UF3: Ultrasonic fork sensor for transparent labels

DATA SHEET

- Fork width 3 mm
- Fork depth 69 mm
- Ultrasonic technology
- Detection of transparent labels on transparent carrier materials
- Detection of metallised material and of RFID labels
- Precise detection of opaque printed and coloured labels
- Unaffected by metal or colour
- Precise splice detection
- Double-sheet detection

Ultrasonic fork sensor

The ultrasonic fork sensor is tasked with the safe detection of totally different labels on totally different carrier materials. High positional accuracy and stable response times make the fork sensor universally applicable.

SICK

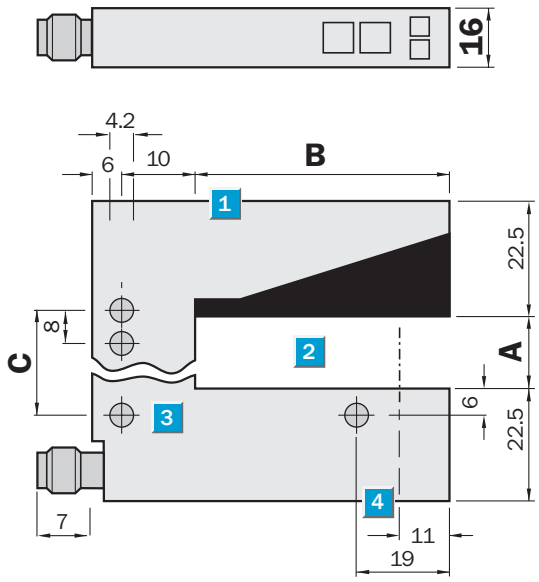
Fork width 3 mm

Ultrasonic fork sensor

- Detection of labels – whether transparent, opaque or printed
- Unaffected by metallised colours
- Accurate detection through stable response time
- Small, industry-standard housing

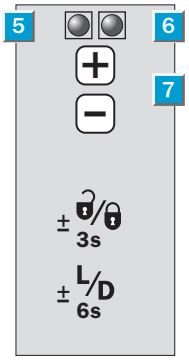
Dimensional drawing

All types



Adjustments possible

All types



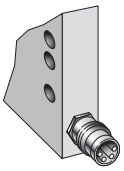
1 Screw for removing the leg for cleaning purposes
2 Fork width: Fork width 3 mm, Fork depth 69 mm
3 Mounting holes, Ø 4.2 mm
4 Detection axis
5 Function indicator (yellow), switching output
6 Function indicator (red)
7 "+"-/"–" buttons and function button

Dimensions

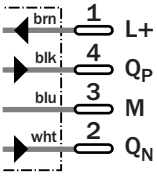
Dimensions (mm)	A Fork width	B Fork depth	C
UF3	3	69	14

Connection types

All types



4-pin, M8



Accessories

Cables and connectors

Technical data	UF	3-70 B410
Fork width	3 mm	
Minimum detectable object size [1]		
Gap between labels	2 mm	
Size of labels	2 mm	
Supply voltage V_S	10 ... 30 V DC [2]	
Current consumption [3]	40 mA	
Ripple (at 10 mA) [4]	< 1 V	
Switching output	PNP and NPN	
	Light/dark adjustable via button	
Signal voltage		
PNP	HIGH = U_V – (< 2 V)/LOW = 0 V	
NPN	HIGH = U_V/LOW = < 2 V	
Output current I_A	100 mA	
Capacitive load	200 nF	
Response time [5]	300 µs	
Initialisation time	100 ms	
VDE protection class [6]	III	
Enclosure rating	IP 65	
Circuit protection [7]	B, C	
Short-circuit protection	✔	
Ambient temperature	Operation +5 °C ... +55 °C	
	Storage –30 °C ... +70 °C	
Operating principle: fork	Ultrasonic detection principle	
Air movement	5 m/sec. max. wind speed	
Connection type	M8, 4-pin	
Adjustment option	"+", "–" adjustment via button	
Housing	Aluminium	
Weight	95 g	

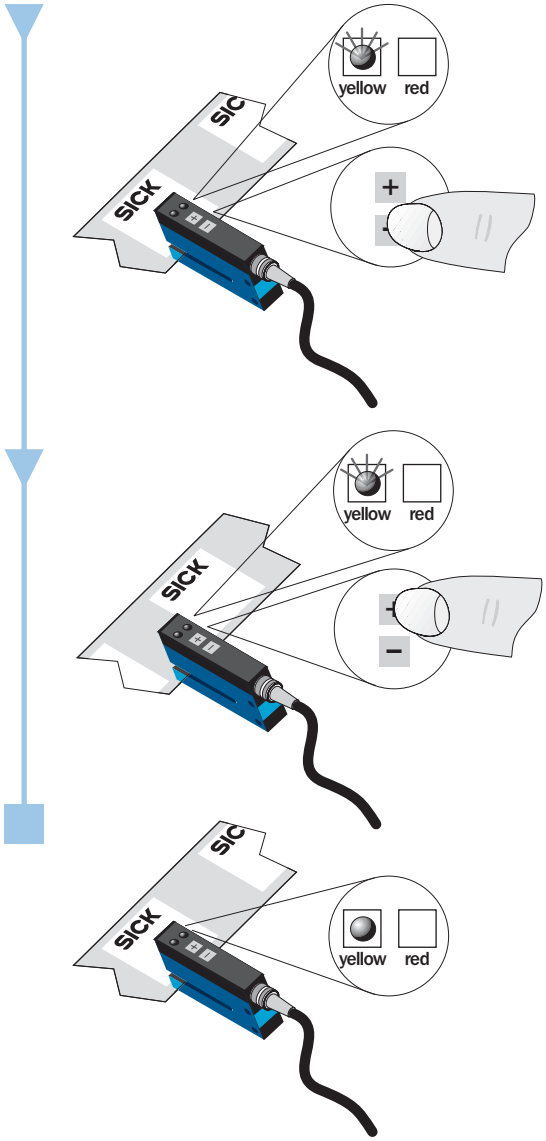
1) Depends on the label thickness
2) Limit values, reverse-polarity protected
3) Without load
4) At 10 mA
5) For 1:1 light/dark ratio, typical, dependent on material and speed
6) Reference voltage 50 V DC
7) B = Outputs short-circuit protected
C = Interference pulse suppression

Notes

- Leg can be removed for cleaning.

Order information	
Type	**Order no.**
UF3-70B410	6034888

Description Switching point adjustment



- Adjustment of the switching point in “light-switching” mode: switching output Q is active if the carrier material is detected between the labels (gap detection).
- Position label between the active surface of the fork sensor (see arrow on sensor). Adjust with “–”, or “+” until the switching output indicator is safely off.
- Position carrier material in the active area of the fork sensor. The switching output indicator (yellow) must light up again; if this is not the case, increase sensitivity with the “+” button until the switching threshold is correctly adjusted.
- If necessary, adjust the switching point slightly in the other direction.

Notes

- **Sensitivity setting**

  \+ / –

  Slow setting:
  Press “+” or “–” button once,
  LED (red) lights with each button hit

  Fast setting:
  Press “+” or “–” button permanently,
  LED (red) flashes after 2 seconds.

- **Light-/dark-switching**

  ± L/D 6s

  Press “+” and “–” buttons simultaneously for 6 seconds,
  LED (yellow) changes status, and the LED (red) flashes slowly. Release “+” and “–” buttons.

- **Locking the buttons**

  ± 3s

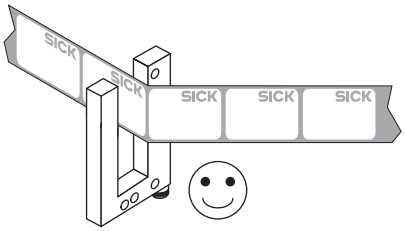
  Press “+” and “–” buttons simultaneously for 3 seconds,
  button lock is enabled/disabled.

  Locking the buttons:
  The red LED goes off after 3 seconds,
  release “+” and “–” buttons,
  LED (red) lights permanently.

  Unlocking the buttons:
  The red LED lights after 3 seconds,
  release “+” and “–” buttons,
  LED (red) extinguishes.

Feed through the material for scanning, flutter-free

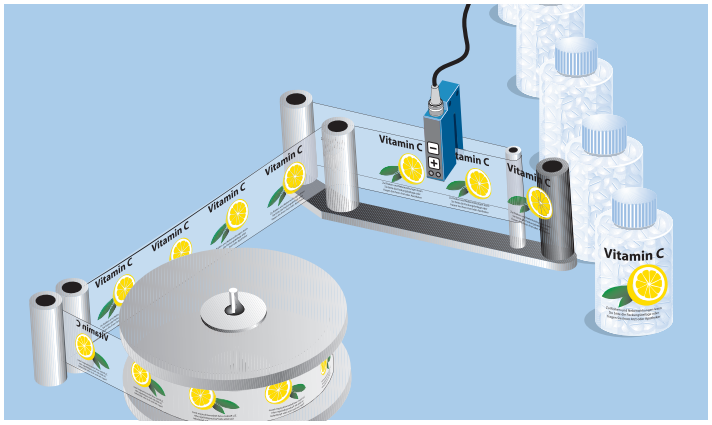
Move the material to be detected under tension and flutter-free.



Sample applications

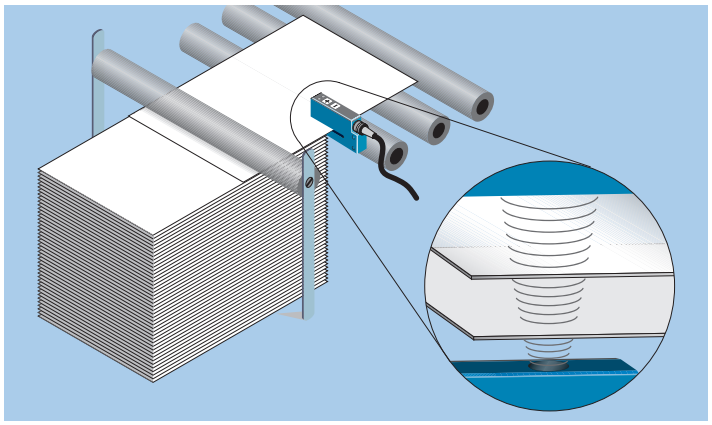
Label detection

- The UF ultrasonic fork sensor reliably detects the labels on the carrier material, irrespective of the printing of the labels or of the carrier material.
- Transparent carrier material.
- Transparent printed label.



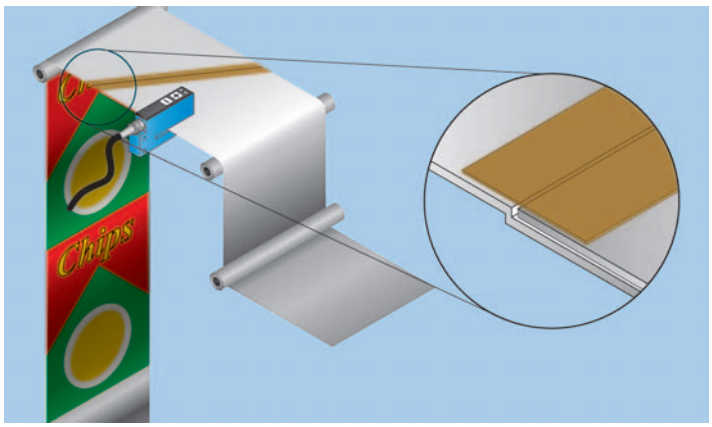
Double-sheet detection

- The UF ultrasonic fork sensor reliably distinguishes between one and two sheet(s) of paper.



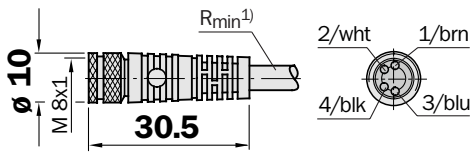
Splice detection

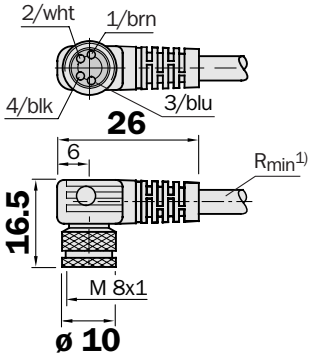
- The UF ultrasonic fork sensor reliably detects the splice. This foil area can be detected within the process.



Female connector M8, 4-pin, straight Cable diameter 5 mm, 4 x 0,25 mm², cable PVC		
Type	**Order no.**	**Cable length**
DOL-0804-G02M	6009870	2 m
DOL-0804-G05M	6009872	5 m
DOL-0804-G10M	6010754	10 m

Female connector M8, 4-pin, angled Cable diameter 5 mm, 4 x 0,25 mm², cable PVC		
Type	**Order no.**	**Cable length**
DOL-0804-W02M	6009871	2 m
DOL-0804-W05M	6009873	5 m
DOL-0804-W10M	6010755	10 m





1) Minimum bend radius in dynamic use
R_{min} = 20 x cable diameter