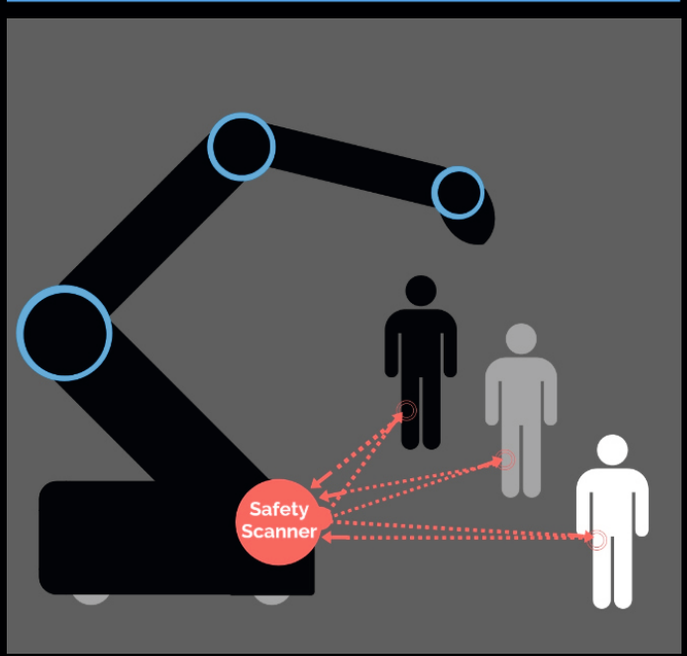
SAFEtect™

Test specimen & measurement targets for active opto-electronic protective devices in the human-robot collaboration

(following DIN CLC/TS 61496-3 (VDE 0113-203) and ISO 3691-4)

Use

The very high safety requirements in the human-machine interaction require a reliable detection of human "obstacles" or other machines and equipment. The proper function of the safety scanners is essential to prevent the risk of a collision. During the scan, both the characteristics of the obstacle (especially clothes) as well as the reflection of ambient light pose a significant risk of interferences for the opto-electronic signal aquisition.



Colours

- Black
- White
- Retroreflective

Shapes

for autonomous test specimen:

- flat foil or foil on a plate
- cylindrical test objects (customer-specific)
- complete test specimen set in a practical case (various shapes and colours)

for systems & plants

- flat foils
- every shapes (customer-specific)

SAFEtect™ offers test specimen and measurement targets for the simulation of the optical borderline cases black, white and retroreflective. They were developed on the basis of the requirements according to DIN CLS/TS 61496-3 and ISO 3691-4. The simulation of obstacles with test specimen with special reflective charcteristics enables the optical function test of the electro-sensitive protective equipment under the test conditions required by the DIN standard.

With the product testing of the safety scanners, their detection capability can be precisely verified and the calibration can be accordingly performed and optimized.

An exact calibration enhances the quality, the reliability and thus also the detection probability of your safety scanners.

SAFEtect™ helps you make your detection systems safer.

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SAFEtect™

Deep black measurement targets

Features

- ACKTAR coating technology
- Highest absorption capacity
- Precisely defined refelctance
- RoHS-compliant
- Suitable for clean rooms
- Calibration certificate available (* 1)

Technical Data

- Hemispherical reflection:
  1,8 % ± 0,2 %
  (optional SAFEtect BLACK 4% **:
  2-6 %; optical density: > 1,22)
- Wavelength range:
  800 nm up to 950 nm (* 2)
- Operating temperature:
  -50°C up to +150°C

DIN CLC/TS 61496-3

Requirements concerning the diffuse reflectance of the surface under normal conditions: 1,6 % to 2,0 % at the transmitter's wavelength. The cylindrical test specimen has an effective length of at least 200 mm and a diameter ranging from 30 mm to 200 mm.

** ISO 3691-4

Requirements for electro-sensitive protective equipment (ESPE) must comply with IEC 61496 (series of standards); forklifts must be equipped with buffers or virtual buffers for the detection of persons.

White measurement targets

Features

- ACKTAR coating technology
- Precisely defined reflectance
- RoHS-compliant
- Suitable for clean rooms
- Calibration certificate available (* 1)

Technical Data

- Hemispherical reflection:
  85 % ± 5 %
- Wavelength range:
  800 nm up to 950 nm (* 2)
- Operating temperature:
  -50°C up to +150°C

DIN CLC/TS 61496-3

The surface of the white test specimen must have a diffuse reflectance in the range of 80 % to 90 % at the transmitter's wavelength.

Retroreflective measurement targets

Features

- Back reflection regardless of orientation
- Compliant with the requirements of ISO 20471
- Back reflection by means of directly-mirrored glass spheres

Technical Data

- Minimum back reflection value:
  330 cd/lx/m^2
- Average back reflection value:
  500 cd/lx/m^2
- Operating temperature:
  -30°C bis +50°C

DIN CLC/TS 61496-3

The surface of the test specimen must consist of retroreflective material. The material must meet the requirements for retroreflective material with particular characteristics according to ISO 20471. The specific minimum back reflection value (CIL) is 330 cd/lx/m^2 at a lighting angle of 5° and a viewing angle of 0.2°.

Remarks:
*1 For every target or test specimen, a reference target with calibration certificate is optionally available.
*2 An extended wavelength range is available on request.