

# Technical data sheet

## Ultrasonic fork sensor

Part no.: 50145982

GSU12/G6.3-M8



For illustration purposes only

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## Technical data

### Basic data

|                      |                                                                        |
|----------------------|------------------------------------------------------------------------|
| Series               | 12                                                                     |
| Principle of physics | Ultrasonics                                                            |
| Application          | Detection of non-transparent labels<br>Detection of transparent labels |
| Label width, min.    | 4 mm                                                                   |
| Label gap, min.      | 2 mm                                                                   |
| Medium               | Transparent and not transparent                                        |

### Electrical data

|                    |                                                         |
|--------------------|---------------------------------------------------------|
| Protective circuit | Polarity reversal protection<br>Short circuit protected |
|--------------------|---------------------------------------------------------|

### Performance data

|                      |                            |
|----------------------|----------------------------|
| Supply voltage $U_B$ | 12 ... 30 V, DC            |
| Residual ripple      | 0 ... 10 %, From $U_B$     |
| Open-circuit current | 0 ... 60 mA, Typical value |

### Outputs

|                                     |            |
|-------------------------------------|------------|
| Number of digital switching outputs | 2 Piece(s) |
|-------------------------------------|------------|

#### Switching outputs

|                         |                                           |
|-------------------------|-------------------------------------------|
| Type                    | Digital switching output                  |
| Voltage type            | DC                                        |
| Switching current, max. | 100 mA                                    |
| Switching voltage       | high: $\geq(U_B - 2V)$<br>low: $\leq 2 V$ |
| Load capacity           | 0.01 $\mu F$                              |

#### Switching output 1

|                     |                                                                                         |
|---------------------|-----------------------------------------------------------------------------------------|
| Switching element   | Transistor, Push-pull                                                                   |
| Switching principle | NPN light switching (switching in the gap), PNP dark switching (switching on the label) |

#### Switching output 2

|                     |                                                                                         |
|---------------------|-----------------------------------------------------------------------------------------|
| Switching element   | Transistor, Push-pull                                                                   |
| Switching principle | PNP light switching (switching in the gap), NPN dark switching (switching on the label) |

### Time behavior

|                                     |          |
|-------------------------------------|----------|
| Switching frequency                 | 1,750 Hz |
| Response time                       | 0.24 ms  |
| Readiness delay                     | 300 ms   |
| Max. conveyor speed during teach-in | 50 m/min |

### Connection

|                       |            |
|-----------------------|------------|
| Number of connections | 1 Piece(s) |
|-----------------------|------------|

#### Connection 1

|                    |                                        |
|--------------------|----------------------------------------|
| Function           | Signal OUT<br>Voltage supply           |
| Type of connection | Connector                              |
| Thread size        | M8                                     |
| Type               | Male                                   |
| Material           | Metal                                  |
| No. of pins        | 4 -pin                                 |
| Plug outlet        | Horizontal (parallel to belt movement) |

### Mechanical data

|                       |                                          |
|-----------------------|------------------------------------------|
| Design                | Fork                                     |
| Mouth width           | 4 mm                                     |
| Mouth depth           | 80 mm                                    |
| Dimension (W x H x L) | 22 mm x 46.9 mm x 96 mm                  |
| Housing material      | Metal                                    |
| Metal housing         | Diecast zinc, with powder coating        |
| Net weight            | 270 g                                    |
| Housing color         | Red                                      |
| Type of fastening     | Mounting thread<br>Through-hole mounting |

### Operation and display

|                                     |                                          |
|-------------------------------------|------------------------------------------|
| Type of display                     | LED                                      |
| Number of LEDs                      | 3 Piece(s)                               |
| Operational controls                | Teach button                             |
| Function of the operational control | Dynamic teach on label carrier and label |

### Environmental data

|                                |               |
|--------------------------------|---------------|
| Ambient temperature, operation | 0 ... 60 °C   |
| Ambient temperature, storage   | -40 ... 70 °C |

### Certifications

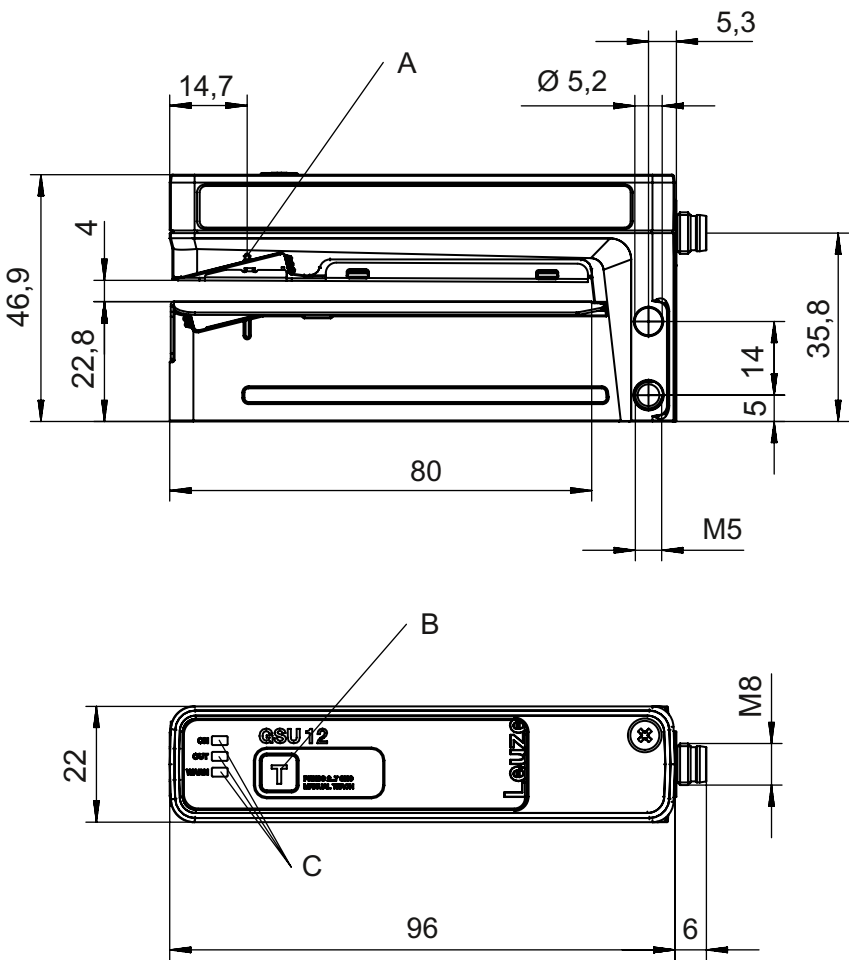
|                      |                           |
|----------------------|---------------------------|
| Degree of protection | IP 65                     |
| Protection class     | III                       |
| Approvals            | c UL US                   |
| Standards applied    | EN 60947-5-2:2007+A1:2012 |
| US patents           | US 6,314,054 B            |

### Classification

|                       |          |
|-----------------------|----------|
| Customs tariff number | 85365019 |
| ECLASS 5.1.4          | 27272801 |
| ECLASS 8.0            | 27272801 |
| ECLASS 9.0            | 27272801 |
| ECLASS 10.0           | 27272801 |
| ECLASS 11.0           | 27272801 |
| ECLASS 12.0           | 27272801 |
| ECLASS 13.0           | 27272801 |
| ECLASS 14.0           | 27272801 |
| ECLASS 15.0           | 27272801 |
| ETIM 5.0              | EC001847 |
| ETIM 6.0              | EC001847 |
| ETIM 7.0              | EC001847 |
| ETIM 8.0              | EC001847 |
| ETIM 9.0              | EC001847 |
| ETIM 10.0             | EC001847 |

Dimensioned drawings

All dimensions in millimeters



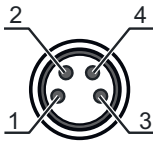
- A Sensor marking (center of label tape)
- B Teach button
- C LED indicator

Electrical connection

Connection 1

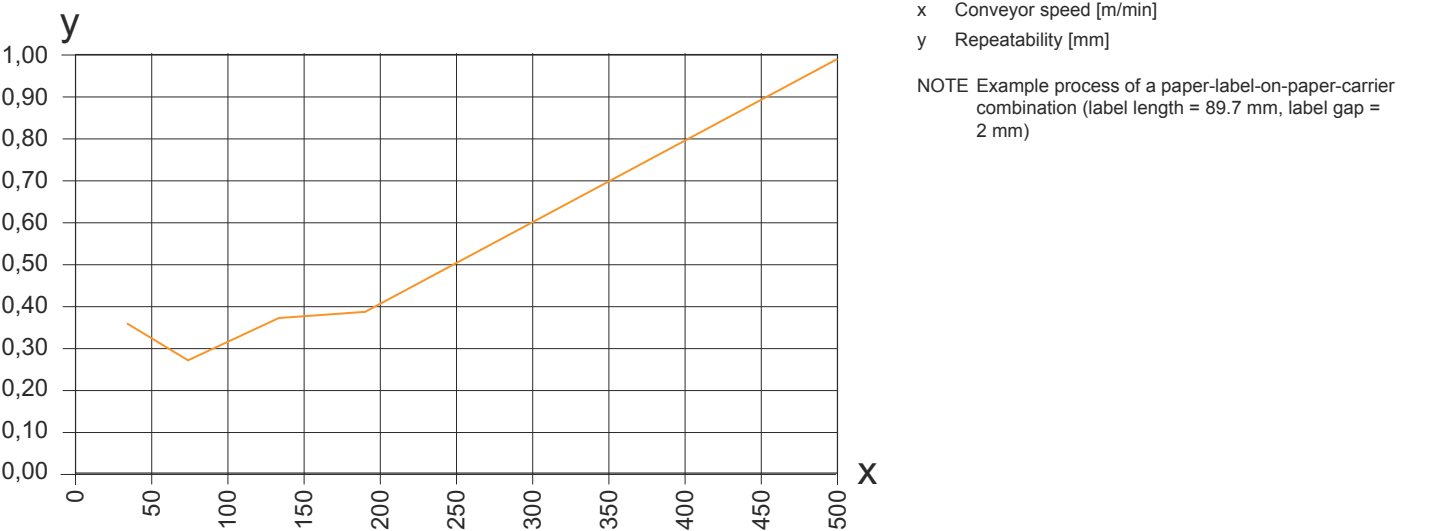
|                    |                                        |
|--------------------|----------------------------------------|
| Function           | Signal OUT                             |
|                    | Voltage supply                         |
| Type of connection | Connector                              |
| Thread size        | M8                                     |
| Type               | Male                                   |
| Material           | Metal                                  |
| No. of pins        | 4 -pin                                 |
| Plug outlet        | Horizontal (parallel to belt movement) |

| Pin | Pin assignment |
|-----|----------------|
| 1   | V+             |
| 2   | OUT 2          |
| 3   | GND            |
| 4   | OUT 1          |



Diagrams

Repeatability as a function of the conveyor speed



Operation and display

| LED    | Display                  | Meaning                           |
|--------|--------------------------|-----------------------------------|
| 1 ON   | Green, continuous light  | Operational readiness             |
| 2 OUT  | Yellow, continuous light | Switching signal in the label gap |
| 3 WARN | Red, continuous light    | Teach error                       |

Part number code

Part designation: AAA12/BCD.E-FFF

|       |                                                                                                                                                                                                                                                                                                 |
|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AAA12 | Operating principle / construction<br>GSU12: Ultrasonic fork sensor                                                                                                                                                                                                                             |
| B     | Switching output / function OUT 1/IN: Pin 4<br>6: push-pull switching output, PNP light switching (switching in the gap), NPN dark switching (switching on the label)<br>G: Push-pull switching output, PNP dark switching (switching on the label), NPN light switching (switching in the gap) |
| C     | Switching output / function OUT 2/IN: pin 2<br>6: push-pull switching output, PNP light switching (switching in the gap), NPN dark switching (switching on the label)<br>G: Push-pull switching output, PNP dark switching (switching on the label), NPN light switching (switching in the gap) |
| D     | Switching output / function OUT 3/IN: Pin 5<br>X: pin not used                                                                                                                                                                                                                                  |
| E     | Equipment<br>3: teach-in via button                                                                                                                                                                                                                                                             |
| FFF   | Electrical connection<br>M12: M12 connector, 5-pin (horizontal plug outlet)<br>M8: M8 connector, 4-pin (horizontal plug outlet)                                                                                                                                                                 |

Note

|  |                                                                                                                                |
|--|--------------------------------------------------------------------------------------------------------------------------------|
|  | A list with all available device types can be found on the Leuze website at <a href="http://www.leuze.com">www.leuze.com</a> . |
|--|--------------------------------------------------------------------------------------------------------------------------------|

## Notes

| ⚠ Observe intended use!                                                          |                                                                                                                                                                                                                                                                                       |
|----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <ul style="list-style-type: none"> <li>✎ This product is not a safety sensor and is not intended as personnel protection.</li> <li>✎ The product may only be put into operation by competent persons.</li> <li>✎ Only use the product in accordance with its intended use.</li> </ul> |

| ⚠ For UL applications:                                                           |                                                                                                                                                                         |
|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <ul style="list-style-type: none"> <li>✎ For UL applications, use is only permitted in Class 2 circuits in accordance with the NEC (National Electric Code).</li> </ul> |

## Further information

- The push-pull switching outputs must not be connected in parallel.
- The label material used determines the achievable precision and the reliability of gap detection between labels.
- To achieve high repeatability, the label tape must be slightly under tension on the lower fork.

## Accessories

### Connection technology - Connection cables

|                                                                                    | Part no. | Designation       | Article          | Description                                                                                                                                                              |
|------------------------------------------------------------------------------------|----------|-------------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50130850 | KD U-M8-4A-V1-050 | Connection cable | Connection 1: Connector, M8, Axial, Female, 4 -pin<br>Connector, LED: No<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 5.000 mm<br>Sheathing material: PVC  |
|                                                                                    | 50130871 | KD U-M8-4W-V1-050 | Connection cable | Connection 1: Connector, M8, Angled, Female, 4 -pin<br>Connector, LED: No<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 5.000 mm<br>Sheathing material: PVC |

## General

|                                                                                    | Part no. | Designation | Article  | Description                                                                  |
|------------------------------------------------------------------------------------|----------|-------------|----------|------------------------------------------------------------------------------|
|  | 50144288 | FS 14EML.5  | Carriage | Dimensions: 21 mm x 21 mm x 170 mm<br>Housing material: Stainless steel, V2A |
|  | 50144289 | FS 14EML1.5 | Carriage | Dimensions: 21 mm x 21 mm x 120 mm<br>Housing material: Stainless steel, V2A |

Accessories

| Note                                                                             |                                                                                                                                  |
|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
|  | <p>A list with all available accessories can be found on the Leuze website in the Download tab of the article detailed page.</p> |