microsonic

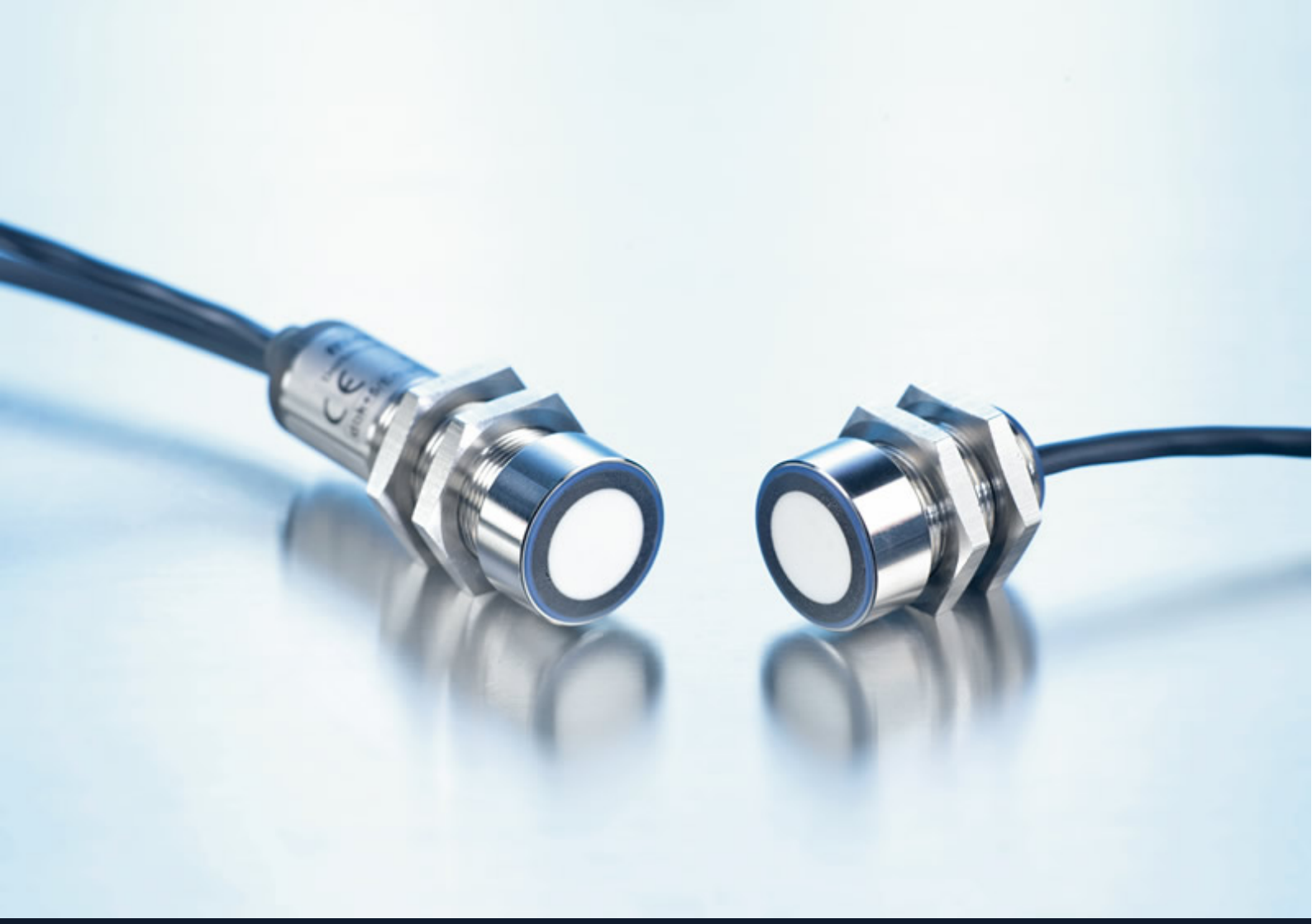
EVERY THING ULTRA SONIC

Extract from our online catalogue:

dbk+5 ultrasonic double sheet control

Current to: 2023-11-13

microsonic GmbH / Phoenixseestraße 7 / 44263 Dortmund / Germany / **T** +49 231 975151-0 / **F** +49 231 975151-51 / **E** info@microsonic.de



The dbk+5 extends the area of application of double sheet controls to heavy carton, corrugated cardboard, and plastic sheets.

HIGHLIGHTS

- High-performance ultrasonic double-sheet control › especially for the probing of corrugated cardboard as well as plastic plates several mm thick
- 3 control inputs › for Teach-in, trigger, and external sensitivity settings for the material
- Teach-in option › e.g. for probing plates stuck together with an oil film
- Compact design in M18 x 1 threaded tube

BASICS

- Reliable detection of single and double sheets
- No Teach-in needed (plug and play)
- Double-sheet and missing-sheet output
- Working distance between the transmitter and the receiver selectable from 30 to 70 mm
- Trigger option › for applications in warehouse flow
- LinkControl › for configuration of sensors from a PC

Description

The dbk+5 ultrasonic double-sheet control

is designed for scanning thin sheet metal, plastic sheets and corrugated cardboard with thicknesses exceeding the working range of the dbk+4 sensors. The principle behind the operation is the same as for the dbk+4 sensors. The main difference between the systems lies in the materials to the detected. (For further information, see dbk+4.)

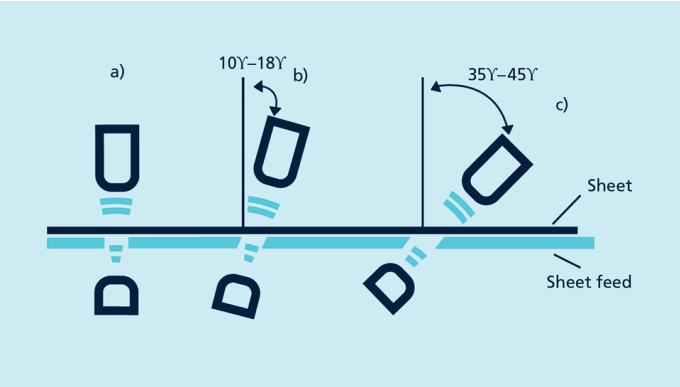
Typical materials

in the range of applications of the dbk+5 are sheet metal up to approx. 2 mm thick (depending on the type of metal), plastic sheets and boards for printed circuits up to a thickness of several millimetres, and coarse corrugated card.

Papers require the sensors to be mounted perpendicular to the passing sheets. But in the case of sheet metal, plastic sheets and boards for printed circuits, it is preferable to mount the dbk+5 at an angle of 10–18° to the passing sheets. The optimum angle should be determined by way of trials. Corrugated cards should be scanned at an angle of 35–45° to the corrugations.

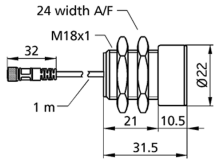
Transmitter and receiver

are housed in M18 x 1 mm threaded sleeves which should be mounted from 30 to 70 mm apart.



dbk+5/Sender/M18/K1

scale drawing



detection zone

working range	papers with weights of 100 - 2,000 g/m², plastic sheets and films up to 5 mm thick*, self-adhesive films, sheet metals up to 2 mm thick*, corrugated card, wafers, PCBs (*: material-dependent)
design	cylindrical M18
operating mode	double sheet control
particularities	transmitter for ultrasonic double sheet control distance between transmitter and receiver can be selected cable connection

ultrasonic-specific

means of measurement	pulse operation with amplitude evaluation
transducer frequency	200 kHz
blind zone	7 mm in front of transmitter and receiver

electrical data

transmitter cable	1 m PUR cable with M8 initiator plug

housing

transmitter/receiver spacing	30 - 70 mm; optimal: 50 mm ± 3 mm
permissible angular deviation	± 45° from the perpendicular to the sheet
material	brass sleeve, nickel-plated, plastic parts, PBT
ultrasonic transducer	polyurethane foam, epoxy resin with glass contents
max. tightening torque of nuts	15 Nm
class of protection to EN 60529	IP 65
operating temperature	+5°C to +60°C
storage temperature	-40°C to +85°C
weight	50 g

dbk+5/Sender/M18/K1

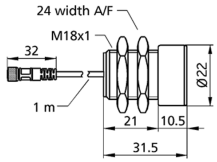
technical features/characteristics	
controls	not necessary
scope for settings	not necessary
particularities	transmitter for ultrasonic double sheet control distance between transmitter and receiver can be selected cable connection

order no.	**dbk+5/Sender/M18/K1**

The content of this document is subject to technical changes. Specifications in this document are presented in a descriptive way only. They do not warrant any product features.

dbk+5/Sender/M18/K2

scale drawing



detection zone

working range	papers with weights of 100 - 2,000 g/m², plastic sheets and films up to 5 mm thick*, self-adhesive films, sheet metals up to 2 mm thick*, corrugated card, wafers, PCBs (*: material-dependent)
design	cylindrical M18
operating mode	double sheet control
particularities	transmitter for ultrasonic double sheet control distance between transmitter and receiver can be selected cable connection

ultrasonic-specific

means of measurement	pulse operation with amplitude evaluation
transducer frequency	200 kHz
blind zone	7 mm in front of transmitter and receiver

electrical data

transmitter cable	1 m PUR cable with M8 initiator plug

housing

transmitter/receiver spacing	30 - 70 mm; optimal: 50 mm ± 3 mm
permissible angular deviation	± 45° from the perpendicular to the sheet
material	brass sleeve, nickel-plated, plastic parts, PBT
ultrasonic transducer	polyurethane foam, epoxy resin with glass contents
max. tightening torque of nuts	15 Nm
class of protection to EN 60529	IP 65
operating temperature	+5°C to +60°C
storage temperature	-40°C to +85°C
weight	50 g

dbk+5/Sender/M18/K2

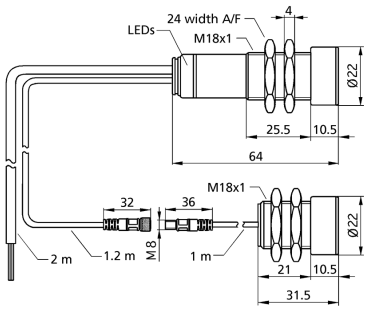
technical features/characteristics	
controls	not necessary
scope for settings	not necessary
particularities	transmitter for ultrasonic double sheet control distance between transmitter and receiver can be selected cable connection

order no.	**dbk+5/Sender/M18/K2**

The content of this document is subject to technical changes. Specifications in this document are presented in a descriptive way only. They do not warrant any product features.

dbk+5/3CDD/M18 E+S

scale drawing



detection zone

2 x pnp

working range	papers with weights of 100 - 2,000 g/m², plastic sheets and films up to 5 mm thick*, self-adhesive films, sheet metals up to 2 mm thick*, corrugated card, wafers, PCBs (*: material-dependent)
design	cylindrical M18
operating mode	double sheet control
particularities	distance between transmitter and receiver can be selected cable connection

ultrasonic-specific

means of measurement	pulse operation with amplitude evaluation
transducer frequency	200 kHz
blind zone	7 mm in front of transmitter and receiver

electrical data

operating voltage U_B	20 - 30 V d.c., reverse polarity protection
voltage ripple	± 10 %
no-load current consumption	≤ 50 mA
type of connection	2 m PUR cable, 7 x 0.14 mm²
transmitter cable	at the receiver: 1.2 m PUR cable, at the transmitter: 1 m PUR cable with M8 initiator plug

dbk+5/3CDD/M18 E+S

outputs	
output 1	double sheet output pnp: I_{max} = 200 mA (U_B-2V) NOC/NCC adjustable, short-circuit-proof
output 2	missing sheet output pnp: I_{max} = 200 mA (U_B-2V) NOC/NCC adjustable, short-circuit-proof
response time	< 500 µs im Trigger-Mode, 5,5 ms im Free-Run-Mode
delay prior to availability	< 300 ms

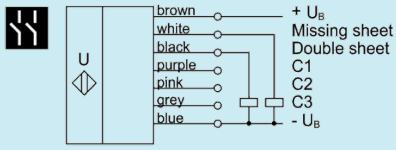
inputs	
description	< -U_B+18 V: logic 1; > -U_B+13 V or control input open: logic 0
input 1	control input
input 2	control input
input 3	control input

housing	
transmitter/receiver spacing	30 - 70 mm; optimal: 50 mm ± 3 mm
permissible angular deviation	± 45° from the perpendicular to the sheet
material	brass sleeve, nickel-plated, plastic parts, PBT, PA
ultrasonic transducer	polyurethane foam, epoxy resin with glass contents
max. tightening torque of nuts	15 Nm
class of protection to EN 60529	IP 65
operating temperature	+5°C to +60°C
storage temperature	-40°C to +85°C
weight	160 g
further versions	single transmitter/receiver
further versions	dbk+5/Sender/M18/K1 dbk+5/Empf/3CDD/M18

technical features/characteristics	
controls	control input
scope for settings	Teach-in LCA-2 with LinkCopy or LinkControl software
indicators	1 x Duo-LED; green: working / red: double sheet / flashing red: missing sheet
particularities	distance between transmitter and receiver can be selected cable connection

dbk+5/3CDD/M18 E+S

pin assignment

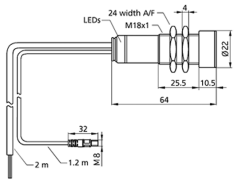


order no.	**dbk+5/3CDD/M18 E+S**

The content of this document is subject to technical changes. Specifications in this document are presented in a descriptive way only. They do not warrant any product features.

dbk+5/Empf/3CDD/M18

scale drawing



detection zone

2 x pnp

working range	papers with weights of 100 - 2,000 g/m², plastic sheets and films up to 5 mm thick*, self-adhesive films, sheet metals up to 2 mm thick*, corrugated card, wafers, PCBs (*: material-dependent)
design	cylindrical M18
operating mode	double sheet control
particularities	receiver for ultrasonic double sheet control distance between transmitter and receiver can be selected cable connection

ultrasonic-specific

means of measurement	pulse operation with amplitude evaluation
transducer frequency	200 kHz
blind zone	7 mm in front of transmitter and receiver

electrical data

operating voltage U_B	20 - 30 V d.c., reverse polarity protection
voltage ripple	± 10 %
no-load current consumption	≤ 50 mA
type of connection	2 m PUR cable, 7 x 0.14 mm²
transmitter cable	1.2 m PUR cable with M8 initiator plug

dbk+5/Empf/3CDD/M18

outputs	
output 1	double sheet output pnp: I_{max} = 200 mA (U_B-2V) NOC/NCC adjustable, short-circuit-proof
output 2	missing sheet output pnp: I_{max} = 200 mA (U_B-2V) NOC/NCC adjustable, short-circuit-proof
response time	< 500 µs im Trigger-Mode, 5,5 ms im Free-Run-Mode
delay prior to availability	< 300 ms

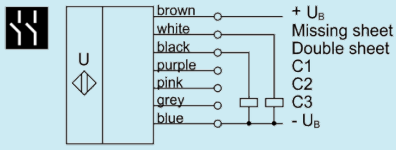
inputs	
description	< -U_B+18 V: logic 1; > -U_B+13 V or control input open: logic 0
input 1	control input
input 2	control input
input 3	control input

housing	
transmitter/receiver spacing	30 - 70 mm; optimal: 50 mm ± 3 mm
permissible angular deviation	± 45° from the perpendicular to the sheet
material	brass sleeve, nickel-plated, plastic parts, PBT, PA
ultrasonic transducer	polyurethane foam, epoxy resin with glass contents
max. tightening torque of nuts	15 Nm
class of protection to EN 60529	IP 65
operating temperature	+5°C to +60°C
storage temperature	-40°C to +85°C

technical features/characteristics	
controls	control input
scope for settings	Teach-in LCA-2 with LinkCopy or LinkControl software
indicators	1 x Duo-LED; green: working / red: double sheet / flashing red: missing sheet
particularities	receiver for ultrasonic double sheet control distance between transmitter and receiver can be selected cable connection

dbk+5/Empf/3CDD/M18

pin assignment

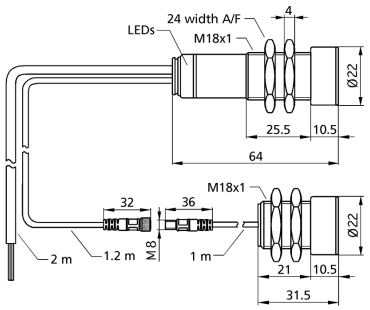


order no.	**dbk+5/Empf/3CDD/M18**

The content of this document is subject to technical changes. Specifications in this document are presented in a descriptive way only. They do not warrant any product features.

dbk+5/3BEE/M18 E+S

scale drawing



detection zone

2 x npn

working range	papers with weights of 100 - 2,000 g/m², plastic sheets and films up to 5 mm thick*, self-adhesive films, sheet metals up to 2 mm thick*, corrugated card, wafers, PCBs (*: material-dependent)
design	cylindrical M18
operating mode	double sheet control
particularities	distance between transmitter and receiver can be selected cable connection

ultrasonic-specific

means of measurement	pulse operation with amplitude evaluation
transducer frequency	200 kHz
blind zone	7 mm in front of transmitter and receiver

electrical data

operating voltage U_B	20 - 30 V d.c., reverse polarity protection
voltage ripple	± 10 %
no-load current consumption	≤ 50 mA
type of connection	2 m PUR cable, 7 x 0.14 mm²
transmitter cable	at the receiver: 1.2 m PUR cable, at the transmitter: 1 m PUR cable with M8 initiator plug

dbk+5/3BEE/M18 E+S

outputs	
output 1	double sheet output npn: I_{max} = 200 mA (-U_B+2V) NOC/NCC adjustable, short-circuit-proof
output 2	missing sheet output npn: I_{max} = 200 mA (-U_B+2V) NOC/NCC adjustable, short-circuit-proof
response time	< 500 µs im Trigger-Mode, 5,5 ms im Free-Run-Mode
delay prior to availability	< 750 ms

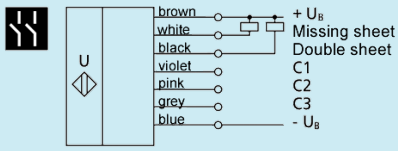
inputs	
description	< -U_B+18 V: logic 1; > -U_B+13 V or control input open: logic 0
input 1	control input
input 2	control input
input 3	control input

housing	
transmitter/receiver spacing	30 - 70 mm; optimal: 50 mm ± 3 mm
permissible angular deviation	± 45° from the perpendicular to the sheet
material	brass sleeve, nickel-plated, plastic parts, PBT, PA
ultrasonic transducer	polyurethane foam, epoxy resin with glass contents
max. tightening torque of nuts	15 Nm
class of protection to EN 60529	IP 65
operating temperature	+5°C to +60°C
storage temperature	-40°C to +85°C
weight	160 g
further versions	single transmitter/receiver
further versions	dbk+5/Sender/M18/K1 dbk+5/Empf/3BEE/M18

technical features/characteristics	
controls	control input
scope for settings	Teach-in LCA-2 with LinkCopy or LinkControl software
indicators	1 x Duo-LED; green: working / red: double sheet / flashing red: missing sheet
particularities	distance between transmitter and receiver can be selected cable connection

dbk+5/3BEE/M18 E+S

pin assignment

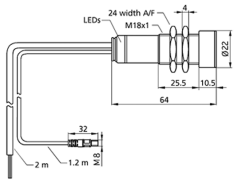


order no.	**dbk+5/3BEE/M18 E+S**

The content of this document is subject to technical changes. Specifications in this document are presented in a descriptive way only. They do not warrant any product features.

dbk+5/Empf/3BEE/M18

scale drawing



detection zone

2 x pnp

working range	papers with weights of 100 - 2,000 g/m², plastic sheets and films up to 5 mm thick*, self-adhesive films, sheet metals up to 2 mm thick*, corrugated card, wafers, PCBs (*: material-dependent)
design	cylindrical M18
operating mode	double sheet control
particularities	receiver for ultrasonic double sheet control distance between transmitter and receiver can be selected cable connection

ultrasonic-specific

means of measurement	pulse operation with amplitude evaluation
transducer frequency	200 kHz
blind zone	7 mm in front of transmitter and receiver

electrical data

operating voltage U_B	20 - 30 V d.c., reverse polarity protection
voltage ripple	± 10 %
no-load current consumption	≤ 50 mA
type of connection	2 m PUR cable, 7 x 0.14 mm²
transmitter cable	1.2 m PUR cable with M8 initiator plug

dbk+5/Empf/3BEE/M18

outputs	
output 1	double sheet output npn: I_{max} = 200 mA (-U_B+2V) NOC/NCC adjustable, short-circuit-proof
output 2	missing sheet output npn: I_{max} = 200 mA (-U_B+2V) NOC/NCC adjustable, short-circuit-proof
response time	< 500 µs im Trigger-Mode, 5,5 ms im Free-Run-Mode
delay prior to availability	< 750 ms

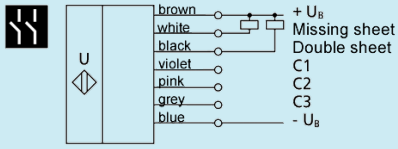
inputs	
description	< -U_B+18 V: logic 1; > -U_B+13 V or control input open: logic 0
input 1	control input
input 2	control input
input 3	control input

housing	
transmitter/receiver spacing	30 - 70 mm; optimal: 50 mm ± 3 mm
permissible angular deviation	± 45° from the perpendicular to the sheet
material	brass sleeve, nickel-plated, plastic parts, PBT, PA
ultrasonic transducer	polyurethane foam, epoxy resin with glass contents
max. tightening torque of nuts	15 Nm
class of protection to EN 60529	IP 65
operating temperature	+5°C to +60°C
storage temperature	-40°C to +85°C

technical features/characteristics	
controls	control input
scope for settings	Teach-in LCA-2 with LinkCopy or LinkControl software
indicators	1 x Duo-LED; green: working / red: double sheet / flashing red: missing sheet
particularities	receiver for ultrasonic double sheet control distance between transmitter and receiver can be selected cable connection

dbk+5/Empf/3BEE/M18

pin assignment

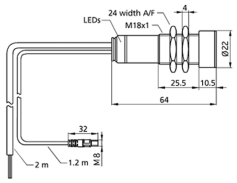


order no.	**dbk+5/Empf/3BEE/M18**

The content of this document is subject to technical changes. Specifications in this document are presented in a descriptive way only. They do not warrant any product features.

dbk+5/Empf/3CDD/M18/ K7K2

scale drawing



detection zone

2 x pnp

working range	papers with weights of 20 - 2,000 g/m², Washi, metal-laminated sheets and films up to 0.4 mm thick, self-adhesive films, sheet metals up to 0.3 mm thick, fine corrugated card, wafers, PCBs
design	cylindrical M18
operating mode	double sheet control
particularities	receiver für ultrasonic-double sheet control distance between transmitter and receiver can be selected long connection cable

ultrasonic-specific

means of measurement	pulse operation with amplitude evaluation
transducer frequency	400 kHz
blind zone	7 mm in front of transmitter and receiver

electrical data

operating voltage U_B	20 - 30 V d.c., reverse polarity protection
voltage ripple	± 10 %
no-load current consumption	≤ 50 mA
type of connection	2 m PUR cable, 7 x 0.14 mm²
transmitter cable	2.3 m PUR cable with M8 initiator plug

dbk+5/Empf/3CDD/M18/ K7K2

outputs	
output 1	double sheet output pnp: I_{max} = 200 mA (U_B-2V) NOC/NCC adjustable, short-circuit-proof
output 2	missing sheet output pnp: I_{max} = 200 mA (U_B-2V) NOC/NCC adjustable, short-circuit-proof
response time	< 500 µs in trigger mode, 2.5 ms in free-run mode

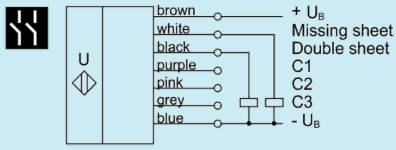
inputs	
description	< -U_B+18 V: logic 1; > -U_B+13 V or control input open: logic 0
input 1	control input
input 2	control input
input 3	control input

housing	
transmitter/receiver spacing	20 - 60 mm; optimal: 40 mm ± 3 mm
permissible angular deviation	± 45° from the perpendicular to the sheet
material	brass sleeve, nickel-plated, plastic parts, PBT, PA
ultrasonic transducer	polyurethane foam, epoxy resin with glass contents
max. tightening torque of nuts	15 Nm
class of protection to EN 60529	IP 65
operating temperature	+5°C to +60°C
storage temperature	-40°C to +85°C
weight	100 g
further versions	90°-Winkelkopf ausgelagerter Sender/Empfänger

technical features/characteristics	
controls	control input
scope for settings	Teach-in LCA-2 with LinkCopy or LinkControl software
indicators	1 x Duo-LED; green: working / red: double sheet / flashing red: missing sheet
particularities	receiver für ultrasonic-double sheet control distance between transmitter and receiver can be selected long connection cable

dbk+5/Empf/3CDD/M18/ K7K2

pin assignment



order no.	**dbk+5/Empf/3CDD/M18/ K7K2**

The content of this document is subject to technical changes. Specifications in this document are presented in a descriptive way only. They do not warrant any product features.