



UDK21 DOUBLE SHEET

SINGLE SIDE SYSTEM, CONTACTING

- Calibration by teach-in procedure
- 5" capacitive touch display
- Simple and clearly structured menu
- Monitoring of over-gauge and under-gauge limits
- Monitoring of operating voltage and sensors
- Integrated fieldbus interface or IO interface
- Available as wall mounting enclosure or as front panel mounting



UDK21 DOUBLE SHEET

Description

Flexible manufacturing systems in sheet metal processing require automated, reliable double sheet detection to protect presses and other processing machines from damage caused by multiple sheets. The UDK21 was developed specifically for this technical environment. The UDK21 consists of the following components:

- the control unit
- one or two sensors (up to four sensors with a sensor switchbox)
- the sensor cables (one cable per sensor)

Function

The UDK21 Double Sheet Detector combines electromagnetic and eddy current measurement principles. It inspects the sheets by making contact on one side and exerts adhesive forces only on steel at the moment of measurement. In the case of non-ferrous materials, the measurement is generally force-free due to the eddy current principle. A change in sheet thickness causes a change in inductance. The control unit calculates the sheet thickness based on this change. Depending on the preselected limit values, 0-sheet, 1-sheet or 2-sheet output signals are generated.

Display view of the UDK21

10

1

2

3

4

09

08

07

06

01

02

03

04

05

ROLAND

11 001 Recipe 001

UDK21-2-PN-S
SN: 26010001

Sensors	1	2	3	4
Nominal value [mm]	1.44	1.44	-	-
Upper limit [mm]	1.71	1.79	-	-
Measurement [mm]	1.45	1.44	-	-
Lower limit [mm]	1.14	1.14	-	-
Material	FE	FE		

01

02

03

04

05

01: User selection

02: Error list

03: Settings

04: Recipe editing

05: Menu navigation

06: Current user mode

07: Interface status

08: System status

09: Current device action

10: Active sensors of the current recipe / action

11: Current recipe number/name

12: Measured value and limits display

Variants of the control units UDK21			
UDK21-2-O-S-FP A B C D E UDK21-2-XX-S-FP	A	Type of unit	UDK21
	B	No. of sensors	1: 1 channel (up to 4 channels with Sensor switchbox) 2: 2 channels
	C	Outputs	0: Opto coupler interface / XX*: Fieldbus interface
			*PR = PROFIBUS DP / DNT = DeviceNet / PN = PROFINET IO / CC = CC-Link / EN = Ethernet/IP / ET = EtherCAT
	D	Connections	S: Cables pluggable
	E	Enclosure version	- : Industrial enclosure / FP: Front panel enclosure

Sensor cables

61

61

Ø 27.4

Ø 27.4

SBCPWBS-GG

Standardkabel

Standard cable

61

79.4

Ø 27.4

Ø 27.4

53

SBCPWBS-GW

Kabel mit Winkelstecker

Cable with angle plug

61

60

Ø 27.4

Ø 27.4

SBCPWBS-GG-TE

Verlängerungskabel

Extension cable

Attention: Angle plug cannot be used with spring loaded sensor brackets.

Bending radius depends on cable type.
Min. 50 mm for fixed installation, min. 110 mm for movable installation

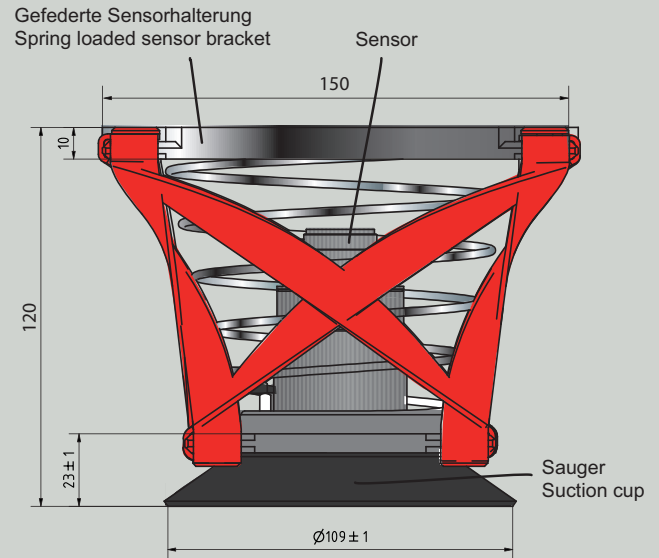
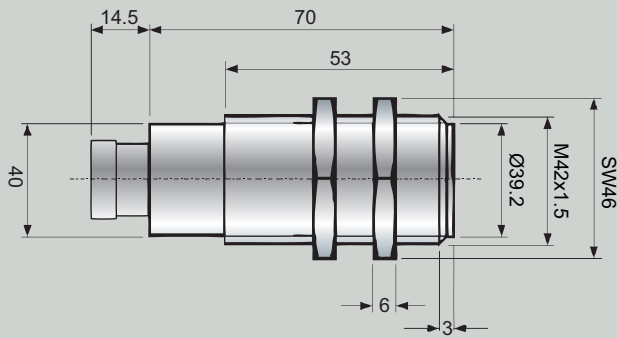
SINGLE SIDE SYSTEM, CONTACTING

Sensors:

The sensor PW42BGS is suitable for connection to the control unit UDK21 only. The connection of the older PW42AGS sensors is only possible to the older unit UDK20 or with an adapter to UDK21.

Spring loaded sensor bracket:

Spring loaded sensor bracket SHX42 with suction cup for sensor PW42BGS (also available without vacuum cup as type SH...GS).



Measurement performance:

Ferrous materials (steel): 0.2 mm (.007 in.) to 4.0 mm (.160 in.) single sheet thickness

Non-ferrous materials: Bronze, zinc, aluminum (conductivity 1.3 - 38 Millisiemens) up to 4 mm (.160 in.) single sheet thickness; copper alloy up to 3.5 mm (.137 in.); copper up to 3 mm (.12 in.), non-magnetic stainless steel (austenite) up to 2 mm (.08 in.)

Measurement time:

Ferrous materials (steel): At a maximum sheet thickness of 4 mm, 120% double-sheet threshold and using a PW42AGS sensor, the measurement takes a maximum of *80 ms; a maximum of *160 ms in sequencer mode with two sensors (UDK20-2PW).

Non-ferrous materials: Constant *85 ms with one sensor or two sensors in sequencer mode (UDK20-2PW).
* plus PLC cycle and processing time

Air gap behaviour:

Ferrous materials (steel):

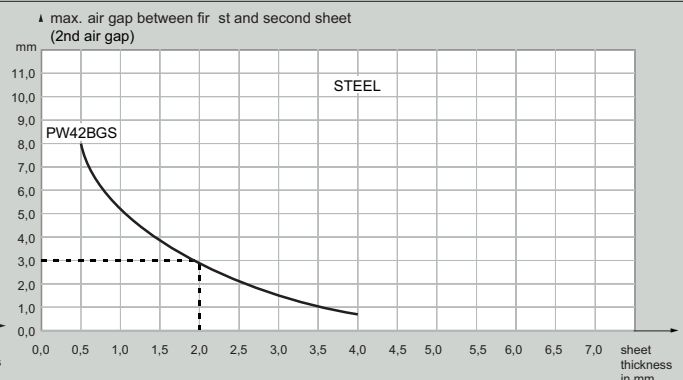
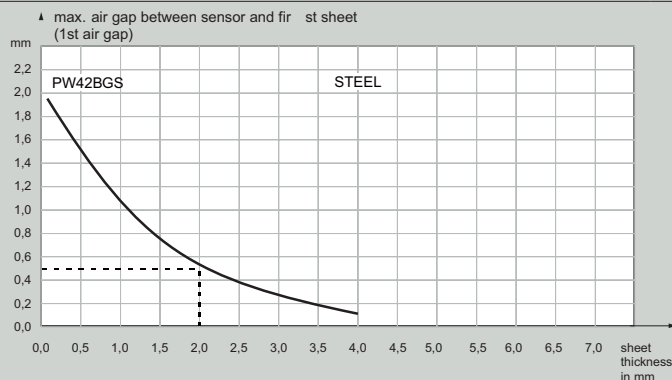
There are two types of air gaps in case of double sheet control. First there is the air gap between sensor and sheet surface (1st air gap) and the air gap between the first sheet and the second sheet (2nd air gap).

The diagrams show the relationship.

Example for 1st air gap with sensor PW42BGS: According to the diagram, if processing a sheet of 2.0 mm (.08 in.) an air gap of 0.5 mm (.02 in.) can be tolerated with a double sheet threshold of 120 %.

Example for 2nd air gap and sensor PW42BGS with 2.0 mm (.08 in.) sheet thickness and a double sheet threshold of 120 %; an air gap of up to 3.0 mm (.12 in.) can be tolerated.

Attention! The performance data of both diagrams cannot be combined!



Non-ferrous materials: The air gap behavior is similar to ferrous material (steel).



Technical Data

UDK21	
Operating voltage:	24 V DC +6 V / -2V
Power consumption:	60 W (operation: <60 W, idle: <10 W)
Class of protection:	IP 65 (industrial enclosure) / IP40 (front panel enclosure)
Ambient temperature:	0°C - 50° C during operation
Weight:	approx. 3 kg (6.61 lbs)
Dimensions (W x H x D):	280 x 184 x 90 mm (industrial enclosure) / 240 x 240 x 100 mm (front panel enclosure)
Backup / Restore / Update:	USB-Stick
UDK21 IO:	Signal inputs: 24 VDC with common ground reference Signal outputs: 24 VDC high side switching with common supply, max. 0.5 A
UDK21 fieldbus:	Version according to the specification of the respective fieldbus

Order Information

UDK21 Fieldbus version / industrial enclosure		UDK21 Fieldbus version / front panel enclosure (FP)	
Part no.	Description	Part no.	Description
UDK21-1-XX-S	1 channel, 4 with Sensor Switchbox	UDK21-1-XX-S-FP	1 channel, 4 with Sensor Switchbox
UDK21-2-XX-S	2 channels	UDK21-2-XX-S-FP	2 channels
XX: PR=PROFIBUS DP, DNT=DeviceNet (A-Coding), PN=PROFINET IO, CC=CC-Link, EN=Ethernet/IP, ET=EtherCAT			

UDK21 IO version / industrial enclosure		UDK21 IO version / front panel enclosure (FP)	
Part no.	Description	Part no.	Description
UDK21-1-0-S	1 channel, 4 with Sensor Switchbox	UDK21-1-0-S-FP	1 channels, 4 with Sensor Switchbox
UDK21-2-0-S	2 channels	UDK21-2-0-S-FP	2 channels

Sensor	
Part no.	Description
PW42BGS	Electromagnet with integrated eddy current probe up to 4.0 mm (.160 in.) single sheet thickness with ferrous and non-ferrous materials and reduced thickness for copper, copper alloys and stainless steel (austenite)

Cable	
Part no.	Description
SBCPWBS-GG*	Cable for connecting the sensor PW42BGS with the UDK21, both cable ends with quick disconnect, straight cable plug at the unit, straight cable socket (GG) at the sensor side, standard length 5 m
SBCPWBS-GW*	Cable for connecting the sensor PW42BGS with the UDK21, both cable ends with quick disconnect, straight cable plug at the unit, angular cable socket (GW) at the sensor side, standard length 5 m
SBCPWBS-GG-TE*	Extension cable between SBCPWS-GG or SBCPWS-GW
SBVCBS-SSBUDK*	Connection cable between UDK21 and Sensor switchbox SSB-UDK21
* Please enquire for longer cables (total length max. 50 m).	

Accessoires	
Part no.	Description
SHX42	Spring loaded sensor brackets with flat suction cup and lateral clearance. Highest tilt flexibility, highest spring travel. Rigid during approach. For high lateral acceleration (up to 2g), minimal wear.
* Additional sensor brackets, spare parts, and other accessories are listed in a separate data sheet!	
SSB-UDK21	Sensor switchbox
RPP-21	Software for parameter backup on a PC

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