EXTA2-* Keyboard

Manual

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With regard to the supply of products, the current issue of the following document is applicable: The General Terms of Delivery for Products and Services of the Electrical Industry, published by the Central Association of the Electrical Industry (Zentralverband Elektrotechnik und Elektroindustrie (ZVEI) e.V.) in its most recent version as well as the supplementary clause: "Expanded reservation of proprietorship"

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1 Safety

1.1 General

Responsibility for planning, assembly, commissioning, operation, maintenance, and dismounting lies with the plant operator.

Installation und Inbetriebnahme aller Geräte dürfen nur von Fachpersonal durchgeführt werden.

Protection of operating personnel and the system is not ensured if the product is not used in accordance with its intended use.

Observe the applicable laws and regulations regarding the intended use of the device. The devices are only approved for proper use for the intended purpose. Improper use will void any warranty and liability claims.

The corresponding datasheets, declarations of conformity, and/or EC-type examination certificates form an integral part of this document. The data sheet contains the electronic data of the EC-type-examination certificate.

These documents can be found at www.pepperl-fuchs.com or contact your local Pepperl+Fuchs representative.

1.2 Delivery, Transport, and Storage

Check the packaging and contents for damage.

Check if you have received every item and if the items received are the ones you ordered.

Keep the original packaging. Always store and transport the device in the original packaging.

Always store the device in a clean and dry location. Observe the permissible storage temperature (see datasheet).

1.3 Installation and Commissioning

Prior to mounting, installation, and commissioning of the device you should make yourself familiar with the device and carefully read the instruction manual.

Installing alongside Intrinsically Safe Circuits

The intrinsically safe circuits of the devices may be installed in hazardous areas. In such cases, they must be securely isolated from all non-intrinsically safe circuits.

The intrinsically safe current circuits must be installed in accordance with the applicable installation regulations.

If intrinsically safe field devices are connected to the intrinsically safe circuits in associated devices, the respective maximum values of these field devices and the associated devices must be observed to ensure explosion protection (verification of intrinsic safety). EN 60079-14/IEC 60079-14 must be taken into account. The "National Foreword" (Nationale Vorwort) of DIN EN 60079-14/VDE 06165 Part 1 must be observed if the device is used in Germany.

The nameplate must not be removed.

The device must be de–energized during installation and servicing. The keyboard/mouse must not be connected to the supply voltage until the mounting and connection processes have been fully completed.

Individually accessible non-grounded metal parts can become electrostatically charged. The determined capacitance exceeds the required value according to IEC/EN 60079-0. The determined capacitance is specified in the technical data.

Information on electrostatic hazards can be found in the technical specification IEC/TS 60079-32-1.

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1.4 Keyboard Marking

EXTA2-*

Pepperl+Fuchs

D-68307 Mannheim

www.pepperl-fuchs.com

Additional label acc. to ATEX

EXTA2-*
Zone 1 and Zone 21
BVS 07 ATEX E 163 X
⟨Ex⟩ II 2G Ex ib IIC T4 Gb
⟨Ex⟩ II 2D Ex ib IIIB T135°C Db

Additional label acc. to IECEx

EXTA2-*
Zone 1 and zone 21
IECEx BVS 08.0022X
Ex ib IIC T4 Gb
Ex ib IIIB T135°C Db

Additional UL listing EXTA2-K-T and EXTA2-K-F for K4 and K6 models
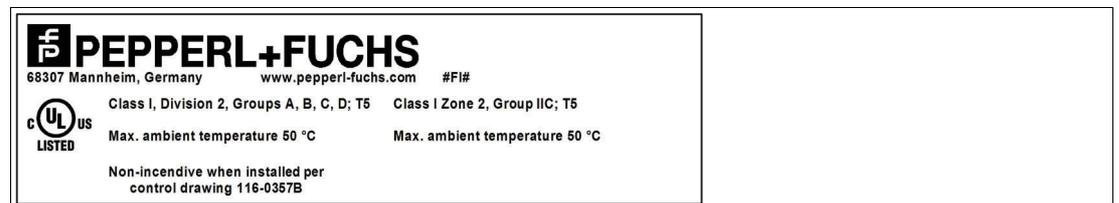
Figure 1.1

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Additional UL listing EXTA2-J-F for K4 model

Figure 1.2

Additional UL recognition EXTA2-J-**- for K4 and K6 models

Figure 1.3

Additional UL recognition EXTA2-J-N for K4 models

Figure 1.4

1.5 Repair and Servicing

The device must not be repaired, changed, or manipulated. In case of failure, always replace the device with an original device.

1.5.1 Servicing

If keyboards and mouse devices are used as parts of a system, standards, guidelines, or legal requirements may exist that stipulate regular system tests.
Keyboard functionality should be checked at least twice a year or more frequently if the keyboard is subject to difficult conditions.

Do not clean the keyboard with corrosive liquids.
Any contamination can cause the keyboard to malfunction or completely fail.

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1.6 Disposal

The devices and the packaging material must be disposed of in accordance with the current applicable statutes and regulations in the respective country.

The devices do not contain any batteries that require separate disposal.

1.7 Intended Use of the EXTA2 Keyboard

EXTA2 is a PC keyboard with an optional control element for mouse functions (touchpad, mechanical trackball, joystick). The keyboard has USB interfaces for intended use in Zone 1 and Zone 21 hazardous areas according to ATEX Directive 2014/34/EU and IECEx. The USB interfaces of the keyboard and the control element for mouse functions are separated, intrinsically safe circuits. Both intrinsically safe circuits are led out either in one or two separate connection cables. The conncection cable corresponds to type "B" according IEC 60079-14 section 12.2.2.8. The cable has to be secured and effectively protected from damage. The EXTA2 keyboard cannot be installed in locations where corrosive media may be used.

To avoid discharge processes, the keyboard may only be installed in areas where high electrostatic buildup due to dust is unlikely. To avoid electrostatic charging, the keyboard cannot be covered or glued with foils.

The keyboard cannot be exposed to direct sunlight, unless it is equipped with the UV-resistant foil option.

When connecting the EXTA2 keyboard to a VisuNet RM/PC, keep in mind that the USB connection is not hot swappable. Connect the keyboard cable when there is no voltage applied.

If circuits with type of protection Ex i are operated with non-intrinsically safe circuits, they must no longer be used as circuits with type of protection Ex i.

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1.8 Symbols Used

Safety-Relevant Symbols

Danger!

This symbol indicates an imminent danger.

Non-observance will result in personal injury or death.

Warning!

This symbol indicates a possible fault or danger.

Non-observance may cause personal injury or serious property damage.

Caution!

This symbol indicates a possible fault.

Non-observance could interrupt the device and any connected systems and plants, or result in their complete failure.

Informative Symbols

Note

This symbol brings important information to your attention.

Action

This symbol indicates a paragraph with instructions. You are prompted to perform an action or a sequence of actions.

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2 Product Specifications

2.1 Function

The EXTA2 is a keyboard/mouse combination with USB interfaces, available in different versions. The intrinsically safe keyboards integrate different mouse systems. The outside dimensions are the same for all versions. The keyboards are designed for panel mounting or for installation in a housing. The EXTA2 comes with an 8-pin connection cable included.

2.2 Technical Data EXTA2-*-*-K3* with Trackball, Intrinsically Safe

Technical Data EXTA2-*-*-K3*	
General specifications	
Type	Keyboard with trackball
Supply	
Rated voltage	Ex i, via data line
Indicators/operating means	
Keyboard	105 short stroke keys Keyboard layout: US international, German, French, (further keyboard layouts on demand)
Trackball	
Diameter	50 mm
Material	Phenolic resin (black)
Driver	Microsoft® Mouse, USB
Interface	
Interface type	USB or PS/2 (PS/2 via adapter)
Directive conformity	
Electromagnetic compatibility	
Directive 2014/30/EU	EN 61326-1:2013 (industrial locations); EN 61000-6-4:2007+A1:2011
RoHS	
Directive 2011/65/EU (RoHS)	EN 50581:2012-09
Conformity	
Electromagnetic compatibility	EN 61000-6-2:2005
Degree of protection	IP65, if trackball is inactive. Undefined during motion.
Ambient conditions	
Ambient temperature	0 ... 50 °C (32 ... 122 °F)

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Technical Data EXTA2-*-*-K3*	
Storage temperature	-20 ... 70 °C (-4 ... 158 °F)
Relative humidity	max. 85 %, non-condensing
Mechanical specifications	
Material	anodized aluminum, Polyester foil
Mass	1.2 kg
Dimensions	482.6 mm x 177.8 mm x 45 mm
Cut out dimensions	450 mm x 152 mm
Cable length	5 m / 1.8 m, USB
Data for application in connection with hazardous areas	
EC-Type Examination Certificate	BVS 07 ATEX E 163 X
Group, category, type of protection	⟨Ex⟩ II 2G Ex ib IIC T4 Gb ⟨Ex⟩ II 2D Ex ib IIIB T135°C Db
Input	
Voltage	5.4 V
Current	240 mA
Power	600 mW
Internal capacitance	24 µF
Internal inductance	negligible
Directive conformity	
Directive 2014/34/EU	EN 60079-0:2012+A11:2013, EN 60079-11:2012
International approvals	
IECEx approval	IECEx BVS 08.0022X
Group, category, type of protection	Ex ib IIC T4 Gb, Ex ib IIIB T135°C Db

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2.3 Technical Data EXTA2-*-*-K4* with Touchpad, Intrinsically Safe
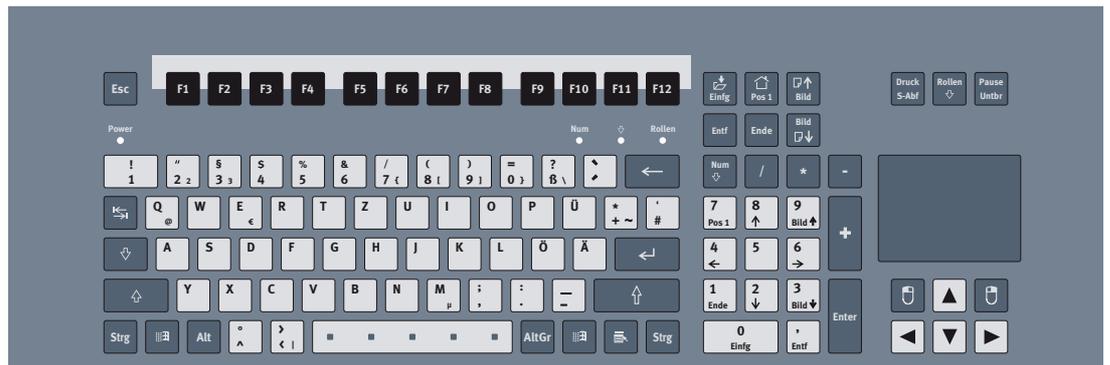
Technical Data EXTA2-*-*-K4*	
General specifications	
Type	Keyboard with touchpad
Supply	
Rated voltage	Ex i, via data line
Indicators/operating means	
Keyboard	105 short stroke keys Keyboard layout: US international, German, French, (further keyboard layouts on demand)
Touchpad	
Active Principle	capacitive
Resolution	40 Pts./mm
Dimensions	66 x 50
Driver	Microsoft Mouse ® , USB
Interface	
Interface type	USB or PS/2 (PS/2 via adapter)
Directive conformity	
Electromagnetic compatibility	
Directive 2014/30/EU	EN 61326-1:2013 (industrial locations) ; EN 61000-6-4:2007+A1:2011
RoHS	
Directive 2011/65/EU (RoHS)	EN 50581:2012-09
Conformity	
Electromagnetic compatibility	EN 61000-6-2:2005
Degree of protection	IP66
Ambient conditions	
Ambient temperature	-20 ... 50 °C (-4 ... 122 °F)
Storage temperature	-20 ... 70 °C (-4 ... 158 °F)
Relative humidity	max. 85 % , non-condensing
Mechanical specifications	
Material	anodized aluminum , Polyester foil
Mass	1.2 kg
Dimensions	482.6 mm x 177.8 mm x 45 mm

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Technical Data EXTA2-*-*-K4*	
Cut out dimensions	450 mm x 152 mm
Cable length	5 m / 1.8 m, USB
Data for application in connection with hazardous areas	
EC-Type Examination Certificate	BVS 07 ATEX E 163 X
Group, category, type of protection	⟨Ex⟩II 2G Ex ib IIC T4 Gb ⟨Ex⟩II 2D Ex ib IIIB T135°C Db
Input	
Voltage	5.4 V
Current	240 mA
Power	600 mW
Internal capacitance	24 µF
Internal inductance	negligible
Directive conformity	
Directive 2014/34/EU	EN 60079-0:2012+A11:2013, EN 60079-11:2012
International approvals	
UL approval	UL listing/recognition: E190294
IECEx approval	IECEx BVS 08.0022X
Group, category, type of protection	Ex ib IIC T4 Gb, Ex ib IIIB T135°C Db

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2.4 Technical Data EXTA2-*-*-K6* with Joystick, Intrinsically Safe

Technical Data EXTA2-*-*-K6*	
General specifications	
Type	Keyboard with joystick
Supply	
Rated voltage	Ex i, via data line
Indicators/operating means	
Keyboard	105 short stroke keys Keyboard layout: US international, German, French, (further keyboard layouts on demand)
Joystick	
Driver	Microsoft Mouse ® , USB
Interface	
Interface type	USB or PS/2 (PS/2 via adapter)
Directive conformity	
Electromagnetic compatibility	
Directive 2014/30/EU	EN 61326-1:2013 (industrial locations) ; EN 61000-6-4:2007+A1:2011
RoHS	
Directive 2011/65/EU (RoHS)	EN 50581:2012-09
Conformity	
Electromagnetic compatibility	EN 61000-6-2:2005
Degree of protection	IP65
Ambient conditions	
Ambient temperature	-20 ... 50 °C (-4 ... 122 °F)
Storage temperature	-20 ... 70 °C (-4 ... 158 °F)
Relative humidity	max. 85 % , non-condensing
Mechanical specifications	
Material	anodized aluminum , Polyester foil
Mass	1.2 kg
Dimensions	482.6 mm x 177.8 mm x 45 mm
Cut out dimensions	450 mm x 152 mm
Cable length	5 m / 1.8 m, USB

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| Technical Data EXTA2-*-*-K6*	
Data for application in connection with hazardous areas	
EC-Type Examination Certificate	BVS 07 ATEX E 163 X
Group, category, type of protection	⟨Ex⟩ II 2G Ex ib IIC T4 Gb ⟨Ex⟩ II 2D Ex ib IIIB T135°C Db
Input	
Voltage	5.4 V
Current	240 mA
Power	600 mW
Internal capacitance	24 µF
Internal inductance	negligible
Directive conformity	
Directive 2014/34/EU	EN 60079-0:2012+A11:2013, EN 60079-11:2012
International approvals	
UL approval	UL listing/recognition: E190294
IECEx approval	IECEx BVS 08.0022X
Group, category, type of protection	Ex ib IIC T4 Gb, Ex ib IIIB T135°C Db

2.5   EXTA2 dimensions

Keyboard dimensions
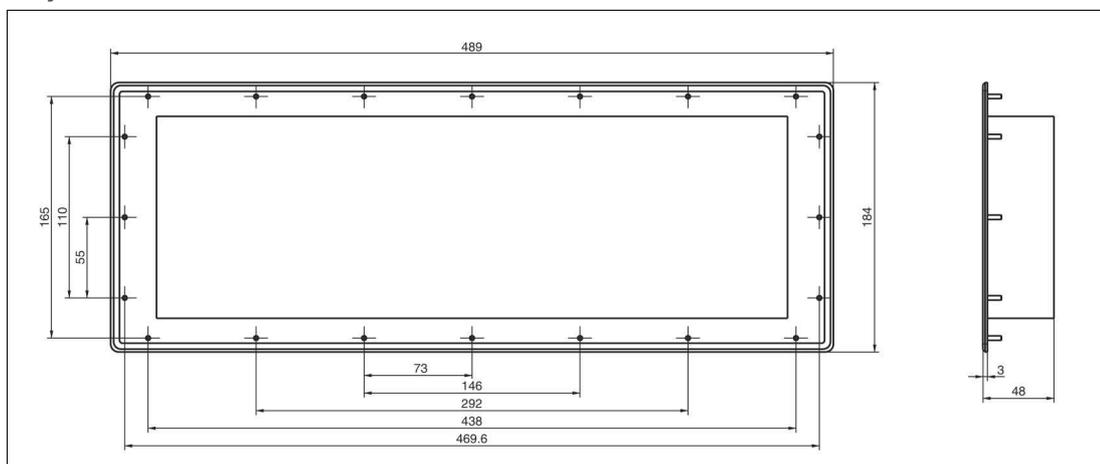
Figure 2.1

The EXTA2 comes with an 8-pin connection cable included.

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2.6   Accessories

If you use the EXTA2 as a stand-alone keyboard, an additional barrier is required.

Order Code	Description	Part Number
SK-PC-Z1D1-UU1-10-HS	2-channel Barrier with intrinsically safe USB outputs for &mouse & keyboard (EXTA2) Approval: ATEX/IECEx Zone 1/21 Inputs: 2x USB 2.0 Outputs: 2x USB 2.0 Ex ib Mounting: DIN rail	548307

Figure 2.2

For further information on installing the EXTA2 Keyboard with the SK-PC-Z1D1-UU1-10-HS barrier please refer to the SK-PC-Z1D1-UU1-10-HS manual at pepperl-fuchs.com.

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3 Installation and Commissioning

3.1 Mounting the Keyboard Connecting Cable to a PC

i **Note**

For installation and connection in North America, refer to Control Drawing 116-0357C.

> **Connecting the Keyboard to a PC via the Keyboard Connecting Cable**

Connect the wires of the keyboard connecting cable as shown in the following table.

Keyboard and Mouse (EXTA2-*-*-K*) Core Assignment

	Assignment	Color coding
Keyboard	Ui	green
	D+	brown
	D-	grey
	GND	yellow
Mouse	Ui	red
	D+	white
	D-	pink
	GND	blue

i **Note**

Torque Specifications for Keyboard Lid

After connecting the keyboard, tighten the screws on the EXTA2 lid to a torque of 0.5 Nm (4.4 in lb).

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Connecting the Keyboard to a PC via Barrier SK-PC-Z1D1-UU1-10-HS for Stand-alone applications

1. Plug the USB plugs of the keyboard cables into the USB ports of the barrier. Use the USB ports on the face labeled with "intrinsically safe."

2. Plug the USB plugs of the **enclosed** USB cables into the USB ports of the barrier. Use the USB ports on the face labeled with "not intrinsically safe."
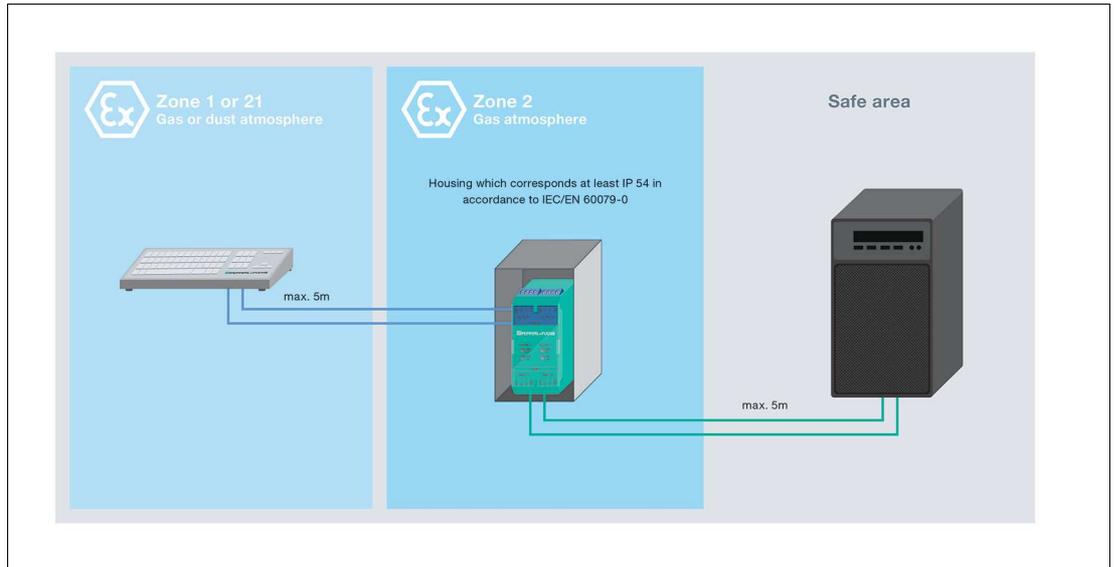

Figure 3.1   Installation requirements for the barrier in Zone 2 (gas) option 1
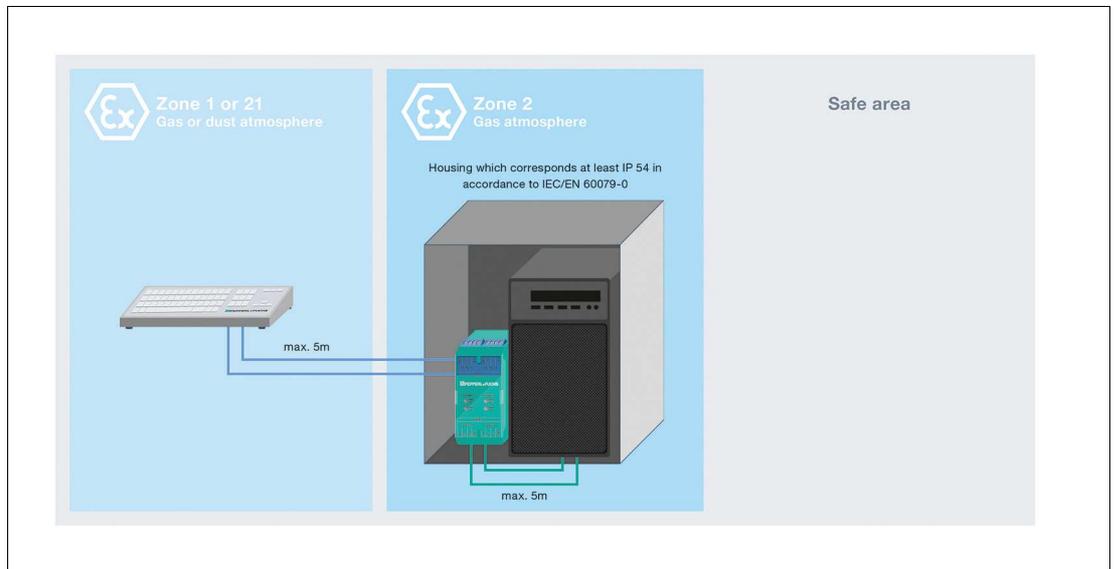

Figure 3.2   Installation requirements for the barrier in Zone 2 (gas) option 2

For further information on how to install the Keyboard in Stand-alone applications via Barrier SK-PC-Z1D1-UU1-10-HS please refer to the SK-PC-Z1D1-UU1-10-HS manual.

> **Equipotential Bonding**

> ⚠ **Danger!**
>
> Explosion Hazard
>
> Risk of fatal injury and severe property damage.
>
> **The housing must always be connected to the PE. There are 2 possibilities:**
> **Connection via cable shielding of the connecting cable.**
> **Built into a metal housing that is connected to the PE.**

1. The shielding of the keyboard cable must be connected in the cable gland of the PC/display (VisuNet) (refer to VisuNet manual). Before doing this, open the cable clip (1) and remove the cable protective tube (2).

   End of the Keyboard Cable (Attached to the Keyboard)
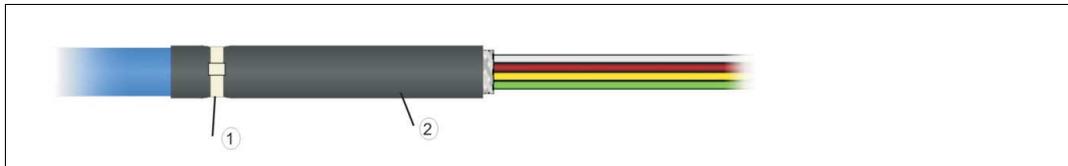
   - (1) cable clip
   - (2) cable protective tube

2. Install the keyboard in a metal housing that is connected to PE.

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3.2 Installation Instructions for Hazardous-Location EMC Cable Glands

Power supply cables for the Ex e Ethernet and the RS-485 or TTY Ex e data interface, the Ex i keyboard, and the Ex i scanner must be shielded to ensure sufficient immunity to interference (EMC). Connect the cable shielding to the VisuNet RM/PC according to the following installation instructions:

	Step 1 • Isolate the cable. • Expose the braid. • Remove the braid and insulation little by little. • With thin cables, the braid can be folded back over the insulation sheath. • Insert the cable into the gland until the braid reaches the contact point. • Tighten the cable gland.
	Step 2 • Guide the cable through the lock nut. • Guide the cable into the terminal insert. • Fold the braid over the insert. • The braid must overlap the O-ring by about 2 mm

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	Step 3 • Fit the terminal insert into the intermediate gland. • Assemble the cable gland.
	Internal view of the assembled cable gland.

3.3 Housing design keyboard

There are different possibilities to mount the keyboards.

1. Panel mounting (Housing version -N)
2. The keyboard is mounted in a desktop housing. (Housing version -T)
3. Different Mounting Options (Housing version -F)

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3.3.1 Keyboard for Panel mounting (Housing Version -N)

Figure 3.3

Safety Information for Installation in North America

When installed in North America, EXTA2-J-N models are only suitable for use in the following locations:

- Class I, Division 2, Groups A, B, C, and D
- Class II, Division 2, Groups F and G
- Class III
- Nonhazardous locations

The following safety information applies for installation in North America:

Danger!

Explosion Hazard

Risk of fatal injury and severe property damage.

Do not substitute components. Substitution of any component may impair suitability for Class I, Division 2 and Class II, Division 2.
Devices must also be installed in a suitable enclosure.

Warning!

Maximum Air Temperature

Risk of device damage.

Devices are suitable for a maximum surrounding air temperature of 50 °C.

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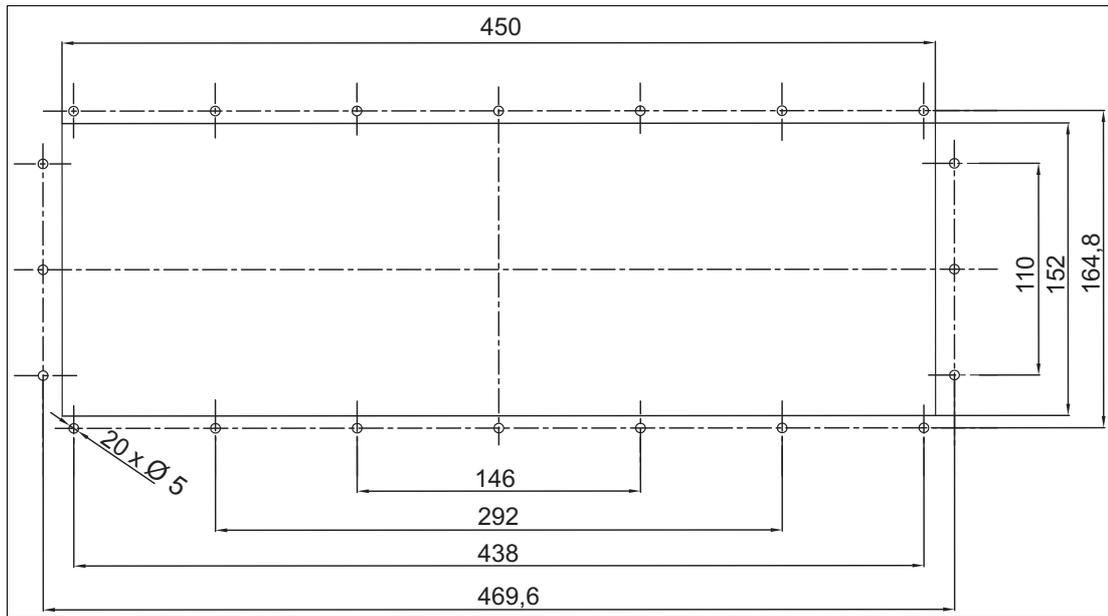**Assembly of the keyboard with cover at the back: Cutout**

Figure 3.4

> **Note**
>
> **Torque Specifications**
>
> Torque the screws for the EXTA2 keyboard and housing interface to 0.4 Nm (3.5 in lb).

3.3.2 Desktop Keyboard (Housing Version -T, e. g., for VisuNet)

Figure 3.5

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Desktop Keyboard Dimensions
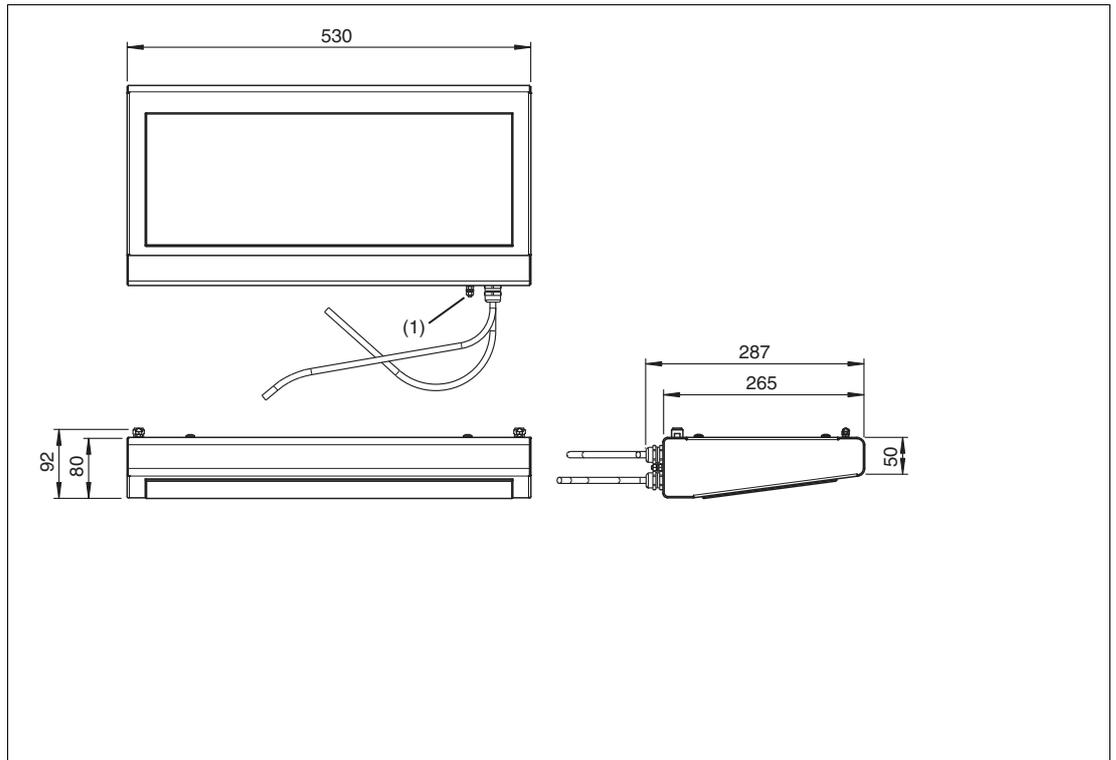
Figure 3.6
- (1) protective earth bolt

Grounding the Desktop Keyboard

1. Ground the Keyboard Housing with the protective earth bolt. Use the following grounding concept. (The PE wire is not included in the scope of delivery and must be provided in the right length.)

1. Housing
2. PE stud (hexagon socket)
3. Contact washer
4. Nut
5. Cable lug
6. Flat washer
7. Spring washer
8. Nut
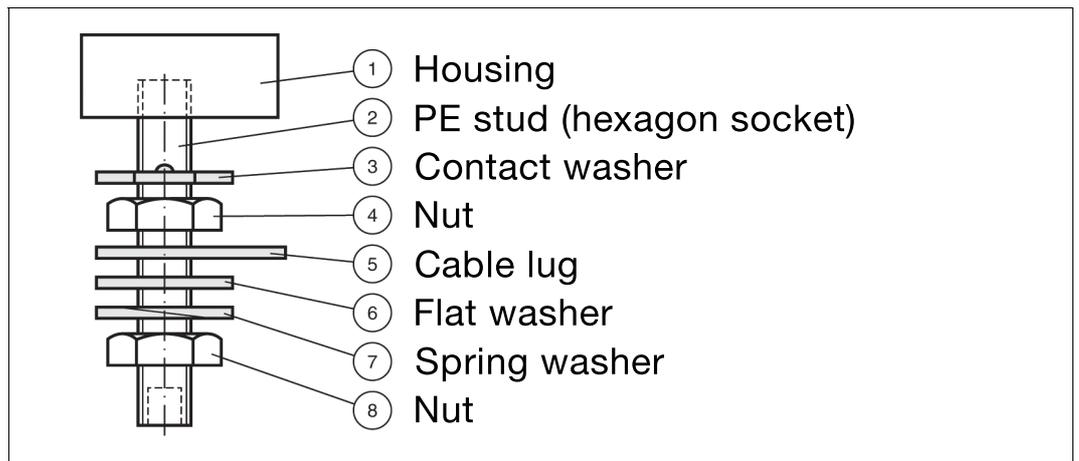
Figure 3.7

2. Fasten the hardware with a torque of 7.5 Nm.

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Note

i

To simplifiy keyboard mounting, you can remove the cables from the keyboard PCB. After you have mounted the keyboard, reattach all cables properly—including the PA cable. Tighten protective earth to a torque of 0.15 Nm (1.3 in lb). Tighten the cable clip to a torque of 0.3 Nm (2.6 in lb).

Figure 3.8

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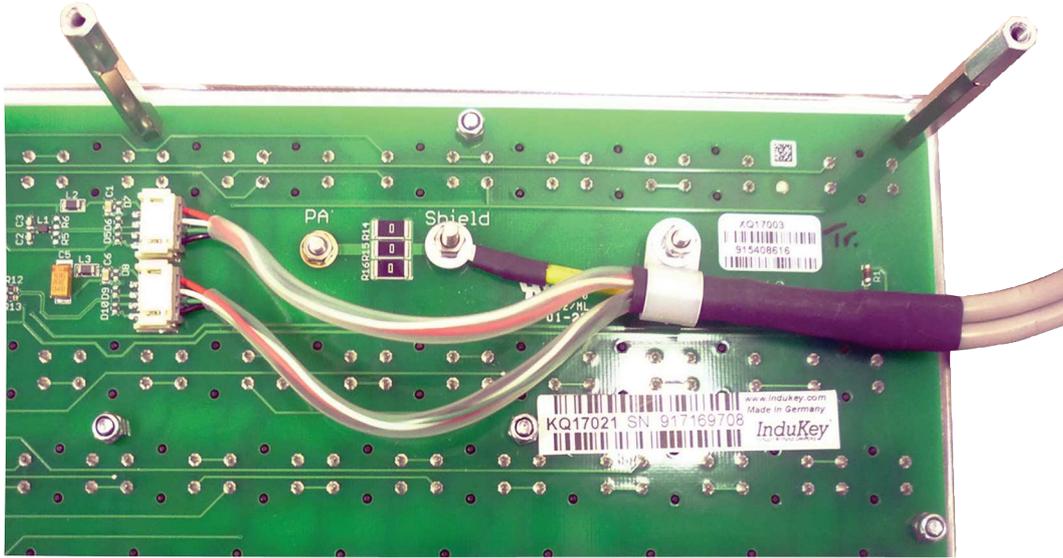
3.3.3   Keyboard Mounting Options for Housing Version -F

Dimensions Mounting Option -G

Figure 3.9
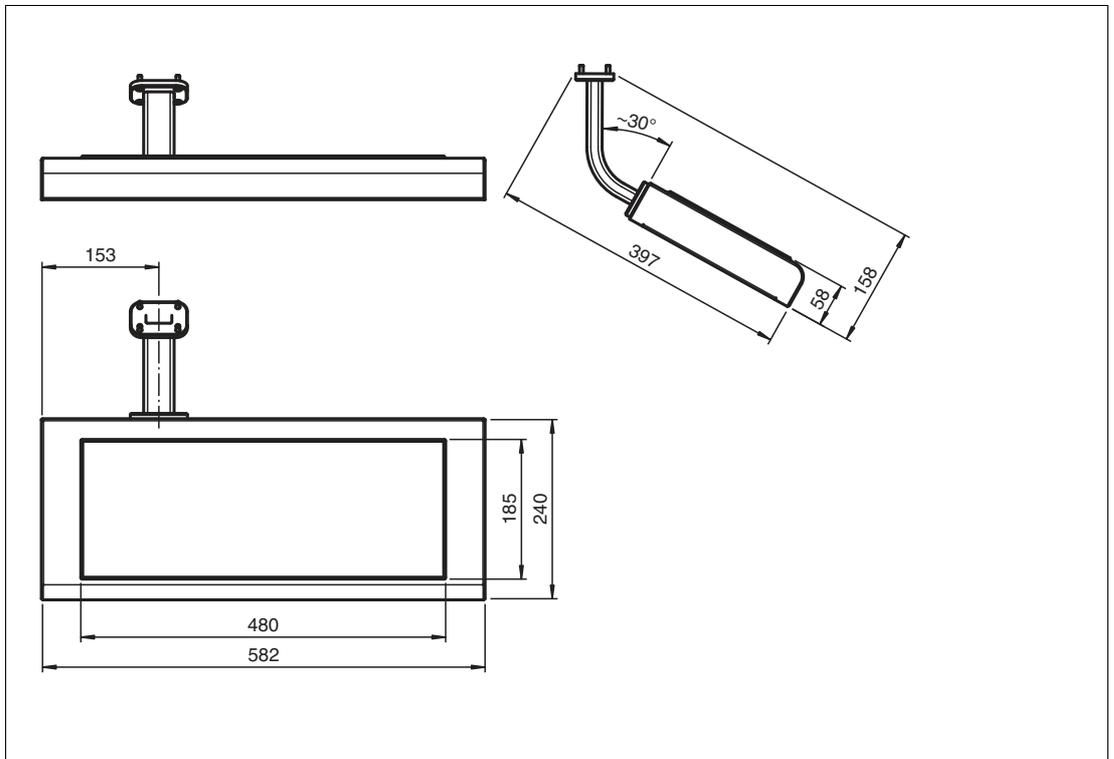
Figure 3.10   Dimensiondrawing

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Dimensions Mounting Option -F

Figure 3.11

Figure 3.12

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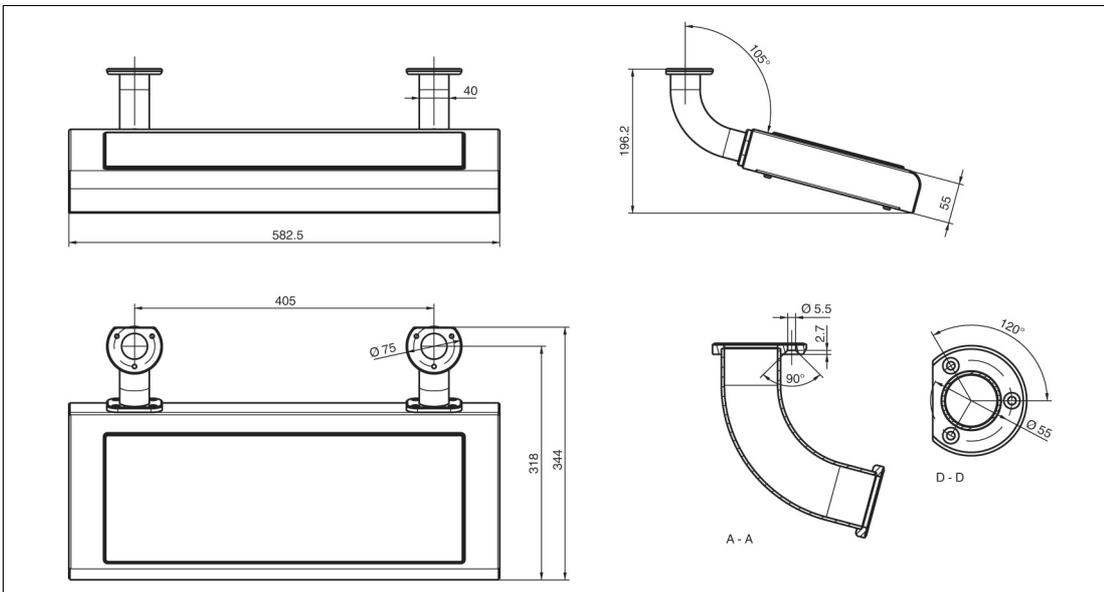
Dimensions Mounting Option -L

Figure 3.13

Figure 3.14

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27
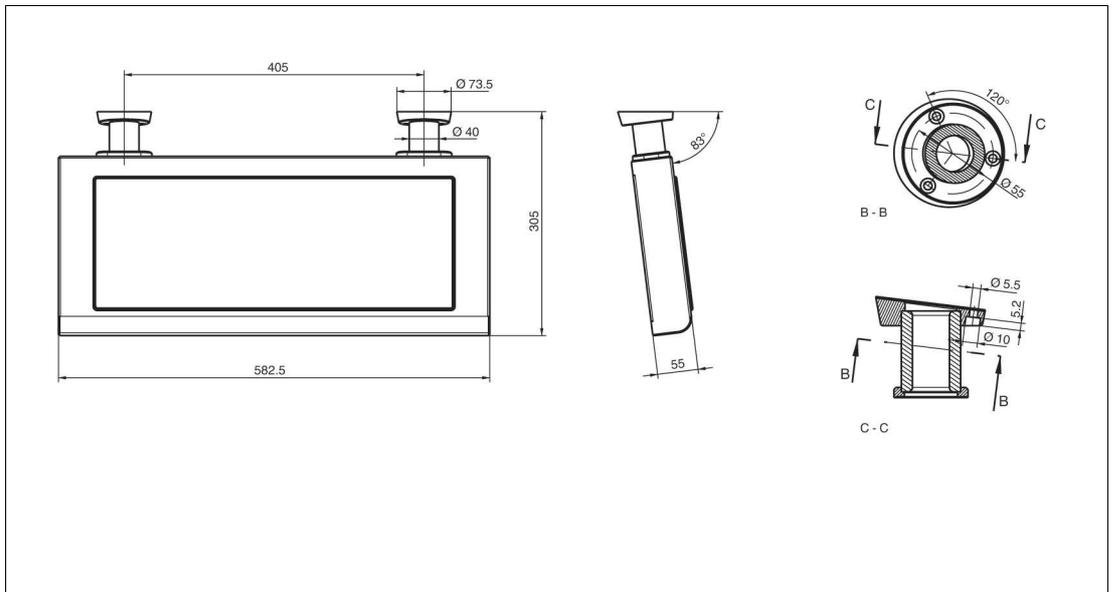
Dimensions Mounting Option -H

Figure 3.15
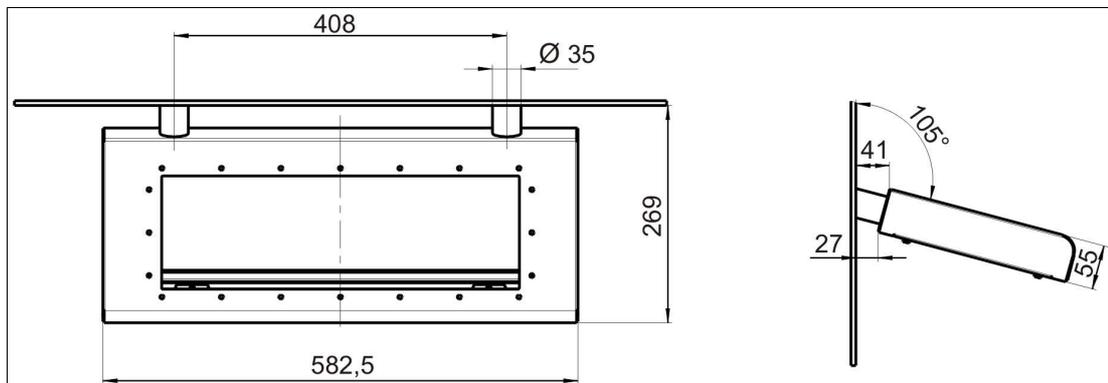
Figure 3.16   Dimensiondrawing

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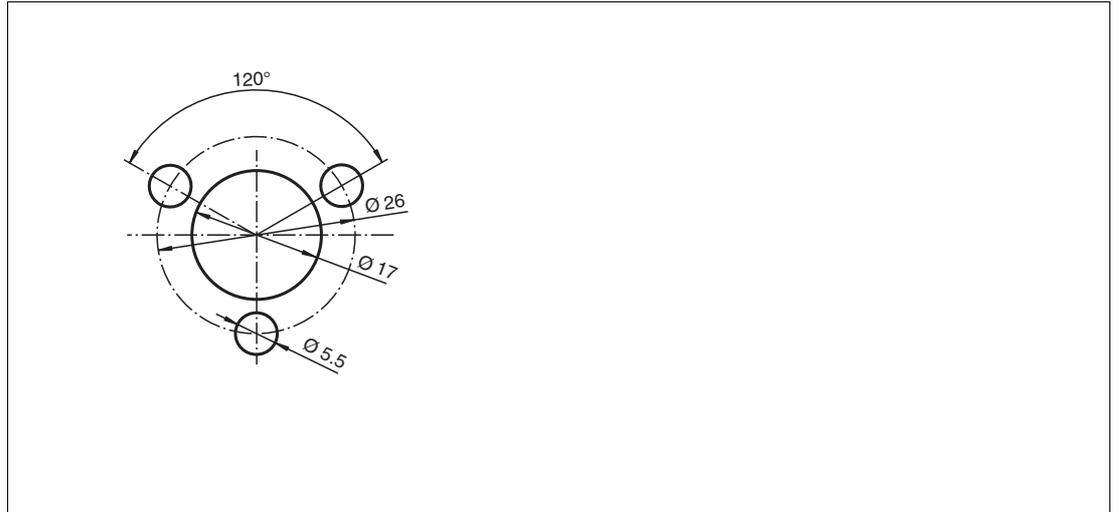
Figure 3.17   Drilling pattern for the wall

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4 Appendix

4.1 Chemical Resistances

4.1.1 Chemical Resistance of Keyboard Foil

⚠

Warning!

Not all models are resistant to UV light!

Destruction of keyboard foil.

Unless the keyboard is equipped with the UV-resistant foil option, do not expose the keyboard foil to direct sunlight. EXTA2-*U models have a UV-resistant foil and are suitable for outdoor use. See the typecode, see chapter 4.2.

Antimicrobial resistance of keyboard foil

The keyboard foil is manufactured from a biaxially alignned polyester-based material and therefore has a greater resistance to solvents. The foil is stronger and more durabe than other standard foils used on keyboards and front panels, such as polycarbonate and PVC.

The keyboard foil is resistant against the following substances (Test method: DIN42115):

Alcohols	Hydrocarbons
Dilute acids	Ketones
Dilute alkalis	Household cleaners
Esters	

The keyboard foil is resistant against the following substances (Test method: AATCC test method 100)::

- Staphyloccus aureus (MRSA)
- Escherichia coli 0157
- Listeria monocytogenes
- Pseudomonas aeruginosa
- Salmonella enteritidis
- Bacillus cereus
- Streptococcus faecalis
- Klebsiella pneumoniae
- Aspergillus niger

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- Penicillium purpurogenum
- Phoma violacea
- Saccharmyyces cerevisiae

4.1.2 Chemical resistance of the trackball, keyboard variante EXTA2-K3

Chemical resistance of the trackball:
Mineral lubricants
Aliphatic hydrocarbons
Aromatic hydrocarbons
Benzine
Weak mineral acids
Strong mineral acids
Weak organic acids
Strong organic acids
Oxidise acids
Weak bases
Strong bases
Trichlorethylen
Perchlorethylen
Acetone
Alcohole
Hot water (hydrolyses resistant)
UV-light and atmospheric conditions

Instructions for cleaning the trackball

- Only use damp cloth to avoid ingress of cleaning fluid.
- Clean carefully, beware of applying pressure.
- Wipe the cleaning fluid off.

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4.2 Typecode

Type	Explosion Protection	Housing	Keyboard Type	Keyboard Layout	Interfaces	Cable Length	Connector Type	Mounting Option	Revision	Options
EXTA2-	Keyboard for hazardous areas									
TA2-	Keyboard for safe area									
	Ex Protection									
	-F	ATEX II 2 GD; Zone 1/21								
	-J	ATEX/IECEx II 2 GD; Zone 1/21 NEC Class I, Division 2, Zone 22; Class II, Division 2, Zone 22; and Class III, Zone 22 (only in combination with "N" housing option).								
	-N	Version for safe area								
	-K	ATEX/IECEx, Class I, Division 2, in combination with housing options T or F								
		Housing								
		-N	Panel mount version							
		-T	Desktop version							
		-F	Enclosure Version							
			Keyboard Type							
			-K3	Foil keyboard with trackball. ATEX/IECEx only.						
			-K4	Foil keyboard with touchpad						
			-K6	Foil keyboard with joystick. Not to be used with option "N" when marked as Class I, Division 2, Zone 2; Class II, Division 2, Zone 22; Class III, Zone 22.						
				Keyboard Layout						
				-US	US international keyboard layout					
				-DE	German keyboard layout					
				-FR	French keyboard layout					
				-XXX	Other keyboard layouts on demand					
					Interface					
					-U	2x USB interface				
						Cable Length				
						02	1.8 m keyboard cable			
						05	5 m keyboard cable			
							Connector Type			
							-CF	Cable ends with wire end ferrule		
							-UA	2 x USB plugs type A (not available for Ex protection option "-J")		
								Mounting Option		
								-Z	No mounting option necessary	
								-F	15° mounting adapters, vertical	

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Type	Explosion Protection	Housing	Keyboard Type	Keyboard Layout	Interfaces	Cable Length	Connector Type	Mounting Option	Revision	Options
								-L		75° mounting adapters, vertical
								-H		15° mounting adapters, horizontal
								-G		1-Arm for mounting to housing AG-XX00
									Revision	
									-10	Release 1.0
										Options
										-N	No options
										-U	UV-resistant foil

PEPPERL+FUCHS

Your automation, our passion.

Explosion Protection

- Intrinsic Safety Barriers
- Signal Conditioners
- FieldConnex® Fieldbus
- Remote I/O Systems
- Electrical Ex Equipment
- Purge and Pressurization
- Industrial HMI
- Mobile Computing and Communications
- HART Interface Solutions
- Surge Protection
- Wireless Solutions
- Level Measurement

Industrial Sensors

- Proximity Sensors
- Photoelectric Sensors
- Industrial Vision
- Ultrasonic Sensors
- Rotary Encoders
- Positioning Systems
- Inclination and Acceleration Sensors
- Fieldbus Modules
- AS-Interface
- Identification Systems
- Displays and Signal Processing
- Connectivity

Pepperl+Fuchs Quality
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