

**Operating Instructions  
for  
By-pass level indicator**

**Model: SZM**



## 1. Contents

---

1. Contents.....	2
2. Note .....	3
3. Instrument Inspection.....	3
4. Regulation Use .....	3
5. Operating Principle.....	4
6. Mechanical Connection.....	4
7. Electrical Connection .....	5
7.1 Capacitive switch (option) .....	5
8. Operation .....	6
9. Maintenance .....	7
10. Technical Information.....	8
11. Order Codes .....	9
12. Dimensions .....	10
13. EU Declaration of Conformance .....	13
14. EU Declaration of Conformance (contact).....	14

### **Manufactured by:**

Kobold-Unirota Ltd.  
4400 Nyíregyháza  
Derkovits út 132-136.  
Tel.: +36-42-342-215  
Fax: +36-42-500-175  
E-Mail: [info.hu@kobold.com](mailto:info.hu@kobold.com)  
Internet: [www.unirot.hu](http://www.unirot.hu)

### **Sold by:**

Kobold Messring GmbH  
Nordring 22-24  
D-65719 Hofheim  
Tel.: +49(0)6192-2990  
Fax: +49(0)6192-23398  
E-Mail: [info.de@kobold.com](mailto:info.de@kobold.com)  
Internet: [www.kobold.com](http://www.kobold.com)

## **2. Note**

---

Please read these operating instructions before unpacking and putting the unit into operation. Follow the instructions precisely as described herein.

The instruction manuals on our website [www.kobold.com](http://www.kobold.com) are always for currently manufactured version of our products. Due to technical changes, the instruction manuals available online may not always correspond to the product version you have purchased. If you need an instruction manual that corresponds to the purchased product version, you can request it from us free of charge by email ([info.de@kobold.com](mailto:info.de@kobold.com)) in PDF format, specifying the relevant invoice number and serial number. If you wish, the operating instructions can also be sent to you by post in paper form against an applicable postage fee.

The devices are only to be used, maintained and serviced by persons familiar with these operating instructions and in accordance with local regulations applying to Health & Safety and prevention of accidents.

When used in machines, the measuring unit should be used only when the machines fulfil the EC-machine guidelines.

## **3. Instrument Inspection**

---

Instruments are inspected before shipping and sent out in perfect condition. Should damage to a device be visible, we recommend a thorough inspection of the delivery packaging. In case of damage, please inform your parcel service / forwarding agent immediately, since they are responsible for damages during transit.

### **Scope of delivery:**

The standard delivery includes:

- By-pass level indicator model: SZM
- Capacitive switch (option)

## **4. Regulation Use**

---

Any use of the device, which exceeds the manufacturer's specification, may invalidate its warranty. Therefore, any resulting damage is not the responsibility of the manufacturer. The user assumes all risk for such usage.

## 5. Operating Principle

---

The Kobold Unirota SZM model by-pass level indicator works on the basis of the intercommunicating vessels principle. The SZM type glass tube level indicator is applicable for the indication of liquid level in small and middle-sized, standing or lying round containers used in food, pharmaceutical and chemical industries. The level of the liquid in the glass tube of the appliance is the same with the level in the round containers. The level of the liquid can be seen through the sight glass.

The loads occurring at the installation is absorbed by the fixing device, thus the glass tube is protected against breaking. The fixing device also protects the glass tube against the mechanical impacts that may occur following the installation. We recommend that the normal design level indicators be fitted on vessels containing pure liquids, while the indicators mounted with cleaning stubs (a low, or low-top stub) be fitted on containers filled with contaminated liquid.

## 6. Mechanical Connection

---

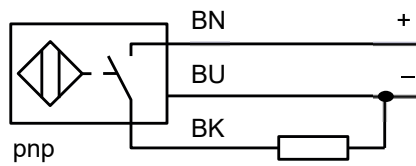
### Before installation:

- Remove all transportation safety locks and ensure that no packing material remains within the unit.
- Be sure that the maximum allowable operating pressure and temperature is not exceeded (see Technical data).
- Install the by-pass level indicator at the side of the round containers, ensure the instrument is under no mechanical stress/tension (install support bracing if necessary).
- Protect the measuring tube from external damage.
- Avoid pressure peaks in the measuring tube, e.g. from sudden surges or stoppage of flow.
- If possible, immediately after making mechanical connections, check whether the connections are properly sealed with no evidence of leakage.
- Make sure that the connections are in plain.

## 7. Electrical Connection

### 7.1 Capacitive switch (option)

#### Wiring diagram



## 8. Operation

---

Capacitive proximity switches are designed for non-contact and wear-free detection of metal (electrically conductive) and nonmetal (electrically non-conductive) objects. load

Type:	capacitive sensor
Operating voltage:	10 ... 65 VDC
Short-circuit protection:	yes
Voltage drop:	≤1.8 V
Operating current:	≤200 mA
No-load current:	≤15 mA
Output function:	3-wire, N/O-contact, PNP
Connection type:	2 m PVC cable
Core cross section:	3 x 0.34 mm <sup>2</sup>
Fine adjustment:	via potentiometer
Switching indication:	LED, yellow
Protection:	IP 67

Note: Customer cannot retrofit the contacts himself. If retrofitting of contacts is desired, the SZM should be ordered with a remark "prepared for retrofitting of limit contact".

### Installing of the capacitive switch

- Slide the switch housing up until the glass tube is empty under the switch.
- Set the switching state LED off by adjusting the potentiometer located the end of the switch.
- Slide the switch housing down until the glass tube is full under the switch.
- The LED must be on. If not, repeat the process from the first step until the LED on.

### Adjustment of limit-values

The switch-point can be adjusted to the desired levels by using the clamping screw on the holder of switch.

*Reference edge:* approx. the middle of the sensor.

Slide the switch housing up or down until the reference edge coincides with the desired switch-point scale reading.

## **9. Maintenance**

---

If the medium to be measured is clean, the series SZM is virtually maintenance-free.

If deposits form on the inner housing or parts, periodic cleaning of the unit is recommended.

At case of SZM-x1..., SZM-x2..., SZM-x3..., SZM-x5..., SZM-x8 (with cleaning hole):

- Drain the residual medium down from your appliance using the drain valve (SZM-x5...), the cup of cleaning hole (SZM-x2..., SZM-x3...) or outlet screw (SZM-x1...).
- If your appliance has shut-off valves, turn them off.
- Remove the units from the container with a suitable tool.
- Screw the cleaning hole out. It can be located at the bottom (SZM-x2..., SZM-x3...) or top (SZM-x1..., SZM-x3..., SZM-x5...).
- Clean the by-pass level indicator with a suitable cleaning.
- Do the reassembly in reverse order.

## 10. Technical Information

---

Installation position:	vertical
Measuring length:	370 ... 3 080 mm
Material:	stainless steel
Gasket:	FPM (standard) EPDM, NBR on request
Process connection:	DIN flange DN 15 ... 50, ANSI flange ½" ... 2" or union nut G ½", ½" NPT
Scale resolution:	engraved, 1 cm, printed on foil, 2 mm
Max. pressure:	10 bar
Max. temperature:	-20 °C...100 °C
Density:	any (no float used)
Max. viscosity:	50 mm <sup>2</sup> /s
Protective category:	IP 67

### Material combinations

Ordering Code	Measuring tube	Connection	Flange (not wetted part)	Sealing
SZM-K	glass	1.4301	1.4301	FPM
SZM-S	glass	1.4404	1.4404	FPM



## 11. Order Codes

	Top and bottom end	Valves	Connection	Scale	Switches <sup>3)</sup>
SZM-K = 1.4301	<p><b>Top: closed</b></p> <p>0 = Bottom: drain plug 2 = Bottom: cleaning hole 4 = Bottom: drain valve</p> <p><b>Top: cleaning hole</b></p> <p>1 = Bottom: drain plug 3 = Bottom: cleaning hole</p>	0 = without 1 = 2 x shut-off valves	<p>G4 = union nut G ½ male I4 = union nut G ½ female N4 = union nut ½" NPT male M4 = union nut ½" NPT female F4 = loose flange DIN 2526, C DN15; PN16 F5 = loose flange DIN 2526, C DN20; PN16 F6 = loose flange DIN 2526, C DN25; PN16 F7 = loose flange DIN 2526, C DN32; PN16 F8 = loose flange DIN 2526, C DN40; PN16 F9 = loose flange DIN 2526, C DN50; PN16 A4 = loose flange ANSI B 16.5 ½"; 150 lbs A5 = loose flange ANSI B 16.5 ¾"; 150 lbs A6 = loose flange ANSI B 16.5 1"; 150 lbs A7 = loose flange ANSI B 16.5 1¼"; 150 lbs A8 = loose flange ANSI B 16.5 1½"; 150 lbs A9 = loose flange ANSI B 16.5 2"; 150 lbs B4 = loose flange ANSI B 16.5 ½"; 300 lbs B5 = loose flange ANSI B 16.5 ¾"; 300 lbs B6 = loose flange ANSI B 16.5 1"; 300 lbs B7 = loose flange ANSI B 16.5 1¼"; 300 lbs B8 = loose flange ANSI B 16.5 1½"; 300 lbs B9 = loose flange ANSI B 16.5 2"; 300 lbs</p>	<p>00 = without G1<sup>1)</sup> = plastic foil on measuring tube (2 mm division) G2<sup>1)</sup> = engraved measuring tube (1 cm-division) S1<sup>2)</sup> = sidewise Alu-scale (with plastic-foil, 2 mm-division) S2<sup>2)</sup> = sidewise engraved Alu-scale (1 cm-division)</p>	<p>00 = without 1D<sup>4)</sup> = 1 x N/O, PNP 2D<sup>4)</sup> = 2 x N/O, PNP nD<sup>4)</sup> = n x N/O, PNP 1S<sup>5)</sup> = 1 x N/O, PNP 2S<sup>5)</sup> = 2 x N/O, PNP nS<sup>5)</sup> = n x N/O, PNP</p>
SZM-S = 1.4404	<p><b>Top: vent valve</b></p> <p>7 = Bottom: drain plug 8 = Bottom: cleaning hole 6 = Bottom: drain valve</p>				

<sup>1)</sup> scale length = Installation length - 120 mm

<sup>2)</sup> scale length = Installation length - 100 mm

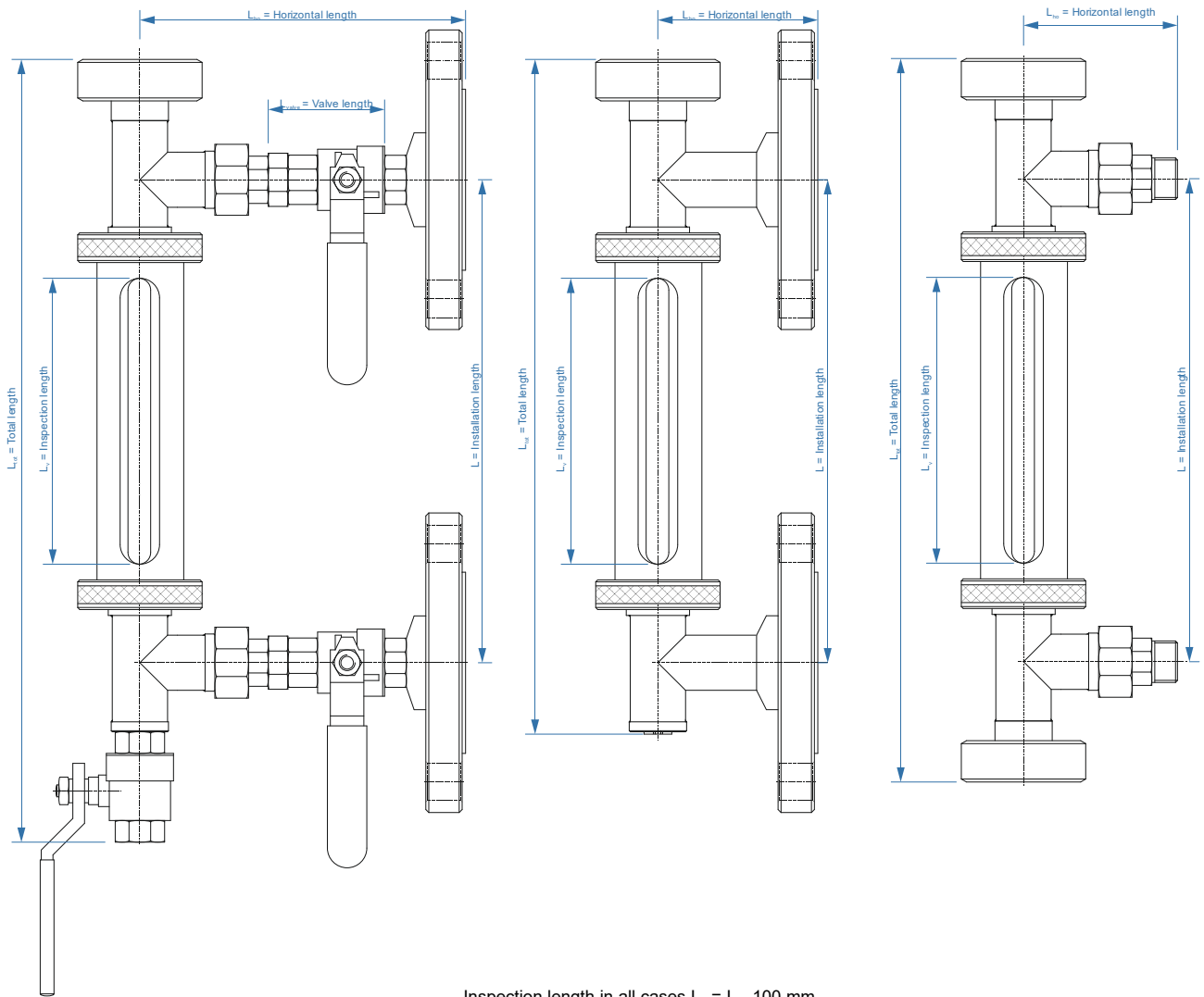
<sup>3)</sup> Capacitive sensors

<sup>4)</sup> Ideal for water, water-based solutions and solvent-based liquids.

<sup>5)</sup> Ideal for oils, greases, lubricants, inks, acids, sauces, water-based alkalis and cleaning agents.

Note: Please specify the installation length "L" in clear text, while ordering.

## 12. Dimensions



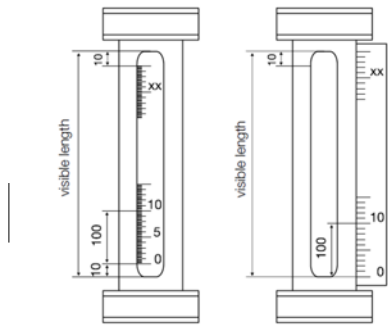
### Vertical dimensions $L_{tot}$ [mm]

Bottom end	Top end		
	closed	cleaning hole	vent valve
drain plug	$L + 72$	$L + 95$	$L + 129$
cleaning hole	$L + 93$	$L + 116$	$L + 150$
drain valve	$L + 127$	$L + 150$	$L + 184$

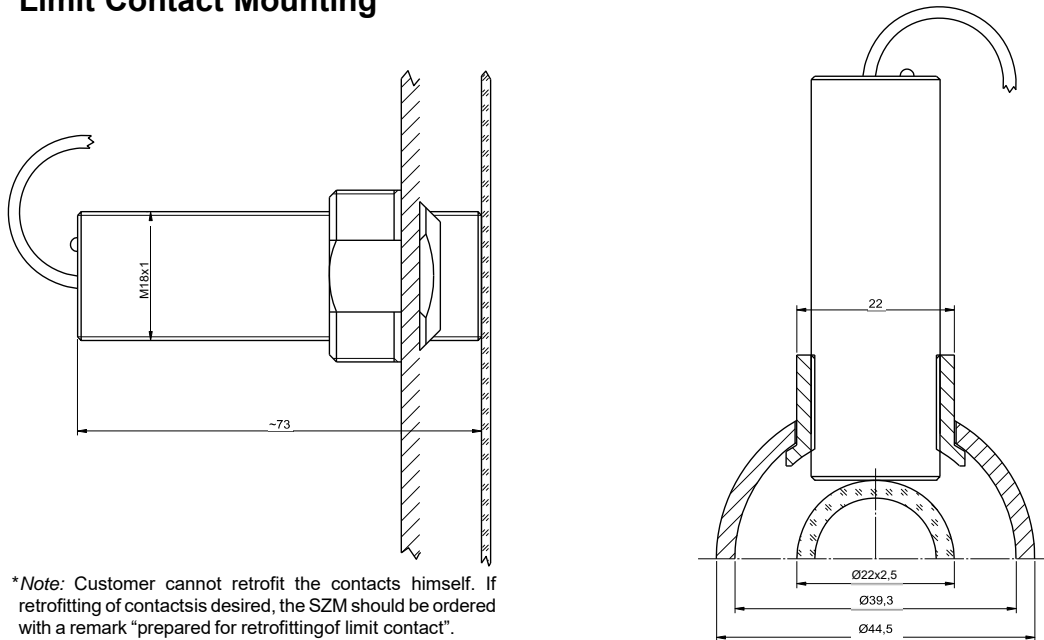
### Horizontal dimensions $L_{ho}$ [mm]

Description	With shut-off valves		Without shut-off valves	
	Model code	Length ( $L_{ho}$ )	Model code	Length ( $L_{ho}$ )
Union-nut	SZM-x x 1 Gx	147	SZM-x x 0 Gx	84
	SZM-x x 1 Nx		SZM-x x 0 Nx	
	SZM-x x 1 lx	153	SZM-x x 0 lx	90
	SZM-x x 1 Mx		SZM-x x 0 Mx	
Flange DIN	SZM-x x 1 Fx	139	SZM-x x 0 Fx	76
Flange ANSI #150	SZM-x x 1 Ax	141	SZM-x x 0 Ax	78
Flange ANSI #300	SZM-x x 1 Bx	146	SZM-x x 0 Bx	83

Measuring scale  
Foil on glass tube    aluminum scale



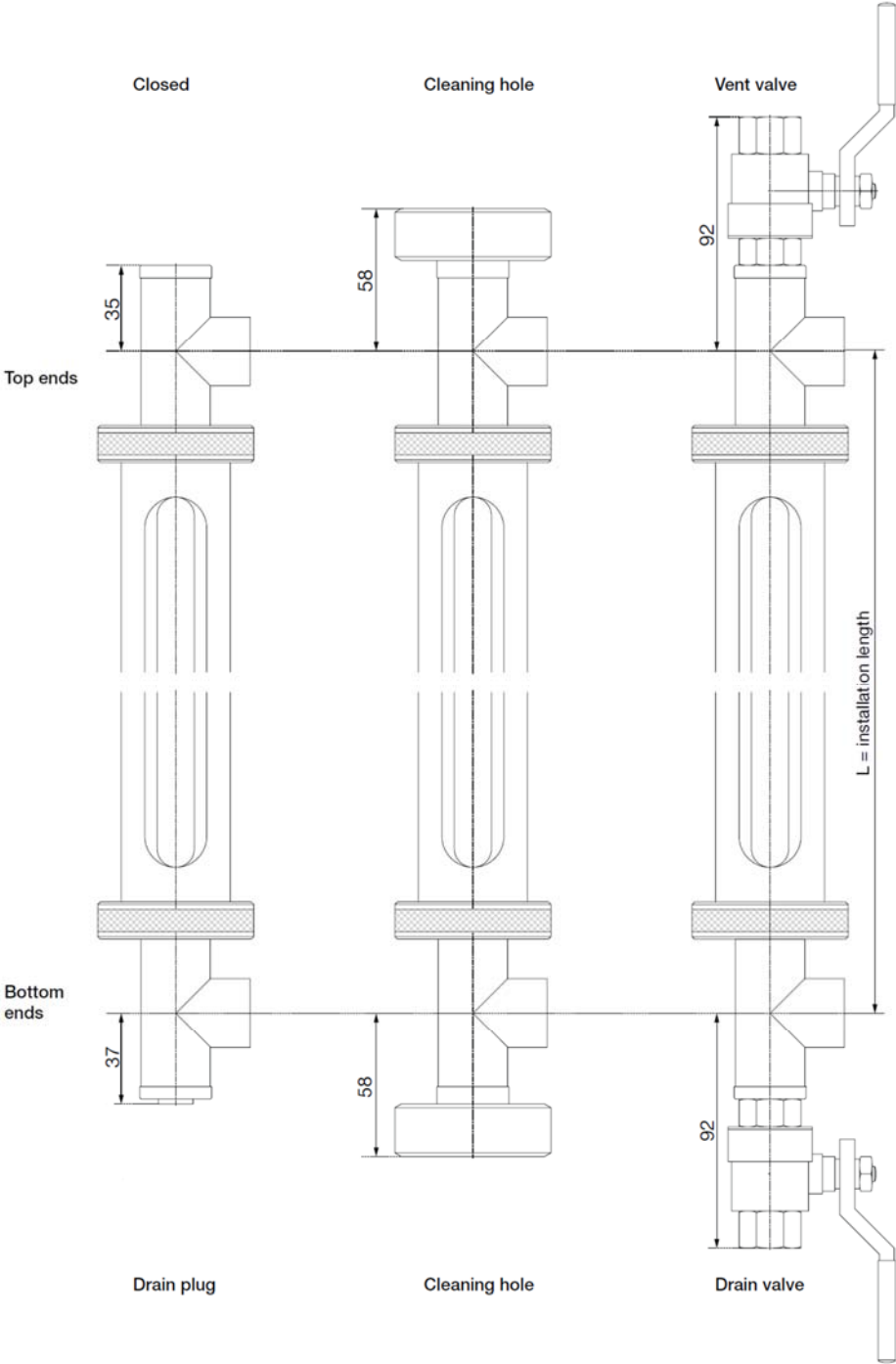
Limit Contact Mounting\*



\*Note: Customer cannot retrofit the contacts himself. If retrofitting of contacts is desired, the SZM should be ordered with a remark "prepared for retrofitting of limit contact".

**Design of the Ends**

**Top Ends**



**Bottom Ends**

## 13. EU Declaration of Conformance

---

We, KOBOLD Unirota Kft. Nyíregyháza Hungary, declare under our sole responsibility that the product:

**By-pass level indicator**

**Model: SZM-...**

to which this declaration relates is in conformity with the standards noted below:

**EN IEC 63000:2018** Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances

Also, the following EC guidelines are fulfilled:

**2011/65/EU**  
**2015/863/EU**

**RoHS** (category 9)  
Delegated Directive (RoHS III)

Nyíregyháza, 10 May 2022



Dénes Szabó  
General Manager

## 14. EU Declaration of Conformance (contact)

---

**EU-Konformitätserklärung Nr.: 5020-2M**

EU Declaration of Conformity No.:

**TURCK**

Wir/ we: HANS TURCK GMBH & CO KG  
WITZLEBENSTR. 7, 45472 MÜLHEIM A.D. RUHR

erklären in alleiniger Verantwortung, dass die Produkte  
declare under our sole responsibility that the products

Induktive, kapazitive, magnetische  
und Ultraschall- Näherungsschalter:  
Inductive, capacitive, magnetic  
and ultrasonic proximity  
switches:

Der Typen beginnend mit:  
types starting with:  
BI, NI, S32SR, SI, WI, BR, MP, DBI, DNI, DTBI, DTNI, BC, NC, RU, WIM,  
BIM

auf die sich die Erklärung bezieht, den Anforderungen der folgenden EU-Richtlinien durch Einhaltung der  
folgenden Normen genügen:  
to which this declaration relates are in conformity with the requirements of the following EU-directives by compliance with the following  
standards:

EMV - Richtlinie /EMC Directive EN 60947-5-2:2007/A1:2012	2014 / 30 / EU	26.02.2014
--------------------------------------------------------------	----------------	------------

RoHS – Richtlinie /RoHS Directive EN 50581:2012	2011 / 65 / EU	08.06.2011
----------------------------------------------------	----------------	------------

Niederspannungsrichtlinie /Low Voltage Directive EN 60947-5-2:2007/A1:2012 (für die Geräte mit Versorgungsspannung / for equipment with supply voltage: >50V AC bzw. >75V DC)	2014 / 35 / EU	26.02.2014
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----------------	------------

Weitere Normen, Bemerkungen:  
additional standards, remarks:

Zusätzliche Informationen:  
Supplementary information:

Mülheim a. d. Ruhr, den 29.01.2019

Ort und Datum der Ausstellung /  
Place and date of issue



i.V. Dr. M. Linde, Leiter Zulassungen /Manager Approvals  
Name, Funktion und Unterschrift des Befugten /  
Name, function and signature of authorized person