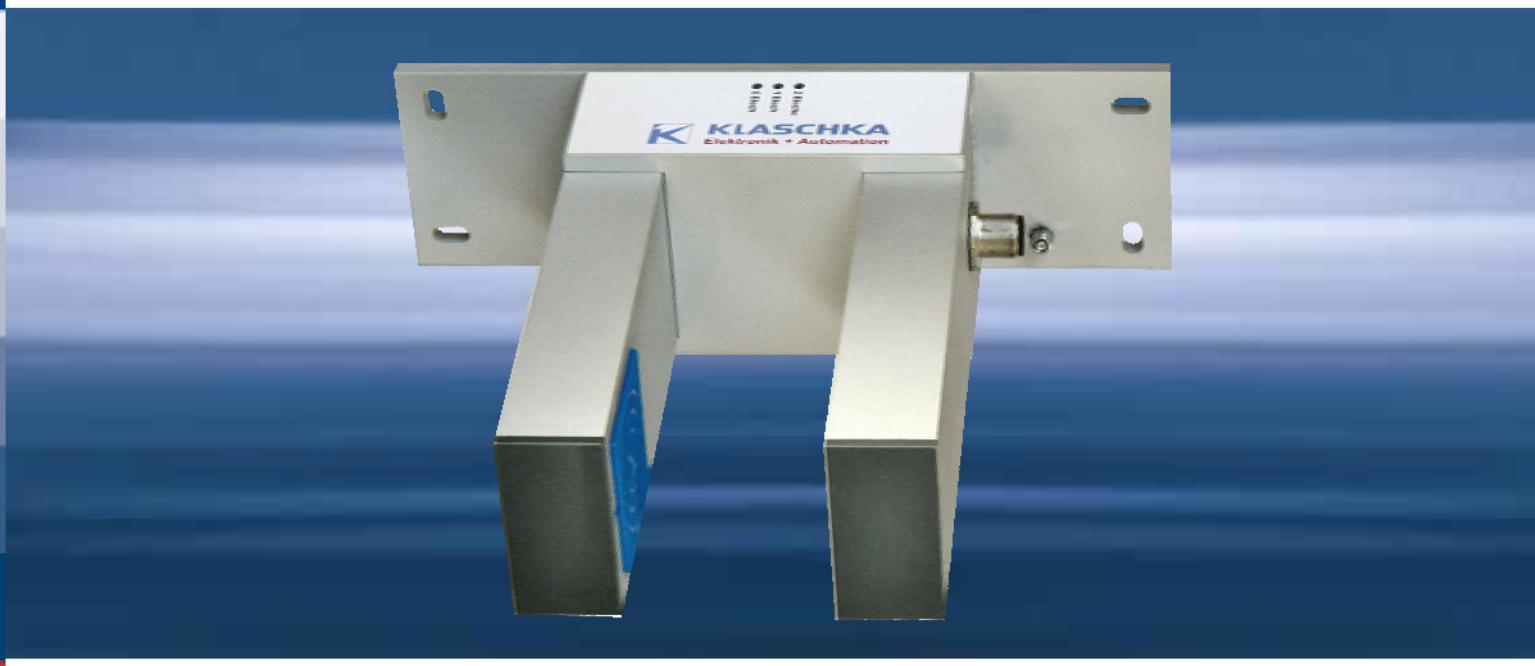
KLASCHKA
Industrieelektronik

# Double Sheet Metal Monitors for forming technology

## BDK Duo
## Self-contained Double Sheet Metal Sensor, double-surface non-contact, for non-ferrous (NE) and ferrous (Fe) sheets

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# Self-contained Double Sheet Metal Sensor BDK Duo

- integral evaluation
- ergonomic design
- cost-effective

**Double Sheet Metal Sensor BDK Duo,** with integral evaluation electronics used for **double-surface** measurement of thin and standard ferrous (Fe) and non-ferrous (NE) sheets.

### Application

The BDK Duo Double Sheet Metal Sensor with integral evaluation electronics is used for non-contact monitoring of sheet metals. The sensor is simple to use and easy to install in plant and machinery. It provides a cost-effective solution for almost all types of sheet-metal processing, including "white goods".

### Metal sheet thickness

| | |
|---|---|
| Ferromagnetic | 0.1 … 2 mm |
| Non- ferromagnetic | 0.1 … 10 mm (depends on sheet type) |

### Installation

Fork-shaped aluminium housing with M12 connector for supply and control leads. Can be installed in conveyor systems. Suitable for measuring stationary and moving parts.

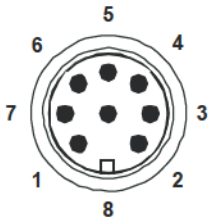
### Operating principle

The all-in-one sensor consists of a transmitter, a receiver and evaluation electronics.

The *Teach-In* (high-active) control input initiates calibration. The calibration procedure consists of two equal parts. To start calibration, the control input *Teach-In* must be set for approx. 2 seconds to *Hi* (high level signal) while *Start* is *Lo* (low level signal). The green LED blinks during calibration. After the first calibration step, the green LED is switched off and the yellow LED switched on. To start the second calibration step, *Teach-In* must again be set to *Hi* for about 2 seconds. The yellow LED blinks during calibration and switches off when calibration has finished. The sheet metal must be between transmitter and receiver during either the first or the second calibration step. The evaluated calibration parameters are stored in a non-volatile memory (EEPROM) so that they are available even after a power failure.

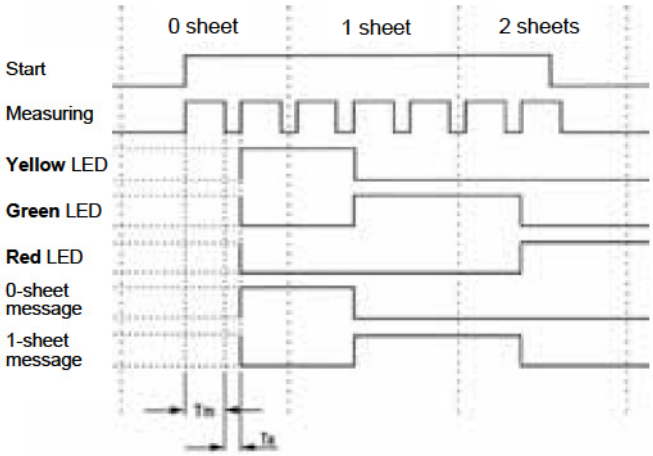
After every measurement the current result (0-, 1-, or 2-sheet(s)) is available at two semi-conductor outputs for further processing in a Programmable Logic Controller (PLC). There are three LEDs for visual monitoring. The diagram below shows the time sequences of a measurement.

**Connection** (* only for Ref. no. 13.35-02 and 13.35-04)




| | | |
|---|---|---|
| 1 | 24 V DC | |
| 2 | M | |
| 3 | 0-sheet message K0 | |
| 4 | 1-sheet message K1 | |
| 5 | Start signal | |
| 6 | Teach-in signal | |
| 7 | Analogue output | }* |
| 8 | Analogue output M | }* |

### Timing diagram: Measurement procedure




Tm < 20 ms — Measuring time depending on sheet thickness and sheet type
Ta < 2 ms — Time to output the result after measurement

### Technical data

| **BWD/L-60as-1s** | **Ref. no. 13.35-03** |
|---|---|
| Operating voltage $U_B$ | 19 …**24**… 30 V DC |
| Reverse polarity protection | yes |
| Power consumption | approx. 300 mA |
| Connection | M12 Euro connector |
| ***Inputs*** | |
| Start signal | Hi = 12 … **24** … 30 V DC<br>Lo = 0 … 5 V DC |
| Input current | approx. 5 mA (for 24 V DC) |
| Teach-In | Hi = 12 … **24** … 30 V DC<br>Lo = 0 … 5 V DC |
| Input current | approx. 5 mA (for 24 V DC) |
| ***Outputs*** | |
| Switching output | semiconductor output, plus switching, short circuit proof |
| Output voltage | ≥ $U_B$ – 1.75 V |
| Output current | max. 100 mA |
| Status display | 3 LED |
| Measuring time | max. 20 ms, min. 3 ms |
| Dimensions (W x H x D) | 100 x 158 x 60 mm |
| Mounting | screw mounting |
| Housing material | aluminium anodized |
| Weight | approx. 1000 g |

**BWE/L-60as-1s** **Ref. No. 13.35-02**

Same technical data as the BWD/L-60as-1s (13.35-03) but with additional analogue voltage output (0 … 10 V DC).

**BWF/L-60as-1s** **Ref. No. 13.35-04**

Same technical data as the BWD/L-60as-1s (13.35-03) but with additional analogue current output (0 … 20 mA).

Subject to changes!

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