

Double sheet sensor

UDC-18GS-3EP1-IO-0,2M-V19

- Ultrasonic system for reliable detection of no, one, or two overlapping sheet materials
 - Insensitive to printing, colors, and shining surfaces
- 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
- Integrated alignment aid
- IO-Link Interface for process data, parameterization and diagnosis
- Synchronization options
- No TEACH-IN required
- Short version

CE 🖤 🖌 🚱 IO-Link

Function

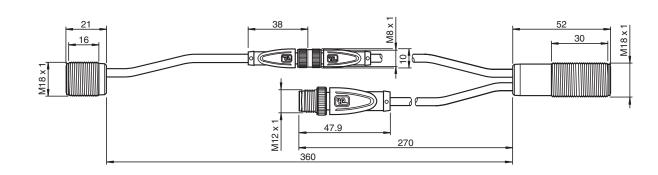
The ultrasonic double-sheet detector is used wherever automatic differentiation between single and double sheets is necessary to protect machines or prevent rejects. The double sheet detection is based on the ultrasonic thru-beam principle.

The following situations can be detected: • No sheet, i. e. air

- Single sheet
- Double sheet or multiple sheets (a statement on the number of sheets is not possible here)

The signals are evaluated by a microprocessor system. As a result of the evaluation, corresponding switching outputs are set and the result of the evaluation is communicated via the IO-Link interface.

Dimensions



Technical Data

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General specifications	
Sensing range	20 60 mm , optimal distance: 45 mm
Transducer frequency	approx. 255 kHz
Memory	
Non-volatile memory	EEPROM
Write cycles	300000
Indicators/operating means	

Refer to "General Notes Relating to Pepperl+Fuchs Product Information"

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Technical Data LED geen indication: single sheet detected frame			
Isabing (I H2) - standby mode LED yellow indication: no head (I H2) - UL/ink mode ILED red indication: no head teleticted Operating voltage Up Operating voltage Up Operating voltage Up Oblications So Om So Time dealby before availability L So Om So Time dealby before availability L So Om So Interface ID-Link ID-Link Operating voltage ID ID Interface bype ID ID Optics profile IN ID Outcin trevision 1.1 Device profile IM dealfield and Dagness-IBD Process data Imput: 16 Bit ID Outcin trevision 3.1 Device ID 3148200 (0x300A02) Timasfer rate COM2 (34 kBit/s) Min. cycle time 2.8 ms SIO mode support yes Compatibile matering row type Class A (use adapter cable listed in accesprise) Outcint type SIO Mas <t< th=""><th>Technical Data</th><th></th><th></th></t<>	Technical Data		
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Retrict a generation in the second se	LED yellow		indication: no sheet detected (Air)
Operating voltageUp b18 30 V DC , tipple 10 %20No-load supply currentLp \leq 40 mAPower consumptionPp \leq 550 mWTime datay before availabilityLp \leq 330 msInterfaceInterfaceInterface supplement value 6 Bit - seatching signal as Dit - seatching signal - seatching signal as Dit - seatching signal as	LED red		
Operating voltageUp b18 30 V DC , tipple 10 %20No-load supply currentLp \leq 40 mAPower consumptionPp \leq 550 mWTime datay before availabilityLp \leq 330 msInterfaceInterfaceInterface supplement value 6 Bit - seatching signal as Dit - seatching signal - seatching signal as Dit - seatching signal as	Electrical specifications		
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Power consumption Po ≤ 550 mW Time delay before availability t, ≤ 300 ms Interface Interface Interface Interface type IO-Link IO-Link IO-Link revision 1.1 IO-Device profile Identification and Diagnosis - I&D Process data Input: 16 Bit - researcement value B bit - elected Inteshold set 2 Bit - researcement value B bit - elected Inteshold set 2 Bit - researcement value B bit - elected Inteshold set 2 Bit - E	No-load supply current	_	
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IO-Link revision 1.1 Device profile Identification and Diagnosis - I&D Process data Input: 16 Bit - measurement value 8 Bit - selected threshold set 2 Bit - selected threshold set 0.58 Bit - disable transducer 1 Bit Vendor ID 1 (0x0001) Device ID 314280 (0x300A02) Transfer rate COM2 (88 4 kBit/s) Min. cycle time 2.8 ms SIO mode support ys Compatible master port type Class A (use adaptor cable listed in accesories) Input/Output 1 Experimentation connection, bidirectional Designation SYNC Input/butpte 1 synchronization connection, bidirectional 0 Level 0 1 V 1 Level 2.5 V Ug Input impedance > 22 KD Output rated operating current current source < 2.5 mA			
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Pulse length $0.4 \dots 3$ ms with external control, low activeSynchronization frequencyCommon mode operation ≤ 230 HzMultiplex operation ≤ 230 Hz /n, n = number of sensors , n ≤ 10 Input/Output 2DesignationIN2/FEEDBACKInput/output typeinput or output programmable via IO-Link : input for selection of a threshold set (factory default) output as the deback outputInput/output typedigital inputSignal $0-level: 0 \dots + 1V$ $1-level: +U_B - 1 V \dots +U_B$ Input impedance ≥ 60 k Ω Pulse length ≥ 100 msOutput typePNPRated operating current I_e Voltage drop $< 3V$ Fusingreverse polarity protected , overload and short-circuit protectedInputDesignationIN1/TEACHInput type 0 -level: $0 \dots + 1V$	Input impedance		> 22 kΩ
Synchronization frequencyImage: Image:	Output rated operating current		current source < 2.5 mA
Common mode operation $\leq 230 \text{ Hz}$ Multiplex operation $\leq 230 \text{ Hz}$, n = number of sensors , n ≤ 10 Input/Output 2DesignationIN2/FEEDBACKInput/output typeinput or output programmable via IO-Link : input for selection of a threshold set (factory default) output as feedback outputInput typedigital inputSignal 0 -level: $0 \dots + 1V$ 1 -level: $+U_B - 1 V \dots + U_B$ Input impedance $\geq 60 \text{ k}\Omega$ Pulse length $\geq 100 \text{ ms}$ Output typePNPRated operating current I_e V_e seringreverse polarity protected , overload and short-circuit protectedInputUnit typeDesignationIN1/TEACHInput type 0 -level: $0 \dots + 1V$	Pulse length		0.4 3 ms with external control, low active
Multiplex operation ≤ 230 Hz /n, n = number of sensors , n ≤ 10 Input/Output 2 IN2/FEEDBACK Designation IN2/FEEDBACK Input/output type input or output programmable via IO-Link : input for selection of a threshold set (factory default) output as feedback output Input type digital input Signal 0-level: 0 + 1V 1-level: +U _B - 1 V +U _B Input impedance ≥ 60 kΩ Pulse length ≥ 100 ms Output type 8 mA Voltage drop < 3 V	Synchronization frequency		
Input/Output 2 Designation IN2/FEEDBACK Input/output type input or output programmable via IO-Link : input for selection of a threshold set (factory default) output as feedback output Input type digital input Signal 0-level: 0 + 1V 1-level: +U _B - 1 V +U _B Input impedance ≥ 60 kΩ Pulse length ≥ 100 ms Output type PNP Rated operating current I _e Voltage drop < 3 V	Common mode operation		≤ 230 Hz
Designation IN2/FEEDBACK Input/output type input or output programmable via IO-Link : input for selection of a threshold set (factory default) output as feedback output Input type digital input Signal 0-level: 0 + 1V 1-level: + U _B - 1 V + U _B Input impedance ≥ 60 kΩ Pulse length ≥ 100 ms Output type PNP Rated operating current I _e Voltage drop < 3 V	Multiplex operation		\leq 230 Hz /n, n = number of sensors , n \leq 10
Input/output type input or output programmable via IO-Link : Input type digital input Signal 0-level: 0 + 1V Input impedance ≥ 60 kΩ Pulse length ≥ 100 ms Output type PNP Rated operating current Ie 8 mA < 3 V	Input/Output 2		
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Signal $0-level: 0 \dots + 1V$ $1-level: +U_B - 1 V \dots +U_B$ Input impedance $\geq 60 k\Omega$ Pulse length $\geq 100 ms$ Output typePNPRated operating current I_e Nated operating current I_e Voltage drop $< 3 V$ Fusingreverse polarity protected , overload and short-circuit protectedInputDesignationIN1/TEACHInput type $0-level: 0 \dots + 1V$	Input/output type		input for selection of a threshold set (factory default)
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Output type PNP Rated operating current Ie 8 mA Voltage drop < 3 V			≥ 60 kΩ
Rated operating current Ie 8 mA Voltage drop < 3 V	Pulse length		
Voltage drop < 3 V			PNP
Fusing reverse polarity protected , overload and short-circuit protected Input IN1/TEACH Input type 0-level: 0 + 1V		l _e	
Input IN1/TEACH Input type 0-level: 0 + 1V	Voltage drop		< 3 V
Designation IN1/TEACH Input type 0-level: 0 + 1V	Fusing		reverse polarity protected , overload and short-circuit protected
Input type 0-level: 0 + 1V			
	Designation		IN1/TEACH
	Input type		

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Technical Data		
Pulse length		≥ 100 ms
Impedance		≥ 60 kΩ
Output		
Designation		OUT 1 3
Number		3
Output function		OUT 1: single sheet detected OUT 2: double sheet detected OUT 3: no sheet detected (air)
Output type		Push-pull (4 in 1) output, NC contact (programmable)
Rated operating current	l _e	100 mA per output
Voltage drop	U _d	≤3V
Switch-on delay	t _{on}	15 ms (programmable)
Switch-off delay	t _{off}	15 ms (programmable)
Pulse extension		can be activated (100 ms or IO-Link cycle time)
Fusing		reverse polarity protected, overload and short-circuit resistant
Compliance with standards and directives		
Standard conformity		
Standards		EN IEC 60947-5-2:2020 IEC 60947-5-2:2019 IEC 61131-9 / IO-Link V1.1.3
Approvals and certificates		
UL approval		cULus Listed, General Purpose, Class 2 Power Source
CCC approval		CCC approval / marking not required for products rated ≤36 V
Ambient conditions		
Ambient temperature		0 60 °C (32 140 °F)
Storage temperature		-25 70 °C (-13 158 °F)
Mechanical specifications		
Connection type		fixed cable with plug
Housing length		
Ultrasonic transmitter		21 mm
Ultrasonic receiver		52 mm
Housing diameter		
Ultrasonic transmitter		18 mm
Ultrasonic receiver		18 mm
Degree of protection		IP65
Material		
Housing		Stainless steel 1.4305/AISI 303, polyamide plastic parts
Transducer		epoxy resin/hollow glass sphere mixture; polyurethane foam
Connector		
Threading		M12 x 1
Number of pins		8
Cable		
Cable diameter		4.3 mm
Bending radius		5 x diameter , fixed
Material		PUR
Color		black
Length	L	approx. 200 mm
Mass		75 g
Tightening torque, fastening screws		max. 20 Nm

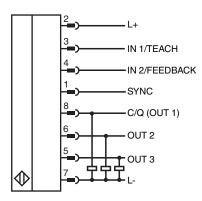
Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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Double sheet sensor

UDC-18GS-3EP1-IO-0,2M-V19

Connection



Connection Assignment



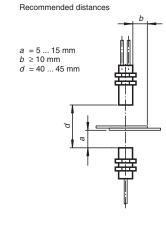
Installation

Hinweis

Only use the cables specified by Pepperl+Fuchs for this purpose to extend the connecting cable between the transmitter and receiver of the ultrasonic double sheet detectors. The use of other cables will result in impairment of the sensor function or even loss of function.

Mounting

Mounting/Adjustment



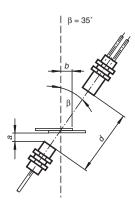
Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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Mounting

Mounting/Adjustment

(for very thick papers)



Angular misalignment



Commissioning

Operating Modes

The measured object is a material inserted between the emitter and receiver. The sensor measures the damping of the emitted ultrasonic signal

The residual amplitude of the ultrasonic signal arriving at the receiver is evaluated in relation to the set threshold values and assigned to the corresponding state (="air", "single sheet" or "double sheet"). The detected state is reported back via the switching outputs of the sensor and via the IO-Link process data. In the IO-Link process data, the measured amplitude is also made available as an analog value. Depending on the application, the sensor can be operated in the following ways:

- 1. By selecting one of the 3 implemented threshold sets, each covering a very wide range of materials. The respective thresholds are preset but adjustable.
- 2. By teaching in a specific material or a specific material constellation for multi-layer materials.
- 3. In permanent IO-Link operation, a completely separate evaluation of the amplitude values measured by the sensor can be performed in the downstream, user-side controller in addition or as an alternative to the two aforementioned options.

Further Documentation

For detailed information on mounting, alignment and commissioning you may refer to the commissioning instruction of the sensor.

The sensor manual is also available as detailed overall documentation.

You can access the documents mentioned via the product detail page at www.pepperl-fuchs.com.

Accessories

<i>S</i> 1	V19-G-BK2M-PUR-U	Female cordset single-ended M12 straight A-coded, 8-pin, PUR cable black, UL approved
	IO-Link-Master02-USB	IO-Link master, supply via USB port or separate power supply, LED indicators, M12 plug for sensor connection
\geq	V19-G-BK0,6M-PUR-U- V1-G-YIOL	Cordset for IO-Link M12 socket straight A-coded 8-pin to M12 plug straight A-coded 4-pin, PUR cable black, UL approved, drag chain suitable
NO	MH-UDB01	Mounting bracket for double sheet monitor
00	AA-UDB-18GM-01	alignment aid for double sheet sensor
Q	V31-GM-1M-PUR- V31-GM-UDB/UDC	1 m cable for extension between emitter and receiver for UDB-18GS, UDC-18GS und UDC(M)-30GS



Accessories



V31-GM-2M-PUR-V31-GM-UDB/UDC 2 m cable for extensionn between emitter and receiver for UDB-18GS-..., UDC-18GS-... and UDC(M)-30GS-...

Refer to "General Notes Relating to Pepperl+Fuchs Product Information"

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