



Model Number

UDC-18GM50-255-3E0-Y206523

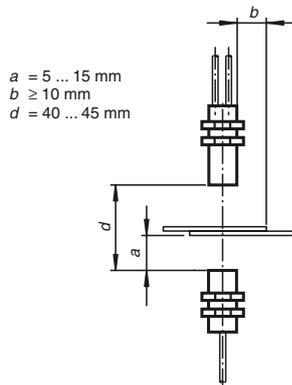
Features

- **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**
- **Perpendicular or inclined sensor mounting relative to the sheet plane possible**
- **Very short response time**
- **Programmable**

Diagrams

Mounting/Adjustment

Recommended distances



a = 5 ... 15 mm
 b ≥ 10 mm
 d = 40 ... 45 mm

Technical data

General specifications

Sensing range	20 ... 60 mm , optimal distance: 45 mm
Transducer frequency	255 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 NPN, NO
Rated operating 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
Pulse extension	min. 120 ms programmable

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 mm ²
Degree of protection	IP67
Material	
Housing	nickel plated brass; plastic components: PBT
Transducer	epoxy resin/hollow glass sphere mixture; polyurethane foam
Mass	135 g

General information

Supplementary information	Switch settings of the external programming adapter: "output load": pull-up "output logic": inv
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Compliance with standards and directives

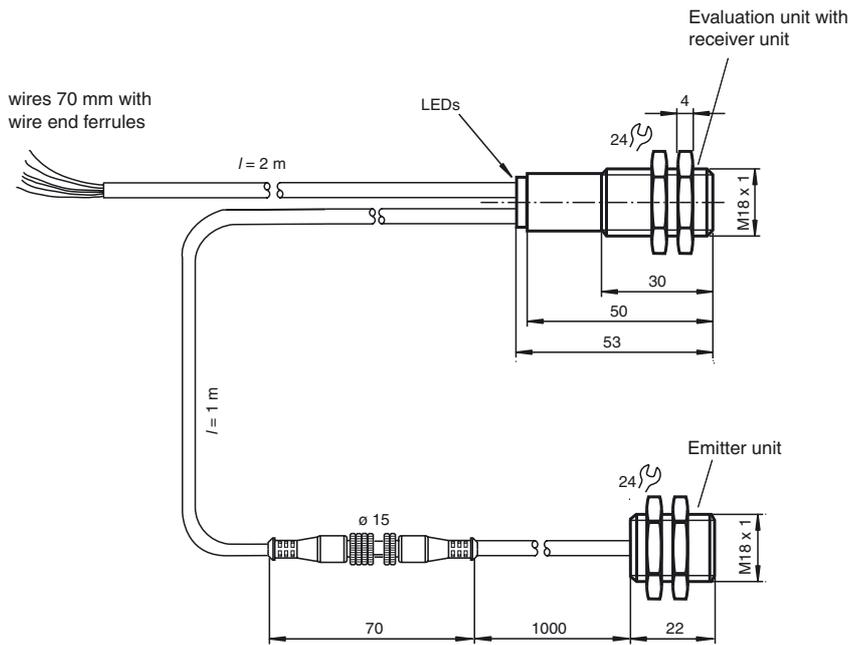
Standard conformity	
Standards	EN 60947-5-2:2007+A1:2012 IEC 60947-5-2:2007 + A1:2012

Approvals and certificates

UL approval	cULus Listed, General Purpose, Class 2 Power Source
CSA approval	cCSAus Listed, General Purpose, Class 2 Power Source
CCC approval	CCC approval / marking not required for products rated ≤36 V

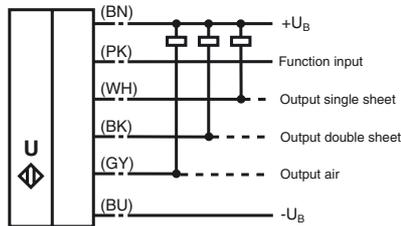
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Dimensions



Electrical Connection

Standard symbol/Connection:
Double sheet control



Accessories

UC-PROG1-USB

Programming adapter

MH-UDB01

Mounting bracket for double sheet monitor

UDB-Cable-2M

UDB-Cable-1M

V15S-G-0,3M-PUR-WAGO

Male cordset, M12, 5-pin, PUR cable with WAGO terminals

Ultraschall-Sensoren DTM

DTM devices for communication with cube style and UMC... sensors

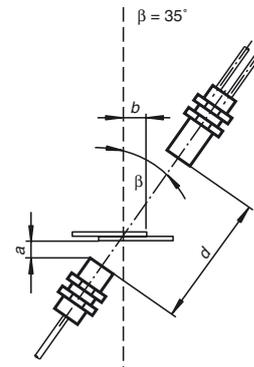
PACTware 4.1

FDT Framework

Additional Information

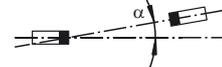
Mounting/Adjustment

(for very thick papers)



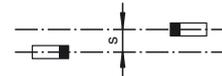
Angular misalignment

$\alpha < +/- 1^\circ$



Sensor offset

$s < +/- 1\text{ mm}$



Description of sensor functions

The ultrasonic double-sheet sensor for the detection of double sheets is used in any situation, where it is essential that a means be provided for the automatic distinction between double and single sheets, in order to protect machinery and/or to avoid waste. The double-sheet sensor is based on the ultrasonic single pass principle. The following situations can be detected:

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

The evaluation of the signal is carried out with a microprocessor system. As a consequence of the evaluation the corresponding switch outputs are set. Changing ambient conditions, such as temperature and humidity, are automatically compensated. The evaluation electronics system is built into an evaluation unit, together with a sensor head, and contained in a compact M18 metal housing.

Interface

The sensor has 6 connections. The function of the connections is shown in the following table. The function input (PK) is used to parameterize the sensor. (see Output pulse expansion, alignment aids and program select). During operation, the function input must always be permanently connected to +U_B or -U_B to prevent possible faults or malfunctions.

Color	Interface	Note
BN	+U _B	
WH	Switching output, single sheet	Pulse width corresponding to the event
BK	Switching output, double sheet	Pulse width corresponding to the event
GY	Switching output air	Pulse width corresponding to the event
PK	-U _B /+U _B	Function input (PK) for parameterization/pulse extension.
BU	-UB	

Normal mode

The sensor operates in normal mode if the function input (PK) is set to -U_B or +U_B when the supply voltage is applied (power on) as specified in the output pulse expansion table (see below).

Display:

- Yellow LED: Air detection
- Green LED: Single sheet detection
- Red LED: Double sheet detection

Switching outputs:

The switching outputs are only active in normal mode!

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

Output pulse expansion

A minimum pulse width of 120 ms can be selected for all the output pulses of the three switching outputs by connecting the function input (PK) to +U_B.

Interface (PK)	Switching behavior (after power on)
-U _B	No output pulse expansion of switching outputs
+U _B	Output pulse expansion of all switching outputs to a minimum of 120 ms

Caution!

This can lead to a situation where more than one switching output is switched through!

Programs

The sensor has 4 programs for different application areas which allow the detection of a wide range of materials. The user can select the program most suited to the relevant application.

The default setting program 1 is selected so that the settings of the majority of applications do not need modifying.

Program numbers	Notes*	Material spectrum
1	Default setting standard papers	100 - 2000 g/m ²
2	Thick papers, cardboard packaging, fine corrugated cardboard (DIN 55 468-1) and thin metal sheeting**	> 300 g/m ²
3	Thin papers	50 – 350 g/m ²
4	Extra fine papers	< 100 g/m ²

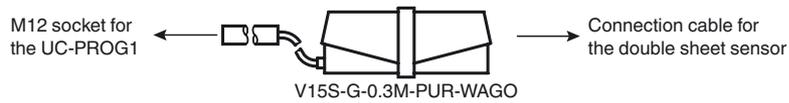
*) Measurements were taken under the following conditions: d = 45 mm, a = 10 mm, β = 0°

**) Measurements were taken under the following conditions: d = 45 mm, a = 10 mm, β = 35°

Adjustment options using the function input

The diagram below shows the adjustment options using the function input.

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Connect the sensor to the terminal adapter according to the table below.

Terminal adapter wire color	Sensor cable wire color
Brown	Brown
Blue	Blue
Black	Black
Gray	Pink

The sensor features a time lock. If no communication request occurs, the time lock blocks parameterization of the sensor 30 seconds after the supply voltage is connected. Start PACTware before switching on the sensor so that the communication request can be made in time.

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