KLASCHKA
Industrieelektronik

Double Sheet Metal Monitors

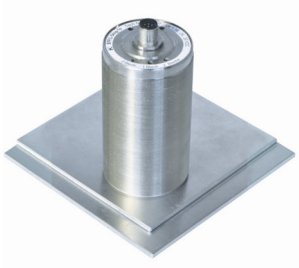
BDK-1.3 / BDK-ET

BDK Compact (BDK/I-1.4)

Double Sheet Metal Sensors with integral evaluation

BDK Duo

BDK DuoFlex



BDK Uno NE

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.

Depending on the measurement method and selected sensor, 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 12 mm / non-contact measurement.

Robust Design

A lockable cover protects the **BDK-1.3 version** against unauthorised access. Sensor and evaluation device are characterised by a sturdy construction and a high protection rating. The ready-made connecting leads with plugs and sockets on sensor and device end permit quick and easy mounting and commissioning of these BDK Double Sheet Metal Monitors.

BDK-1.3 Double Sheet Metal Monitors are available in different versions:

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

Large Program Memory

Operator keys and a text display permit the convenient entry of device and measuring parameters. There are 256 program memory locations, which allow the storage of the measuring programs. They allow quick changes of material or tool during operation, and the programs remain stored even when the device is switched off. Data can be saved with a software tool.

Complex solutions

The overview to the right includes next to complex systems for the automotive and automotive supply industries also easy and cost-effective solutions for the wide range of the metal processing field.

Successful and long term installations

For many years, Klaschka Double Sheet Metal Detectors have been effective 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.

Subject to changes!

Versions

1. Double Sheet Metal Monitors (Systems with Evaluation device and Sensor)

BDK-1.3

BDK evaluation device with integral switch for connection of sensors for

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

Optional operation up to 4 different sensors via T-coupler (ADD), respectively 8 different or same type sensors via external Sensor switches (BDIW).

BDK-ET

BDK-ET evaluation device for the connection of one sensor

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

Optional operation up to 2 different sensors via T-coupler (ADD), respectively 4 different or same type sensors via external Sensor switch (BDIW).

BDK Compact

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.

*BDK Compact, **the smallest, most cost-effective alternative** for applications which do not need the performance and functionality of BDK-1.3 / BDK-ET systems!*

2. Double Sheet Metal Sensors with integral evaluation electronics

BDK Uno NE

- single-surface contact measurement, non-ferrous (NE) sheets from 0.1 to 6.0 mm.

BDK Duo

U-shaped housing (integral transmitter + receiver)

- for double-surface non-contact measurement, ferrous (Fe) sheets from 0.1 to 2.0 mm, non-ferrous (NE) sheets from 0.1 to 10.0 mm (depends on composition).

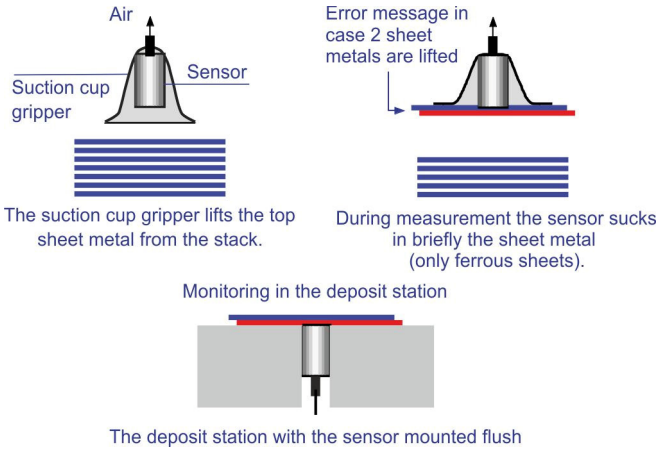
BDK Duo Flex

Housing with integral receiver and separate transmitter module for flexible mounting at conveyor belts

- for double-surface non-contact measurement, ferrous (Fe) sheets from 0.1 to 2.0 mm, non-ferrous (NE) sheets from 0.1 to 10.0 mm (depends on composition).

Basic Functions, Applications

Double Sheet Metal Monitors, single-surface contact measurement



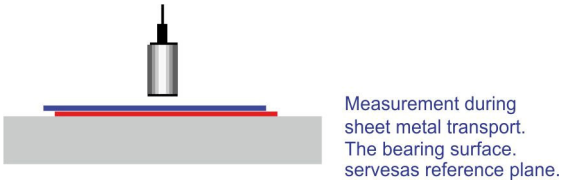
Single-surface contact double sheet metal monitors either function according to the saturation induction principle (ferrous sheet metals) or to the eddy current induction principle (non-ferrous sheet metals). Usually, they are mounted in suction cup grippers, or flush in deposit stations.

Available are sensors which can either detect only ferrous or only non-ferrous sheet metals. For the detection of both sheet metal types there is a sensor designed especially for this purpose. Together with an universal one- or two-channel evaluation device (BDK-ET or 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) and single-surface contact Sensors.

For applications with non-ferrous and V2A (chromium-iron steel) metals, compact double sheet metal sensors with integrated evaluation device can be used. (BDK Uno NE).

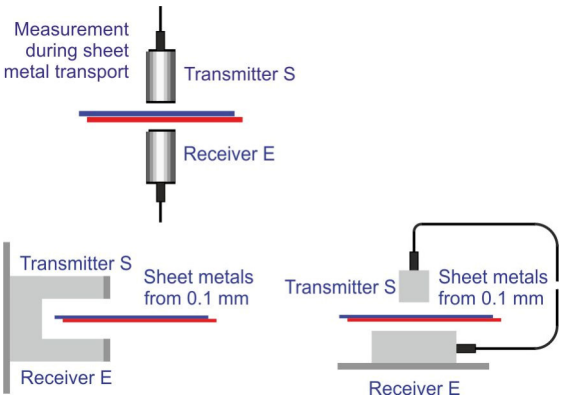
Double Sheet Metal Monitors, single-surface non-contact measurement



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-1.3).

Double Sheet Metal Monitors, double-surface non-contact measurement



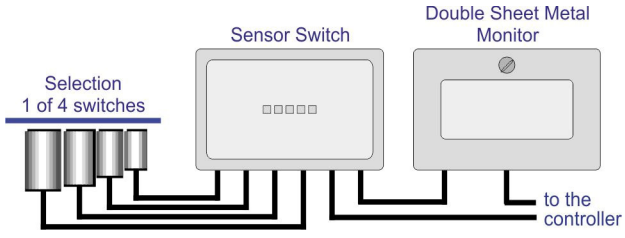
Double-surface non-contact double sheet metal monitors work according to the signal transmission principle. They consist of a transmitter and a receiver which are mounted coaxially opposite each other. They allow the measurement of moving sheet metals in the space between the transmitter and receiver.

Double surface non-contact double sheet metal sensors (BDK Duo) for thin sheet metals down to 0.1 mm with a measuring U-shaped sensor and integral evaluation electronics. Easy to use with Teach-In and analogue current or voltage output. Applicable for ferrous (Fe) and non-ferrous (NE) sheet metals.

Available also with separate transmitter module (BDK DuoFlex) for flexible mounting, especially for conveyor belts.

Sensor Switch

(combined with BDK-1.3 or BDK-ET)

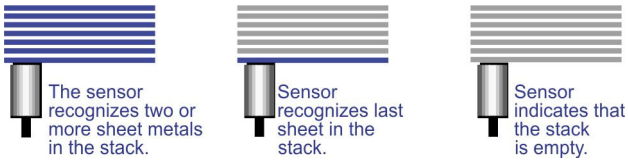


The processing of sheet metals with large differences in thickness and / or different materials (e.g. steel and aluminium) requires the installation either of several different sensors or sensors of the same type at various mounting positions near the feeding area of the press.

Sensor switch (BDIW) + **Double Sheet Metal Monitors** BDK-1.3 or BDK-ET permits installation of further different or same type Sensors to select suitable Sensor for particular measuring process.
BDK-1.3 with two Sensor switches (BDIW): max. 8 Sensors.
BDK-ET with 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: Type	Sensor: Ref. no.	Sensor: Thicknesses from … to (mm)	Evaluation Device: Type	Evaluation Device: Ref. no.	Connection: Controller	Connection: Sensor
Single-surface contact	Fe	DSP-36sg-1s	13.05-86	0.2 … 1.5	BDK-1.3	20.05-80	parallel	2 *
		DSP-42sg-1s	13.05-87	0.2 … 2.5	BDK/OB-1.3	20.21-01	parallel	2 *
		DSP-54sg-1s	13.05-89	0.2 … 3.5	BDK-ET-1.3	20.05-96	parallel	1 *
		DSP-75sg-1s	13.05-90	0.2 … 5.5	BDK/FP-1.3	20.05-82	PROFIBUS-DP	2 *
	NE	BDWF-m54rg-2s	13.05-73	0.2 … 5.5	BDK-ET/FP-1.3	20.05-97	PROFIBUS-DP	1 *
	Fe / NE	DSPW-42sg-1s	13.05-66	Fe: 0.2 … 3.0 NE: 0.2 … 2.0/ 3	BDK/PN-1.3	20.05-93	PROFINET	2 *
		DSPW-54sg-1s	13.05-67	Fe: 0.2 … 3.5 NE: 0.2 … 2.5/ 4				
	Fe	DSP-36sg-2s	13.05-96	0.15 … 1.5	BDK/I-1.4 (Compact)	20.21-03	parallel	1
		DSP-54sg-2s	13.05-95	0.15 … 3.5				
Single-surface non-contact	Fe	DSD-18mg61n0,5/3-1Sd1	13.05-91	0.5 … 3.5	BDK-1.3	20.05-80	parallel	2 *
		DSD-60mg90n3/12-1Y1	13.05-83	3.0 … 12.0	BDK/OB-1.3	20.21-01	parallel	2 *
					BDK/FP-1.3	20.05-82	PROFIBUS-DP	2 *
					BDK/PN-1.3	20.05-93	PROFINET	2 *
Double-surface non-contact	Fe / NE	BDWD/S-m36rg-1s (transmitter)	13.05-74	Fe: 0.2… 3.5 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
Single-surface contact	NE	**BDK Uno**			
		BED/L-54sg-1s	13.35-05	Alu: 0.1 … 6.0 V2A: 0.3 … 5.0	parallel + Analogue value 0…10 V (13.35-06) + Analogue value 0…20 mA (13.35-07)
		BEE/L-54sg-1s	13.35-06		
		BEF/L-54sg-1s	13.35-07		
Double-surface non-contact	Fe / NE	**BDK Duo**			
		BWD/L-60as-1s	13.35-03	Fe: 0.1 … 2.0 V2A: 0.2 … 5.0 Alu: 0.1 … 10.0 (depends on composition)	parallel + Analogue value 0…10 V (13.35-02) + Analogue value 0…20 mA (13.35-04)
		BWE/L-60as-1s	13.35-02		
		BWF/L-60as-1s	13.35-04		
		BDK Duo Flex			
		BV/S-40fq-1s (transmitter)	13.35-10		parallel + Analogue value 0…10 V (13.35-12) + Analogue value 0…20 mA (13.35-13)
		BVD/E-60as-1s (receiver)	13.35-11		
		BVE/E-60as-1s (receiver)	13.35-12		
		BVF/E-60as-1s (receiver)	13.35-13		

Fe = ferrous / NE = non-ferrous / * = optional operation up to 4, respectively 8 sensors (with Sensor switch BDIW)

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