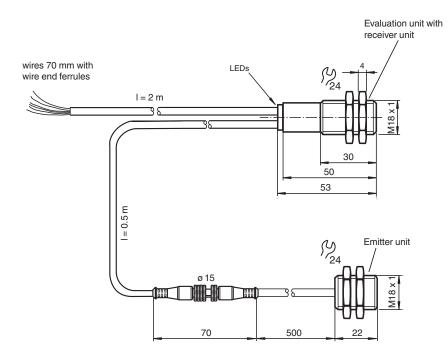


# Splice sensor UGB-18GM50-255-2E1

- Ultrasonic system for splice detection
- Short version
- Insensitive to printing, colors, and shining surfaces
- Very high processing speeds are possible.

### **Dimensions**



# **Technical Data**

	20 60 mm , optimal distance: 45 mm
	255 kHz
	Display: readiness
	Display: splice detected
	indication: no sheet detected (Air)
U <sub>B</sub>	18 30 V DC , ripple 10 % <sub>SS</sub>
I <sub>0</sub>	< 60 mA

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

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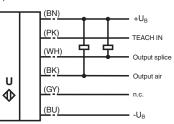
# Splice sensor

# UGB-18GM50-255-2E1

Time delay before availability $t_{v}$ <500 ms	Technical Data		
putTeach-In input input typeTeach-In input input typePulse length $\leq$ 500 msImpedance $\geq$ 500 msImpedance $\geq$ 500 msImpedance $\geq$ 20 witch outputs NPN, NCOutput typeImpedanceOutput typeImpedanceStandard conformityImpedanceStandardsImpedanceOutput typeImpedanceOutput typeImpedanceOutput typeImpedanceOutput typeImpedanceOutput typeImpedanceOutput typeImpedanceOutput typeImpedanceOutput typeImpedance			
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Input type     Impediance     Impediance     Soo ms       Impedance     Soo ms     Soo ms       Impedance     Soo Ms     Soo Ms       Output type     Soo Ms     Soo Ms       Output type     Soo Ms     Soo Ms       Nated operating current     Le     S x100 mA , short-circuit/overload protected       Voltage drop     U, up     Soo Ms       Switch-off delay     Le     S 400 µS       Switch-off delay     Le     S 200 ms       Pulse extension     Impediance     Soo Ms       Switch-off delay     Le     S 120 ms programmable       Pulse extension     Impediance Ms     Soo Ms       Standard conformity     Impediance Ms     Soo Coll parts Soo Mark Soo Mar	, ,	-0	
Impedance     ≥ 10 kΩ       Output type     2 switch outputs NPN, NC       Rated operating current     Ie     2 x 100 mA , short-circuit/overload protected       Voltage drop     Ud     ≤ 3 V       Switch-on delay     ton     ≤ 600 µs       Switch-on delay     ton     ≤ 600 µs       Pulse extension     ≥ 120 ms programmable       Compliance with standards and directives     ≥ 120 ms programmable       Standard conformity     ≥ 120 ms programmable       Compliance with standards and directives     ≥ 120 ms programmable       Standard conformity     ≥ 120 ms programmable       CC approval and certificates     EC 60947-5-2:202       VL approval     CC Capproval / marking not required for products rated ≤36 V       Ambient conditions     CC Capproval / marking not required for products rated ≤36 V       Ambient temperature     060 °C (32140 °F)       Storage temperature     060 °C (42158 °F)       Connection type     060 °C (42158 °F)       Core cross section     014 mm²       Pagree of protection     IP67       Material     IP67 <tr td="">     IP67</tr>			$0$ -level: $-U_{\rm P}$ $= -U_{\rm P} + 1V$
Dutput     Image: Constraint of the second of the	Pulse length		≥ 500 ms
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Rated operating current     I <sub>e</sub> 2 x 100 mA , short-circuit/overload protected       Voltage drop     U <sub>d</sub> ≤ 3 V       Switch-on delay     t <sub>on</sub> ≤ 600 µs       Switch-off delay     t <sub>on</sub> ≤ 600 µs       Pulse extension     > 120 ms programmable       Compliance with standards and directives     > 120 ms programmable       Standard conformity     EN IEC 60947-5-2:2020       Standards     CCC approval       Approvals and certificates     CCC approval       VL approval     CC approval / marking not required for products rated ≤36 V       Approvals conditions     CCC approval / marking not required for products rated ≤36 V       Ambient temperature     0 60 °C (32 140 °F)       Storage temperature     0 60 °C (32 140 °F)       Connection type     cable PVC , 2 m       Connection type     cable PVC , 2 m       Core cross section     0.14 mm²       Housing diameter     IP67       Material     IP       Housing     inkek plated brass; plastic components: PBT	Output		
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witch-on delayt₀n≤ 600 μsSwitch-off delayt₀r≤ 600 μsPulse extension≥ 120 ms programmableCompliance with standards and directivesStandard conformityStandardsEN IEC 60947-5-2:2020 EC 60947-5-2:2019Approvals and certificatesUL approvalCULus Listed, General PurposeCCC approvalCUC approval / marking not required for products rated ≤36 VAmbient conditionsAmbient temperature0 60 °C (32 140 °F)Storage temperature0 60 °C (32 140 °F)Storage temperature0 60 °C (32 140 °F)Connection type0 60 °C (32 140 °F)Connection type0 60 °C (24 158 °F)Mechanical specifications0 40 °C (-40 158 °F)Mousing diameter0 40 °C (-40 158 °F)Housing diameter18 mmHousing diameter1967MaterialIP67MaterialImage and inckel plated brass; plastic components: PBTTransducerinckel plated brass; plastic components: PBT	Rated operating current	le	2 x 100 mA , short-circuit/overload protected
Switch-off delaytoff≤ 600 μsPulse extension> 120 ms programmableCompliance with standards and directivesStandard conformityStandardsStandardsStandardsStandardsStandardsStandardsCompliance with standardsStandards <td>Voltage drop</td> <td><math>U_d</math></td> <td>≤3V</td>	Voltage drop	$U_d$	≤3V
Pulse extension   ≥ 120 ms programmable     Compliance with standards and directives     Standard conformity     Standards   EN IEC 60947-5-2:2020 IEC 60947-5-2:2019     Approvals and certificates   CULus Listed, General Purpose     UL approval   CCC approval / marking not required for products rated ≤36 V     Ambient conditions   CCC approval / marking not required for products rated ≤36 V     Ambient temperature   0 60 °C (32 140 °F)     Storage temperature   0 60 °C (32 140 °F)     Storage temperature   0 60 °C (32 140 °F)     Connection type   Cable PVC , 2 m     Core cross section   0.14 mm²     Housing diameter   18 mm     Degree of protection   IP67     Material   mickel plated brass; plastic components: PBT     Transducer   epoxy resin/hollow glass sphere mixture; polyurethane foam	Switch-on delay	t <sub>on</sub>	≤ 600 µs
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IEC 60947-5-2:2019     Approvals and certificates     UL approval   cULus Listed, General Purpose     CCC approval   CCC approval / marking not required for products rated ≤36 V     Ambient conditions   CCC approval / marking not required for products rated ≤36 V     Ambient temperature   0 60 °C (32 140 °F)     Storage temperature   0 60 °C (40 158 °F)     Mechanical specifications   cable PVC , 2 m     Connection type   cable PVC , 2 m     Core cross section   0.14 mm²     Housing diameter   18 mm     Degree of protection   IP67     Material   mickel plated brass; plastic components: PBT     Housing   mickel plated brass; plastic components: PBT     Transducer   epoxy resin/hollow glass sphere mixture; polyurethane foam	Standard conformity		
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Connection typecable PVC , 2 mCore cross section0.14 mm²Housing diameter18 mmDegree of protectionIP67MaterialImage: Section Secti	Storage temperature		-40 70 °C (-40 158 °F)
Core cross section0.14 mm²Housing diameter18 mmDegree of protectionIP67MaterialHousingnickel plated brass; plastic components: PBTTransducerepoxy resin/hollow glass sphere mixture; polyurethane foam	Mechanical specifications		
Housing diameter 18 mm   Degree of protection IP67   Material IP67   Housing nickel plated brass; plastic components: PBT   Transducer epoxy resin/hollow glass sphere mixture; polyurethane foam	Connection type		cable PVC , 2 m
Degree of protection IP67   Material inickel plated brass; plastic components: PBT   Transducer epoxy resin/hollow glass sphere mixture; polyurethane foam	Core cross section		0.14 mm <sup>2</sup>
Material Inickel plated brass; plastic components: PBT   Transducer epoxy resin/hollow glass sphere mixture; polyurethane foam	Housing diameter		18 mm
Housingnickel plated brass; plastic components: PBTTransducerepoxy resin/hollow glass sphere mixture; polyurethane foam	Degree of protection		IP67
Transducer epoxy resin/hollow glass sphere mixture; polyurethane foam	Material		
	Housing		nickel plated brass; plastic components: PBT
Mass 150 g	Transducer		epoxy resin/hollow glass sphere mixture; polyurethane foam
	Mass		150 g

# Connection

#### Standard symbol/Connection: Splice control

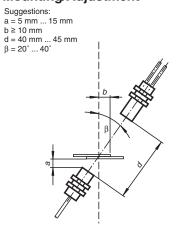


Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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# **Characteristic Curve**

### Mounting/Adjustment



#### Angular misalignment



s < +/- 1 mm

### Accessories

D	MH-UDB01	Mounting bracket for double sheet monitor
	UVW90-K18	Ultrasonic -deflector
°0 °0	M18K-VE	Plastic nuts with centering ring for the vibration-free mounting of cylindrical sensors

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

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# Operation

#### Operation in applications with increased ESD requirements

Using the included metal screw caps, the sensor can be used in applications with increased ESD requirements up to 30 kV (ESD = electrostatic discharge). The metal coupling nuts are screwed on the front of the transmitter and receiver. The installation of the transmitter and receiver must ensure a large area electrical connection to the machine earth.

### Additional Information

#### **Description of sensor functions**

The ultrasonic double sheet monitor for splice detection can be used in all applications, where an automatic detection of glue dots, splices, bondings or the absence of base material is required, to protect machines or to evade waste production. The double-sheet monitor is based on the ultrasonic through-beam principle. The following can be detected:

- No base material, i.e. air,
- glue dots, splices, bondings

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.

#### **Electrical connection**

The sensor is equipped with 6 connecting wires. The functionality of the connections is described in the following table. The teach input (PK) is used to teach the sensor.

Colour	Switching on	Comments
BN	+U <sub>B</sub>	
WH	Switch output for splices	Pulse width corresponds to the event
BK	Switch output for air	Pulse width corresponds to the event
GY	not connected	
PK	-U <sub>B</sub> / n.c. / +U <sub>B</sub>	Normal operation / output pulse prolongation / TEACH-IN
BU	-UB	

#### Normal mode

The sensor is working in normal mode if the function input (PK) is applied to  $-U_B$  or not connected.

Displays:				
LED yellow:	Detecti	on of splices		
LED green:	Power	on		
LED red:	Detecti	on of air (no base material)		
Switch outputs	s:			
The switch outputs are only active in normal operation!				
White:	WH	Splice output		
Black:	BK	Air output		

#### **Output pulse extension**

If the teach input (PK) is not connected, when switching on the power supply, the sensor operates with output pulse prolongation. Events, shorter than 120 ms cause an output pulse duration of 120 ms at the Splice output. For sensor operation without pulse prolongation, the teach input (PK) has to be connected with  $-U_B$  while power supply is switched on.

Please note:

This can result in a condition in which more than one switch output is switched through!

#### **TEACH-IN mode**

Connecting the teach input (PK) with  $+U_B$  for at least 500 ms causes the sensor to change into TEACH-IN mode. The TEACH-IN procedure has to be carried out with base material. In case of inhomogeneous base materials we suggest to teach the sensor with activated material feeding and a corresponding prolongation of the TEACH-IN procedure.

During the TEACH-IN procedure flashes the yellow LED; the green LED is off.

After returning to the normal operation mode (teach input (PK) detached from +U<sub>B</sub>) the sensor indicates whether the TEACH-IN procedure was successful or not.

TEACH-IN procedure successful: green LED flashes 3 times

TEACH-IN procedure not successful: red LED flashes 3 times

#### Notes:

A complete device consists of an ultrasonic emitter and an evaluation unit with an ultrasonic emitter. The sensor heads are optimally adjusted to each other when they leave the factory. Therefore, they must not be used separately or exchanged with other devices of the same type. The plug connector on the emitter/receiver connection cable is only intended to be used for easier mounting, not to replace units.



# Splice sensor

# UGB-18GM50-255-2E1

If two or more double sheet controls are used in the immediate vicinity of each other, there may be mutual interference between them, which can result in improper functionality of the devices. Mutual interference can be prevented by introducing suitable countermeasures when planning systems. Suitable measures can be:

- Mounting of sound absorbers (foam material)
- mounting of sound separators (sheet metal)
- insallation of the sensors with different directions of sound transmission.

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

