



## Double Sheet Metal Monitors

### BDK-A

#### Universal System

single and double surface  
contact and non-contact  
Sensors

Fe- and NE-sheets  
variable and extensible  
up to 8 Sensors



New generation with TFT-Display  
easy operator guidance – universal extensible  
compatible successor-System for BDK-1.3 und BDK-ET

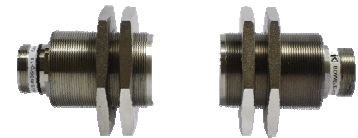


### BDK-1.3

#### Universal System

single and double surface  
contact and non-contact Sensors

Fe- and NE-sheets  
variable and extensible  
up to 8 Sensors



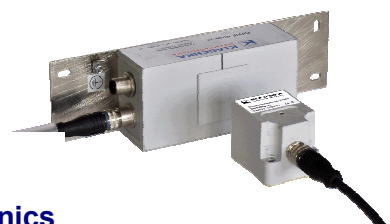
### BDK-ET

single surface  
contact Sensors  
Fe- and NE-sheets  
variable and extensible  
up to 4 Sensors



### BDK Compact

single surface contact Sensors  
Fe- and NE-sheets  
easy handling  
with Teach-In-Function



### BDK DuoFlex

Sensor with integral evaluation electronics  
double surface non-contact measurement  
flexible mounting at conveyor belts

# General

**BDK Double Sheet Metal Monitors** prevent the simultaneous feeding of two or more sheets, lying on top of each other, into sheet metal processing equipment (e.g. presses). They provide for an appropriate loading by destacking machines, robots and feeders and reduce the breakage of tools, machine down times and high repair costs.

Double sheets can be detected in ferrous (Fe) and non-ferrous (NE) metals with thicknesses in the range 0.15 mm to 5.5 mm / contact or to 6.5 mm / non-contact measurement.

## New Universal System BDK-A

The innovative BDK-A generation with 5" TFT display features convenient user guidance with input control, status display and selection of language.

Sensors and connecting leads correspond to the system configurations of the long-established series BDK-1.3 und BDK-ET.

The new BDK-A can also be used as a **compatible successor system** without any problems.

## Robust design and variable sensor connections

The **BDK-A** and **BDK-1.3** systems are well prepared to be **configured flexibly**. With a large selection of **different sensors and measuring methods**, as well as suitable connecting leads with integrated connectors, installation and commissioning can be carried out quickly and easily. These devices (as well as BDK-ET) can be variably extended with up to 4 or 8 sensors and are **optimal equipped for retrofitting and rebuild**.

BDK Double Sheet Metal Monitors are reliable and available in different versions:

- with parallel PLC-Interface (electromechanical relays or non-contact semi-conductor relays)
- fieldbus interfaces: PROFIBUS, PROFINET
- further interfaces on request

## Large Program Memory

Operating buttons and display for entering device and measurement parameters (up to 2048 memory locations). Data is also retained offline and enables a quick change of operation to another sheet type. Optional data backup with software tool.

## Extensive solutions

In addition to these systems for the automotive industry and its suppliers, other user-friendly and less complex solutions for sheet metal processing are also available (BDK Compact und BDK DuoFlex).

## Many years of successful applications

For many years, Klaschka Double Sheet Metal Detectors have been effectively employed in the metal-forming field, in particular in automotive industries. They work reliably in harsh environments, measure fast and precisely with high tolerance (e.g. with air gaps) and offer an inexpensive and safe protection against damages and production losses.

## Versions

### 1. Systems with Evaluation device and Sensors

#### - NEW - Universal Double Sheet Detector BDK-A

Device for connection of 2 Sensors for

- single-surface contact and non-contact measurement
- double-surface non-contact measurement of ferrous (Fe) and non-ferrous (NE) sheets

Optional operation up to 4 sensors (via 2 T-coupler ADD)

Extendable via external Sensor switch (BDIW) up to 4 different or same type sensors

With 2 Switches (BDIW) up to 8 Sensors possible

5" TFT-Display with comfortable operator guidance

Input-control and status display, selection of language, compatible successor system for BDK-1.3 / BDK-ET

#### Universal Double Sheet Detector BDK-1.3

Device for connection of 2 Sensors for

- single-surface contact and non-contact measurement
- double-surface non-contact measurement of ferrous (Fe) and non-ferrous (NE) sheets

Optional operation up to 4 sensors (via 2 T-coupler ADD)

Extendable via external Sensor switch (BDIW) up to 4 different or same type sensors

With 2 Switches (BDIW) up to 8 Sensors possible.

Housing with key. Possible upload and download of saved programs and backups

#### Double Sheet Detector BDK-ET

Device for connection of 1 Sensor for

- single-surface contact control (Fe- and NE-sheets)

Optional operation up to 2 different sensors via T-coupler (ADD)

Extendable via external Sensor switch (BDIW) up to 4 different or same type sensors

#### Double Sheet Detector BDK Compact

Perfect and most cost-effective alternative for applications which do not need the performance and functionality of BDK/A, BDK-1.3 or BDK/ET systems

BDK/I-1.4 evaluation device for the connection of one sensor. Easy handling and teach-in-programming

- for single-surface contact measurement of ferrous (Fe) sheets (0.2 to 3.5 mm)

### 2. Double Sheet Metal Sensors

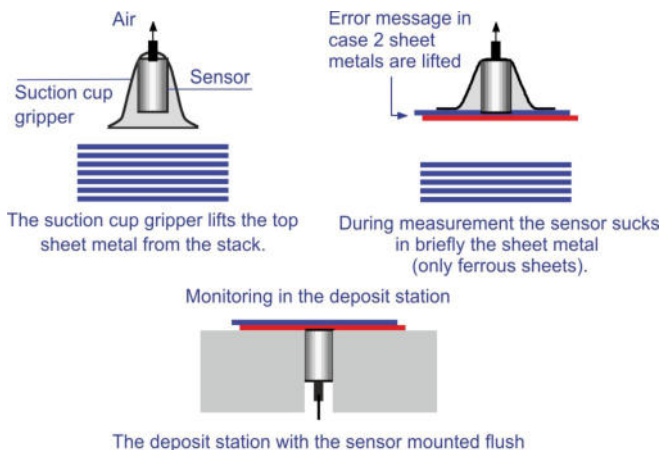
#### Sensor with integral evaluation BDK Duo Flex

Housing with integral receiver and separate transmitter module for flexible mounting at conveyor belts, e.g. at can manufacturing

- double-surface non-contact measurement ferrous (Fe) sheets (0.1 to 2.0 mm), non-ferrous (NE) sheets (0.1 bis 6.0 mm) (depends on composition).

# Basic Functions, Applications

## Double Sheet Metal Monitors, single-surface contact measurement



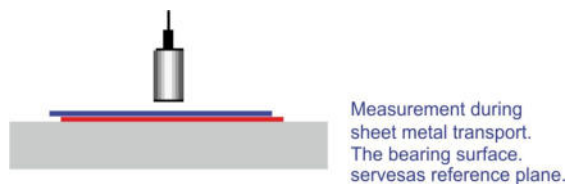
**Single-surface contact double sheet metal monitors** either function according to the saturation induction principle (ferrous sheet metals) or to the eddy current induction principle (non-ferrous sheet metals). Usually, they are mounted in suction cup grippers, or flush in deposit stations.

Available are sensors which can either detect only ferrous (DSP) or only non-ferrous sheet metals (BDWF). For the detection of both sheet metal types there is a sensor designed especially for this purpose (DSPW).

With an universal one-channel evaluation device (BDK-ET) or two-channel monitor (BDK-A / BDK-1.3), all sensors can be used for the single surface contact measurement.

Detection of ferrous sheets is also possible with cost-effective device (BDK Compact).

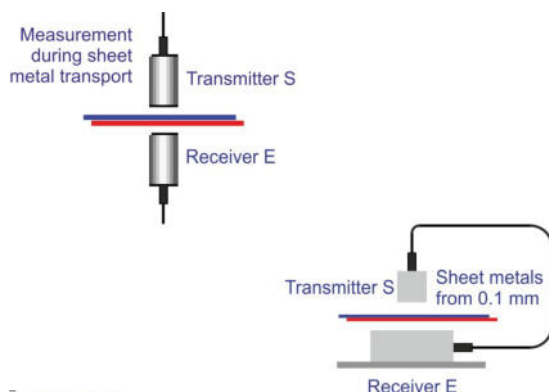
## Double Sheet Metal Monitors, single-surface non-contact measurement



**Single-surface non-contact double sheet metal monitors** function according to the distance measurement principle and thus are suitable for medium to large thicknesses. They can be used where sheet metals lie flat on a measuring station or are transported towards the measuring sensor on a fixed reference surface. This is the case with conveyor belts or especially with magnetic conveyors.

Sensors DSD are applicable especially for ferrous sheets (with Monitor BDK-A / BDK-1.3).

## Double Sheet Metal Monitors, single-surface non-contact measurement



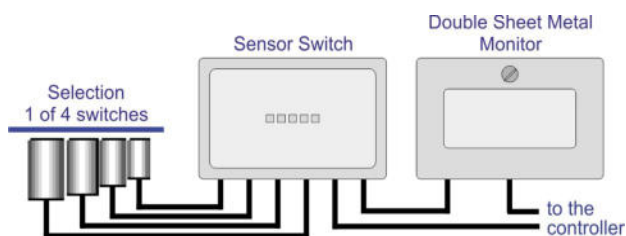
**Double-surface non-contact double sheet metal monitors** work according to the signal transmission principle. They consist of a transmitter (BDWD/S) and a receiver (BDWD/E) which are mounted coaxially opposite each other. They allow the measurement of moving sheet metals in the space between the transmitter and receiver (with monitor BDK-A / BDK-1.3).

**Double surface non-contact double sheet metal sensors** (BDK DuoFlex) for thin sheet metals down to 0.1 mm. With integral evaluation electronics and easy to use Teach-In function. Analogue current or voltage output. Applicable for ferrous (Fe) and non-ferrous (NE) sheet metals.

For flexible mounting, especially for conveyor belts, e.g. at can manufacturing.

## Sensor Switch BDIW

(combined with BDK-A / BDK-1.3 oder BDK-ET)

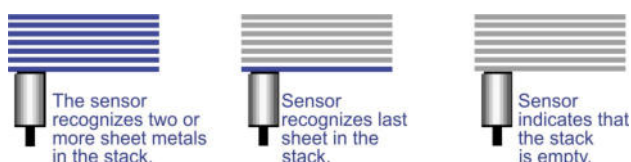


The processing of sheet metals with large differences in thickness and / or different materials (e.g. steel and aluminium) requires the installation either of several different sensors or sensors of the same type at various mounting positions near the feeding area of the press.

**Sensor switch (BDIW) + Double Sheet Metal Monitors** BDK-A / BDK-1.3 or BDK-ET permits installation of further different or same type Sensors to activate suitable Sensor for particular measuring process.  
 BDK-A / BDK-1.3: two Sensor switches (BDIW): max. 8 Sensors.  
 BDK-ET: one Sensor switch (BDIW): max. 4 Sensors.

The sensor number is dialled by the PLC.

## Stack Monitor



The sheet from the bottom of a stack normally gets damaged or contaminated. If this piece is processed, a reject is produced and the tool will get dirty.

This problem can be solved by using a single surface double sheet metal monitor as **sheet metal stack monitor** in the work-piece loader. For this the sensor is mounted in the stack lifter table, which monitors from below the number of remaining pieces in the stack. The output signal from the double sheet metal monitor can be used for the automatic stack change.

Double Sheet Metal Monitors and Double Sheet Metal Sensors											
How to Measure	Sheet material	Sensor			Evaluation Device						
		Type	Ref.no.	Thickness from ... to (mm)	Type	Ref.no.	Connection				
							Controller	Sensor			
Single-surface contact	Fe	DSP-36sg-2s	13.05-96	0..2 ... 1.5	BDK/I-1.4 (Compact)	20.21-03	parallel	1			
		DSP-54sg-2s	13.05-95	0.2 ... 3.5							
		DSP-36sg-1s	13.05-86	0.2 ... 1.5	BDK-ET-1.3	20.05-96	parallel	1 *			
		DSP-42sg-1s	13.05-87	0.2 ... 2.5	BDK-ET/FP-1.3	20.05-97	PROFIBUS-DP	1 *			
		DSP-54sg-1s	13.05-89	0.2 ... 3.5	BDK-A/PR-4.3	20.21-10	parallel	2 *			
	DSP-75sg-1s	13.05-90	0.2 ... 5.5	20.21-11		PROFIBUS-DP	2 *				
	NE	BDWF-m54rg-2s	13.05-73	0.2 ... 5.5	BDK-A/PN-4.3	20.21-12	PROFINET	2 *			
	Fe / NE	DSPW-42sg-1s	13.05-66	Fe: 0.2 ... 3.0 NE: 0.2 ... 2.0/3.0	BDK-1.3	20.05-80	parallel	2 *			
		DSPW-54sg-1s	13.05-67	Fe: 0.2 ... 3.5 NE: 0.2 ... 2.5/4.0	BDK/OB-1.3	20.21-01	parallel	2 *			
	Single-surface non-contact	Fe	DSD-18mg61n0,5/3-1Sd1	13.05-91	0.5 ... 3.5	BDK-A/PR-4.3	20.21-10	parallel	2 *		
DSD-30mg74n3/6,5-1Sd1			13.05-94	3.0 ... 6.5	20.21-11					PROFIBUS-DP	2 *
					20.21-12					PROFINET	2 *
Double-surface non-contact	Fe / NE	BDWD/S-m36rg-1s (transmitter)	13.05-74	Fe: 0.2 ... 3.0 NE: 0.2 ... 6.0	BDK-1.3	20.05-80	parallel	2 *			
		BDWD/E-m36rg-1s (receiver)	13.05-75		BDK/OB-1.3	20.21-01	parallel	2 *			
		BDWD/S-60aq30-1Y1 (transmitter)	13.05-76		BDK/FP-1.3	20.05-82	PROFIBUS-DP	2 *			
		BDWD/E-60aq30-1Y1 (receiver)	13.05-77		BDK/PN-1.3	20.05-93	PROFINET	2 *			
Double Sheet Metal Sensors with integral evaluation electronics											
How to Measure	Sheet material	Type	Ref.no.	Thickness from ... to (mm)	Connection to controller						
Double-surface non-contact	Fe / NE	<b>BDK DuoFlex</b> BV/S-40fq-1s (transmitter)	13.35-10	Fe: 0.1 ... 2.0	parallel (13.35-11)  + Analogue value 0...20 mA (13.35-13)						
		BVD/E-60as-1s (receiver)	13.35-11	V2A: 0.3 ... 5.0							
		BVF/E-60as-1s (receiver)	13.35-13	Alu: 0.1 ... 6.0 (depends on composition)							

Fe = ferrous / NE = non-ferrous

1 \* = optional operation up to 2 different sensors (with T-Coupler), extendable to 4 sensors (with Sensor switch BDIW)

2 \* = optional operation up to 4 sensors (with T-Coupler), extendable to 8 sensors (with 2 Sensor switch BDIW)

Subject to changes!