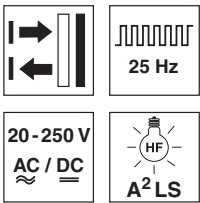## HT49C RELAIS    Diffuse reflection light scanners with background suppression

en 02-2015/08   50128462-01



**5 … 3000mm**
1200mm with
black-white error < 10%

| | |
|---|---|
| I→ \| ←I | 25 Hz |
| 20 - 250 V AC / DC ≈ ⚊ | (HF) A²LS |

- Scanner with adjustable background suppression in red light and infrared light version
- Reliable detection of objects with different surface structures
- Robust plastic housing, degree of protection IP 67 and IP 69K for universal, industrial application
- All-mains design 20 … 250VAC/DC with relay output (potential-free)
- Large adjustment range and minimal zero distance for optimum adaptation to the application
- Light/dark switching and time module activation via teach button for time-saving integration in existing evaluation environment:
- Space-saving installation thanks to front access to the connection compartment
- Extremely time-saving connection by means of spring terminals (up to 1.5mm²)
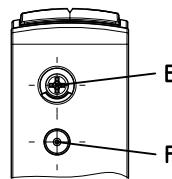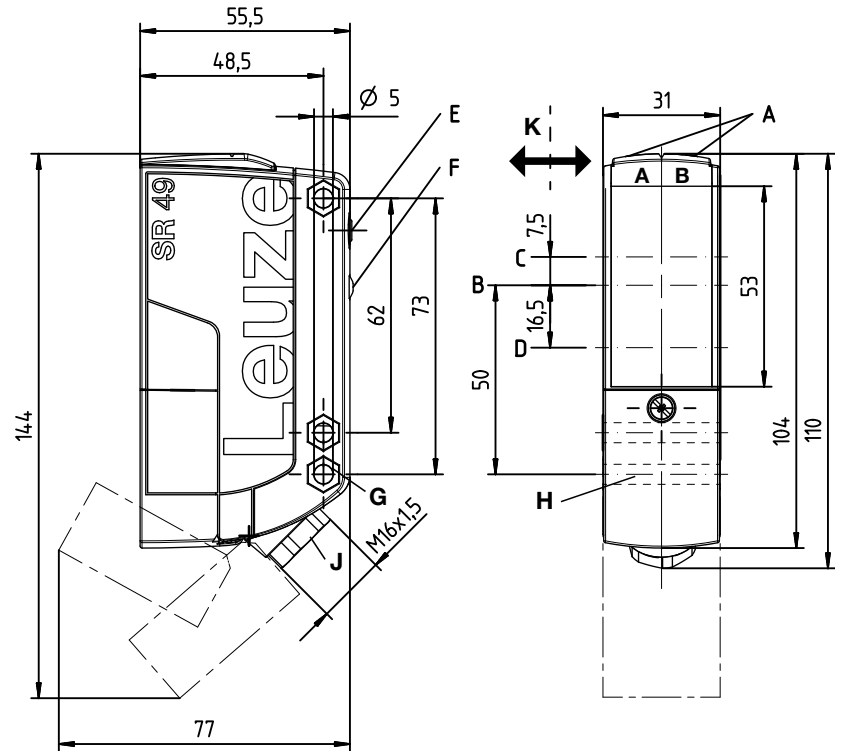- A²LS - Active Ambient Light Suppression
- Optics heating

CE

| IEC 60947… | IEC 60947… | ▢ | IP 69K IP 67 |

### Accessories:

**(available separately)**

- Mounting systems (BTU 460, BT 96, BT 96.1, BT 450.1-96)
- Spark extinction

We reserve the right to make changes • DS_HT49CUCTS_en_50128462_01.fm

## Dimensioned drawing



| | | |
|---|---|---|
| A_A | Green indicator diode | |
| A_B | Yellow indicator diode | |
| B | Optical axis | |
| C | Receiver | |
| D | Transmitter | |
| E | Scanning range adjustment | |
| F | Teach button for light/dark switching / time module activation | |
| G | Countersinking for SK nut M5, 4.2 deep | |
| H | Connection compartment with spring terminals | |
| J | Cable entry with M16x1.5 screw fitting for Ø5 … 10mm | |
| K | Preferred entry direction | |

## Electrical connection
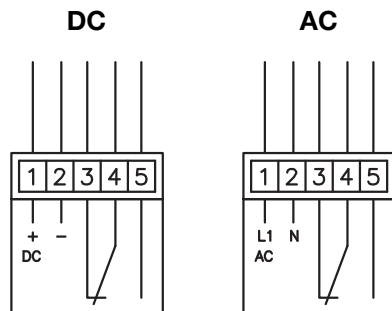


**Wire color of connecting cable**

| Pin | Color |
|---|---|
| 1 | BR / BN |
| 2 | BL / BU |
| 3 | WS / WH |
| 4 | GR / GY |
| 5 | SW / BK |

# Specifications

## Optical data

| | HT49C… | HT49CI… |
|---|---|---|
| Typ. scanning range limit (white 90 %) [1] | 5 … 3000mm | |
| Scanning range [2] | see diagrams | |
| Black-white error | <10 % up to 1200mm | |
| Adjustment range | 120 … 3000mm | |
| Light source | LED (modulated light) | |
| Wavelength | 630nm (red light) | 860nm (infrared light) |

## Timing

| | |
|---|---|
| Switching frequency | 25Hz |
| Response time | 20ms |
| Delay before start-up | ≤ 300ms |

## Electrical data

| | |
|---|---|
| Operating voltage $U_B$ | 20 … 250VAC, 50/60Hz |
| | 20 … 250VDC |
| Power consumption | ≤ 1.5VA |
| Switching output [3] | relay, 1 change-over contact |
| Function | break-contact/make-contact |
| Switching voltage, relay | 250VAC/DC |
| Switching current, relay | 250VAC, 2.5A/30VDC, 2.5A |
| Switching power, relay | 625VA, cosφ=1 |
| Scanning range | adjustable |

## Indicators

| | |
|---|---|
| Green LED | ready |
| Yellow LED | reflection |

## Mechanical data

| | |
|---|---|
| Housing | polycarbonate |
| Optics cover | plastic |
| Weight | 150g |
| Connection type | spring terminals, max. wire cross section 1.5mm$^2$ |
| | cable 2000mm, 5 x 0.5mm$^2$ |

## Environmental data

| | |
|---|---|
| Ambient temp. (operation/storage) | -40°C … +60°C/-40°C … +70°C |
| Protective circuit [4] | 1, 4 |
| VDE safety class [5] | II, all-insulated |
| Degree of protection | IP 67, IP 69K [6] |
| Light source | exempt group (in acc. with EN 62471) |
| Standards applied | IEC 60947-5-2 |

## Options

| | |
|---|---|
| **Switching function** (teach level 1) | light switching (factory setting) or dark switching |
| **Time module** (teach level 2) | active:     dropout delay 500ms |
| | not active:no dropout delay (factory setting) |

## Optics heating

| | |
|---|---|
| Current consumption | approx. 70mA at 20VDC |

1) Typ. scanning range limit: max. attainable range without performance reserve
2) Scanning range: recommended range with performance reserve
3) Suitable spark extinction (snubber) must be provided with inductive or capacitive loads.
4) 1=transient protection, 4=interference blanking
5) Rating voltage 250VAC
6) IP 69K test acc. to DIN 40050 part 9 simulated, high pressure cleaning conditions without the use of additives, acids and bases are not part of the test

# Remarks

| **Operate in accordance with 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 the intended use. |

● With the set scanning range, a tolerance of the upper scanning range limit is possible depending on the reflection properties of the material surface.
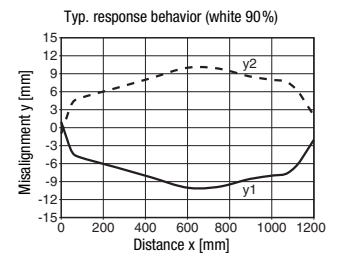
# Tables

| 1 | 5 | 3000 |
|---|---|---|
| 2 | 20 | 2000 |
| 3 | 50 | 1500 |

| 1 | white 90% |
|---|---|
| 2 | gray 18% |
| 3 | black 6% |

| Scanning range [mm] |
|---|

# Diagrams

**HT49C… with red light**

Typ. response behavior (white 90%)



**HT49CI… with infrared light**

Typ. response behavior (white 90%)



**HT49C… with red light**

Typ. black/white behavior



**HT49CI… with infrared light**

Typ. black/white behavior
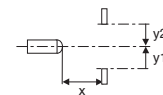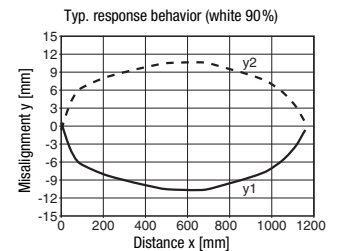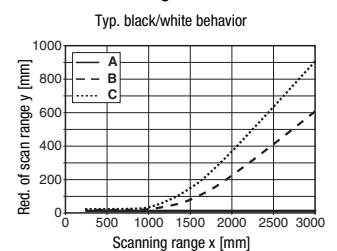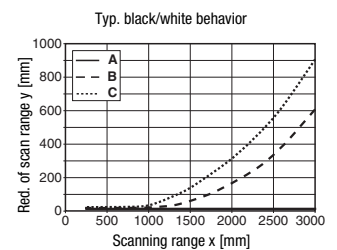


**A** white 90%

**B** gray 18%

**C** black 6%
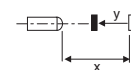
## HT49C RELAIS      Diffuse reflection light scanners with background suppression

## Part number code

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| H | T | 4 | 9 | C | I | . | U | C | H | / | T | S | - | T | B |

**Operating principle**

**HT**    Diffuse reflection light scanners with background suppression

**Series**

**49C**    49C series

**Light type**

**I**      Infrared light
**free**   Red light

**Operating voltage**

**UC**    20 … 250VAC/DC (all-mains design)

**Equipment**

**H**     Optics heating

**Setting**

**free**   Mechanical scanning range adjustment, teach button (light/dark switching, time module activation)

**Switching output**

**TS**    Relay, normally closed contact/normally open contact (NC/NO)
**M4**   Low-impedance MOSFET semiconductor switching output, normally open contact (NO)

**Connection technology**

**TB**    Terminal block - terminal compartment with spring terminals (5 x 1.5mm$^2$)
**free**   Cable 2000mm

## Order guide

The sensors listed here are preferred types; current information at www.leuze.com.

| All-mains designs with relay output | Designation | Part no. |
|---|---|---|
| **Terminal compartment with spring terminals (5 x 1.5mm$^2$)** | | |
| Red light | HT49C.UC/TS-TB | 50127193 |
| Infrared light | HT49CI.UC/TS-TB | 50127433 |
| Red light, optics heating | HT49C.UCH/TS-TB | 50130470 |
| Infrared light, optics heating | HT49CI.UCH/TS-TB | 50130471 |
| **Cable, cable length 2m** | | |
| Red light | HT49C.UC/TS | 50127430 |
| Infrared light | HT49CI.UC/TS | 50127434 |

# Teach procedure for sensor

**Note**

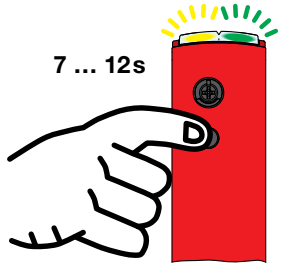Factory setting:  **light switching,
time module not active**

# Light/dark switching

## Setting the switching behavior of the relay output

| | |
|---|---|
| **Teach level 1** | **Press teach button** (2 to 7s) until both LEDs (green/yellow) **flash synchronously**. |
| | Release teach button – switchover is complete. |
| | The **yellow LED** then indicates the **current setting of the switching output** for **3s**: |
| | ON = light switching = output between **pin 4** and **pin 3**: **normally closed contact (NC)** |
| | output between **pin 4** and **pin 5**: **normally open contact (NO)** |
| | OFF = dark switching = output between **pin 4** and **pin 3**: **normally open contact (NO)** |
| | output between **pin 4** and **pin 5**: **normally closed contact (NC)** |

2 … 7s

# Activation/deactivation of the time module

## Setting a dropout delay for the relay output

| | |
|---|---|
| **Teach level 2** | **Press teach button** (7 to 12s) until both LEDs (green/yellow) **flash alternately**. |
| | Release teach button – activation/deactivation is complete. |
| | The **yellow LED** then indicates the **current setting of the dropout delay** for **3s**: |
| | ON = time module not active = **no dropout delay** for the relay |
| | OFF = time module active = **dropout delay** for the relay: **500ms** [1] |
| | 1) Additional models on request |

7 … 12s

Dropout delay: if the object is no longer present, the output switches with a time delay.