Leuze electronic

the sensor people

GS 754B CCD Forked Photoelectric Sensors

Technical Description

en 03-2014/02 50112717
We reserve the right to
make technical changes

TECHNICAL DESCRIPTION

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1 About this document

This technical description contains information regarding the proper use of the GS 754B measuring CCD forked photoelectric sensors. It is included in the delivery contents.

1.1 Explanation of symbols

The symbols used in this technical description are explained below.

Attention

This symbol precedes text messages which must strictly be observed. Failure to comply with this information results in injuries to personnel or damage to the equipment.

Notice

This symbol indicates text passages containing important information.

2 Safety notices

2.1 Safety standards

The GS 754B measuring CCD forked photoelectric sensors were developed in accordance with the applicable safety standards and tested by the manufacturer.

2.2 Approved purpose

In connection with a connected control system or evaluation unit, GS 754B CCD forked photoelectric sensors are used to detect and measure small objects in industrial production processes.

Attention

The protection of personnel and the device cannot be guaranteed if the device is operated in a manner not corresponding to its intended use.

Attention

Access and changes to the device, except where expressly described in this operating manual, are not authorized.

2.3 Organizing measures

All information in this technical description, particularly the "Safety notices" section must be observed without fail.

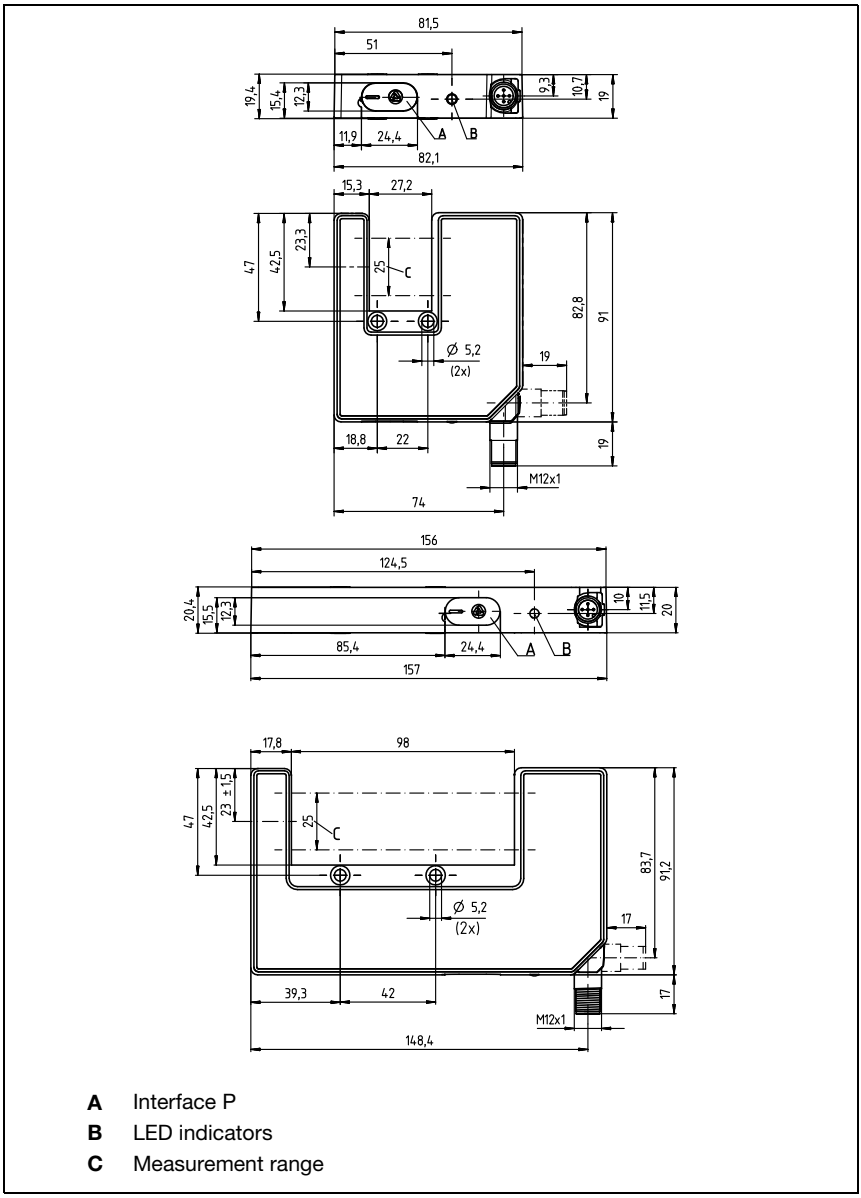
Keep this technical description in a safe place. It should be available at all times.

Observe the locally applicable legal regulations and the rules of the employer's liability insurance association.

Mounting, commissioning and maintenance of the device must only be carried out by qualified personnel. Electrical work must be carried out by a certified electrician.

Repairs, particularly opening the housing, may only be performed by the manufacturer or a person authorized by the manufacturer.

3 Controls and indicators



A Interface P
B LED indicators
C Measurement range

Figure 3.1: Positioning of the controls and indicators

4 Device description

4.1 General information

The central part of the unit is an optical sensor that generates a horizontal band of light (figure 3.1). The band of light illuminates a CCD line array camera. This CCD array produces an output signal that depends on the number of illuminated pixels.

The system has a permanent calibration and guarantees maximum precision and stability at all times.

Every sensor features two interfaces (see figure 3.1).

1. Interface P (RS 232):
   programming interface for configuring the measurement modes and for visualizing the measurement values.
2. Interface M12 (process interface):
   data for the control system are transmitted via this interface. Depending on the device model used, the measurement values are output either as an analog current/voltage signal or as digital, serial information (RS 232, RS 422).

Depending on the device model used, not all measurement values are available at the P and M12 interfaces:

- The analog interface can only output one measurement value at a time.
- The digital interface can transmit any number of measurement values.

4.2 Optical data

	GS 754B	
	Output modes 1 … 5	**Output mode 7**
Measurement range	25 mm	25 mm
Mouth width	27 mm/98 mm	27 mm/98 mm
Mouth depth	42 mm	42 mm
Resolution	≤ 0.1 mm over the entire measurement range	≥ 0.014 mm per measurement level
Smallest object	≥ 0.5 mm	≥ 0.5 mm
Light source	infrared LED	infrared LED
Wavelength	850 nm	850 nm

Table 4.1: Optical data

4.3 LED indicators

LED	Meaning
green, continuous light	Ready
green, flashing	Interference

Table 4.2: LED indicators

5 Applications

5.1 Diameter determination

Depending on which interface is used, data for up to three objects can be output. Data for more than one object can only be transmitted via the serial interface. The analog value is always based on the edge or diameter information.

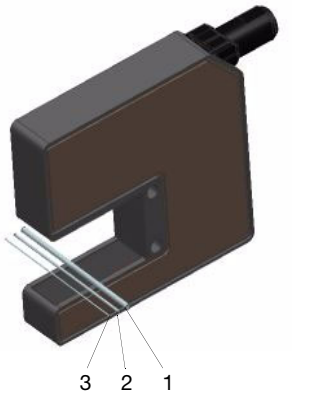


Figure 5.1: Diameter determination application example

5.1.1 ASCII representation via RS 232 (P and M12 interfaces)

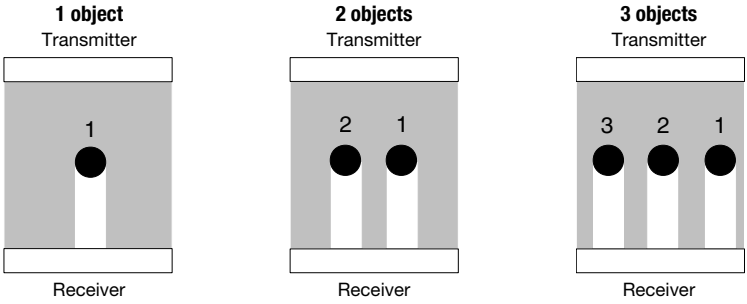


Figure 5.2: Diameter determination - Detection of 1, 2 or 3 objects

Parameter		ASCII output data via S1 and S2
Q,q	Single-object detection	Middle pos. : xxx Diameter: xxx
W,w	Detection of two objects	Middle pos. : xxx Diameter: xxx Middle pos. : xxx Diameter: xxx
E,e	Detection of three objects	Middle pos. : xxx Diameter: xxx Middle pos. : xxx Diameter: xxx Middle pos. : xxx Diameter: xxx

Table 5.1: ASCII representation, output modes 1 … 5

Example for xxx: 123 (12.3mm)

5.1.2 Binary representation via RS 232 (P and M12 interfaces)

Due to the fast output of measurement values, only data for single-object detection can be output in this output mode. The measurement values cannot be displayed on the screen (see chapter 7.2.2).

5.2 Edge measurement and height verification

With this measurement, the sensor expects only one edge within the measurement field. If more or fewer edges are detected by the system, depending on the configuration (see chapter 6.4), this leads to an error message.

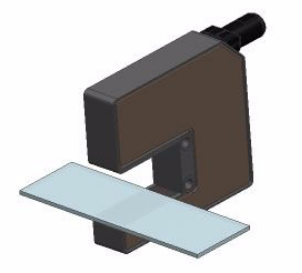


Figure 5.3: Edge measurement and height verification

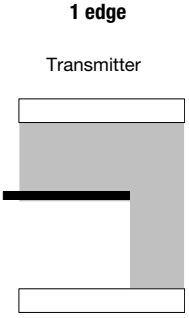


Figure 5.4: Edge measurement - Detection of 1 edge

Various configurations are possible with this measurement (see chapter 6.4).
The following only applies to devices with an analog interface:

1. Linear edge measurement over the entire measuring range (s. point 8)
2. Teach-in edge measurement with 5V-output at teaching point

5.3 Width measurement

To measure the width of strip material, two GS 754B CCD forked photoelectric sensors can be used mutually opposed from one another.

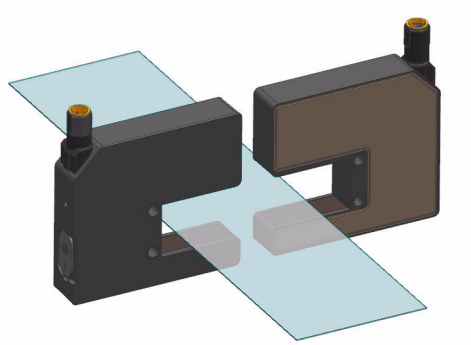


Figure 5.5: Width measurement

Each forked photoelectric sensor relays an edge position which can be extrapolated to the total width when the distance of the sensors vis-à-vis one another is known in the control.

In conjunction with this, time synchronization of the measurement data is ensured via PIN 2 as a trigger input. If the control generates a LOW -> HIGH signal change at the trigger inputs, then both forked photoelectric sensors simultaneously each start an output cycle.

6 Device configuration

6.1 General information

To configure the GS 754B forked photoelectric sensor, you require a PC with an RS 232 interface and a terminal program with the following setting. For this, use the corresponding KB-ODS 96-1500 cable (part no. 50082007).

6.2 Terminal program

Any terminal or modem program that can access the serial interface(s) of your PC can be used for the configuration.

Under Microsoft® Windows® 95/98/NT/2000, you can use the HyperTerminal, for example.

6.2.1 Basic configuration of the terminal program (interface P)

Transmission rate	9600 bit/s
Data bits	8
Parity	None
Stop bits	1
Protocol	None

Table 6.1: Basic configuration of the terminal program (interface P)

6.3 Configuration of the measurement, analysis and output procedures over interface P

The appropriate configuration is activated by entering ASCII characters. Letters may be entered in either capital or lowercase form.

6.3.1 Configuration table for GS 754B

ASCII commands			Available for interface
Output mode	**Object type**		
	"!" - perforated objects "?" - homogeneous objects	**"%" - partially transparent, translucent objects**	
1	output cycle approx. 3000 ms	output cycle approx. 700 ms	serial and analog
2	output cycle approx. 1000 ms	output cycle approx. 250 ms	serial and analog
3	output cycle approx. 500 ms	output cycle approx. 130 ms	serial and analog
4	output cycle approx. 250 ms	output cycle approx. 70 ms	serial and analog
5	output cycle approx. 100 ms	output cycle approx. 35 ms	serial and analog
6	reserved	reserved	
7	output cycle approx. 12 ms	output cycle approx. 3 ms	serial and analog
Averaging			
M,m	averaging across the specified output cycle period		serial and analog
A,a	output of individual measurement value (default)		serial and analog
Object number			
Q,q	single-object measurement (default)		serial (only modes 1-5)
W,w	measurement of two objects		serial (only modes 1-5)
E,e	measurement of three objects		serial (only modes 1-5)
Evaluation process			
=	diameter detection		serial and analog
-	edge detection (default)		serial and analog
Object type			
!	perforated objects		serial and analog
?	homogeneous objects (default)		serial and analog
%	semi-transparent, translucent objects		serial and analog
Reset			
R,r	reset with config. switching output (7,a,-,o,?) reset with config. teach input (7,a,-,t,?)		serial and analog

Edge assignment for analog output (single-object measurement)		
D,d	object diameter	analog
$	edge, middle	analog
(	inner edge (default)	analog
)	outer edge	analog
Function PIN 2		
T,t	teach input function	analog
O,o	switching output function	serial and analog
S, s	synchronization / trigger input function	serial and analog
L, l	activation input function (LED transmitter ON)	serial and analog
Switching function PIN 2 [1)]		
<	standard function (default) (chapter 6.4.6)	serial and analog
>	standard function, inverted (chapter 6.4.6)	serial and analog
*	photoelectric sensor function, dark switching (presence monitoring)	serial and analog
#	photoelectric sensor function, light switching (presence monitoring)	serial and analog
Switching level PIN 2		
P,p	PNP switching output (default)	serial and analog
N,n	NPN switching output	serial and analog
G,g	push-pull switching output	serial and analog

1) relative to the PNP switching level; refer to the following note.

Table 6.2: Parameterizing commands GS 754B

By entering the ASCII character "R", the state on delivery is restored. "R", however, has no effect on the configuration of the switching function and the switching level.

Notice

The descriptions of the PIN 2 switching functions (chapter 6.4.3 et seq.) always relate to the PNP switching level.

If the PIN 2 switching level is configured to NPN, all levels must be inverted.

6.4 Special configurations

6.4.1 Edge measurement for perforated objects

With this function, net-like objects, e.g. fabric, can be detected.

Here, the first edge of the object is output as the measurement value. All other edges are suppressed. In this configuration the number of edges is not checked. Error messages are not output.

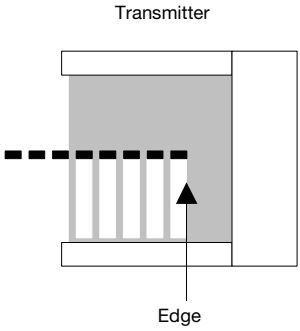


Figure 6.1: Edge measurement for perforated objects

Required ASCII commands:

Object number	
Q,q	single-object measurement (default)
Evaluation process	
-	edge detection (default)
Object type	
!	perforated objects

6.4.2 Changeover of the edge assignment for single-object measurement

Only one piece of edge information can be output via the analog interface. With single-object measurement, the sensor sees two edges. Using these edges, information such as object diameter and object middle can be calculated. These edge assignments can be configured.

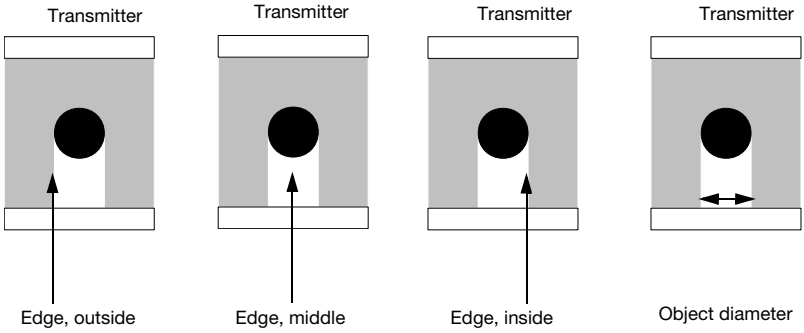


Figure 6.2: Changeover of the edge assignment for single-object measurement

ASCII commands for changing over the edge assignment:

Edge assignment for analog output (single-object measurement)	
D,d	object diameter
$	edge, middle
(	edge, inside (default)
)	edge, outside

6.4.3 PIN 2 as a teach input

Connection PIN 2 of devices with analog output can be configured as a warning output or as a teach input. If PIN 2 has been configured as a teach input, edge adjustment is possible here at 5V. In this way, any given point of the measurement field can be assigned the output value 5V.

6.4.3.1 Teach-in in the middle of the measurement field

The measurement value is output linearized. As a result, the entire measurement field is available for the measurement.

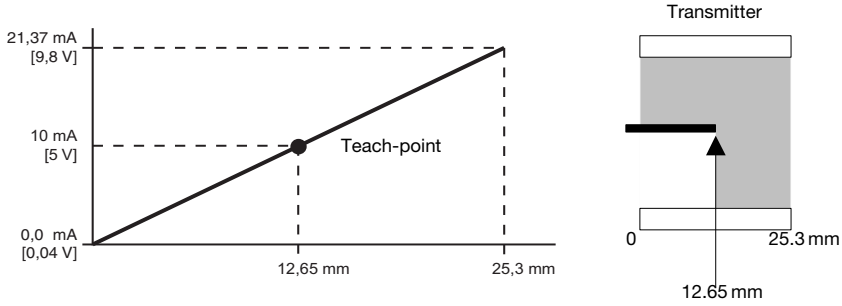


Figure 6.3: Teach-in (edge in the middle of the measurement field)

6.4.3.2 Teach-in at the end of the measurement field

The measurement value is output linearized. The measurement field range is restricted. A change in measurement value no longer occurs at the beginning of the measurement field.

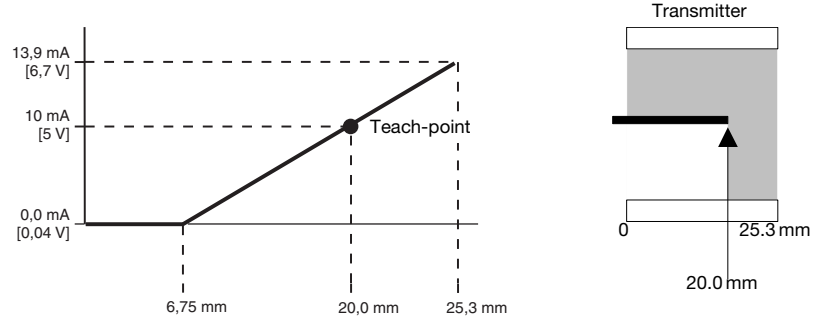


Figure 6.4: Teach-in (edge at the end of the measurement field)

6.4.3.3 Teach-in at the start of the measurement field

The measurement value is output linearized. The measurement field range is restricted. A change in measurement value no longer occurs at the end of the measurement field.

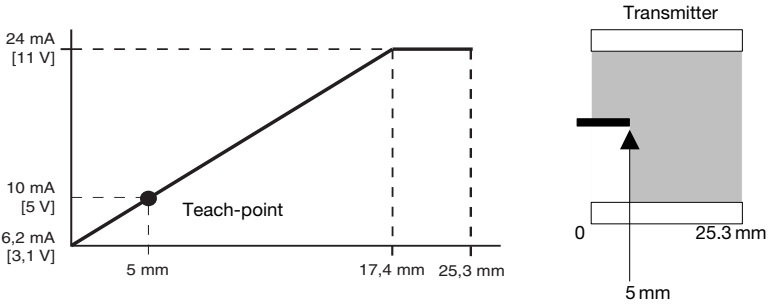


Figure 6.5: Teach-in (edge at start of the measurement field)

6.4.4 PIN 2 as a synchronization / trigger input

If PIN 2 is configured as a trigger input, the GS 745B CCD forked photoelectric sensor remains inactive as long as there is a LOW signal at PIN 2.

If the external signal changes from LOW to HIGH, the forked photoelectric sensor then performs exactly one measurement and outputs the configured measurement data.

The duration of this measurement varies depending on the set measure mode. The average value of the individual measurements is calculated within the set time (n • 12 ms).

6.4.5 PIN 2 as an activation input

If PIN 2 is configured as an activation input, the GS 745B CCD forked photoelectric sensor remains inactive as long as there is a LOW signal at PIN 2.

If there is a HIGH signal at PIN 2, the forked photoelectric sensor is activated and repeatedly performs measurements as long as the HIGH signal remains at PIN 2.

The measurement data are output at the interfaces depending on the measure mode set.

6.4.6 PIN 2 as a switching output

When PIN 2 is configured as a switching output, various logical functions can be assigned to this switching output. A distinction is made between standard and photoelectric sensor functions/presence monitoring.

		Switching output pin 2		
Configuration	**Function**	**Object partially in measurement field**	**Object completely in measurement field**	**Object not in measurement field**
<	standard	high	low	high
>	standard inverted	low	high	low
*	dark switching	high	high	low
#	light switching	low	low	high

6.4.6.1 Standard function

The number of object edges is monitored.

Example of diameter detection:

In this setting, the sensor expects two object edges. If more or fewer object edges are detected, an error message is output.

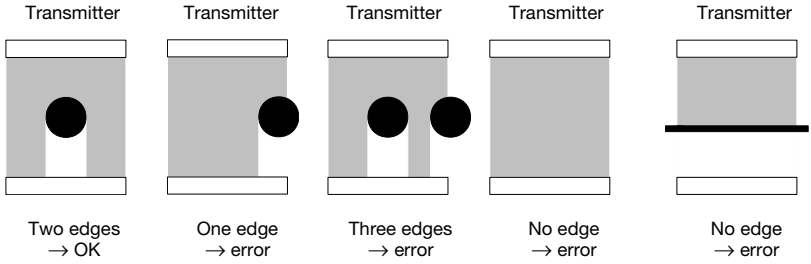


Figure 6.6: Example of diameter detection

Example of edge detection:

In this setting, the sensor expects only one object edge. If more or fewer object edges are detected, an error message is output.

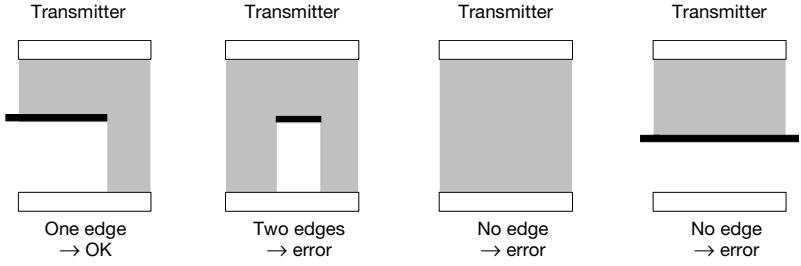


Figure 6.7: Example of edge detection

6.4.6.2 *Standard function, inverted*

The number of object edges is monitored and output inverted.

6.4.6.3 *Photoelectric sensor function, dark switching*

When configured for the photoelectric sensor function, the number of edges is not monitored. The entire measuring range is analyzed as a throughbeam photoelectric sensor. The switching output functions on a dark-switching basis.

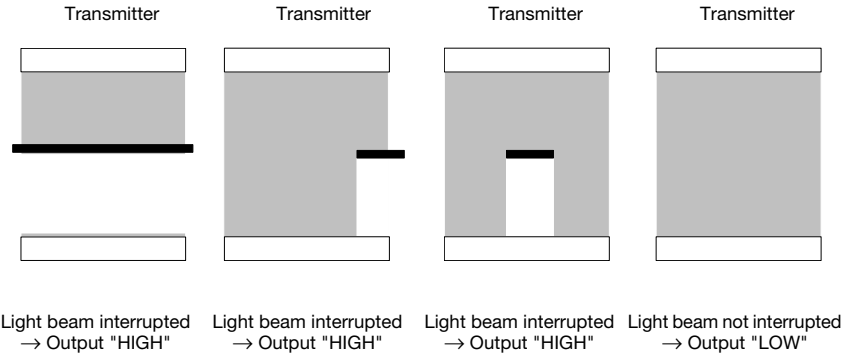


Figure 6.8: Photoelectric sensor function, dark switching

6.4.6.4 *Photoelectric sensor function, light switching*

With photoelectric sensor level, the entire measurement range is analyzed as a throughbeam photoelectric sensor. The switching output functions on a light-switching basis.

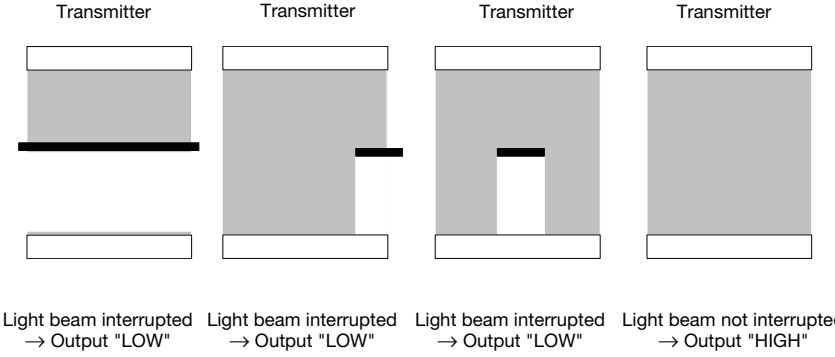


Figure 6.9: Photoelectric sensor function, light switching

7 Measurement range and resolution

The detection range of the GS 754B forked photoelectric sensor is max. 28.6mm (2048 • 14µm).
The maximum measurement range is 25.3mm.

Measurement values of the serial and analog interfaces are linearized.

The sensor makes the measurement values available in the following resolutions, depending on the output mode chosen:

Resolution:

	Output modes 1 … 5	Output mode 7
Serial interface	0.1mm (ASCII)	0.014mm (binary)
Analog interface	0.1mm (current/voltage)	0.014mm (current/voltage)

7.1 Analog measurement value output (interface M12)

The analog current and voltage values are available only at the M12 interface. The data formats which are output differ depending on the type and configuration used. In output modes 1...5 and in output mode 7, the resolution/measurement resolution changes as follows.

	Output modes 1 … 5	Output mode 7
Analog current	0.063 mA / 0.1mm	11.72µA / 14µm
Analog voltage	0.0316 V / 0.1mm	5.37mV / 14µm

Table 7.1: Data formats for analog interface M12

Output modes 1 … 5:

In output modes 1 … 5, the measurement values are scaled. These measurement values are adapted to the standard 4 … 20mA (2 … 10V) interface via the internal microcontroller. The resulting measurement field for output modes 1 … 5 is 25.3 mm (1807 * 14 µm).

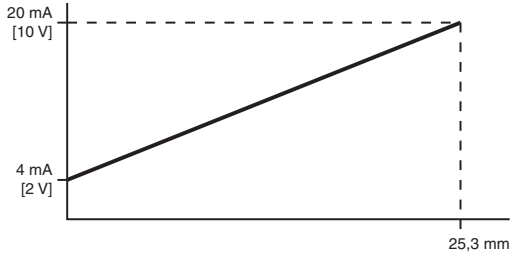


Figure 7.1: Linearity in output modes 1 … 5

Output mode 7:

In output mode 7, the measurement values are not scaled. Each measurement value is output directly. The resulting measurement field for output mode 7 is 25.3 mm (1807 * 14 µm) with an output current of 0 … 21.37 mA (0.04 … 9.8 V).

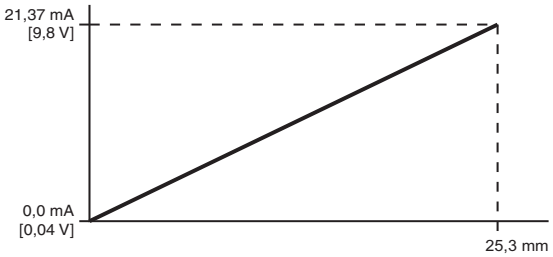


Figure 7.2: Linearity in output mode 7

7.2 Digital measurement value output (P and M 12 interfaces)

The measurement value output is dependent on the type of sensor used and the configuration set.

There are a number of different output modes available.

These are divided into two primary output variants:

1. Output modes 1, 2, 3, 4, 5:
   the measurement value output is performed at 0.3 Hz, 1 Hz, 2 Hz, 4 Hz or 10 Hz. The measurement values are linearized by the sensor and converted to mm values. Conversion of the pixel data is no longer necessary. The sensor transmits the measurement values to interfaces P and M12. The digital information is, in this case, transmitted in ASCII format and can be read using the monitor program. The resolution is 0.1 mm.
2. Output mode 7:
   the measurement value output is performed at 80 Hz. The sensor transmits the measurement values to interfaces P and M12. In this case, digital information is transmitted in binary format and can be read with the monitor program. The resolution is 0.014 mm.

The various output formats are explained on the following pages using examples.

7.2.1 ASCII format for P and M12 interfaces

Readable ASCII data are only output via the digital interfaces in output modes 1, 2, 3, 4, 5. The resolution is 0.1 mm.

ASCII commands		Measurement value output in ASCII format
=, q, 5	Diameter detection	Middlepos. : xxx Diameter: xxx
-, q, 5	Edge detection	Edge-Pos. : xxx

Table 7.2: ASCII format for P and M12 interfaces

Example of diameter detection:

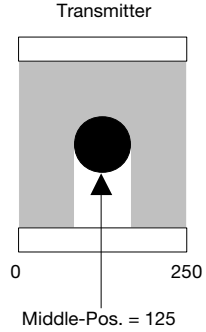


Figure 7.3: Ex. diameter detection (ASCII format)

Middle-Pos.:	125	(equivalent to 12.5 mm)
Diameter:	020	(equivalent to 2.0 mm)

The middle of the object is located at CCD position 12.5 mm.
The object diameter is 2.0 mm.

Example of edge detection:

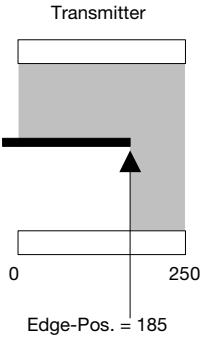


Figure 7.4: Ex. edge detection (ASCII format)

Edge-Pos.: 185 (equivalent to 18.5mm)

The edge of the object is located at CCD position 18.5mm.

7.2.2 Binary format for the P and M12 interfaces

Binary data is only output via the digital interfaces in output mode 7. This binary data cannot be displayed by the terminal program.

The resolution is 0.014mm.

ASCII commands	
=, q, 7	Diameter detection
-, q, 7	Edge detection

Table 7.3: Binary format for the P and M12 interfaces

Example of diameter detection:

Measurement value output in binary format								
Data						Byte designator		
D_5	D_4	D_3	D_2	D_1	D_0	P_1	P_0	
Middle-Pos. (low byte)						0	0	byte 0
Middle-Pos. (high byte)						0	1	byte 1
Diameter (low byte)						1	0	byte 2
Diameter (high byte)						1	1	byte 3

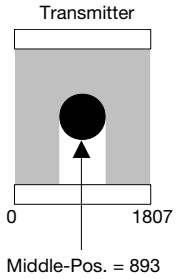


Figure 7.5: Ex. diameter detection (binary format)

The middle of the object is located at CCD pixel 893.
The diameter of the object is 143 pixels.

Measurement value output in binary format									
Data						Byte designator			
D_5	D_4	D_3	D_2	D_1	D_0	P_1	P_0		
1	1	1	1	0	1	0	0	byte 0	001101111101
0	0	1	1	0	1	0	1	byte 1	value: 893 (893 x 0.014 mm = 12.5 mm)
0	0	1	1	1	1	1	0	byte 2	000010001111
0	0	0	0	1	0	1	1	byte 3	value: 143 (143 x 0.014 mm = 2.0 mm)

Example of edge detection:

Measurement value output in binary format								
Data						Byte designator		
D_5	D_4	D_3	D_2	D_1	D_0	P_1	P_0	
Edge-Pos. (low byte)						0	0	byte 0
Edge-Pos. (high byte)						0	1	byte 1

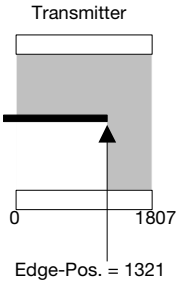


Figure 7.6: Ex. edge detection (binary format)

The edge of the object is located at CCD pixel 1321.

Measurement value output in binary format									
Data						Byte designator			
D_5	D_4	D_3	D_2	D_1	D_0	P_1	P_0		
1	0	1	0	0	1	0	0	byte 0	010100101001
0	1	0	1	0	0	0	1	byte 1	value: 1321 (1321 x 0.014 mm = 18.5 mm)

8 Error messages (P and M12 interfaces)

Errors vary depending on the configured measurement, analysis and output variants. The errors are output at interfaces P and M12.

		Fewer edges than specified	More edges than specified	Light path fully blocked
Serial output	**Modes 1 … 5**	000	555	999
	Mode 7	0	2047	0
Analog current	**Modes 1 … 5**	3.5mA	>20mA	>20mA
	Mode 7	0mA		
Analog voltage	**Modes 1 … 5**	1.75V	>10V	>10V
	Mode 7	0V		

9 Service and support

24-hour on-call service at: +49 (0) 7021 573-0

Service hotline: +49 (0) 7021 573-217

Monday to Thursday, 8.00 a.m. to 5.00 p.m. (UTC+1)

Friday, 8.00 a.m. to 4.00 p.m. (UTC +1)

E-mail: service.detect@leuze.de

Return address for repairs:

Servicecenter Leuze electronic GmbH + Co. KG
In der Braike 1
D-73277 Owen
Germany

10 Specifications

10.1 Optical data

Mouth width	GS 754B/...-27…:	27mm
	GS 754B/...-98…:	98mm
Mouth depth	42mm	
Measurement range	25mm	
Resolution [1]	a: 0.1mm (modes 1 … 5)	
	b: 0.014mm (mode 7)	
Reproducibility	± 0.03mm	
Linearity	± 0.36mm	
Minimal object diameter	0.5mm	
Object position	any [2]	
Light source	LED (modulated light)	
Wavelength	850nm	

1) System resolution, i.e. smallest practical value for the last position of the display.
2) Objects < 1 mm should be scanned in front of the receiver.
Extraneous light sources must not beam into the receiver from the front.

10.2 Timing

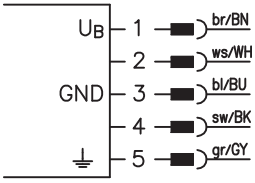
Response time	min. 12ms
Output cycle	0.012 … 3.00s
Delay before start-up	≤ 300ms

10.3 Electrical data

Operating voltage U_B [1]	with RS 232/RS 422: 10 … 30VDC (incl. residual ripple)
	with analog output: 18 … 30VDC (incl. residual ripple)
Residual ripple	≤ 15% of U_B
Open-circuit current	≤ 60mA

1) Protective extra-low voltage (VDE 0100/T 410).
For UL applications: only for use in class 2 circuits according to NEC.

Electrical connection



Functional earth must be wired.

Device models	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5
RS 232	10…30VDC	I/O	GND	TxD	FE - functional earth
RS 422	10…30VDC	Tx-	GND	Tx+	FE - functional earth
Analog voltage	18…30VDC	I/O	GND	analog	FE - functional earth
Analog current	18…30VDC	I/O	GND	analog	FE - functional earth

10.4 Output signals

Level active/not active	≥ 8V/≤ 2V or not connected
Activation/disable delay	≤ 1ms
Input resistance	approx. 6kΩ
Switching output current	pin 2: max. 100mA
Analog output current	(0)4 … 20mA (depending on output mode), $R_L \leq 500\Omega$
Analog output voltage	(0)2 … 10V (depending on output mode), $R_L \geq 2k\Omega$
Serial interface	RS 232/RS 422
Teach input	pin 2 reversible
Switching output	pin 2 reversible

10.5 Mechanical data

Housing	diecast zinc
Weight	GS 754B/...-27…: 270g GS 754B/...-98…: 290g
Optics cover	plastic [1]
Connection type	M12 connector, metal, 5-pin

1) Only fiber-free cloths may be used to clean the lens covers.
Tips and hard objects damage the lens.

10.6 Environmental data

Ambient temp. (operation/storage)	-20°C … +50°C/-30°C … +60°C
Protective circuit [1]	1, 2, 3
VDE safety class	III
Protection class	IP 67
Light source	exempt group (in acc. with EN 62471)
Standards applied	IEC 60947-5-2
Certifications	UL 508, C22.2 No.14-13 [2] [3]

1) 1=transient protection, 2=polarity reversal protection, 3=short circuit protection for all output.
2) Protective extra-low voltage (VDE 0100/T 410).
   For UL applications: only for use in class 2 circuits according to NEC.
3) These proximity switches shall be used with UL Listed cable assemblies rated 30V, 0.2A min, in the field installation, or equivalent (categories: CYJV/CYJV7 or PVVA/PVVA7).

11 Order guide and accessories

11.1 Order guide

Selection table Order code ➔ Equipment ➔		GS 754B/D24-27-S12 Part no. 50115807	GS 754B/D3-27-S12 Part no. 50115806	GS 754B/V4-27-S12 Part no. 50115809	GS 754B/C4-27-S12 Part no. 50115803	GS 754B/D24-98-S12 Part no. 50119710	GS 754B/D3-98-S12 Part no. 50119711	GS 754B/V4-98-S12 Part no. 50117818	GS 754B/C4-98-S12 Part no. 50119712
Mouth width	27 mm	●	●	●	●				
	98 mm					●	●	●	●
Output variants	RS 232	●				●			
	RS 422		●				●		
	Analog voltage			●				●	
	Analog current				●				●
Pin 2, configurable	I/O	●		●	●	●		●	●

11.2 Accessories

11.2.1 Connection cables

Part no.	Type designation	Description
50114692	KB DN/CAN-2000 BA	Connection cable, M12 socket axial, 5 pin, A-coded; length 2000 mm; open cable end; PUR; shielded
50114696	KB DN/CAN-5000 BA	Connection cable, M12 socket axial, 5 pin, A-coded; length 5000 mm; open cable end; PUR; shielded
50114699	KB DN/CAN-10000 BA	Connection cable, M12 socket axial, 5 pin, A-coded; length 10000 mm; open cable end; PUR; shielded

11.2.2 Configuration cable

Part no.	Type designation	Description
50082007	KB-ODS 96-1500	Connection cable, Sub-D socket, 9-pin; length 1500 mm; configuration connector GS 754B

12 Declaration of conformity

The GS 754B measuring CCD forked photoelectric sensors have been developed and manufactured in accordance with the applicable European standards and directives.

Notice

A corresponding Declaration of Conformity can be requested from the manufacturer.

The manufacturer of the GS 754B CCD forked photoelectric sensors, Leuze electronic GmbH + Co. KG in D-73277 Owen, possesses a certified quality assurance system in accordance with ISO 9001.

CE