

















## red light LED version

product family	FGUM 020	FGUM 030	FGUM 030	FGUM 050	FGUM 050	FGUM 080	FGUM 080
							
width / diameter	40 mm	50 mm	50 mm	70 mm	70 mm	100 mm	100 mm
fork width Sb	20 mm	30 mm	30 mm	50 mm	50 mm	80 mm	80 mm
response time / release time	< 0,125 ms	< 0,125 ms	< 0,166 ms	< 0,125 ms	< 0,166 ms	< 0,125 ms	< 0,166 ms
light source	pulsed red LED	pulsed red LED	pulsed red LED	pulsed red LED	pulsed red LED	pulsed red LED	pulsed red LED
sensitivity adjustment	potentiometer, 270°	potentiometer, 270°	Teach-in: button / remote	potentiometer, 270°	Teach-in: button / remote	potentiometer, 270°	Teach-in: button / remote
output circuit	PNP	PNP	PNP	PNP	PNP	PNP	PNP
connection types	connector	connector	connector	connector	connector	connector	connector
housing material	metal	metal	metal	metal	metal	metal	metal
protection class	IP 67	IP 67	IP 67	IP 67	IP 67	IP 67	IP 67
<b>page</b>	<b>239</b>	<b>240</b>	<b>241</b>	<b>242</b>	<b>243</b>	<b>244</b>	<b>245</b>

## laser version

product family	OGUM 030 Basic	OGUM 030 Performance	OGUM 050 Basic	OGUM 050 Performance	OGUM 080 Basic	OGUM 080 Performance	OGUM 120 Basic
							
width / diameter	50 mm	60 mm	70 mm	80 mm	100 mm	110 mm	144 mm
fork width Sb	30 mm	30 mm	50 mm	50 mm	80 mm	80 mm	120 mm
response time / release time	< 0,166 ms	< 0,166 ms	< 0,166 ms	< 0,166 ms	< 0,166 ms	< 0,166 ms	< 0,166 ms
light source	pulsed red laser diode	pulsed red laser diode	pulsed red laser diode	pulsed red laser diode	pulsed red laser diode	pulsed red laser diode	pulsed red laser diode
sensitivity adjustment	potentiometer, 270°	potentiometer, 270°	potentiometer, 270°	potentiometer, 270°	potentiometer, 270°	potentiometer, 270°	potentiometer, 270°
output circuit	PNP	PNP	PNP	PNP	PNP	PNP	PNP
connection types	connector	connector	connector	connector	connector	connector	connector
housing material	metal	metal	metal	metal	metal	metal	metal
protection class	IP 67	IP 67	IP 67	IP 67	IP 67	IP 67	IP 67
<b>page</b>	<b>250</b>	<b>251</b>	<b>252</b>	<b>253</b>	<b>254</b>	<b>255</b>	<b>256</b>

FGUM 120	FGLM 050	FGLM 080	FGLM 120
			
144 mm	75 mm	105 mm	150 mm
120 mm	60 mm	100 mm	158 mm
< 0,25 ms	< 0,125 ms	< 0,125 ms	< 0,25 ms
pulsed red LED	pulsed red LED	pulsed red LED	pulsed red LED
potentiometer, 270°	potentiometer, 270°	potentiometer, 270°	potentiometer, 270°
PNP	PNP	PNP	PNP
connector	connector	connector	connector
metal	metal	metal	metal
IP 67	IP 67	IP 67	IP 67
<b>246</b>	<b>247</b>	<b>248</b>	<b>249</b>

**OGUM 120**  
Performance



150 mm
120 mm
< 0,166 ms
pulsed red laser diode
potentiometer, 270°
PNP
connector
metal
IP 67
<b>257</b>



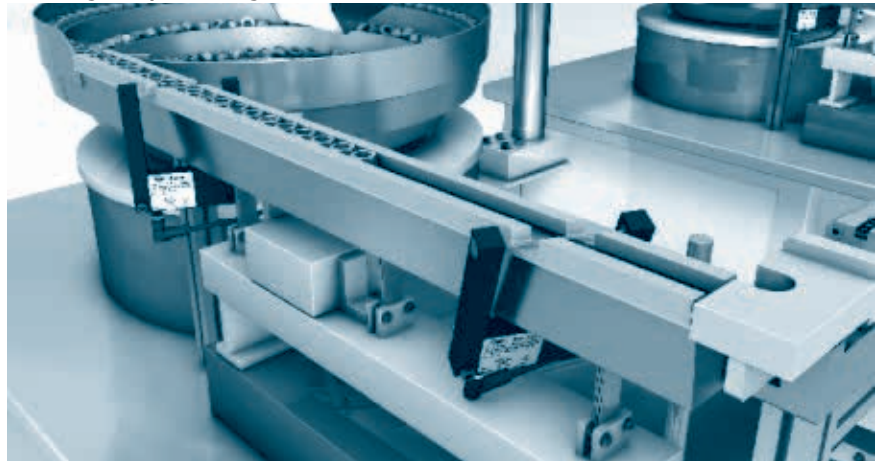
## Introduction

Fork and angle sensors comprise an emitter and a receiver optimally aligned to one another and installed in a torsionally rigid metal housing. This enables highly accurate scanning and positioning of objects, as is required in automatic feeders, vibration conveyors and other applications, while high repeatability is ensured by precise collimator optics. Equipped with a laser light source, fork sensors can even position the very smallest of parts in the micron range. Time-consuming alignment and adjustment usually required for through beam sensors is unnecessary. Compared to through beam sensors, the electric wiring features just one cable connection.

## Typical applications

Thanks to their simple handling and optimally aligned optics, fork and angle sensors are extremely versatile. To enable optimum installation, different fork widths as well as U- and L-shaped versions are available.

### Scanning and positioning



Scanning very small objects down to 50  $\mu\text{m}$  in an automatic feeder

### Stack height monitoring



Monitoring CD sheet stack heights



## Features and benefits

### Easy installation and adjustment

The emitter and receiver are already optimally aligned to one another in a torsionally rigid metal housing.

### Innovative shapes

The special L-shape of the angle sensor enables optimum approach towards the optical axis.

### Fast processes

Switching frequencies of up to 50 kHz allow rotational speed measurements.

### Rugged

Use possible even in harsh ambient conditions thanks to metal housing and protection class IP 67.

## Technology and function

Fork and angle sensors as well as through beam sensors are founded on the same basic principle.

The scratch-resistant, mineral glass collimator optics used in the fork and angle sensors FGUM/ FGLM and OGUM produces a homogeneous, very narrow light beam. This feature gives the sensor its high detection accuracy, which is guaranteed over the entire beam range from all sides.

The largest laser fork sensor can reliably and repeatedly detect a 50 µm object over the entire 120 mm range.

The virtually parallel light beam and the small beam angle of the receiver optics make it possible to install the fork and angle sensors side by side without affecting each other and even produce, for example, small light barriers.

Sensitivity adjustment features a choice of two different adjustment methods – easy manual adjustment of sensitivity using a potentiometer or variable adjustment options by automatic teach-in.

### Potentiometer

Easy sensitivity adjustment thanks to mechanical 270° potentiometer directly on the fork sensor.

### Teach-in

The teach-in function enables rapid and easy commissioning in the field. The teach-in operation can be performed using the integrated teach-in button or the external teach-in cable.



## Mounting and adjustment

The almost parallel light beam and the small beam angle of the receiver optics make it possible to install the sensors side by side without affecting each other and even construct, for example, small light barriers.

Attach the fork and angle sensors so that the object can pass freely through the scanning range. The receiver side should be protected from direct exposure to external light sources.

### Potentiometer adjustment

Sensitivity is highest when the potentiometer is turned fully counterclockwise, enabling the smallest possible parts to be scanned with minimal power of the beam.

When the potentiometer is turned fully clockwise, sensitivity is lowest, so only larger parts are scanned. The power of the beam is highest and the fork/angle sensor has high excess gain to combat dirt.

### Teach-in adjustment

The dynamic teach-in facility enables the sensor to calculate the optimum sensitivity level during operation, resulting in new potential applications.

For example, the smallest objects can be taught in without precise positioning simply by passing the light beam.

To initiate the dynamic teach-in procedure, the yellow teach-in button must be held down for 2 seconds. At least two objects should pass the light beam of the fork sensor during the following 2-4 seconds of the active teach-in phase. The LED indicates the active teach-in phase by flashing rapidly. If the teach-in procedure was completed successfully, this is clearly and visibly indicated by two flashes of the LED.

The active teach-in phase can be defined individually using an external teach-in facility. The longer a pulse is applied to the external teach-in cable, the longer the sensor teaches in its surrounding. When the external teach-in facility is employed, the teach-in button can also be automatically disabled.

### Adjustment of light/dark switching

The output functions NO (dark-switching) and NC (light-switching) can be adjusted using a rotary switch. The required switch position is indicated on the type plate. To prevent accidental switching, the rotary switch is covered by a rubber cap.

Important: always set the switch for the output function fully clockwise or counterclockwise. Intermediate positions lead to undefined output states.



**Sb = 20 mm**



- sensitivity adjustable via potentiometer
- fork width 20 mm
- rugged metal housing

### general data

type	through beam sensor
object size	> 0,4 mm
repeat accuracy	< 0,02 mm
hysteresis	< 0,1 mm
ambient light immunity	< 50 kLux
sensitivity adjustment	potentiometer, 270°
light source	pulsed red LED
wave length	660 nm
light indicator	LED yellow

### electrical data

response time / release time	< 0,125 ms
switching frequency	< 4 kHz
voltage supply range +Vs	10 ... 35 VDC
current consumption max. (no load)	30 mA
output function	light / dark operate switchable
output circuit	PNP
voltage drop Vd	< 2,8 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes

### mechanical data

width / diameter	40 mm
fork width Sb	20 mm
height / length	50 mm
penetration depth	25 mm
depth	10 mm
type	U profile
housing material	die-cast zinc
connection types	connector M8, 3 pin

### ambient conditions

operating temperature	-10 ... +60 °C
protection class	IP 67

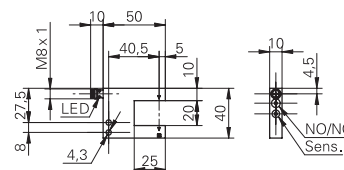
### connectors and mating connectors

ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

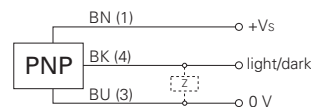
### order reference

**FGUM 020P8001/S35L**

### dimension drawing



### connection diagram





Sb = 30 mm



- sensitivity adjustable via potentiometer
- fork width 30 mm
- rugged metal housing

**general data**

type	through beam sensor
object size	> 0,5 mm
repeat accuracy	< 0,02 mm
hysteresis	< 0,25 mm
ambient light immunity	< 140 kLux
sensitivity adjustment	potentiometer, 270°
light source	pulsed red LED
wave length	660 nm
light indicator	LED yellow

**electrical data**

response time / release time	< 0,125 ms
switching frequency	< 4 kHz
voltage supply range +Vs	10 ... 35 VDC
current consumption max. (no load)	30 mA
output function	light / dark operate switchable
output circuit	PNP
voltage drop Vd	< 2,8 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes

**mechanical data**

width / diameter	50 mm
fork width Sb	30 mm
height / length	60 mm
penetration depth	35 mm
depth	10 mm
type	U profile
housing material	die-cast zinc
connection types	connector M8, 3 pin

**ambient conditions**

operating temperature	-10 ... +60 °C
protection class	IP 67

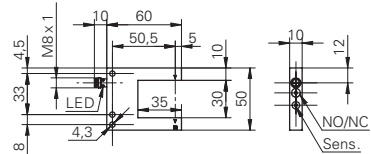
**connectors and mating connectors**

ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

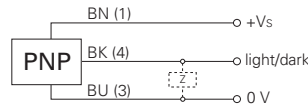
**order reference**

FGUM 030P8001/S35L

**dimension drawing**



**connection diagram**



FGUM 030 Sb = 30 mm

Fork and angle sensors



Sb = 30 mm



- sensitivity adjustable via Teach-in
- smallest detectable object 0,3 mm
- rugged metal housing

**general data**

type	through beam sensor
object size	> 0,3 mm
repeat accuracy	< 0,03 mm
hysteresis	< 0,1 mm
ambient light immunity	< 20 kLux
sensitivity adjustment	Teach-in: button / remote
light source	pulsed red LED
wave length	660 nm
light indicator	LED yellow

**electrical data**

response time / release time	< 0,166 ms
switching frequency	< 3 kHz
voltage supply range +Vs	10 ... 35 VDC
current consumption max. (no load)	30 mA
output function	light / dark operate switchable
output circuit	PNP
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes

**mechanical data**

width / diameter	50 mm
fork width Sb	30 mm
height / length	60 mm
penetration depth	35 mm
depth	10 mm
type	U profile
housing material	die-cast zinc
connection types	connector M8

**ambient conditions**

operating temperature	-10 ... +60 °C
protection class	IP 67

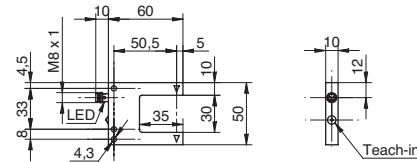
**connectors and mating connectors**

ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

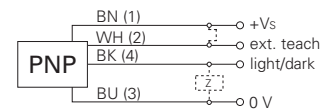
**order reference**

FGUM 030P6901/S35A

**dimension drawing**

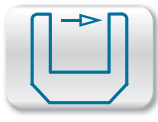


**connection diagram**



FGUM 030 Sb = 30 mm Fork and angle sensors





Sb = 50 mm



- sensitivity adjustable via potentiometer
- fork width 50 mm
- rugged metal housing

**general data**

type	through beam sensor
object size	> 0,5 mm
repeat accuracy	< 0,04 mm
hysteresis	< 0,25 mm
ambient light immunity	< 80 kLux
sensitivity adjustment	potentiometer, 270°
light source	pulsed red LED
wave length	660 nm
light indicator	LED yellow

**electrical data**

response time / release time	< 0,125 ms
switching frequency	< 4 kHz
voltage supply range +Vs	10 ... 35 VDC
current consumption max. (no load)	30 mA
output function	light / dark operate switchable
output circuit	PNP
voltage drop Vd	< 2,8 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes

**mechanical data**

width / diameter	70 mm
fork width Sb	50 mm
height / length	80 mm
penetration depth	55 mm
depth	10 mm
type	U profile
housing material	die-cast zinc
connection types	connector M8, 3 pin

**ambient conditions**

operating temperature	-10 ... +60 °C
protection class	IP 67

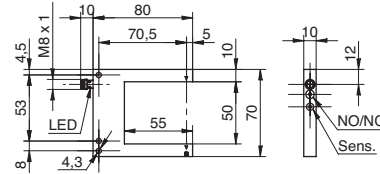
**connectors and mating connectors**

ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

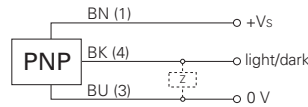
**order reference**

FGUM 050P8001/S35L

**dimension drawing**



**connection diagram**





Sb = 50 mm

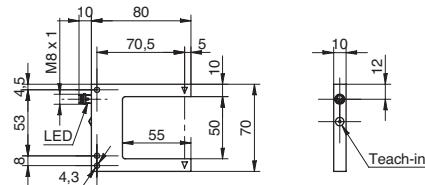
- sensitivity adjustable via Teach-in
- smallest detectable object 0,3 mm
- rugged metal housing



**general data**

type	through beam sensor
object size	> 0,3 mm
repeat accuracy	< 0,03 mm
hysteresis	< 0,1 mm
ambient light immunity	< 20 kLux
sensitivity adjustment	Teach-in: button / remote
light source	pulsed red LED
wave length	660 nm
light indicator	LED yellow

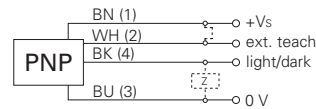
**dimension drawing**



**electrical data**

response time / release time	< 0,166 ms
switching frequency	< 3 kHz
voltage supply range +Vs	10 ... 35 VDC
current consumption max. (no load)	30 mA
output function	light / dark operate switchable
output circuit	PNP
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes

**connection diagram**



**mechanical data**

width / diameter	70 mm
fork width Sb	50 mm
height / length	80 mm
penetration depth	55 mm
depth	10 mm
type	U profile
housing material	die-cast zinc
connection types	connector M8

**ambient conditions**

operating temperature	-10 ... +60 °C
protection class	IP 67

**connectors and mating connectors**

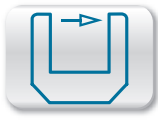
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m

additional cable connectors and field wireable connectors: see accessories

**order reference**

FGUM 050P6901/S35A

FGUM 050 Sb = 50 mm Fork and angle sensors



Sb = 80 mm



- sensitivity adjustable via potentiometer
- fork width 80 mm
- rugged metal housing

**general data**

type	through beam sensor
object size	> 0,5 mm
repeat accuracy	< 0,06 mm
hysteresis	< 0,25 mm
ambient light immunity	< 80 kLux
sensitivity adjustment	potentiometer, 270°
light source	pulsed red LED
wave length	660 nm
light indicator	LED yellow

**electrical data**

response time / release time	< 0,125 ms
switching frequency	< 4 kHz
voltage supply range +Vs	10 ... 35 VDC
current consumption max. (no load)	30 mA
output function	light / dark operate switchable
output circuit	PNP
voltage drop Vd	< 2,8 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes

**mechanical data**

width / diameter	100 mm
fork width Sb	80 mm
height / length	80 mm
penetration depth	55 mm
depth	10 mm
type	U profile
housing material	die-cast zinc
connection types	connector M8, 3 pin

**ambient conditions**

operating temperature	-10 ... +60 °C
protection class	IP 67

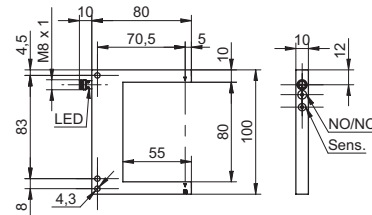
**connectors and mating connectors**

ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

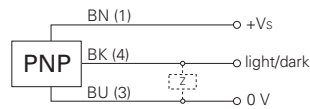
**order reference**

FGUM 080P8001/S35L

**dimension drawing**



**connection diagram**





Sb = 80 mm

- sensitivity adjustable via Teach-in
- smallest detectable object 0,3 mm
- rugged metal housing



**general data**

type	through beam sensor
object size	> 0,3 mm
repeat accuracy	< 0,03 mm
hysteresis	< 0,1 mm
ambient light immunity	< 20 kLux
sensitivity adjustment	Teach-in: button / remote
light source	pulsed red LED
wave length	660 nm
light indicator	LED yellow

**electrical data**

response time / release time	< 0,166 ms
switching frequency	< 3 kHz
voltage supply range +Vs	10 ... 35 VDC
current consumption max. (no load)	30 mA
output function	light / dark operate switchable
output circuit	PNP
voltage drop Vd	< 2 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes

**mechanical data**

width / diameter	100 mm
fork width Sb	80 mm
height / length	80 mm
penetration depth	55 mm
depth	10 mm
type	U profile
housing material	die-cast zinc
connection types	connector M8

**ambient conditions**

operating temperature	-10 ... +60 °C
protection class	IP 67

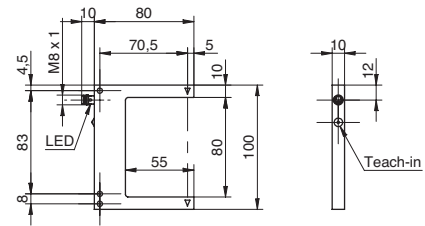
**connectors and mating connectors**

ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

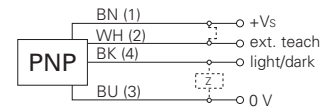
**order reference**

FGUM 080P6901/S35A

**dimension drawing**



**connection diagram**





Sb = 120 mm



- sensitivity adjustable via potentiometer
- fork width 120 mm
- rugged metal housing

**general data**

type	through beam sensor
object size	> 0,8 mm
repeat accuracy	< 0,06 mm
hysteresis	< 0,25 mm
ambient light immunity	< 50 kLux
sensitivity adjustment	potentiometer, 270°
light source	pulsed red LED
wave length	660 nm
light indicator	LED yellow

**electrical data**

response time / release time	< 0,25 ms
switching frequency	< 2 kHz
voltage supply range +Vs	10 ... 35 VDC
current consumption max. (no load)	40 mA
output function	light / dark operate switchable
output circuit	PNP
voltage drop Vd	< 2,8 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes

**mechanical data**

width / diameter	144 mm
fork width Sb	120 mm
height / length	90 mm
penetration depth	60 mm
depth	12 mm
type	U profile
housing material	die-cast zinc
connection types	connector M8, 3 pin

**ambient conditions**

operating temperature	-10 ... +60 °C
protection class	IP 67

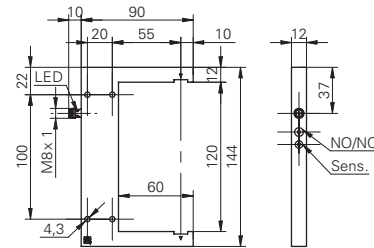
**connectors and mating connectors**

ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

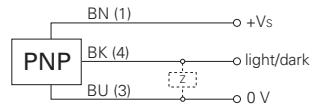
**order reference**

FGUM 120P8001/S35L

**dimension drawing**



**connection diagram**





**S<sub>b</sub> = 60 mm**



- optical axis approachable in x-, y- and z-direction
- smallest detectable object 0,5 mm
- rugged metal housing

#### general data

type	through beam sensor
object size	> 0,5 mm
repeat accuracy	< 0,06 mm
hysteresis	< 0,25 mm
ambient light immunity	< 80 kLux
sensitivity adjustment	potentiometer, 270°
light source	pulsed red LED
wave length	660 nm
light indicator	LED yellow

#### electrical data

response time / release time	< 0,125 ms
switching frequency	< 4 kHz
voltage supply range +Vs	10 ... 35 VDC
current consumption max. (no load)	30 mA
output function	light / dark operate switchable
output circuit	PNP
voltage drop V <sub>d</sub>	< 2,8 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes

#### mechanical data

width / diameter	75 mm
fork width S <sub>b</sub>	60 mm
height / length	75 mm
penetration depth	50 mm
depth	10 mm
type	L profile
housing material	die-cast zinc
connection types	connector M8, 3 pin

#### ambient conditions

operating temperature	-10 ... +60 °C
protection class	IP 67

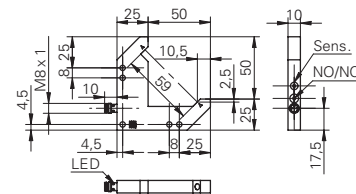
#### connectors and mating connectors

ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

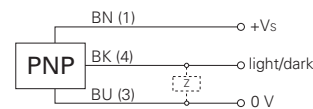
#### order reference

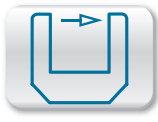
**FGLM 050P8001/S35L**

#### dimension drawing



#### connection diagram





Sb = 100 mm



- optical axis approachable in x-, y- and z-direction
- smallest detectable object 0,7 mm
- rugged metal housing

**general data**

type	through beam sensor
object size	> 0,7 mm
repeat accuracy	< 0,06 mm
hysteresis	< 0,25 mm
ambient light immunity	< 70 kLux
sensitivity adjustment	potentiometer, 270°
light source	pulsed red LED
wave length	660 nm
light indicator	LED yellow

**electrical data**

response time / release time	< 0,125 ms
switching frequency	< 4 kHz
voltage supply range +Vs	10 ... 35 VDC
current consumption max. (no load)	30 mA
output function	light / dark operate switchable
output circuit	PNP
voltage drop Vd	< 2,8 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes

**mechanical data**

width / diameter	105 mm
fork width Sb	100 mm
height / length	105 mm
penetration depth	80 mm
depth	10 mm
type	L profile
housing material	die-cast zinc
connection types	connector M8, 3 pin

**ambient conditions**

operating temperature	-10 ... +60 °C
protection class	IP 67

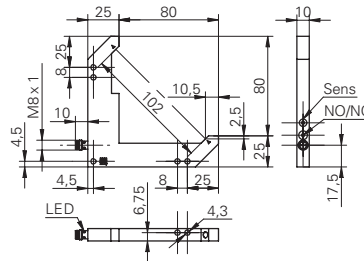
**connectors and mating connectors**

ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

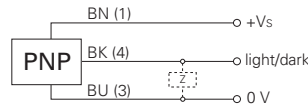
**order reference**

FGLM 080P8001/S35L

**dimension drawing**



**connection diagram**





Sb = 158 mm



- optical axis approachable in x-, y- and z-direction
- smallest detectable object 1 mm
- rugged metal housing

**general data**

type	through beam sensor
object size	> 1 mm
repeat accuracy	< 0,06 mm
hysteresis	< 0,25 mm
ambient light immunity	< 50 kLux
sensitivity adjustment	potentiometer, 270°
light source	pulsed red LED
wave length	660 nm
light indicator	LED yellow

**electrical data**

response time / release time	< 0,25 ms
switching frequency	< 2 kHz
voltage supply range +Vs	10 ... 35 VDC
current consumption max. (no load)	40 mA
output function	light / dark operate switchable
output circuit	PNP
voltage drop Vd	< 2,8 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes

**mechanical data**

width / diameter	150 mm
fork width Sb	158 mm
height / length	150 mm
penetration depth	120 mm
depth	12 mm
type	L profile
housing material	die-cast zinc
connection types	connector M8, 3 pin

**ambient conditions**

operating temperature	-10 ... +60 °C
protection class	IP 67

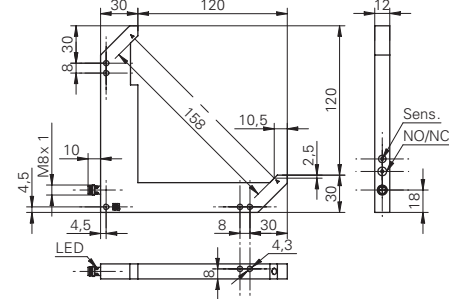
**connectors and mating connectors**

ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

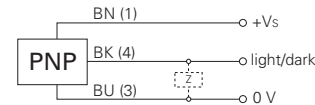
**order reference**

FGLM 120P8001/S35L

**dimension drawing**

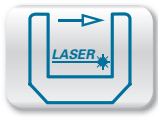


**connection diagram**



FGLM 120 Sb = 158 mm Fork and angle sensors





Sb = 30 mm



- laser fork sensor in rugged metal housing
- smallest detectable object 0,1 mm
- high repeatability of 0,02 mm

**general data**

type	through beam sensor
object size	> 0,1 mm
repeat accuracy	< 0,02 mm
hysteresis	< 0,05 mm
ambient light immunity	< 5 kLux
sensitivity adjustment	potentiometer, 270°
light source	pulsed red laser diode
wave length	670 nm
laser class	1
light indicator	LED yellow

**electrical data**

response time / release time	< 0,166 ms
switching frequency	< 3 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	30 mA
output function	light / dark operate switchable
output circuit	PNP
voltage drop Vd	< 2,8 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes

**mechanical data**

width / diameter	50 mm
fork width Sb	30 mm
height / length	60 mm
penetration depth	35 mm
depth	10 mm
type	U profile
housing material	die-cast zinc
connection types	connector M8, 3 pin

**ambient conditions**

operating temperature	5 ... +45 °C
protection class	IP 67

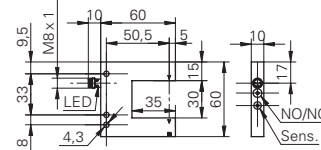
**connectors and mating connectors**

ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

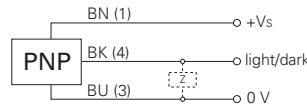
**Accessories**

10161959	Converter PNP/NPN - M8 x 1
11163236	Adapter for pulse stretching M8
for details: see accessories section	

**dimension drawing**



**connection diagram**



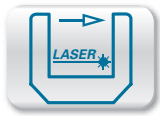
**laser warning**



IEC 60825-1/2014  
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except for deviations pursuant to laser  
notice No. 50, dated June 24, 2007

**order reference**

OGUM 030P8002/S35L



Sb = 30 mm

- precise laser fork sensor in rugged metal housing
- smallest detectable object 0,05 mm
- very high repeatability of 0,01 mm



**general data**

type	through beam sensor
object size	> 0,05 mm
repeat accuracy	< 0,01 mm
hysteresis	< 0,02 mm
ambient light immunity	< 100 kLux
sensitivity adjustment	potentiometer, 270°
light source	pulsed red laser diode
wave length	670 nm
laser class	1
light indicator	LED yellow

**electrical data**

response time / release time	< 0,166 ms
switching frequency	< 3 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	30 mA
output function	light / dark operate switchable
output circuit	PNP
voltage drop Vd	< 2,8 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes

**mechanical data**

width / diameter	60 mm
fork width Sb	30 mm
height / length	60 mm
penetration depth	35 mm
depth	10 mm
type	U profile
housing material	aluminum anodized
connection types	connector M8, 3 pin

**ambient conditions**

operating temperature	5 ... +45 °C
protection class	IP 67

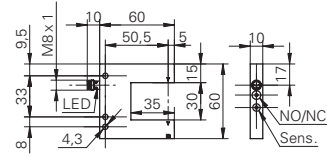
**connectors and mating connectors**

ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

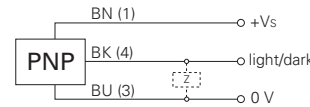
**order reference**

OGUM 030P8001/S35L

**dimension drawing**



**connection diagram**

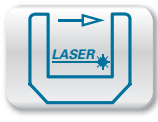


**laser warning**

**CLASS 1 LASER PRODUCT**

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except for deviations pursuant to laser  
notice No. 50, dated June 24, 2007

OGUM 030 Performance Sb = 30 mm  
Fork and angle sensors



Sb = 50 mm



- laser fork sensor in rugged metal housing
- smallest detectable object 0,1 mm
- high repeatability of 0,02 mm

**general data**

type	through beam sensor
object size	> 0,1 mm
repeat accuracy	< 0,02 mm
hysteresis	< 0,05 mm
ambient light immunity	< 5 kLux
sensitivity adjustment	potentiometer, 270°
light source	pulsed red laser diode
wave length	670 nm
laser class	1
light indicator	LED yellow

**electrical data**

response time / release time	< 0,166 ms
switching frequency	< 3 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	30 mA
output function	light / dark operate switchable
output circuit	PNP
voltage drop Vd	< 2,8 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes

**mechanical data**

width / diameter	70 mm
fork width Sb	50 mm
height / length	80 mm
penetration depth	55 mm
depth	10 mm
type	U profile
housing material	die-cast zinc
connection types	connector M8, 3 pin

**ambient conditions**

operating temperature	5 ... +45 °C
protection class	IP 67

**connectors and mating connectors**

ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

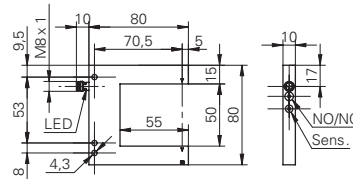
**Accessories**

10161959	Converter PNP/NPN - M8 x 1
11163236	Adapter for pulse stretching M8
for details: see accessories section	

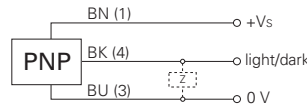
**order reference**

OGUM 050P8002/S35L

**dimension drawing**



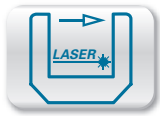
**connection diagram**



**laser warning**



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except for deviations pursuant to laser  
notice No. 50, dated June 24, 2007



Sb = 50 mm

- precise laser fork sensor in rugged metal housing
- smallest detectable object 0,05 mm
- very high repeatability of 0,01 mm



**general data**

type	through beam sensor
object size	> 0,05 mm
repeat accuracy	< 0,01 mm
hysteresis	< 0,02 mm
ambient light immunity	< 100 kLux
sensitivity adjustment	potentiometer, 270°
light source	pulsed red laser diode
wave length	670 nm
laser class	1
light indicator	LED yellow

**electrical data**

response time / release time	< 0,166 ms
switching frequency	< 3 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	30 mA
output function	light / dark operate switchable
output circuit	PNP
voltage drop Vd	< 2,8 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes

**mechanical data**

width / diameter	80 mm
fork width Sb	50 mm
height / length	80 mm
penetration depth	55 mm
depth	10 mm
type	U profile
housing material	aluminum anodized
connection types	connector M8, 3 pin

**ambient conditions**

operating temperature	5 ... +45 °C
protection class	IP 67

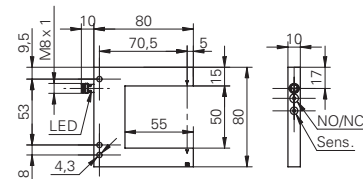
**connectors and mating connectors**

ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

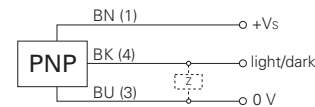
**order reference**

OGUM 050P8001/S35L

**dimension drawing**



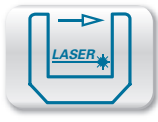
**connection diagram**



**laser warning**

**CLASS 1 LASER PRODUCT**

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Sb = 80 mm



- laser fork sensor in rugged metal housing
- smallest detectable object 0,1 mm
- repeatability of 0,02 mm

**general data**

type	through beam sensor
object size	> 0,2 mm
repeat accuracy	< 0,02 mm
hysteresis	< 0,05 mm
ambient light immunity	< 5 kLux
sensitivity adjustment	potentiometer, 270°
light source	pulsed red laser diode
wave length	670 nm
laser class	1
light indicator	LED yellow

**electrical data**

response time / release time	< 0,166 ms
switching frequency	< 3 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	30 mA
output function	light / dark operate switchable
output circuit	PNP
voltage drop Vd	< 2,8 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes

**mechanical data**

width / diameter	100 mm
fork width Sb	80 mm
height / length	80 mm
penetration depth	55 mm
depth	10 mm
type	U profile
housing material	die-cast zinc
connection types	connector M8, 3 pin

**ambient conditions**

operating temperature	5 ... +45 °C
protection class	IP 67

**connectors and mating connectors**

ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

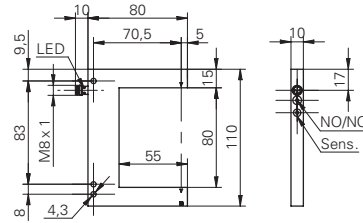
**Accessories**

10161959	Converter PNP/NPN - M8 x 1
11163236	Adapter for pulse stretching M8
for details: see accessories section	

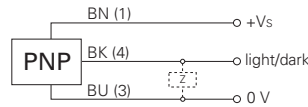
**order reference**

OGUM 080P8002/S35L

**dimension drawing**



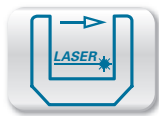
**connection diagram**



**laser warning**



IEC 60825-1/2014  
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except for deviations pursuant to laser  
notice No. 50, dated June 24, 2007



**S<sub>b</sub> = 80 mm**

- precise laser fork sensor in rugged metal housing
- smallest detectable object 0,05 mm
- very high repeatability of 0,01 mm



### general data

type	through beam sensor
object size	> 0,05 mm
repeat accuracy	< 0,01 mm
hysteresis	< 0,02 mm
ambient light immunity	< 100 kLux
sensitivity adjustment	potentiometer, 270°
light source	pulsed red laser diode
wave length	670 nm
laser class	1
light indicator	LED yellow

### electrical data

response time / release time	< 0,166 ms
switching frequency	< 3 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	30 mA
output function	light / dark operate switchable
output circuit	PNP
voltage drop V <sub>d</sub>	< 2,8 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes

### mechanical data

width / diameter	110 mm
fork width S <sub>b</sub>	80 mm
height / length	80 mm
penetration depth	55 mm
depth	10 mm
type	U profile
housing material	aluminum anodized
connection types	connector M8, 3 pin

### ambient conditions

operating temperature	5 ... +45 °C
protection class	IP 67

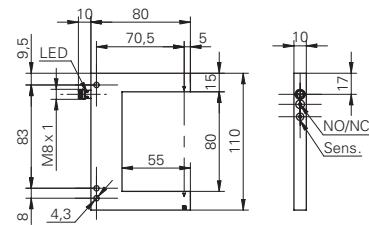
### connectors and mating connectors

ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

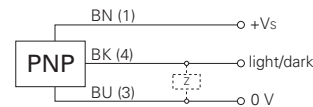
### order reference

**OGUM 080P8001/S35L**

### dimension drawing



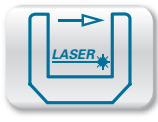
### connection diagram



### laser warning

**CLASS 1 LASER PRODUCT**

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Sb = 120 mm

- laser fork sensor in rugged metal housing
- smallest detectable object 0,1 mm
- repeatability of 0,02 mm



**general data**

type	through beam sensor
object size	> 0,2 mm
repeat accuracy	< 0,02 mm
hysteresis	< 0,05 mm
ambient light immunity	< 5 kLux
sensitivity adjustment	potentiometer, 270°
light source	pulsed red laser diode
wave length	670 nm
laser class	1
light indicator	LED yellow

**electrical data**

response time / release time	< 0,166 ms
switching frequency	< 3 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	30 mA
output function	light / dark operate switchable
output circuit	PNP
voltage drop Vd	< 2,8 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes

**mechanical data**

width / diameter	144 mm
fork width Sb	120 mm
height / length	90 mm
penetration depth	60 mm
depth	12 mm
type	U profile
housing material	die-cast zinc
connection types	connector M8, 3 pin

**ambient conditions**

operating temperature	5 ... +45 °C
protection class	IP 67

**connectors and mating connectors**

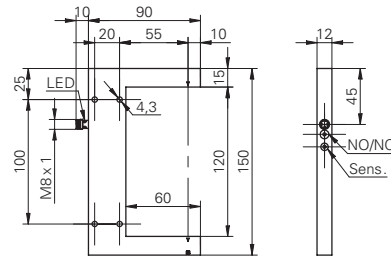
ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

**Accessories**

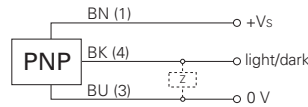
10161959	Converter PNP/NPN - M8 x 1
11163236	Adapter for pulse stretching M8

for details: see accessories section

**dimension drawing**



**connection diagram**



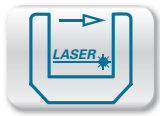
**laser warning**



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**order reference**

OGUM 120P8002/S35L



**Sb = 120 mm**

- precise laser fork sensor in rugged metal housing
- smallest detectable object 0,05 mm
- very high repeatability of 0,01 mm



### general data

type	through beam sensor
object size	> 0,05 mm
repeat accuracy	< 0,01 mm
hysteresis	< 0,02 mm
ambient light immunity	< 100 kLux
sensitivity adjustment	potentiometer, 270°
light source	pulsed red laser diode
wave length	670 nm
laser class	1
light indicator	LED yellow

### electrical data

response time / release time	< 0,166 ms
switching frequency	< 3 kHz
voltage supply range +Vs	10 ... 30 VDC
current consumption max. (no load)	30 mA
output function	light / dark operate switchable
output circuit	PNP
voltage drop Vd	< 2,8 VDC
output current	< 200 mA
short circuit protection	yes
reverse polarity protection	yes

### mechanical data

width / diameter	150 mm
fork width Sb	120 mm
height / length	90 mm
penetration depth	60 mm
depth	12 mm
type	U profile
housing material	aluminum anodized
connection types	connector M8, 3 pin

### ambient conditions

operating temperature	5 ... +45 °C
protection class	IP 67

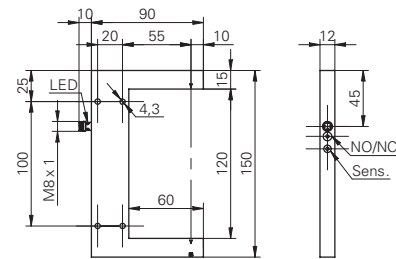
### connectors and mating connectors

ESG 32SH0200	Connector M8, 3 pin, straight, 2 m
ESW 31SH0200	Connector M8, 3 pin, angular, 2 m
additional cable connectors and field wireable connectors: see accessories	

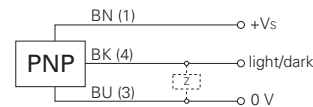
### order reference

**OGUM 120P8001/S35L**

### dimension drawing



### connection diagram



### laser warning



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