Leuze

IO-Link interface description

PRK33C, PRK35C

Polarized retro-reflective photoelectric sensor - autocollimation

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1 IO-Link interface

Sensors in the PRK33C and PRK35C variants 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. **(Only valid for DeviceID 6138)**

1.1 IO-Link identification

VendorID dec/hex	DeviceID dec/hex	Device
338/0x152	6138/0x17FA	PRK35C.PPTT3/LG-M12
	6138/0x17FA	PRK35C.PPTT3/LG
	6138/0x17FA	PRK35C.PPTT3/LG-200-M12
	6138/0x17FA	PRK33C.PPTT3/LG-M8
	6139/0x17FB	PRK35C.PPTT3/LT-M12
	6139/0x17FB	PRK35C.PPTT3/LT
	6139/0x17FB	PRK35C.PPTT3/LT-200-M12
	6139/0x17FB	PRK33C.PPTT3/LT-M8

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	SSC.1 – Switching signal	0: Switching output 1 not active 1: Switching output 1 active
1	1	Warning	0: No warning 1:Warning
2	1	Status	0: Only during teach 1: Sensor in operation
3	1	Teach status	0: Teach OK 1: Teach error

Byte 0	x	x	x	x	Teach status	Status	Warning	SSC.1
	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	SSC. 1 – Switching signal	0: Switching output 1 not active 1: Switching output 1 active
1	7	Measurement value	Current measurement value

Byte 0	Measurement value							SSC.1
	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 is a device with the Data Storage function, i.e., device exchange is possible without additional measures (such as teaching).
- In the PREOPERATE state, this device uses TYPE_0.
- Changes to the transferred PDOUT information are ignored if they are marked as invalid. On the sensor side, the replacement value 0 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 conveniently with the USB-IO-Link Master SET MD12-US2-IL1.1 (part no. 50121098) and the *Sensor Studio* configuration and diagnosis software (in the download area of the sensor at **www.leuze.com**).

NOTICE
The system commands trigger an action in the device.

Parameter	Index	Subindex	Data type, octets	Access	Value range	Parameter	Index
System-command	2	0	UIntegerT, 1	WO	130, 161, 162, 163, 164, 168, 173, 174, 175, 176, 192		130: Reset to factory settings 161: High sensitive teach 11% (filled bottle) 162: Sensitive teach 18% (empty bottle) 163: Robust teach 30% (colored bottle) 164: EasyTune up (increase in sensitivity) 168: EasyTune down (decrease in sensitivity) 173: Format change to High sensitive 11% 174: Format change to Sensitive 18% 175: Format change to Robust 30% 176: Reset object counter 192: Back To Box

Parameter	Index	Subindex	Data type, octets	Access	Value range	Default	Explanation
Application Specific Tag	24	0	String, max. 32	RW		***	Application-specific marking
Function Tag	25	0	String, max. 32	RW		***	Function identifier
Location Tag	26	0	String, max. 32	RW		***	Location indicator

Parameter	Index	Sub-index	Data type, octets	Access	Value range	Default	Explanation
Config	64	1	UIntegerT, 2 bit	RW	0, 1	0	Process data input configuration: 0: Process data bits 1: Measurement value
		2	Boolean	RW	0, 1	0	Key lock: 0: Deactivated 1: Activated
		3	Boolean	RW	0, 1	0	Process data output configuration: 0: Transmitter active 1: Transmitter not active
		4	UIntegerT, 2 bit	RW	0 … 3	0	Setting the functionality on PIN 2. **(Only valid for DeviceID 6138)** 0: Logic switching output inverted 1: Logic switching output not inverted 2: Warning output 3: Warning output inverted
		5	UIntegerT, 2 bit	RW	0 … 3	0	Input configuration **(Only valid for DeviceID 6139)** 0 = Off 1 = Teach 2 = Deactivate 3 = Activate
		6	UIntegerT, 2 bit	RW	0 … 3	1	Function selection of switching delay SSC.1: 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.
		7	UIntegerT, 2 bit	RW	0 … 3	1	Definition of the time basis: 0: 1 ms 1: 10 ms 2: 100 ms 3: 1000 ms
		8	UIntegerT, 4 bit	RW	1 ... 15	1	Multiplier of the time delay: 1 ... 15* time basis
		11	Boolean	RW	0, 1	0	Non-volatile saving of teach parameters: 0: No 1: Yes
		12	Boolean	RW	0, 1	1	Activating / deactivating EasyTune (manual threshold adjustment): 0: EasyTune function deactivated 1: EasyTune function activated

Parameter	Index	Subindex	Data type, octets	Access	Value range	Default	Explanation
Config	64	14	Boolean	RW	0, 1	0	Logic: 0: Active with no object 1: Active with object
		15	Boolean	RW	0, 1	1	Tracking –contamination compensation This function significantly extends the cleaning intervals, which leads to higher system efficiency. 0: Deactivated 1: Activated
		16	Boolean	RW	0, 1	0	Time module: 0: Deactivated 1: Activated
Number of Objects SSC.1	70	0	UIntegerT, 4	RO	0 … 4294967295		Object counter: The device has an internal, volatile object counter. This counts the switching events and can be freely read out. This function enables a simple validation of the process. As soon as the object counter has reached the maximum end value, the count process starts over again at 0.
Operation Hour Counter	71	0	UIntegerT, 4	RO	0 … 4294967295		Non-volatile counting of completed operating hours.
Setpoints	73	1	UIntegerT, 1	RO			Numerical output of switching point SP1
		2	UIntegerT, 1	RO			Numerical output of switching point SP2