Model Number

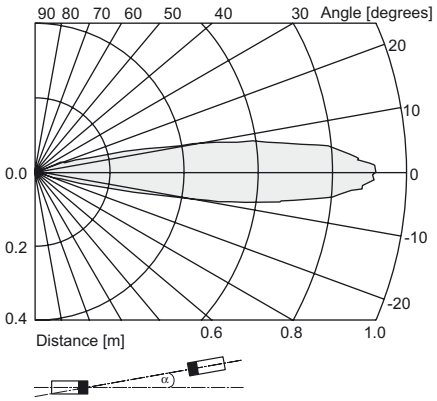
UDBL-18GM35-3E2

Features

- **Ultrasonic system for detection of labels, carrier materials and double sheets.**
- **Weights of paper from 30 g up to cartons weighing over 1200 g can be detected.**
- **It is also possible to detect thin metal and plastic films.**
- **Various materials and thicknesses are programmed in via a TEACH-IN signal.**
- **No automatic switching treshold tracking in the case of slowly changing ambient conditions.**
- **Signal output via short-circuit proof PNP switch outputs.**
- **Very high processing speeds are possible.**

Curves

Characteristic response curves



Technical data

General specifications	
Transducer frequency	180 kHz
Indicators/operating means	
LED green	indication: carrier material detected
LED yellow	indication: label detected
LED red	indication: double sheet detected
Electrical specifications	
Operating voltage U_B	20 ... 30 V DC , ripple 10 $\%_{SS}$
No-load supply current I_0	< 80 mA
Time delay before availability t_v	≥5 minutes
Input	
Input type	1 pulse input for Teach-In
Pulse length	≥ 100 ms
Impedance	≥ 10 kOhm
Voltage	12 ... 30 V
Output	
Output type	3 switch outputs pnp, NO
Rated operational current I_e	3 x 200 mA
Voltage drop U_d	≤ 2 V
Switch-on delay t_{on}	≤ 1 ms
Switch-off delay t_{off}	≤ 1 ms
Ambient conditions	
Ambient temperature	0 ... 60 °C (273 ... 333 K)
Storage temperature	-40 ... 70 °C (233 ... 343 K)
Mechanical specifications	
Protection degree	IP65
Connection	emitter: V1-W connector with 2.5 m cable receiver: 2.5 m fixed cable (not disconnectable) S1,S2: 2 connectors V1-W, M12x1 (included with delivery)
Material	
Housing	Makrolon/nickel-plated brass
Mass	370 g
Compliance with standards and directives	
Standard conformity	
Standards	EN 60947-5-2:2007 IEC 60947-5-2:2007
Approvals and certificates	
UL approval	C-UL listed: 57M3, IND CONT. EQ., "Powered by Class 2 Power Source"

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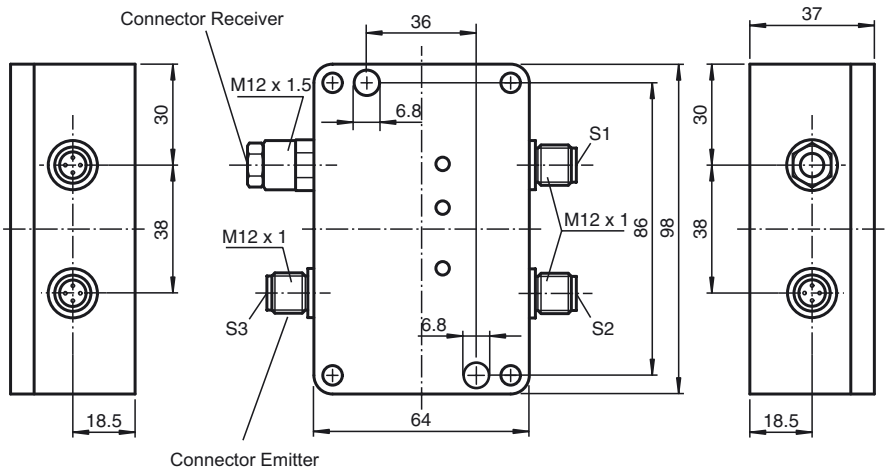
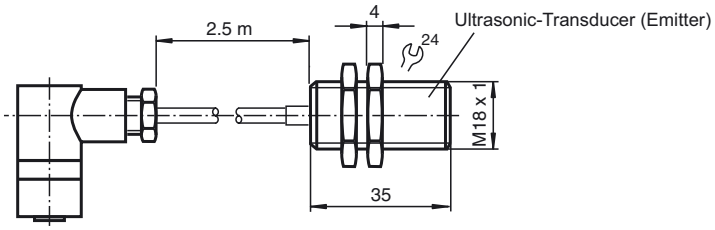
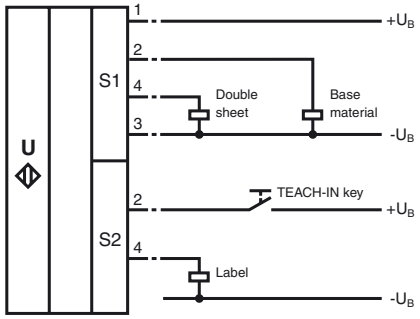
Dimensions





Electrical Connection

Standard symbol/Connection:
Double sheet control



Pinout

Connector V1

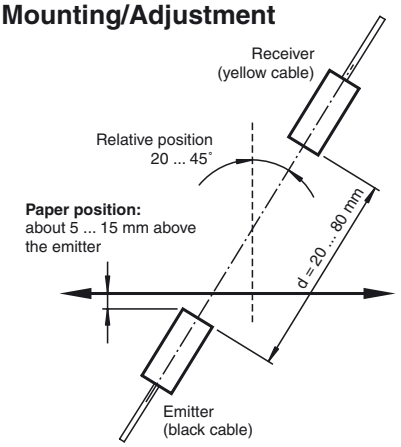
Description of the sensor functions

Ultrasonic double-sheet monitoring to detect labels is used in all situations in which an automatic distinction must be made between labels and carrier material as well as double sheets in order to protect machines or avoid waste production. The double-sheet monitor is based on the ultrasonic through-beam principle. The following can be detected:

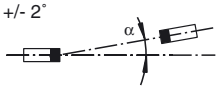
- Base material
- Label
- Double sheet

Additional Information

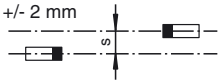
Mounting/Adjustment



Angular alignment
$\alpha < +/- 2^{\circ}$



Sensor offset
$s < +/- 2$ mm



Accessories

MH-UDB01
Mounting aid

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A microprocessor system evaluates the signals. The appropriate switch outputs are set as a result of the evaluation. The evaluation electronics are installed in a cuboid plastic housing separate from the sensor heads.

Measuring system

A complete system consists of an ultrasonic emitter, an ultrasonic receiver and an evaluation unit. These units have been optimally tuned to one another at the factory and may not be used separately.

Alignment

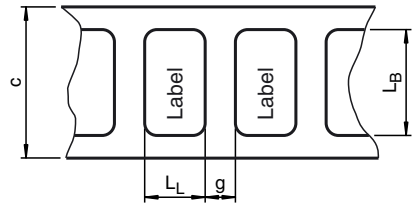
When adjusting the emitter and receiver, take care to align them as precisely as possible.

Distance of the sensor heads:	d = 20 mm ... 80 mm
Angular tolerance:	α < +/- 2°
Maximum offset:	s < +/- 2 mm

To ensure their correct function, the sensor heads must be aligned at an angle of 20° ... 45° from vertical onto the paper surface. The paper is guided over the emitter at a distanceteach-in of 5 mm ... 15 mm. The emitter is installed below in order to prevent dust deposits. Install the sensor heads using the included plastic nuts. The sound cone must be completely covered by the paper. This means that the sensor heads must be installed above the sheet of paper and at least 10 mm away from the side edge of the paper.

Maximum feed speed of the sheet (approximate value)

Depends on the label and gap width as well as the materials in question.
Approximate value 10 m/s while maintaining the required minimum sizes.



c ≥ 35 mm
g ≥ 2 mm
L_B ≥ 15 mm
L_L ≥ 15 mm

Teach-In

Before starting a valid Teach-In a warm up period of approx. 5 min must be maintained. After the warm up period and a short-time reset of the operating voltage a valid value is automatically taught in, provided that a carrier material and label is between emitter and receiver.

Teach-In for new type of sheet

If a new type of labels is used, the Teach-In procedure must be carried out. To do this, a label with carrier material is put between emitter and receiver and the teach-in is performed with reference to the label. After having applied the Teach-In-signal the value is adopted automatically.

Caution!

The paper sheets may not touch the sensor heads during operation. Depending on physical conditions, reflections on the edge of a single sheet may result in double-sheet output. This is not an error, and can be masked out in the higher-level control system.

Sensor systems for ultrasonic double-sheet monitoring can also be delivered with a customised time response for optimal adaptation to specific applications.

Notes:

When installing, care has to be taken that the ultrasonic signal cannot pass around the material that is to be detected, due to multiple reflections. This can happen if large surfaces are present at right angles to the direction of sound propagation. This can be the case if unsuitable mounting brackets are used, or if assemblies with large surface are part of the machine. In the latter case such machine parts should be covered by sound absorbing material or a different location for the installation should be chosen.

In cases where more than one system is needed per machine, acoustic isolation should be provided to avoid cross-talk. This can be provided, for example, by appropriately positioning isolation panels.

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