Model Number

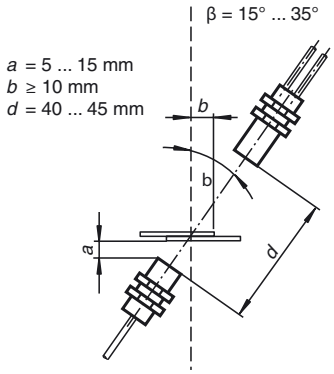
UDC-18GM50-400-3E3-Y234802

Features

- **Ultrasonic system for reliable detection of no, one, or two overlapping sheet materials, preferably papers**
- **Short version**
- **No TEACH-IN required**
- **Function indicators visible from all directions**
- **Insensitive to printing, colors, and shining surfaces**
- **Material weight from 10 g/m² up to over 2000 g/m²**
- **Very wide material spectrum, finest papers up to thin sheet metals as well as plastic- and metal foils**
- **Quick response time**

Diagrams

Mounting/Adjustment

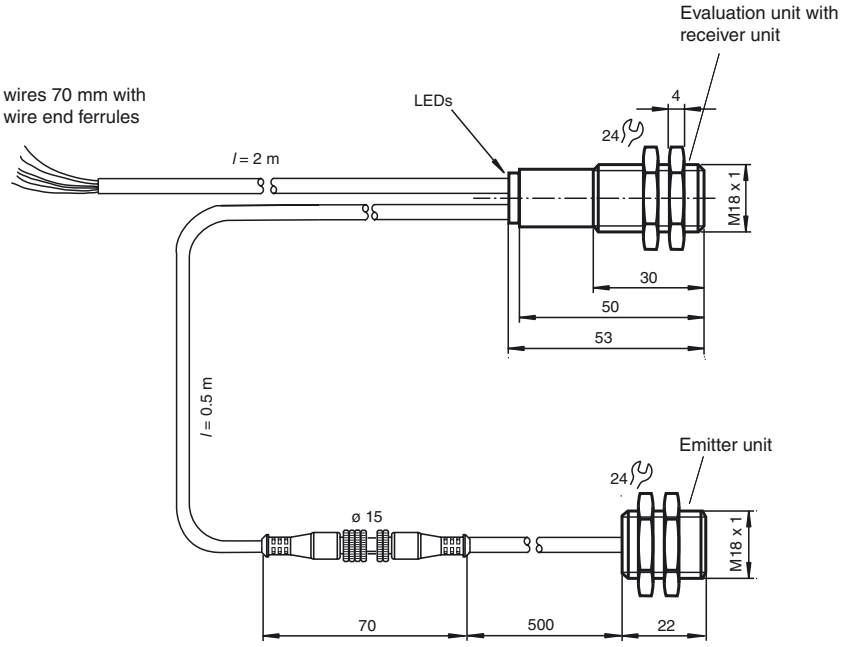


Technical data

General specifications	
Sensing range	20 ... 60 mm , optimal distance: 45 mm
Transducer frequency	395 kHz
Indicators/operating means	
LED green	indication: single sheet detected
LED yellow	Indication: No sheet detected (Air)
LED red	indication: double sheet detected
Electrical specifications	
Operating voltage U_B	18 ... 30 V DC , ripple 10 %$_{SS}$
No-load supply current I_0	< 50 mA
Time delay before availability t_v	< 500 ms
Input	
Input type	Function input 0-level: -U_B ... -U_B + 1V 1-level: +U_B - 1 V ... +U_B
Pulse length	≥ 100 ms
Impedance	≥ 4 kΩ
Output	
Output type	3 Switch outputs PNP, normally-closed
Rated operational current I_e	3 x 100 mA , short-circuit/overload protected
Voltage drop U_d	≤ 3 V
Switch-on delay t_{on}	approx. 1.5 ms
Switch-off delay t_{off}	approx. 1.5 ms
Ambient conditions	
Ambient temperature	0 ... 60 °C (32 ... 140 °F)
Storage temperature	-40 ... 85 °C (-40 ... 185 °F)
Mechanical specifications	
Connection type	cable PVC , 2 m
Core cross-section	0.14 mm²
Protection degree	IP67
Material	
Housing	nickel plated brass; plastic components: PBT
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Mass	135 g
Compliance with standards and directives	
Standard conformity	
Standards	EN 60947-5-2:2007 IEC 60947-5-2:2007

Approvals and certificates	
UL approval	cULus Listed, General Purpose, Class 2 Power Source
CSA approval	cCSAus Listed, General Purpose, Class 2 Power Source

Dimensions



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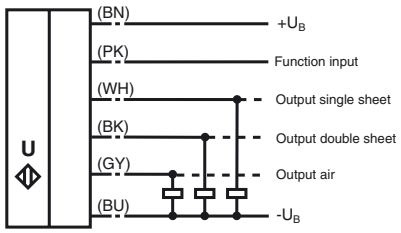
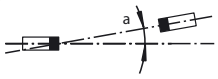
Electrical Connection

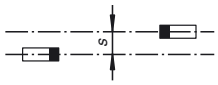
Standard symbol/Connection:
Double sheet control



Angular misalignment
a < +/- 1°



Sensor offset
s < +/- 1 mm



Accessories

UDB-Cable-2M

MH-UDB01
Mounting bracket for double sheet monitor

UDB-Cable-1M

Description of sensor functions

The ultrasonic double sheet detector is used for double sheet detection in all situations in which the automatic distinction between double and single sheets is required in order to protect machines or avoid waste production. The double-sheet detector is based on the ultrasonic thru-beam principle. The following can be detected:

- No sheet, i.e. air
- Single sheet
- Double sheet

A microprocessor system evaluates the signals. The appropriate switch outputs are set as a result of the evaluation.. Changes in ambient conditions such as temperature and humidity are compensated for automatically. The interface electronics is integrated into a compact M18 metal housing together with a sensor head.

Connections

The sensor has 6 connections. The function of the connections is shown in the following table. The function input (PK) is used to select program 1 or 3. During operation, the function input must always be connected to $+U_B$ or $-U_B$ to prevent possible faults or malfunctions.

Color	Connection	Comment
BN	$+U_B$	
WH	Switch output, single sheet	Pulse width corresponding to the event
BK	Switch output, double sheet	Pulse width corresponding to the event
GY	Switch output, air	Pulse width corresponding to the event
PK	$-U_B$ $+U_B$	Selection of program 1 Selection of program 3
BU	-UB	

Normal mode

Display:

LED yellow:	Air detection
LED green:	Single sheet detection
LED red:	Double sheet detection

Switch outputs:
The switch outputs are only active in normal mode!

White:	WH	Single sheet output
Black:	BK	Double sheet output
Gray:	GY	Air output

Parameterization

The sensor has 2 programs for different application areas. This allows the detection of a wide range of materials. The user can select the program most suited to the relevant application.

Programs

Program number	Notes*	Range of materials

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1	Default setting, standard paper	20 - 1200 g/m^2
3	Thin paper	20 – 250 g/m^2

Program selection

The function input allows switching between programs 1 and 3 during operation (see **Connections**). The sensor does not have to be turned off when switching between programs.

If a number of double sheet detectors are used in close proximity to each other, mutual interference may occur leading to device malfunction. Mutual interference can be avoided by implementing suitable countermeasures when planning the system.

On installation, care should be taken that the ultrasonic signal cannot pass around the material to be detected due to multiple reflections. This can happen if there are large surfaces present capable of reflecting the sound at right angles to the direction of the sound propagation. This can be the case when unsuitable mounting brackets are used, or may be due to plant components with large surfaces. In the case of reflecting plant components, these must either be clad with sound-absorbing material, or an alternative mounting location found for the sensor.

Notes:

A complete device consists of one ultrasonic transmitter and one evaluation unit with an ultrasonic receiver. The sensor heads are optimally matched to each other and should therefore not be used separately. The plug connector on the transmitter/receiver connection cable is merely provided for ease of installation.

Very light papers (e.g. tissues) and paper with perforations are not always suitable for double sheet detection because of their physical characteristics.

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