Leuze

IO-Link interface description

RK46C

Retro-reflective photoelectric sensor

The Sensor People

We reserve the right to make technical changes
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1 IO-Link interface

Sensors in the RK46C variant have a dual channel architecture. The IO-Link interface is available in accordance with specification 1.1.2 (July 2013) on pin 4. 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.

In parallel with the IO-Link communication, the sensor can output the continuous switching signal for object detection on pin 2 (SSC1 inverted by default) by means of the dual channel architecture. The IO-Link communication does not interrupt this signal.

1.1 IO-Link identification

VendorID dec/hex	DeviceID dec/hex	Device
338/0x152	2111/0x83F	RK46C.DL3/LP
	2110/0x83E	RK46C.DXL3P2/LP

Please refer to the respective product data sheet for the identification data of other IO-Link devices.

1.2 IO-Link process data

Device input data (PDOut – 1-bit data length)

Bit offset	Data width in bits	Assignment	Meaning
0	1	CSC - Sensor Control	0: Transmitter active 1: Transmitter not active

Byte 0	x	x	x	x	x	x	x	CSC
	7	6	5	4	3	2	1	0

Device output data (PDIn - 8-bit data length) - PD input configuration = 0

Bit offset	Data width in bits	Assignment	Meaning
0	1	Q	0: Switching output 1 not active 1: Switching output 1 active
1	1	Warning	0: No warning 1:Warning
2	1	Status	0: Sensor not in operation 1: Sensor in operation

Byte 0	x	x	x	x	x	Status	Warning	Q
	7	6	5	4	3	2	1	0

Device output data (PDIn - 8-bit data length) - PD input configuration = 1

Bit offset	Data width in bits	Assignment	Meaning
0	1	Q	0: Switching output 1 not active 1: Switching output 1 active
1	7	Received Signal	Current measurement value

Byte 0	Received Signal							Q
	7	6	5	4	3	2	1	0

1.3 Device-specific IODD

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

On the IODDfinder platform (https://ioddfinder.io-link.com/), a central cross-manufacturer database, you can also find the description files (IODDs) of the IO-Link sensors.

1.4 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 in the directory containing the extracted files:

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

If the html file within the ZIP archive is opened, the image files are not displayed.

↳ Extract the ZIP file first.

1.5 Device-specific information

- This device does not have ISDU support; parameters are read and written via the direct parameter overlay.
- In the PREOPERATE state, this device uses TYPE_0.
- Because this device is not an actuator, no special failsafe behavior in the event of failure of PDOut is necessary. In the context of deactivation, there are, however, the following special situations:
  - Changes to the transferred PDOut information are ignored if they are marked as invalid. On the sensor side, the replacement value 0 (= activation) is assumed:
    If the device was previously activated, it thus remains activated.
    If the device was previously deactivated, it changes to the activated state.
- If there is a lack of communication, the last setting (activation or deactivation) remains unchanged.

Fundamentals:

- IO-Link Interface and System Specification Version 1.1.2, July 2013
- IO-Link Test Specification Version 1.1.2 July 2014

2 Functions configurable via IO-Link

PC configuration and visualization is performed comfortably with the USB-IO-Link Master SET MD12-US2-IL1.1 (part no. 50121098) and the *Sensor Studio* configuration software (in the download area of the sensor at **www.leuze.com**).

System commands

NOTICE

The system commands trigger an action in the device.

Parameter	Index	Sub-index	Data type, octets	Access	Value range	Default	Explanation
System command	0	16	UIntegerT, 1	WO	160, 161, 162, 163, 164, 170, 171, 172, 173, 174, 191		160: Acknowledgment on error 161: Teach 11 % (standard sensitivity) 162: Teach 30 % (reduced sensitivity) (DeviceID 2111) 162: Teach 14 % (reduced sensitivity) (DeviceID 2110) 163: Dark switching 164: Light switching 170: Switch to configuration mode 171: Load last teach state (WORKING) 172: Restore factory settings (FACTORY) 173: Save current parameters in the device 174: Switch on sensor mode 191: Switch the process data display mode to analog value

General configuration

Parameter	Index	Sub-index	Data type, octets	Access	Value range	Default	Explanation
Off Limit	1	2	UIntegerT, 1	RO			Switch-off threshold
On Limit	1	3	UIntegerT, 1	RO			Switch-on threshold
Key Lock	1	6	Boolean	RW	0, 1	0	Button lock (overwrites IN2 Input/PD): 0: Teach button not locked 1: Teach button locked
Q2 logic function	1	8	UIntegerT, 2 bits	RW	0 … 2	0	Setting the functionality on PIN 2: 0: PIN as SSC inverted 1: PIN as SSC 2: PIN as warning output (only for DeviceID 2111)

Parameter	Index	Sub-index	Data type, octets	Access	Value range	Default	Explanation
Delay Function	1	10	UIntegerT, 2 bits	RW	0 … 3	1	Function selection of the switching delay: 0: Switch-on delay 1: Switch-off delay 2: Pulse stretching 3: Pulse suppression Function selection of the switching delay: activation of a suitable switching delay is possible. It is not possible to combine switching delays.
Time base	1	11	UIntegerT, 2 bits	RW	0 … 3	3	Definition of the time basis: 0: 1 ms 1: 10 ms 2: 100 ms 3: 1000 ms
Multiplication factor for time base	1	12	UIntegerT, 4 bits	RW	1 … 15	5	Multiplier of the time delay: 1 ... 15* time basis
Light/Dark Switching	1	18	Boolean	RW	0, 1	0	Logic: 0: Light switching 1: Dark switching
Internal Delay Unit	1	20	Boolean	RW	0, 1	0	Time module: 0: Deactivated 1: Activated