ex ia IIC T4 Gb	for supply with ia circuits
	Ex ib IIC T4 Gb	for supply with ib circuits
	Ex ic IIC T4 Gc	for supply with ic circuits
Dust	Ex ia IIIC T_{200} 135°C Db	for supply with ia circuits
	Ex ib IIIC T_{200} 135°C Db	for supply with ib circuits

Versions KB2 / PD2 -Z1-*-HSG*U3*

Version	Ex marking	
Gas	Ex eb ia q IIC T4 Gb	for supply with ia circuits
	Ex eb ib q IIC T4 Gb	for supply with ib circuits
	Ex eb ic q IIC T4 Gc	for supply with ic circuits
Dust	Ex ia tb IIIC 135°C Db	for supply with ia circuits
	Ex ib tb IIIC 135°C Db	for supply with ib circuits

4.4.8 Ex classification KCS

Versions KB2 / PD2 -Z1*
KB2 / PD2 -Z1*-HSG*00*

Version	Ex marking	
Gas	Ex ia IIC T4 Gb	for supply with ia circuits
	Ex ib IIC T4 Gb	for supply with ib circuits
	Ex ic IIC T4 Gc	for supply with ic circuits
Dust	Ex ia IIIC T_{200} 135°C Db	for supply with ia circuits
	Ex ib IIIC T_{200} 135°C Db	for supply with ib circuits
	Ex ic IIIC T_{200} 135°C Dc	for supply with ic circuits

Versions KB2 / PD2 -Z1-*-HSG*U3*

Version	Ex marking	
Gas	Ex eb ia q IIC T4 Gb	for supply with ia circuits
	Ex eb ib q IIC T4 Gb	for supply with ib circuits
	Ex eb ic q IIC T4 Gc	for supply with ic circuits
Dust	Ex ia tb IIIC T135°C Db	for supply with ia circuits
	Ex ib tb IIIC T135°C Db	for supply with ib circuits
	Ex ic tb IIIC T135°C Dc	for supply with ic circuits

4.4.9 Ex classification FM USA

Versions KB2 / PD2 -*

Version	Ex marking	
Gas	Class I, Zone 1 AEx ia IIC T4 Gb	for supply with ia circuits
	Class I, Zone 2 AEx ic IIC T4 Gc	for supply with ic circuits
	Class I, Div. 2 Groups A, B, C, D, nonincendive	

Versions KB2-*-HSG*

Version	Ex marking	
Gas	Class I, Zone 1 AEx ia IIC T4 Gb	for supply with ia circuits
	Class I, Zone 2 AEx ic IIC T4 Gc	for supply with ic circuits
	Class I, Div. 2 Groups A, B, C, D, nonincendive	
Dust	Zone 21, AEx ia IIIC T135°C Db	for supply with ia circuits
	Zone 22, AEx ic IIIC T135°C Dc	for supply with ic circuits
	Class II, III Div. 1 Groups E, F and G, intrinsically safe	
	Class II, III Div. 2 Groups E, F and G, nonincendive	

Versions KB2-*-HSG*U3*

Version	Ex marking
Gas	Class I, Zone 1 AEx eb q IIC T4 Gb
	Class I, Zone 2 AEx ec nC IIC T4 Gc
	Class I, Div. 2 Groups A, B, C, D, nonincendive
Dust	Zone 21, AEx tb IIIC T115°C Db
	Zone 22, AEx tc IIIC T115°C Dc
	Class II, III Div. 1 Groups E, F and G, intrinsically safe
	Class II, III Div. 2 Groups E, F and G, nonincendive

4.4.10 Ex classification FM Kanada

Versions KB2 / PD2 -*

Version	Ex marking	
Gas	Class I, Zone 1 Ex ia IIC T4 Gb	for supply with ia circuits
	Class I, Zone 2 Ex ic IIC T4 Gc	for supply with ic circuits
	Class I, Div. 2 Groups A, B, C, D, nonincendive	

Versions KB2-*-HSG*

Version	Ex marking	
Gas	Class I, Zone 1 Ex ia IIC T4 Gb	for supply with ia circuits
	Class I, Zone 2 Ex ic IIC T4 Gc	for supply with ic circuits
	Class I, Div. 2 Groups A, B, C, D, nonincendive	
Dust	Zone 21, Ex ia IIIC T135°C Db	for supply with ia circuits
	Zone 22, Ex ic IIIC T135°C Dc	for supply with ic circuits
	Class II, III Div. 1 Groups E, F and G, intrinsically safe	
	Class II, III Div. 2 Groups E, F and G, nonincendive	

Versions KB2-*-HSG*U3*

Version	Ex marking
Gas	Class I, Zone 1 Ex eb q IIC T4 Gb
	Class I, Zone 2 Ex ec nC IIC T4 Gc
	Class I, Div. 2 Groups A, B, C, D, nonincendive
Dust	Zone 21, Ex tb IIIC T115°C Db
	Zone 22, Ex tc IIIC T115°C Dc
	Class II, III Div. 1 Groups E, F and G, intrinsically safe
	Class II, III Div. 2 Groups E, F and G, nonincendive

4.4.11 Ex classification PESO

Versions KB2-Z1-*

Version	Ex marking
Gas	Ex ia IIC T4 Gb
	Ex ib IIC T4 Gb

5 Transport and storage

NOTE	**No or damaged packaging during transport and storage** If the device is transported or stored without packaging, shocks, vibrations, pressure and humidity can directly impact the device. Damaged packaging indicates that the device has been subjected to and possibly been damaged by outside influences. This may result in faulty functionality. • Check the state of the packaging. • Report any damage sustained in transport to the haulier responsible and have it confirmed. • Transport and store the device in undamaged packaging, ideally the original packaging.

Transport and store the device carefully and in accordance with the safety notes (see chapter 3 Safety).

Transport and store the device in undamaged packaging, ideally the original packaging.

Ensure specified storage temperature range is not exceeded (see chapter 16.1 Technical data).

Store the device in a dry place free of vibrations.

Do not drop the device.

6 Unpacking

Unpack the device at its final destination.

Check the contents are complete and undamaged (see chapter 4.1.5. Scope of delivery)

Contact the manufacturer if the contents are incomplete, damaged or not what you have ordered.

Dispose of the packaging materials according to local regulations.

7 Mounting and installation

7.1 Note on mounting and installation

Observing the following points will ensure a professional and safe assembly and installation

Only use threads or holes already present in the enclosure.

Mount the device carefully and strictly in accordance with the safety notes (see chapter 3 Safety).

Study the installation conditions and assembly instructions in these Operating Instructions carefully and follow them to the letter.

7.2 Requirements for site of installation

	Mount the device in such a way that it is always operated within the permissible temperature range.

Observe the stipulated hazardous zones: Z2 devices may only be installed in Zone 2 and Zone 22.

The site of installation must be stable and suitable for the dimensions of the device, and able to bear the load of its weight and that of any necessary attachments.

Avoid trackball / touchpad contamination by saltwater: conductive liquids on the trackball / touchpad may restrict functionality. This applies in particular to salt water.

Avoid trackball contamination as this may restrict functionality.

7.3 Mounting types

The device is mounted and operated horizontally with the supporting arms (usually at the enclosure or yoke of the operating device).

These supporting arms are mounted at the HSG enclosure of the assemblies.

	For a detailed description of how to mount the device refer to the Installation Manual stored on the CD / DVD / USB stick included in the delivery or online at r-stahl.com.

7.4 Installation KB2 in enclosure

	For suitable enclosure types, see chapter 3.4 Special conditions of use.

NOTE 	**Possible mechanical or electrical damage to the keyboard** Exposed circuit boards and electronic components. • Take ESD protective measures before installation. • If possible, do not touch the circuit board areas.

- Prepare the mounting cut-out and hole dimensions for the enclosure in accordance with chapter 20.1 Cut-out KB2.
- Carefully insert the keypad into the mounting cut-out
- Fasten the keyboard with M3 lock nuts, tightening torque: 1.0 ±0.1 Nm
- Electrical installation, instructions according to chapter 7.5 Installation

7.5 Installation

DANGER	**Explosion hazard due to improper installation !** Non-compliance may result in fatal or serious injuries. • Ensure the atmosphere is non-explosive. • Make sure that the device is not damaged. • If the device is connected to the mains: ○ Disconnect the device from the power supply.

DANGER	**Explosion hazard due to electrostatic charge!** Non-compliance may result in fatal or serious injuries. • Do not paint / coat the device or retouch its paint / coating. All repairs must be carried out by the manufacturer. • If additional sticky labels are attached, the specifications of EN IEC 60079-0 must be observed. • Clean the device with a damp cloth only.

7.5.1 General information on electric connection

- Connect cables carefully.
- Do not screw down on the conductor insulation.
- Do not switch conductors.
- Observe code of practice when connecting conductors.
- Firmly screw down conductors.
- Cables are attached ex factory and must not be extended or replaced.
- The KB2 device versions are fitted with an 8-pole cable (+ shield conductor), and the PD2 versions with a 4-pole cable (+ shield conductor).
- Shield the cable with a maximum of 1 MΩ against ground.
- Twist the D+ and D- data conductors until right up to their terminals.
- Pay attention to specified torques for screws to avoid damage to threads.
- Suitable measures against electrical surge during lightning strike may be necessary.
- Only connect and operate keyboards with the same protection level (see note on "Protection level") !
- For the connection of keyboards to IT-xx7 Non-Ex devices use the "Non-Ex connector KB2 set" (2x USB connector) (SAP no. 301224) !

7.5.2 Connecting the device

1. Connect the USB conductors according to the terminal diagram (see chapter 19.1 Connection overview terminal assignment KB2)
2. Make sure the pin assignment is correct.

7.5.3 Grounding the device

Connect the shield with the cable lug to the PA ground connection (see chapter 19.1 Connection overview terminal assignment KB2).

8 Initial start-up

Conditons:

The device has been installed correctly.
The device has been connected to the equipotential bonding.

1. Since factors such as storage or temperature can have an impact on the cables and cable glands, check the following connections:
   - Connection terminals
   - Existing screw connections
2. Switch on the operating device (HMI).
   - Together with the operating device, the KB2 device is immediately operational.

9 (Re-) Commissioning

1. Check the device is correctly installed:
   - Connection terminals
   - Existing screw connections
2. Check the device for visible damage.
   - Only commission the device if there is no visible damage and if it has been correctly installed.
3. Switch on the operating device (HMI).
   - Together with the operating device, the KB2 device is immediately operational.

10 Operation

DANGER	**Explosion hazard due to damaged device !** Non-compliance may result in fatal or serious injuries. In case of damage or changes to the factory state: • Decommission device immediately. • Contact manufacturer.

DANGER	**Explosion hazard due to electrostatic charge !** Non-compliance may result in fatal or serious injuries • Do not paint / coat the device or retouch its paint / coating. All repairs must be carried out by the manufacturer. • If additional sticky labels are attached, the specifications of EN IEC 60079-0 must be observed. • Clean the device with a damp cloth only.

WARNING 	**Hot surfaces !** Non-compliance may result in minor burns. In ambient temperatures exceeding +45 °C the surface of the device may heat up. • Do not touch the device.

- Conductive liquids on the trackball / touchpad may restrict functionality. This applies in particular to salt water.
  Avoid contamination of the trackball / touchpad with salt water.
- Avoid trackball contamination as this may restrict functionality.
- Regularly clean the trackball (see chapter 22.1 Trackball cleaning).

10.1 Switching the device on and off

The device is switched on and off together with the operating device (HMI).
When the operating device is switched on, the device is immediately operational.

11 Maintenance, overhaul and repair

DANGER	**Explosion hazard due to damaged seal !** Non-compliance may result in fatal or serious injuries. • In case of damage or changes to the factory state immediately decommission the device. • Contact manufacturer.

DANGER	**Explosion hazard due to incorrect maintenance, overhaul or repair !**
	Non-compliance may result in fatal or serious injuries.
	• Ensure the atmosphere is non-explosive.
	• Make sure that the device is not damaged.
	• Do not open the enclosure.
	• If the device is connected to the operating device:
	  ○ Disconnect the operating device from the power supply.
	  ○ Isolate supply and all Ex e circuits and wait 5 minutes before opening the terminal boxes of the operating device.

WARNING 	**Hot surfaces at the device !** Non-compliance may result in minor burns. In ambient temperatures exceeding +45 °C the surface of the device may heat up. • Do not touch the device.

11.1 Servicing

When servicing the device, check the following points in addition to those stipulated in the national regulations:

- Damage to seals: cracks or other visible damage to the device enclosure and / or the protective enclosure.
- All cables and conductors securely connected: conductors tightly clamped
- All cables and conductors undamaged
- Compliance with permitted temperature range
- Mounting fits securely, all screws tightened fast
- Ensure pointing devices are clean
- Ensure the device is used as intended
- Only connect and operate keyboards with the same protection level (see note on "Protection level") !

11.2 Maintenance

Because the transmission of the devices remains reliable and stable over long periods of time, regular adjustments are not required.

- Regularly clean the trackball.
- If the device is operated in temperatures around freezing point, clean the trackball regularly to ensure there is no liquid / water inside it.
- Clean the trackball with a damp cloth only. Do not use any abrasive cleaning materials, and no cleaning agents. Under adverse ambient conditions the trackball may have to be cleaned at shorter intervals.
- Replace damaged seals with original parts by the manufacturer only.

For trackball cleaning, see chapter 22.1 Trackball cleaning

11.3 Repair

The devices cannot be repaired by the customer.

- Any repair on the device is to be performed by R. STAHL only.
- The devices must be dismounted by qualified staff only (see chapter 3.3 Personnel qualification).
- Returned devices must be accompanied by a description of the fault.
- Remove any residual substances. Take particular care with seal notches and slits to which residual substances might adhere.

⚠ CAUTION	**Substance residues adhering to device** Substance residues adhering to the device may result in skin lesions and must be removed. • Do not return any devices for which you cannot be absolutely sure that any hazardous substance residues have been completely removed.

12 Returning the device

Only return or package the devices after consulting R. STAHL. Contact the responsible representative from R. STAHL. R. STAHL's customer service is available to handle returns if repair or service is required.

Contact customer service via E-mail or telephone:

- E: service.dehm@r-stahl.com
- T: +49 221 76806 3000

Requesting a RMA ticked via our website:

- Go to r-stahl.com.
- Under "Support" > "RMA form", select "Request RMA ticket".
- Fill in and send the form.
- You will automatically receive and E-mail with an RMA ticket.
- Print out the RMA ticket.
- Clearly copy the RMA number onto the outside of the package.
- Send the device with the RMA ticket included in the package to R. STAHL HMI Systems GmbH (see chapter 1.1 Manufacturer for the address).

13 Cleaning

- Check the device for damage before and after cleaning it. Decommission damaged devices immediately.
- Devices located in hazardous areas may only be cleaned with a damp cloth to avoid electrostatic charge.
- When cleaning with a damp cloth, use water or mild, non-abrasive, non-scratching cleaning agents.
- Do not use abrasive detergents or solvents.
- Never clean the device with a strong water jet, such as a pressure washer.

For trackball cleaning, see chapter 22.1 Trackball cleaning

14 Disposal

- Observe national, local and statutory regulations regarding disposal.
- Separate materials for recycling.
- Ensure environmentally friendly disposal of all components according to statutory regulations.

For disposal and restricted substances, see Chapter 20.1 Disposal / Restricted substances.

15 Accessories

NOTE	**Malfunction or damage to the device due to the use of non- original components.** Non-compliance may result in material damage. • Only use original R. STAHL HMI Systems GmbH accessories.

16 Appendix A

16.1 Technical data

Function / Equipment	KB2-HSG assemblies
Power supply	via USB interface
Interfaces	USB
Connection	open cable end
Cable type	standard USB
Cable conductors (number)	8 + shield
Cable lengths	
Total length	2.4 m (must not be extended by the customer !)
Usable length	
for version M00	
for version M01 (MANTA)	1.95 m from the support arm exit
for version M02 (SHARK)	from the edge of the enclosure approx. 0.65 m
for version M03 (ORCA01)	
Keyboard layout (standard)	German (QWERTZ), American (QWERTY), French (AZERTY)
Other keyboard layouts	Spanish, Swiss German, Nordic (Swedish, Finnish, Norwegian, Danish), Slovenian, Japanese, Hungarian, Ukrainian
Number of keys	105 104 (American), 109 (Japanese)
Keyboard foil	Polyester
Key technology	
Switching force / travel	2.55 N / 0.55 mm
Service life	at least 1,000,000 actuations
Design	
Trackball	
Ball diameter [mm]	50
Switching force / travel	2.55 N / 0.55 mm
Service life	1,000,000 ball rotations
Joystick	
Length [mm]	24.3
Switching force / travel	2.55 N / 0.55 mm
Service life	1,000,000 actuation cycles
Enclosure	V2A stainless steel (SS304, 1.4301) or V4A stainless steel (SS316L, 1.4404)
Enclosure protection type	IP66
Front	IP66
Back	IP66
Operating temperature range	
Operation	-40 °C … +70 °C
Storage temperature range	-40 °C … +70 °C
Relative humidity	10% to 90% relative humidity, non-condensing
Damp heat	+95 °C / 90 %
MTBF	min. / typ. 50,000 h at Ta 20 °C (68 °F) and intended purpose

Dimensions [mm]	without cable
Keyboard with enclosure HSG	without cable and screw connections
Width x length (W x L)	635 x 254
Height (H)	92
Width x length (W x L) with UB03	778 x 254
Width x length x height (W x L x H) with support arm for FR / CFR / BD / ORCA OFR	635 x 350 x 424
Width x length x height (W x L x H) with UB03 with support arm for FR / CFR / BD/ ORCA OFR	778 x 350 x 424
Width x length x height (W x L x H) with support arm for Yoke mount	635 x 382 x 105
Keyboard without enclosure	without cable
Width x length x deep (W x L x D)	580 x 185 x 53
Total height (H) with trackball	69.1
Total height (H) with joystick	74.3
Total weight [kg]	
for version M01 (MANTA) and M03 (ORCA01)	8.5
for version M01 (MANTA) with UB03 and M03 (ORCA01)	11
for version M02 (SHARK)	8.2
Own weight keyboard [kg]	2.4

17 Appendix B

17.1 Permitted maximum values

17.1.1 KB2 / PD2 versions

Cable	Colour	Connection	Signal name	Name
1	White	Keyboard	+5 V	Power supply +UB
2	Green		USM_m	Data conductor D-
3	Yellow		USM_p	Data conductor D+
4	Brown		GND	Power supply GND
5	Red	Pointing device	+5 V	Power supply +UB
6	Grey		USM_m	Data conductor D-
7	Pink		USM_p	Data conductor D+
8	Blue		GND	Power supply GND

Cable	Colour	Connection	Signal name	Name
1	White	PD2	+5 V	Power supply +UB
2	Green		USM_m	Data conductor D-
3	Yellow		USM_p	Data conductor D+
4	Brown		GND	Power supply GND

U_i		=	5.9	VDC	U_o	=	U_i
I_i	Group III ib / ic	=	250	mA	I_o	=	I_i
P_i		=	650	mW	P_o	=	P_i
C_i		=	21	µF	C_o	=	-
L_i		=	1.68	µH	L_o	=	-

For the fixed cable, an additional capacity value of 200 pf/m and inductance value of 1 µH/m must also be taken into account !

When connecting to operating devices with MANTA platform:

When the power supply is located in dust hazardous areas, the devices must be installed inside a suitable enclosure to ensure at least IP64 according to EN IEC 60079-0 !

I_i	Group II / III ia	=	319	mA	I_o	=	I_i

17.1.2 For HSG enclosures with "U3" device version

	Only version UB03-USB is available for KB2 keyboards with UB03. Version UB03-RS-422 is not possible !

	Only representation of the relevant data.

USB version					
Terminal	**Pin**	**Signal**	**typical colour coding**		**Connection / function**
			USB 2.0 cable	Profinet cable	
X1	1	VBUS	Red	Orange	+5 VDC power supply
	2	USB D-	White	White	Data conductor -
	3	USB D+	Green	Blue	Data conductor +
	4	GND	Black	Yellow	0 VDC power supply
X2	Not in use / do not allocate !				

Device power supplyX1 pins 1 and 4:

Nominal voltage		=	5 … 30	VDC
Nominal current		=	max. 1	A
Nominal power		≤	30	W
Max. input voltage	U_m	=	250	VAC

Data cable X1 pins 2 and 3:

Nominal voltage = 5 VDC
Max. input voltage Um = 250 VAC

18 Appendix C

18.1 Proof of intrinsic safety

Proof of intrinsic safety for connection of KB2 keyboards with HMI devices with platforms MANTA (ET-/MT-xx7), SHARK (ET-/MT-xx8) and ORCA (ORCA01*).

18.1.1 General information

Proof of intrinsic safety is given on the basis of the IEC/EN 60079-14 and the standards referred to therein. In particular, we refer to Chapter 12 "Additional requirements for type of protection i - intrinsic safety" in IEC/EN 60079-14.

Proof has been produced on the basis of the Certificate of Conformity according to IEC/EN 60079- 0 and IEC/EN 60079-11 or the EC Type Examination Certificate according to the 2014/34/EU directive and the comparison of the safety-relevant data listed therein.

The following Type Examination Certificates were used:

Device		*Type Examination Certificate*
ET-xx7	—	BVS 11 ATEX E 102 X
MT-xx7	—	BVS 12 ATEX E 033 X
ET-xx8	—	BVS 14 ATEX E 134 X
MT-xx8	—	
ORCA01*	—	UL 23 ATEX 2902X
KB2 keyboards and assemblies	—	BVS 20 ATEX E 078 X BVS 20 ATEX E 079 X BVS 20 ATEX E 106 X BVS 20 ATEX E 107 X

The relevant test body has listed **all** conditions applicable to intrinsic safety in the type examination certificates.
For example, if a type examination certificate for a specific device only lists the applicable voltage (Ui), this means that intrinsic safety is guaranteed for connections if the associated power supply device does not exceed this voltage level (Uo is smaller than / equal to Ui).
Other output parameters defined in the test certificate of the power supply device (e.g. Io, Po) are irrelevant to intrinsic safety concerns.

The data listed in this document **DO NOT** absolve the installers / operators of each system from their duty and responsibility to observe the applicable statutory requirements, directives and regulations. In any case, the associated due diligence remains the responsibility of the installer and / or the operator !

18.1.2 Connections

Examination of the voltage, current, capacitance and inductance values of all circuits to establish the connection between the KB2 keyboards and assemblies with MANTA (ET-/MT-xx7), SHARK (ET-/MT-xx8) and ORCA (ORCA01*) devices.

a) ET-/MT-xx7 HMI device with KB2 keyboards / assemblies

Source / active		==>	Sink / passive
ET-/MT-xx7			KB2 keyboards / assemblies
Terminals X11 / X12			Keyboard connection
Uo = 5.5 VDC		≤	Ui = 5.9 VDC
Io = 309 mA		≤	Ii = 319 mA
Po = 629 mW		≤	Pi = 650 mW
Co [µF] =	50	≥	Ci = 21 µF
Lo [µH] =	40	≥	Li = 1.68 µH

C_o and L_o pairs directly above / underneath each other may be used.

For the fixed cable, an additional capacity value of 200 pf/m and inductance value of 1 µH/m must also be taken into account !

b) ET-/MT-xx8 HMI device with KB2 keyboards / assemblies

Source / active		==>	Sink / passive
ET-/MT-xx8			KB2 keyboards / assemblies
Terminals X33 / X34			Keyboard connection
Uo = 5.36 VDC		≤	Ui = 5.9 VDC
Io = 249.85 mA		≤	Ii = 250 mA
Po = 518 mW		≤	Pi = 650 mW
Co [µF] =	21	≥	Ci = 21 µF
Lo [µH] =	4.68	≥	Li = 1.68 µH

C_o and L_o pairs directly above / underneath each other may be used.

For the fixed cable, an additional capacity value of 200 pf/m and inductance value of 1 µH/m must also be taken into account !

c) ORCA01* device with KB2 keyboards / assemblies

Source / active		==>	Sink / passive
ORCA01*			KB2 keyboards / assemblies
Terminals X5 / X6			Keyboard connection
Uo = 5.36 VDC		≤	Ui = 5.9 VDC
Io = 249 mA		≤	Ii = 250 mA
Po = 550 mW		≤	Pi = 650 mW
Co [µF] =	21	≥	Ci = 21 µF
Lo [µH] =	5	≥	Li = 1.68 µH

C_o and L_o pairs directly above / underneath each other may be used.

For the fixed cable, an additional capacity value of 200 pf/m and inductance value of 1 µH/m must also be taken into account !

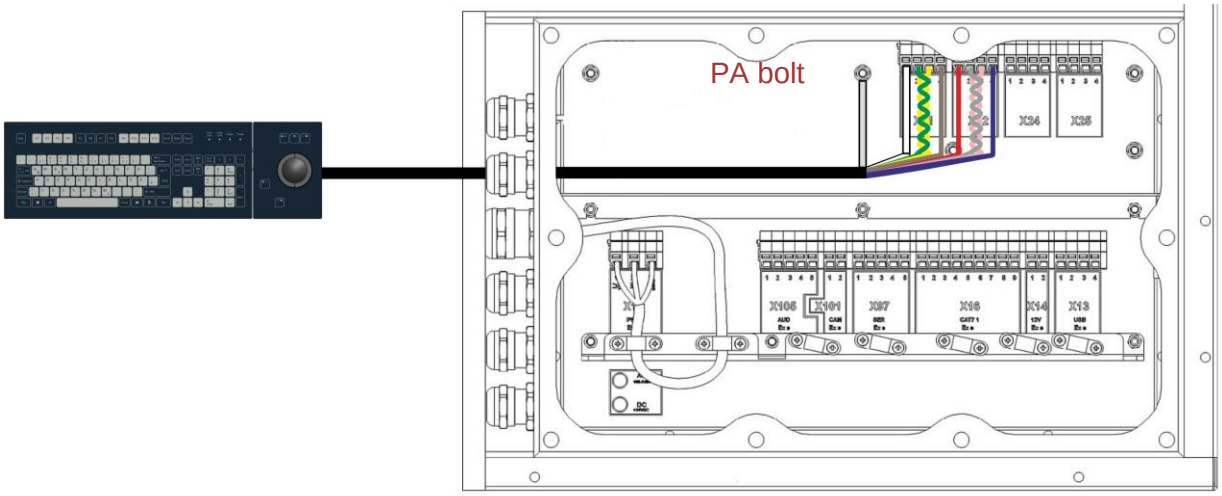
19 Appendix D

19.1 Connection overview cable assignment KB2

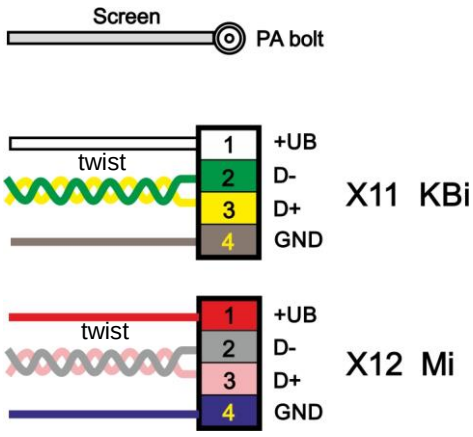
The length of the connection cable (see Technical data) must not be extended or replaced by the customer !

Cable	Colour	Connection	Signal name	Name
1	White	Keyboard	+5 V	Power supply +UB
2	Green		USM_m	Data conductor D-
3	Yellow		USM_p	Data conductor D+
4	Brown		GND	Power supply GND
5	Red	Pointing device	+5 V	Power supply +UB
6	Grey		USM_m	Data conductor D-
7	Pink		USM_p	Data conductor D+
8	Blue		GND	Power supply GND
Screen	-		Screen	Connect shielding to ground (< 1 MΩ)

19.1.1 KB2 at ET-/MT-xx7

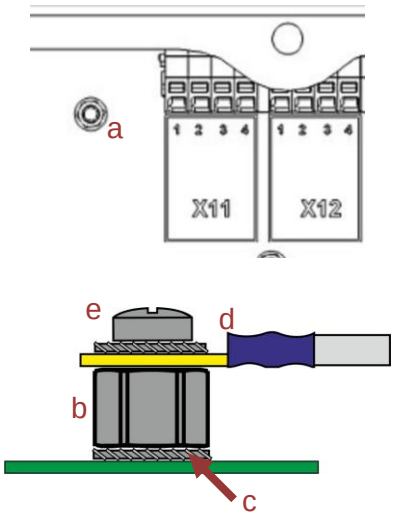


Detailed view terminal assignment



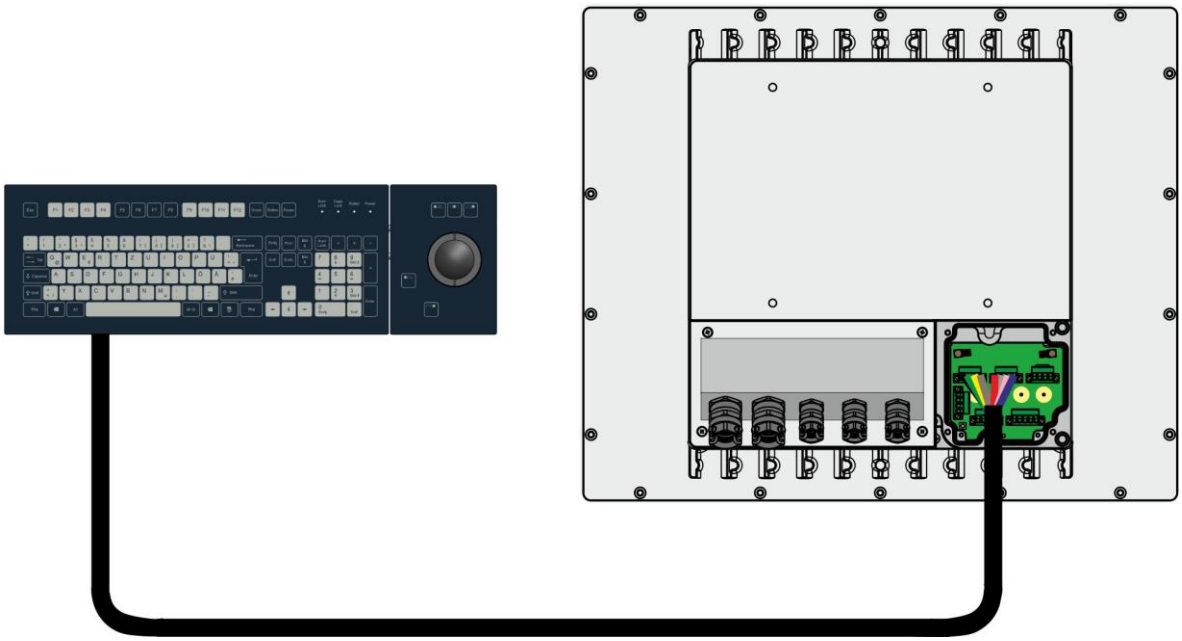
Ground connection

- unscrew existing nut (a)
- Screw on distance bolt I/I (b) with tooth lock washer (c) (tightening torque 1 Nm)
- Attach ring cable lug (d) with combined screw and tooth lock washer (e)

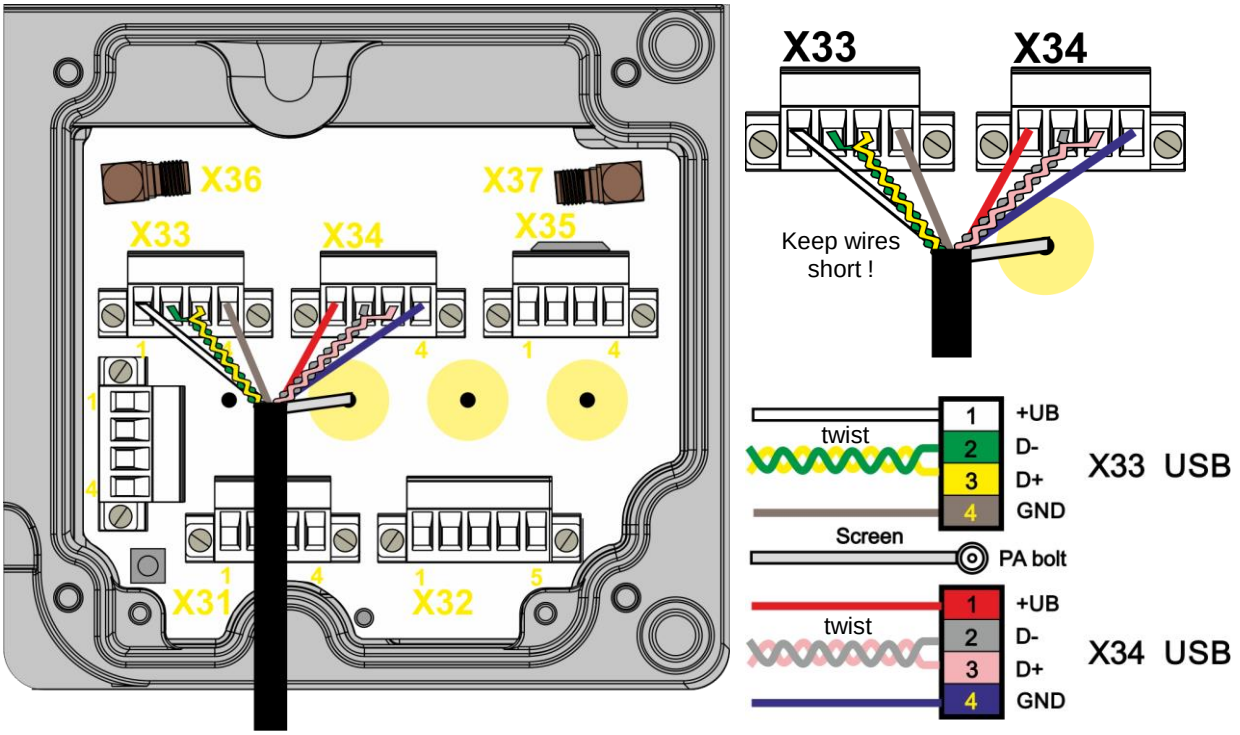


Earthing material see 4.1.7 Scope of delivery

19.1.2 KB2 at ET-/MT-xx8

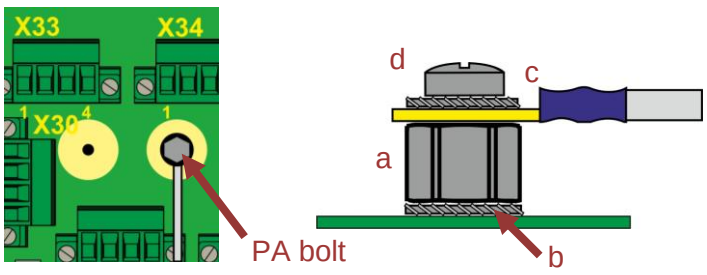


Detailed view terminal assignment



Ground connection

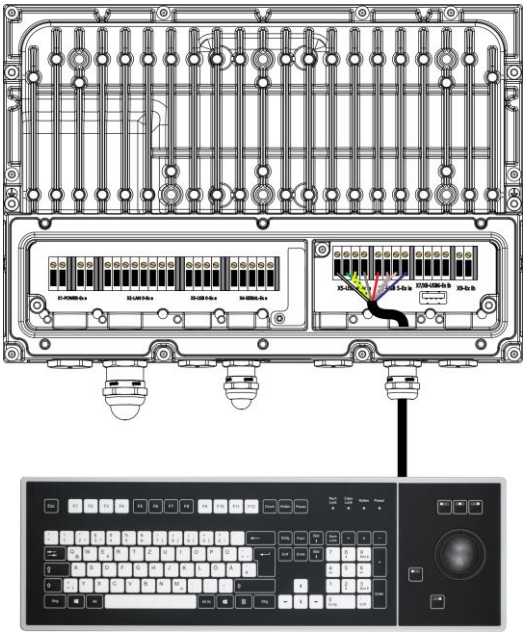
- Screw on distance bolt I/A (a) with toothed washer (b) (tightening torque 1 Nm)
- Attach ring cable lug (c) with combined screw and tooth lock washer (d)



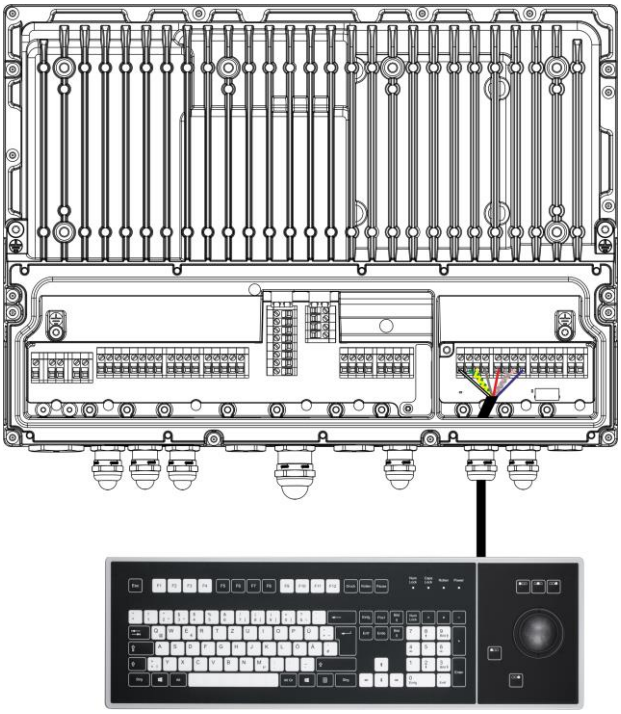
Earthing material see 4.1.7 Scope of delivery

19.1.3 KB2 at ORCA01*

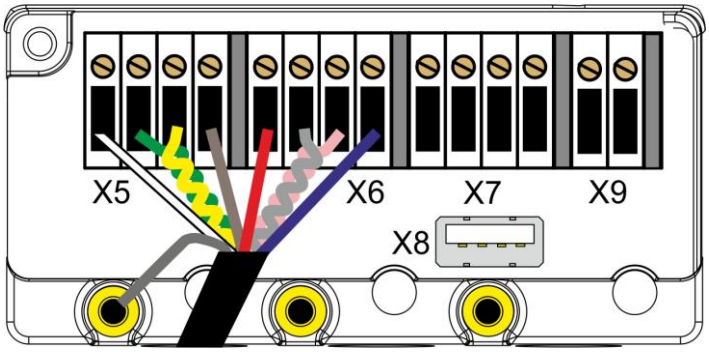
E-Box Standard

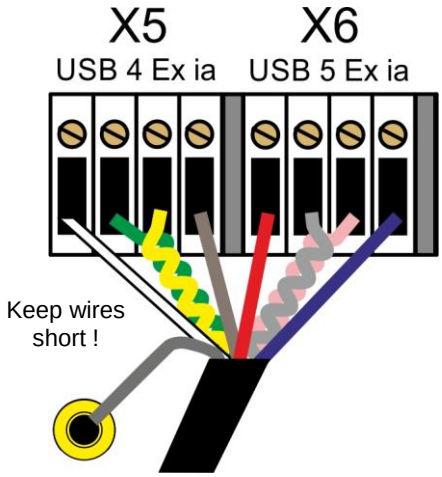


E-Box PRO



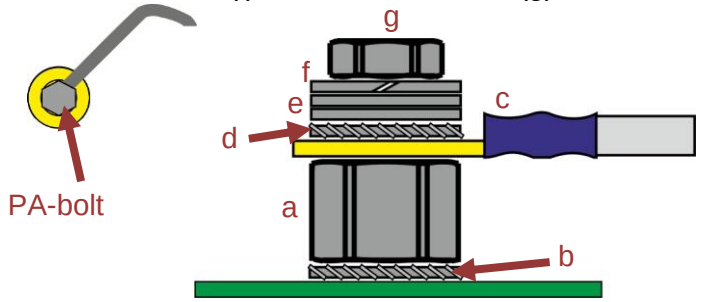
Detailed view terminal assignment (identical for E-Box Standard and PRO)

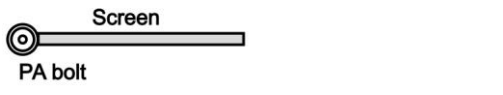


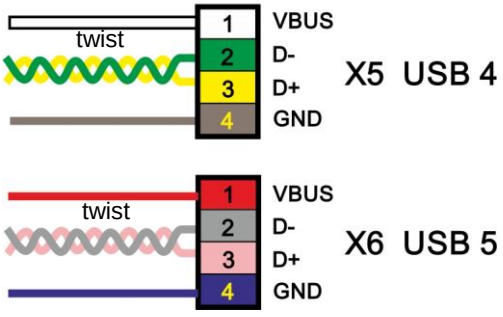


Ground connection

- Screw on distance bolt I/A (a) with tooth lock washer (b) (tightening torque 1 Nm)
- Fit distance bolt A-A M3 with ring cable lug (c), tooth lock washer (d), 2x washer (e), spring lock washer (f) and fasten with nut (g).







	Earthing material see 4.1.7 Scope of delivery

19.2 Connection overview cable assignment PD2

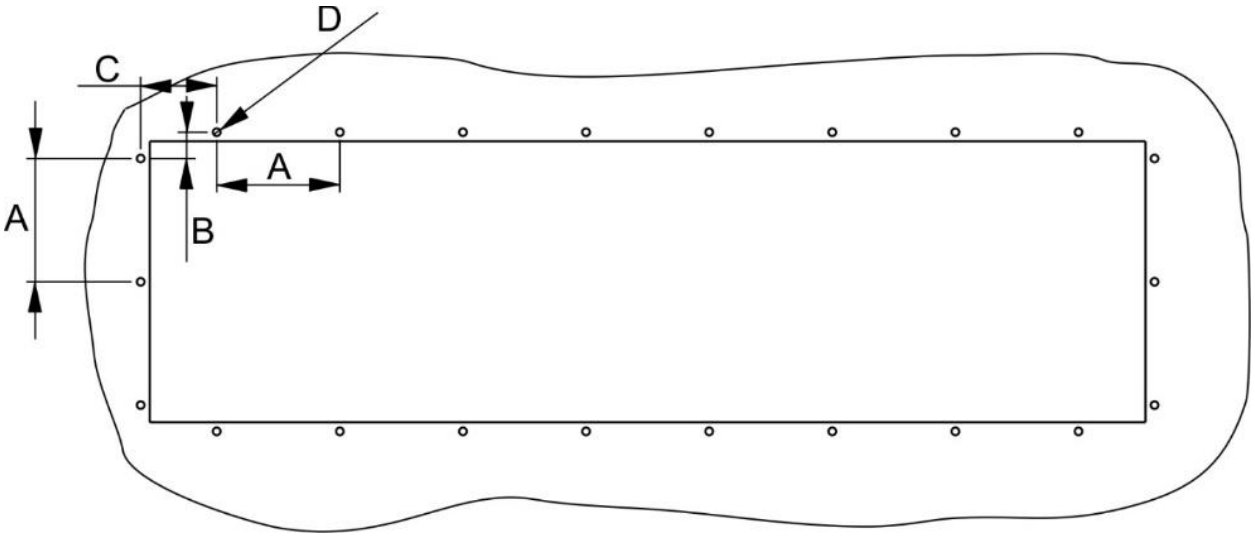
The length of the connection cable (see Technical data) must not be extended or replaced by the customer !.

Cable	Colour	Connection	Signal name	Name
1	White	PD2	+5 V	Power supply +UB
2	Green		USM_m	Data conductor D-
3	Yellow		USM_p	Data conductor D+
4	Brown		GND	Power supply GND
Screen	-		Screen	Connect shielding to ground (< 1 MΩ)

20 Appendix E

20.1 Cut-out KB2

in mm



A	B	C	D	Material thickness
68	14.5	42	Ø 4.2	1.5 to 7

21 Attachment F

21.1 Trackball cleaning

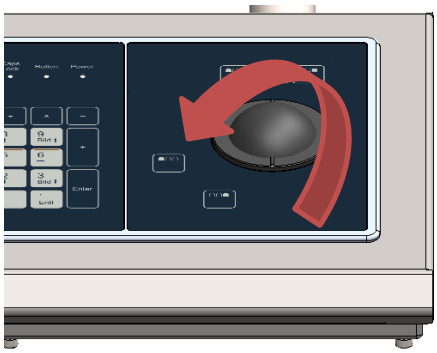
Required materials:

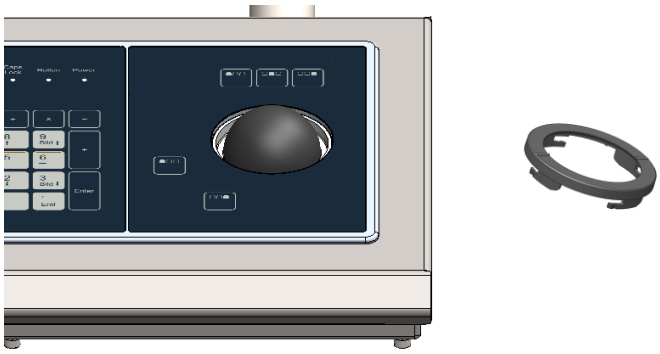
Suction cup (included in the delivery)

a damp, lint-free cloth

Procedure:

1 - Switch off the device
- Using your fingers, turn black ring to the left and remove it

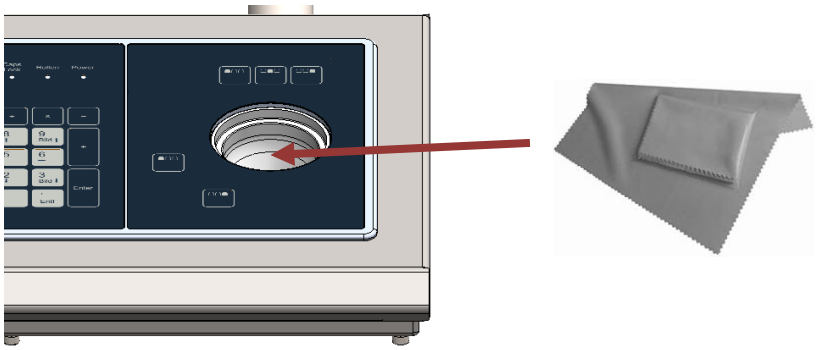




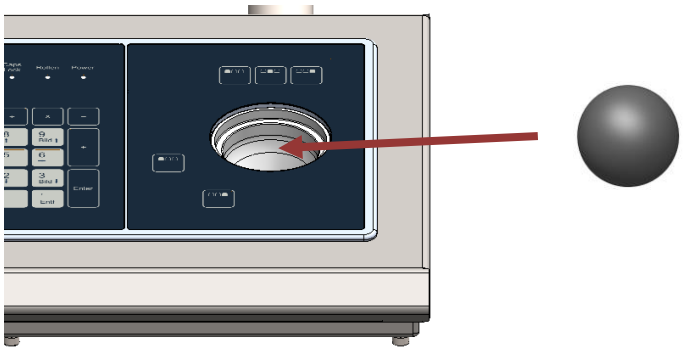
2 - Using the included suction cup, carefully remove the trackball

NOTE	**Malfunction or damage to the device due to incorrect handling !** A damaged surface may result in incorrect functionality ! • Handle the trackball carefully • Take care not to damage the surface

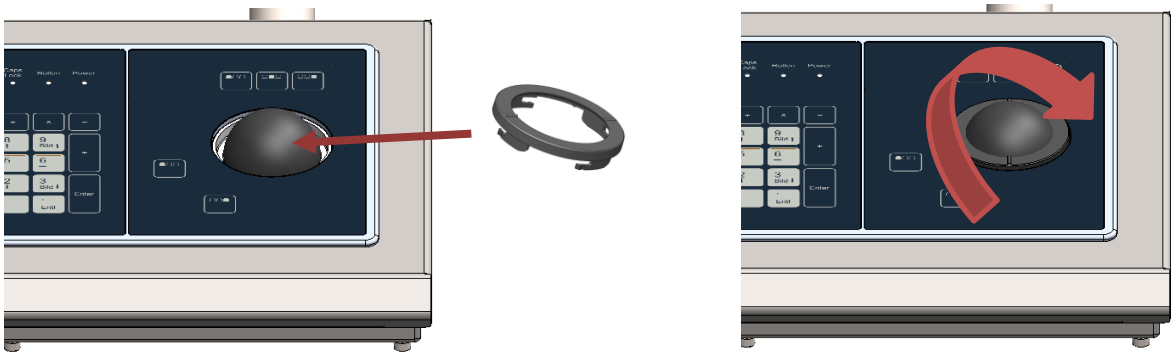
3 - Clean and dry the recess for the ball with a damp, lint-free cloth



4 - Slowly and carefully return the trackball to the recess



5 - Using your fingers, replace the ring disk and turn to right.



6 - Switch the device back on
- Check trackball function

22 Appendix G

22.1 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	SG4 large devices >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.

22.1.1 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)

22.1.1.1 Declarable substance groups

Component	Name	Mass (g)	Declarable Substance Groups and Substances (IEC 62474 database)	CAS No.	Mass %	Exemption (acc. to directive)
-	-	-	No SVHC present	-	-	-

22.1.1.2 RoHS directive 2011/65/EC

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

22.1.1.3 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).

23 Appendix H

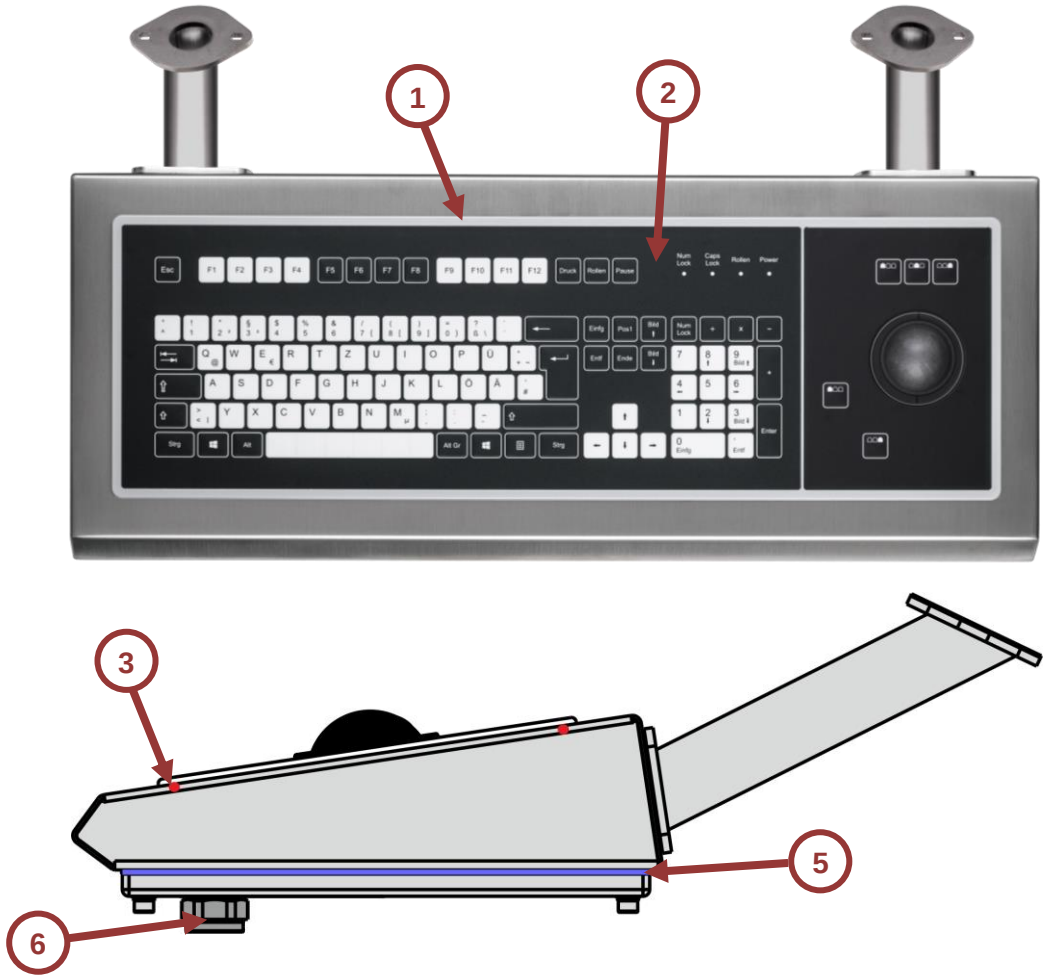
23.1 Material resistance

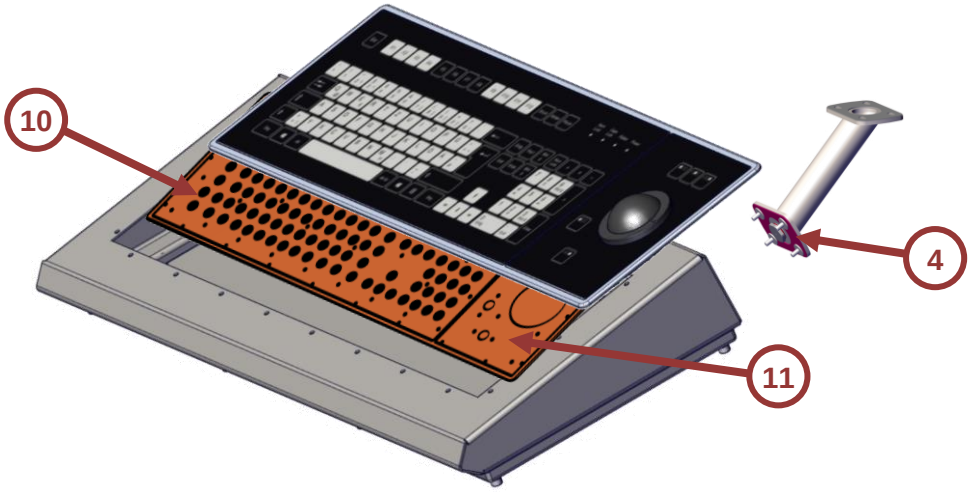
This section deals with the resistance to chemicals of keyboard components that are exposed to the outside environment.
The selection of individual chemicals listed is by no means complete.

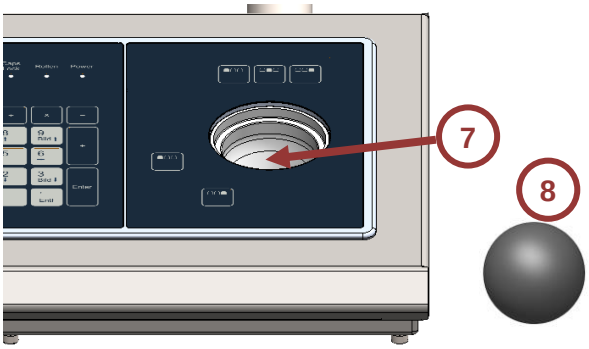
23.1.1 Materials

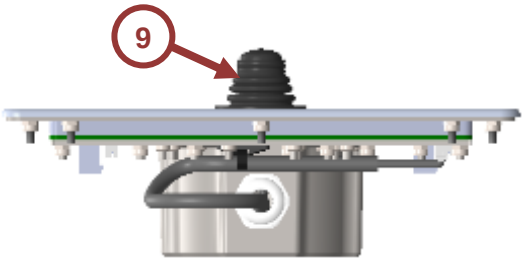
Item	Colour in image	Designation	Position / additional designation	Materials
1	white	Front plate	Powder-coated aluminium	Tiger Drylac series 29
2	black	Front plate membrane	MacDermid Autotex XE	Polyester
3	red	Front plate seal	enclosure-side	Bisco HT-800
4	dark red	Enclosure seal	at the mounting arms	Bisco HT-800
5	blue	Enclosure seal	back cover side	Köpp methyl vinyl polysiloxane gum [VMQ]
6	dark grey	Breather	CMP 781e	Felt insert
7	light grey	Trackball recess	Ball recess featuring trackball optics	Polycarbonate (Lexan) LS2
8	dark grey	Trackball	Trackball itself	Epoxy Resin
9	black	Joystick	Rubber hood	
10	orange	Key pad	below front plate	Momentive Silopren LSR2650
11		PD2 seal		

Positions









23.1.1.1 Powder coating front plate

Chemical substances	Resistance					
	7 days	1 month	3 months	6 months	9 months	12 months
Ammonia solution 10%	moderate	moderate	-	-	-	-
Sodium hydroxide 10%	yes	yes	moderate	-	-	-
Soda 10%	yes	yes	yes	yes	yes	yes
Acetic acid 10%	yes	yes	moderate	-	-	-
Lactic acid 10%	yes	yes	yes	yes	yes	yes
Phosphoric acid 10%	yes	yes	yes	yes	yes	yes
Nitric acid 10%	yes	yes	moderate	moderate	-	-
Hydrochloric acid 10%	yes	yes	yes	moderate	moderate	moderate
Sulphuric acid 32%	yes	yes	moderate	moderate	moderate	-
Ethanol 96% (rectified spirit)	yes	yes	yes	yes	yes	yes
Isopropyl alcohol	yes	yes	yes	yes	yes	yes
Ethyl acetate	no	-	-	-	-	-
Toluene	no	-	-	-	-	-
Xylene	no	-	-	-	-	-
Diesel fuel	yes	yes	yes	yes	yes	yes
FAM test fluid	moderate	moderate	moderate	no	no	no
Petroleum	yes	yes	yes	yes	yes	yes
Seawater	yes	yes	yes	yes	yes	yes

23.1.1.2 Front plate membrane

The front plate membrane contains a UV-absorbent chemical substance which substantially increases the membrane's resistance to discolouration and premature brittleness with outdoor installation.
When in continuous contact with certain chemicals these may start to remove the UV absorber, reducing the membrane's UV resistance.
The front plate membrane resists exposure for 5 hours to the following chemicals without any visible change or loss of UV resistance. With longer exposure, both the membrane's appearance (colour) and its UV resistance may be affected.

Resistance for 5 hours				
Diesel fuel	Ammonia 2% *	Acetic acid 5%	Cutting oil	Hydraulic oil
Glycerin	Sodium hydroxide *	Hydrochloric acid 10%	Paraffin oil	Saltwater
White spirit *	Potash *	Nitric acid 10%	Pure turpentine	Water
SBP 60/95 *	Potassium ferricyanide	Phosphoric acid ≥30 %	Linseed oil	
Spirit	Sodium carbonate solution *	Sulphuric acid 10%	Castor oil	

* Exposure to these chemicals lead to an extremely faint sheen of the texture.

Exposure to the following chemicals under the above conditions results in a faint sheen of the texture and a reduction in resistance to UV light of the product.

Chemical substances		
1.1.1. Trichloroethane	Ethyl acetate	Methanol
Acetaldehyde	Formaldehyde solution	Methylethyl ketone
Acetone	Formic acid 50%	Toluene *
Cyclohexanol	Glycol	Xylene
Cyclohexanone	Industrial methylated spirit	
Ether	Isopropanol	

* Exposure to these chemicals resulted in a white spot on the membrane surface.

The front plate membrane withstands exposure for 5 hours at 50 °C to the following household chemicals:

Chemical substances		
Bleach / toilet cleaner	Cleaner for hard surfaces	Cleaning liquid
Cream cleaner	Washing powder solutions	Window cleaner
Fabric conditioner	Washing-up liquid	Tomato ketchup

The front plate membrane is NOT resistant to the following chemicals:

Chemical substances		
Benzyl alcohol	Concentrated mineral acids	High-pressure steam over 100 °C
Concentrated alkalis	Dichloromethane	

23.1.1.3 Front plate / enclosure seal HT-800

Generally, the seals show excellent or very good resistance to diluted acids or alkalis, organic liquids and crude oil products.

Chemical substances	Tensile strength (% change)		Dimensional stability (% change)		Compression set (% actual)
	wet	dry	wet	dry	dry
Sulphuric acid 10%	0 - 20	0 - 20	0 - 20	0 - 20	0 - 5
Hydrochloric acid 10%	0 - 20	0 - 20	0 - 20	0 - 20	0 - 5
Acetic acid 10%	40 - 60	0 - 20	0 - 20	0 - 20	0 - 5
Sodium bicarbonate 10%	0 - 20	0 - 20	0 - 20	0 - 20	0 - 5
Ammonia solution 10%	0 - 20	0 - 20	0 - 20	0 - 20	0 - 5
Potassium hydroxide 10%	0 - 20	0 - 20	0 - 20	0 - 20	0 - 5
Isopropyl alcohol	20 - 40	0 - 20	0 - 20	0 - 20	0 - 5
Methanol	0 - 20	0 - 20	0 - 20	0 - 20	0 - 5
Petrol	60 - 80	0 - 20	20 - 40	0 - 20	0 - 5
Mr. Clean®	0 - 20	0 - 20	0 - 20	0 - 20	0 - 5
Fantastik®	0 - 20	0 - 20	0 - 20	0 - 20	0 - 5
Formula 409	0 - 20	0 - 20	0 - 20	0 - 20	0 - 5
Distilled water	0 - 20	0 - 20	0 - 20	0 - 20	0 - 5

23.1.1.4 Enclosure seal VQM

The enclosure seal has a very high thermic resistance, good cold flexibility, good dielectric properties and a very good resistance to oxygen and ozone.

Medium swelling resistance	- with mineral oils (comparable to materials on CR basis) - can be operated in water up to +100 °C - sufficiently resistant in watery saline solutions - sufficiently resistant in monovalent and polyvalent alcohols	
High degree of swelling in	- low-molecular-weight esters and ethers - aliphatic and aromatic hydrocarbons - concentrated acids and alkalis - Water and steam at temperatures over +100 °C have a highly destructive effect	
Hardness	10 - 20 Shore A	
Compression set	22 h; 70 °C 50% deformation 22 h; 24 °C 50% deformation	5 – 10% 4 – 6%
Compressive strength	0.30 - 0.60 N/mm²	
Tensile strength	0.8 - 1.2 N/mm²	
Strain	200 - 400%	
Resilience	33%	

23.1.1.5 Breather

No information available

23.1.1.6 Joystick

Chemical resistance to		
Engine oil	Starbite soap and cleaner	Ammonia solution (over 5 volume percent solution)
Diesel fuel	WD-40	Alcohol
Antifreeze	Kerosene	Beer (over 5 volume percent alcohol)
Petrol	Acetone	Suntan lotion
Automatic transmission fluid	Armor All™ cleaner	Insect repellent

23.1.1.7 Trackball recess

The chemical strength of thermoplastics depends on the duration of exposure, temperature and wear (external conditions to which part is subjected) Chemical exposure of a thermoplastic substance can result in discoloration, softening, swelling, cracking or loss of its properties. The chemicals listed below underwent a very strict test procedure to evaluate their effect on the material. This test entailed exposure to the chemical in question under defined conditions, including temperature (20 °C and 80 °C) and load (0.5% and 1%) over a period of seven days.

Very good resistance (unaffected in its performance when exposed for defined duration, under defined temperature and load)		
Boric acid	Polyethylene glycol	Potassium bromide
Hydrogen chloride 20%	Oxygen	Potassium carbonate
Hydrogen fluoride 20%	Propylene	Potassium chlorate
Phosphorous pentoxide dry	Dichlorohydroxybenzene	Potassium chloride 15%
Phosphoric acid 1%	Aluminium oxide	Potassium cyanide powder
Phosphorous pentachloride	Copper oxide	Potassium dichromate
Sulphuric acid 50%	Phenoxyacetic acid	Potassium iodide
Gallic acid	Aluminium fluoride	Potassium nitrate
Maleic acid	Aluminium sodium sulphate	Potassium persulphate
Myristic acid 20%	Ammonium bicarbonate	Potassium sulphate
Oleic acid	Ammonium bromide	Silver nitrate
Palmitic acid	Ammonium dichromate	Sodium bisulphate
Phenoxyacetic acid	Ammonium persulphate	Sodium bromate
Phthallic anhydride	Barium carbonate	Sodium bromide
Salycilate acid	Barium chloride	Sodium carbonate
Tannic acid	Barium sulphate	Sodium chlorate
Thiodiacetic acid	Calcium chloride	Sodium cyanide
Ethyl glycol 60%	Calcium sulphate	Sodium fluoride
Glycerin	Cesium bromide	Sodium hypochlorite 6%
Octyl alcohol	Copper (II) chloride 5%	Sodium perborate
Oxydiethanol 2.2	Iron (III) ammonium sulphate	Sodium phosphate
Polyethylene glycol	Iron (III) chloride saturated	Sodium silicate
Sorbitol	Iron (III) sulphate	Sodium sulphite
Triethylene glycol	Lithium bromide	Strontium bromide

Formaldehyde solvent 37%	Lithium hydroxine powder	Tin (II) chloride
Formalin	Magnesium bromide	Tin (IV) chloride
Thriethanolamine	Magnesium chloride	Titanium tetrachloride
Hydroxylamine	Magnesium nitrate	Zinc bromide
Aluminium hydroxine powder	Magnesium sulphate	Zinc carbonate
Sodium hydroxine dry	Mercury (I) nitrate	Zinc sulphate
Sodium thotalamate	Mono ammonium phosphate	Aluminium acetate
Dosononyl phthalate	Nickel nitrate	Ammonium oxalate
Ethyl bromoacetate	Potassium bicarbonate dry	Aniline sulphate
Methyl acetate	Potassium bisulphate	Valine bromide dl
2 dodecyl phenyl carbonate	Potassium bromate	

Medium resistance (considered to be marginal, only for short exposure at low temperatures or if loss of properties is not critical)		
Sulphamine acid 5%	Isobutanol	Sodium bicarbonate saturated
Sodium etherlaurysuphate		

No resistance (not recommended, results in failure or significant deterioration)		
Hydrogen chloride 25%	Benzyl benzoate	Chlorobenzene
Nitric acid 70%	Butyl cellosolvate acetate	Chlorobutane
Perchlorid acid	Butyl stearate	Chloroform
Phosphoric acid 10%	Cello acetobutyrate	Dibromomethane
Sulphuric acid 70%	Cellulose acetate	Dichloroethane
Sulphurous acid 5%	Cellulose proprionate	Dichloromethane
Acetic anyhydride	Dibutyl phthalate	Methyl ethyl ketone
Formic acid concentrate	Didecyl carbonate	Arsenic trioxide
Mercapto acetic acid	Disodecyl phthalate	Calcium oxide paste
Myristic acid 25%	Dioctyl phthalate	Mercury metallic
Phenol sulphonic acid	Dioctyl sebacate	Allyl 4 methoxyphenol
Tannic acid 20%	Ditridecyl carbonate	Cresol
Trichlor acetic acid	Ditridecyl phthalate	P-Phenylphenol
Allyl alcohol	Ethyl butyrate	Pentachlorophenol
Amyl alcohol	Ethyl cellusolve 5%	Phenol sulphonic acid
Butoxyethanol	Ethyl chloracetate	Phenol 5%
Chlorethanol 2	Ethyl cyanoacetate	Aluminium ammonium sulphate
Decyl alcohol	Ethyl lactate	Aluminium chloride
Ethanol	Ethyl salicylate	Aluminium potassium sulphate
Ethyl glycol 100%	Isopropyl myristrate	Ammonium carbonate
Furfuryl alcohol	Methyl calicylate	Calcium carbonate paste
Hepthyl alcohol	Methylbenzoate	Iron (II) chloride
Nonyl alcohol	Triacetine	Iron (III) nitrate
Penethyl alcohol	Tributoexethyl phosphate	Mercury (II) chloride
Polyalkylene glycol	Tributyl cello phosphate	Potassium chloride saturated

Propylene glycol	Ether	Potassium chromium sulphate
Thiodiglycol 5%	Methyl cellosolve	Potassium permanganate
Tripropylene glycol	Polyalkylene glycol	Silver chloride saturated
Acetaldehyde	Polyethylene sulphide	Sodium bicarbonate 13%
Butyraldehyde	Propylene oxide	Sodium carbonate solvent
Propionaldehyde	Bromine	Sodium hypochlorite 15%
Dimethylformamide	Chloracetophenone	Sodium nitrate 10%
Aniline	Chlorine	Sodium sulphide
Diphenylamine	Iodine	Trisodiumphosphate 5%
Methylaniline N	Isobutane	Zinc chloride
Methylene dianiline	Methane	Zinc oxide
Phenylhydrazine	Ozone 2%	Ammonium acetate
Pyridine	Sulphur dioxide	Potassium acetate 30%
Ammonium concentrate	Sulphur hexafluoride	Quinine sulphate
Ammonium hydroxide 0.13%	Acetylene dibromo	Sodium acetate 30%
Calcium hydroxide	Acetylene tetrachloride	
Potassium hydroxide 10%	Bromochloromethane	
Sodium hydroxide 10%	Carbon tetrachloride	

23.1.1.8 Trackball (itself)

The trackball was subjected to the following chemical tests:

Fluid group	Fluid type		Test fluid	Test fluid temperature (+/- 2 °C)
Fuels and Solvents	Fuels	Kerosene	ISO 1817, Test liquid F	70
		Petrol	ISO 1817, Test liquid B	40
		Ester based	ISO 1817, Test liquid 101	150
	Solvents and cleaning fluids		Propan-2-ol (isopropyl alcohol)	50
			Solvent – DTD 929	23
			Denatured alcohol	23
			Detergent Cleaning compound for aircraft surfaces	23
Oils	Hydraulic oils	Mineral oil based	NATO H-520/NATO H-515	70
	Lubricating oils	Mineral based	NATO O-1176(OMD 80)	70
De-Icers	De-icing & antifreeze fluids		Inhibited ethylene glycol (BS6580) 80% and 50% solution in water (v/v)	23
	Runway de-icers		25% urea / 25% ethylene glycol in water (v/v)	23
			50% inhibited potassium acetate in water	23
Corrosion preventatives and beverages	Corrosion preventative fluid		Def Stan 68-10, NATO C-634	23
	Beverages		Tea	23
			Coffee	23
			Fruit Juices	16
			Minerals	16
Extinguishers and NBC	Fire extinguishants		Protein: NATO Stock #4210 99 224 6855	23
			Fluoroprotein: NATO Stock #4210 99 224 6854	23
	NBC decontamination agents		Chemical Agent Decontaminant (CAD) - an aqueous solution of hydroxide and sodium dischloroisocyanurate buffered at pH 10.5 with boric acid (exposure duration 5 minutes)	16
			Super Tropical Bleach (STB) or High-Test Hypochlorite (HTH) - chlorinated lime containing 30% or 37% free chlorine by weight (exposure duration 5 minutes)	16
			Fullers earth powder (exposure duration 5 minutes)	16

23.1.1.9 Key pad / PD2 seal

	The key pad / PD2 seal has only a limited contact to the outside. The keyboard membrane contains small airing channels through which substances may penetrate under a large pressure difference or with a hard water jet.

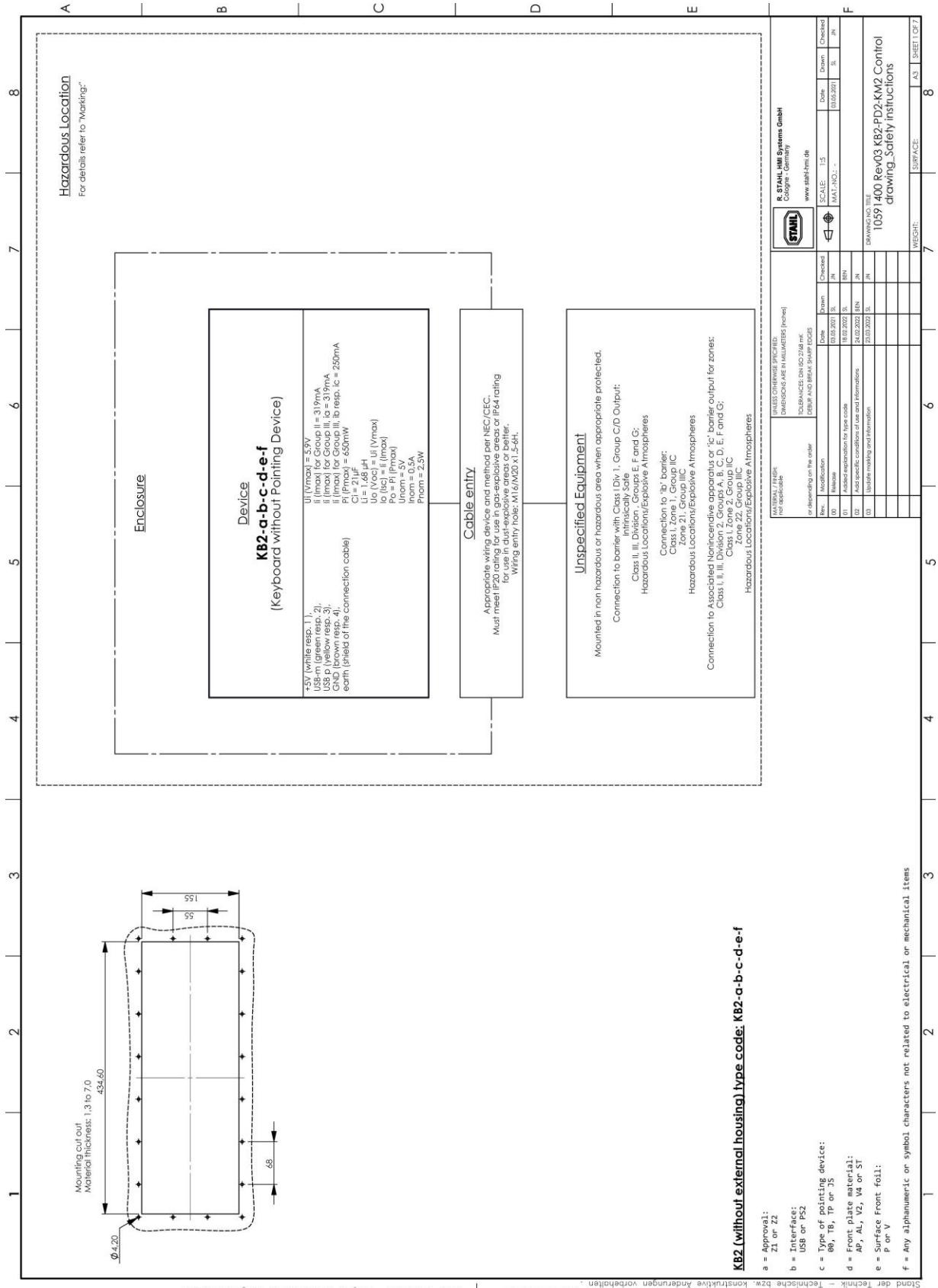
The LSR materials are resistant to diluted acids and alkalis. This resistance weakens under increased concentration or temperature. Boiling water has no significant effect on the LSR materials.
The LSR materials begin to slowly disintegrate under water vapour of a temperature of 100 °C and above.
The swelling degree of the LSR materials under exposure to chemicals refers to a Shore A hardness of about 50.

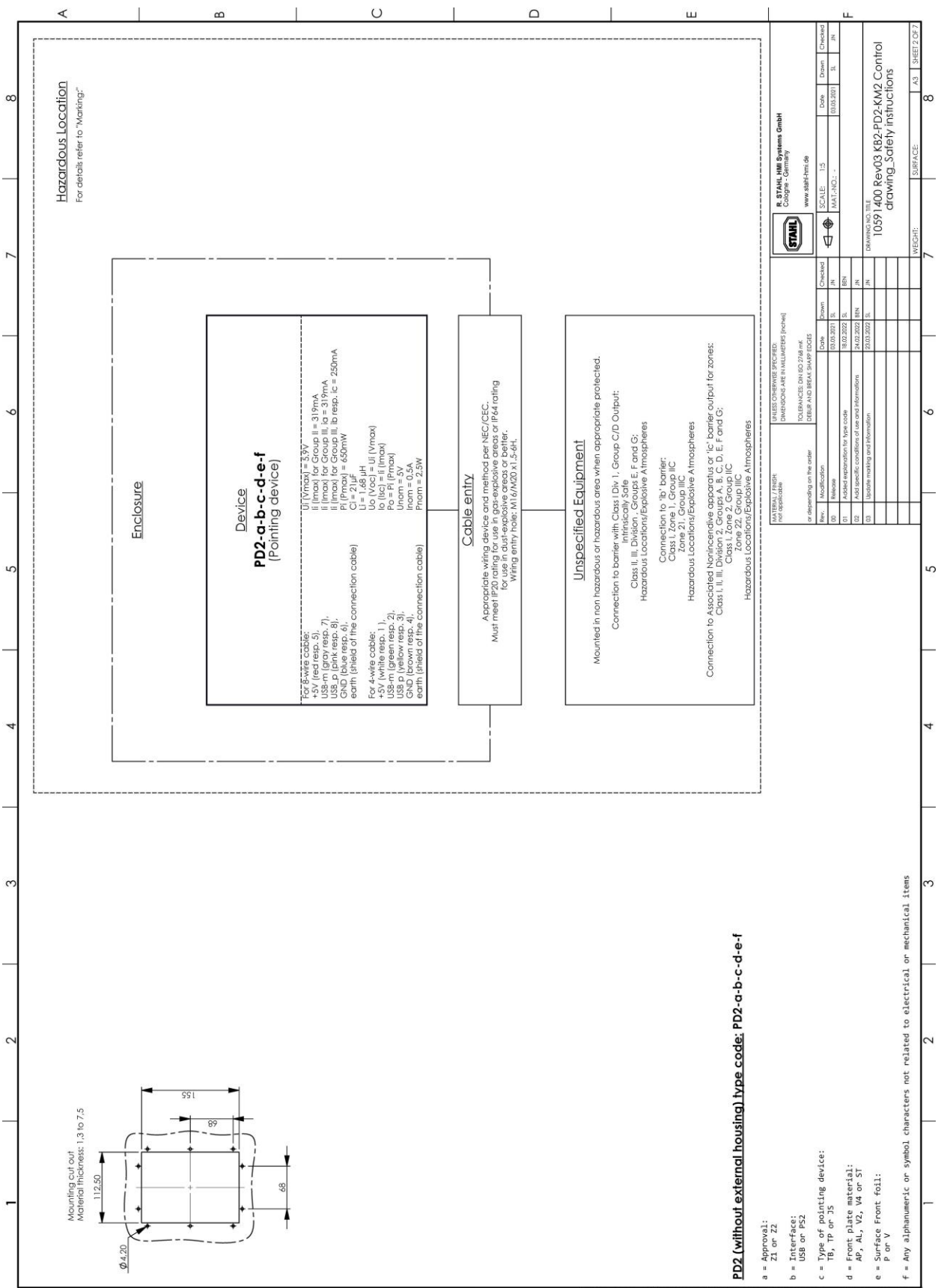
Swelling degree of LSR under exposure to chemicals (testing period 8 days)			
Chemical substance	**Test temperature in °C**	**Change to Shore hardness**	**Swelling in volume %**
Acetone	20	-8	33
Ammonia, diluted 25%	20	3	4
Baysilone® oil M10 (100 cSt at 25 °C)	150	-10	72
n-Butanol	20	-8	19
Chloroform	20	-12	218
Cyclohexane	20	-10	10
Glacial acetic acid	20	-2	128
Ethanol	20	-5	10
Ethyl acetate	20	-11	113
Glycol	20	0	0
Methanol	20	-3	8
Methyl ethyl ketone	20	-10	80
Dichloromethane	20	-10	103
Mineral oil ASTM No. 2	150, 72 h	-4	9
Mineral oil ASTM No. 3	150, 72 h	-12	42
Sodium hydroxide 20%	20	0	0
Olive oil	100	0	0
Petroleum ether	20	-10	237
Phosphoric acid 50%	20	0	0
Nitric acid 10%	20	0	0
Hydrochloric acid 20%	20	0	0
Sulphuric acid 20%	20	0	1
Carbon tetrachloride	20	-40	192
Trichloroethylene	20	-13	150
Vaseline	100	-8	14
Xylene	20	-20	127

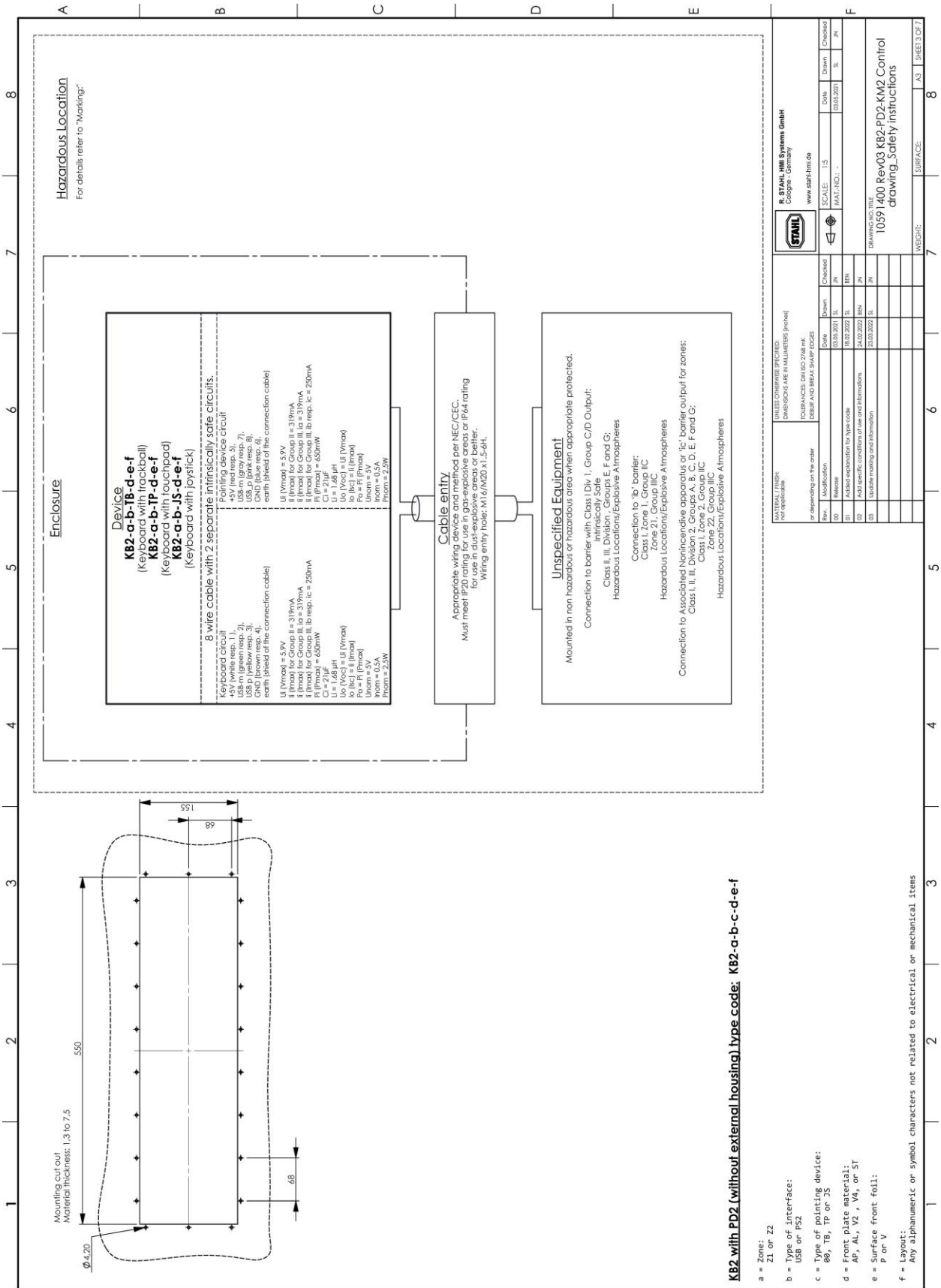
24 Appendix I

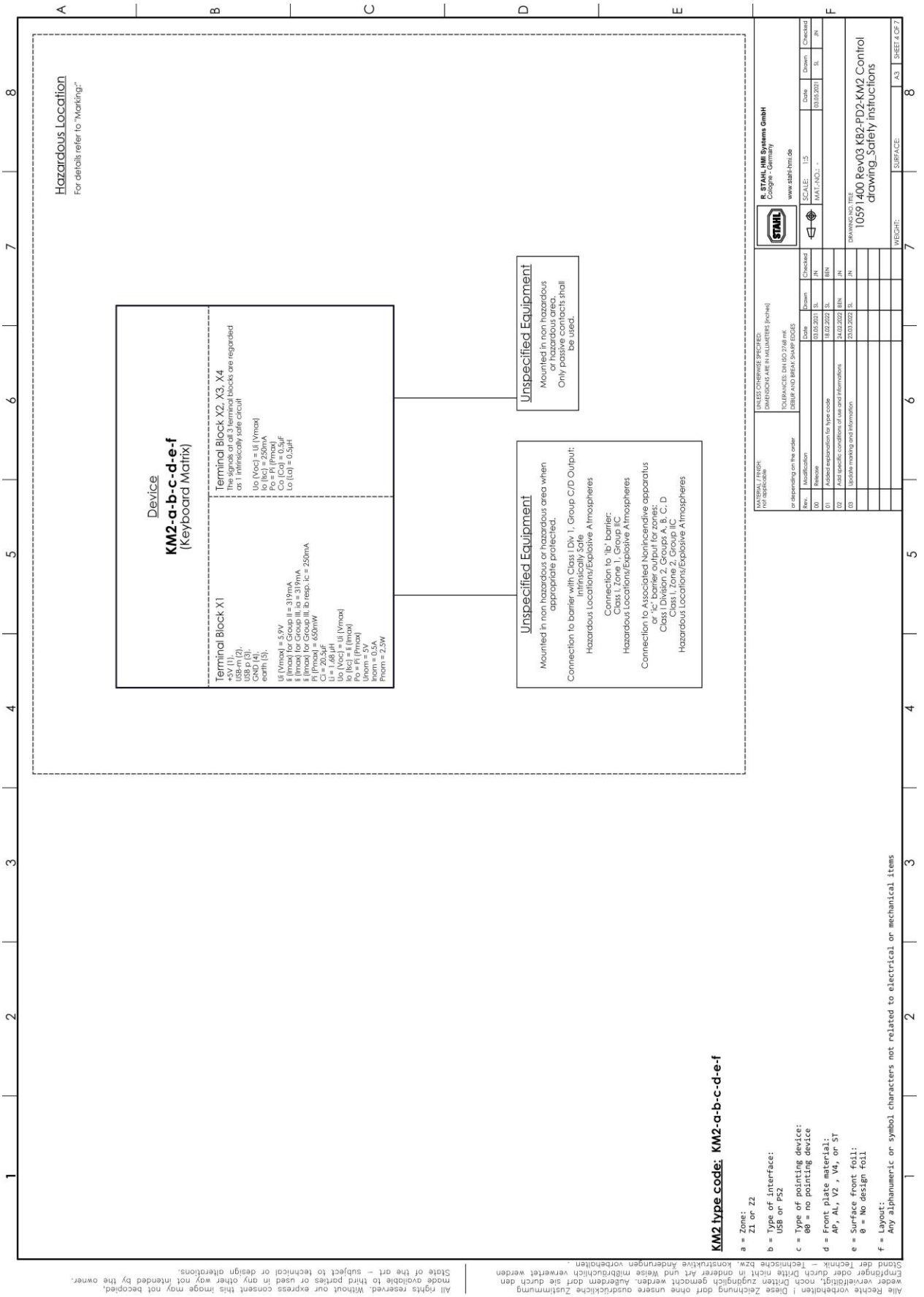
24.1 Control Drawing for USA and Canada

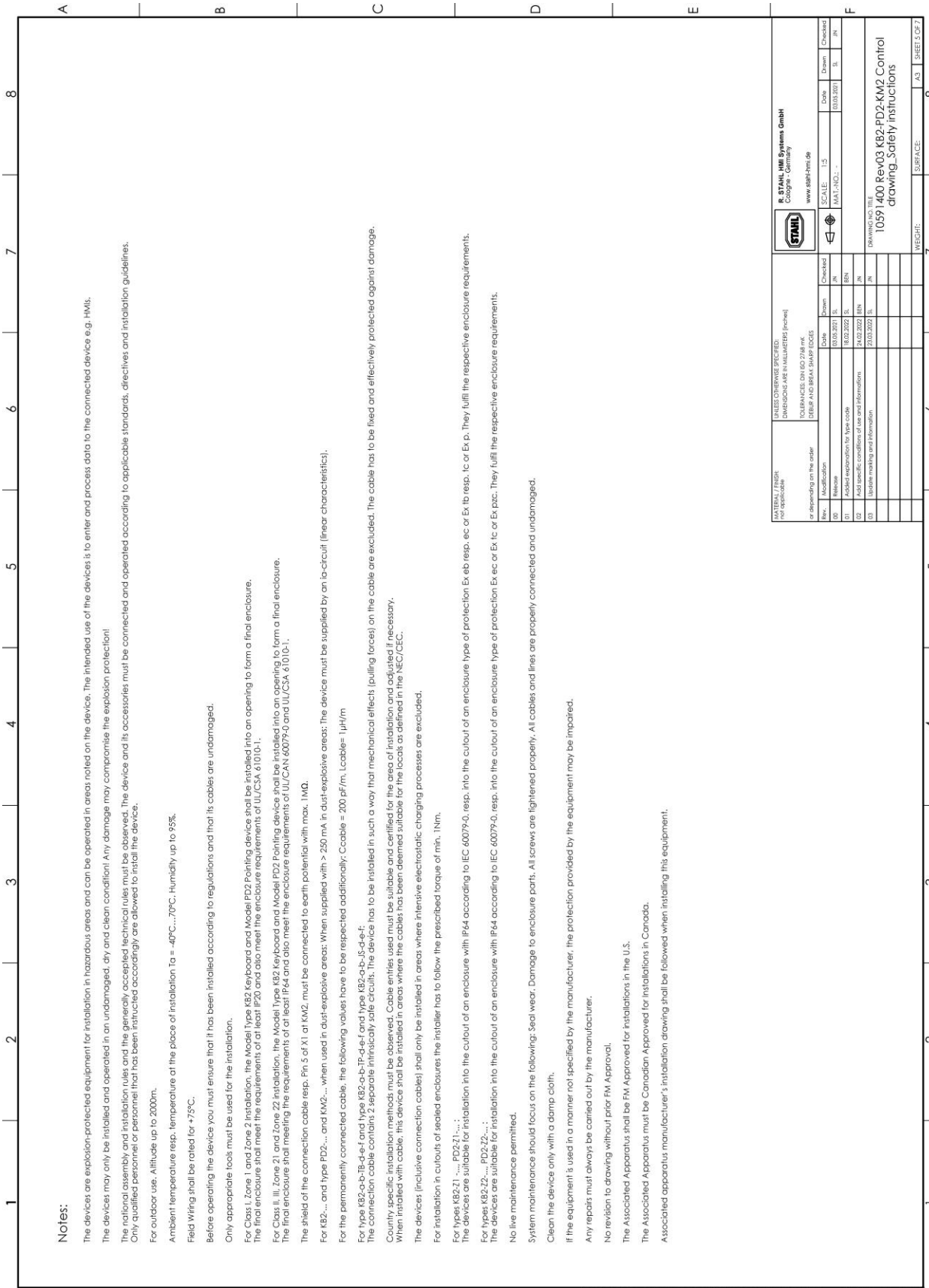
24.1.1 KB2 / PD2 versions










Notes:
The devices are explosion-protected equipment for installation in hazardous areas and can be operated in areas noted on the device. The intended use of the devices is to enter and process data to the connected device e.g. HMIs.
The devices may only be installed and operated in an undamaged, dry and clean condition! Any damage may compromise the explosion protection!
The national assembly and installation rules and the generally accepted technical rules must be observed. The device and its accessories must be connected and operated according to applicable standards, directives and installation guidelines. Only qualified personnel or personnel that has been instructed accordingly are allowed to install the device.
For outdoor use. Altitude up to 2000m.
Ambient temperature resp. temperature at the place of installation Ta = -40°C....70°C. Humidity up to 95%.
Field Wiring shall be rated for +75°C.
Before operating the device you must ensure that it has been installed according to regulations and that its cables are undamaged.
Only appropriate tools must be used for the installation.
For Class I, Zone 1 and Zone 2 installation, the Model Type KB2 Keyboard and Model PD2 Pointing device shall be installed into an opening to form a final enclosure. The final enclosure shall meet the requirements of at least IP20 and also meet the enclosure requirements of UL/CSA 61010-1.
For Class II, III, Zone 21 and Zone 22 installation, the Model Type KB2 Keyboard and Model PD2 Pointing device shall be installed into an opening to form a final enclosure. The final enclosure shall meeting the requirements of at least IP64 and also meet the enclosure requirements of UL/CAN 60079-0 and UL/CSA 61010-1.
The shield of the connection cable resp. Pin 5 of X1 at KM2, must be connected to earth potential with max. 1MΩ.
For KB2-... and type PD2-... and KM2-... when used in dust-explosive areas: When supplied with > 250 mA in dust-explosive areas: The device must be supplied by an ia-circuit (linear characteristics).
For the permanently connected cable, the following values have to be respected additionally: Ccable = 200 pF/m, Lcable= 1µH/m
For type KB2-a-b-TB-d-e-f and type KB2-a-b-TP-d-e-f and type KB2-a-b-JS-d-e-f:
The connection cable contains 2 separate intrinsically safe circuits. The device has to be installed in such a way that mechanical effects (pulling forces) on the cable are excluded. The cable has to be fixed and effectively protected against damage.
Country specific installation methods must be observed. Cable entries used must be suitable and certified for the area of installation and adjusted if necessary.
When installed with cable, this device shall be installed in areas where the cables has been deemed suitable for the locals as defined in the NEC/CEC.
The devices (inclusive connection cables) shall only be installed in areas where intensive electrostatic charging processes are excluded.
For installation in cutouts of sealed enclosures the installer has to follow the prescribed torque of min. 1Nm.
For types KB2-Z1-...., PD2-Z1-...:
The devices are suitable for installation into the cutout of an enclosure with IP64 according to IEC 60079-0, resp. into the cutout of an enclosure type of protection Ex eb resp. ec or Ex tb resp. tc or Ex p. They fulfil the respective enclosure requirements.
For types KB2-Z2-...., PD2-Z2-...:
The devices are suitable for installation into the cutout of an enclosure with IP64 according to IEC 60079-0, resp. into the cutout of an enclosure type of protection Ex ec or Ex tc or Ex pzc. They fulfil the respective enclosure requirements.
No live maintenance permitted.
System maintenance should focus on the following: Seal wear. Damage to enclosure parts. All screws are tightened properly. All cables and lines are properly connected and undamaged.
Clean the device only with a damp cloth.
If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.
Any repairs must always be carried out by the manufacturer.
No revision to drawing without prior FM Approval.
The Associated Apparatus shall be FM Approved for installations in the U.S.
The Associated Apparatus must be Canadian Approved for installations in Canada.
Associated apparatus manufacturer's installation drawing shall be followed when installing this equipment.
MATERIAL / FINISH: see specification
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS [inches]
TOLERANCES: DIN ISO 2768 mK
or depending on the order
DEBUR AND BREAK SHARP EDGES
Rev. Modification Date Drawn Checked
00 Release 03.05.2021 SL JN
01 Added explanation for type code 18.02.2022 SL BEN
02 Add specific conditions of use and information 24.02.2022 BEN JN
03 Update marking and information 27.03.2022 SL JN
R. STAHL HMI Systems GmbH
Cologne · Germany
www.stahl-hmi.de
SCALE: 1:5 Date Drawn
MAT.-NO.: - 03.05.2021 SL
Checked
JN
DRAWING NO. TITLE:
1059 1400 Rev03 KB2-PD2-KM2 Control drawing_Safety instructions
WEIGHT: SURFACE: A3 SHEET 5 OF 7
All rights reserved. Without our express consent this image may not be copied, made available to third parties or used in any other way not intended by the owner. State of the art – subject to technical or design alterations.
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Notes for NI Field Wiring:

The Nonincendive Field Wiring Circuit Concept allows interconnection of Nonincendive apparatus with associated Nonincendive apparatus not specifically examined in combination as a system when:
Uo ≤ Ui , Co ≥ Ci + Ccable; Lo ≥ Li + Lcable.

Installation in the U.S. should be in accordance with the National Electrical Code® (ANSI-NFPA 70).

Installation in Canada should be in accordance with the latest edition of the C22.1 Canadian Electrical Code, Part I.

Notes for Intrinsic safety:

The control room equipment connected to Associated Apparatus shall not generate more than 250 Vrms or Vdc, or the marked Um on the associated apparatus, whichever is less.

Installations in the U.S. should be in accordance with ANSI/ISA RP12.06.01 "Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations" and the latest edition of the National Electrical Code (ANSI/NFPA 70).

Resistance between Intrinsically Safe Ground and earth ground shall be less than 1.0 Ohm.

The Entity Concept allows interconnection of associated apparatus and intrinsically safe apparatus when the following is true:
Uo ≤ Ui , Io ≤ Ii , Po ≤ Pi , Co ≥ Ci + Ccable; Lo ≥ Li + Lcable.

Warnings:

FM3610 – Intrinsically Safe Equipment. FM3610 – Équipement à sécurité intrinsèque

WARNING – Substitution of components may impair Intrinsic Safety. AVERTISSEMENT – La substitution de composants peut compromettre la sécurité intrinsèque !

WARNING – To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing. AVERTISSEMENT – Ne pas débrancher l'équipement en présence d'atmosphère inflammable ou combustible !

WARNING – to reduce the risk of ignition of hazardous atmospheres., do not remove cover while circuits are alive. AVERTISSEMENT – Déconnectez l'équipement de l'alimentation avant d'ouvrir le boîtier pour réduire le risque d'inflammation d'atmosphères dangereuses.

Specific conditions of use for KB2-a-b-c-d -e-f:

1. Using the box provided on the nameplate, the User shall permanently mark the type of protection chosen for the specific installation. Once the type of protection has been marked it shall not be changed.
2. The equipment shall be installed to complete the final enclosure and the final enclosure shall have a minimum enclosure protection of IP20.
3. The connection cable contains two separate intrinsically safe circuits when The Model PD2 pointing device (Option c= TB, TP or JS) is included, and shall be installed as such. The equipment shall be installed in such a way that mechanical effects (pulling forces) on the cable are excluded. The cable shall be fixed and effectively protected against damage.
4. The non-metallic parts incorporated in the enclosure of this equipment may generate an ignition-capable level of electrostatic charge. Therefore, particularly when it is used for applications that specifically require Group III, the equipment shall not be installed in a location where the external conditions are conducive to the build-up of electrostatic charge on such surfaces.
5. The Model KB2 keyboard electronics may contain metallic materials which are considered a potential risk of ignition by impact or friction. Care must be taken into account to prevent impact and friction.
6. When installed as part of a final enclosure, the gasket seals of the Model KB2 Keyboard Electronics were verified to comply with Type 3 requirements to UL50e, to dust exclusion requirements of ANSI/UL60079-0 and FM3616, and to enclosure protection IP64 to ANSI/UL 60529. When installed as part of a final enclosure, the gasket seals of the Model KB2 Keyboard Electronics were verified to comply with Type 3 requirements to C22.2 No. 94.2, to dust exclusion requirements of CAN/CSA-C22.2 No. 60079-0 and C22.2 No. 25-17, and to enclosure protection IP64 to CAN/CSA-C22.2. 60529.

Specific conditions of use for PD2-a-b-c-d -e-f:

1. Using the box provided on the nameplate, the User shall permanently mark the type of protection chosen for the specific installation. Once the type of protection has been marked it shall not be changed.
2. The equipment shall be installed to complete the final enclosure and the final enclosure shall have a minimum enclosure protection of IP20.
3. The non-metallic parts incorporated in the enclosure of this equipment may generate an ignition-capable level of electrostatic charge. Therefore, particularly when it is used for applications that specifically require Group III, the equipment shall not be installed in a location where the external conditions are conducive to the build-up of electrostatic charge on such surfaces.
4. The Model PD2 pointing device may contain metallic materials which are considered a potential risk of ignition by impact or friction. Care must be taken into account to prevent impact and friction.
5. When installed as part of a final enclosure, the gasket seals of the Model PD2 Pointing Device were verified to comply with Type 3 requirements to UL50e, to dust exclusion requirements of ANSI/UL60079-0 and FM3616, and to enclosure protection IP64 to ANSI/UL 60529. When installed as part of a final enclosure, the gasket seals of the Model KB2 Keyboard Electronics were verified to comply with Type 3 requirements to C22.2 No. 94.2, to dust exclusion requirements of CAN/CSA-C22.2 No. 60079-0 and C22.2 No. 25-17, and to enclosure protection IP64 to CAN/CSA-C22.2. 60529.

Specific conditions of use for KM2-a-b-c-d-e-f:

1. Using the box provided on the nameplate, the User shall permanently mark the type of protection chosen for the specific installation. Once the type of protection has been marked it shall not be changed.
2. The equipment shall be installed in a final enclosure having minimum protection of IP20 and be in compliance with the mounting, spacing and segregation requirements of the ultimate application.

MATERIAL / FINISH:
not applicable

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MILLIMETERS [inches]
TOLERANCES: DIN ISO 2768 mK
or depending on the order
DEBUR AND BREAK SHARP EDGES

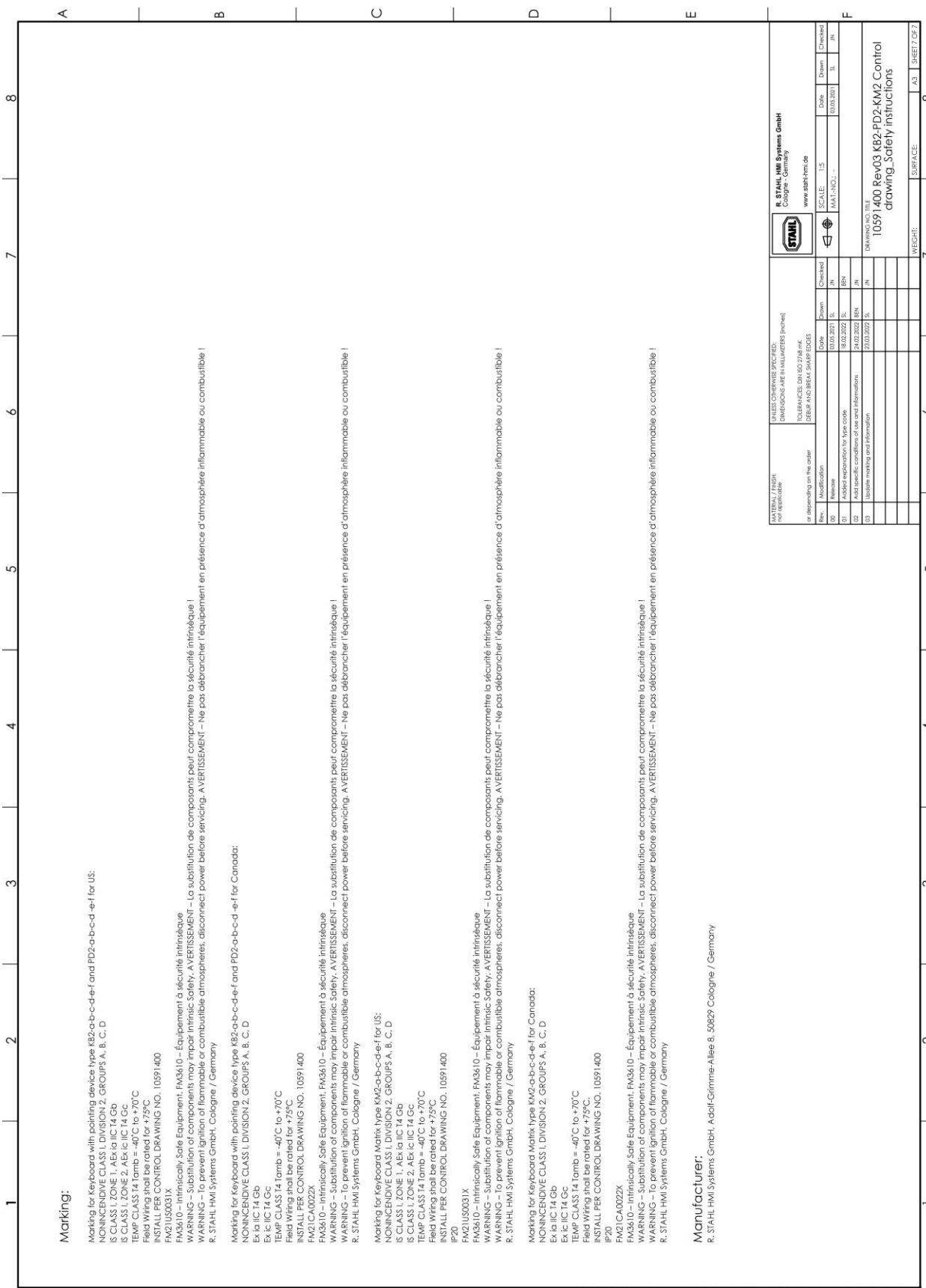
Rev.	Modification	Date	Drawn	Checked
00	Release	03.05.2021	SL	JN
01	Added explanation for type code	18.02.2022	SL	BEN
02	Add specific conditions of use and informations	24.02.2022	BEN	JN
03	Update marking and information	23.03.2022	SL	JN

R. STAHL HMI Systems GmbH
Cologne · Germany
www.stahl-hmi.de

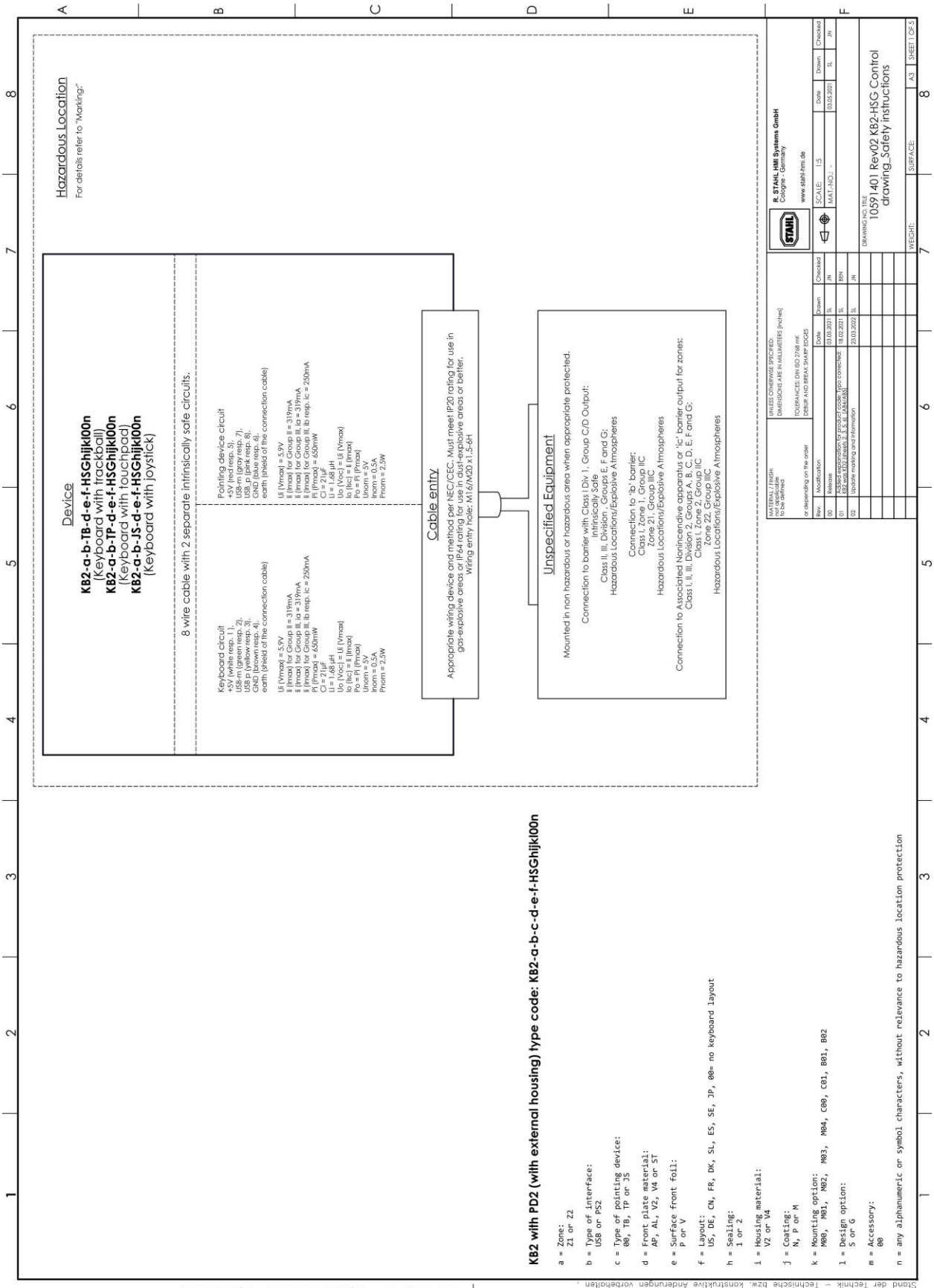
SCALE: 1:5 | Date: 03.05.2021 | Drawn: SL | Checked: JN
MAT.-NO.: - | | |

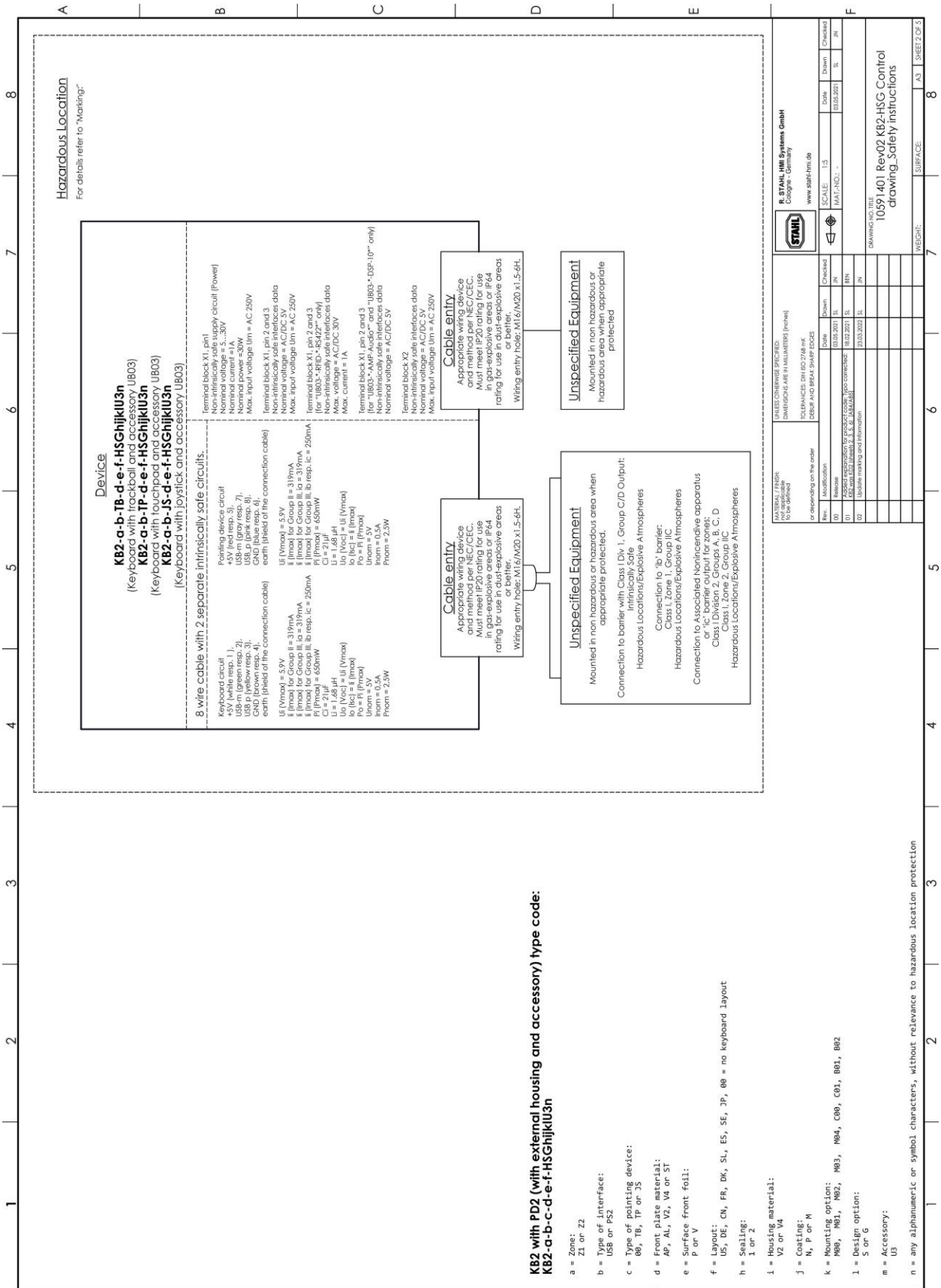
DRAWING NO. TITLE:
1059 1400 Rev03 KB2-PD2-KM2 Control drawing_Safety instructions

WEIGHT: | SURFACE: | A3 | SHEET 6 OF 7



24.1.2 KB2-*-HSG-* versions





Notes:

The devices are explosion-protected equipment for installation in hazardous areas and can be operated in areas noted on the device. The intended use of the devices is to enter and process data to the connected device e.g. HMIs.

The devices may only be installed and operated in an undamaged, dry and clean condition! Any damage may compromise the explosion protection!

The national assembly and installation rules and the generally accepted technical rules must be observed. The device and its accessories must be connected and operated according to applicable standards, directives and installation guidelines.
Only qualifed personnel or personnel that has been instructed accordingly are allowed to install the device.

For outdoor use. Altitude up to 2000m.

Ambient temperature resp. temperature at the place of installation Ta = -40°C…70°C. Humidity up to 95%.

Field Wiring shall be rated for +75°C

Before operating the device you must ensure that it has been installed according to regulations and that its cables are undamaged.

Only appropriate tools must be used for the installation.

The shield of the connection cable must be connected to earth potential with max. 1MΩ.

The enclosure, must be connected to earth potential with max. 1MΩ. If applicable, the mounting components or the earth of mounted components can be used for this.

When used in dust-explosive areas: When supplied with > 250 mA in dust-explosive areas: The device must be supplied by an ia-circuit (linear characteristics).

For the permanently connected cable, the following values have to be respected additionally: Ccable = 200 pF/m, Lcable= 1µH/m

For type KB2-**-***-TB-**-*-* and type KB2-**-***-TP-**-*-* and type KB2-**-***-JS-**-*-*:
The connection cable contains 2 separate intrinsically safe circuits. The device has to be installed in such a way that mechanical effects (pulling forces) on the cable are excluded. The cable has to be fixed and effectively protected against damage.

Country specific installation methods must be observed. Cable entries used must be suitable and certified for the area of installation and adjusted if necessary.
When installed with cable, this device shall be installed in areas where the cables has been deemed suitable for the locals as defined in the NEC/CEC.

The devices (inclusive connection cables) shall only be installed in areas where intensive electrostatic charging processes are excluded.

For the variants KB2-a-b-c-d-e-f-HSGhijklU3n a connecting cable with min. 0.5 mm insulation (conductor / outer sheath) must be used for the UB03 connection. The connecting cable must be Installed in the housing in such a way that a distance of min. 50mm to bare conductive parts of the keyboard I pointing device is ensured.

For installation in cutouts of sealed enclosures the installer has to follow the prescribed torque of min. 1Nm.

For KB2-a-b-c-d-e-f-HSGhijklmn: For installation of the rear opening of the sealed enclosures the installer has to follow the prescribed troque of 3,4 +0,6/-0 Nm.

For KB2-a-b-c-d-e-f-HSGhijklmn: The associated equipment has to fulfill at least the IP-rating of the housing and must be separately certified for the respective type of protection.

No live maintenance permitted.

System maintenance should focus on the following: Seal wear. Damage to enclosure parts. All screws are tightened properly. All cables and lines are properly connected and undamaged.

Clean the device only with a damp cloth.

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Any repairs must always be carried out by the manufacturer.

No revision to drawing without prior FM Approval.

The Associated Apparatus shall be FM Approved for installations in the U.S.

The Associated Apparatus must be Canadian Approved for Installations in Canada.

Associated apparatus manufacturer's installation drawing shall be followed when installing this equipment.

MATERIAL / FINISH: not applicable to be defined or depending on the order	UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS [inches] TOLERANCES: DIN ISO 2768 mK DEBUR AND BREAK SHARP EDGES			
Rev.	Modification	Date	Drawn	Checked
00	Release	03.05.2021	SL	JN
01	Added explanation for product code; Typo corrected: KB2 was KD2 (sheets 2, 3, 5, 6) [AB4/AB5]	18.02.2021	SL	BEN
02	Update marking and information	23.03.2022	SL	JN

R. STAHL HMI Systems GmbH
Cologne - Germany
www.stahl-hmi.de

SCALE: 1:5	Date	Drawn	Checked
MAT.-NO.: -	03.05.2021	SL	JN

DRAWING NO. TITLE
10591401 Rev02 KB2-HSG Control drawing_Safety instructions

WEIGHT: SURFACE: A3 SHEET 3 OF 5

Notes for NI Field Wiring:

The Nonincendive Field Wiring Circuit Concept allows interconnection of Nonincendive apparatus with associated Nonincendive apparatus not specifically examined in combination as a system when:
Uo ≤ Ui , Co ≥ Ci + Ccable; Lo ≥ Li + Lcable.

Installation in the U.S. should be in accordance with the National Electrical Code® (ANSI/NFPA 70).

Installation in Canada should be in accordance with the latest edition of the C22.1 Canadian Electrical Code, Part I.

Notes for Intrinsic safety:

The control room equipment connected to Associated Apparatus shall not generate more than 250 Vrms or Vdc, or the marked Um on the associated apparatus, whichever is less.

Installations in the U.S. should be in accordance with ANSI/ISA RP12.06.01 "Installation of Intrinsically Safe Systems for Hazardous (Classified) Locations" and the latest edition of the National Electrical Code (ANSI/NFPA 70).

Resistance between Intrinsically Safe Ground and earth ground shall be less than 1.0 Ohm.

The Entity Concept allows interconnection of associated apparatus and intrinsically safe apparatus when the following is true:
Uo ≤ Ui , Io ≤ Ii , Po ≤ Pi , Co ≥ Ci + Ccable: Lo ≥ Li + Lcable.

Warnings:

FM3610 - Intrinsically Safe Equipment. FM3610 - Équipement à sécurité intrinsèque

WARNING - Substitution of components may impair Intrinsic Safety. AVERTISSEMENT - La substitution de composants peut compromettre la sécurité intrinsèque !

WARNING - To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing. AVERTISSEMENT - Ne pas débrancher l'équipement en présence d'atmosphère inflammable ou combustible !

WARNING - to reduce the risk of ignition of hazardous atmospheres,. do not remove cover while circuits are alive. AVERTISSEMENT - Déconnectez l'équipement de l'alimentation avant d'ouvrir le boîtier pour réduire le risque d'inflammation d'atmosphères dangereuses.

Specific Conditions of Use:

1. Using the box provided on the nameplate, the User shall permanently mark the type of protection chosen for the specific installation. Once the type of protection has been marked it shall not be changed.
2. The non-metallic parts incorporated in the enclosure of this equipment may generate an ignition-capable level of electrostatic charge. Therefore, particularly when it is used for applications that specifically require Group III, the equipment shall not be installed in a location where the external conditions are conducive to the build-up of electrostatic charge on such surfaces.
3. The Model KB2 keyboard may contain metallic materials which are considered a potential risk of ignition by impact or friction. Care must be taken into account to prevent impact and friction.

MATERIAL / FINISH: see specification to be defined

or depending on the order

UNLESS OTHERWISE SPECIFIED:
DIMENSIONS ARE IN MILLIMETERS [inches]

TOLERANCES: DIN ISO 2768 mK
DEBUR AND BREAK SHARP EDGES

Rev.	Modification	Date	Drawn	Checked
00	Release	03.05.2021	SL	JN
01	Added explanation for product code, typo corrected, KB2 was KB2 (sheet), 2, 3, 4)	18.02.2021	SL	BEN
02	Update marking and information	23.03.2022	SL	JN

R. STAHL HMI Systems GmbH
Cologne - Germany

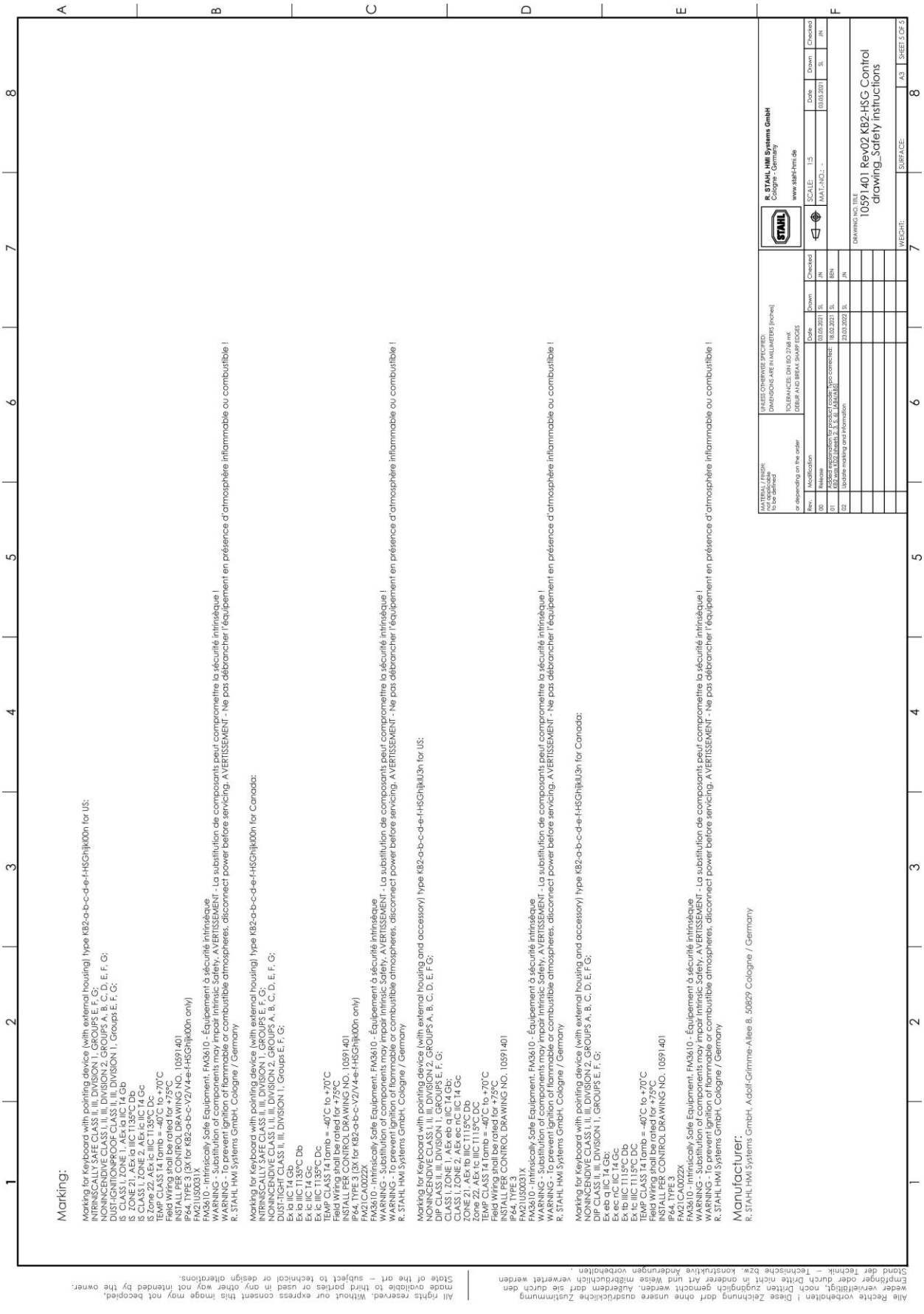
www.stahl-hmi.de

SCALE: 1:5 | Date: 03.05.2021 | Drawn: SL | Checked: JN

MAT.-NO.: -

DRAWING NO. TITEL:
105911401 Rev02 KB2-HSG Control drawing_Safety instructions

WEIGHT: | SURFACE: | A3 | SHEET 4 OF 5


Marking:
Marking for Keyboard with pointing device (with external housing) type KB2-a-b-c-d-e-f-HSGhijkl00n for US:
INTRINSICALLY SAFE CLASS II, III, DIVISION 1, GROUPS E, F, G;
NONINCENDIVE CLASS I, II, III, DIVISION 2, GROUPS A, B, C, D, E, F, G;
DUST-IGNITIONPROOF CLASS II, III, DIVISION 1, Groups E, F, G;
IS CLASS I, ZONE 1, AEx ia IIC T4 Gb
IS ZONE 21, AEx ia IIIC T135°C Db
IS CLASS I, ZONE 2, AEx ic IIC T4 Gc
IS Zone 22, AEx ic IIIC T135°C Dc
TEMP CLASS T4 Tamb = -40°C to +70°C
Field Wiring shall be rated for +75°C
INSTALL PER CONTROL DRAWING NO. 10591401
IP64, TYPE 3 (3X for KB2-a-b-c-V2/V4-e-f-HSGhijkl00n only)
FM21US0031X
FM3610 - Intrinsically Safe Equipment. FM3610 - Équipement à sécurité intrinsèque
WARNING - Substitution of components may impair Intrinsic Safety. AVERTISSEMENT - La substitution de composants peut compromettre la sécurité intrinsèque !
WARNING - To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing. AVERTISSEMENT - Ne pas débrancher l'équipement en présence d'atmosphère inflammable ou combustible !
R. STAHL HMI Systems GmbH, Cologne / Germany
Marking for Keyboard with pointing device (with external housing) type KB2-a-b-c-d-e-f-HSGhijkl00n for Canada:
INTRINSICALLY SAFE CLASS II, III, DIVISION 1, GROUPS E, F, G;
NONINCENDIVE CLASS I, II, III, DIVISION 2, GROUPS A, B, C, D, E, F, G;
DUST-TIGHT CLASS II, III, DIVISION 1, Groups E, F, G;
Ex ia IIC T4 Gb
Ex ic IIC T4 Gc
Ex tc IIIC T135°C Dc
Ex tc IIIC T1 15°C DC
TEMP CLASS T4 Tamb = -40°C to +70°C
Field Wiring shall be rated for +75°C
INSTALL PER CONTROL DRAWING NO. 10591401
IP64, TYPE 3 (3X for KB2-a-b-c-V2/V4-e-f-HSGhijkl00n only)
FM21CA0022X
FM3610 - Intrinsically Safe Equipment. FM3610 - Équipement à sécurité intrinsèque
WARNING - Substitution of components may impair Intrinsic Safety. AVERTISSEMENT - La substitution de composants peut compromettre la sécurité intrinsèque !
WARNING - To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing. AVERTISSEMENT - Ne pas débrancher l'équipement en présence d'atmosphère inflammable ou combustible !
R. STAHL HMI Systems GmbH, Cologne / Germany
Marking for Keyboard with pointing device (with external housing and accessory) type KB2-a-b-c-d-e-f-HSGhijkU3n for US:
NONINCENDIVE CLASS I, II, III, DIVISION 2, GROUPS A, B, C, D, E, F, G;
DIP CLASS II, III, DIVISION 1, GROUPS E, F, G;
CLASS I, ZONE 1, AEx eb q IIC T4 Gb;
CLASS I, ZONE 2, AEx ec nC IIC T4 Gc
ZONE 21, AEx tb IIIC T115°C Db
Zone 22, AEx tc IIIC T115°C DC
TEMP CLASS T4 Tamb = -40°C to +70°C
Field Wiring shall be rated for +75°C
INSTALL PER CONTROL DRAWING NO. 10591401
IP64, TYPE 3
FM21US0031X
FM3610 - Intrinsically Safe Equipment. FM3610 - Équipement à sécurité intrinsèque
WARNING - Substitution of components may impair Intrinsic Safety. AVERTISSEMENT - La substitution de composants peut compromettre la sécurité intrinsèque !
WARNING - To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing. AVERTISSEMENT - Ne pas débrancher l'équipement en présence d'atmosphère inflammable ou combustible !
R. STAHL HMI Systems GmbH, Cologne / Germany
Marking for Keyboard with pointing device (with external housing and accessory) type KB2-a-b-c-d-e-f-HSGhijkU3n for Canada:
NONINCENDIVE CLASS I, II, III, DIVISION 2, GROUPS A, B, C, D, E, F, G;
DIP CLASS II, III, DIVISION 1, GROUPS E, F, G;
Ex eb q IIC T4 Gb;
Ex ec nC IIC T4 Gc;
Ex tb IIIC T115°C Db
Ex tc IIIC T1 15°C DC
TEMP CLASS T4 Tamb = -40°C to +70°C
Field Wiring shall be rated for +75°C
INSTALL PER CONTROL DRAWING NO. 10591401
IP64, TYPE 3
FM21CA0022X
FM3610 - Intrinsically Safe Equipment. FM3610 - Équipement à sécurité intrinsèque
WARNING - Substitution of components may impair Intrinsic Safety. AVERTISSEMENT - La substitution de composants peut compromettre la sécurité intrinsèque !
WARNING - To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing. AVERTISSEMENT - Ne pas débrancher l'équipement en présence d'atmosphère inflammable ou combustible !
R. STAHL HMI Systems GmbH, Cologne / Germany
Manufacturer:
R. STAHL HMI Systems GmbH, Adolf-Grimme-Allee 8, 50829 Cologne / Germany
MATERIAL / FINISH: see detail drawing to be defined
or depending on the order
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS [inches]
TOLERANCES: DIN ISO 2768 mK
DEBUR AND BREAK SHARP EDGES
Rev. Modification Date Drawn Checked
00 Release 03.05.2021 SL JN
01 Added explanation for product code, typo corrected, KB2 was KB2 (sheet 3, 4, 6) 18.02.2021 SL BEN
02 Update marking and information 23.03.2022 SL JN
R. STAHL HMI Systems GmbH
Cologne - Germany
www.stahl-hmi.de
SCALE: 1:5 Date Drawn Checked
MAT.-NO.: - 03.05.2021 SL JN
WEIGHT: SURFACE: A3 SHEET 5 OF 5
DRAWING NO. TITLE:
10591401 Rev02 KB2-HSG Control drawing_Safety instructions
1 2 3 4 5 6 7 8
A B C D E F
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Alle Rechte vorbehalten ! Diese Zeichnung darf ohne unsere ausdrückliche Zustimmung weder vervielfältigt, noch Dritten zugänglich gemacht, Anderen darf sie durch den Empfänger oder durch Dritte nicht in anderer Art und Weise mitgeteilt werden . Stand der Technik – Technische bzw. konstruktive Änderungen vorbehalten .

24.2 Installation Instructions Requirements China

24.2.1 KB2 / PD2 versions

安装使用要求
Installation Instructions Requirements

认证编号
Certification No. CN2021C2309-000201-1

本产品经认证符合 CNCA-C23-01: 2019《强制性产品认证实施规则 防爆电气》的要求。
The product(s) is verified and certified according to CNCA-C23-01: 2019 China Compulsory Certification Implementation Rule on Explosion Protected Electrical Product.

#	**产品名称 Product** **型号 Type**	**防爆标志** Ex Marking
1	防爆键盘 KB2-Z1-CCC-DD-EE-F-GG*, PD2-Z1-CCC-DD-EE-F-GG*, KM2-Z1-CCC-DD-EE-F-GG*	型号 KB2-Z1-…，PD2-Z1-…，KM2-Z1-…: 当连接到ia电路时：Ex ia IIC T4 Gb, Ex ia IIIC T_{200} 135℃ Db 当连接到ib电路时：Ex ib IIC T4 Gb, Ex ib IIIC T_{200} 135℃ Db 当连接到ic电路时：Ex ic IIC T4 Gc

系列标准 **Series standards**	GB/T3836.1-2021, GB/T3836.4-2021
安全使用条件 **Specific conditions of safety use:**	- 型号KB2-Z1-… 和 PD2-Z1-…: - 对于用于爆炸性气体环境，必须将设备安装在最低防护等级为IP20（GB/T4208）的外壳中。 - 型号KB2-Z1-…， PD2-Z1-…和KM2-Z1-…: - 对于用于爆炸性粉尘环境，必须将设备安装在最低防护等级为IP64（GB/T3836.1）的外壳中。 - 当在粉尘爆炸区域供电>250 mA时：设备必须由ia电路供电（线性特性）。 - 型号KB2-Z1-***-TB-**-*-** *，KB2-Z1-***-TP-**-*-** *和KB2-Z1-***-JS-**-*-** *: - 连接电缆包含2个独立的本安电路。 - 该设备的安装方式必须排除电缆上的机械影响（拉力）。 - 电缆必须固定并有防止损坏措施。 - 该设备（包括连接电缆）不能安装在强静电充电过程的区域。

	- Type KB2-Z1-... and type PD2-Z1-... : - For use in gas-explosive areas, the devices must be installed in a suitable enclosure to obtain at least IP20 in accordance with GB/T4208. - Type KB2-Z1-... and type PD2-Z1-... and KM2-Z1-... : - When used in dust-explosive areas, the device has to be installed in a suitable enclosure to obtain at least IP64 in accordance with GB/T3836.1. - When supplied with > 250 mA in dust-explosive areas: The device must be supplied by an ia-circuit (linear characteristics). - Type KB2-Z1-***-TB-**-*-** * and type KB2-Z1-***-TP-**-*-** * and type KB2-Z1-***-JS-**-*-** *: - The connection cable contains 2 separate intrinsically safe circuits. - The device has to be installed in such a way that mechanical effects (pulling forces) on the cable are excluded. - The cable has to be fixed and effectively protected against damage. - The devices (inclusive connection cables) shall only be installed in areas where intensive electrostatic charging processes are excluded.

R. STAHL HMI Systems GmbH

产品上的符合性标志:

Compliance marks on product:

中国强制性认证

China Compulsory Certification

CCC: 2021312309000474

德国制造 Made in Germany

Doc No.:

Approved: Date： 2023.03.20

24.2.2 KB2-*-HSG-* versions

安装使用要求
Installation Instructions Requirements

认证编号
Certification No. CN2021C2309-000197-1

本产品经认证符合 CNCA-C23-01: 2019《强制性产品认证实施规则 防爆电气》的要求。
The product(s) is verified and certified according to CNCA-C23-01: 2019 China Compulsory Certification Implementation Rule on Explosion Protected Electrical Product.

#	**产品名称 Product** **型号 Type**	**防爆标志** Ex Marking
1	防爆键盘 KB2-Z1-...-HSG..., PD2-Z1-...-HSG...	型号KB2-Z1-...-HSG...00... 和 PD2-Z1-...-HSG...00...: 当连接到ia电路时：Ex ia IIC T4 Gb, Ex ia IIIC T_{200} 135℃ Db 当连接到ib电路时：Ex ib IIC T4 Gb, Ex ib IIIC T_{200} 135℃ Db 当连接到ic电路时：Ex ic IIC T4 Gc 型号KB2-Z1-...-HSG...U3...和PD2-Z1-...-HSG...U3...: 当连接到ia电路时：Ex eb ia q IIC T4 Gb, Ex ia tb IIIC T135°C Db 当连接到ib电路时：Ex eb ib q IIC T4 Gb, Ex ib tb IIIC T135°C Db 当连接到ic电路时：Ex eb ic q IIC T4 Gc

系列标准 **Series standards**	GB/T3836.1-2021, GB/T3836.3-2021, GB/T3836.4-2021, GB/T3836.7-2017, GB/T3836.31-2021
安全使用条件 **Specific conditions of safety use:**	- 外壳防护等级：IP66。 - 型号KB2-Z1-... 和 PD2-Z1-...: - 当在粉尘爆炸区域供电>250 mA时：设备必须由ia电路供电（线性特性）。 - 型号KB2-Z1-***-TB-**-*-**-HSG * ** * *** * ** *、KB2-Z1-***-TP-**-*-**-HSG * ** * *** * ** *和KB2-Z1-***-JS-**-*-**-HSG * ** * *** * ** *: - 连接电缆包含2个独立的本安电路。 - 该设备的安装方式必须排除电缆上的机械影响（拉力）。 - 电缆必须固定并有防止损坏措施。 - 该设备（包括连接电缆）不能安装在强静电充电过程的区域。

	- 外壳必须接地，接地电阻小于1MΩ。如果适用，可使用安装部件或已安装部件的接地。 - 对于型号KB2-*-HSG*U3*或PD2-*-HSG*U3*，UB03连接必须使用绝缘层至少为0.5 mm的连接电缆（导线/外护套）。连接电缆必须安装在外壳中，确保与键盘/定点设备的裸露导电部件之间至少有50 mm的距离。 - Ingress protection: IP66. - Type KB2-Z1-… and type PD2-Z1-… : - When supplied with > 250 mA in dust-explosive areas: The device must be supplied by an ia-circuit (linear characteristics). - Type KB2-Z1-***-TB-**-*-**-HSG * ** * *** * ** *, Type KB2-Z1-***-TP-**-*-**-HSG * ** * *** * ** *, Type KB2-Z1-***-JS-**-*-**-HSG * ** * *** * ** *: - The connection cable contains 2 separate intrinsically safe circuits. - The device has to be installed in such a way that mechanical effects (pulling forces) on the cable are excluded. - The cable has to be fixed and effectively protected against damage. - The devices (inclusive connection cables) shall only be installed in areas where intensive electrostatic charging processes are excluded. - The enclosure, must be connected to earth potential with max. 1MΩ. If applicable, the mounting components or the earth of mounted components can be used for this. - For the variants KB2-*-HSG*U3* or PD2-*-HSG*U3* a connecting cable with min. 0.5 mm insulation (conductor / outer sheath) must be used for the UB03 connection. The connecting cable must be installed in the housing in such a way that a distance of min. 50 mm to bare conductive parts of the keyboard / pointing device is ensured.

R. STAHL HMI Systems GmbH

产品上的符合性标志:

Compliance marks on product:

中国强制性认证
China Compulsory Certification
CCC: 2021312309000476

德国制造 Made in Germany
Doc No.:
Approved: Date： 2023.03.20

25 Appendix J

25.1 Declarations of conformity

25.1.1 EU

25.1.1.1 KB2 / PD2 -Z1

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: *that the product:* *que le produit:*	Keyboard with pointing device Pointing device
Typ(en), *type(s), type(s):*	KB2-Z1-CCC-DD-EE-F-* PD2-Z1-CCC-DD-EE-F-*

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)*
2014/34/EU ATEX-Richtlinie *2014/34/EU ATEX Directive* *2014/34/UE Directive ATEX*	EN IEC 60079-0:2018 EN 60079-11:2012
Kennzeichnung, *marking, marquage:*	**II 2G Ex ia IIC T4 Gb** **II 2D Ex ia IIIC T_{200} 135°C Db** **(when supplied with ia-circuits)** **II 2G Ex ib IIC T4 Gb** **II 2D Ex ib IIIC T_{200} 135°C Db** **(when supplied with ib-circuits)** **II 3G Ex ic IIC T4 Gc** **II 3D Ex ic IIIC T_{200} 135°C Dc** **(when supplied with ic-circuits)**
EU-Baumusterprüfbescheinigung: *EU Type Examination Certificate:* *Attestation d'examen UE de type:*	**BVS 20 ATEX E 078 X** (DEKRA EXAM GmbH Dinnendahlstraße 9, 44809 Bochum, Germany, NB0158)
2014/30/EU EMV-Richtlinie *2014/30/EU EMC Directive* *2014/30/UE Directive CEM*	DIN EN 61326-1:2013-07 DIN EN IEC 61000-6-2:2019-11 DIN EN IEC 61000-6-4:2020-09
Produktnormen nach RoHS-Richtlinie (2011/65/EU): *Product standards according to RoHS Directive:* *Normes des produit pour la Directive RoHS:*	EN IEC 63000:2018

CE 0158

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, 2021-04-22	i.V. Joachim Düren	i.V. A. Jung
Ort und Datum *Place and date* *Lieu et date*	**J. Düren** Technical Director	**A. Jung** Ex Representative

20210970020 Konformitätserklärung KB2-PD2-Z1.docx Template_ EGEU_Konf_20150720.docx, Page 1 / 1

25.1.1.2 KB2 / PD2 –Z2

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: *that the product:* *que le produit:*	Keyboard with pointing device Pointing device
Typ(en), *type(s), type(s):*	KB2-Z2-CCC-DD-EE-F-* PD2-Z2-CCC-DD-EE-F-*

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)*
2014/34/EU **ATEX-Richtlinie** *2014/34/EU ATEX Directive* *2014/34/UE Directive ATEX*	EN IEC 60079-0:2018 EN 60079-11:2012
Kennzeichnung, *marking, marquage:*	**Ex II 3G Ex ic IIC T4 Gc** **II 3D Ex ic IIIC T_{200} 135°C Dc** CE
EU-Baumusterprüfbescheinigung: *EU Type Examination Certificate:* *Attestation d'examen UE de type:*	**BVS 20 ATEX E 079 X** (DEKRA EXAM GmbH Dinnendahlstraße 9, 44809 Bochum, Germany, NB0158)
2014/30/EU **EMV-Richtlinie** *2014/30/EU EMC Directive* *2014/30/UE Directive CEM*	DIN EN 61326-1:2013-07 DIN EN IEC 61000-6-2:2019-11 DIN EN IEC 61000-6-4:2020-09
Produktnormen nach RoHS-Richtlinie (2011/65/EU): *Product standards according to RoHS Directive:* *Normes des produit pour la Directive RoHS:*	EN IEC 63000:2018

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, 2021-04-22	i.V. Joachim Düren	i.V. A. Jung
Ort und Datum *Place and date* *Lieu et date*	**J. Düren** Technical Director	**A. Jung** Ex Representative

20210970030 Konformitätserklärung KB2-PD2-Z2.docx Template_ EGEU_Konf_20150720.docx, Page 1 / 1

25.1.1.3 KB2 / PD2 -Z1 –HSG

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: *that the product:* *que le produit:*	Keyboard with pointing device and enclosure Pointing device and enclosure
Typ(en), *type(s), type(s):*	KB2-Z1-CCC-DD-EE-F-GG-HSG H II J KKK L MM * PD2-Z1-CCC-DD-EE-F-GG-HSG H II J KKK L MM *

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)*
2014/34/EU **ATEX-Richtlinie** *2014/34/EU* *ATEX Directive* *2014/34/UE* *Directive ATEX*	EN IEC 60079-0:2018 EN 60079-5:2015 EN IEC 60079-7:2015 + A1 :2018 EN 60079-11:2012 EN 60079-31:2014

Kennzeichnung, *marking, marquage:*

Type KB2-Z1-...-HSG...00...
Type PD2-Z1-...-HSG...00...

Ⓔx **II 2G Ex ia IIC T4 Gb**
II 2D Ex ia IIIC T_{200} 135°C Db
(when connected to an ia-circuits)

Ⓔx **II 2G Ex ib IIC T4 Gb**
II 2D Ex ib IIIC T_{200} 135°C Db
(when connected to an ib-circuits)

CE 0158

Type KB2-Z1-...-HSG...U3...
Type PD2-Z1-...-HSG...U3...

Ⓔx **II 2G Ex eb ia q IIC T4 Gb**
II 2D Ex ia tb IIIC T135°C Db
(when connected to an ia-circuits)

Ⓔx **II 2G Ex eb ib q IIC T4 Gb**
II 2D Ex ib tb IIIC T135°C Db
(when connected to an ib-circuits)

EU-Baumusterprüfbescheinigung: *EU Type Examination Certificate:* *Attestation d'examen UE de type:*	**BVS 20 ATEX E 106 X** (DEKRA EXAM GmbH Dinnendahlstraße 9, 44809 Bochum, Germany, NB0158)
2014/30/EU **EMV-Richtlinie** *2014/30/EU* *EMC Directive* *2014/30/UE* *Directive CEM*	DIN EN IEC 61000-6-2:2019-11 DIN EN IEC 61000-6-4:2020-09
2014/53/EU **Funkanlagen-Richtlinie** *2014/53/EU* *Radio Equipment Directive* *2014/53/UE* *Directive Équipement Radioélectrique*	For type with MM=U3 only: ETSI EN 300 330 V2.1.1 ETSI EN 301 489-1 V2.2.3 ETSI EN 301 489-3 V2.1.1
Produktnormen nach Niederspannungsrichtlinie: *Product standards according to Low Voltage Directive:* *Normes des produit pour la Directive Basse Tension:*	For type with MM=U3 only: EN 62368-1:2014/AC:2015/A11:2017

20210970040 Konformitätserklärung KB2 HSG-Z1.docx Template_ EGEU_Konf_20150720.docx, Page 1 / 2

EU-Konformitätserklärung
EU Declaration of Conformity
Déclaration de Conformité UE

STAHL

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

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, 2021-04-22	i.V.	i.V.
Ort und Datum *Place and date* *Lieu et date*	**J. Düren** Technical Director	**A. Jung** Ex Representative

20210970040 Konformitätserklärung KB2 HSG-Z1.docx

Template_ EGEU_Konf_20150720.docx, Page **2** / **2**

25.1.1.4 KB2 / PD2 –Z2 -HSG

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: *that the product:* *que le produit:*	Keyboard with pointing device and enclosure Pointing device and enclosure
Typ(en), *type(s), type(s):*	KB2-Z2-CCC-DD-EE-F-GG-HSG H II J KKK L MM * PD2-Z2-CCC-DD-EE-F-GG-HSG H II J KKK L MM *

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)*
2014/34/EU **ATEX-Richtlinie** *2014/34/EU* *ATEX Directive* *2014/34/UE* *Directive ATEX*	EN IEC 60079-0:2018 EN IEC 60079-7:2015 + A1 :2018 EN 60079-11:2012 EN 60079-15:2010 EN 60079-31:2014
Kennzeichnung, *marking, marquage:*	**Type KB2-Z2-...-HSG...00...** **Type PD2-Z2-...-HSG...00...** **II 3G Ex ic IIC T4 Gc** **II 3D Ex ic IIIC T_{200} 135°C Dc** CE **Type KB2-Z2-...-HSG...U3...** **Type PD2-Z2-...-HSG...U3...** **II 3G Ex ec ic nC IIC T4 Gc** **II 3D Ex ic tc IIIC T135°C Dc**
EU-Baumusterprüfbescheinigung: *EU Type Examination Certificate:* *Attestation d'examen UE de type:*	**BVS 20 ATEX E 107 X** (DEKRA EXAM GmbH Dinnendahlstraße 9, 44809 Bochum, Germany, NB0158)
2014/30/EU **EMV-Richtlinie** *2014/30/EU* *EMC Directive* *2014/30/UE* *Directive CEM*	DIN EN IEC 61000-6-2:2019-11 DIN EN IEC 61000-6-4:2020-09
2014/53/EU **Funkanlagen-Richtlinie** *2014/53/EU* *Radio Equipment Directive* *2014/53/UE* *Directive Équipement Radioélectrique*	For type with MM=U3 only: ETSI EN 300 330 V2.1.1 ETSI EN 301 489-1 V2.2.3 ETSI EN 301 489-3 V2.1.1
Produktnormen nach Niederspannungsrichtlinie: *Product standards according to Low Voltage Directive:* *Normes des produit pour la Directive Basse Tension:*	For type with MM=U3 only: EN 62368-1:2014/AC:2015/A11:2017
Produktnormen nach RoHS-Richtlinie (2011/65/EU): *Product standards according to RoHS Directive:* *Normes des produit pour la Directive RoHS:*	EN IEC 63000:2018

20210970050 Konformitätserklärung KB2 HSG-Z2.docx Template_ EGEU_Konf_20150720.docx, Page 1 / 2

EU-Konformitätserklärung
EU Declaration of Conformity
Déclaration de Conformité UE

STAHL

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, 2021-04-22	i.V.	i.V.
Ort und Datum *Place and date* *Lieu et date*	**J. Düren** Technical Director	**A. Jung** Ex Representative

25.1.2 CCC

25.1.2.1 KB2 / PD2 - Z1

CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION

No.: 2021312309000474

Applicant	R. STAHL HMI Systems GmbH
Address	Adolf-Grimme-Allee 8, 50829 Koln, Germany
Manufacturer	R. STAHL HMI Systems GmbH
Address	Adolf-Grimme-Allee 8, 50829 Koln, Germany
Production Factory	R. STAHL HMI Systems GmbH
Production Address	Adolf-Grimme-Allee 8, 50829 Koln, Germany
Product	Keyboard
Model/Type	KB2-Z1-CCC-DD-EE-F-GG*, PD2-Z1-CCC-DD-EE-F-GG*, KM2-Z1-CCC-DD-EE-F-GG*
Ex marking	See Annex
Reference Standards	GB/T 3836.1-2021, GB/T 3836.4-2021
Certification mode	Type Test + Initial Factory Inspection + Post-Certification Surveillance

The product(s) is verified and certified according to CNCA-C23-01: 2019 *China Compulsory Certification Implementation Rule on Explosion Protected Electrical Product* and CNEX-C2301-2019 *Guideline of China Compulsory Certification Implementation Rule on Explosion Protected Electrical Product*.

See Annex for the detailed product information (8 pages)

Initial issue date: 2021-05-08
Issued date: 2023-04-28 Valid to: 2026-05-07

The validity of this certificate is maintained through the regular supervision of the issuing authority during the validity period.

Where any discrepancy arises between the English translation and the original Chinese version, the Chinese version shall prevail.

Director:

CNEX C C C

Nanyang Explosion Protected Electrical Apparatus Research Institute Co.,Ltd.

CNAS 中国认可 产品 PRODUCT CNAS C208-P

http://www.ccc-cnex.com
ccc.china-ex.com

Add: No. 20, North Zhongjing Road, Nanyang, Henan, P. R. China P.C.: 473008
Tel: 0377-63239734 Email: ccc@cn-ex.com

CN 0001896

CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION

(Annex)

No.: 2021312309000474

Product information:

1. This certificate covers the following models:

   - Keyboard with pointing device : KB2-Z1-CCC-DD-EE-F-GG*,

     Pointing device : PD2-Z1-CCC-DD-EE-F-GG*,

     Keyboard matrix interface : KM2-Z1-CCC-DD-EE-F-GG*

     Subject and Type:

     Types AAA-BB-CCC-DD-EE-F-GG*

   In the complete type denomination, the wild cards A-G are replaced by the following characters and numbers to distinguish different variants.

AAA:	**Type**
KB2	Keyboard with pointing device
PD2	Pointing device only
KM2	Keyboard matrix interface

BB:	**Zone**
Z1	For use in Zone 1, 2, 21, 22

CCC:	**Type of interface (not Ex-relevant)**
USB	USB
PS2	PS2

DD:	**Type of pointing device**
00	No pointing device
TB	Trackball
TP	Touchpad
JS	Joystick

Issued date: 2023-04-28

Director:

CNEX C C C

Nanyang Explosion Protected Electrical Apparatus Research Institute Co.,Ltd.

CNAS 中国认可 产品 PRODUCT CNAS C208-P

http://www.ccc-cnex.com
ccc.china-ex.com

Add: No. 20, North Zhongjing Road, Nanyang, Henan, P. R. China P.C.: 473008
Tel: 0377-63239734 Email: ccc@cn-ex.com

CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION

(Annex)

No.: 2021312309000474

EE:	**Front plate material**
AP	Aluminium coated
AL	Aluminium anodized
V2	Stainless steel
V4	Stainless steel
ST	Steel
F:	**Surface front foil**
P	Polyester foil
V	Metallic foil
GG:	**Layout (not Ex-relevant)**
CN	keyboard layout CN (China)
US	keyboard layout US-American
DE	keyboard layout German
FR	keyboard layout French
DK	keyboard layout Denmark
SL	keyboard layout Slovenia
ES	keyboard layout Spain
SE	keyboard layout Sweden
JP	keyboard layout Japan
00	no keyboard layout

The * is replaced by characters and numbers to distinguish variations with no influence to explosion protection.

Parameters:

Electrical parameters:

Type PD2-Z1-*-**-**-*-*-**** *(Pointing device):

Issued date: 2023-04-28

Director:

防爆电气研究所有限公司

CNEX CCC

Nanyang Explosion Protected Electrical Apparatus Research Institute Co.,Ltd.

CNAS 中国认可 产品 PRODUCT CNAS C208-P

http://www.ccc-cnex.com ccc.china-ex.com
Add: No. 20, North Zhongjing Road, Nanyang, Henan, P. R. China P.C.: 473008
Tel: 0377-63239734 Email: ccc@cn-ex.com

CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION

(Annex)

No.: 2021312309000474

Supply via a permanently connected cable with max. 5 m length.

Wires: for 8-wire cable: +5V (red resp. 5), USB-m (gray resp. 7), USB_p (pink resp. 8) and GND (blue resp. 6).

for 4-wire cable: +5V (white resp. 1), USB-m (green resp. 2), USB_p (yellow resp. 3) and GND (brown resp. 4).

Maximum input voltage U_i	5.9V DC
Maximum input current I_i	
For Group II	319mA
For Group III, ia	319mA
For Group III, ib	250mA
Maximum input power P_i	650mW
Effective internal capacitance C_i	21μF
Effective internal inductance L_i	1.68μH
For the permanently connected cable, the following values have to be respected additionally:	
Cable capacitance C_c	200pF/m
Cable inductance L_c	1μH/m

Type KB2-Z1-*-00-**-*-**** *(Keyboard without Pointing Device) :

Supply via a permanently connected cable with max. 5 m length.

Wires: +5V (white resp. 1), USB-m (green resp. 2), USB_p (yellow resp. 3) and GND (brown resp. 4).

Maximum input voltage U_i	5.9V DC
Maximum input current I_i	

Issued date: 2023-04-28

Director:

CNEX CCC

Nanyang Explosion Protected Electrical Apparatus Research Institute Co.,Ltd.

CNAS 中国认可 产品 PRODUCT CNAS C208-P

http://www.ccc-cnex.com ccc.china-ex.com
Add: No. 20, North Zhongjing Road, Nanyang, Henan, P. R. China P.C.: 473008
Tel: 0377-63239734 Email: ccc@cn-ex.com

CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION

(Annex)

No.: 2021312309000474

For Group II	319mA
For Group III, ia	319mA
For Group III, ib	250mA
Maximum input power P_i	650mW
Effective internal capacitance C_i	21μF
Effective internal inductance L_i	1.68μH
For the permanently connected cable, the following values have to be respected additionally:	
Cable capacitance C_c	200pF/m
Cable inductance L_c	1μH/m

Type KB2-Z1-*-TB-**-*-** *, KB2-Z1-***-TP-**-*-** *, KB2-Z1-***-JS-**-*-** *:**

(Keyboard with Pointing Device)

Supply with 2 separate intrinsically safe circuits via an 8-wire permanently connected cable with max. 5 m length.

Keyboard-circuit:

Wires: +5V (white resp. 1), USB-m (green resp. 2), USB_p (yellow resp. 3) and GND (brown resp. 4).

Maximum input voltage U_i	5.9V DC
Maximum input current I_i	
For Group II	319mA
For Group III, ia	319mA
For Group III, ib	250mA
Maximum input power P_i	650mW

Issued date: 2023-04-28

Director:

Nanyang Explosion Protected Electrical Apparatus Research Institute Co.,Ltd.

CNAS 中国认可 产品 PRODUCT CNAS C208-P

http://www.ccc-cnex.com ccc.china-ex.com
Add: No. 20, North Zhongjing Road, Nanyang, Henan, P. R. China P.C.: 473008
Tel: 0377-63239734 Email: ccc@cn-ex.com

CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION

(Annex)

No.: 2021312309000474

Effective internal capacitance C_i	21μF
Effective internal inductance L_i	1.68μH
For the permanently connected cable, the following values have to be respected additionally:	
Cable capacitance C_c	200pF/m
Cable inductance L_c	1μH/m

Pointing Device-Circuit :

Wires: +5V (red resp. 5), USB-m (gray resp. 7), USB_p (pink resp. 8) and GND (blue resp. 6).

Maximum input voltage U_i	5.9V DC
Maximum input current I_i	
For Group II	319mA
For Group III, ia	319mA
For Group III, ib	250mA
Maximum input power P_i	650mW
Effective internal capacitance C_i	21μF
Effective internal inductance L_i	1.68μH
For the permanently connected cable, the following values have to be respected additionally:	
Cable capacitance C_c	200pF/m
Cable inductance L_c	1μH/m

Type KM2-Z1-*-**-**-*-**** *(Keyboard Matrix):

Issued date: 2023-04-28

Director:

Nanyang Explosion Protected Electrical Apparatus Research Institute Co.,Ltd.

CNEX CCC

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Add: No. 20, North Zhongjing Road, Nanyang, Henan, P. R. China P.C.: 473008
Tel: 0377-63239734 Email: ccc@cn-ex.com

CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION

(Annex)

No.: 2021312309000474

Supply:

Terminal block X1

Terminals:+5V (1), USB_m (2), USB_p (3), GND (4).

Maximum input voltage U_i	5.9V DC
Maximum input current I_i	
For Group II	319mA
For Group III, ia	319mA
For Group III, ib	250mA
Maximum input power P_i	650mW
Effective internal capacitance C_i	20.5μF
Effective internal inductance L_i	1.68μH
Terminal 5 is intended for connection of a cable shield.	

Terminals for connection of an external keyboard:

Terminal blocks X2, X3, X4:

(The signals at all 3 terminal blocks are regarded as 1 intrinsically safe circuit)

Maximum output voltage U_o	$=U_i$
Maximum output current I_o	250 mA
Maximum output power P_o	$= P_i$
Maximum external capacitance C_o	0.5μF
Maximum external inductance L_o	0.5μH

Ambient temperature:-40℃~+70℃

Issued date: 2023-04-28

Director:

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(Annex)

No.: 2021312309000474

Ex marking:

Type KB2-Z1-... ,Type PD2-Z1-... ,Type KM2-Z1-... :

When connected to an ia-circuit: Ex ia IIC T4 Gb, Ex ia IIIC T_{200} 135℃ Db

When connected to an ib-circuit: Ex ib IIC T4 Gb, Ex ib IIIC T_{200} 135℃ Db

When connected to an ic-circuit: Ex ic IIC T4 Gc

- Producers should organize production in accordance with the technical documents approved by the certification body.

2. Specific conditions of safety use:

- Type KB2-Z1-... and type PD2-Z1-... :

  •For use in gas-explosive areas, the devices must be installed in a suitable enclosure to obtain at least IP20 in accordance with GB/T4208.

- Type KB2-Z1-... and type PD2-Z1-... and KM2-Z1-... :

  • When used in dust-explosive areas, the device has to be installed in a suitable enclosure to obtain at least IP64 in accordance with GB/T3836.1.

  •When supplied with > 250 mA in dust-explosive areas: The device must be supplied by an ia-circuit (linear characteristics).

-Type KB2-Z1-***-TB-**-*-** * and type KB2-Z1-***-TP-**-*-** * and type KB2-Z1-***-JS-**-*-** *:

  •The connection cable contains 2 separate intrinsically safe circuits.

  •The device has to be installed in such a way that mechanical effects (pulling forces) on the cable are excluded.

  •The cable has to be fixed and effectively protected against damage.

Issued date: 2023-04-28

Director:

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(Annex)

No.: 2021312309000474

-The devices (inclusive connection cables) shall only be installed in areas where intensive electrostatic charging processes are excluded.

- See instruction for other information.

3. Certificate related report(s):

   - Type test report: CQST2103C007, CQST2103C007/01

   - Factory inspection report: CN2023Q030119

4. Certificate change information:

   - 1st change on April 28, 2023: Updated the standards for certification.

Issued date: 2023-04-28

Director:

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25.1.2.2 KB2 / PD2 - Z1-*-HSG*00* / *U3*

CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION

No.: 2021312309000476

Applicant	R. STAHL HMI Systems GmbH
Address	Adolf-Grimme-Allee 8, 50829 Koln, Germany
Manufacturer	R. STAHL HMI Systems GmbH
Address	Adolf-Grimme-Allee 8, 50829 Koln, Germany
Production Factory	R. STAHL HMI Systems GmbH
Production Address	Adolf-Grimme-Allee 8, 50829 Koln, Germany
Product	Keyboard
Model/Type	KB2-Z1-...-HSG..., PD2-Z1-...-HSG...
Ex marking	See Annex
Reference Standards	GB/T 3836.1-2021, GB/T 3836.3-2021, GB/T 3836.4-2021, GB/T 3836.7-2017, GB/T 3836.31-2021
Certification mode	Type Test + Initial Factory Inspection + Post-Certification Surveillance

The product(s) is verified and certified according to CNCA-C23-01: 2019 *China Compulsory Certification Implementation Rule on Explosion Protected Electrical Product* and CNEX-C2301-2019 *Guideline of China Compulsory Certification Implementation Rule on Explosion Protected Electrical Product.*

See Annex for the detailed product information (9 pages)

Initial issue date: 2021-05-14

Issued date: 2023-04-29 Valid to: 2026-05-13

The validity of this certificate is maintained through the regular supervision of the issuing authority during the validity period.

Where any discrepancy arises between the English translation and the original Chinese version, the Chinese version shall prevail.

Director:

CNEX C C C

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Tel: 0377-63239734 Email: ccc@cn-ex.com

CN 0001901

CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION

(Annex)

No.: 2021312309000476

Product information:

1. This certificate covers the following models:

   - Keyboard with pointing device and enclosure: KB2-Z1-...-HSG...,

     Pointing device: PD2-Z1-...-HSG...

   Subject and Type:

   AAA-BB-CCC-DD-EE-F-GG-HSG H II J KKK L MM *

   In the complete type denomination, the wild cards A-M are replaced by the following characters and numbers to distinguish different variants.

AAA:	**Type**
KB2	Keyboard with pointing device
PD2	Pointing device only

BB:	**Zone**
Z1	For use in Zone 1, 2, 21, 22

CCC:	**Type of interface**
USB	USB
PS2	PS2

DD:	**Type of pointing device**
00	no pointing device
TB	Trackball
TP	Touchpad
JS	Joystick

EE:	**Front plate material**
AP	Aluminium coated
AL	Aluminium anodized
V2	Stainless steel
V4	Stainless steel

Issued date: 2023-04-29

Director:

CNEX C C C

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CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION

(Annex)

No.: 2021312309000476

ST	Steel
F:	**Surface front foil**
P	Polyester foil
V	Metallic foil
GG:	**Layout (not Ex-relevant)**
CN	keyboard layout CN (China)
US	keyboard layout US-American
DE	keyboard layout German
FR	keyboard layout French
DK	keyboard layout Denmark
SL	keyboard layout Slovenia
ES	keyboard layout Spain
SE	keyboard layout Sweden
JP	keyboard layout Japan
00	no keyboard layout
HSG:	**Housing**
HSG	Housing
H:	**Sealing**
1	Sealing 1
2	Sealing 2
II:	**Housing material**
V2	Enclosure material V2A
V4	Enclosure material V4A
J:	**Coating**
N	no coating
P	coating
M	Metallic coating
KKK:	**Mounting option**
M##	mounting options

Issued date: 2023-04-29

Director:

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CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION

(Annex)

No.: 2021312309000476

B## backcover type

L: **Design option** (not Ex-relevant)

S Standard
G GMP-option

MM: Accessory
00 no accessory
U3 UB03

The * is replaced by characters and numbers to distinguish variations with no influence to explosion protection.

The # is replaced by one character or number to distinguish variations with no influence to explosion protection.

Parameters:

Electrical parameters:

Type PD2-Z1-***-**-**-*-**-HSG * ** * *** * ** *(Pointing device) :

Supply via a permanently connected cable with max. 5 m length.

Wires for 8-wire cable: +5V (red resp. 5), USB-m (gray resp. 7), USB_p (pink resp. 8) and GND (blue resp. 6) for 4-wire cable: +5V (white resp. 1), USB-m (green resp. 2), USB_p (yellow resp. 3) and GND (brown resp. 4).

Maximum input voltage U_i	5.9 V DC
Maximum input current I_i	
For Group II	319 mA
For Group III, ia	319 mA
For Group III, ib	250 mA

Issued date: 2023-04-29

Director:

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CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION

(Annex)

No.: 2021312309000476

Maximum input power P_i	650 mW
Effective internal capacitance C_i	21 µF
Effective internal inductance L_i	1.68 µH
For the permanently connected cable, the following values have to be respected additionally:	
Cable capacitance C_c	200 pF/m
Cable inductance L_c	1 µH/m

Type KB2-Z1-***-00-**-*-**-HSG * ** * *** * ** *(Keyboard without Pointing Device) :

Supply via a permanently connected cable with max.5m length.

Wires: +5V (white resp.1), USB-m (green resp. 2), USB_p (yellow resp. 3) and GND (brown resp. 4).

Maximum input voltage U_i	5.9 V DC
Maximum input current I_i	
For Group II	319 mA
For Group III, ia	319 mA
For Group III, ib	250 mA
Maximum input power P_i	650 mW
Effective internal capacitance C_i	21 µF
Effective internal inductance L_i	1.68 µH
For the permanently connected cable, the following values have to be respected additionally:	
Cable capacitance C_c	200 pF/m
Cable inductance L_c	1 µH/m

Issued date: 2023-04-29

Director:

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(Annex)

No.: 2021312309000476

Type KB2-Z1-***-TB-**-*-**-HSG * ** * *** * ** * ,
Type KB2-Z1-***-TP-**-*-**-HSG * ** * *** * ** * ,
Type KB2-Z1-***-JS-**-*-**-HSG * ** * *** * ** * (Keyboard with Pointing Device):

Supply with 2 separate intrinsically safe circuits via an 8-wire permanently connected cable with max. 5 m length.

Keyboard-circuit :

Wires: +5V (white resp. 1), USB-m (green resp. 2), USB_p (yellow resp. 3) and GND (brown resp. 4).

Maximum input voltage U_i	5.9 V DC
Maximum input current I_i	
For Group II	319 mA
For Group III, ia	319 mA
For Group III, ib	250 mA
Maximum input power P_i	650 mW
Effective internal capacitance C_i	21 µF
Effective internal inductance L_i	1.68 µH
For the permanently connected cable, the following values have to be respected additionally:	
Cable capacitance C_c	200 pF/m
Cable inductance L_c	1 µH/m

Pointing Device-Circuit :

Wires :+5V (red resp. 5), USB-m (gray resp. 7), USB_p (pink resp. 8) and GND (blue resp. 6).

Maximum input voltage U_i	5.9 V DC

Issued date: 2023-04-29

Director:

CNEX C C C

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CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION

(Annex)

No.: 2021312309000476

Maximum input current I_i	
For Group II	319 mA
For Group III, ia	319 mA
For Group III, ib	250 mA
Maximum input power P_i	650 mW
Effective internal capacitance C_i	21 µF
Effective internal inductance L_i	1.68 µH
For the permanently connected cable, the following values have to be respected additionally:	
Cable capacitance C_c	200 pF/m
Cable inductance L_c	1 µH/m

Type ***-Z1-***-**-**-*-**-HSG * ** * *** * U3 *(Accessory UB03) :

Terminal block X1, pin1	
Non-intrinsically safe supply circuit (Power)	
Nominal voltage	5~30V DC
Nominal current	≤ 1 A
Nominal power	≤ 30 W
Max. input voltage U_m	250V AC
Terminal block X1, pin 2 and 3	
Non-intrinsically safe interfaces data	
Nominal voltage	5V AC/DC
Max. input voltage U_m	250V AC
Terminal block X1, pin 2 and 3 (for "UB03-*-RFID-*-RS422*" only)	

Issued date: 2023-04-29

Director:

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CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION

(Annex)

No.: 2021312309000476

Non-intrinsically safe interfaces data	
Max. voltage	30V AC/DC
Max. current	≤ 1 A
Terminal block X1, pin 2 and 3 (for "UB03-*-AMP-Audio*" and "UB03-*-DSP-10*" only)	
Non-intrinsically safe interfaces data	
Max. output voltage	30V AC/DC

Terminal block X2	
Non-intrinsically safe interfaces data	
Nominal voltage	5V AC/DC
Max. input voltage U_m	250V AC

Rated ambient temperature range: -40 °C up to +70 °C

Ex marking:

Type KB2-Z1-...-HSG...00... and Type PD2-Z1-...-HSG...00... :

When connected to an ia-circuit: Ex ia IIC T4 Gb, Ex ia IIIC T_{200} 135°C Db

When connected to an ib-circuit: Ex ib IIC T4 Gb, Ex ib IIIC T_{200} 135°C Db

When connected to an ic-circuit: Ex ic IIC T4 Gc

Type KB2-Z1-...-HSG...U3... and Type PD2-Z1-...-HSG...U3... :

When connected to an ia-circuit: Ex eb ia q IIC T4 Gb, Ex ia tb IIIC T135°C Db

When connected to an ib-circuit: Ex eb ib q IIC T4 Gb, Ex ib tb IIIC T135°C Db

When connected to an ic-circuit: Ex eb ic q IIC T4 Gc

Issued date: 2023-04-29

Director:

CNEX CCC

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CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION

(Annex)

No.: 2021312309000476

- Producers should organize production in accordance with the technical documents approved by the certification body.

2. Specific conditions of safety use:

- Ingress protection: IP66.

- Type KB2-Z1-... and type PD2-Z1-... :

  •When supplied with > 250 mA in dust-explosive areas: The device must be supplied by an ia-circuit (linear characteristics).

- Type KB2-Z1-***-TB-**-*-**-HSG * ** * *** * ** *,

  Type KB2-Z1-***-TP-**-*-**-HSG * ** * *** * ** *,

  Type KB2-Z1-***-JS-**-*-**-HSG * ** * *** * ** *:

  •The connection cable contains 2 separate intrinsically safe circuits.

  •The device has to be installed in such a way that mechanical effects (pulling forces) on the cable are excluded.

  •The cable has to be fixed and effectively protected against damage.

- The devices (inclusive connection cables) shall only be installed in areas where intensive electrostatic charging processes are excluded.

- The enclosure, must be connected to earth potential with max. 1MΩ. If applicable, the mounting components or the earth of mounted components can be used for this.

- For the variants KB2-*-HSG*U3* or PD2-*-HSG*U3* a connecting cable with min. 0.5 mm insulation (conductor / outer sheath) must be used for the UB03 connection. The connecting cable must be installed in the housing in such a way that a distance of min. 50 mm to bare conductive parts of the keyboard / pointing device is ensured.

- See instruction for other information.

3. Certificate related report(s):

Issued date: 2023-04-29

Director:

CNEX CCC

Nanyang Explosion Protected Electrical Apparatus Research Institute Co.,Ltd.

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CERTIFICATE FOR CHINA COMPULSORY PRODUCT CERTIFICATION

(Annex)

No.: 2021312309000476

- Type test report: CQST2103C003, CQST2103C003/01
- Factory inspection report: CN2023Q030119

4. Certificate change information:

- 1st change on April 29, 2023: Updated the standards for certification.

Issued date: 2023-04-29

Director:

Nanyang Explosion Protected Electrical Apparatus Research Institute Co.,Ltd.

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25.1.3 KCC

25.1.3.1 KB2-Z1-*-TB-*

86F1-AB74-E036-35BA

21-043669-03

방송통신기자재등의 적합등록 필증

Registration of Broadcasting and Communication Equipments

상호 또는 성명 *Trade Name or Registrant*	알스탈주식회사
기자재명칭(제품명칭) *Equipment Name*	**Keyboard with trackball**
기기부호/추가 기기부호 *Equipment code /Additional Equipment code*	**IND**
기본모델명 *Basic Model Number*	**KB2-Z1-USB-TB-AP-P-DE**
파생모델명 *Series Model Number*	[redacted]
등록번호 *Registration No.*	**R-R-RSE-KB2-Z1-USB-TB**
제조자/제조국가 *Manufacturer/Country of Origin*	**R.stahl HMI Systems GmbH / 독일**
등록연월일 *Date of Registration*	**2022-03-23**
기타 *Others*	

위 기자재는 「전파법」 제58조의2 제3항에 따라 등록되었음을 증명합니다.

It is verified that foregoing equipment has been registered under the Clause 3, Article 58-2 of Radio Waves Act.

2022년(Year) 03월(Month) 23일(Day)

국립전파연구원장

Director General of National Radio Research Agency

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위반시 과태료 처분 및 등록이 취소될 수 있습니다.

25.1.3.2 KB2-Z1-*-TP-*

32F1-5BCE-0F98-3C3D

21-043669-02

방송통신기자재등의 적합등록 필증

Registration of Broadcasting and Communication Equipments

상호 또는 성명 *Trade Name or Registrant*	알스탈주식회사
기자재명칭(제품명칭) *Equipment Name*	**Keyboard with touchpad**
기기부호/추가 기기부호 *Equipment code /Additional Equipment code*	**IND**
기본모델명 *Basic Model Number*	**KB2-Z1-USB-TP-AP-P-DE**
파생모델명 *Series Model Number*	[redacted]
등록번호 *Registration No.*	**R-R-RSE-KB2-Z1-USB-TP**
제조자/제조국가 *Manufacturer/Country of Origin*	**R.stahl HMI Systems GmbH / 독일**
등록연월일 *Date of Registration*	**2022-03-23**
기타 *Others*	

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It is verified that foregoing equipment has been registered under the Clause 3, Article 58-2 of Radio Waves Act.

2022년(Year) 03월(Month) 23일(Day)

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Director General of National Radio Research Agency

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25.1.3.3 KB2-Z1-*-JS-*

7F53-20B3-3709-5802

21-043669-01

방송통신기자재등의 적합등록 필증

Registration of Broadcasting and Communication Equipments

상호 또는 성명 *Trade Name or Registrant*	알스탈주식회사
기자재명칭(제품명칭) *Equipment Name*	**Keyboard with joystick**
기기부호/추가 기기부호 *Equipment code /Additional Equipment code*	**IND**
기본모델명 *Basic Model Number*	**KB2-Z1-USB-JS-AP-P-DE**
파생모델명 *Series Model Number*	[redacted]
등록번호 *Registration No.*	**R-R-RSE-KB2-Z1-USB-JS**
제조자/제조국가 *Manufacturer/Country of Origin*	**R.stahl HMI Systems GmbH / 독일**
등록연월일 *Date of Registration*	**2022-03-22**
기타 *Others*	

위 기자재는「전파법」제58조의2 제3항에 따라 등록되었음을 증명합니다.

It is verified that foregoing equipment has been registered under the Clause 3, Article 58-2 of Radio Waves Act.

2022년(Year) 03월(Month) 22일(Day)

국립전파연구원장

Director General of National Radio Research Agency

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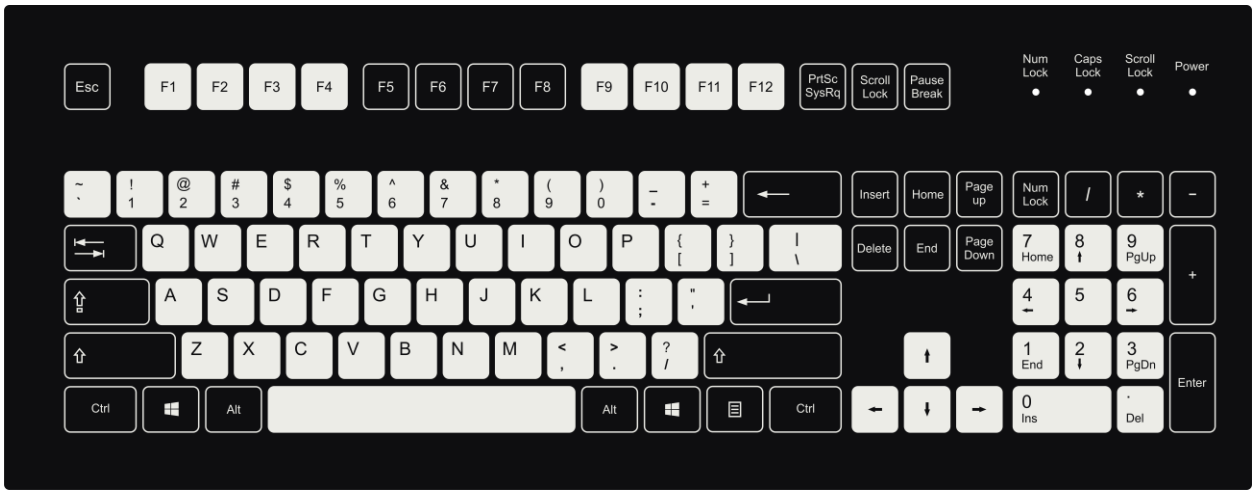
26 Appendix K

26.1 Keyboard layouts

26.1.1 German - DE

26.1.2 American - US



26.1.3 French - FR

26.1.4 Spanish - ES

26.1.5 Swiss German - DE-CH

26.1.6 Nordic

Swedish, Finnish, Norwegian, Danish

26.1.7 Slovenian - SL

26.1.8 Japanese - JP

JIS standard

26.1.9 Hungarian - HU

26.1.10 Ukrainian - UA

In preparation

27 Appendix L

27.1 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 older release notes
- Correction of CE / ATEX listing in section "Certificates"
- Changing designation "International" to "Global" in section "Approvals"
- Removal of EAC certification
- Removal of EAC Ex classification
- Removal of EAC declaration of conformity
- Update CCC certification, adaption Ex classification
- Renew CCC certificates (english), (chinese certificates in "certificate combination KB2 (CE_Keyboards_KB2)"
- Renew BIS approval
- Adaption earthing material in section "Scope of delivery"
- Adaption text and drawing for earthing material for xx7 and xx8 in section "Connection overview cable assignment KB2"
- Adaption text and drawing for earthing material for ORCA01* in section "Connection overview cable assignment KB2"
- Deleted "Standard cable length of 2.4 m" in section "Proof of intrinsic safety - Connections"
- Changing / addition of attribute description for cable length in section "Technical data"
- Addition of section "Installation Instructions Requirements China" in Appendix I
- Addition of code "NX - Devices for Non-Ex" in section "Type code layout"
- Addition of "Desktop enclosure with keyboard for Non-Ex applications" in section "Enclosure"
- Addition of reference to document "2023348000_1-Arbeitsanweisung KB2 Desktop Binderstecker.pdf" in section "Further documents"
- Addition of "KB2 desktop assemblies" in section "Scope of delivery"
- Addition of drawings "Desktop enclosure with keyboard" in section "Enclosure versions"
- Addition of section "Keyboard with pointing device desktop mounting"
- Addition of "Symbol electrostatic discharge hazard" in section "Warning notes"
- Addition of section "Installation KB2 in enclosure"
- Addition of "Comment" according to ATEX / IECEx in section "Approvals"
- Changing picture "Design of a type label"
- Adaption values for Co and Lo in section "Connections"
- Formal changes

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