

Technical data sheet Ultrasonic fork sensor

Part no.: 50142867

GSX14E/1WT.3-M12



For illustration purposes only

Contents

- Technical data
- Dimensioned drawings
- Electrical connection
- Diagrams
- Operation and display
- Part number code
- Notes
- Further information
- Accessories



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

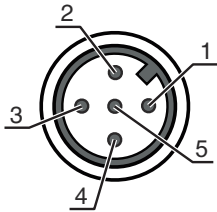
Ambient temperature, operation	0 ... 60 °C
Ambient temperature, storage	-40 ... 70 °C

Electrical connection

Connection 1

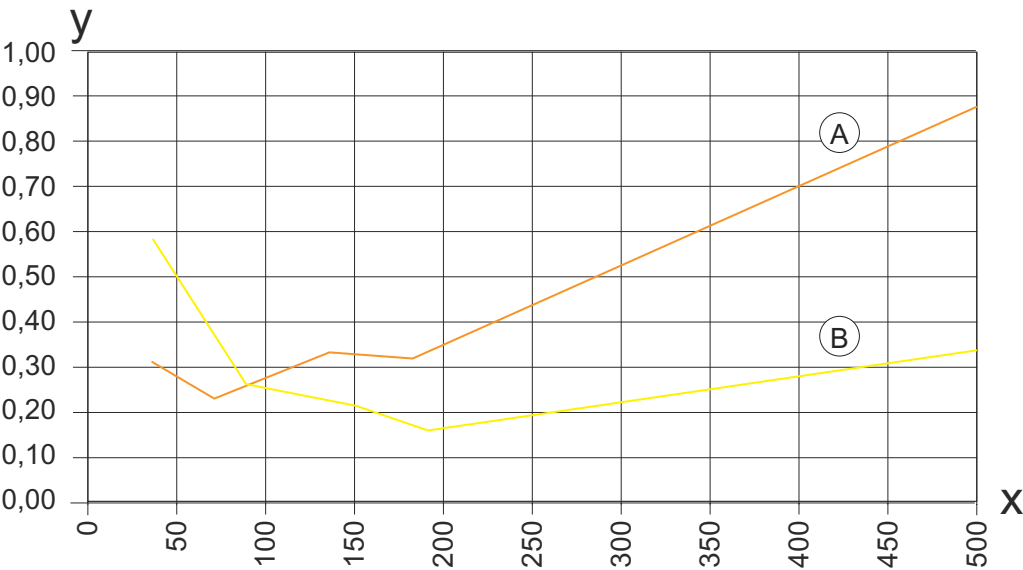
Function	Signal IN
	Signal OUT
	Voltage supply
Type of connection	Connector
Thread size	M12
Type	Male
Material	Metal
No. of pins	5 -pin
Encoding	A-coded
Plug outlet	Horizontal (parallel to belt movement)

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!



- 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.