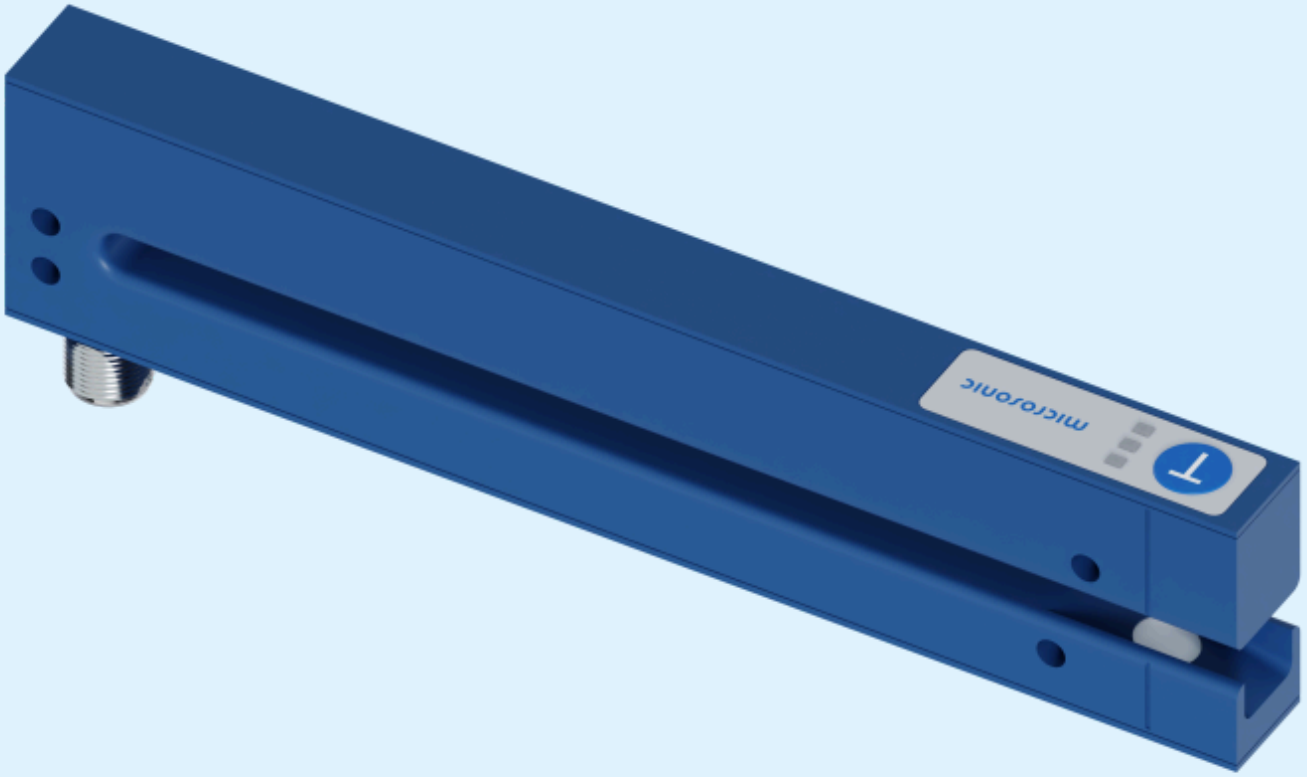


온라인 카탈로그 발췌:

esf-1/15/CDF/A

최신 버전: 2026-10-16

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esf-1 초음파 라벨 과 이매 접착 검출 센서

esf-1 포크형 센서는 고속 라벨작업에서도 안정적으
로 라벨을 감지 할 수 있습니다.

하이라이트

- 3 Teach-in methods › for the detection of labels even outside the standard
- Response time < 300 µs: › for use at high web speeds
- Housing in fork format with very compact dimensions
- QuickTeach › simplified Teach-in process
- IO-Link interface › for support of the new industry standard
- Smart Sensor Profile › more transparency between IO-Link Devices
- Smart Sonic Function › recipe management via IO-Link
- UL Listed to Canadian and US safety standards

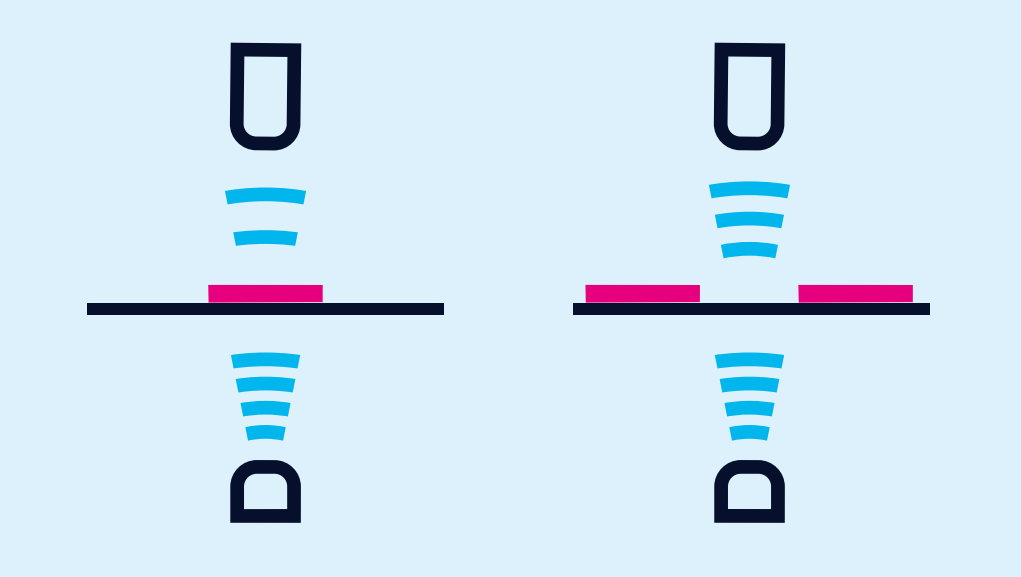
기본 사항

- Label and splice sensor as a fork sensor
- 2 switching outputs › for label/ splice detection and web break monitoring
- 3 LEDs and 1 button on the top of the housing
- Teach-in optionally via button or pin 5
- LinkControl › as optional assistance for installation and commissioning

The functional principle

Labels are guided through the fork. An ultrasonic transmitter in the lower leg of the fork beams a fast sequence of pulses through the backing material. The sound pulses cause the backing material to vibrate such that a greatly attenuated sound save is beamed from the opposite side. The receiver in the upper leg of the fork receives this sound wave.

The backing material transmits a different signal level from the label. This signal difference is evaluated by the esf-1. The signal difference between the backing material and the label can be very slight. To ensure a reliable distinction, the esf-1 has to learn the label.



Backing material with a label provides an attenuated signal level

The esf-1

can reliably detect high-transparency, reflective materials as well as metallised labels and labels of any colour. The measurement cycle time automatically self-adjusts to the sound power required. For thin labels and backing materials, the esf-1 can work at its maximum speed, with a response time of < 300 µs.

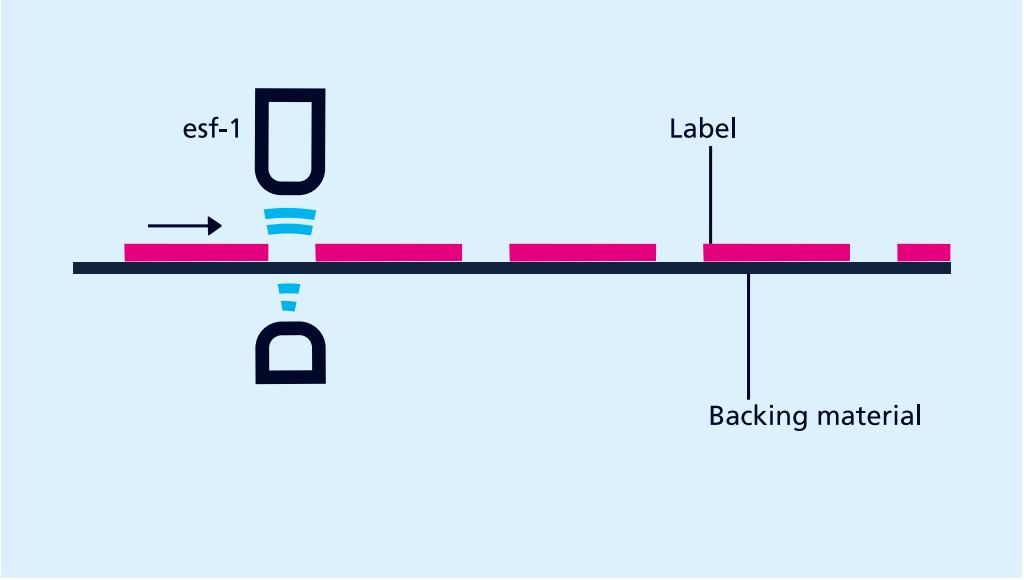
To be able to detect special labels, for example labels with punches or perforations, there are three different Teach-in methods available.

A) Learn both backing material and label dynamically

During the Teach-in process, the backing material and its labels are guided through the fork at a constant speed.

The esf-1 sensor automatically learns the signal level for the labels and for the gaps between the labels.

This is the standard Teach-in for labels.



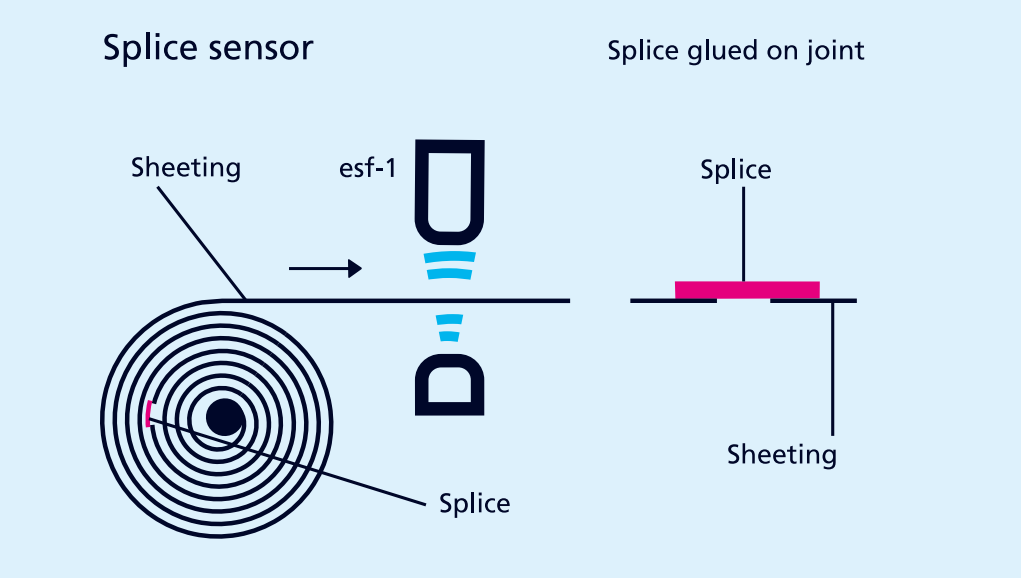
esf-1 as label sensor

B) Separate Teach-in for backing material and labels

The signal level difference for the backing material and labels might be very slight. In order to still scan labels with very little difference in signals, Teach-in for the signal levels is done separately: Teach-in is first done for the backing material and then for the label on it. The switching threshold then lies between these two signal levels.

C) Learn web material only

Web material is generally processed from a roll. The splice to be detected is hidden somewhere in the roll. There is a separate Teach-in method available for this purpose, in which only the sheeting is learned. The esf-1 detects the level difference at the splice and sets its output.



esf-1 as a splice sensor

The Teach-in procedure

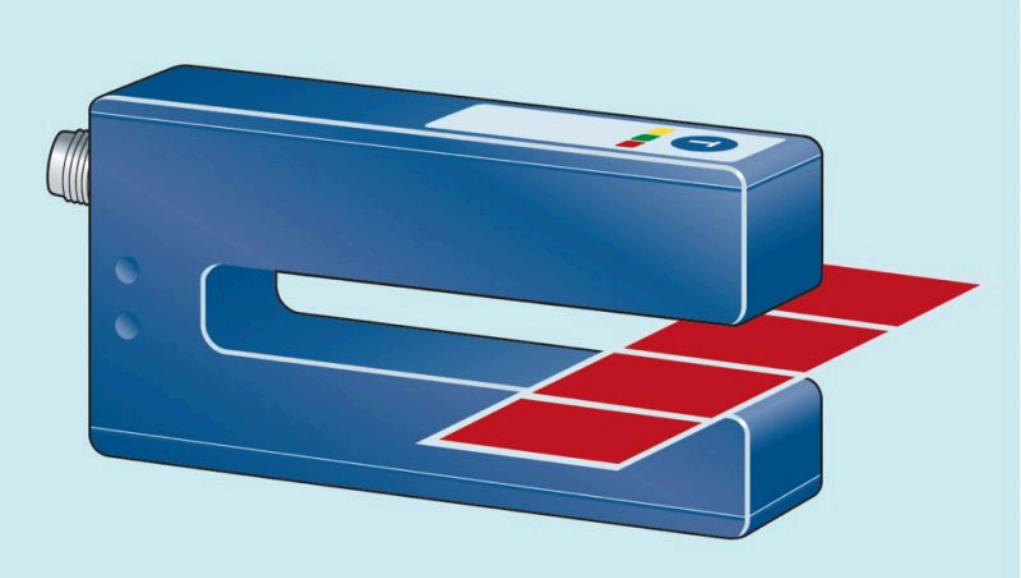
can optionally be carried out with the button on the top of the housing or with pin 5 on the unit's connector.

For QuickTeach

the esf-1 learns the material for the duration that the button is pushed or pin 5 is controlled.

With LinkControl

the esf-1 can optionally be parameterised. Measured values can also be shown graphically.



Labels are guided through the fork. The esf-1 reacts to the signal difference between the backing material and the label.

IO-Link

esf-1 ultrasonic label and splice sensors have a Push-Pull switching output and support IO-Link in version 1.1.

Smart Sonic Function

The sensor has an additional recipe management function integrated via IO-Link. To use this function, the different labels with carrier material are first taught in and the material parameters are stored in the controller. If the label is changed, the operator selects the label type on the controller. The controller then writes the label-specific parameters back to the sensor.

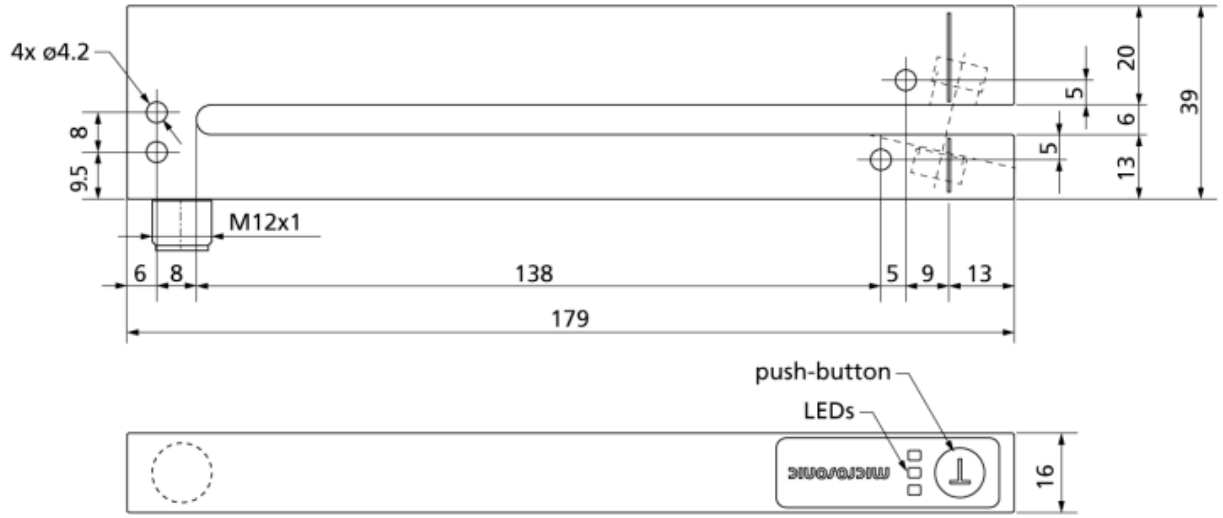
esf+1
new label sensor

Experience speed and precision

The new esf+1 ultrasonic label sensors combine a slim, flat housing with maximum positioning accuracy and ultra-fast measurement times.

esf-1/15/CDF/A

축척 도면



1 x Push-Pull + 1 x pnp

디자인	포크 형
작동 모드/기본 기능	IO-Link label/splice detection
동작거리	sheeting with weights of < 20 g/m^2 up to >> 400 g/m^2, metal-laminated sheets and films up to 0.2 mm thick, self-adhesive films, labels on backing material
특이성	größere Gabelweite/-Tiefe IO-Link Smart Sensor Profile UL Listed

초음파 사양

측정값	진폭 계산을 가진 펄스 작동
전송 주파수	500 kHz

전기적인 데이터

동작 전압 U_B	20 - 30 V d.c., 역극성 보호
전압 변동	± 10 %
무부하 소비전류	≤ 50 mA
연결 타입	5-핀 M12 규격 플러그

출력

출력 1	스위칭 출력 label/splice detected Push-Pull, U_B-3 V, -U_B+3 V,I_{max} = 100 mA NOC/NCC 조정가능,쇼트 보호회로
Ausgang 2	스위칭 출력 label/splice detected web break pnp: $I_{최대}$ = 200 mA (U_B-2V) NOC/NCC 조정가능,쇼트 보호회로
응답속도	300 µs up to 2,25 ms, dependent on the material
선지연 유용성	< 300 ms

입력

입력 1	com 입력 동기화 입력 teach-in 입력

하우징

재질	산화처리 알루미늄
초음파 송신기	폴리우레탄 폼, 글라스-에폭시 수지
EN60529에 따르는 보호등급	IP 65
동작온도	+5°C to +60°C
보관 온도	-40°C to +85°C
무게	80 g

기술 특징/특성

제어	1 push-button com input
세팅을 위한 범위	Teach-in and QuickTeach via push-button Teach-in via com input on pin 5 LCA-2 with LinkControl IO-Link
Synchronisation	아니오
표시기	1 x LED 녹색:작동중, 1 x LED 노란색:스위치 상태 pin 4, 1 x LED red: switch status pin 2

액세서리

분리가능 액세서리	KST5A-2/M12 KST5A-5/M12 KST5G-2/M12 KST5G-5/M12 LCA-2 LCA-2 Koffer

핀 할당

