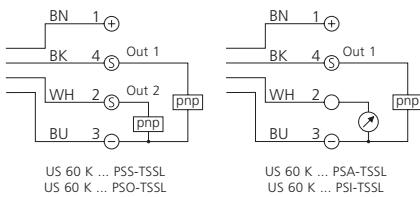


## Ultraschall-Sensoren | Ultrasonic sensors

- Stabiles Gehäuse
  - Arbeitsbereich einstellbar
  - Schmutzunempfindlich
  - Störgeräuschunempfindlich
  - Messung oberflächenunabhängig
  - Schalt- und Analogausgang
  - Hohe Folgegeschwindigkeit
  - Hohe Auflösung
  - Piezokeramischer Verbundwandler
- 
- Robust casing
  - Scanning range adjustable
  - Insensitive to dirt
  - Insensitive to ambient noise
  - Scanning does not depend on surface
  - Binary and analog output
  - High follow-up speed
  - High resolution
  - Piezo-ceramic composite transducer

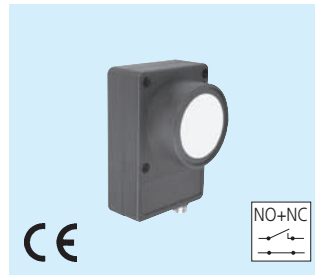
### Anschlussschema Connection diagram



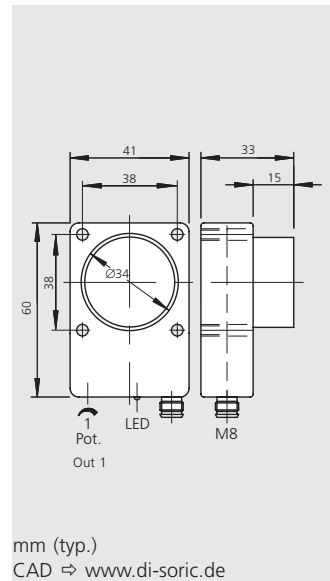
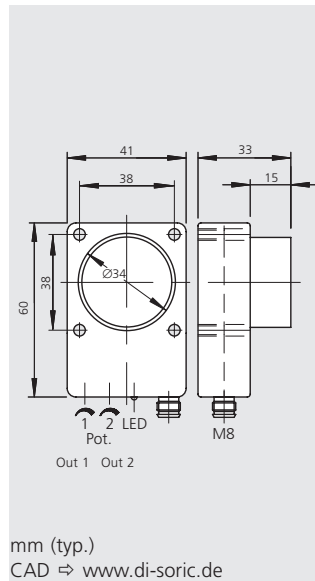
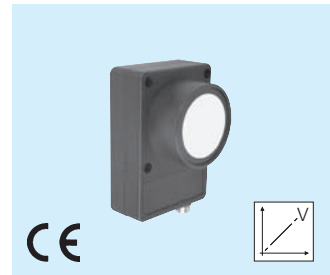
BN = Braun / brown  
BK = Schwarz / black

BU = Blau / blue  
WH = Weiß / white

Arbeitsbereich 2500 mm  
Scanning range



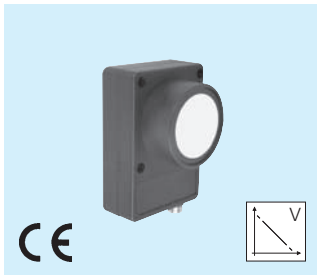
Arbeitsbereich 2500 mm  
Scanning range



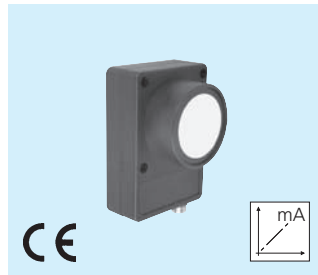
| Technische Daten         | Technical Data             | bei + 20 °C, 24 V DC / at + 20 °C, 24 V DC |                                   |
|--------------------------|----------------------------|--------------------------------------------|-----------------------------------|
| <b>Arbeitsbereich</b>    | <b>Scanning range</b>      | <b>ca. 250 ... 2500 mm</b>                 | <b>ca. 250 ... 2500 mm</b>        |
| Sendefrequenz            | Operating frequency        | 120 kHz                                    | 120 kHz                           |
| Betriebsspannung         | Service voltage            | 15 ... 30 V DC                             | 15 ... 30 V DC                    |
| Eigenstromaufnahme       | Internal power consumption | ca. 60 mA                                  | ca. 60 mA                         |
| Schaltausgang            | Binary output              | Transistor pnp, 100 mA                     | Transistor pnp, 100 mA, NO        |
| Schaltfrequenz           | Switching frequency        | ca. 3 Hz                                   | ca. 3 Hz                          |
| Ansprech- / Abfallzeit   | Response / release time    | ca. 200 ms / 120 ms (50% Sn max.)          | ca. 200 ms / 120 ms (50% Sn max.) |
| Schalthysterese axial    | Switching hysteresis axial | ca. 40 mm                                  | ca. 40 mm                         |
| Genauigkeit              | Accuracy                   | < ± 1 % / Sn max.                          | < ± 1 % / Sn max.                 |
| <b>Analogausgang</b>     | <b>Analog output</b>       | –                                          | <b>1 ... 10 V</b>                 |
| Linearität Analogausgang | Linearity analog output    | –                                          | < ± 0,5 % / Sn max.               |
| Lastwiderstand           | Load resistance            | –                                          | > 10 kΩ                           |
| Welligkeit               | Ripple                     | –                                          | ca. ± 15 mV                       |
| Folgegeschwindigkeit     | Follow-up speed            | –                                          | 400 ms (95% Sn max.)              |
| Auflösung                | Resolution                 | ca. 0,1 % / Sn max.                        | ca. 0,1 % / Sn max.               |
| Temperaturfehler         | Temperature error          | < 1 % (-20 ... +50 °C)                     | < 1 % (-20 ... +50 °C)            |
| Umgebungstemperatur      | Ambient temperature        | -20 ... +50 °C                             | -20 ... +50 °C                    |
| Schutzart                | Protection class           | IP 67                                      | IP 67                             |

| Bestelltabelle                   | Ordering Table                     | Typ / Model           |                       |
|----------------------------------|------------------------------------|-----------------------|-----------------------|
| <b>Ausgang</b>                   | <b>Output</b>                      |                       |                       |
| 2 x NO                           | 2 x NO                             | US 60 K 2500 PSS-TSSL | –                     |
| NO + NC (antivalent)             | NO + NC (exclusive OR)             | US 60 K 2500 PSO-TSSL | –                     |
| NO + analog                      | NO + analog                        | –                     | US 60 K 2500 PSA-TSSL |
| 2 x analog                       | 2 x analog                         | –                     | –                     |
| Anschlusskabel (sep. Datenblatt) | Connecting cable (sep. data-sheet) | TK ... /4             | TK ... /4             |

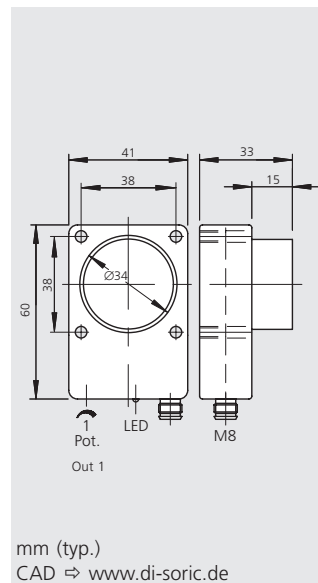
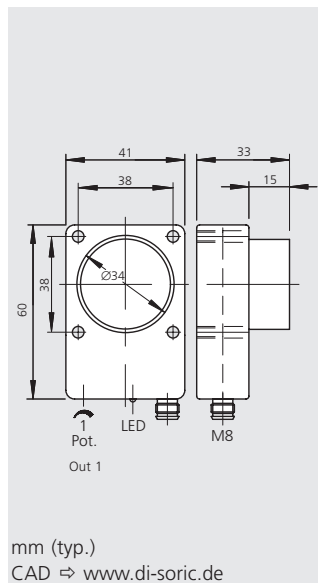
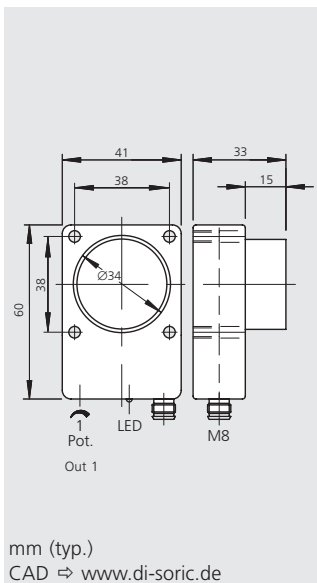
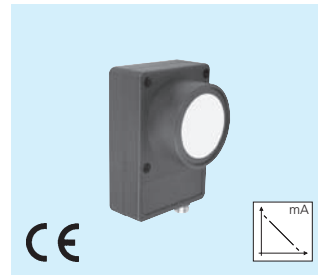
Arbeitsbereich 2500 mm  
Scanning range



Arbeitsbereich 2500 mm  
Scanning range



Arbeitsbereich 2500 mm  
Scanning range



ca. 250 ... 2500 mm

120 kHz

15 ... 30 V DC

ca. 60 mA

Transistor pnp, 100 mA, NO

ca. 3 Hz

ca. 200 ms / 120 ms (50% Sn max.)

ca. 40 mm

< ± 1 % / Sn max.

9 ... 0 V

< ± 0,5 % / Sn max.

> 10 kΩ

ca. ± 15 mV

400 ms (95% Sn max.)

ca. 0,1 % / Sn max.

< 1 % (-20 ... +50 °C)

-20 ... +50 °C

IP 67

ca. 250 ... 2500 mm

180 kHz

15 ... 30 V DC

ca. 80 mA

Transistor pnp, 100 mA, NO

ca. 3 Hz

ca. 200 ms / 120 ms (50% Sn max.)

ca. 40 mm

< ± 1 % / Sn max.

5,6 ... 20 mA

< ± 0,5 % / Sn max.

max. 400 Ω

ca. ± 15 mV

400 ms (95% Sn max.)

ca. 0,1 % / Sn max.

< 1 % (-20 ... +50 °C)

-20 ... +50 °C

IP 67

ca. 250 ... 2500 mm

180 kHz

15 ... 30 V DC

ca. 80 mA

Transistor pnp, 100 mA, NO

ca. 3 Hz

ca. 200 ms / 120 ms (50% Sn max.)

ca. 40 mm

< ± 1 % / Sn max.

18,4 ... 4 mA

< ± 0,5 % / Sn max.

max. 400 Ω

ca. ± 15 mV

400 ms (95% Sn max.)

ca. 0,1 % / Sn max.

< 1 % (-20 ... +50 °C)

-20 ... +50 °C

IP 67

—

—

US 60 K 2500 PSA-I-TSSL

—

TK ... /4

—

—

US 60 K 2500 PSI-TSSL

—

TK ... /4

—

—

US 60 K 2500 PSI-I-TSSL

—

TK ... /4