Leuze

IO-Link interface description

GS04B, GS08B, GSL08B

Fork photoelectric sensor

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

Sensors in the GSL04B/... , GS08B/... and GSL08B/... variant have a IO-Link interface. The IO-Link interface is available on pin 4 in accordance with specification 1.1.2 (July 2013). 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.

1.1 IO-Link identification

VendorID dec/hex	DeviceID dec/hex	Device
338/0x152	2522/0x0009DA	GSL04B/1.1-30-M8.3 GSL04B/1.1-50-M8.3 GSL04B/1.1-80-M8.3 GSL04B/1.1-120-M8.3
	2523/0x0009DB	GS08B/1.1-30-M8.3 GS08B/1.1-50-M8.3 GS08B/1.1-80-M8.3
	2524/0x0009DC	GSL08B/1.1-30-M8.3 GSL08B/1.1-50-M8.3 GSL08B/1.1-80-M8.3 GSL08B/1.1-120-M8.3
	2525/0x0009DD	GS08B/1.1-120-M8.3
	…	…

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)

Data bit	Assignment	Meaning
0	Not assigned	Free
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 output data (PDIn – 16-bit data length)

Data bit	Assignment	Meaning
0	Switching state	Current state of the switching output. 0: Not active (switching output to low or 0V) 1: Active (switching output to high or 24V)
1	Not assigned	Free
2	Stability	Assessment of the current function reserve of the device. 0: OK – function reserve sufficient 1: Not OK – function reserve no longer sufficient
3	Not assigned	Free

Data bit	Assignment	Meaning
4	Measurement value	Describes the degree of damping of the light path. If objects are located in the light beam, the measurement value decreases depending on the occlusion and transmission of the object. Value range 0..113% If the light path is free and the optics are not soiled, the measurement value in *Standard* sensor mode is 100%. In *Power* sensor mode, the measurement value with free light path is higher than 100%; in *Precision* sensor mode, the measurement value is lower than 100% (see chapter 3 "Configuring sensor mode").
5	Not assigned	Free
6	Not assigned	Free
7	Not assigned	Free

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 data 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.

2 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**).

System commands

NOTICE

The system commands trigger an action in the device.

Parameter	Index	Sub-index	Data type, octets	Access	Value range	Default	Explanation	Available in following devices
System command	2	0	UIntegerT, 1	WO	64, 65, 67, 68, 71, 72, 79, 130, 160, 163, 164, 165, 166		64: Execute teach 65: Single-value teach 67: Two-value teach, teach point 1 68: Two-value teach, teach point 2 71: Start dynamic teach 72: Stop dynamic teach 79: Cancel teach 130: Reset factory settings 160: Accept local settings 163: Reset diagnostic information 164: Laser deactivation 165: Laser activation 166: Laser single measurement	GSL04B/..., GSL08B/...
System command	2	0	UIntegerT, 1	WO	64, 65, 67, 68, 71, 72, 79, 130, 160, 163		64: Execute teach 65: Single-value teach 67: Two-value teach, teach point 1 68: Two-value teach, teach point 2 71: Start dynamic teach 72: Stop dynamic teach 79: Cancel teach 130: Reset factory settings 160: Accept local settings 163: Reset diagnostic information	GS08B/...

General configuration

Parameter	Index	Sub-index	Data type, octets	Access	Value range	Default	Explanation	Available in following devices
Device Access Locks	12	0	UInteger T, 2	RW	0, 8	0	0: Potentiometer not disabled 8: Potentiometer disabled	GSL04B/..., GSL08B/..., GS08B/...
Setpoint	60	0	UInteger T,4	RW	4 ... 88	50	Configured threshold value for switching output. The value range is device dependent.	GSL04B/..., GSL08B/..., GS08B/...
Logic switching output	61	0	UInteger T,4	RW	0, 1	0	Configuration of switching output logic. 0: Dark switching 1: Light switching In the factory setting, the switching output is configured as dark switching.	GSL04B/..., GSL08B/..., GS08B/...
Device Adjustment	65	0	UInteger T, 1	RW	0, 1	1	Selection of device configuration – local by means of potentiometer or remote via IO-Link interface. 0: Remote 1: Local	GSL04B/..., GSL08B/..., GS08B/...
On delay switching output	66	0	UInteger T, 2	RW	0 ... 10000	0	Activation of switching delay for switch-on delay. Definition of time base in 1 ms increments, configurable from 0 ms to 10,000 ms.	GSL04B/..., GSL08B/..., GS08B/...
Off delay switching output	67	0	UInteger T, 2	RW	0 ... 10000	0	Activation of switching delay for switch-off delay. Definition of time base in 1 ms increments, configurable from 0 ms to 10,000 ms.	GSL04B/..., GSL08B/..., GS08B/...
Switching output	70	0	UInteger T, 1	RW	0, 1, 2	0	Configuration of switching output polarity. 0: Push-pull 1: NPN 2: PNP In the factory setting, the switching output is configured as push-pull.	GSL04B/..., GSL08B/..., GS08B/...

Parameter	Index	Sub-index	Data type, octets	Access	Value range	Default	Explanation	Available in following devices
Sensor mode	73	0	UIntegerT, 1	RW	0, 1, 2, 3	0	Configuration of the sensor mode. The device allows the configuration of 4 different sensor modes: 0: *Standard* 1: *Precision* 2: *Power* 3: *Speed* In the factory setting, the *Standard* sensor mode is configured. For details on the differences between the individual sensor modes, see chapter 3 "Configuring sensor mode".	GSL04B/..., GSL08B/..., GS08B/...
Switch-counter	85	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, edited and reset. 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.	GSL04B/..., GSL08B/..., GS08B/...
Temperature	86	0	IntegerT, 2	RO			The device is equipped with an integrated temperature sensor for transmitting the internal temperature in increments of 1 °Celsius.	GSL04B/..., GSL08B/..., GS08B/...

Parameter	Index	Sub-index	Data type, octets	Access	Value range	Default	Explanation	Available in following devices
Teach-In Quality	87	0	IntegerT, 1	RO	0, 1, 2, 3		Current quality of the teach-in. 0: Empty OK (Empty): Corresponds to the "Undefined" state in the software – after device restart, the result of the last teach event is no longer known. 1: High OK (High): Teach event performed, teach successful. 2: Low not OK (Low): Teach event performed, teach may however be unstable under certain circumstances. 3: Error not OK (Error): Teach event aborted.	GSL04B/..., GSL08B/..., GS08B/...
Sensibility Switch	90	0	UIntegerT, 1	RO			Describes the position of the potentiometer and therefore the configured sensitivity of the device.	GSL04B/..., GSL08B/..., GS08B/...
Logic switching output	91	0	UIntegerT, 1	RO	0, 1		Switching output logic. 0: Light switching 1: Dark switching	GSL04B/..., GSL08B/..., GS08B/...

3 Configuring sensor mode

General description

The fork sensors in the GSL04B/.., GSL/08B.. and GS08B/.. variant enable operation in various sensor modes by means of IO-Link. These sensor modes differ in terms of switching frequency, reproducibility and the smallest object they are able to detect. Depending on requirements, they can be implemented in various use cases and applications.

It is possible to choose between 4 different sensor modes, whereby the "Standard" sensor mode is the default factory setting.

Changing current sensor mode

In index 73, the desired sensor mode can be selected and activated by writing the values 0, 1, 2 or 3.

- 0: *Standard* sensor mode (factory setting, suitable for general applications)

	Switching frequency [Hz]	Reproducibility [mm]	Smallest detectable object [mm]
GSL04B/…			
GSL04B/1.1-30-M8.3	5,000	0.01	0.05
GSL04B/1.1-50-M8.3	5,000	0.01	0.05
GSL04B/1.1-80-M8.3	5,000	0.01	0.05
GSL04B/1.1-120-M8.3	5,000	0.01	0.1
GSL08B/…			
GSL08B/1.1-30-M8.3	5,000	0.01	0.05
GSL08B/1.1-50-M8.3	5,000	0.01	0.05
GSL08B/1.1-80-M8.3	5,000	0.01	0.05
GSL08B/1.1-120-M8.3	5,000	0.01	0.1
GS08B/…			
GS08B/1.1-30-M8.3	5,000	0.02	0.3
GS08B/1.1-50-M8.3	5,000	0.02	0.3
GS08B/1.1-80-M8.3	5,000	0.02	0.3
GS08B/1.1-120-M8.3	5,000	0.02	0.5

- 1: *Precision* sensor mode (for detecting extremely small objects)

	Switching frequency [Hz]	Reproducibility [mm]	Smallest detectable object [mm]
GSL04B/…			
GSL04B/1.1-30-M8.3	2,000	0.01	0.03
GSL04B/1.1-50-M8.3	2,000	0.01	0.03
GSL04B/1.1-80-M8.3	2,000	0.01	0.04
GSL04B/1.1-120-M8.3	2,000	0.01	0.05
GSL08B/…			
GSL08B/1.1-30-M8.3	2,000	0.01	0.03
GSL08B/1.1-50-M8.3	2,000	0.01	0.03
GSL08B/1.1-80-M8.3	2,000	0.01	0.04
GSL08B/1.1-120-M8.3	2,000	0.01	0.05
GS08B/…			
GS08B/1.1-30-M8.3	1,500	0.02	0.2
GS08B/1.1-50-M8.3	1,500	0.02	0.2
GS08B/1.1-80-M8.3	1,500	0.02	0.2
GS08B/1.1-120-M8.3	1,500	0.02	0.3

- 2: *Power* sensor mode (increased function reserve for better insensitivity to soiling)

	Switching frequency [Hz]	Reproducibility [mm]	Smallest detectable object [mm]
GSL04B/…			
GSL04B/1.1-30-M8.3	1,000	0.015	0.1
GSL04B/1.1-50-M8.3	1,000	0.015	0.1
GSL04B/1.1-80-M8.3	1,000	0.015	0.15
GSL04B/1.1-120-M8.3	1,000	0.015	0.15
GSL08B/…			
GSL08B/1.1-30-M8.3	1,000	0.015	0.1
GSL08B/1.1-50-M8.3	1,000	0.015	0.1
GSL08B/1.1-80-M8.3	1,000	0.015	0.15
GSL08B/1.1-120-M8.3	1,000	0.015	0.15
GS08B/…			
GS08B/1.1-30-M8.3	250	0.02	1
GS08B/1.1-50-M8.3	250	0.02	1
GS08B/1.1-80-M8.3	250	0.02	1
GS08B/1.1-120-M8.3	250	0.02	1.5

- 3: *Speed* sensor mode (reliable detection of fast moving parts)

	Switching frequency [Hz]	Reproducibility [mm]	Smallest detectable object [mm]
GSL04B/…			
GSL04B/1.1-30-M8.3	10,000	0.015	0.05
GSL04B/1.1-50-M8.3	10,000	0.015	0.05
GSL04B/1.1-80-M8.3	10,000	0.015	0.05
GSL04B/1.1-120-M8.3	10,000	0.015	0.1
GSL08B/…			
GSL08B/1.1-30-M8.3	10,000	0.015	0.05
GSL08B/1.1-50-M8.3	10,000	0.015	0.05
GSL08B/1.1-80-M8.3	10,000	0.015	0.05
GSL08B/1.1-120-M8.3	10,000	0.015	0.1
GS08B/…			
GS08B/1.1-30-M8.3	8,000	0.02	0.3
GS08B/1.1-50-M8.3	8,000	0.02	0.3
GS08B/1.1-80-M8.3	8,000	0.02	0.3
GS08B/1.1-120-M8.3	8,000	0.02	0.5