Leuze

# Retro-reflective photoelectric sensor

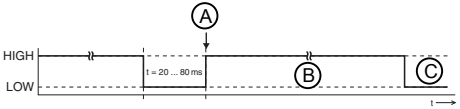
## PRK3CA Autokollimation

We reserve the right to make changes – 2020/02/12 – 50137129-01

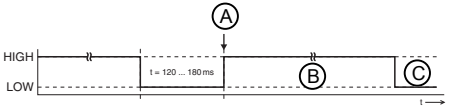
Leuze electronic GmbH + Co. KG
In der Braike 1 73277 Owen Tel.: +49 7021 573-0
info@leuze.com • www.leuze.com

ПРОМЭЛЕКТРОНИКА / sales@prom-elec.com

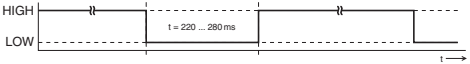
# 1


A
HIGH
LOW
t = 20 ... 80 ms
B
C
t

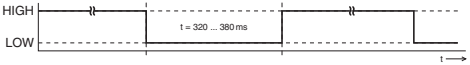
# 2


A
HIGH
LOW
t = 120 ... 180 ms
B
C
t

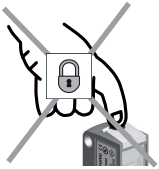
# 3


HIGH
LOW
t = 220 ... 280 ms
t

# 4


HIGH
LOW
t = 320 ... 380 ms
t

# 5



## *Sensor adjustment (teach) via teach button*

The sensor is factory-adjusted for maximum operating range. The teach procedure is only necessary if the sensor does not switch when an object enters the light beam.

| (1) Standard teach (low sensitivity) | | (2) Sensitive teach (increased sensitivity) | |
|---|---|---|---|
| Clear the light path before teaching! | | | |
| 1 | Hold down the teach button (2 to 7 s) until the yellow and green LEDs flash simultaneously. | 1 | Hold down the teach button (7 to 12 s) until the yellow and green LEDs flash alternately. |
| 2 | Release teach button – ready. | 2 | Release teach button – ready. |
| The sensor switches when approx. half of the light beam is covered by the object. | | Unlike the standard teach mode, the sensor switches when a considerably smaller part of the light spot is covered. | |
| Device settings are stored fail-safe. | | | |

| (3) Teach at max. operating range (factory setting) | | (4) Set switching behavior (light/dark switching) | |
|---|---|---|---|
| Obstruct the light path before teaching! | | When the function is activated, the switching output is inverted relative to the previously set state. | |
| 1 | Hold down the teach button (2 to 7 s) until the yellow and green LEDs flash simultaneously. | 1 | Hold down the teach button longer than 12 s until only the green LED flashes. |
| 2 | Release teach button – ready. | 2 | Release teach button – ready. |
| The sensor now operates with the maximum function reserve/operating range. | | Behavior of the yellow LED in this operating mode:<br>After releasing the teach button, the yellow LED indicates the set switching behavior for 2 s and then reverts back to the light path.<br>Switching behavior with reflectors:<br>– Yellow LED on continuously: switching output now dark switching<br>– Yellow LED remains off for 2 s and is then on continuously: switching output now light switching<br>Switching behavior without reflector:<br>– Yellow LED switches on for 2 s and then remains off: switching output now dark switching<br>– Yellow LED remains off: switching output now light switching | |
| | | Note:<br>The yellow LED is not dependent on the switching behavior setting and always indicates the light path in normal operation. | |
| Device settings are stored fail-safe. | | | |

## *Sensor adjustment (teach) via teach input (pin 2)*

This device setting is only available for sensors in the PRK3C.A3/…T… variant.

| | *NOTICE* |
|---|---|
| i | The following description applies to PNP switching logic!<br>Signal level LOW ≤ 2V<br>Signal level HIGH ≥ ($U_B$-2V)<br>With the NPN models, the signal levels are inverted! |

**1**

### Standard teach (low sensitivity)

A Standard teach (low sensitivity) is performed
B Teach button is locked
C Teach button may now be operated again

**2**

### Sensitive teach (increased sensitivity)

A Sensitive teach (increased sensitivity) is performed
B Teach button is locked
C Teach button may now be operated again

**3**

### Dark switching logic

Switching outputs are dark switching, i.e., outputs are active, when there is an object currently in the light path.
With antivalent switching outputs: OUT 1 (pin 4) dark switching, OUT 2 (pin 2) light switching.

**4**

ПРОМЭЛЕКТРОНИКА / sales@prom-elec.com

### Light switching logic

Switching outputs are light switching, i.e., outputs are active, when there is no object currently in the light path.
With antivalent switching outputs: OUT 1 (pin 4) light switching, OUT 2 (pin 2) dark switching.

### *Locking the teach button via the teach input*

**5**

This device setting is only available for sensors in the PRK3C.A3/…T… variant (teach input via pin 2).
A static high signal (≥ 20 ms) at the teach input locks the teach button on the sensor if required, such that no manual operation is possible (e.g., protection from erroneous operation or manipulation).
If the teach input is not connected or if there is a static low signal, the button is unlocked and can be operated freely.

## *IO-Link interface*

Sensors in the PRK3C…/L… variant have a dual-channel architecture. The IO-Link interface is available in accordance with specification 1.1.2 (July 2013) on pin 4 (OUT 1). You can easily, quickly and economically configure the devices via the IO-Link interface. Furthermore, the sensor transmits the process data via the IO-Link interface and makes diagnostic information available through it.

Parallel to the IO-Link communication, the sensor can output the continuous switching signal for object detection on OUT 2. The IO-Link communication does not interrupt this signal.

| | *NOTICE* |
|---|---|
| | In the *Sensor Studio* configuration software, the following applies with regard to the designations: Q1 = OUT 1, Q2 = OUT 2. |

The sensors offer no data retention and no ISDU support. The device can only be identified via VendorID and DeviceID.

## *IO-Link identification*

| VendorID dec/hex | DeviceID dec/hex | Device |
|---|---|---|
| 338/0x152 | 2118/0x000846 | PRK3C.A3/LP |

## *IO-Link process data*

### Device output data

| Data bit | Assignment | Meaning |
|---|---|---|
| 0 | Switching output Q1 (OUT 1) | 0 = inactive, 1 = active |
| 1 | Warning output autoCon-trol | 0 = no warning, 1 = warning |
| 2 | Sensor operation | 0 = off, 1 = on<br>Sensor operation off when detection is not possible (e.g during the teach event). |
| 3 | Not assigned | Free |
| 4 | Not assigned | Free |
| 5 | Not assigned | Free |
| 6 | Not assigned | Free |
| 7 | Not assigned | Free |

### Device input data

| Data bit | Assignment | Meaning |
|---|---|---|
| 0 | Deactivation | 0 = transmitter active, 1 = transmitter in-active |
| 1 | Not assigned | Free |
| 2 | Not assigned | Free |
| 3 | Not assigned | Free |
| 4 | Not assigned | Free |
| 5 | Not assigned | Free |
| 6 | Not assigned | Free |
| 7 | Not assigned | Free |

## *Device-specific IODD*

At www.leuze.com in the download area for IO-Link sensors you will find the IODD zip file with all data required for the installation.

## *IO-Link parameters documentation*

The complete description of the IO-Link parameters can be found in the *.html files. Double-click on a language variant:

- German: *IODD*-de.html
- English: *IODD*-en.html

## *Functions configurable via IO-Link*

PC configuration and visualization is performed comfortably with the USB-IO-Link Master SET US2-IL1.1 (part no. 50121098) and the *Sensor Studio* configuration software (in the download area of the sensor at www.leuze.com).

| Function block | Function | Description |
|---|---|---|
| Configuration | Logical function of Q2 | If the function Q2 = *switching output* is selected, the switching function corresponds to the current setting which was selected via the L/D changeover.<br>If Q2 = *inv. switching output* is selected, the switching behavior of the output is inverted. |
| | Key Lock | *On* disables the teach button on the sensor. |
| | L/D switching | In the factory setting, outputs Q1 and Q2 are antivalent switching outputs:<br>– Light switching: Q1 = light switching, Q2 = dark switching.<br>– Dark switching: Q1 = dark switching, Q2 = light switching. |
| | Switching delay | *On* activates the internal time function. |
| | Function selection of the switching delay | Activation of a suitable switching delay is possible. It is not possible to combine switching delays. |
| | Time base of the switching delay | Possibility of selecting a time base. |
| | Factor for the time base of the switching delay | To adapt the time base, it is multiplied by the entered factor. Only whole-number factors from 1 to 15 are permitted. |

| Function block | Function | Description |
|---|---|---|
| **Commands**<br>The first four commands correspond to the functions which can be performed at the sensor using the teach button or the remote teach function. | **Sensitive teach**<br>for the detection of a transparent object (e.g. empty single bottle) | Clear the light path before activation. |
| | **Standard teach**<br>for the detection of a partially transparent object (e.g. bottle made of colored glass) | Clear the light path before activation. |
| | Light switching | |
| | Dark switching | |
| | Switch the process data display mode to analog value | Activate to display diagrams on the *Process* tab when using *Sensor Studio* configuration software. |