

Technical data sheet Ultrasonic fork sensor

Part no.: 50142867

GSX14E/1WT.3-M12



For illustration purposes only

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Technical data

Basic data

| | |
|----------------------|-------------------------------------|
| Series | 14 |
| Principle of physics | optical and ultrasonics |
| Application | Detection of non-transparent labels |
| | Detection of transparent labels |
| Label width, min. | 4 mm ultrasonics / 2 mm optical |
| Label gap, min. | 2 mm |
| Medium | Transparent and not transparent |

Special version

| | |
|-----------------|---|
| Special version | ALC function (tracking) |
| | easyTeach function |
| | Manual fine tuning of the switching threshold |
| | Teach input |
| | Warning output |

Optical data

| | |
|--------------------------|--------------------------------------|
| Light source | LED, Infrared |
| Wavelength | 850 nm |
| Transmitted-signal shape | Pulsed |
| LED group | Exempt group (in acc. with EN 62471) |

Electrical data

| | |
|--------------------|------------------------------|
| Protective circuit | Polarity reversal protection |
| | Short circuit protected |

Performance data

| | |
|----------------------|----------------------------|
| Supply voltage U_B | 18 ... 30 V, DC |
| Residual ripple | 0 ... 10 %, From U_B |
| Open-circuit current | 0 ... 80 mA, Typical value |

Inputs

| | |
|------------------------|------------|
| Number of teach inputs | 1 Piece(s) |
|------------------------|------------|

Teach inputs

| | |
|-------------------|-----------------|
| Type | Teach input |
| Voltage type | DC |
| Switching voltage | high: $\geq 9V$ |
| | low: $\leq 2 V$ |
| Input resistance | 15,000 Ω |

Teach input 1

| | |
|------------------------|------|
| Active switching state | High |
|------------------------|------|

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: $\geq (U_B - 2V)$ |
| | low: $\leq 2 V$ |
| Load capacity | 0.01 μF |

Switching output 1

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

Switching output 2

| | |
|---------------------|--|
| Switching element | Transistor, Push-pull |
| Switching principle | active low (normal operation high, event case low) |

Time behavior

| | |
|-------------------------------------|---|
| Switching frequency | 2,000 Hz, ultrasonics / 9061 Hz optical |
| Response time | 0.2 ms, ultrasonics / 0.05 ms optical |
| Readiness delay | 300 ms |
| Max. conveyor speed during teach-in | 50 m/min |

Interface

| | |
|------------------|----------------------|
| Type | IO-Link |
| IO-Link | |
| COM mode | COM3 |
| Profile | Smart sensor profile |
| Min. cycle time | COM3 = 0.5 ms |
| Frame type | 2.5 |
| Specification | V1.1 |
| Device ID | 2501 |
| SIO-mode support | Yes |

Connection

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

Connection 1

| | |
|--------------------|--|
| Function | Signal IN |
| | Signal OUT |
| | Voltage supply |
| Type of connection | Connector |
| Thread size | M12 |
| Type | Male |
| Material | Metal |
| No. of pins | 5 -pin |
| Encoding | A-coded |
| 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, galvanic nickel coating |
| Net weight | 270 g |
| Housing color | Silver |
| Type of fastening | Mounting thread |
| | Through-hole mounting |

Operation and display

| | |
|-------------------------------------|--|
| Type of display | LED |
| Number of LEDs | 6 Piece(s) |
| Operational controls | Control buttons |
| 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 |

Technical data

Certifications

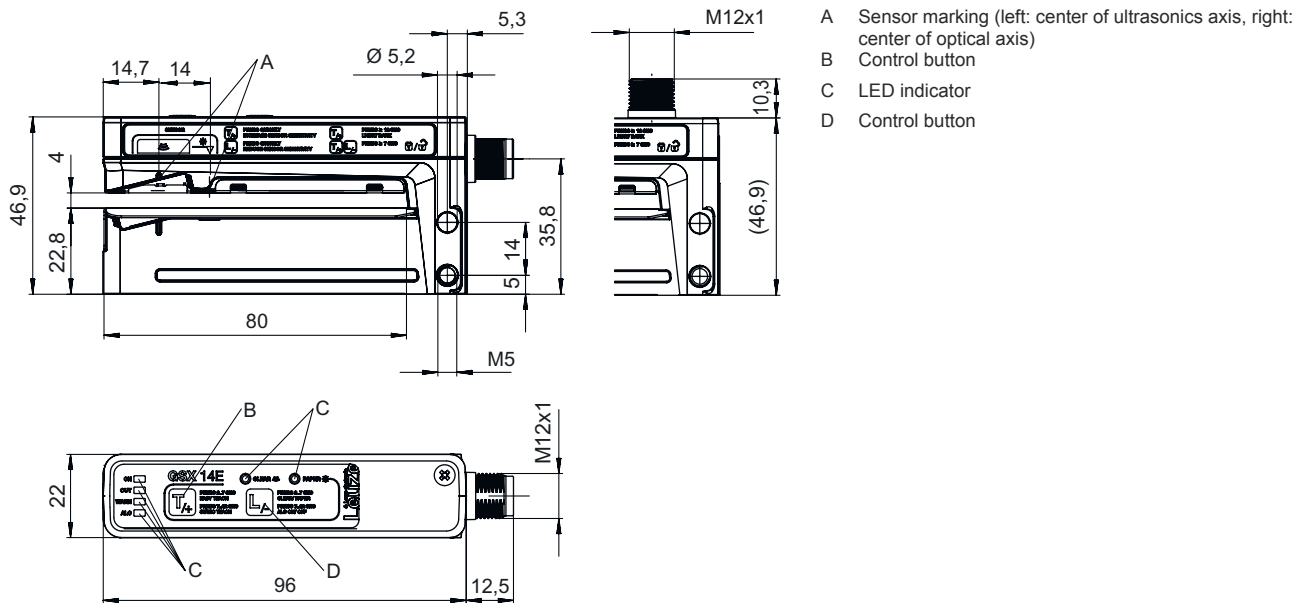
| | |
|----------------------|---------------------------|
| Degree of protection | IP 65 |
| Protection class | III |
| Approvals | c UL US |
| Standards applied | EN 60947-5-2:2007+A1:2012 |
| US patents | US 6,314,054 B |

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 |
| ECLASS 16.0 | 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 |
| UNSPSC 26.08 | 41111960 |

Dimensioned drawings

All dimensions in millimeters

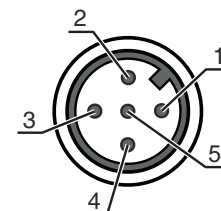


Electrical connection

Connection 1

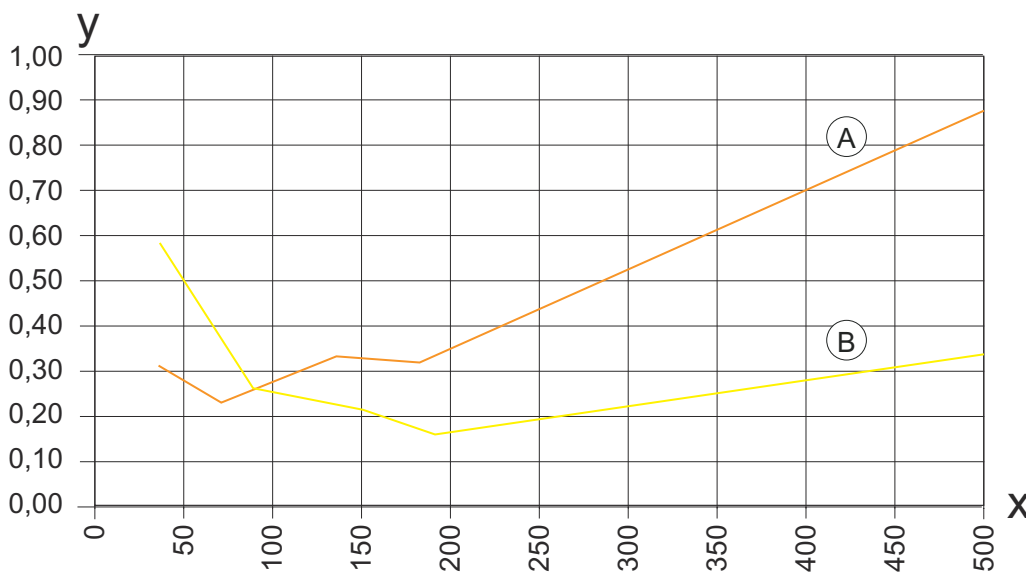
| | |
|--------------------|--|
| Function | Signal IN |
| | Signal OUT |
| | Voltage supply |
| Type of connection | Connector |
| Thread size | M12 |
| Type | Male |
| Material | Metal |
| No. of pins | 5 -pin |
| Encoding | A-coded |
| Plug outlet | Horizontal (parallel to belt movement) |

| Pin | Pin assignment |
|-----|-----------------|
| 1 | V+ |
| 2 | OUT WARN |
| 3 | GND |
| 4 | IO-Link / OUT 1 |
| 5 | Teach-in |



Diagrams

Repeatability as a function of the conveyor speed



x Conveyor speed [m/min]
 y Repeatability [mm]

NOTE Example process of a paper-label-on-paper-carrier combination (label length = 89.7 mm, label gap = 2 mm)

A Ultrasonics
 B Optical

Operation and display

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

Operation and display

| LED | Display | Meaning |
|-----|---------------------------------------|-------------------------------------|
| 3 | WARN Red, continuous light | Teach error |
| 4 | ALC Yellow, continuous light | Tracking function active |
| 5 | CLEAR Yellow, continuous light | Ultrasonic detection process active |
| 6 | PAPER Yellow, continuous light | Optical detection process active |

Part number code

Part designation: **AAA14E/BCD.EEE-FFF**

| | |
|---------------|--|
| AAA14E | Operating principle / construction GSU14E: Ultrasonic fork sensor IGSU14E: Ultrasonic fork sensor with integrated easyTeach function GSX14E: Fork sensor, ultrasonic/optical combination |
| B | Switching output / function OUT 1/IN: Pin 4 6: push-pull switching output, PNP light switching (switching in the gap), NPN dark switching (switching on the label) G: Push-pull switching output, PNP dark switching (switching on the label), NPN light switching (switching in the gap) 1: IO-Link / NPN light switching (switching in the gap), PNP dark switching (switching on the label) L: IO-Link / PNP light switching (switching in the gap), NPN dark switching (switching on the label) |
| C | Switching output / function OUT 2/IN: pin 2 6: push-pull switching output, PNP light switching (switching in the gap), NPN dark switching (switching on the label) G: Push-pull switching output, PNP dark switching (switching on the label), NPN light switching (switching in the gap) W: warning output |
| D | Switching output / function OUT 3/IN: Pin 5 T: teach-in |
| EEE | Equipment 3: teach-in via button SD: Splice inspection |
| FFF | Electrical connection M12: M12 connector, 5-pin (horizontal plug outlet) M12V: M12 connector, 5-pin (vertical plug outlet) |

| Note | |
|------|--|
| | A list with all available device types can be found on the Leuze website at www.leuze.com . |

Notes

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


| For UL applications: | |
|-----------------------------|---|
| | For UL applications, use is only permitted in Class 2 circuits in accordance with the NEC (National Electric Code). |

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 unit

| | Part no. | Designation | Article | Description |
|--|----------|-----------------------|----------------|---|
|  | 50144900 | MD 798i-11-82/L5-2222 | IO-Link master | Current consumption, max.: 11,000 mA Interface: IO-Link, Automatic protocol detection, EtherNet IP, Modbus TCP, PROFINET Connections: 12 Piece(s) Sensor connections: 8 Piece(s) Degree of protection: IP 67, IP 65, IP 69K |

Connection technology - Connection cables

| | Part no. | Designation | Article | Description |
|---|----------|--------------------|------------------|--|
|  | 50132079 | KD U-M12-5A-V1-050 | Connection cable | Application: Chemical resistant Connection 1: Connector, M12, Axial, Female, A-coded, 5 -pin Connector, LED: No Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: PVC |

General

| | Part no. | Designation | Article | Description |
|--|----------|-------------|----------|--|
|  | 50144288 | FS 14EML.5 | Carriage | Housing material: Stainless steel, V2A |
|  | 50144289 | FS 14EML1.5 | Carriage | Housing material: Stainless steel, V2A |

Note



A list with all available accessories can be found on the Leuze website in the Download tab of the article detailed page.