

IO-Link interface description

LE53C, LE55C

PRK53C, PRK55C

Throughbeam photoelectric sensor receiver

Polarized retro-reflective photoelectric sensor



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1 IO-Link interface

Sensors in the LE53C, LE55C and PRK53C, PRK55C variants have a dual channel architecture. The IO-Link interface is available in accordance with specification 1.1.3 (June 2019) 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 | 6019/0x1783 | LE53C/LG-M8 |
| | 6019/0x1783 | LE55C/LG-200-M12 |
| | 6019/0x1783 | LE55C/LG-5000 |
| | 6019/0x1783 | LE55C/LG-M8 |
| | 6021/0x1785 | PRK55C/LG-200-M12 |
| | 6021/0x1785 | PRK55C/LG-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 (PDOOut – 1-bit data length)

| Bit offset | Data width in bits | Assignment | Meaning |
|------------|--------------------|----------------------|---|
| 0 | 1 | CSC - Sensor Control | 0: Transmitter active 1: Transmitter not active (Only valid for Device ID 6021) |

| | | | | | | | | |
|--------|---|---|---|---|---|---|---|-----|
| 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: Sensor not in operation 1: Sensor in operation |

| | | | | | | | | |
|--------|---|---|---|---|---|--------|---------|-------|
| Byte 0 | x | x | x | x | x | 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 (Only valid for Device ID 6021) |
| 1 | 7 | Measurement value | Current measurement value (Only valid for Device ID 6021) |

| | | | | | | | | |
|--------|---------|---|---|---|---|---|---|-------|
| Byte 0 | Warning | | | | | | | 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 PDOOUT 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 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 | 2 | 0 | UIntegerT, 1 | WO | 130, 176, 192 | | 130: Reset factory settings 176: Reset object counter 192: Back To Box |

General configuration

| Parameter | Index | Sub-index | 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: (Only valid for Device ID 6021) 0: Process data bits 1: Measurement value |
| | | 3 | Boolean | RW | 0.1 | 0 | Process data output configuration: (Only valid for Device ID 6021) 0: Transmitter active 1: Transmitter not active |
| | | 4 | UIntegerT, 2 bit | RW | 0 ... 3 | 0 | Setting the functionality on PIN 2: 0: Logic switching output inverted 1: Logic switching output not inverted 2: Warning output 3: Warning output inverted |
| | | 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 switching delay: 1 ... 15* time basis |
| | | 14 | Boolean | RW | 0.1 | 0 | Logic: 0: Switching output active if light path is free 1: Switching output active on object detection |
| | | 16 | Boolean | RW | 0.1 | 0 | Time module: 0: Deactivated 1: Activated |
| Number of Objects SSC.1 | 70 | 0 | UIntegerT, 4 | RO | 0 ... 429 496729 5 | | 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 ... 429 496729 5 | | Non-volatile counting of completed operating hours. |

| Parameter | Index | Sub-index | Data type, octets | Access | Value range | Default | Explanation |
|-----------|-------|-----------|-------------------|--------|-------------|---------|--|
| Setpoints | 73 | 1 | UIntegerT, 1 | RO | | | Numerical output of switching point SP1. (Only valid for Device ID 6021) |
| | | 2 | UIntegerT, 1 | RO | | | Numerical output of switching point SP2. (Only valid for Device ID 6021) |