

Infrared
and Laser
Light Barriers

Inductive
Proximity
Switches

Sensors with
Analogue Output

Laser Reflex
Scanners

Accessories

for Punching, Forming and Automation Systems

SENSORS



Company building

Business Divisions of VESTER Elektronik GmbH

Trouble-free and safe production processes are essentially based on the functional safety of technical designs, devices and plants or else their monitoring. The prevention of failures by using control systems – in particular the safe, trouble-free punching and forming process – was the initial basic idea behind the foundation of our company.

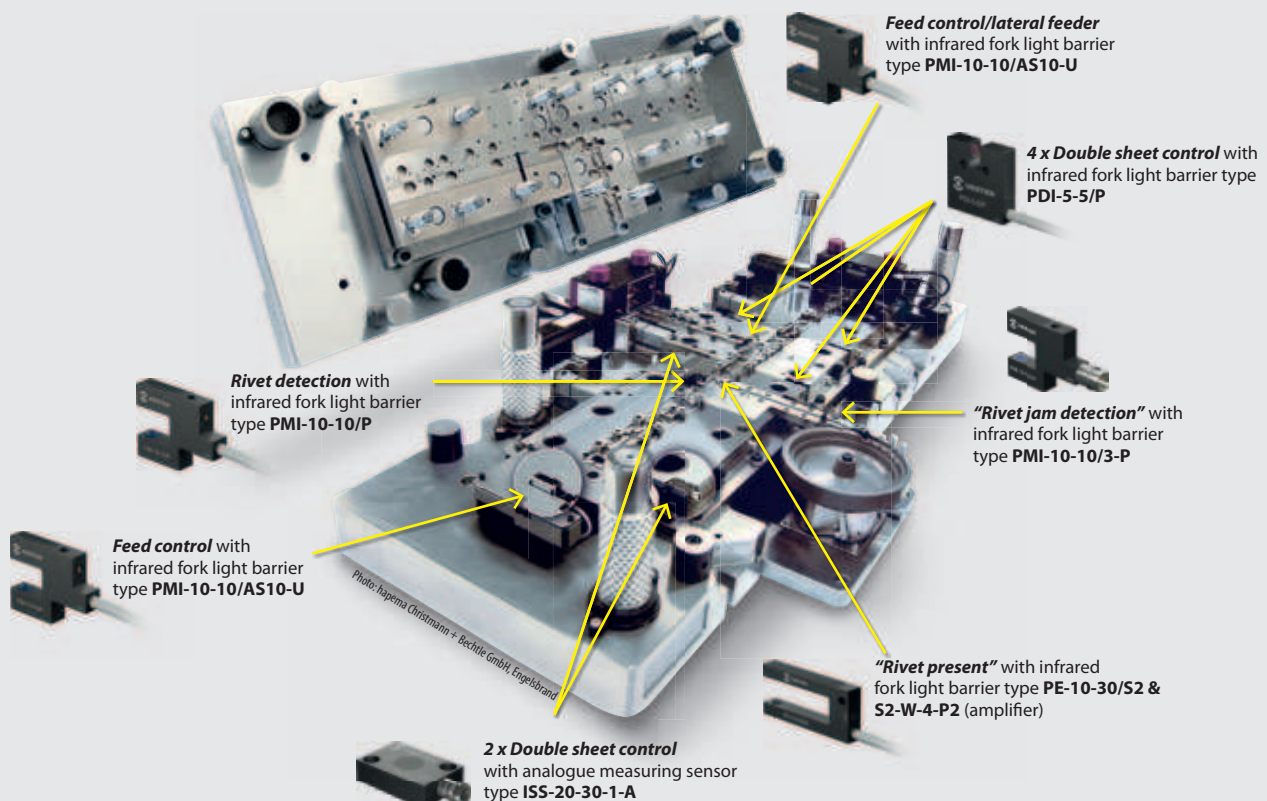
And it has remained so ever since.

Today we develop and manufacture mechatronic systems which, by using sensors and IT components, become semi-intelligent products for a reliable controlling and monitoring of punching and forming processes to an unprecedented degree.

From this historical background **two business areas** have developed in our company.

Our classic business division consist of the product lines **“Sensor Technology and Process Monitoring”**. Here the focus lies on failure prevention by means of sensors, mainly light barriers and control systems and in particular the safe and trouble-free punching and forming process.

Sensor Technology and Process Monitoring



The sector of sensor technology is presented in this catalogue and subdivided into 11 chapters showing numerous IR and laser light barriers, complemented by proximity switches, fibre optics and various accessories.

The process monitoring with the SAS Advanced System enables to monitor and control all operations on the press.

Thus VESTER sensor technology and process monitoring systems help to detect malfunctions in the punching process in time to avoid tool breakage and expensive consequential damages.

Our new business division of **“test automation”** includes the product lines of our automated testing systems with image processing as well as laser marking systems.

Apart from the safe, trouble-free production with preventive error proofing, the 100% quality control for a faultless output and also the marking of parts for ensuring the traceability of the production sequence have become compulsory exercises for many industry branches.

Our VESTER VIDEOcheck testing systems control the manufactured products directly in process or in a process-oriented manner and thus ensure the output of faultless parts.

For the marking of continuously manufactured stampings and single parts the VESTER laser marking cells of the VLM product line are designed to meet the requirements of traceability.

For four decades our name has been a guarantor of innovative and well-engineered **systems for quality assurance and the monitoring of punching and forming processes.**

We offer a highly specialised know-how plus a broad product range in the fields of metrology and sensor technology for safe, transparent production processes and a consistent quality assurance.

Test automation



Factory picture: Leicht & Müller

Stamping line with **VVC 610** and **LASERmark VLM 600**:
Laser marking of continuously manufactured stampings



Factory picture: Kramski

Test cell **VVC 610** for stampings



Automatic measuring and sorting machine **VIDEOcheck VVC 110**
with charging device and bunker

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Technical Terms

Preliminary Note

While listing the technical terms we were deliberately exercising restraint so as not to create a technical reference book at this point. Rather, it is our main concern to give the end user a brief explanation of essential terms related to the application of our sensors. We raise no claims to completeness with regard to the representation of complex physical fundamentals.

Operation Modes

We draw a distinction between static and dynamic operation. The compact single-beam light barriers with an integrated amplifier inherently function in static mode, i.e. the output will immediately follow the status of the light beam. Depending on the application, single-beam light barriers with a separate chopped light amplifier may also be operated in a purely dynamic mode. An interruption of the light beam causes an adjustable output pulse length. Multi-beam light barriers combine both principles and are therefore very versatile.

Static Operation :

The interruption of a light beam by an object causes a change of state on the amplifier output, which will continue until this interruption is undone by the object. The pulse length is roughly equivalent to the time of interruption.

Dynamic Operation :

Sensors with amplifiers which combine both operating principles can detect fast moving and small objects and create a defined output pulse. However, we can also detect those objects which, are still located inside the cross section of the sensor. This feature expands the range of applications, in particular of multi-beam stamping light barriers. Furthermore, the static operation mode also includes a continuous contamination control.

Resolution

The smallest part size a sensor can reliably identify in its highest sensitivity setting.

Output

PNP-switching :

The load is connected to the ground of the operating voltage source. The amplifier output will connect the load to the positive pole of the operating voltage source. PNP-switching sensors are state of the art and are required as standard by almost all industrial applications.

NPN-switching :

The load is connected to the positive pole of the operating voltage source. The amplifier output will connect the load to the ground of the operating voltage source.

Operating Voltage

All sensors have an operating voltage range of 12 – 24 (30) VDC (-5 % / +20 %), inductive proximity switches of 10 – 30 VDC (-5 % / +10 %), depending on type. In industrial ambience a 24 VDC supply has become established.

Function Principle

VESTER single- and multi-beam light barriers mostly operate as infrared and red light one-way sensors. Laser light barriers run in the visible range (red light). The laser output power is below 1 mW (class 2). Nevertheless, with split-type versions you should never look directly into the laser beam! In a one-way sensor transmitter and receiver are arranged in a common optic axis, split-type models in separate housings, fork and frame light barriers in a common housing. Both the transmitter and receiver elements are classified for highest sensitivity to achieve the required accuracy and reliability.

Housing

All fork and frame light barriers are made of high-quality anodised aluminium to ensure a high electro-mechanical stability for many years. The optical elements are protected by scratch-proof hardened glass. Each sensor has a sufficient number of mounting options either directly on the housing or, as is realised in most multi-beam light barriers, on special support rails and protective frames.

Pulse Extension

Many SPS applications require an extension of short output signals from sensors into a defined time signal, which can be safely read within the SPS programme cycle time. This functionality is available as a pulse extension on a large number of sensors, particularly on multi-beam light barriers. The setting range is between 1 ms and 100 ms. The selected pulse length (default setting on delivery is 10 ms) also affects the sensor switching frequency, which must be taken into account with correspondingly fast counting operations.

Function

With a digital switching operating mode the amplifier output can have only two states.

Bright function :

The amplifier output will be connected through if a sufficient quantity of light meets the receiver(s). There is no object between transmitter and receiver element.

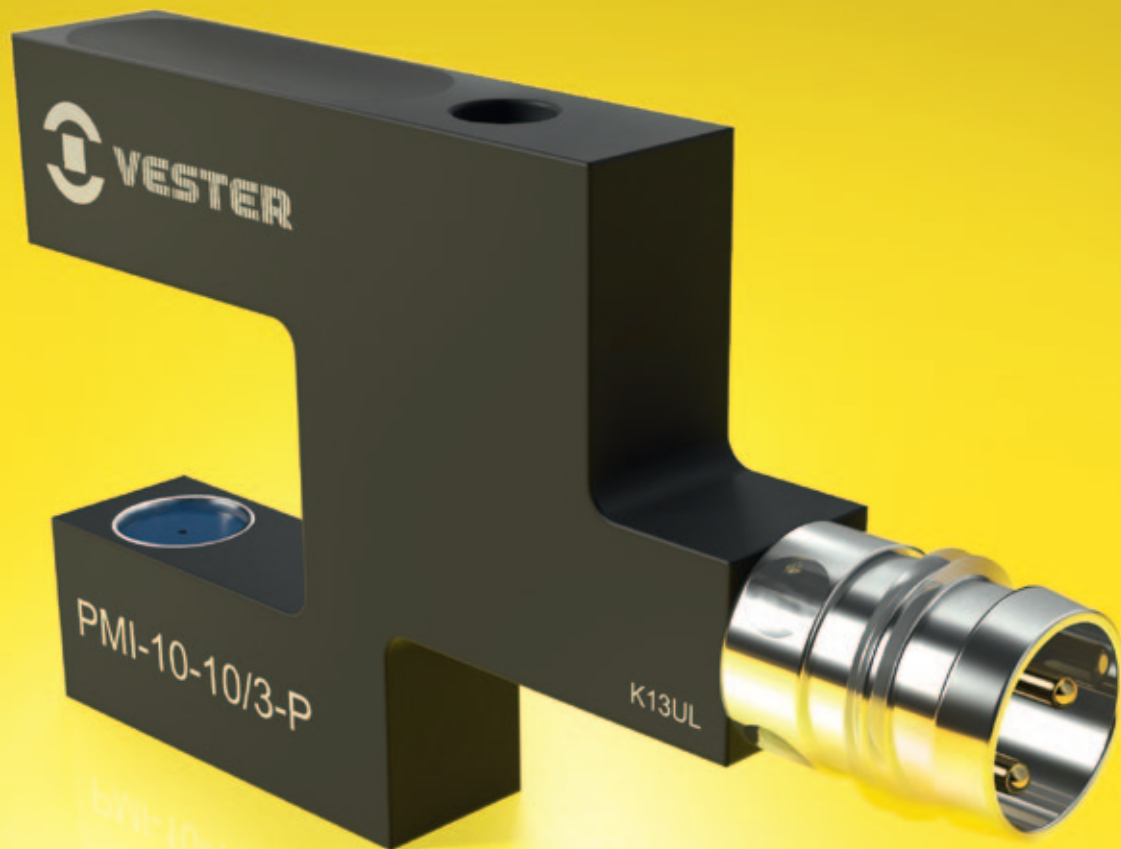
Dark function :

The amplifier output will be connected through if the receiver is sufficiently darkened, with multi-beam light barriers at least one element. There is an object between transmitter and receiver. On many sensor types the “bright/dark switching” function is switchable, according to the case of application.

Single-beam light barriers with integrated amplifier

K1

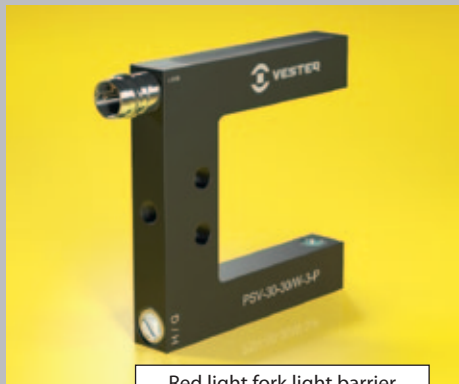
Our compact models – with high resolution and repeating accuracy



Infrared fork light barrier



Laser fork light barrier



Red light fork light barrier



Split laser light barrier

- ▶ Single-beam light barriers with integrated amplifier
- ▶ Infrared fork light barriers

PMI 6 mm series

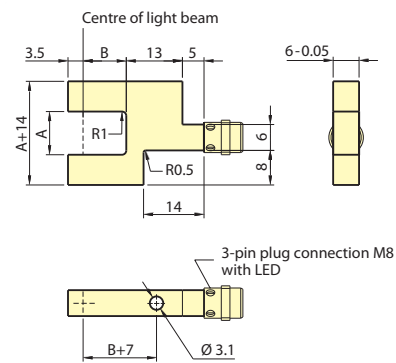
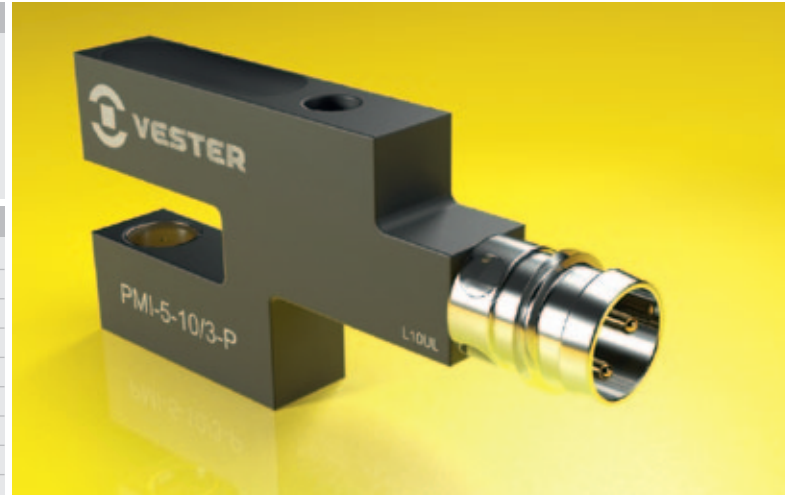
with 3-pin connector M8

Application

- Feed control
- Position control

Specifications

Circuit	Constant light trigger
Operating voltage	12 – 30 VDC
Current consumption	max. 60 mA
Mode of operation	static
Output with LED	PNP
Function	dark function
Load current	200 mA short-circuit proof
Repeating accuracy	< 0.02 mm
Frequency	1 KHz
Temperature range	0 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... C E
System of protection	IP 65

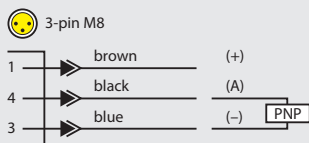


Resolution

Fork width A [mm]:	5	10	20
Part diameter [mm]:	0.3	0.4	0.6

A [mm]:	5	10	10	10	20	20	20
B [mm]:	10	10	20	30	10	20	30

Pin configuration



Article	Order No.
PMI- 5-10/3-P	6311-00000-3002
PMI-10-10/3-P	6312-00000-3002
PMI-10-20/3-P	6320-00000-3002
PMI-10-30/3-P	6317-00000-3002
PMI-20-10/3-P	6304-00000-3002
PMI-20-20/3-P	6324-00000-3002
PMI-20-30/3-P	6313-00000-3002

Accessories (more accessories see chapter K11)

Article	Order No.
Connection cable 5 m:	
• VK-M8-g	2111-00005-0300
• VK-M8-w	2111-00005-1300

- ▶ Single-beam light barriers with integrated amplifier
- ▶ Infrared fork light barriers

PMI 6 mm series

with free cable end 1.5 m

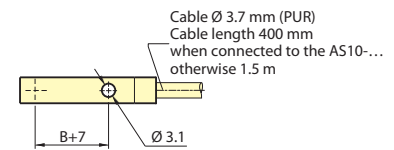
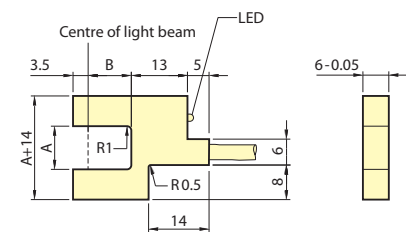
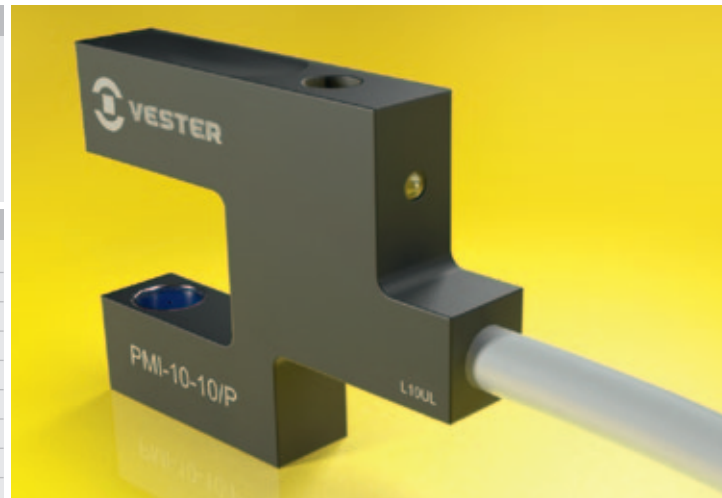
Application

- Feed control
- Position control

Specifications

Circuit	Constant light trigger
Operating voltage	12 – 30 VDC
Current consumption	max. 60 mA
Mode of operation	static
Output with LED	PNP
Function	dark function ¹⁾
Load current	200 mA short-circuit proof
Repeating accuracy	< 0.02 mm
Frequency	1 KHz
Temperature range	0 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... CEE
System of protection	IP 65

¹⁾ with accessory AS10-U/4: external bright/dark function

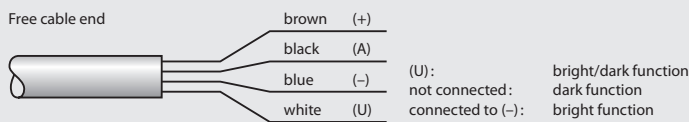


Resolution

Fork width A [mm]:	5	10	20
Part diameter [mm]:	0.3	0.4	0.6

A [mm]:	5	10	10	10	20	20	20
B [mm]:	10	10	20	30	10	20	30

Pin configuration



Article	Order No.
PMI- 5-10/P	6311-00000-0002
PMI-10-10/P	6312-00000-0002
PMI-10-20/P	6320-00000-0002
PMI-10-30/P	6317-00000-0002
PMI-20-10/P	6304-00000-0002
PMI-20-20/P	6324-00000-0002
PMI-20-30/P	6313-00000-0002

Accessories (more accessories see chapter K11)

Article	Order No.
Mounting block for self-assembly!	
• AS10-U/4, 4-pin M12	2306-00000-1004
• AS10-U, 5-pin M16	2306-00000-1005

- ▶ Single-beam light barriers with integrated amplifier
- ▶ Infrared fork light barriers

PMI 6 mm series

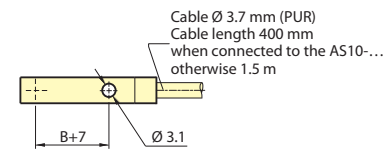
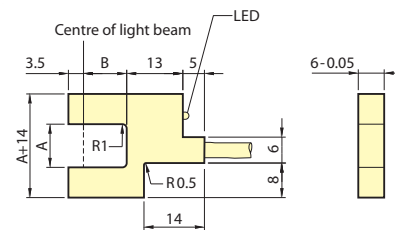
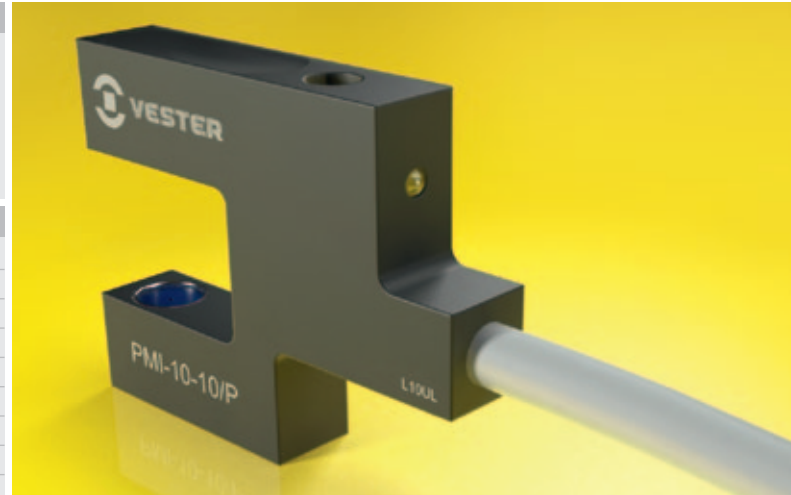
with 4-pin connector M12

Application

- Feed control
- Position control

Specifications

Circuit	Constant light trigger
Operating voltage	12 – 30 VDC
Current consumption	max. 60 mA
Mode of operation	static
Output with LED	PNP
Function	bright / dark function
Load current	200 mA short-circuit proof
Repeating accuracy	< 0.02 mm
Frequency	1 KHz
Temperature range	0 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... CĈ
System of protection	IP 65

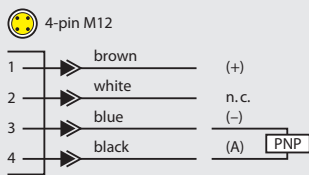


Resolution

Fork width A [mm]:	5	10	20
Part diameter [mm]:	0.3	0.4	0.6

A [mm]:	5	10	10	10	20	20	20
B [mm]:	10	10	20	30	10	20	30

Pin configuration

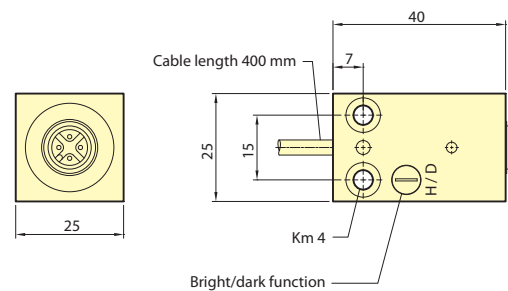


Article	Order No.
PMI- 5-10/AS10-U/4	6311-00000-1402
PMI-10-10/AS10-U/4	6312-00000-1402
PMI-10-20/AS10-U/4	6320-00000-1402
PMI-10-30/AS10-U/4	6317-00000-1402
PMI-20-10/AS10-U/4	6304-00000-1402
PMI-20-20/AS10-U/4	6324-00000-1402
PMI-20-30/AS10-U/4	6313-00000-1402

Accessories (more accessories see chapter K11)

Article	Order No.
Connection cable 5 m:	
• VK-M12-5-g	2112-00005-0500
• VK-M12-5-w	2112-00005-1500
Extension cable 4-pin M12:	
• VK-M12-g/M12 (2 m)	2112-00002-0404
• VK-M12-g/M12 (5 m)	2112-00005-0404

with mounting block AS10-U/4



- ▶ Single-beam light barriers with integrated amplifier
- ▶ Infrared fork light barriers

PMI 6 mm series

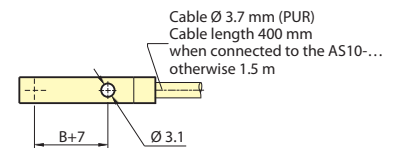
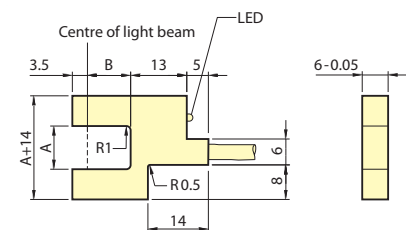
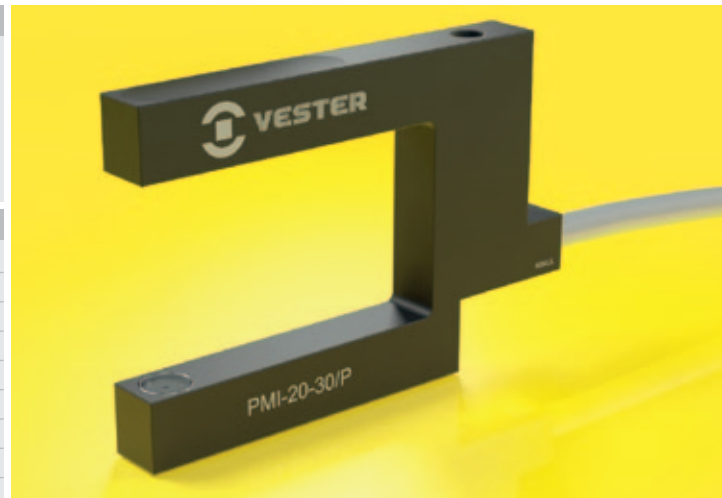
with 5-pin connector M16

Application

- Feed control
- Position control

Specifications

Circuit	Constant light trigger
Operating voltage	12 – 30 VDC
Current consumption	max. 60 mA
Mode of operation	static
Output with LED	PNP
Function	bright / dark function
Load current	200 mA short-circuit proof
Repeating accuracy	< 0.02 mm
Frequency	1 KHz
Temperature range	0 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... CEE
System of protection	IP 65



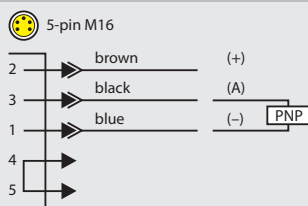
Cable Ø 3.7 mm (PUR)
Cable length 400 mm
when connected to the AS10-...
otherwise 1.5 m

Resolution

Fork width A [mm]:	5	10	20
Part diameter [mm]:	0.3	0.4	0.6

A [mm]:	5	10	10	10	20	20	20
B [mm]:	10	10	20	30	10	20	30

Pin configuration

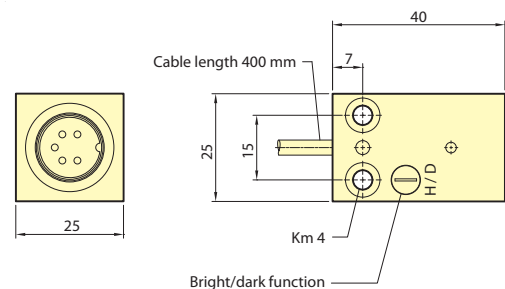


Article

Order No.

PMI- 5-10/AS10-U	6311-00000-1502
PMI-10-10/AS10-U	6312-00000-1502
PMI-10-20/AS10-U	6320-00000-1502
PMI-10-30/AS10-U	6317-00000-1502
PMI-20-10/AS10-U	6304-00000-1502
PMI-20-20/AS10-U	6324-00000-1502
PMI-20-30/AS10-U	6313-00000-1502

with mounting block AS10-U



Accessories (more accessories see chapter K11)

Article

Order No.

Connection cable (with free cable end):	
• VK-D/F-St-A (2 m)	2105-00002-0600
• VK-D/F-St-A (5 m)	2105-00005-0600
Extension cable 5/6-pin M16:	
• VK-D/D (2m)	2104-00002-0606
• VK-D/D (5m)	2104-00005-0606

- ▶ Single-beam light barriers with integrated amplifier
- ▶ Infrared fork light barriers

PDI 6 mm series

with free cable end 1.5 m

Application

- Double sheet control

Specifications

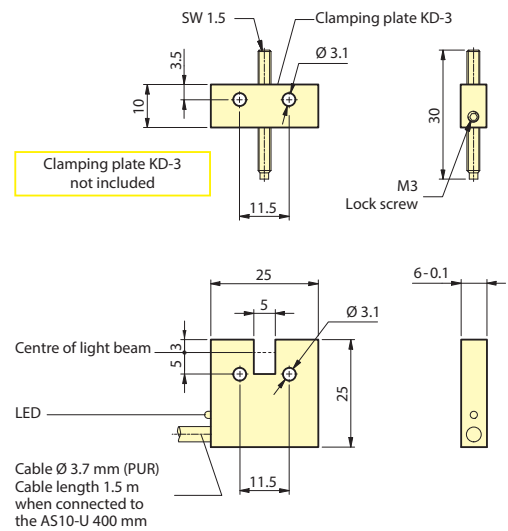
Circuit	Constant light trigger
Operating voltage	12 – 30 VDC
Current consumption	max. 60 mA
Mode of operation	static
Output with LED	PNP
Function	dark function ¹⁾
Load current	200 mA short-circuit proof
Repeating accuracy	< 0.02 mm
Frequency	1 KHz
Temperature range	0 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... CEE
System of protection	IP 65

¹⁾ with accessory AS10-U/4 or AS10-U: external bright/dark function

Resolution

Fork width A [mm]:	5
Part diameter [mm]:	0.3

Pin configuration

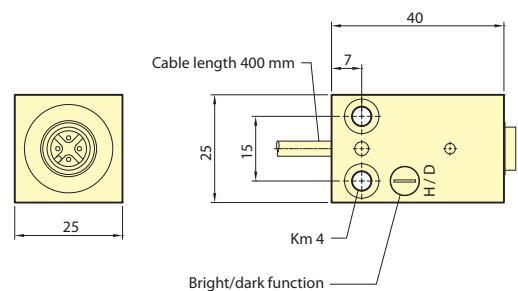


Article

Order No.

Fork light barrier with free cable end 1.5 m:	
• PDI-5-5/P	6327-00000-0002
Fork light barrier with mounting block:	
• PDI-5-5/AS10-U/4 (4-pin)	6327-00000-1402
• PDI-5-5/AS10-U (5-pin)	6327-00000-1502

Mounting block AS10-U/4



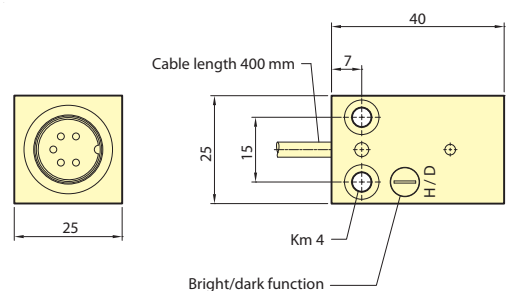
Accessories (more accessories see chapter K11)

Article

Order No.

Mounting block for self-assembly!	
• AS10-U/4, 4-pin M12	2306-00000-1004
• AS10-U, 5-pin M16	2306-00000-1005
Clamping plate:	
• KD-3	2203-00000-0000

Mounting block AS10-U



- ▶ Single-beam light barriers with integrated amplifier
- ▶ Infrared fork light barriers

PXI series

with 3-pin connector M8

Application

- Double sheet control

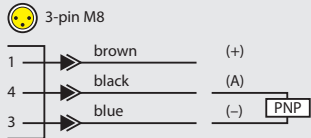
Specifications

Circuit	Constant light trigger
Operating voltage	12 – 30 VDC
Current consumption	max. 60 mA
Mode of operation	static
Output with LED	PNP
Function	bright / dark function
Load current	200 mA short-circuit proof
Repeating accuracy	< 0.02 mm
Frequency	1 KHz
Temperature range	0 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... C E
System of protection	IP 65

Resolution

Fork width A [mm]:	5
Part diameter [mm]:	0.3

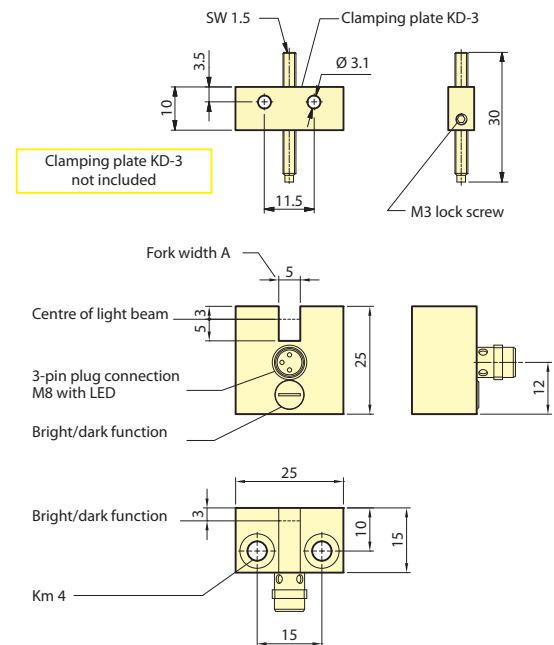
Pin configuration



Article	Order No.
PXI-5-5/3-P	6327-00001-3002

Accessories (more accessories see chapter K11)

Article	Order No.
Connection cable 5 m:	
• VK-M8-g	2111-00005-0300
• VK-M8-w	2111-00005-1300
Clamping plate:	
• KD-3	2203-00000-0000



- ▶ Single-beam light barriers with integrated amplifier
- ▶ Infrared fork light barriers

PSI 8 mm series

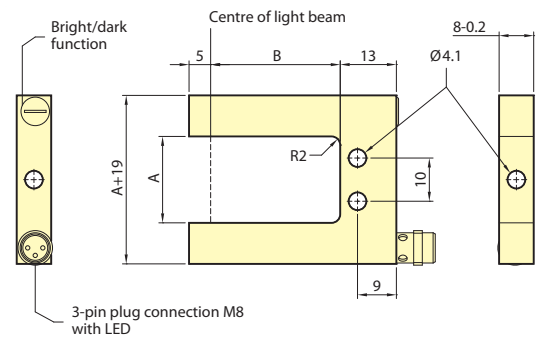
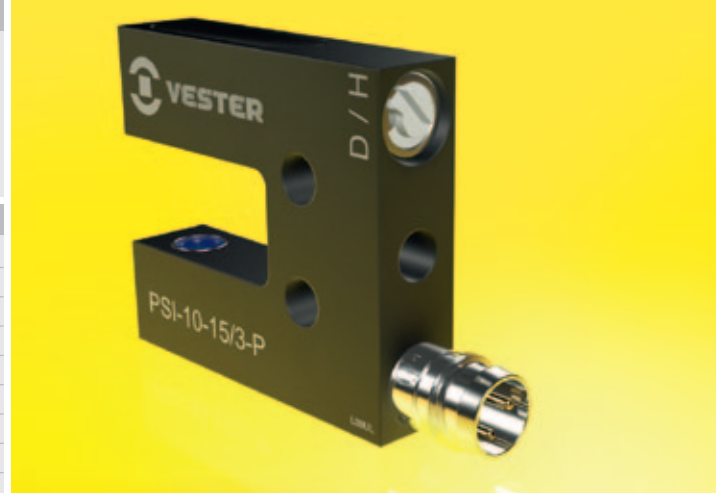
with 3-pin connector M8 | Constant light trigger

Application

- Feed control
- Position control

Specifications

Circuit	Constant light trigger
Operating voltage	12 – 30 VDC
Current consumption	max. 60 mA
Mode of operation	static
Output with LED	PNP
Function	bright / dark function
Load current	200 mA short-circuit proof
Repeating accuracy	< 0.02 mm
Frequency	1 KHz
Temperature range	0 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... C€
System of protection	IP 65

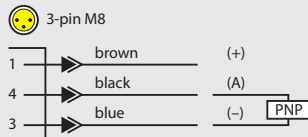


Resolution

Fork width A [mm]:	10	20/25	30	40
Part diameter [mm]:	0.4	0.6	0.7	1.0

A [mm]:	10	10	20	20	20	20	25	30	30	30	30	40	40	40
B [mm]:	15	30	15	30	40	60	80	15	30	40	60	40	60	80

Pin configuration



Article	Order No.
PSI-10-15/3-P	6331-00000-3002
PSI-10-30/3-P	6332-00000-3002
PSI-20-15/3-P	6333-00000-3002
PSI-20-30/3-P	6334-00000-3002
PSI-20-40/3-P	6351-00000-3002
PSI-20-60/3-P	6352-00000-3002
PSI-25-80/3-P	6360-00000-3002
PSI-30-15/3-P	6335-00000-3002
PSI-30-30/3-P	6336-00000-3002
PSI-30-40/3-P	6354-00000-3002
PSI-30-60/3-P	6355-00000-3002
PSI-40-40/3-P	6357-00000-3002
PSI-40-60/3-P	6358-00000-3002
PSI-40-80/3-P	6359-00000-3002

Accessories (more accessories see chapter K11)

Article	Order No.
Connection cable 5 m:	
• VK-M8-g	2111-00005-0300
• VK-M8-w	2111-00005-1300

- ▶ Single-beam light barriers with integrated amplifier
- ▶ Infrared fork light barriers

PSI 8 mm series

with 3-pin connector M8 | Chopped light trigger

Application

- Feed control
- Position control

Specifications

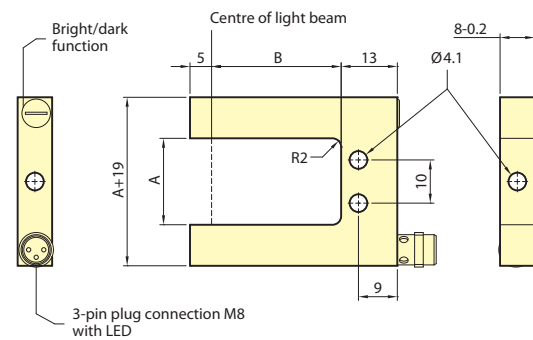
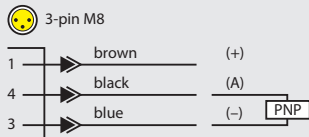
Circuit	Chopped light trigger
Operating voltage	12 – 30 VDC
Current consumption	max. 60 mA
Mode of operation	static
Output with LED	PNP
Function	bright / dark function
Load current	200 mA short-circuit proof
Repeating accuracy	< 0.02 mm
Frequency	4 KHz
Temperature range	0 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... CĒ
System of protection	IP 65



Resolution

Fork width A [mm]:	10	20 / 25	30 / 40
Part diameter [mm]:	0.2	0.3	0.4

Pin configuration



A [mm]:	10	20	20	20	25	30	30	30	40	40	40
B [mm]:	30	30	40	60	80	30	40	60	40	60	80

Article Order No.

PSI-10-30/W-3-P	6332-00000-3022
PSI-20-30/W-3-P	6334-00000-3022
PSI-20-40/W-3-P	6351-00000-3022
PSI-20-60/W-3-P	6352-00000-3022
PSI-25-80/W-3-P	6360-00000-3022
PSI-30-30/W-3-P	6336-00000-3022
PSI-30-40/W-3-P	6354-00000-3022
PSI-30-60/W-3-P	6355-00000-3022
PSI-40-40/W-3-P	6357-00000-3022
PSI-40-60/W-3-P	6358-00000-3022
PSI-40-80/W-3-P	6359-00000-3022

Accessories (more accessories see chapter K11)

Article Order No.

Connection cable 5 m:	
• VK-M8-g	2111-00005-0300
• VK-M8-w	2111-00005-1300

- ▶ Single-beam light barriers with integrated amplifier
- ▶ Infrared fork light barriers

PKI 10 mm series

with 3-pin connector M8 | Fork width 10 to 20 mm

Application

- Position control
- Parts counting in assembly lines

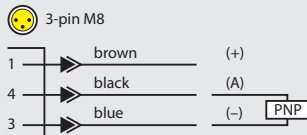
Specifications

Circuit	Chopped light trigger
Operating voltage	12 – 30 VDC
Current consumption	max. 60 mA
Mode of operation	static
Sensitivity	2 levels : I / II
Output with LED	PNP
Function	bright / dark function
Load current	200 mA short-circuit proof
Repeating accuracy	< 0.02 mm
Frequency	4 KHz
Temperature range	0 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... CE
System of protection	IP 65

Resolution

Fork width A [mm]:	10 – 20
Part diameter [mm] with amplifier level I:	0.5
Part diameter [mm] with amplifier level II:	0.6

Pin configuration



Article

Order No.

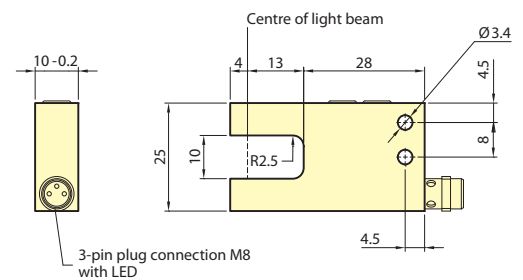
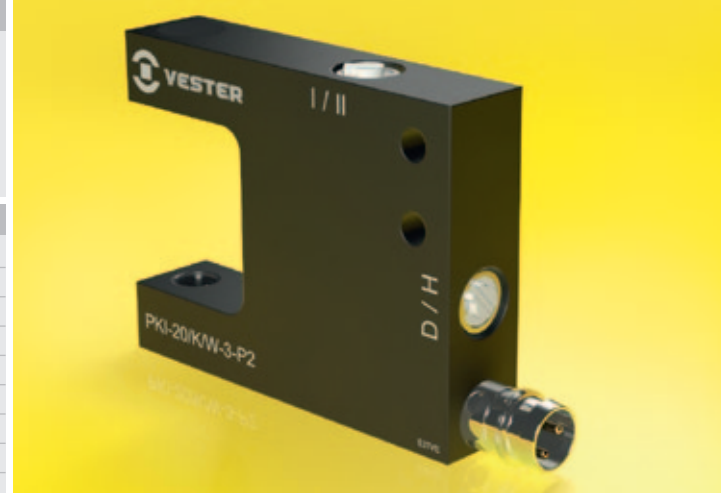
PKI-10/K/W-3-P2	6331-00000-3064
PKI-20/K/W-3-P2	6333-00001-3064

Accessories (more accessories see chapter K11)

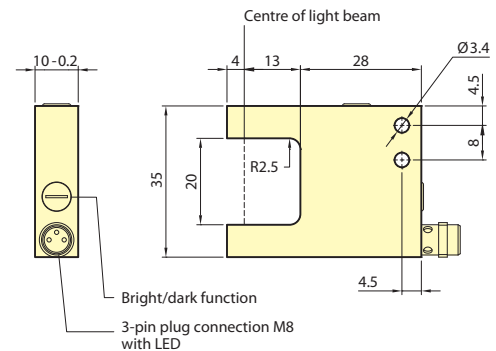
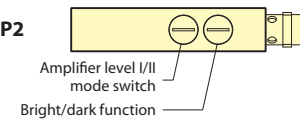
Article

Order No.

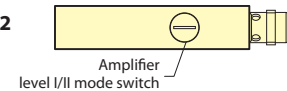
Connection cable 5 m:	
• VK-M8-g	2111-00005-0300
• VK-M8-w	2111-00005-1300



PKI-10/K/W-3-P2



PKI-20/K/W-3-P2



Recommendations / instructions for the use of the dual-level chopped light amplifier:

- **Amplifier level I → High resolution:**
Default setting for all fork light barriers
- **Amplifier level II → High operational reliability:**
For fork light barriers when used in oil mist or dusty surroundings. The operational reliability is twice the level of amplifier level I.

- ▶ Single-beam light barriers with integrated amplifier
- ▶ Infrared fork light barriers

PKI 10 mm series

with 3-pin connector M8 | Fork width 20 to 80 mm

Application

- Position control
- Parts counting in assembly lines

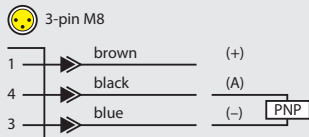
Specifications

Circuit	Chopped light trigger
Operating voltage	12 – 30 VDC
Current consumption	max. 60 mA
Mode of operation	static
Sensitivity	2 levels : I / II
Output with LED	PNP
Function	bright / dark function
Load current	200 mA short-circuit proof
Repeating accuracy	< 0.02 mm
Frequency	4 KHz
Temperature range	0 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... C E
System of protection	IP 65

Resolution

Fork width A [mm]:	20	30	50	80
Part diameter [mm] with amplifier level I:	0.5	0.6	0.8	0.9
Part diameter [mm] with amplifier level II:	0.6	0.8	0.9	1.1

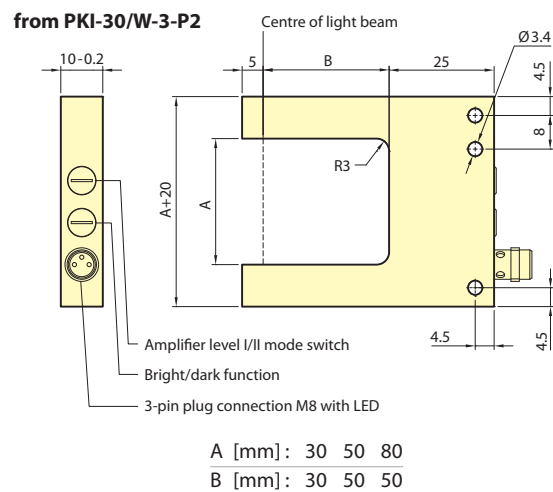
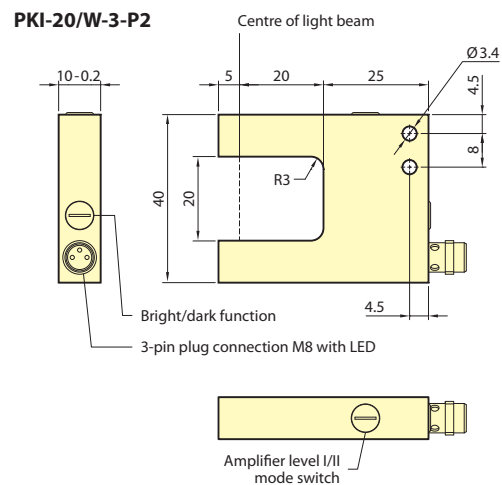
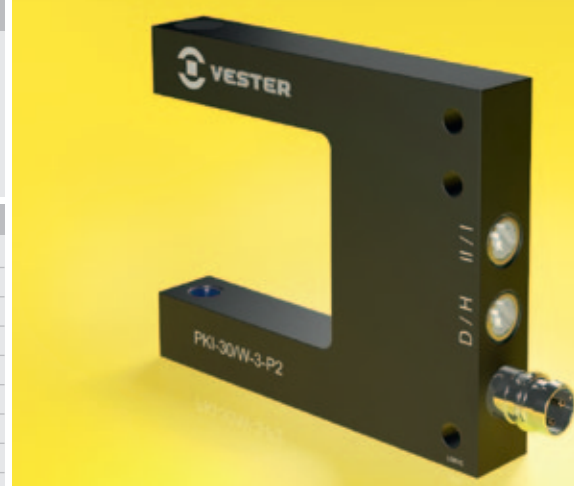
Pin configuration



Article	Order No.
PKI-20/W-3-P2	6333-00000-3064
PKI-30/W-3-P2	6336-00000-3064
PKI-50/W-3-P2	6374-00000-3064
PKI-80/W-3-P2	6376-00000-3064

Accessories (more accessories see chapter K11)

Article	Order No.
Connection cable 5 m:	
• VK-M8-g	2111-00005-0300
• VK-M8-w	2111-00005-1300



Recommendations / instructions for the use of the dual-level chopped light amplifier:

- **Amplifier level I → High resolution:**
Default setting for all fork light barriers.
- **Amplifier level II → High operational reliability:**
For fork light barriers when used in oil mist or dusty surroundings. The operational reliability is twice the level of amplifier level I.

- ▶ Single-beam light barriers with integrated amplifier
- ▶ Red light fork light barriers

PSV 8 mm series

with 3-pin connector M8

Application

- Feed control
- Position control

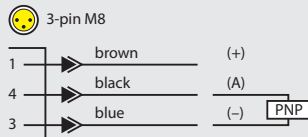
Specifications

Circuit	Chopped light trigger
Wavelength	650 nm, red light
Operating voltage	12 – 30 VDC
Current consumption	60 mA
Mode of operation	static
Output with LED	PNP
Function	bright / dark function
Load current	200 mA short-circuit proof
Repeating accuracy	< 0.02 mm
Frequency	4 KHz
Temperature range	0 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... CEE
System of protection	IP 65

Resolution

Fork width A [mm]:	10	20/25	30	40
Part diameter [mm]:	0.2	0.3	0.4	0.5

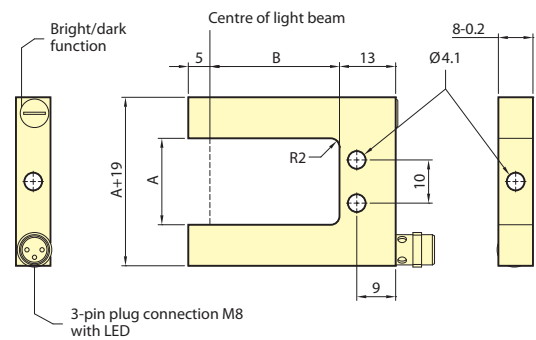
Pin configuration



Article	Order No.
PSV-10-30/W-3-P	6332-00010-3022
PSV-20-30/W-3-P	6334-00010-3022
PSV-20-40/W-3-P	6351-00010-3022
PSV-20-60/W-3-P	6352-00010-3022
PSV-25-80/W-3-P	6360-00010-3022
PSV-30-30/W-3-P	6336-00010-3022
PSV-30-40/W-3-P	6354-00010-3022
PSV-30-60/W-3-P	6355-00010-3022
PSV-40-40/W-3-P	6357-00010-3022
PSV-40-60/W-3-P	6358-00010-3022
PSV-40-80/W-3-P	6359-00010-3022

Accessories (more accessories see chapter K11)

Article	Order No.
Connection cable 5 m:	
• VK-M8-g	2111-00005-0300
• VK-M8-w	2111-00005-1300



A [mm]:	10	20	20	20	25	30	30	30	40	40	40
B [mm]:	30	30	40	60	80	30	40	60	40	60	80

- ▶ Single-beam light barriers with integrated amplifier
- ▶ Laser fork light barriers

PSL 8 mm series

with 3-pin connector M8

Application

- Feed control
- Position control

Specifications

Circuit	Laser chopped light trigger
Wavelength	650 nm, red light
Light beam diameter	0.2 mm
Laser output power	< 1 mW, laser class 2

Caution! Never look directly into laser beam!

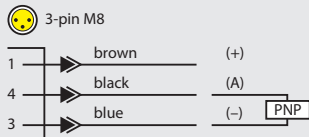
Operating voltage	12 – 24 VDC
Current consumption	max. 30 mA
Mode of operation	static
Output with LED	PNP
Function	bright / dark function
Load current	200 mA short-circuit proof
Repeating accuracy	< 0.02 mm
Frequency	4 KHz
Temperature range	0 °C – 40 °C
EMC according to 2004/108/EG	EN 61000... CE
System of protection	IP 65



Resolution

Fork width A [mm]:	10	20 / 30	40
Part diameter [mm]:	0.2	0.3	0.4

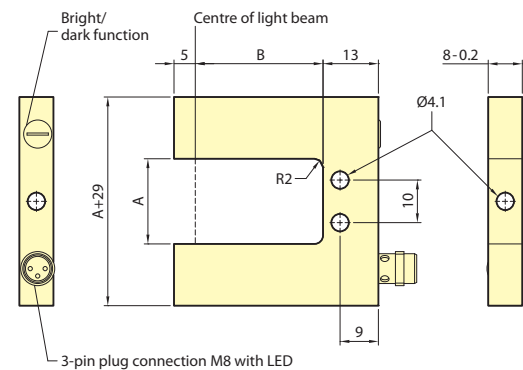
Pin configuration



Article	Order No.
PSL-10-30/W-3-P	6532-00000-3022
PSL-20-30/W-3-P	6534-00000-3022
PSL-25-80/W-3-P	6560-00000-3022
PSL-30-30/W-3-P	6535-00000-3022
PSL-40-40/W-3-P	6557-00000-3022
PSL-40-80/W-3-P	6559-00000-3022

Accessories (more accessories see chapter K11)

Article	Order No.
Connection cable shielded:	
• VK-M8-g-S (2 m)	2111-00902-0300
• VK-M8-g-S (5 m)	2111-00905-0300



A [mm]:	10	20	25	30	40	40
B [mm]:	30	30	80	30	40	80

- ▶ Single-beam light barriers with integrated amplifier
- ▶ Laser fork light barriers

PKL 10 mm series

with 3-pin connector M8

Application

- Position control
- Parts counting in assembly lines

Specifications

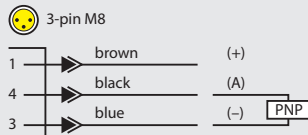
Circuit	Laser chopped light trigger
Wavelength	650 nm, red light
Light beam diameter	0.2 mm
Laser output power	< 1 mW, laser class 2
Caution! Never look directly into laser beam!	
Operating voltage	12 – 24 VDC
Current consumption	max. 30 mA
Mode of operation	static
Output with LED	PNP
Function	bright / dark function
Load current	200 mA short-circuit proof
Repeating accuracy	< 0.02 mm
Frequency	4 KHz
Temperature range	0 °C – 40 °C
EMC according to 2004/108/EG	EN 61000... C€
System of protection	IP 65



Resolution

Fork width A [mm]:	20	30	50	80	100
Part diameter [mm]:	0.3	0.3	0.4	0.5	0.7

Pin configuration



Article

Order No.

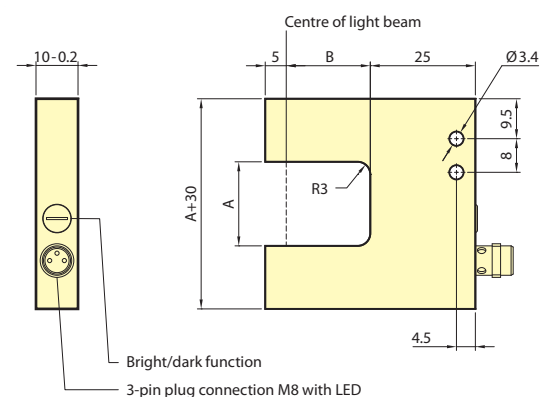
PKL-20/W-3-P	6533-00000-3064
PKL-30/W-3-P	6536-00000-3064
PKL-50/W-3-P	6574-00000-3064
PKL-80/W-3-P	6576-00000-3064
PKL-80-80/W-3-P	6549-00000-3064
PKL-100-100/W-3-P	6550-00000-3064

Accessories (more accessories see chapter K11)

Article

Order No.

Connection cable shielded:	
• VK-M8-g-S (2 m)	2111-00902-0300
• VK-M8-g-S (5 m)	2111-00905-0300



A [mm]:	20	30	50	80	80	100
B [mm]:	20	30	50	50	80	100

- ▶ Single-beam light barriers with integrated amplifier
- ▶ Split IR light barriers

PGI series

Flat housing, with 3-pin connector M8

Application

- Feed control
- Position control
- Parts counting in assembly lines

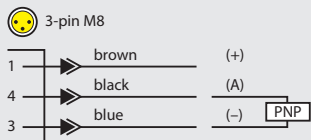
Specifications

Circuit	Chopped light trigger
Operating voltage	12 – 30 VDC
Current consumption	max. 60 mA
Mode of operation	static
Output with LED	PNP
Function	bright / dark function
Load current	200 mA short-circuit proof
Repeating accuracy	< 0.1 mm
Frequency	4 KHz
Temperature range	0 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... CE
System of protection	IP 65

Resolution

Max. distance A [mm]:	700
Part diameter [mm]:	> 1.4

Pin configuration



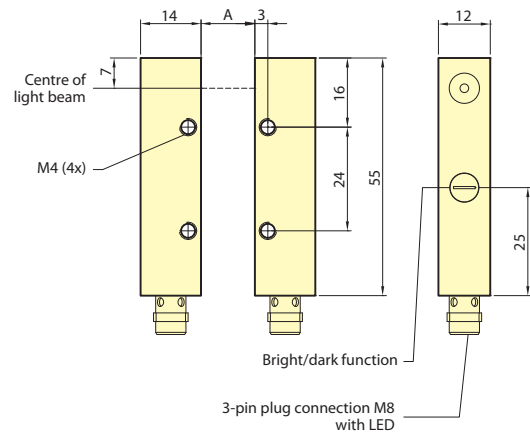
Article

Order No.

Split light barrier with separate transmitter and receiver:	
PGI/W-3-P	6450-00000-3022

Accessories (more accessories see chapter K11)

Article	Order No.
Connection cable 5 m:	
• VK-M8-g	2111-00005-0300
• VK-M8-w	2111-00005-1300



- ▶ Single-beam light barriers with integrated amplifier
- ▶▶ Split laser light barriers

PGI-L series

Flat housing, with 3-pin connector M8

Application

- Feed control
- Position control
- Parts counting in assembly lines

Specifications

Circuit	Laser constant light trigger
Wavelength	650 nm, red light
Light beam diameter	0.2 mm
Laser output power	< 1 mW, laser class 2

Caution! Never look directly into laser beam!

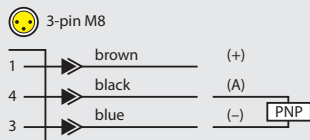
Operating voltage	12 – 24 VDC
Current consumption	max. 60 mA
Mode of operation	static
Output with LED	PNP
Function	bright / dark function
Load current	200 mA short-circuit proof
Repeating accuracy	< 0.02 mm
Frequency	1 KHz
Temperature range	0 °C – 40 °C
EMC according to 2004/108/EG	EN 61000... C€
System of protection	IP 65



Resolution

Max. distance A [mm]:	1000
Part diameter [mm]:	> 0.6

Pin configuration



Article

Order No.

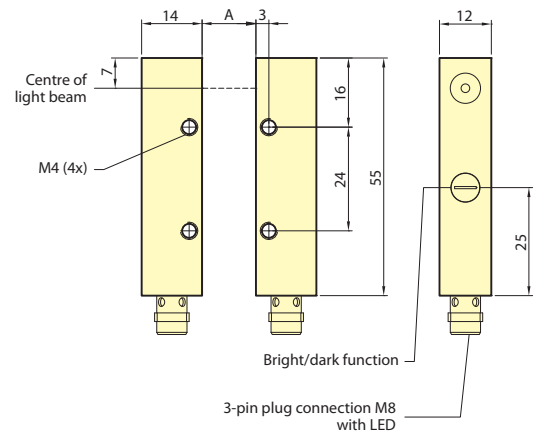
Split light barrier with separate transmitter and receiver:	
PGI-L/3-P	6520-00000-3002

Accessories (more accessories see chapter K11)

Article

Order No.

Connection cable shielded:	
• VK-M8-g-S (2 m)	2111-00902-0300
• VK-M8-g-S (5 m)	2111-00905-0300



Single-beam plug-in type light barriers – S2 with separate amplifier S2-...

The alternatives: amplifier and sensor types are interchangeable, high flexibility due to standardised miniature plug-in system S2.



Infrared fork light barriers with cleaning nozzles

Dual-level chopped light amplifier



Amplifier output side 4-pin M12

Amplifier input side for sensors -S2



Split infrared light barriers



Split laser light barrier

- ▶ Single-beam plug-in type light barriers – S2 with separate amplifier S2-...
- ▶ Chopped light amplifier

S2-W-4-P2

with 4-pin connector M12

Application

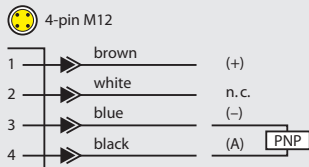
- Amplifier for all plug-in type light barriers

Specifications

Circuit	Chopped light trigger
Operating voltage	12 – 24 VDC
Current consumption	max. 60 mA
Mode of operation	static / dynamic ¹⁾
Pulse extension	max. 100 ms
Sensitivity	2 levels : I/II
Output with LED	PNP ²⁾
Function	bright / dark function
Load current	200 mA short-circuit proof
Repeating accuracy	< 0.01 mm
Frequency	4 KHz
Temperature range	0 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... C E
System of protection	IP 64

¹⁾ switchable, default setting: static
²⁾ NPN amplifier on request

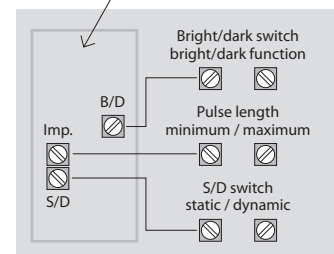
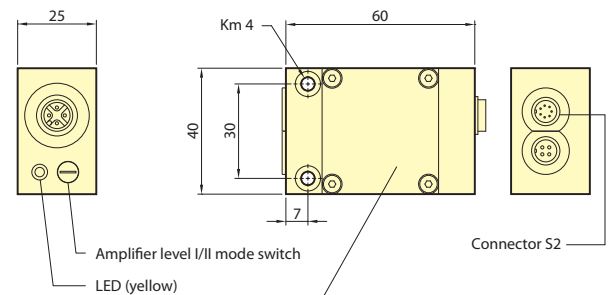
Pin configuration



Article	Order No.
S2-W-4-P2	2000-00008-4064

Accessories (more accessories see chapter K11)

Article	Order No.
Connection cable 5 m:	
• VK-M12-5-g	2112-00005-0500
• VK-M12-5-w	2112-00005-1500
Connection cable shielded (with free cable end) for split laser light barrier PGL-8-W-S2:	
• VK-M12-5-g-S (2 m)	2112-00902-0500
• VK-M12-5-g-S (5 m)	2112-00905-0500
Extension cable 4-pin M12:	
• VK-M12-g/M12 (2 m)	2112-00002-0404
• VK-M12-g/M12 (5 m)	2112-00005-0404



Recommendations / instructions for the use of the dual-level chopped light amplifier:

- **Amplifier level I → High resolution:**
Default setting for all fork light barriers as well as for split versions with small distances between transmitter and receiver.
- **Amplifier level II → High operational reliability:**
Default setting for all split types in oil mist ambience or with large distances between transmitter and receiver ($A_{max} > 50\%$).
For PS-S2 series fork light barriers when used in oil mist ambience.
The operational reliability is twice the level of amplifier level I.

- ▶ Single-beam plug-in type light barriers – S2 with separate amplifier S2-...
- ▶▶ Chopped light amplifier

S2-W-5-P2

with 5-pin connector M16

Application

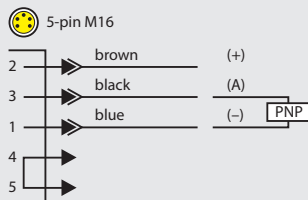
- Amplifier for all plug-in type light barriers

Specifications

Circuit	Chopped light trigger
Operating voltage	12 – 24 VDC
Current consumption	max. 60 mA
Mode of operation	static / dynamic ¹⁾
Pulse extension	max. 100 ms
Sensitivity	2 levels : I/II
Output with LED	PNP ²⁾
Function	bright / dark function
Load current	200 mA short-circuit proof
Repeating accuracy	< 0.01 mm
Frequency	4 KHz
Temperature range	0 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... C€
System of protection	IP 64

¹⁾ switchable, default setting : static
²⁾ NPN amplifier on request

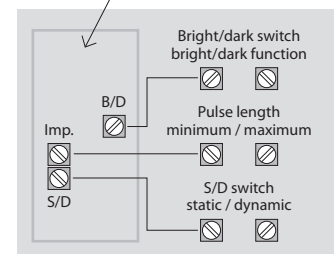
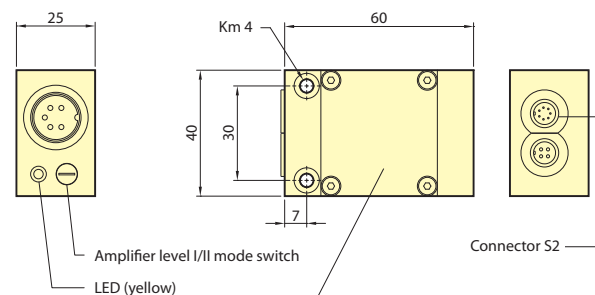
Pin configuration



Article	Order No.
S2-W-5-P2	2000-00008-0064

Accessories (more accessories see chapter K11)

Article	Order No.
Connection cable 5 m:	
• VK-D/F-St-A (2 m)	2105-00002-0600
• VK-D/F-St-A (5 m)	2105-00005-0600
Extension cable 5/6-pin M16:	
• VK-D/D (2 m)	2104-00002-0606
• VK-D/D (5 m)	2104-00005-0606



Recommendations / instructions for the use of the dual-level chopped light amplifier:

- **Amplifier level I → High resolution:**
Default setting for all fork light barriers as well as for split versions with small distances between transmitter and receiver.
- **Amplifier level II → High operational reliability:**
Default setting for all split types in oil mist ambience or with large distances between transmitter and receiver ($A_{max} > 50\%$).
For PS-S2 series fork light barriers when used in oil mist ambience.
The operational reliability is twice the level of amplifier level I.

- ▶ Single-beam plug-in type light barriers – S2 with separate amplifier S2-...
- ▶▶ Dynamic pulse amplifier

S2-D-4-P

with 4-pin connector M12

Application

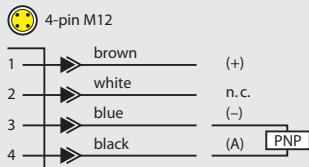
- Amplifier for all plug-in type infrared light barriers

Specifications

Circuit	Constant light pulse amplifier
Operating voltage	12 – 24 VDC
Current consumption	90 mA
Mode of operation	dynamic
Pulse extension	1 – 100 ms
Output with LED	PNP ¹⁾
Function	bright / dark function
Load current	200 mA short-circuit proof
Repeating accuracy	< 0.01 mm
Frequency	max. 1 KHz
Temperature range	0 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... C E
System of protection	IP 64

¹⁾ NPN amplifier on request

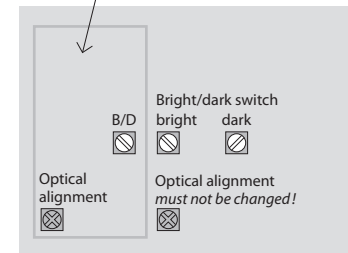
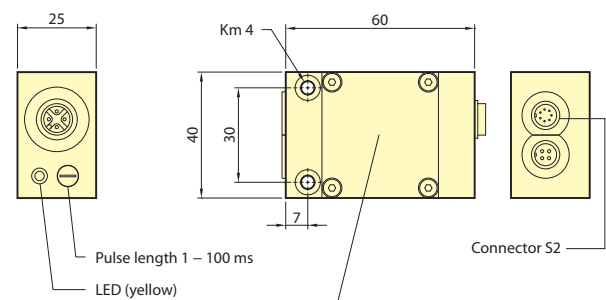
Pin configuration



Article	Order No.
S2-D-4-P	2000-00008-4024

Accessories (more accessories see chapter K11)

Article	Order No.
Connection cable 5 m:	
• VK-M12-5-g	2112-00005-0500
• VK-M12-5-w	2112-00005-1500
Extension cable 4-pin M12:	
• VK-M12-g/M12 (2 m)	2112-00002-0404
• VK-M12-g/M12 (5 m)	2112-00005-0404



- ▶ Single-beam plug-in type light barriers – S2 with separate amplifier S2-...
- ▶▶ Dynamic pulse amplifier

S2-D-5-P

with 5-pin connector M16

Application

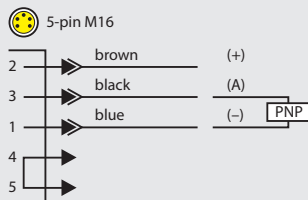
- Amplifier for all plug-in type infrared light barriers

Specifications

Circuit	Constant light pulse amplifier
Operating voltage	12 – 24 VDC
Current consumption	90 mA
Mode of operation	dynamic
Pulse extension	1 – 100 ms
Output with LED	PNP ¹⁾
Function	bright / dark function
Load current	200 mA short-circuit proof
Repeating accuracy	< 0.01 mm
Frequency	max. 1 KHz
Temperature range	0 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... CEE
System of protection	IP 64

¹⁾ NPN amplifier on request

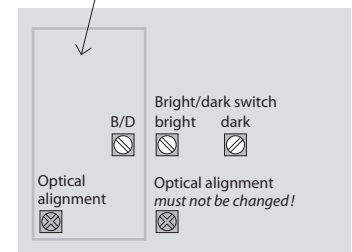
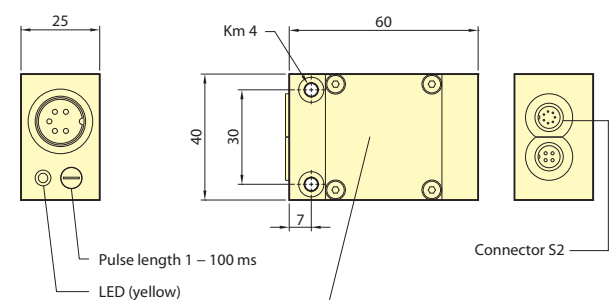
Pin configuration



Article	Order No.
S2-D-5-P	2000-00008-0024

Accessories (more accessories see chapter K11)

Article	Order No.
Connection cable 5 m:	
• VK-D/F-St-A (2 m)	2105-00002-0600
• VK-D/F-St-A (5 m)	2105-00005-0600
Extension cable 5/6-pin M16:	
• VK-D/D (2 m)	2104-00002-0606
• VK-D/D (5 m)	2104-00005-0606



- ▶ Single-beam plug-in type light barriers – S2 with separate amplifier S2-...
- ▶ Infrared fork light barriers

PM-S2 6 mm series

with 7-pin connector S2

Application

- Feed control
- Position control

Specifications

Repeating accuracy	< 0.01 mm
Temperature range	0 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... CE
System of protection (for plug-in amplifier types S2-...)	IP 64

Resolution

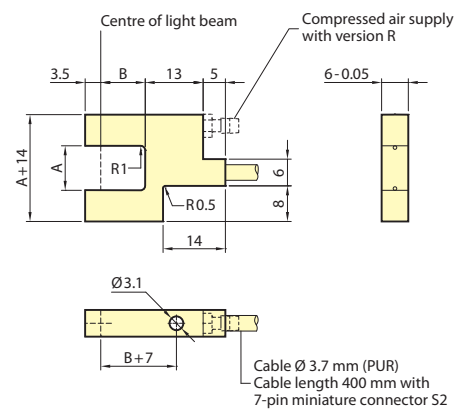
Fork width A [mm] :	5	10	20
Part diameter [mm] :			
• with chopped light amplifier, amplifier level I	0.3	0.4	0.5
• with pulse amplifier	0.1	0.1	0.1

Article Order No.

Fork light barrier (without amplifier) :	
• PM- 5-10/S2	6011-00006-0000
• PM-10-10/S2	6012-00006-0000
• PM-10-20/S2	6020-00006-0000
• PM-10-30/S2	6017-00006-0000
• PM-20-30/S2	6013-00006-0000
Fork light barrier with cleaning nozzles R:	
• PM- 5-10/R/S2	6011-40006-0000
• PM-10-10/R/S2	6012-40006-0000
• PM-10-20/R/S2	6020-40006-0000
• PM-10-30/R/S2	6017-40006-0000
• PM-20-30/R/S2	6013-40006-0000

Accessories (more accessories see chapter K11)

Article Order No.	
Amplifier 4-pin M12:	
• S2-W-4-P2	2000-00008-4064
• S2-D-4-P	2000-00008-4024
Amplifier 5-pin M16:	
• S2-W-5-P2	2000-00008-0064
• S2-D-5-P	2000-00008-0024
Mounting block:	
• AS2	2300-00000-0002
Extension cable:	
• VK-S2/7 (1 m)	2115-00001-0707



A [mm] :	5	10	10	10	20
B [mm] :	10	10	20	30	30

- ▶ Single-beam plug-in type light barriers – S2 with separate amplifier S2-...
- ▶ Infrared fork light barriers

PE-S2 6 mm series

with 7-pin connector S2

Application

- Feed control
- Position control

Specifications

Repeating accuracy	< 0.01 mm
Temperature range	0 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... CĒ
System of protection (for plug-in amplifier types S2-...)	IP 64

Resolution

Fork width A [mm] :	5	10	20	30
Part diameter [mm]:				
• with chopped light amplifier, amplifier level I	> 0.4	> 0.5	> 0.8	> 1.0
• with pulse amplifier	0.1	0.1	0.1	0.1

Article

Order No.

Fork light barrier (without amplifier) :

• PE-5-5/S2	6027-06006-0000
• PE-5-10/S2	6028-06006-0000
• PE-10-10/S2	6029-06006-0000
• PE-10-30/S2	6032-06006-0000
• PE-20-30/S2	6034-06006-0000
• PE-30-30/S2	6036-06006-0000

Accessories (more accessories see chapter K11)

Article

Order No.

Amplifier 4-pin M12:

• S2-W-4-P2	2000-00008-4064
• S2-D-4-P	2000-00008-4024

Amplifier 5-pin M16:

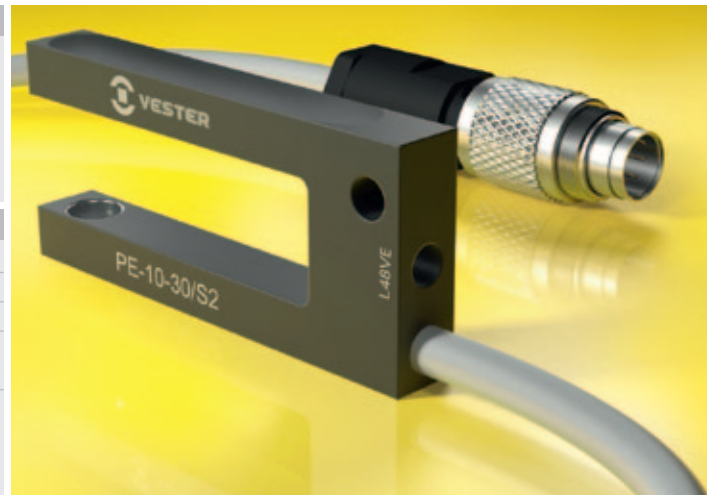
• S2-W-5-P2	2000-00008-0064
• S2-D-5-P	2000-00008-0024

Mounting block:

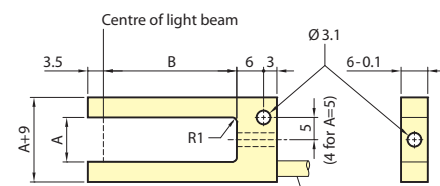
• AS2	2300-00000-0002
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Extension cable:

• VK-S2/7 (1 m)	2115-00001-0707
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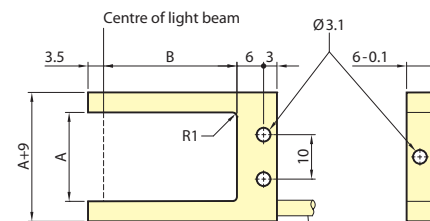


Up to PE-10-30/S2:



Cable Ø3.7 mm (PUR) Cable length 400 mm with 7-pin miniature connector S2

PE-20-30/S2 and PE-30-30/S2:



Cable Ø3.7 mm (PUR) Cable length 400 mm with 7-pin miniature connector S2

A [mm] :	5	5	10	10	20	30
B [mm] :	5	10	10	30	30	30

- ▶ Single-beam plug-in type light barriers – S2 with separate amplifier S2-...
- ▶ Infrared fork light barriers

PS-S2 8 mm series

with 7-pin connector S2

Application

- Feed control
- Position control

Specifications

Repeating accuracy	< 0.01 mm
Temperature range	0 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... CEE
System of protection (for plug-in amplifier types S2-...)	IP 64

Resolution

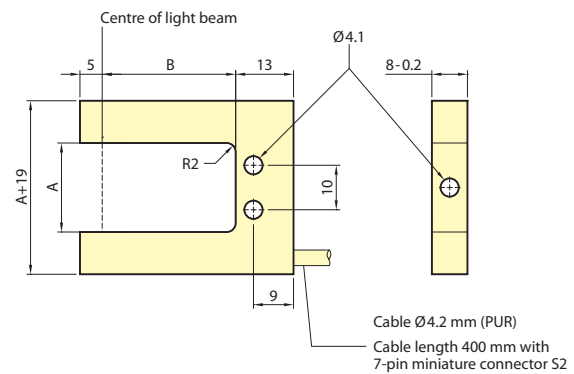
Fork width A [mm] :	10	20	30	40
Part diameter [mm] :				
• with chopped light amplifier, amplifier level I	> 0.3	> 0.4	> 0.5	> 0.8
• with chopped light amplifier, amplifier level II	> 0.4	> 0.6	> 0.8	> 1.0
• with pulse amplifier	0.1	0.1	0.1	0.1

Article **Order No.**

Fork light barrier (without amplifier) :	
• PS-10-15/S2	6331-00006-0000
• PS-10-30/S2	6332-00006-0000
• PS-20-15/S2	6333-00006-0000
• PS-20-30/S2	6334-00006-0000
• PS-20-40/S2	6351-00006-0000
• PS-20-60/S2	6352-00006-0000
• PS-30-15/S2	6335-00006-0000
• PS-30-30/S2	6336-00006-0000
• PS-30-40/S2	6354-00006-0000
• PS-30-60/S2	6355-00006-0000
• PS-40-40/S2	6357-00006-0000

Accessories (more accessories see chapter K11)

Article	Order No.
Amplifier 4-pin M12:	
• S2-W-4-P2	2000-00008-4064
• S2-D-4-P	2000-00008-4024
Amplifier 5-pin M16:	
• S2-W-5-P2	2000-00008-0064
• S2-D-5-P	2000-00008-0024
Mounting block:	
• AS2	2300-00000-0002
Extension cable:	
• VK-S2/7 (1 m)	2115-00001-0707



A [mm] :	10	10	20	20	20	20	30	30	30	30	40
B [mm] :	15	30	15	30	40	60	15	30	40	60	40

Recommendations / instructions for the use of the dual-level chopped light amplifier :

- **Amplifier level I → High resolution:**
Default setting for all fork light barriers!
- **Amplifier level II → High operational reliability:**
For PS-S2 series fork light barriers when used in oil mist ambience.
The operational reliability is twice the level of amplifier level I.

- ▶ Single-beam plug-in type light barriers – S2 with separate amplifier S2-...
- ▶ Infrared fork light barriers

PS-S2 8 mm series

with cleaning nozzles | with 7-pin connector S2

Application

- Feed control
- Position control

Specifications

Repeating accuracy	< 0.01 mm
Temperature range	0 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... CĒ
System of protection (for plug-in amplifier types S2-...)	IP 64

Resolution

Fork width A [mm] :	10	20	30	40
Part diameter [mm]:				
• with chopped light amplifier, amplifier level I	> 0.3	> 0.4	> 0.5	> 0.8
• with chopped light amplifier, amplifier level II	> 0.4	> 0.6	> 0.8	> 1.0
• with pulse amplifier	0.1	0.1	0.1	0.1

Article

Order No.

Fork light barrier (without amplifier) **with cleaning nozzles** :

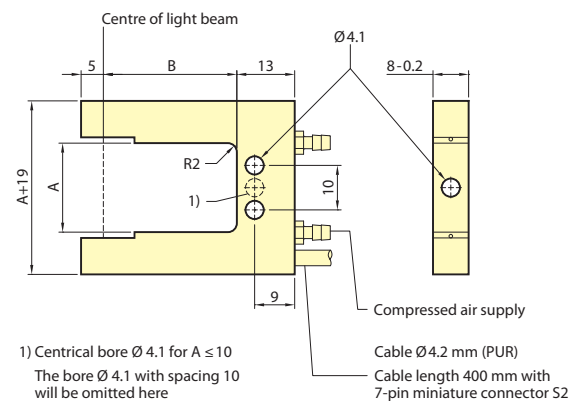
• PS-10-15/R/S2	6331-10006-0000
• PS-10-30/R/S2	6332-10006-0000
• PS-20-15/R/S2	6333-10006-0000
• PS-20-30/R/S2	6334-10006-0000
• PS-20-40/R/S2	6351-10006-0000
• PS-20-60/R/S2	6352-10006-0000
• PS-30-15/R/S2	6335-10006-0000
• PS-30-30/R/S2	6336-10006-0000
• PS-30-40/R/S2	6354-10006-0000
• PS-30-60/R/S2	6355-10006-0000
• PS-40-40/R/S2	6357-10006-0000

Accessories (more accessories see chapter K11)

Article

Order No.

Amplifier 4-pin M12:	
• S2-W-4-P2	2000-00008-4064
• S2-D-4-P	2000-00008-4024
Amplifier 5-pin M16:	
• S2-W-5-P2	2000-00008-0064
• S2-D-5-P	2000-00008-0024
Mounting block:	
• AS2	2300-00000-0002
Extension cable:	
• VK-S2/7 (1 m)	2115-00001-0707



A [mm] :	10	10	20	20	20	20	30	30	30	30	40
B [mm] :	15	30	15	30	40	60	15	30	40	60	40

Recommendations / instructions for the use of the dual-level chopped light amplifier:

- **Amplifier level I → High resolution:**
Default setting for all fork light barriers!
- **Amplifier level II → High operational reliability:**
For PS-S2 series fork light barriers when used in oil mist ambience.
The operational reliability is twice the level of amplifier level I.

- ▶ Single-beam plug-in type light barriers – S2 with separate amplifier S2-...
- ▶ Split infrared light barriers

PG-S2 series

Cylinder housing 4 mm / M5 | with 4/7-pin connector S2

Application

- Feed control
- Position control
- Parts counting in assembly lines

Specifications

Repeating accuracy	< 0.02 mm
Temperature range	0 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... C E
System of protection (for plug-in amplifier types S2-...)	IP 64

Resolution

Distance A [mm]:	25	125	250
Part diameter [mm]:			
• with chopped light amplifier, amplifier level I	> 0.9	> 0.4	–
• with chopped light amplifier, amplifier level II	> 1.2	> 0.8	> 0.5
• with pulse amplifier	0.1	0.1	0.5

Article

Order No.

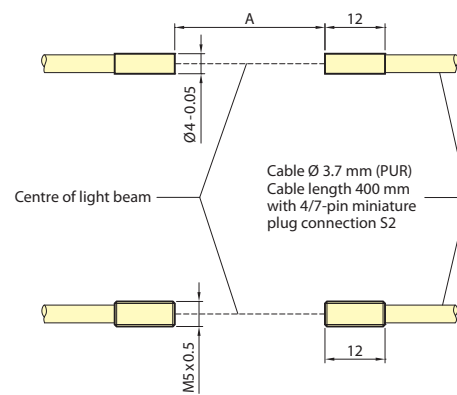
Split light barrier (without amplifier):	
• PG-4-S2	6404-00000-0000
• PG-M5-S2	6410-00000-0000

Accessories (more accessories see chapter K11)

Article

Order No.

Amplifier 4-pin M12:	
• S2-W-4-P2	2000-00008-4064
• S2-D-4-P	2000-00008-4024
Amplifier 5-pin M16:	
• S2-W-5-P2	2000-00008-0064
• S2-D-5-P	2000-00008-0024
Mounting block:	
• AS2	2300-00000-0002
Extension cable:	
• VK-S2/7 (1 m)	2115-00001-0707
• VK-S2/4 (1 m)	2115-00001-0404



Recommendations / instructions for the use of the dual-level chopped light amplifier:

- **Amplifier level I → High resolution:**
Default setting for all split-type versions with small distances between transmitter and receiver, i.e. for $A_{max} < 50\%$!
- **Amplifier level II → High operational reliability:**
Default setting for all split-type versions when used in oil mist surroundings or with large distances between transmitter and receiver ($A_{max} > 50\%$).
The operational reliability is twice the level of amplifier level I.

- ▶ Single-beam plug-in type light barriers – S2 with separate amplifier S2-...
- ▶▶ Split infrared light barriers

PG-S2 series

Cylinder housing 6 mm / M5 | with 4/7-pin connector S2

Application

- Feed control
- Position control
- Parts counting in assembly lines

Specifications

Repeating accuracy	< 0.02 mm
Temperature range	0 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... CEE
System of protection (for plug-in amplifier types S2-...)	IP 64

Resolution

Distance A [mm] :	100	500	1000
Part diameter [mm] :			
• with chopped light amplifier, amplifier level I	> 2.2	> 1.5	–
• with chopped light amplifier, amplifier level II	> 3.0	> 2.0	> 1.5
• with pulse amplifier	0.2	0.2	0.2

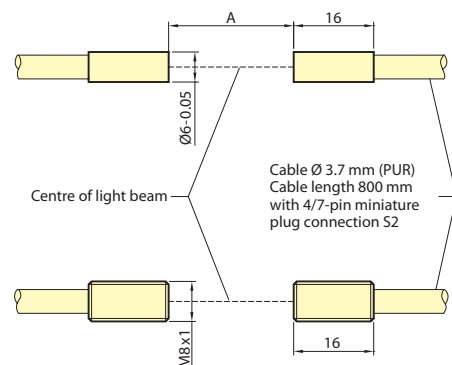
Article

Order No.

Split light barrier (without amplifier) :	
• PG-6-S2	6414-00000-0000
• PG-M8-S2	6418-00000-0000

Accessories (more accessories see chapter K11)

Article	Order No.
Amplifier 4-pin M12:	
• S2-W-4-P2	2000-00008-4064
• S2-D-4-P	2000-00008-4024
Amplifier 5-pin M16:	
• S2-W-5-P2	2000-00008-0064
• S2-D-5-P	2000-00008-0024
Mounting block:	
• AS2	2300-00000-0002
Extension cable:	
• VK-S2/7 (1 m)	2115-00001-0707
• VK-S2/4 (1 m)	2115-00001-0404



Recommendations / instructions for the use of the dual-level chopped light amplifier:

- **Amplifier level I → High resolution:**
Default setting for all split-type versions with small distances between transmitter and receiver, i.e. for $A_{max} < 50\%$!
- **Amplifier level II → High operational reliability:**
Default setting for all split-type versions when used in oil mist surroundings or with large distances between transmitter and receiver ($A_{max} > 50\%$). The operational reliability is twice the level of amplifier level I.

- ▶ Single-beam plug-in type light barriers – S2 with separate amplifier S2-...
- ▶▶ Split infrared light barriers

PG-S2 series

Flat housing F2 | with 4/7-pin connector S2

Application

- Feed control
- Position control
- Parts counting in assembly lines

Specifications

Repeating accuracy	< 0.02 mm
Temperature range	0 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... C€
System of protection (for plug-in amplifier types S2-...)	IP 64

Resolution

Distance A [mm] :	25	125	250
Part diameter [mm]:			
• with chopped light amplifier, amplifier level I	> 0.9	> 0.4	–
• with chopped light amplifier, amplifier level II	> 1.2	> 0.8	> 0.5
• with pulse amplifier	0.1	0.1	0.5

Article

Order No.

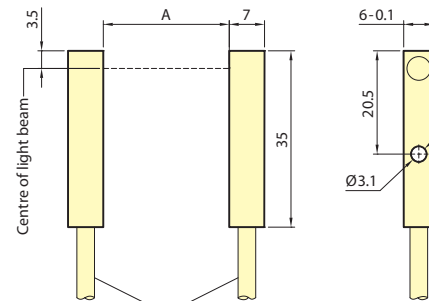
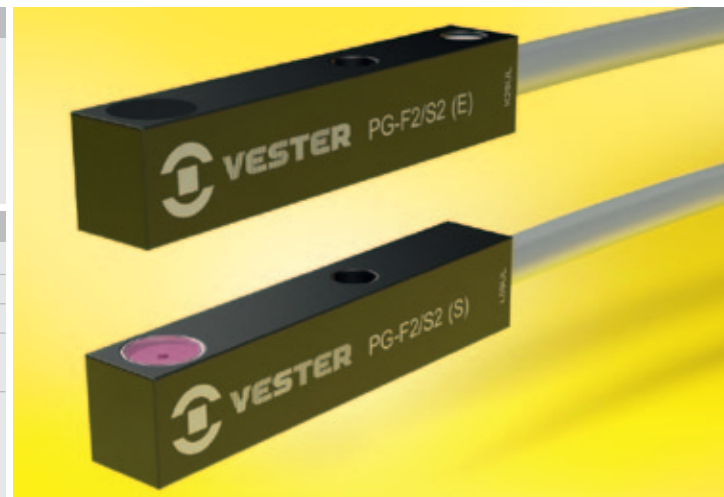
Split light barrier (without amplifier):	
PG-F2-S2	6434-00000-0000

Accessories (more accessories see chapter K11)

Article

Order No.

Amplifier 4-pin M12:	
• S2-W-4-P2	2000-00008-4064
• S2-D-4-P	2000-00008-4024
Amplifier 5-pin M16:	
• S2-W-5-P2	2000-00008-0064
• S2-D-5-P	2000-00008-0024
Mounting block:	
• AS2	2300-00000-0002
Extension cable:	
• VK-S2/7 (1 m)	2115-00001-0707
• VK-S2/4 (1 m)	2115-00001-0404



Cable Ø 3.7 mm (PUR)
Cable length 400 mm
with 4/7-pin miniature
plug connection S2

Recommendations / instructions for the use of the dual-level chopped light amplifier:

- **Amplifier level I → High resolution:**
Default setting for all split-type versions with small distances between transmitter and receiver, i.e. for $A_{max} < 50\%$!
- **Amplifier level II → High operational reliability:**
Default setting for all split-type versions when used in oil mist surroundings or with large distances between transmitter and receiver ($A_{max} > 50\%$).
The operational reliability is twice the level of amplifier level I.

- ▶ Single-beam plug-in type light barriers – S2 with separate amplifier S2-...
- ▶ Split infrared light barriers

PGL-S2 series

Cylinder housing 8 mm | laser | with 4/7-pin connector S2

Application

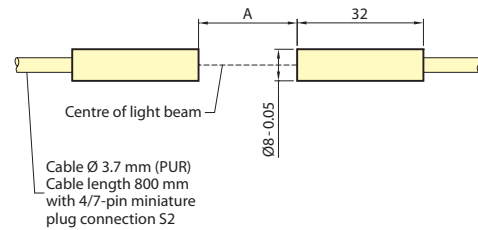
- Feed control
- Position control
- Parts counting in assembly lines

Specifications

Wavelength	650 nm, red light
Light beam diameter	0.2 mm
Laser output power	< 1 mW, laser class 2

Caution! Never look directly into laser beam!

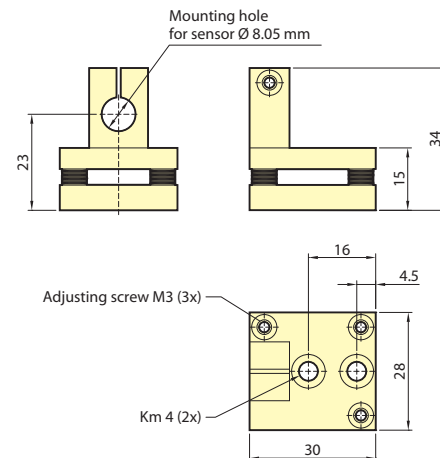
Repeating accuracy	< 0.02 mm
Temperature range	0 °C – 40 °C
EMC	EN 61000... C E
System of protection (for plug-in amplifier types S2-...)	IP 64



Resolution

Distance A [mm]:	250	500	1000
Part diameter [mm]:			
• with chopped light amplifier, amplifier level I	> 0.8	> 0.8	> 0.8
• with chopped light amplifier, amplifier level II	> 1.0	> 1.2	> 1.4

Adjustment device JEL-8



Article	Order No.
Split light barrier (without amplifier): PGL-8-W-S2	6509-00006-0000

Accessories (more accessories see chapter K11)

Article	Order No.
Amplifier 4-pin M12:	
• S2-W-4-P2	2000-00008-4064
Amplifier 5-pin M16:	
• S2-W-5-P2	2000-00008-0064
Mounting block:	
• AS2	2300-00000-0002
Extension cable:	
• VK-S2/7 (1 m)	2115-00001-0707
• VK-S2/4 (1 m)	2115-00001-0404
Adjustment device:	
• JEL-8	2300-00000-0008

Recommendations / instructions for the use of the dual-level chopped light amplifier:

- **Amplifier level I → High resolution!**
- **Amplifier level II → High operational reliability:**
The operational reliability is twice the level of amplifier level I.

Single-beam light barriers with separate amplifier

Split single-beam infrared and laser light barriers:

Transmitter or receiver modules are permanently connected to the respective amplifier.



Split infrared light barriers ...

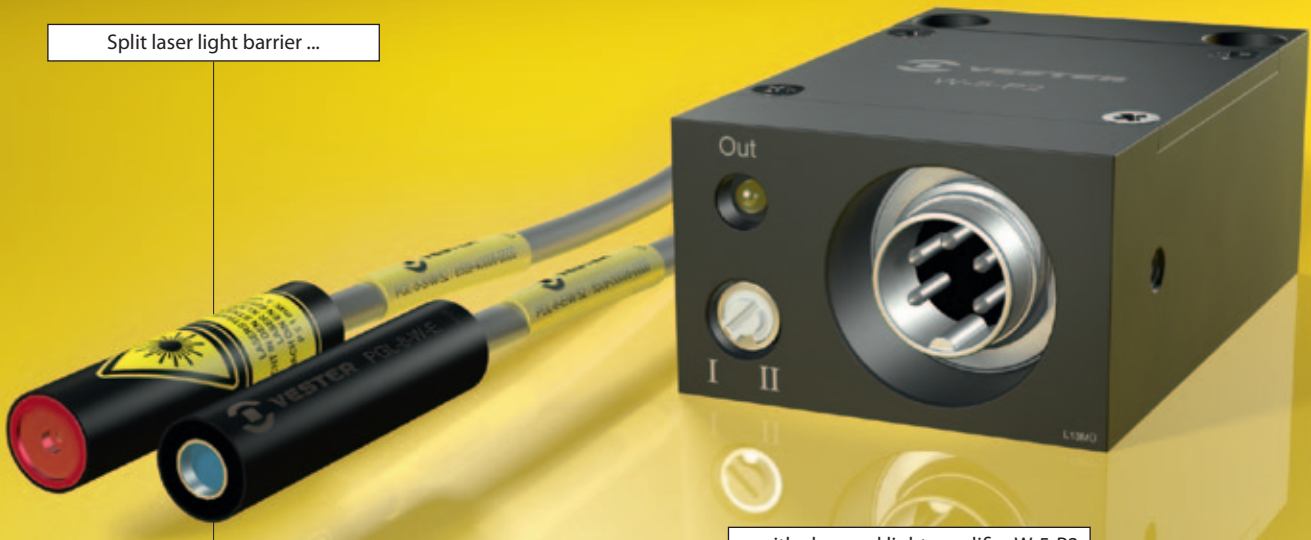


... with chopped light amplifier W-4-P2



... with pulse amplifier D-5-P

Split laser light barrier ...



... with chopped light amplifier W-5-P2

- ▶ Single-beam light barriers with separate amplifier
- ▶ Chopped light amplifiers

W-4-P2 | W-5-P2

with 4-pin connector M12 or 5-pin connector M16

Application

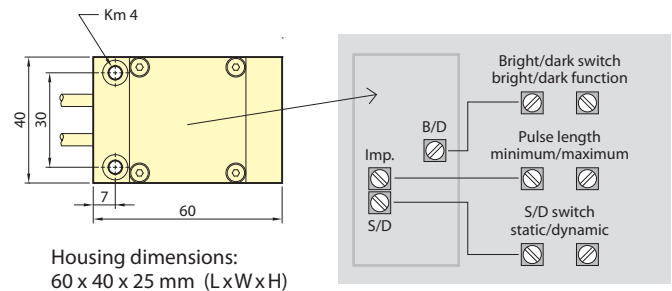
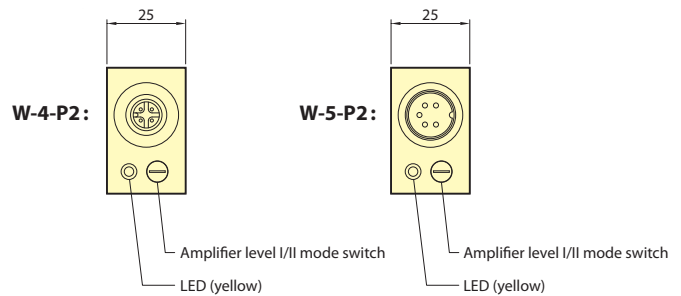
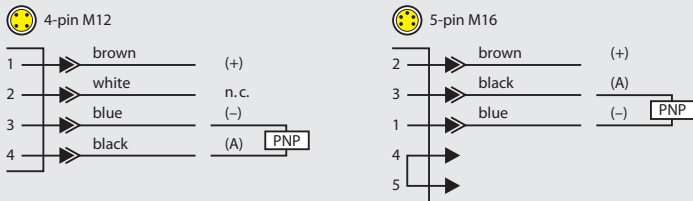
- For all split light barriers of the PG and PGL series with a separate amplifier

Specifications

Circuit	Chopped light trigger
Operating voltage	12 – 24 VDC
Current consumption	max. 60 mA
Mode of operation	static / dynamic ¹⁾
Pulse extension	max. 100 ms
Sensitivity	2 levels: I/II
Output with LED	PNP ²⁾
Function	bright / dark function
Load current	200 mA short-circuit proof
Repeating accuracy	see sensor type
Frequency	4 KHz
Temperature range	0 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... C E
System of protection	IP 65

¹⁾ switchable, default setting: static
²⁾ NPN amplifier on request

Pin configuration



Housing dimensions:
60 x 40 x 25 mm (LxWxH)

Recommendations / instructions for the use of the dual-level chopped light amplifier:

- **Amplifier level I → High resolution:**
Default setting for all split-type versions with small distances between transmitter and receiver, i.e. for $A_{max} < 50\%$!
- **Amplifier level II → High operational reliability:**
Default setting for all split-type versions when used in oil mist surroundings or with large distances between transmitter and receiver ($A_{max} > 50\%$).
The operational reliability is twice the level of amplifier level I.

- ▶ Single-beam light barriers with separate amplifier
- ▶▶ Dynamic pulse amplifier

D-4-P | D-5-P

with 4-pin connector M12 or 5-pin connector M16

Application

- For all split light barriers of the PG series with a separate amplifier

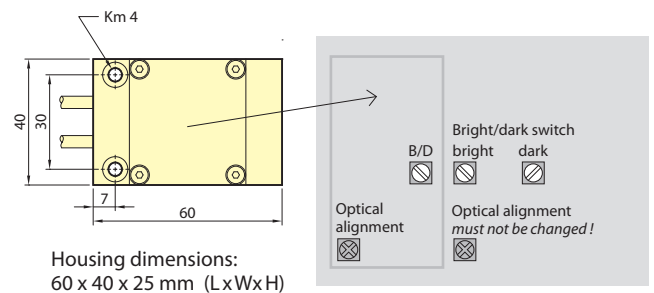
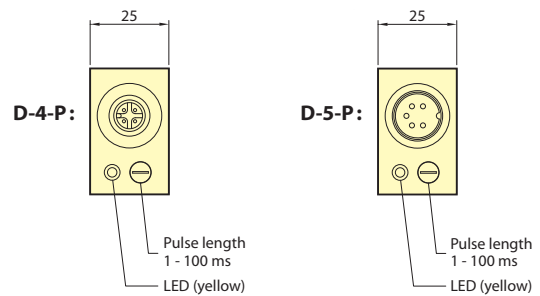
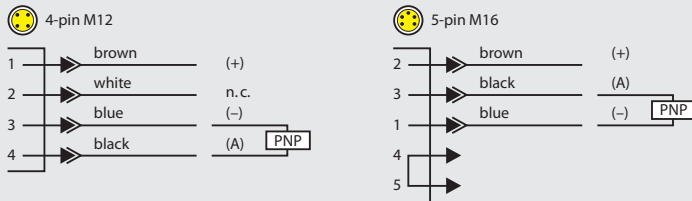
Specifications

Circuit	Constant light pulse amplifier
Operating voltage	12 – 24 VDC
Current consumption	90 mA
Mode of operation	dynamic
Pulse extension	1 – 100 ms
Output with LED	PNP ¹⁾
Function	bright / dark function
Load current	200 mA short-circuit proof
Repeating accuracy	see sensor type
Frequency	max. 1 KHz
Temperature range	0 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... CEE
System of protection	IP 65

¹⁾ NPN amplifier on request



Pin configuration



- ▶ Single-beam light barriers with separate amplifier
- ▶▶ Split infrared fork light barriers

PG series

Cylinder housing 4 mm / M5

Application

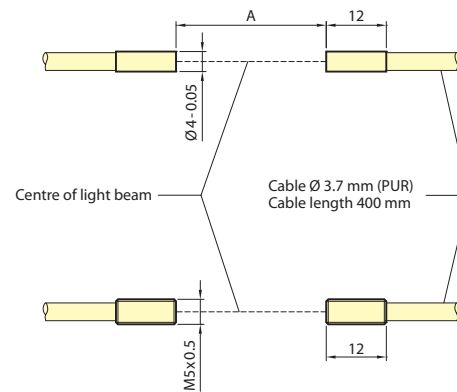
- Feed control
- Position control
- Parts counting in assembly lines

Specifications

Repeating accuracy	< 0.02 mm
Temperature range	0 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... CE
System of protection	IP 65

Resolution

Distance A [mm] :	25	125	250
Part diameter [mm] :			
• with chopped light amplifier, amplifier level I	>0.9	>0.4	–
• with chopped light amplifier, amplifier level II	>1.2	>0.8	>0.5
• with pulse amplifier	0.1	0.1	0.5



Article Order No.

Split light barrier – with 4-pin connector:

• PG-4/W-4-P2	6401-00000-4064
• PG-M5/W-4-P2	6407-00000-4064
• PG-4/D-4-P	6401-00000-4024
• PG-M5/D-4-P	6407-00000-4024

Split light barrier – with 5-pin connector:

• PG-4/W-5-P2	6401-00000-0064
• PG-M5/W-5-P2	6407-00000-0064
• PG-4/D-5-P	6401-00000-0024
• PG-M5/D-5-P	6407-00000-0024

Accessories 4-pin amplifier (more accessories see chapter K11)

Article Order No.

Connection cable, length 5 m:

• VK-M12-5-g	2112-00005-0500
• VK-M12-5-w	2112-00005-1500

Extension cable 4-pin M12:

• VK-M12-g/M12 (2 m)	2112-00002-0404
• VK-M12-g/M12 (5 m)	2112-00005-0404

Accessories 5-pin amplifier (more accessories see chapter K11)

Article Order No.

Connection cable shielded (with free cable end):

• VK-D/F-St-A (2 m)	2105-00002-0600
• VK-D/F-St-A (5 m)	2105-00005-0600

Extension cable 5/6-pin M16:

• VK-D/D (2 m)	2104-00002-0606
• VK-D/D (5 m)	2104-00005-0606

Recommendations / instructions for the use of the dual-level chopped light amplifier:

- **Amplifier level I → High resolution:**
Default setting for all split-type versions with small distances between transmitter and receiver, i.e. for $A_{max} < 50\%$!
- **Amplifier level II → High operational reliability:**
Default setting for all split-type versions when used in oil mist surroundings or with large distances between transmitter and receiver ($A_{max} > 50\%$). The operational reliability is twice the level of amplifier level I.

- ▶ Single-beam light barriers with separate amplifier
- ▶▶ Split infrared fork light barriers

PG series

Cylinder housing 6 mm / M8

Application

- Feed control
- Position control
- Counting of ultra small parts

Specifications

Repeating accuracy	< 0.02 mm
Temperature range	0 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... C€
System of protection	IP 65

Resolution

Distance A [mm] :	100	500	1000
Part diameter [mm]:			
• with chopped light amplifier, amplifier level I	> 2.2	> 1.5	–
• with chopped light amplifier, amplifier level II	> 3.0	> 2.0	> 1.5
• with pulse amplifier	0.2	0.2	0.2

Article

Order No.

Split light barrier – with 4-pin connector:	
• PG-6/W-4-P2	6411-00000-4064
• PG-M8/W-4-P2	6415-00000-4064
• PG-6/D-4-P	6411-00000-4024
• PG-M8/D-4-P	6415-00000-4024

Split light barrier – with 5-pin connector:

• PG-6/W-5-P2	6411-00000-0064
• PG-M8/W-5-P2	6415-00000-0064
• PG-6/D-5-P	6411-00000-0024
• PG-M8/D-5-P	6415-00000-0024

Accessories 4-pin amplifier (more accessories see chapter K11)

Article

Order No.

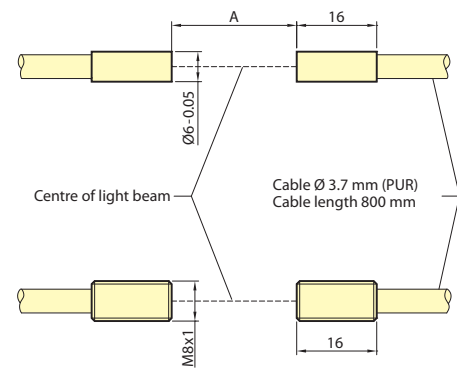
Connection cable, length 5 m:	
• VK-M12-5-g	2112-00005-0500
• VK-M12-5-w	2112-00005-1500
Extension cable 4-pin M12:	
• VK-M12-g/M12 (2 m)	2112-00002-0404
• VK-M12-g/M12 (5 m)	2112-00005-0404

Accessories 5-pin amplifier (more accessories see chapter K11)

Article

Order No.

Connection cable shielded (with free cable end) :	
• VK-D/F-St-A (2 m)	2105-00002-0600
• VK-D/F-St-A (5 m)	2105-00005-0600
Extension cable 5/6-pin M16:	
• VK-D/D (2 m)	2104-00002-0606
• VK-D/D (5 m)	2104-00005-0606



Recommendations / instructions for the use of the dual-level chopped light amplifier:

- **Amplifier level I → High resolution:**
Default setting for all split-type versions with small distances between transmitter and receiver, i.e. for $A_{max} < 50\%$!
- **Amplifier level II → High operational reliability:**
Default setting for all split-type versions when used in oil mist surroundings or with large distances between transmitter and receiver ($A_{max} > 50\%$). The operational reliability is twice the level of amplifier level I.

- ▶ Single-beam light barriers with separate amplifier
- ▶ Split infrared fork light barriers

PG series

Flat housing F1

Application

- Feed control
- Position control
- Parts counting in assembly lines

Specifications

Repeating accuracy	< 0.02 mm
Temperature range	0 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... C E
System of protection	IP 65

Resolution

Distance A [mm] :	100	500	1000
Part diameter [mm] :			
• with chopped light amplifier, amplifier level I	>2.2	> 1.5	–
• with chopped light amplifier, amplifier level II	>3.0	>2.0	>1.5
• with pulse amplifier	0.2	0.2	0.2

Article **Order No.**

Split light barrier – with 4-pin connector:

• PG-F1/W-4-P2	6421-00000-4064
• PG-F1/D-4-P	6421-00000-4024

Split light barrier – with 5-pin connector:

• PG-F1/W-5-P2	6421-00000-0064
• PG-F1/D-5-P	6421-00000-0024

Accessories 4-pin amplifier (more accessories see chapter K11)

Article **Order No.**

Connection cable, length 5 m:

• VK-M12-5-g	2112-00005-0500
• VK-M12-5-w	2112-00005-1500

Extension cable 4-pin M12:

• VK-M12-g/M12 (2 m)	2112-00002-0404
• VK-M12-g/M12 (5 m)	2112-00005-0404

Accessories 5-pin amplifier (more accessories see chapter K11)

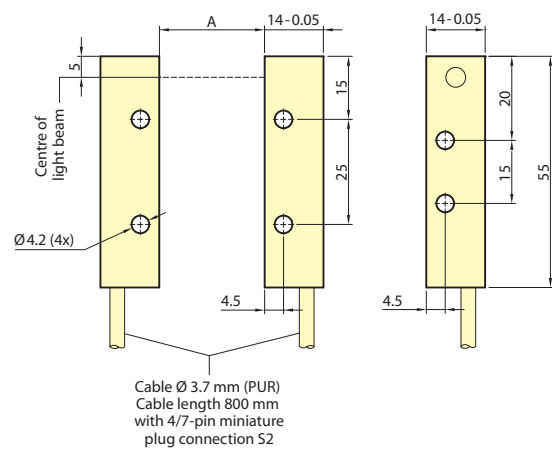
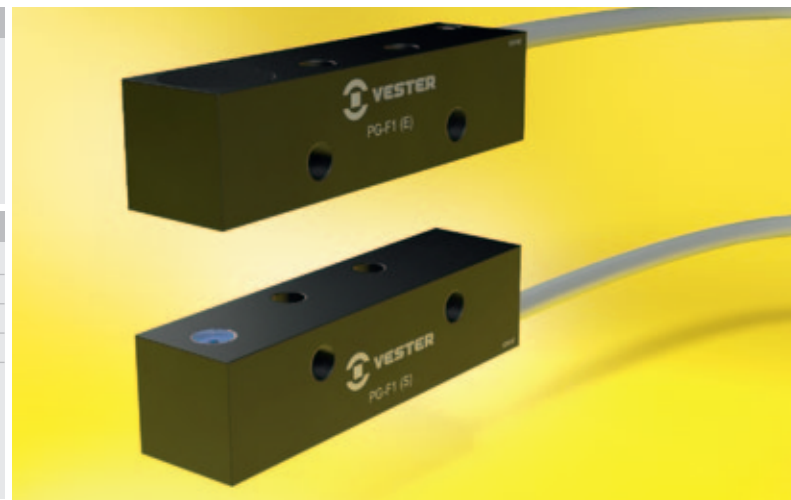
Article **Order No.**

Connection cable shielded (with free cable end):

• VK-D/F-St-A (2 m)	2105-00002-0600
• VK-D/F-St-A (5 m)	2105-00005-0600

Extension cable 5/6-pin M16:

• VK-D/D (2 m)	2104-00002-0606
• VK-D/D (5 m)	2104-00005-0606



Recommendations / instructions for the use of the dual-level chopped light amplifier:

- **Amplifier level I → High resolution:**
Default setting for all split-type versions with small distances between transmitter and receiver, i.e. for $A_{max} < 50\%$!
- **Amplifier level II → High operational reliability:**
Default setting for all split-type versions when used in oil mist surroundings or with large distances between transmitter and receiver ($A_{max} > 50\%$).
The operational reliability is twice the level of amplifier level I.

- ▶ Single-beam light barriers with separate amplifier
- ▶▶ Split infrared fork light barriers

PG series

Flat housing F2

Application

- Feed control
- Position control
- Parts counting in assembly lines

Specifications

Repeating accuracy	< 0.02 mm
Temperature range	0 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... CĈ
System of protection	IP 65

Resolution

Distance A [mm] :	25	125	250
Part diameter [mm]:			
• with chopped light amplifier, amplifier level I	> 0.9	> 0.4	–
• with chopped light amplifier, amplifier level II	> 1.2	> 0.8	> 0.5
• with pulse amplifier	0.1	0.1	0.5

Article

Order No.

Split light barrier – with 4-pin connector:

• PG-F2/W-4-P2	6431-00000-4064
• PG-F2/D-4-P	6431-00000-4024

Split light barrier – with 5-pin connector:

• PG-F2/W-5-P2	6431-00000-0064
• PG-F2/D-5-P	6431-00000-0024

Accessories 4-pin amplifier (more accessories see chapter K11)

Article

Order No.

Connection cable, length 5 m :

• VK-M12-5-g	2112-00005-0500
• VK-M12-5-w	2112-00005-1500

Extension cable 4-pin M12:

• VK-M12-g/M12 (2 m)	2112-00002-0404
• VK-M12-g/M12 (5 m)	2112-00005-0404

Accessories

Article

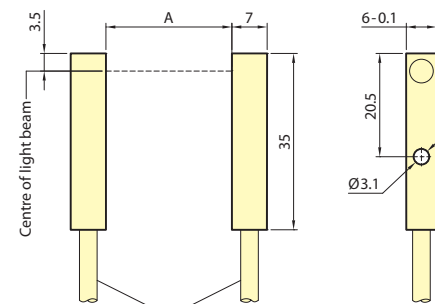
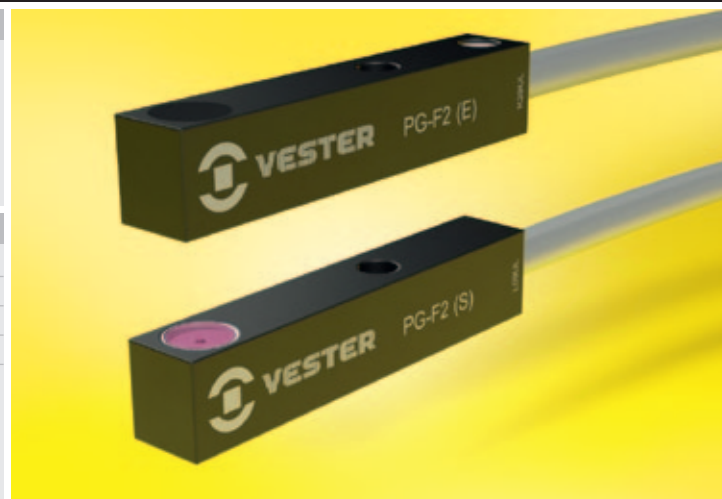
Order No.

Connection cable shielded (with free cable end) :

• VK-D/F-St-A (2 m)	2105-00002-0600
• VK-D/F-St-A (5 m)	2105-00005-0600

Extension cable 5/6-pin M16:

• VK-D/D (2 m)	2104-00002-0606
• VK-D/D (5 m)	2104-00005-0606



Cable Ø 3.7 mm (PUR)
Cable length 400 mm
with 4/7-pin miniature
plug connection S2

Recommendations / instructions for the use of the dual-level chopped light amplifier :

- **Amplifier level I → High resolution :**
Default setting for all split-type versions with small distances between transmitter and receiver, i.e. for $A_{max} < 50\%$!
- **Amplifier level II → High operational reliability :**
Default setting for all split-type versions when used in oil mist surroundings or with large distances between transmitter and receiver ($A_{max} > 50\%$).
The operational reliability is twice the level of amplifier level I.

- ▶ Single-beam light barriers with separate amplifier
- ▶ Split laser light barriers

PGL series

Cylinder housing 8 mm | laser

Application

- Feed control
- Position control
- Parts counting in assembly lines



Specifications

Wavelength	650 nm, red light
Light beam diameter	0.2 mm
Laser output power	< 1 mW, laser class 2

Caution! Never look directly into laser beam!

Repeating accuracy	< 0.02 mm
Temperature range	0 °C – 40 °C
EMC	EN 61000... CEE
System of protection	IP 65

Resolution

Distance A [mm]:	250	500	1000
Part diameter [mm]:			
• with chopped light amplifier, amplifier level I	>0.8	>0.8	>0.8
• with chopped light amplifier, amplifier level II	>1.0	>1.2	>1.4

Article Order No.

Split light barrier – with 4-pin connector M12:	
• PGL-8-W/W-4-P2	6509-00000-4064

Split light barrier – with 5-pin connector M16:	
• PGL-8-W/W-5-P2	6509-00000-5064

Accessories 4-pin amplifier (more accessories see chapter K11)

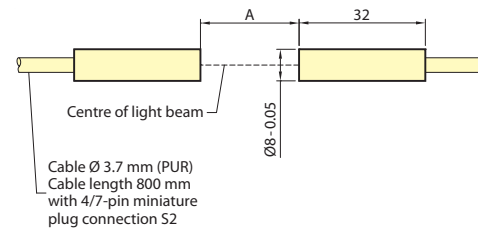
Article Order No.	
Connection cable, length 5 m:	
• VK-M12-g-5-S (2 m)	2112-00902-0500
• VK-M12-g-5-S (5 m)	2112-00905-0500
Extension cable 4-pin M12:	
• VK-M12-g/M12 (2 m)	2112-00002-0404
• VK-M12-g/M12 (5 m)	2112-00005-0404

Accessories 5-pin amplifier (more accessories see chapter K11)

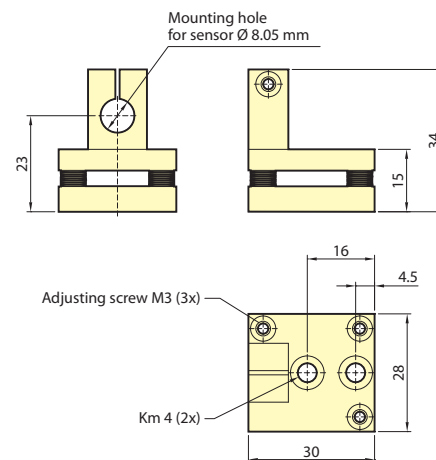
Article Order No.	
Connection cable shielded (with free cable end):	
• VK-D/F-St-A (2 m)	2105-00002-0600
• VK-D/F-St-A (5 m)	2105-00005-0600
Extension cable 5/6-pin M16:	
• VK-D/D (2 m)	2104-00002-0606
• VK-D/D (5 m)	2104-00005-0606

Other accessories

Article Order No.	
Adjustment device:	
• JEL-8	2300-00000-0008



Adjustment device JEL-8



Recommendations / instructions for the use of the dual-level chopped light amplifier:

- **Amplifier level I** → **High resolution!**
- **Amplifier level II** → **High operational reliability:**
The operational reliability is twice the level of amplifier level I.

Dual-beam light barriers

Our special models: for special applications – when more than just counting is required.
Dual-beam light barriers with directional operation.



Infrared light barriers with optional cleaning nozzles

Operating modes

Bright function with direction recognition	1	2	3	4
Dark function with direction recognition				
Bright function w/o direction recognition*				
Dark function w/o direction recognition				

Operating mode	1	2	3	4		
Direction of movement			→	←	→	←
Receiver I	[Pulse]	[Pulse]	[Pulse]	[Pulse]	[Pulse]	[Pulse]
Receiver II	[Pulse]	[Pulse]	[Pulse]	[Pulse]	[Pulse]	[Pulse]
A1	[Pulse]	[Pulse]	[Pulse]	[Pulse]	[Pulse]	[Pulse]
A2	[Pulse]	[Pulse]	[Pulse]	[Pulse]	[Pulse]	[Pulse]

*) Default value on delivery



Compact red light dual-beam light barriers with integrated amplifier

- ▶ Dual-beam light barriers
- ▶ Infrared fork light barriers with separate amplifier

PZ 8 mm series

with 4-pin connector M12

Application

- Forward/backward recognition (with counter)
- e.g. for applications in selective electroplating

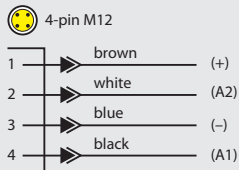
Specifications

Circuit	2 x constant light trigger
Operating voltage	12 – 24 VDC
Current consumption	< 40 mA
Mode of operation	static
Output 1 and 2 with LED	PNP
Function	bright / dark function with direction recognition
see <i>operating modes table</i>	
Load current	200 mA short-circuit proof
Repeating accuracy	< 0.01 mm
Frequency	3 KHz
Temperature range	0 °C – 50 °C
EMC according to 2004/108/EG	EN 61000... C E
System of protection	IP 65

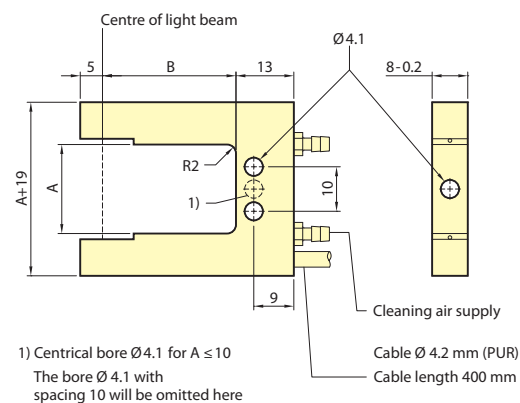
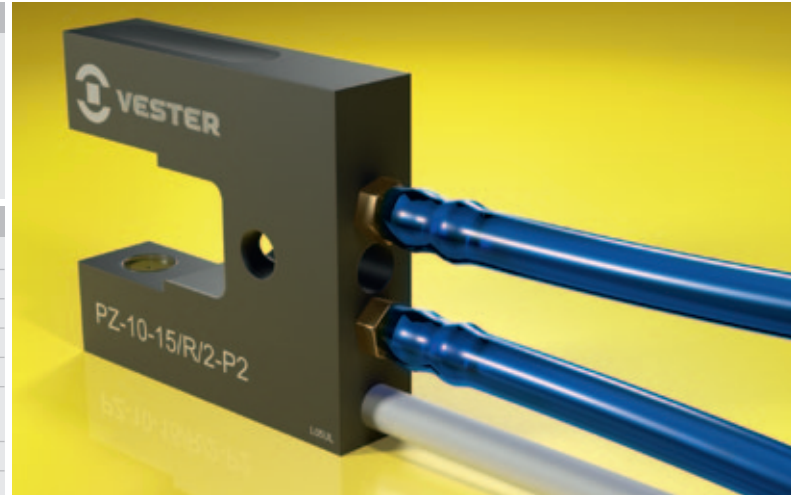
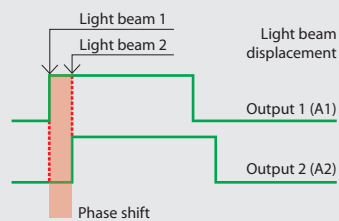
Resolution

Fork width A [mm] :	10	20 / 25	30 / 40
Part diameter [mm] :	0.4	0.8	1.2

Pin configuration



Phase shift



A [mm] :	10	10	20	20	20	20	25
B [mm] :	15	30	15	30	40	60	80

Article

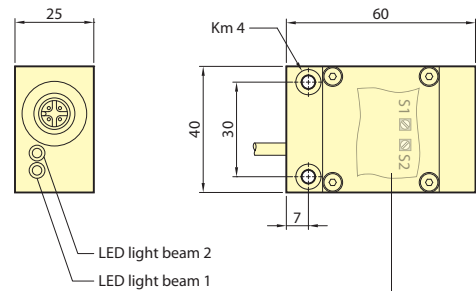
Order No.

Fork light barrier:	
• PZ-10-15/2-P2-M12	6231-00000-4182
• PZ-10-30/2-P2-M12	6232-00000-4182
• PZ-20-15/2-P2-M12	6233-00000-4182
• PZ-20-30/2-P2-M12	6234-00000-4182
• PZ-20-40/2-P2-M12	6251-00000-4182
• PZ-20-60/2-P2-M12	6252-00000-4182
• PZ-25-80/2-P2-M12	6260-00000-4182
Fork light barrier with cleaning nozzles R:	
• PZ-10-15/R/2-P2-M12	6231-10000-4182
• PZ-10-30/R/2-P2-M12	6232-10000-4182
• PZ-20-15/R/2-P2-M12	6233-10000-4182
• PZ-20-30/R/2-P2-M12	6234-10000-4182
• PZ-20-40/R/2-P2-M12	6251-10000-4182
• PZ-20-60/R/2-P2-M12	6252-10000-4182
• PZ-25-80/R/2-P2-M12	6260-10000-4182

Accessories (more accessories see chapter K11)

Article	Order No.
Connection cable 5 m (with free cable end):	
• VK-M12-5-g	2112-00005-0500
• VK-M12-5-w	2112-00005-1500

Constant light amplifier 2-P2



Housing dimensions (L x W x H):
60 x 40 x 25 mm

Operating modes			
S1	S2	Modi	
⊗	⊗	1	Dark function w/o direction recognition
⊗	⊙	2*	Bright function w/o direction recognition
⊙	⊗	3	Dark function with direction recognition
⊙	⊙	4	Bright function with direction recognition

*) Default value on delivery

- ▶ Dual-beam light barriers
- ▶ Red light fork light barriers with integrated amplifier

PZV 10 mm series

with 4-pin connector M8

Application

- Forward/backward recognition
- e.g. for applications on automatic winding machines and in selective electroplating

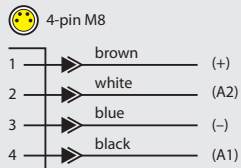
Specifications

Circuit	2 x constant light trigger
Wavelength	650 nm, red light LED
Operating voltage	12 – 24 VDC
Current consumption	< 40 mA
Mode of operation	static
Output 1 and 2 with LED	PNP
Function	see operating modes table
Load current	200 mA short-circuit proof
Repeating accuracy	< 0.01 mm
Frequency	3 KHz
Temperature range	0 °C – 50 °C
EMC according to 2004/108/EG	EN 61000... C €
System of protection	IP 65

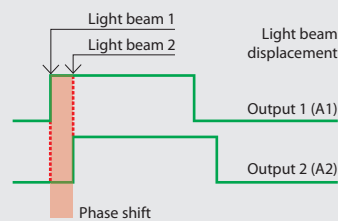
Resolution

Fork width A [mm] :	25	30
Part diameter [mm] :	0.8	1.2

Pin configuration



Phase shift



Article

Fork light barrier:

• PZV-30-30/4-P	6210-00010-4182
• PZV-25-80/4-P	6220-00010-4182
• PZV-30-80/4-P	6230-00010-4182

Order No.

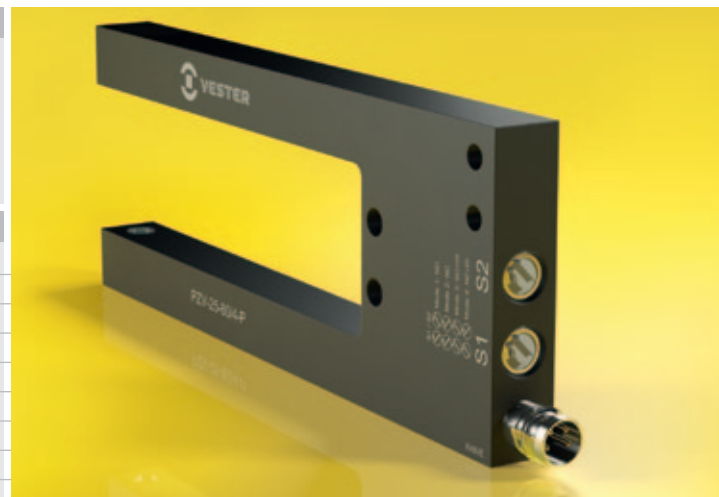
Accessories (more accessories see chapter K11)

Article

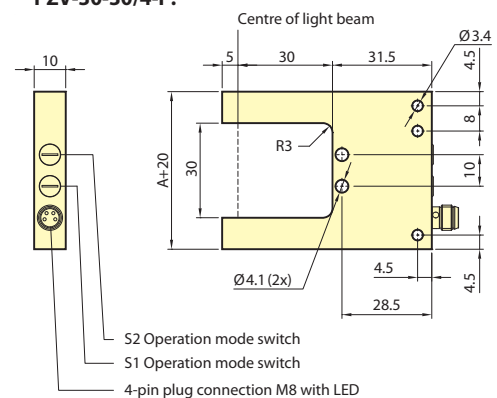
Connection cable 5 m (with free cable end):

• VK-M8-4-w	2111-00005-1400
• VK-M8-4-g	2111-00005-0400

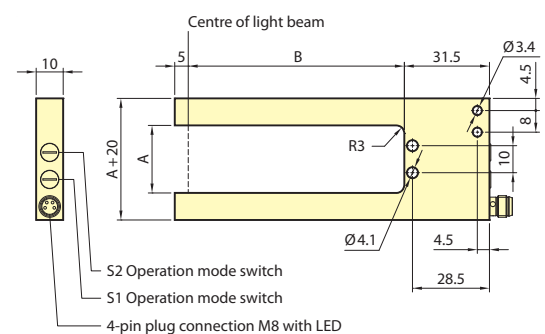
Order No.



PZV-30-30/4-P:



PZV-25-80/4-P | PZV-30-80/4-P:



A [mm] :	25	30
B [mm] :	80	80

Operating modes

S1	S2	Modi	
⊗	⊗	1	Dark function w/o direction recognition
⊗	⊗	2*	Bright function w/o direction recognition
⊗	⊙	3	Dark function with direction recognition
⊗	⊙	4	Bright function with direction recognition

*) Default value on delivery

Multi-beam light barriers with integrated amplifier

Compact fork and frame infrared multi-beam light barriers

K5



Fork light barrier of the PBI series with protective frame*



Frame light barrier of the PRI and PRX series

*) Protective frame as optional accessory

- ▶ Multi-beam light barriers with integrated amplifier
- ▶ Infrared frame light barriers

PRI 15 mm series

with 4-pin connector M12

Application

- Ejection control
- Counting of ultra small parts

Specifications

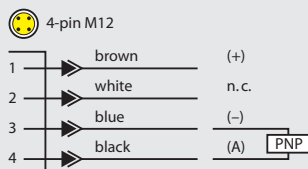
Circuit	Constant light trigger
Operating voltage	12 – 24 VDC
Current consumption	50 – 200 mA, depending on type
Mode of operation	dynamic / static ¹⁾
Sensitivity static/dynamic	adjustable by 270° pot
Output with LED	PNP
Function	bright / dark function
Load current	200 mA short-circuit proof
Pulse length	10 ms, internally adjustable (1 – 100 ms)
Frequency	max. 1 KHz, depending on pulse length
Temperature range	0 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... €€
System of protection	IP 65

¹⁾ internal switch for dynamic/static operating mode

Resolution

Light band B [mm] :	76	96	150
Part diameter [mm] :			
• dynamic	1.0	1.0	1.5
• static	1.0	1.5	2.0

Pin configuration



Article

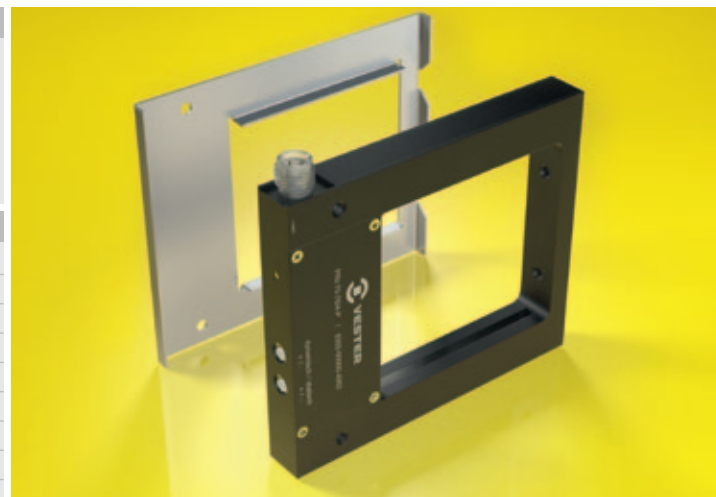
Order No.

Frame light barrier:	
• PRI-70-76/4-P	8300-00000-4002
• PRI-100-96/4-P	8301-00000-4002
• PRI-150-150/4-P	8302-00000-4002

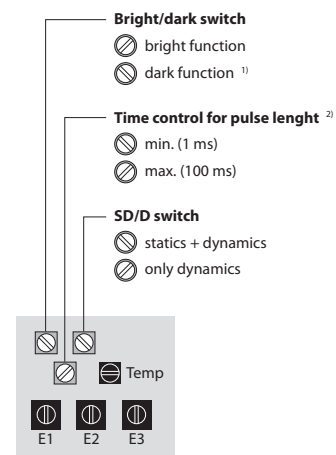
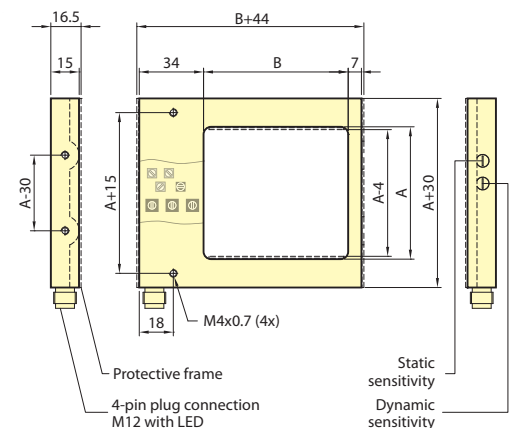
Also available w/o tie-bar (7 mm)

Accessories (more accessories see chapter K11)

Article	Order No.
Protective frame:	
• SR 70-76	2300-00000-0230
• SR 100-96	2300-00000-0231
• SR 150-150	2300-00000-0232
Connection cable 5 m:	
• VK-M12-5-g	2112-00005-0500
• VK-M12-5-w	2112-00005-1500
Extension cable 4-pin M12:	
• VK-M12-g/M12 (2 m)	2112-00002-0404



The protective frame is optionally available



- Must not be changed!
- 1) Default setting
- 2) Default setting: 10 ms

A [mm] :	70	100	150
B [mm] :	76	96	150

- ▶ Multi-beam light barriers with integrated amplifier
- ▶ Infrared frame light barriers

PRX 15 mm series

with 4-pin connector M12

Application

- Ejection control
- Counting of ultra small parts
- Very high-resolution frame light barrier with two light bands offset by 90° (dual light band)

Specifications

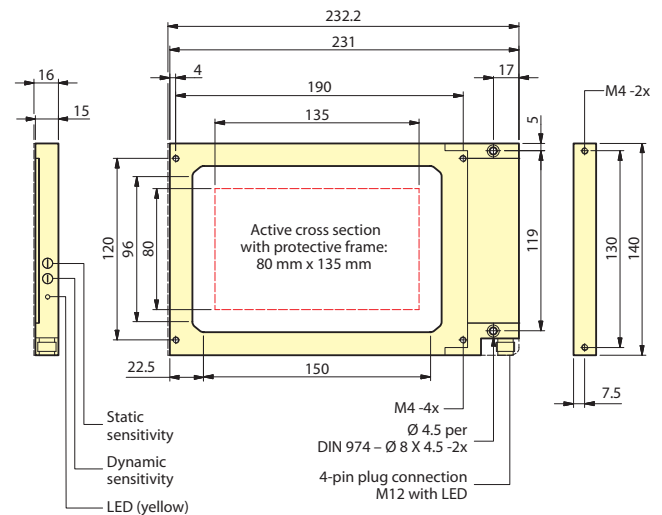
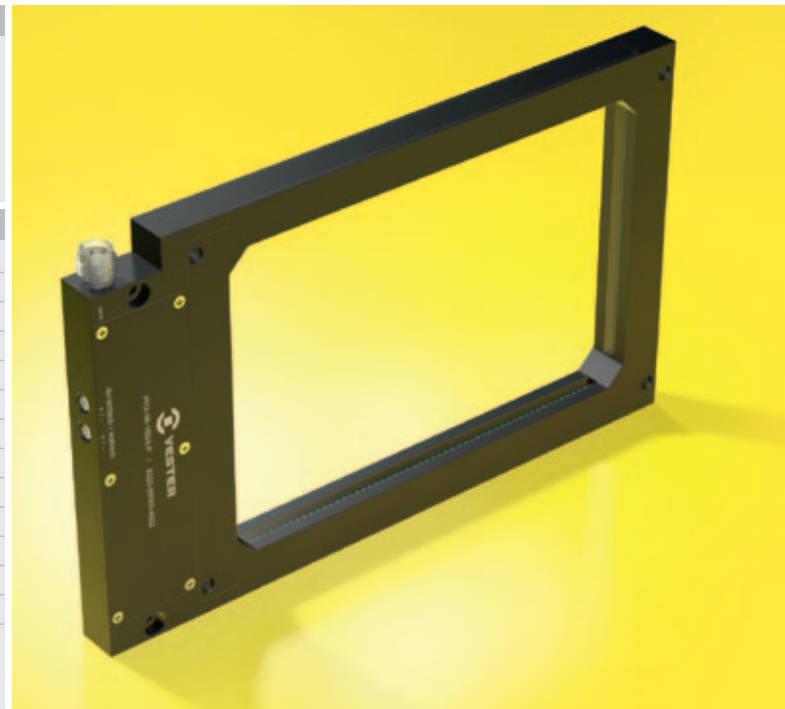
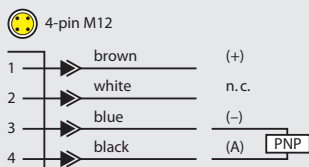
Circuit	Constant light trigger
Operating voltage	12 – 24 VDC
Current consumption	150 – 200 mA
Mode of operation	dynamic / static ¹⁾
Sensitivity static/dynamic	adjustable by 270° pot
Output with LED	PNP
Function	bright / dark function
Load current	200 mA short-circuit proof
Pulse length	10 ms, internally adjustable (1 – 100 ms)
Frequency	max. 1 KHz, depending on pulse length
Temperature range	0 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... C E
System of protection	IP 65

¹⁾ internal switch for dynamic/static operating mode

Resolution

Frame cross section [mm] :	96 – 150
Part diameter [mm] :	
• dynamic	0,9
• static	0,9

Pin configuration

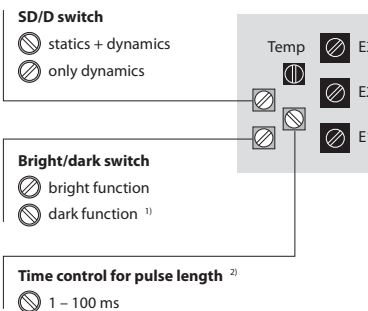


Article Order No.

Frame light barrier:	
PRX-96-150/4-P	8320-00000-4002

Accessories (more accessories see chapter K11)

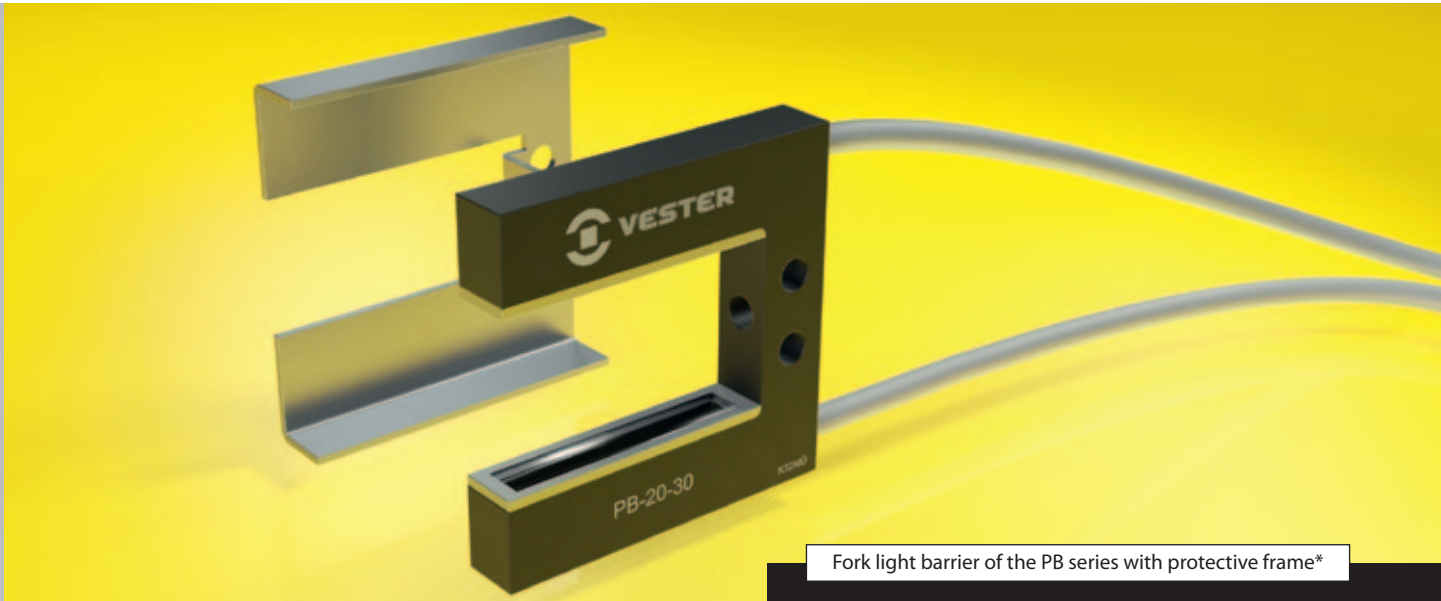
Article	Order No.
Protective frame:	
• SRX-96-150	2300-00000-8230
Connection cable 5 m:	
• VK-M12-5-g	2112-00005-0500
• VK-M12-5-w	2112-00005-1500
Extension cable 4-pin M12:	
• VK-M12-g/M12 (2 m)	2112-00002-0404



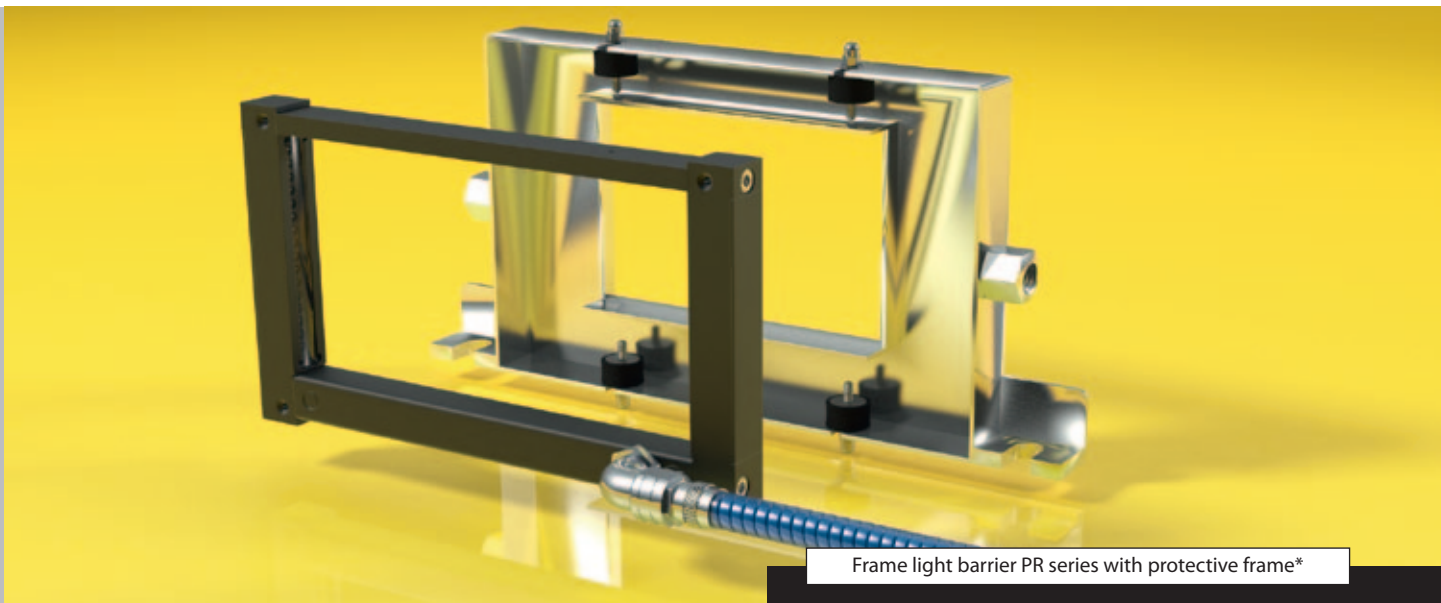
Multi-beam light barriers with separate amplifier

Fork and frame infrared multi-beam light barriers

K6

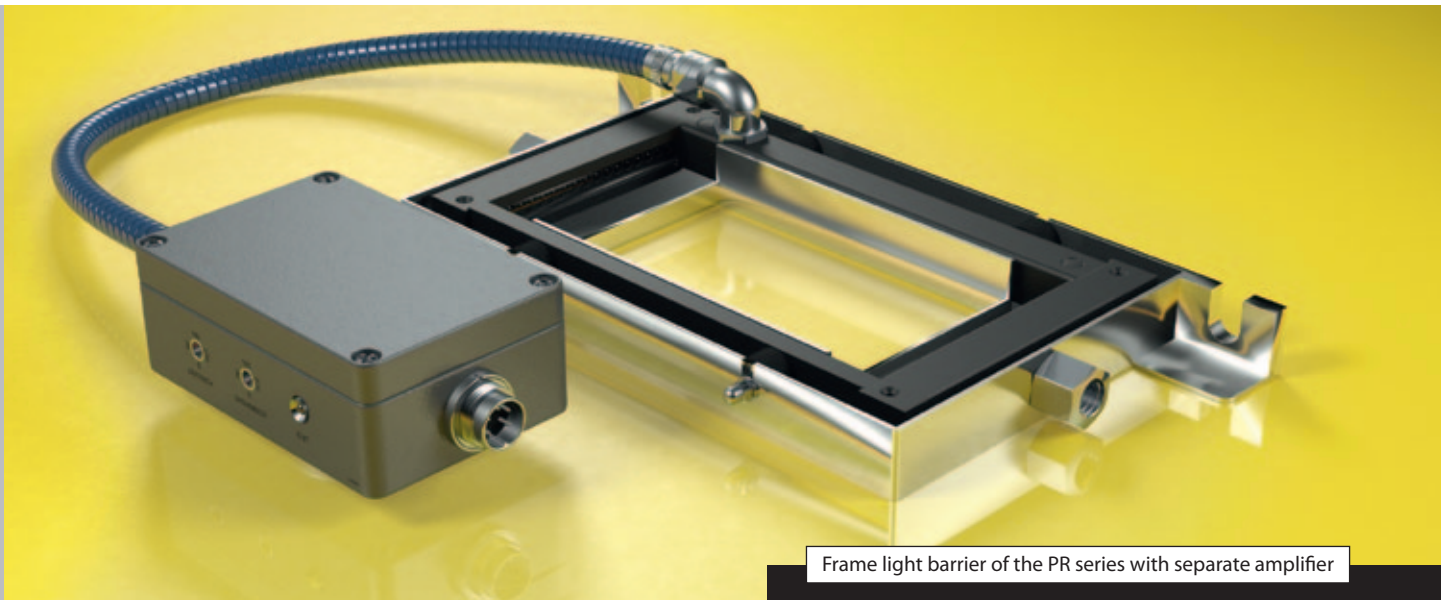


Fork light barrier of the PB series with protective frame*



Frame light barrier PR series with protective frame*

*) Protective frame as optional accessory

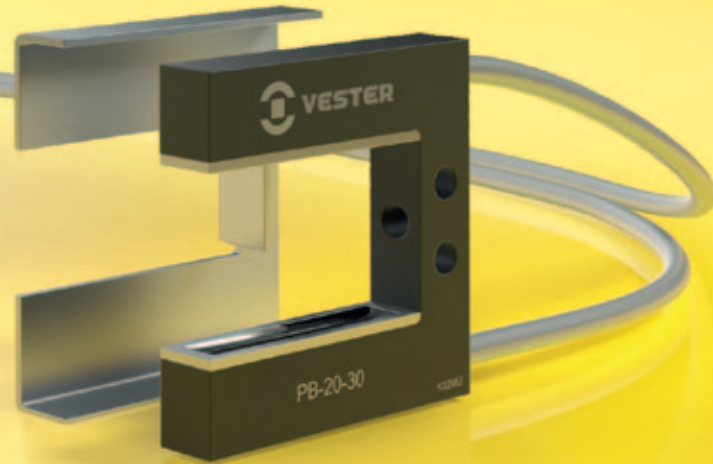


Frame light barrier of the PR series with separate amplifier

- ▶ Multi-beam light barriers with separate amplifier
- ▶ Infrared fork light barriers

PB 8 mm series

with 4-pin connector M12 or 5-pin connector M16



The protective frame is optionally available

Application

- Ejection control
- Counting of ultra small parts

Specifications

Circuit	Constant light trigger
Operating voltage	12 – 24 VDC
Current consumption	50 – 200 mA, depending on type
Mode of operation	dynamic / static ¹⁾
Sensitivity static/dynamic	adjustable by 270° pot
Output with LED	PNP, NPN on request
Function	bright / dark function
Load current	200 mA short-circuit proof
Pulse length	10 ms, internally adjustable (1 – 100 ms)
Frequency	max. 1 KHz, depending on pulse length
Temperature range	0 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... C E
System of protection	IP 65

¹⁾ internal switch for dynamic/static operating mode

Resolution

Fork width A [mm]:		10 – 30	40 – 60
Part diameter [mm]:	dynamic	0.8	1.0
Part diameter [mm]:	static	1.5	2.0

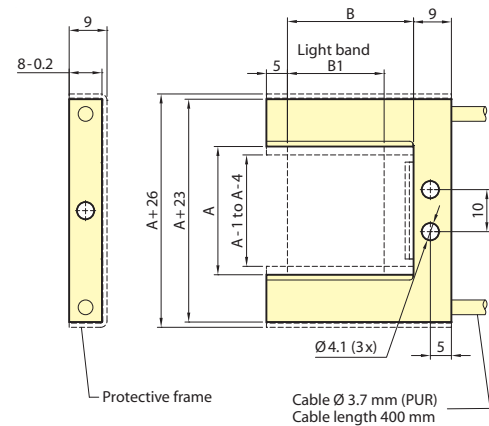
Article Order No.

Fork light barrier with amplifier 4-pin plug:

• PB-10-15/4-P	8000-00000-4102
• PB-20-30/4-P	8001-00000-4102
• PB-30-30/4-P	8002-00000-4102
• PB-40-40/4-P	8003-00000-4102
• PB-50-75/4-P	8005-00000-4102
• PB-60-75/4-P	8006-00000-4102

Fork light barrier with amplifier 5-pin plug:

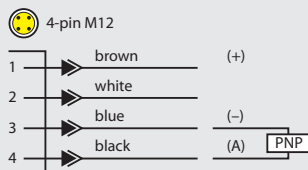
• PB-10-15/5-P	8000-00000-0102
• PB-20-30/5-P	8001-00000-0102
• PB-30-30/5-P	8002-00000-0102
• PB-40-40/5-P	8003-00000-0102
• PB-50-75/5-P	8005-00000-0102
• PB-60-75/5-P	8006-00000-0102



A [mm]:	10	20	30	40	50	60
B [mm]:	15	30	30	40	75	75
B1 [mm]:	10	23	23	35	69	69

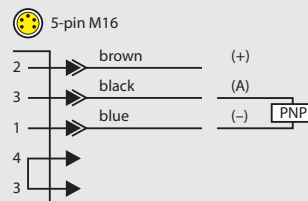
Constant light amplifier 4-P*

Pin configuration

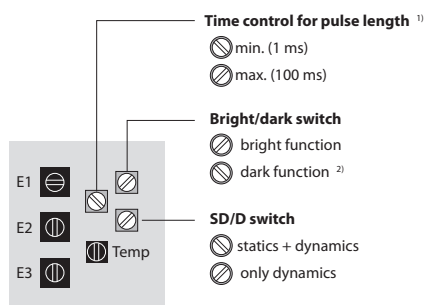
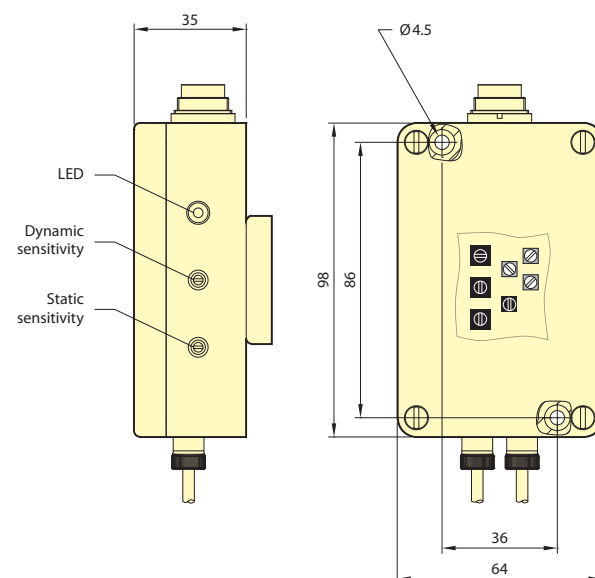
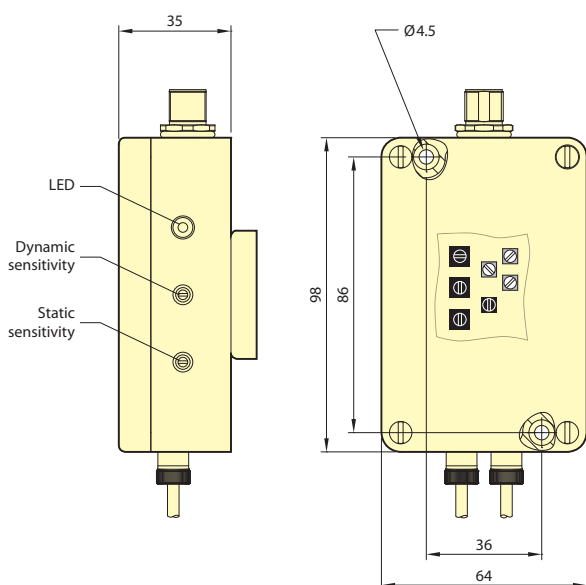


Constant light amplifier 5-P*

Pin configuration



*) With magnetic holder



■ Must not be changed!

1) Default setting: 10 ms

2) Default setting

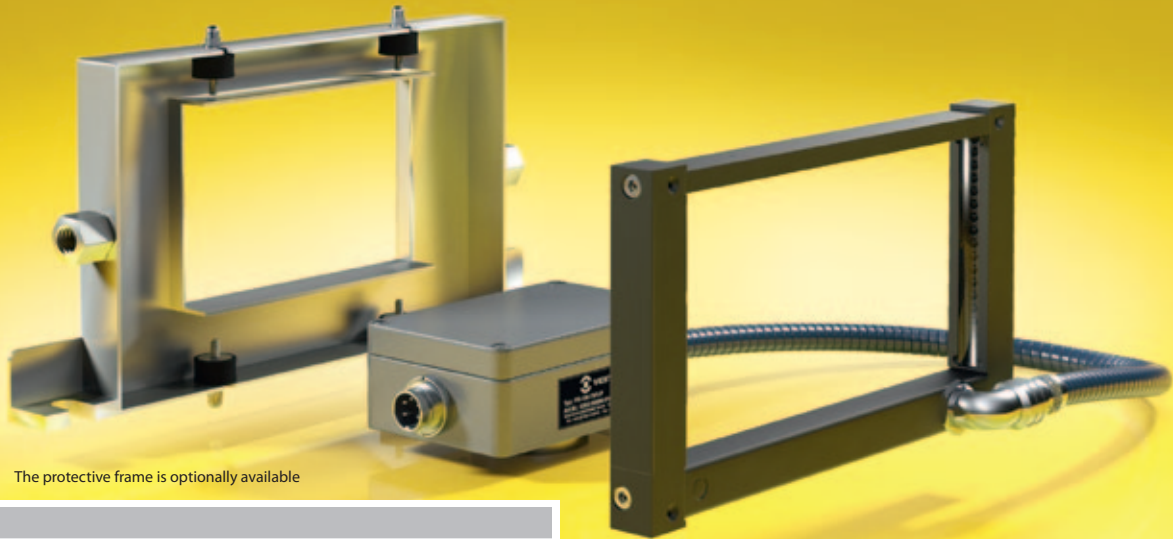
Accessories (more accessories see chapter K11)

Article	Order No.
Connection cable M12 (5 m):	
• VK-M12-5-g	2112-00005-0500
• VK-M12-5-w	2112-00005-1500
Extension cable 4-pin M12:	
• VK-M12-g/M12 (2 m)	2112-00002-0404
• VK-M12-g/M12 (5 m)	2112-00005-0404
Connection cable 5/6-pin M16:	
• VK-D/F-St-A (2 m)	2105-00002-0600
• VK-D/F-St-A (5 m)	2105-00005-0600
Extension cable 5/6-pin M16:	
• VK-D/D (2 m)	2104-00002-0606
• VK-D/D (5 m)	2104-00005-0606
Protective frame:	
• SR 10-15	2300-00000-0177
• SR 20-30	2300-00000-0178
• SR 30-30	2300-00000-0179
• SR 40-40	2300-00000-0180
• SR 50-75	2300-00000-0182
• SR 60-75	2300-00000-0183

- ▶ Multi-beam light barriers with separate amplifier
- ▶ Infrared frame light barriers

PR 15 mm series

with 4-pin connector M12 or 5-pin connector M16



The protective frame is optionally available

Application

- Ejection control
- Counting of ultra small parts

Specifications

Circuit	Constant light trigger
Operating voltage	12 – 24 VDC
Current consumption	60 – 300 mA, depending on type
Mode of operation	dynamic / static ¹⁾
Sensitivity static/dynamic	adjustable by 270° pot
Output with LED	PNP, NPN on request
Function	bright / dark function
Load current	200 mA short-circuit proof
Pulse length	10 ms, internally adjustable (1 – 100 ms)
Frequency	max. 1 KHz, depending on pulse length
Temperature range	0 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... C E
System of protection	IP 64

1) internal switch for dynamic/static operating mode

Resolution

Light band B [mm]:		54–78	96–126	150–192	300
Part diameter [mm]:	dynamic	1	2	3	4
Part diameter [mm]:	static	2	4	6	8

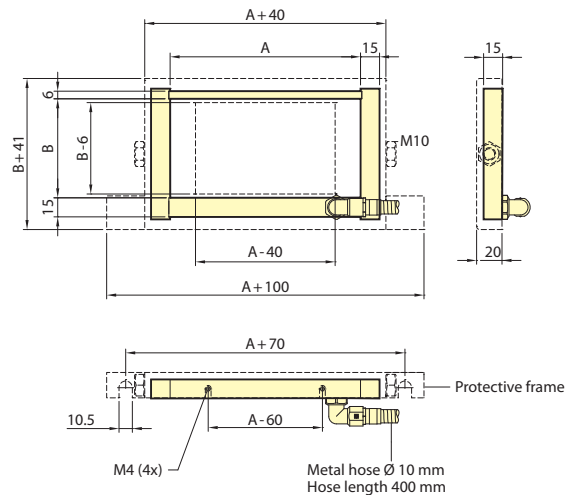
Article Order No.

Frame light barrier with amplifier 4-pin plug:

• PR-52-54/4-P	8200-00000-4102
• PR-100-66/4-P	8201-00000-4102
• PR-150-78/4-P	8202-00000-4102
• PR-200-96/4-P	8203-00000-4102
• PR-250-126/4-P	8204-00000-4102
• PR-300-150/4-P	8205-00000-4102
• PR-400-192/4-P	8206-00000-4102
• PR-500-300/4-P	8207-00000-4102

Frame light barrier with amplifier 5-pin plug:

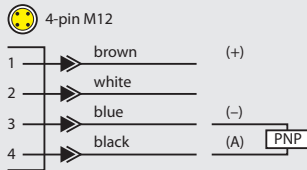
• PR-52-54/5-P	8200-00000-0102
• PR-100-66/5-P	8201-00000-0102
• PR-150-78/5-P	8202-00000-0102
• PR-200-96/5-P	8203-00000-0102
• PR-250-126/5-P	8204-00000-0102
• PR-300-150/5-P	8205-00000-0102
• PR-400-192/5-P	8206-00000-0102
• PR-500-300/5-P	8207-00000-0102



A [mm]:	52	100	150	200	250	300	400	500
B [mm]:	54	66	78	96	126	150	192	300

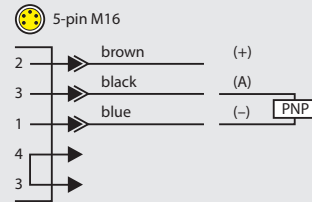
Constant light amplifier 4-P*

Pin configuration

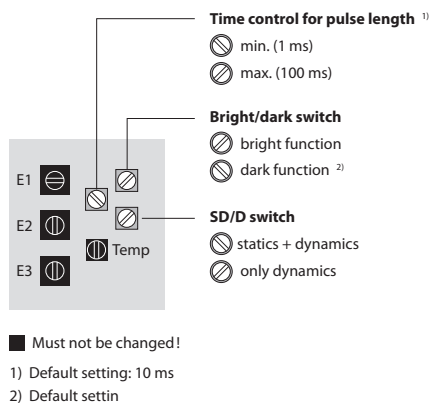
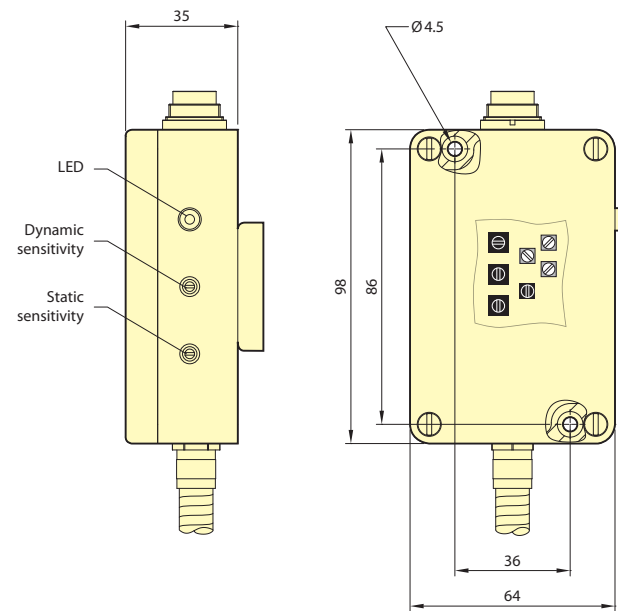
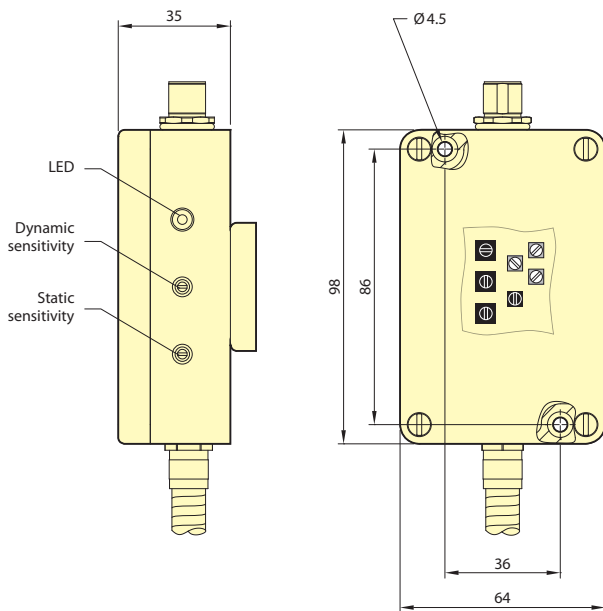


Constant light amplifier 5-P*

Pin configuration



*) With magnetic holder



Accessories (more accessories see chapter K11)

Article	Order No.
Connection cable M12 (5 m):	
• VK-M12-5-g	2112-00005-0500
• VK-M12-5-w	2112-00005-1500
Extension cable 4-pin M12:	
• VK-M12-g/M12 (2 m)	2112-00002-0404
• VK-M12-g/M12 (5 m)	2112-00005-0404
Connection cable 5/6-pin M16:	
• VK-D/F-St-A (2 m)	2105-00002-0600
• VK-D/F-St-A (5 m)	2105-00005-0600
Extension cable 5/6-pin M16:	
• VK-D/D (2 m)	2104-00002-0606
• VK-D/D (5 m)	2104-00005-0606
Protective frame:	
• SR 150-78	2300-00000-0410
• SR 200-96	2300-00000-0411
• SR 250-126	2300-00000-0412
• SR 300-150	2300-00000-0413
• SR 400-192	2300-00000-0414
• SR 500-300	2300-00000-0415
Magnetic holding device MS 80	2300-00000-0036

- ▶ Multi-beam light barriers with separate amplifier
- ▶ Infrared bar light barriers

DHS series

Multi-beam light barriers DHS 801 and DHS 1601 as loop control

The non-contacting, microprocessor-controlled infrared multi-beam light barriers DHS 801 and DHS 1601 are based on many years of experience in the field of optical sensor technology and automation engineering.

By the detection of thin and fast moving stamped strips these sensors are used primarily as loop control in coiling and uncoiling machines.

The requirement of winding or unwinding thin and perforated stamped strips from a coil in a smooth and jerk-free – and thus also thrust- and tension-free – manner is an essential element of the current winding technology.

A loop control has the purpose of regulating the coiling drive in such a way to ensure a continuous and vibration-free operation, depending on the growing or decreasing coil diameter.

Only that way it can be guaranteed that highly sensitive strip material can be wound or unwound without damages.

Furthermore, changing the strip shall require no additional adjustment on the sensor or the control: the system is designed to work independently from the material in use!



Rewinding station with DHS 801

The DHS series models are infrared multi-beam light barriers which self-align within an operating range between 50 mm and 400 mm, here the distance between transmitter and receiver components.

Depending on the model version, the DHS 801 has 8 IR light beams arranged horizontally as one-way light barriers over a range between 450 mm and 1250 mm in such a way that only one light beam will be crossed by the strip material loop. The DHS 1601 has 16 IR light beams.

Via programing adapter each light beam can be assigned exactly one output value between 0 and 10 VDC, which the amplifier module at the output will provide as a set value for the drive (frequency converter) until another light beam is crossed by the strip loop.

Strip flutter will not affect the function, for it doesn't matter if the concerning light beam is crossed only once or several times.

This ensures a continuous and vibration-free operation of the winder drive and will notably extend the service life of the drive components.

Both the first and last light beam can be programmed as digital "limit switches", e.g. if the strip is tightening or running out, which considerably enhances the functionality again by making extra limit switches redundant.

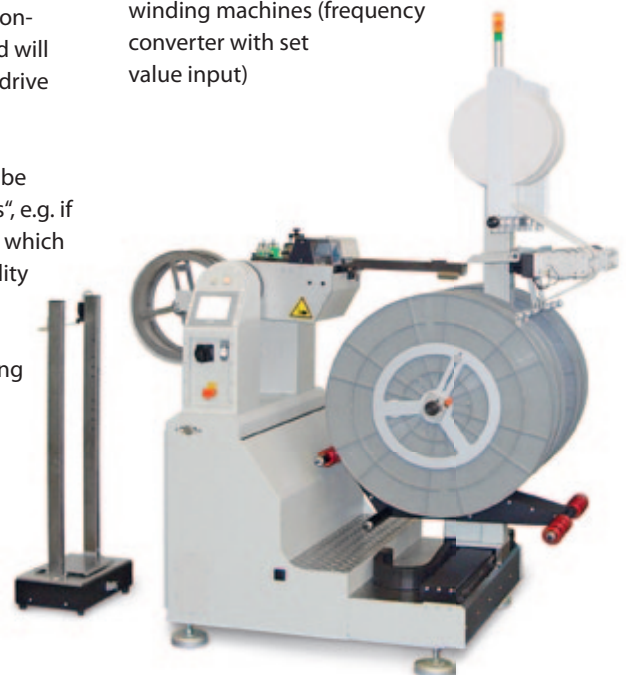
The two "wind" and "unwind" operating modes can be selected by switch, according to the current application.

Performance features of the DHS multi-beam light barriers:

- Analogue control output: 0 – 10 VDC, set value for frequency converter
- 8 or 16 individually programmable one-way light barriers, default set value 0 – 10 VDC
- Programmable for individual default set values or fixed values (factory setting)
- Switchable winding / unwinding operation, optionally with PNP alarm signal for band tension and band end 'limit values'
- Resolution from 0.1 mm strip thickness
- Material-independent function; therefore no adjustment when changing the tool!
- Material-friendly winding procedure due to vibration-free, continuous drive operation; thus longer service life
- Easy retrofitting on automatic winding machines (frequency converter with set value input)



Strip accumulator with DHS 801



Quad winder with DHS 1601

- ▶ Multi-beam light barriers with separate amplifier
- ▶ Infrared bar light barriers

DHS series

Transmitter and receiver bar

Application

- 8- or 16-channel loop control with variable operating range between 50 and 400 mm
- Switchable winding and unwinding operating modes stored in memory

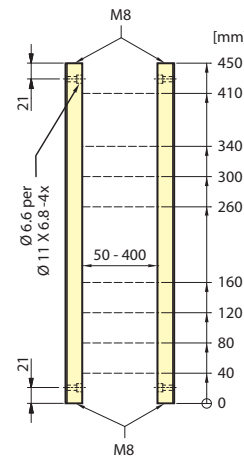
Specifications

Circuit	Constant light trigger, PIC controller
Operating voltage	24 VDC ±10 %
Current consumption	< 200 mA
Mode of operation	dynamic
Sensitivity	> 0.1 mm, depending on distance A between transmitter and receiver bar
Output with LED	0 – 10 VDC, green LED lights up briefly when a light beam is crossed
Switch output SA	DHS 801: PNP, for channel 0 + 7 DHS 1601: PNP, for channel 0 + 15 dark function
Function	dark function
Load current	max. 100 mA short-circuit proof
Frequency	>1 KHz
Temperature range	0 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... CEE
System of protection	IP 65, for transmitter and receiver bar

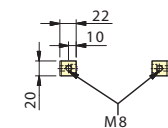
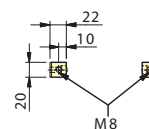
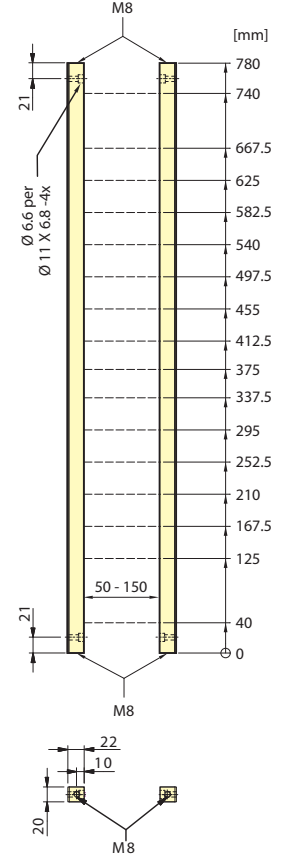


Transmitter and receiver bar with 8 or 16 light barriers

DHS 801/450:



DHS 1601:



Drawing DHS 801/1250 on request

Resolution DHS 801:

Distance A [mm]:	50 – 150	250 – 400
Material thickness [mm]:	0.2	0.1

Resolution DHS 1601:

Distance A [mm]:	50 – 150
Material thickness [mm]:	0.1

Article

Order No.

DHS 801/450 complete system 450 mm	8701-45008-1000
DHS 801/2xSA-PNP, as above with switch output	8701-45008-3000
DHS 801/1250 complete system 1250 mm	8701-12508-1000
DHS 801/AE, 8-channel amplifier	8701-00008-1001
DHS 801/450/transmitter	8701-45008-1002
DHS 801/450/receiver	8701-45008-1003
DHS 801/1250/transmitter	8701-12508-1002
DHS 801/1250/receiver	8701-12508-1003

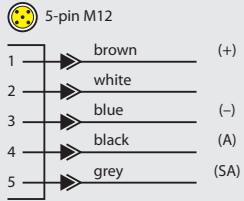
DHS 1601/780 complete system 780 mm	8701-78016-1000
DHS 1601/AE 16-channel amplifier	8701-00016-1001
DHS 1601/780/transmitter	8701-78016-1002
DHS 1601/780/receiver	8701-78016-1003

- ▶ Multi-beam light barriers with separate amplifier
- ▶ Infrared bar light barriers

DHS series

Amplifier

Pin configuration



- Pin 1: +24 VDC
- Pin 2: Ext. range selection
n.c. → memory range 1, yellow LED off
5 VDC → memory range 2, yellow LED on
- Pin 3: 0 V
- Pin 4: Output 0 – 10 VDC
- Pin 5: switch output SA-PNP, with model version / 2xSA-PNP



Housing dimensions (LxWxH): 220 x 120 x 90 mm

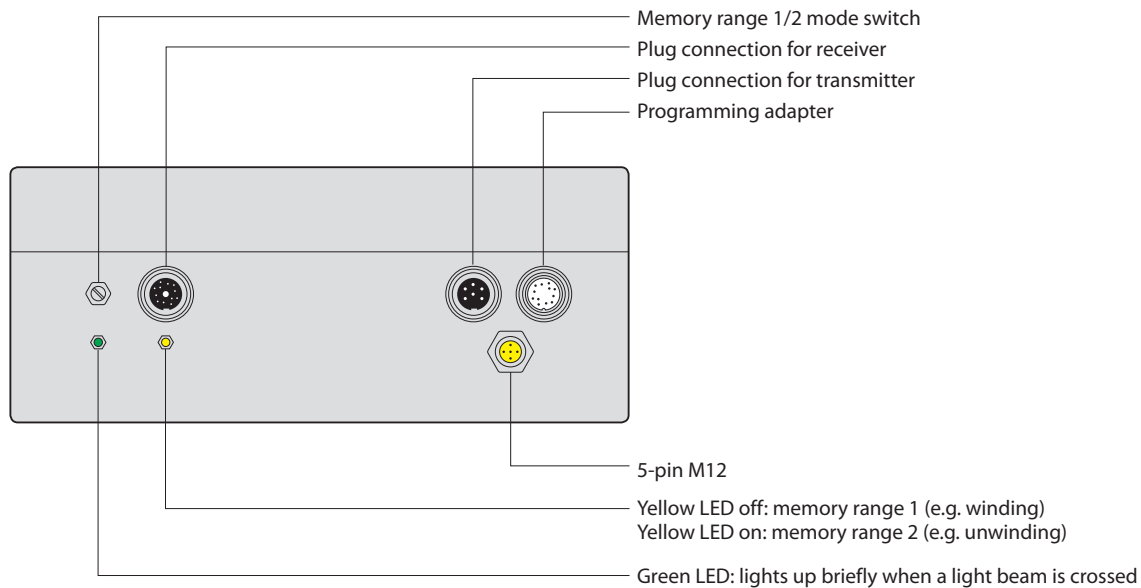
Accessories (more accessories see chapter K11)

Article	Order No.
Connection cable 5 m:	
• VK-M12-5-g	2112-00005-0500
• VK-M12-5-w	2112-00005-1500
DHS x /feet (pair)	8600-00110-0005
Stand A-1/100 for DHS compl.	0949-60140-0000
Protective plate DHS x / 450 transmitter compl.	8600-00110-0006
Protective plate DHS x / 450 receiver compl.	8600-00110-0007
Programming adapter:	
• PA16-DHS	8601-00100-0000

Freely programmable with programming adapter PA16-DHS!

Note:
With the optional programming adapter output voltages between 0 and 10 V may be set for each channel!

Transmitter and receiver bar are both pluggable



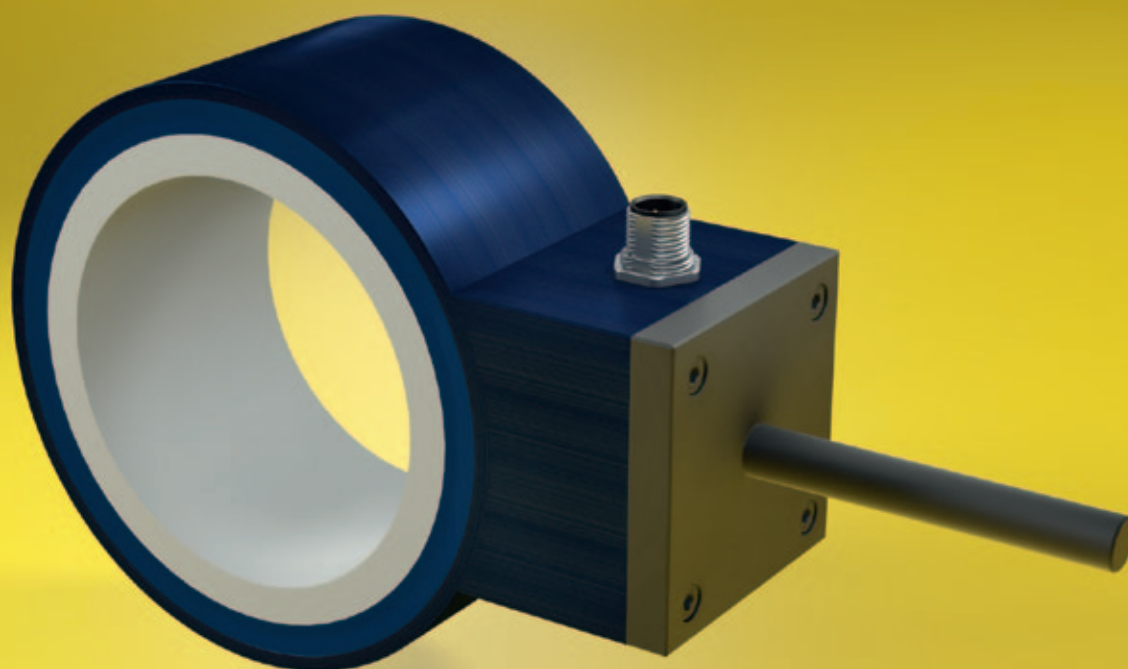
Switch output SA:

Upon crossing the light beams of channels 0 + 7 (DHS 1601: channels 0 + 15), an additional output is activated, e.g. for band tension or band end (limit signals)

Inductive switches and ring sensors

Inductive proximity switches are available in many sizes with plug connection and cable output. The universal sensor for nearly all applications.

Our ring sensors are available in three sizes and convince by a high resolution and reliability in a rough and oil mist ambience.



Ring sensor of the IRS series

- ▶ Inductive switches and ring sensors
- ▶ Inductive proximity switches

IS series

with cable output

Sensor type	Sn ST 37	Order No.	Drawing
IS-M4-22-06	0.6 mm	6604-22060-0000	
IS-4-25-1,5	1.5 mm	6604-25150-0000	
IS-M5-25-1,5	1.5 mm	6605-25150-0000	
IS-6,5-16-1,5	1.5 mm	6606-16150-0000	
IS-6,5R-16-1,5	1.5 mm	6606-16159-0000	
IS-M8-10-1,5	1.5 mm	6608-10150-0000	
IS-M8-16-1,5	1.5 mm	6608-16150-0000	
IS-M8-32-1,5	1.5 mm	6608-32150-0000	
IS-M8-45-3	3 mm	6608-45300-0000	
IS-M12-31-4	4 mm	6612-31400-0000	
IS-M12-50-6	6 mm	6612-50600-0000	
IS-M18-50-12	12 mm	6618-50120-0000	

Specifications

Operating voltage	10 – 30 VDC, polarity protected
Current consumption	max. 10 mA (Idle running)
Mode of operation	static
Output	cable output: PNP (S), – (Bl), + (Br), length: 2.5 – 3 m
Function	make contact
Load current	200 mA short-circuit proof
Repeating accuracy	$R \leq 5\%$ of S_r , with S_r = real switching distance
Reduction factor for S_n , with S_n = nominal switching distance	V2A: appr. 0.85 AL: appr. 0.4 Cu: appr. 0.3
Frequency	max. 3 KHz, depending on type
Temperature range	0 °C – 70 °C
EMC according to 2004/108/EG	EN 61000... CÉ
System of protection	IP 65

Accessories (more accessories see chapter K11)

Article	Order No.
Cylinder plug RS-5	1200-00006-0874
Mounting block AS 10-5	2306-00000-0005

- ▶ Inductive switches and ring sensors
- ▶ Inductive plug-in type proximity switches

ISS series

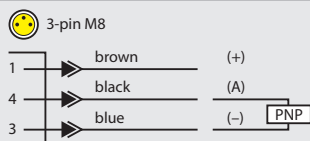
with 3-pin connector M8

Sensor type	Sn ST 37	Order No.	Drawing
ISS-6,5-58-4	4 mm	6606-58400-0000	
ISS-M8-45-1,5	1.5 mm	6608-45151-0000	
ISS-M8-60-3	3 mm	6608-60301-0000	
ISS-10-28-1 ¹⁾	2 mm	6610-28201-0000	
ISS-26-20-1,5/R ²⁾	1.5 mm	6626-20151-0000	
ISS-26-20-1,5/L ²⁾	1.5 mm	6626-20151-1000	

¹⁾ Alternative version with cable output on request

²⁾ cable outlet with angled plug R = right-hand, L = left-hand

Pin configuration



Specifications

Operating voltage	10 – 30 VDC, polarity protected
Current consumption	max. 10 mA (Idle running)
Mode of operation	static
Output	PNP
Function	make contact
Load current	200 mA short-circuit proof
Repeating accuracy	$R \leq 5\%$ of S_r , with S_r = real switching distance
Reduction factor for S_n , with S_n = nominal switching distance	V2A: appr. 0.85 AL: appr. 0.4 Cu: appr. 0.3
Frequency	max. 1 KHz, depending on type
Temperature range	0 °C – 70 °C
EMC according to 2004/108/EG	EN 61000... C€
System of protection	IP 65 / 67

Accessories (more accessories see chapter K11)

Article	Order No.
Connection cable (5 m):	
• VK-M8-g	2111-00005-0300
• VK-M8-w	2111-00005-1300

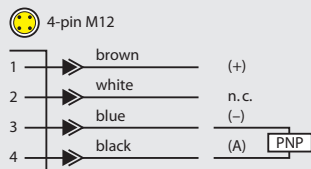
- ▶ Inductive switches and ring sensors
- ▶ Inductive plug-in type proximity switches

ISS series

with 4-pin connector M12

Sensor type	Sn ST 37	Order No.	Drawing
ISS-M12-45-4	4 mm	6612-45401-0000	
ISS-M12-61-6	6 mm	6612-61601-0000	
ISS-M18-66-12	12 mm	6618-66121-0000	
ISS-M30-84-40	40 mm	6630-84401-0000	

Pin configuration



Specifications

Operating voltage	10 – 30 VDC, polarity protected
Current consumption	max. 10 mA (Idle running)
Mode of operation	static
Output	PNP
Function	make contact
Load current	200 mA short-circuit proof
Repeating accuracy	$R \leq 5\%$ of S_r , with S_r = real switching distance
Reduction factor for S_n , with S_n = nominal switching distance	V2A: appr. 0.85 AL: appr. 0.4 Cu: appr. 0.3
Frequency	max. 1 KHz, depending on type
Temperature range	0 °C – 70 °C
EMC according to 2004/108/EG	EN 61000... C E
System of protection	IP 65 / 67

Accessories (more accessories see chapter K11)

Article	Order No.
Connection cable (5 m):	
• VK-M12-5-g	2112-00005-0500
• VK-M12-5-w	2112-00005-1500

- ▶ Inductive switches and ring sensors
- ▶ Inductive ring sensors

IRS series

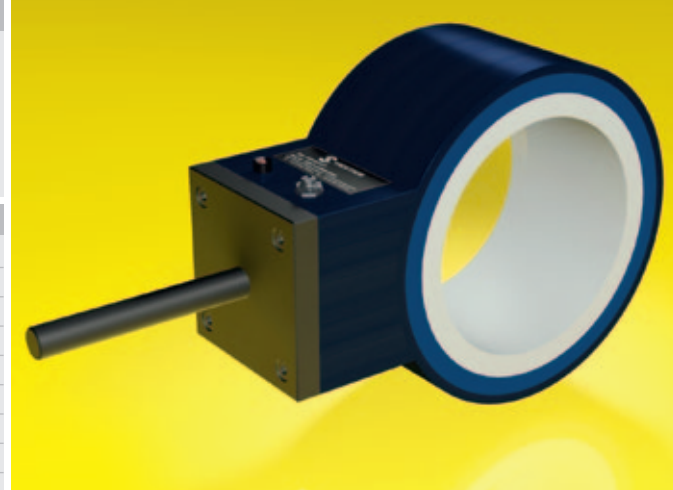
with 4-pin connector M12

Application

- Ejection control in oil mist ambiance

Specifications

Circuit	Trigger electronics
Operating voltage	12 – 24 VDC
Current consumption	appr. 50 mA
Mode of operation	dynamic
Sensitivity	adjustable by 270° pot
Output with LED	PNP
Load current	100 mA short-circuit proof
Frequency	max. 200 Hz
Temperature range	0 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... C€
System of protection	IP 60

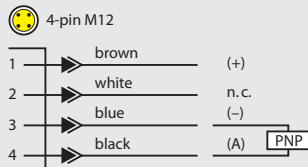


Resolution

Diameter A* [mm]:	40	84	155
Part diameter [mm]:	1.5	3	6

*) A = Test diameter without protective tube

Pin configuration



Article

Order No.

Ring sensor:	
• IRS-40/4-P	8907-41000-1003
• IRS-84/4-P	8907-41000-2003
• IRS-155/4-P	8907-41000-3003

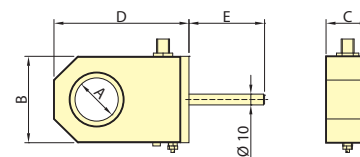
Accessories (more accessories see chapter K11)

Article

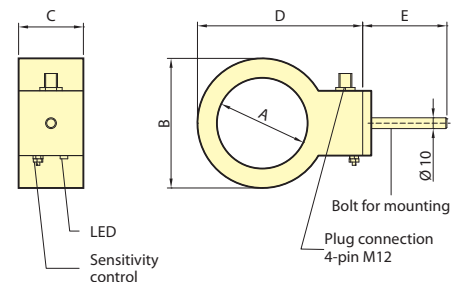
Order No.

Protective tube:	
• ST 40	2305-28174-0010
• ST 84	2305-28338-4010
• ST 155	2305-28379-9010
Connection cable:	
• VK-M12-5-g (5 m)	2112-00005-0500
• VK-M12-5-w (5 m)	2112-00005-1500
Extension cable 4-pin M12:	
• VK-M12-g/M12 (2 m)	2112-00002-0404
• VK-M12-g/M12 (5 m)	2112-00005-0404

IRS-40:

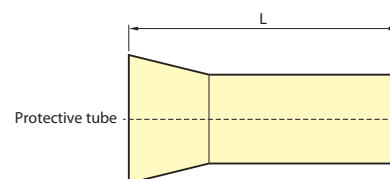


IRS-84 | IRS-155:



Dimensions [mm]	Ring sensor		
	IRS 40	IRS 84	IRS 155
A	40	84	155
B	80	120	200
C	40	60	60
D	125	157	237
E	70	70	90

Protective tube



Dimension [mm]	Protective tube		
	ST 40	ST 84	ST 155
L	200	250	300

Contact sensors

Contact sensors are robust mechanical sensors which supply a precise signal upon contact with metallically conductive objects and machine parts which can then be converted into an industrially useable PNP signal by the back-end trigger electronics.



Sensor of the IG/S2 series



Trigger electronics S2-B-4-P2

IG-S2 series

with 2-pin miniature connector S2

Sensor type	Ram identifier	Order No.	Drawing
IG-4-12/S2	/standard (ST 37)	6804-12000-2000	
IG-5-30/S2	/standard (ST 37)	6805-30000-2000	
IG-5-30/D/HSS/S2	/D/HSS	6805-30010-2000	
IG-6-30/S2	/standard (ST 37)	6806-30000-2000	
IG-6-30/D/HSS/S2	/D/HSS	6806-30010-2000	
IG-6-30/I/HSS/S2	/I/HSS	6806-30020-2000	
IG-M8-30/S2	/standard (ST 37)	6808-30000-2000	
IG-M8-30/D/HSS/S2	/D/HSS	6808-30010-2000	
IG-M8-30/I/HSS/S2	/I/HSS	6808-30020-2000	

Spring-loaded ram	IG-4-12	IG-5-30	IG-6-30	IG-M8-30
Spring force	0.5 N	2.5 N	2 N	2 N
Range of spring	0.5 mm	2 mm	2 mm	2 mm

- ▶ Contact sensors
- ▶ Amplifier

S2-B-4-P2

with 4-pin connector M12

Application

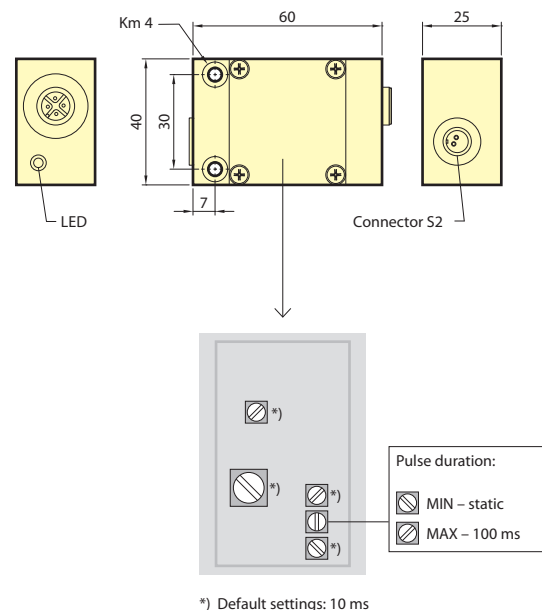
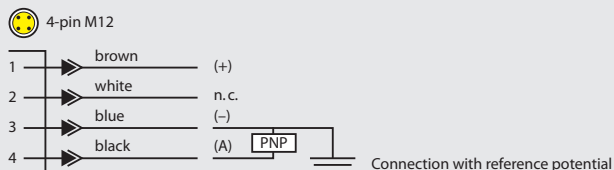
- Rivet control

Specifications

Circuit	Trigger electronics
Operating voltage	12 – 24 VDC
Current consumption	< 15 mA
Mode of operation	static, upon contact with reference potential
Output with LED	PNP
Min. time of contact	0.3 ms
Contact resistance	< 3 KΩ at 24 VDC
Load current	200 mA short-circuit proof
Pulse length	10 ms or internally adjustable
Frequency	max. 1 KHz, depending on pulse length
Temperature range	0 °C – 60 °C (Amplifier), 0 °C – 150 °C (Sensor)
EMC according to 2004/108/EG	EN 61000... C€
System of protection	IP 60



Pin configuration



Article	Order No.
Trigger electronics: S2-B-4-P2	2000-00008-4114

Accessories (more accessories see chapter K11)

Article	Order No.
Connection cable 5 m:	
• VK-M12-5-g	2112-00005-0500
• VK-M12-5-w	2112-00005-1500
Extension cable 4-pin M12:	
• VK-M12-g/M12 (2 m)	2112-00002-0404
• VK-M12-g/M12 (5 m)	2112-00005-0404

- ▶ Contact sensors
- ▶ Amplifier

S2-B-5-P2

with 5-pin connector M16

Application

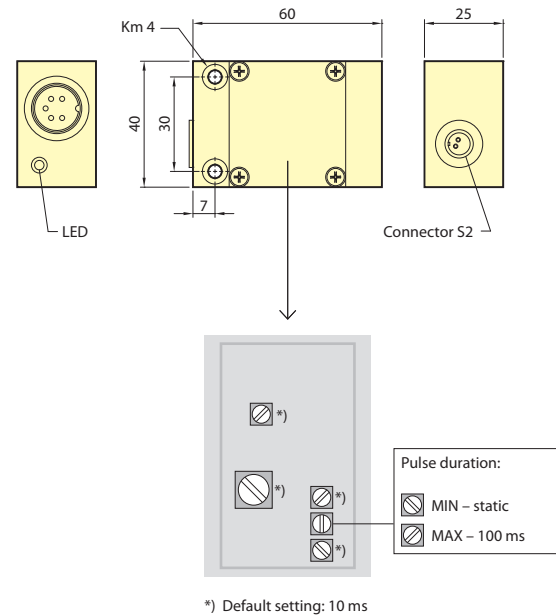
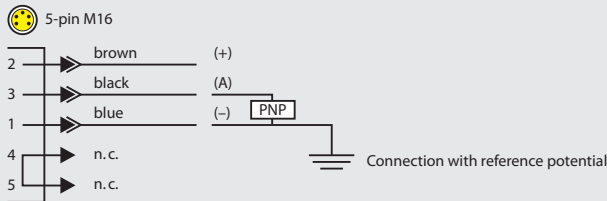
- Rivet control

Specifications

Circuit	Trigger electronics
Operating voltage	12 – 24 VDC
Current consumption	< 15 mA
Mode of operation	static, upon contact with reference potential
Output with LED	PNP
Min. time of contact	0.3 ms
Contact resistance	< 3 KΩ at 24 VDC
Load current	200 mA short-circuit proof
Pulse length	10 ms or internally adjustable
Frequency	max. 1 KHz, depending on pulse length
Temperature range	0 °C – 60 °C (Amplifier), 0 °C – 150 °C (Sensor)
EMC according to 2004/108/EG	EN 61000... C€
System of protection	IP 60



Pin configuration



Article	Order No.
Amplifier 5-pin M16: S2-B-5-P2	2000-00008-0114

Accessories (more accessories see chapter K11)

Article	Order No.
Connection cable:	
• VK-D/F-St-A (2 m)	2105-00002-0600
• VK-D/F-St-A (5 m)	2105-00005-0600
Extension cable 5/6-pin M16:	
• VK-D/D (2 m)	2104-00002-0606
• VK-D/D (5 m)	2104-00005-0606

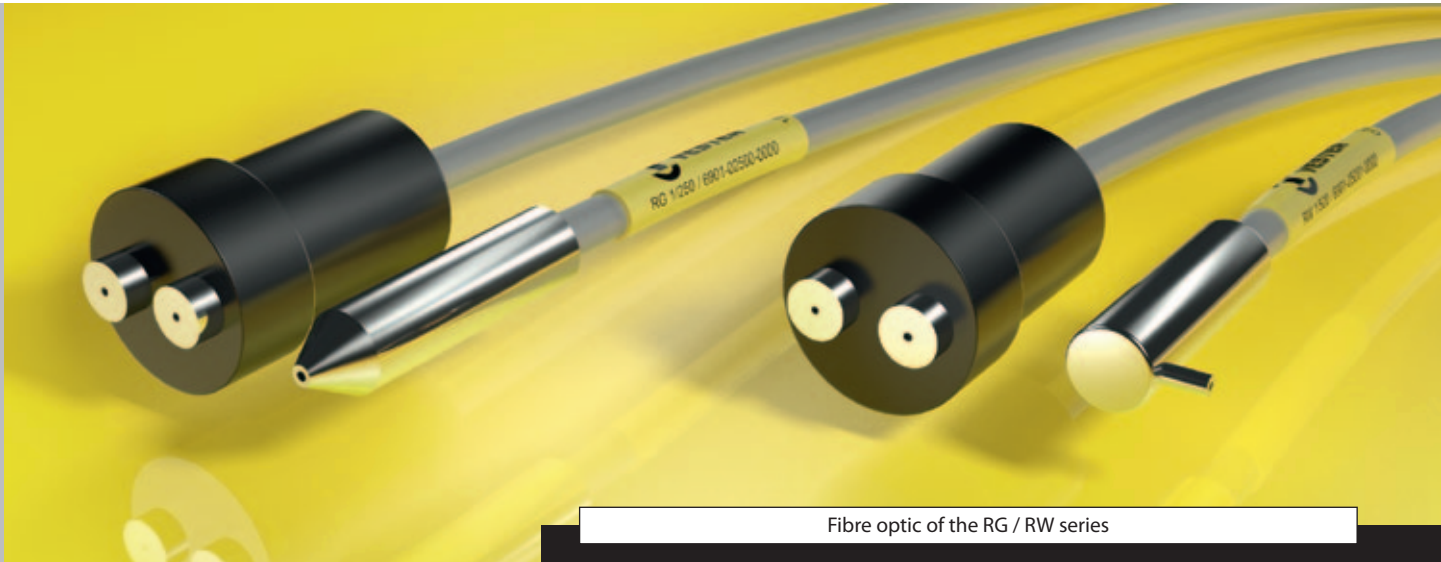
Fibre optics, reflex scanners, amplifiers

K9

Fibre optics are available in many sizes with appropriate scanning ranges and cable lengths.

Due to their compact designs and dimensions they are particularly suitable where space is scarce or for applications with high ambient temperatures.

Laser reflex scanners of the LRT series with background suppression and large scanning range ensure safe and stable scans. Easy setup with visible laser light.



Fibre optic of the RG / RW series



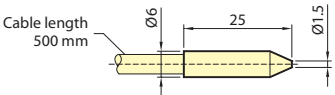
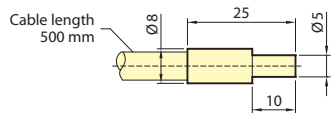
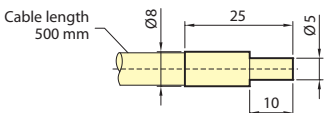
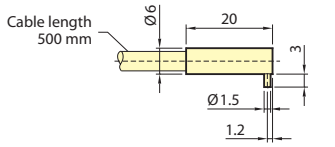
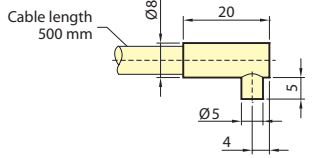
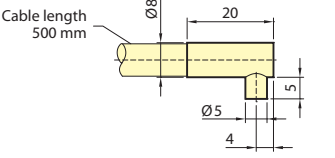
Chopped light amplifier W-R-4-P2 with adapter for fibre optics support



Laser reflex scanner of the LRT series with red light laser for easy setup procedures

- ▶ Fibre optics, reflex scanners
- ▶ Fibre optics

RG / RW series

Sensor type	Scanning range ¹⁾	Order No.	Drawing
RG 1/500	2 – 15 mm	6901-05000-0000	
RG 2/500	20 – 150 mm	6902-05000-0000	
RG 3/500	30 – 250 mm	6903-05000-0000	
RW 1/500	2 – 15 mm	6901-05001-0000	
RW 2/500	15 – 100 mm	6902-05001-0000	
RW 3/500	15 – 125 mm	6903-05001-0000	

1) Related to Kodak paper white mat, 200 g/sqm.
Other fibre lengths (250, 750, 1000 mm) on request.

Specifications

Reduction factor for scan range	metal glossy: 1, 2 – 3 / rusty: 0.2 – 0.6
Temperature range	-10 °C bis +250 °C

Accessories (more accessories see chapter K11)

Article	Order No.
Chopped light amplifier:	
• W-R-5-P2 5-pin	2000-00000-0064
• W-R-4-P2 4-pin	2000-00000-4064

- ▶ Fibre optics, reflex scanners
- ▶ Chopped light amplifier

W-R-4-P2

with 4-pin connector M12

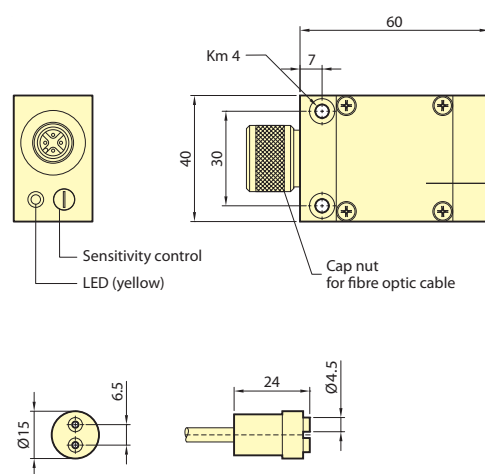
Application

- Amplifier for all fibre optics of the RG/RW series

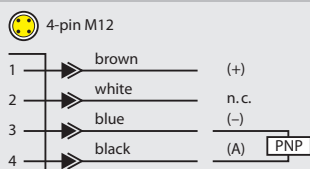
Specifications

Circuit	Chopped light trigger
Operating voltage	12 – 24 VDC
Current consumption	70 mA
Mode of operation	static / dynamic
Pulse extension	max. 100 ms
Sensitivity	with 270° pot
Output with LED	PNP ¹⁾
Function	bright / dark function
Load current	200 mA short-circuit proof
Corrective factor for scan range	metal glossy: 1, 2 – 3 / rusty: 0.2 – 0.6
Frequency	4 KHz
Temperature range	0 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... CEE
System of protection	IP 64

1) NPN amplifier on request



Pin configuration



Article

Order No.

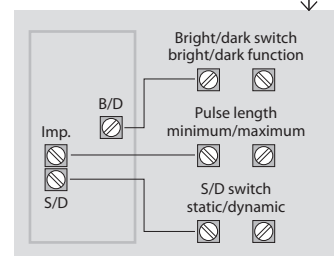
Amplifier 4-pin M12: W-R-4-P2	2000-00000-4064
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Accessories (more accessories see chapter K11)

Article

Order No.

Connection cable 5 m:	
• VK-M12-5-g	2112-00005-0500
• VK-M12-5-w	2112-00005-1500
Extension cable 4-pin M12:	
• VK-M12-g/M12 (2 m)	2112-00002-0404
• VK-M12-g/M12 (5 m)	2112-00005-0404



- ▶ Fibre optics, reflex scanners
- ▶ Chopped light amplifier

W-R-5-P2

with 5-pin connector M16

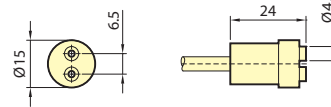
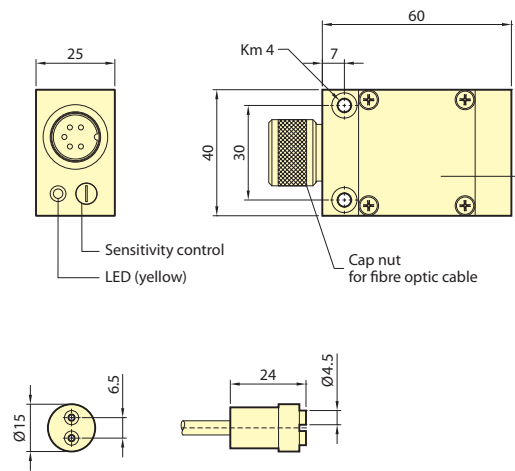
Application

- Amplifier for all fibre optics of the RG/RW series

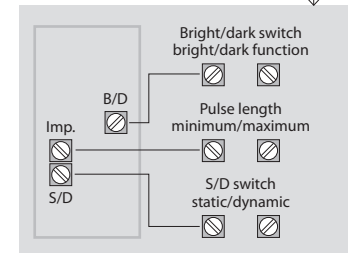
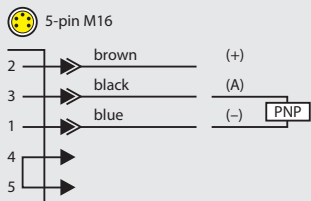
Specifications

Circuit	Chopped light trigger
Operating voltage	12 – 24 VDC
Current consumption	70 mA
Mode of operation	static / dynamic
Pulse extension	max. 100 ms
Sensitivity	with 270° pot
Output with LED	PNP ¹⁾
Function	bright / dark function
Load current	200 mA short-circuit proof
Corrective factor for scan range	metal glossy: 1, 2 – 3 / rusty: 0.2 – 0.6
Frequency	4 KHz
Temperature range	0 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... C E
System of protection	IP 64

1) NPN amplifier on request



Pin configuration



Article	Order No.
Amplifier 5-pin M16: W-R-5-P2	2000-00000-0064

Accessories (more accessories see chapter K11)

Article	Order No.
Connection cable 5/6-pin M16 :	
• VK-D/F-St-A (2 m)	2105-00002-0600
• VK-D/F-St-A (5 m)	2105-00005-0600
Extension cable 5/6-pin M16:	
• VK-D/D (2 m)	2104-00002-0606
• VK-D/D (5 m)	2104-00005-0606

- ▶ Fibre optics, reflex scanners
- ▶ Laser reflex scanners

LRT series

with 4-pin connector M8

Application

- Laser reflex scanners with background suppression



Specifications

Circuit	Laser chopped light trigger
Wavelength	650 nm, red light
Light spot diameter	0.5 mm in focus (35 mm)
Laser output power	< 1 mW, laser class 2

Caution! Never look directly into laser beam!

Operating voltage	10 – 30 VDC
Current consumption	< 30 mA
Mode of operation	static
Sensitivity	Teach-in
Output yellow LED	PNP ¹⁾
Function	bright / dark function
Load current	100 mA short-circuit proof
Stability indicator	LED green
Frequency	1 KHz
Temperature range	0 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... CE
System of protection	IP 67

1) NPN amplifier on request

Scanning range 20 – 60 mm

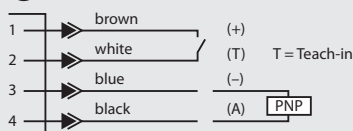
Related to Kodak grey card 90 % reflection

Correction factor for:

- metal glossy 1.2 ... 1.6
- aluminium, black anodised 1.2 ... 1.8

Pin configuration

4-pin M8



Article

Order No.

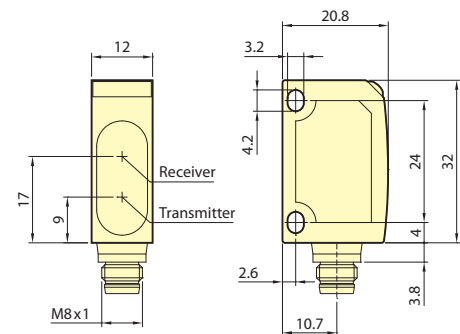
Laser reflex scanners:	
LRT 6K/150	6501-00000-0004

Accessories (more accessories see chapter K11)

Article

Order No.

Connection cable 3 m:	
• VK-M8-4-w	2111-00003-1400



- ▶ Fibre optics, reflex scanners
- ▶ Laser reflex scanners

LRT series

with 4-pin connector M12

Application

- Laser reflex scanners with background suppression



Specifications

Circuit	Laser chopped light trigger
Wavelength	660 nm, red light
Light spot diameter	see scanning range table
Laser output power	< 1 mW, laser class 2

Caution! Never look directly into laser beam!

Operating voltage	10 – 30 VDC
Current consumption	< 50 mA
Mode of operation	static
Sensitivity	Potentiometer
Output yellow LED	PNP ¹⁾
Function	bright / dark function
Load current	200 mA short-circuit proof
Stability indicator	LED red
Frequency	2.5 KHz
Temperature range	0 °C – 45 °C
EMC according to 2004/108/EG	EN 61000... CE
System of protection	IP 67

1) NPN amplifier on request

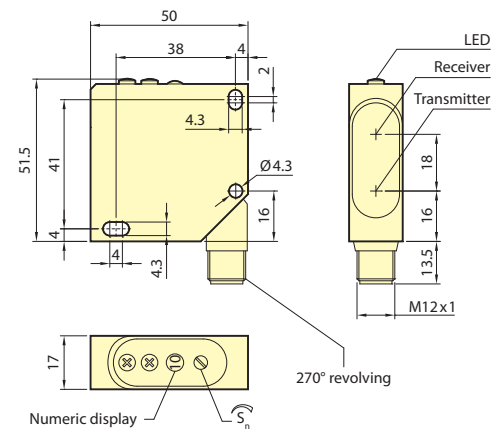
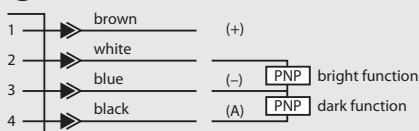
Scanning range [mm]	30	50	60	80	100	150	200	300
Light spot [mm]	LRT 26K/150	1.8	0.7	0.1	1.1	2.5		
	LRT 26K/300	5x1.8			4x1.5		3.8x1.2	3x1

Correction factor for...

• metal glossy	1.2 ... 1.6
• aluminium, black anodised	1.2 ... 1.8

Pin configuration

4-pin M12



Article Order No.

Laser reflex scanners:	
• LRT 26K/150	6501-00000-0002
• LRT 26K/300	6501-00000-0003

Accessories (more accessories see chapter K11)

Article Order No.

Connection cable 5 m:	
• VK-M12-5-g	2112-00005-0500
• VK-M12-5-w	2112-00005-1500

Sensors with 0 – 10 V analogue output for metrological applications

K10

Sensors with an analogue output are increasingly used for high-quality and at the same time manageable metrological applications, wherever space is limited or robust sensors in a difficult ambiance are required, e.g. for applications inside or close by the stamping tool.



For the precise feed control fork light barriers of the PSA series with cleaning nozzles are qualified well. For measuring the “BDC” and also for an analogue “double sheet control” inside the tool inductive analogue sensors are primarily used. Both sensor types can be combined with the VCA 400 analogue controller, an inexpensive subsystem for the analogue signal pre-processing in combination with already existing process monitoring systems.



Analogue controller VCA 400



Fork light barrier PSA-10-15-08/R/AV-4



Inductive analogue sensor ISS-20-30-1-A

- ▶ Sensors with 0–10 V analogue output for metrological applications
- ▶ Infrared fork light barriers with separate amplifier

PSA 8 mm series

with 4-pin connector M12

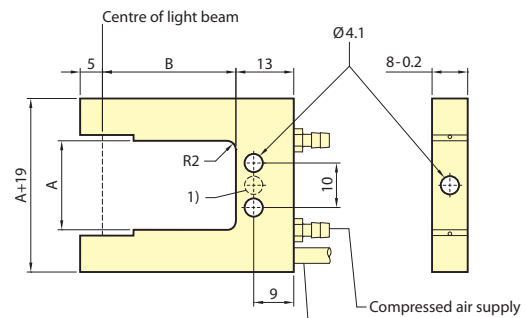
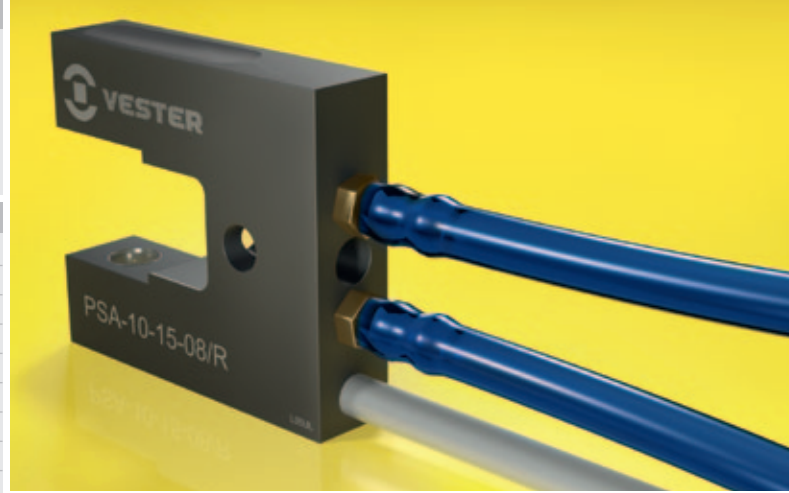
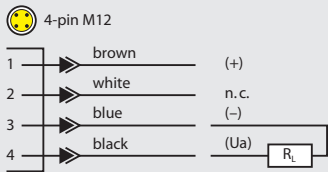
Application

- Fork light barriers with cleaning nozzles and analogue amplifier: e.g. for metrological applications inside the stamping tool

Specifications

Circuit	Amplifier with analogue output
Operating voltage	24 VDC ± 10 %
Current consumption	< 80 mA
Mode of operation	static
Output U _a	0 – 10 V, Idle speed U _a = 11.5 V
Current output (optional)	0 – 20 mA
Load resistance R _L	> 1 KΩ
Measuring range	see table
Repeatability	≤ 4 % (from U _a max.)
Linearity error	≤ 3 % (from U _a max.)
Temperature range	20 °C – 50 °C
EMC according to 2004/108/EG	EN 61000... C E
System of protection	IP 65

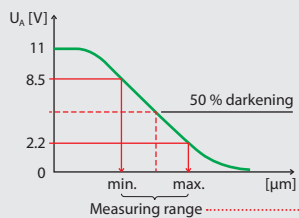
Pin configuration



1) Central bore Ø 4.1 for A ≤ 10
The bore Ø 4.1 with spacing 10 will be omitted here

A [mm]:	10	10	20	30
B [mm]:	15	30	30	30

Output characteristic



Measuring range [µm]

Fork width A [mm]	Aperture [mm]		
	0.8	1.0	1.4
10	250	300	500
20	250	300	500
30	300	350	500

Amplifier AV-4 with analogue output



Article

Order No.

Fork light barrier with cleaning nozzles:

PSA-10-15-08/R/AV-4	6331-10008-4177
PSA-10-15-10/R/AV-4	6331-10010-4177
PSA-10-15-14/R/AV-4	6331-10014-4177
PSA-10-30-08/R/AV-4	6332-10008-4177
PSA-10-30-10/R/AV-4	6332-10010-4177
PSA-10-30-14/R/AV-4	6332-10014-4177
PSA-20-30-08/R/AV-4	6334-10008-4177
PSA-20-30-10/R/AV-4	6334-10010-4177
PSA-20-30-14/R/AV-4	6334-10014-4177
PSA-30-30-08/R/AV-4	6336-10008-4177
PSA-30-30-10/R/AV-4	6336-10010-4177
PSA-30-30-14/R/AV-4	6336-10014-4177

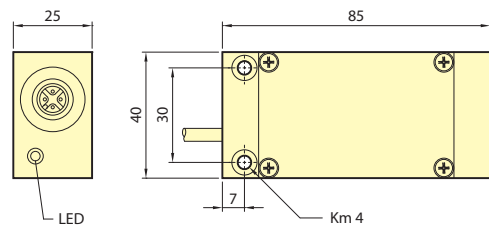
Accessories (more accessories see chapter K11)

Article

Order No.

Connection cable 5 m (with free cable end):

• VK-M12-5-g	2112-00005-0500
• VK-M12-5-w	2112-00005-1500



- ▶ Sensors with 0 – 10 V analogue output for metrological applications
- ▶ Infrared fork light barriers with separate amplifier

PSA 8 mm series

with 5-pin connector M16

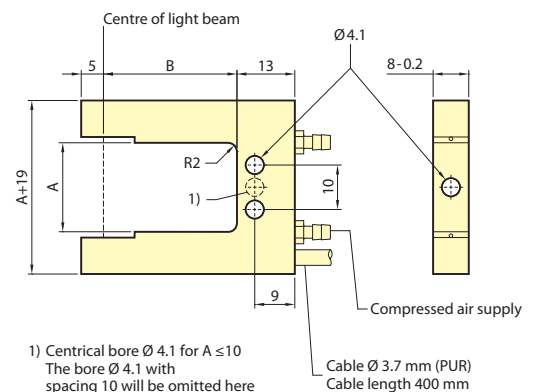
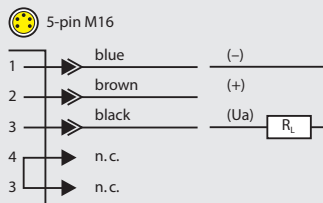
Application

- Fork light barriers with cleaning nozzles and analogue amplifier: e.g. for metrological applications inside the stamping tool

Specifications

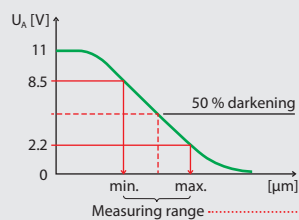
Circuit	Amplifier with analogue output
Operating voltage	24 VDC ± 10 %
Current consumption	< 80 mA
Mode of operation	static
Output U _a	0 – 10 V, Idle speed U _a = 11.5 V
Current output (optional)	0 – 20 mA
Load resistance R _L	> 1 KΩ
Measuring range	see table
Repeatability	≤ 4 % (from U _a max.)
Linearity error	≤ 3 % (from U _a max.)
Temperature range	20 °C – 50 °C
EMC according to 2004/108/EG	EN 61000... CE
System of protection	IP 65

Pin configuration



A [mm]:	10	10	20	30
B [mm]:	15	30	30	30

Output characteristic



Measuring range [µm]

Fork width A [mm]	Aperture [mm]		
	0.8	1.0	1.4
10	250	300	500
20	250	300	500
30	300	350	500

Amplifier AV-5 with analogue output



Article

Order No.

Fork light barrier with cleaning nozzles:

PSA-10-15-08/R/AV-5	6331-10008-0177
PSA-10-15-10/R/AV-5	6331-10010-0177
PSA-10-15-14/R/AV-5	6331-10014-0177
PSA-10-30-08/R/AV-5	6332-10008-0177
PSA-10-30-10/R/AV-5	6332-10010-0177
PSA-10-30-14/R/AV-5	6332-10014-0177
PSA-20-30-08/R/AV-5	6334-10008-0177
PSA-20-30-10/R/AV-5	6334-10010-0177
PSA-20-30-14/R/AV-5	6334-10014-0177
PSA-30-30-08/R/AV-5	6336-10008-0177
PSA-30-30-10/R/AV-5	6336-10010-0177
PSA-30-30-14/R/AV-5	6336-10014-0177

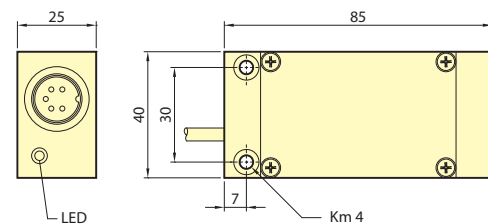
Accessories (more accessories see chapter K11)

Article

Order No.

Connection cable (with free cable end):

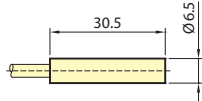
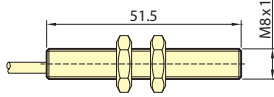
• VK-D/F-St-A (2 m)	2105-00002-0600
• VK-D/F-St-A (5 m)	2105-00005-0600



- ▶ Sensors with 0 – 10 V analogue output for metrological applications
- ▶ Inductive analogue sensors

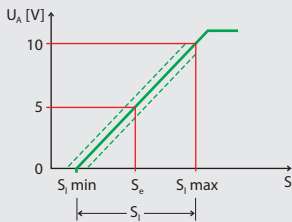
IS-A series

with free cable end

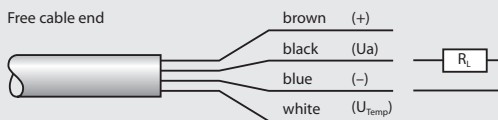
Sensor type	Linearity range S_l flush	Order No.	Drawing
IS-6,5-30-1,5-A	0.5 – 2 mm Rated operating distance $S_e = 1.25$ mm (ST37)	6606-30120-0000	 with temperature output
IS-M8-51-1-A	0.5 – 1.5 mm Rated operating distance $S_e = 1$ mm (ST37)	6608-51100-0000	

Specifications

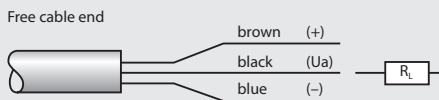
Operating voltage	24 VDC \pm 10 %
Output voltage U_a	0 – 10 VDC
Load resistance R_L	> 5 k Ω
Limit frequency	1 KHz
Max. temperature drift at S_l	\pm 5 % (from U_a max.)
Linearity error	\pm 3 % (from U_a max.)
Repeatability for IS-6,5-30-1,5-A	\leq 3 % (from U_a max.)
Temperature range	10 °C – 60° C
EMC according to 2004/108/EG	EN 61000... C ϵ
System of protection	IP 67



Cable output (IS-6,5-30-1,5-A)



Cable output (IS-M8-51-1-A)



Accessories (more accessories see chapter K11)

Article	Order No.
Analogue controller VCA 400 (Connection to VCA 400 with 3-pole M8 connector)	4440-00010-0000

- ▶ Sensors with 0 – 10 V analogue output for metrological applications
- ▶ Inductive analogue sensors

ISS-A series

with 3-in connector M8

Application

- Double sheet control
- Measuring inside the stamping tool

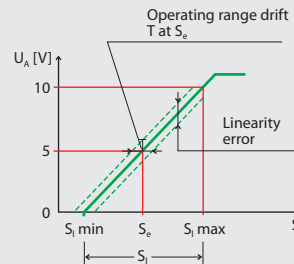
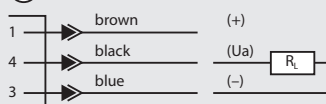
Specifications

Circuit	Analogue amplifier
Operating voltage	24 VDC ± 10 %
Output voltage U_a	0 – 10 VDC
Load resistance R_L	5 k Ω min.
Limit frequency	1 KHz
Linearity range S_i	0.5 – 2 mm / flush mountable
Max. temperature drift at S_i	± 5 % (from U_a max.)
Linearity error	± 3 % (from U_a max.)
Repeatability	≤ 3 % (from U_a max.)
Rated operating distance S_e	1.25 mm, mit ST37
Max. operating range drift T at S_e	± 0.125 mm
Temperature range	10 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... CE
System of protection	IP 67

Instruction: Rated operating distance $S_e = 1.25$ mm with covering in BDC (Reference: ST37).

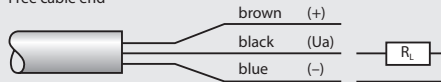
Pin configuration

3-pin M8



Cable output

Free cable end



Article

Order No.

with 3-pin connector M8:

• ISS-20-30-1-A 6620-30151-0000

with cable output:

• IS-20-30-1-A 6620-30150-0000

Accessories (more accessories see chapter K11)

Article

Order No.

Analogue controller VCA 400 4440-00010-0000

Connection cable on VCA 400:

• VK-M8-g/M8-g (1 m) 2111-00001-0303
 • VK-M8-g/M8-g (2 m) 2111-00002-0303
 • VK-M8-w/M8-g (1 m) 2111-00001-1303
 • VK-M8-w/M8-g (2 m) 2111-00002-1303

Connection cable 5 m:

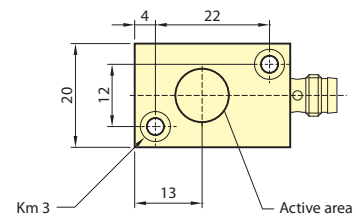
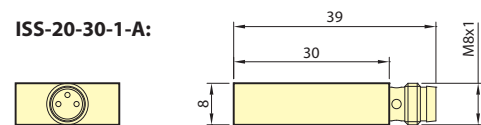
• VK-M8-g 2111-00005-0300
 • VK-M8-w 2111-00005-1300

Mounting bracket for tool:

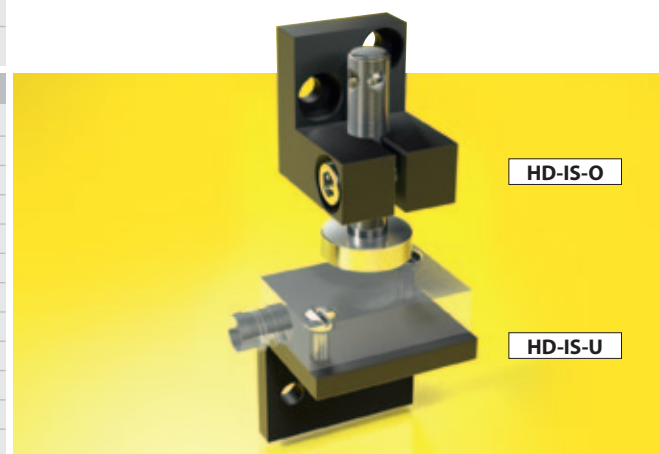
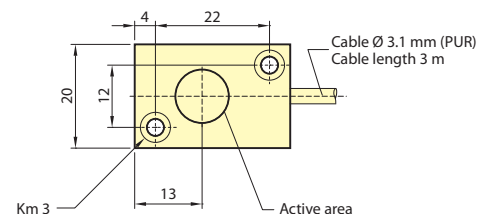
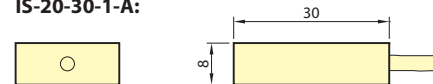
• HD-IS-O (top) 2200-00011-0000
 • HD-IS-U (bottom) 2200-00012-0000



ISS-20-30-1-A:



IS-20-30-1-A:



Application example

see VCA 400 under K10.5

- ▶ Sensors with 0 – 10 V analogue output for metrological applications
- ▶ Analogue controller

VCA 400



Application

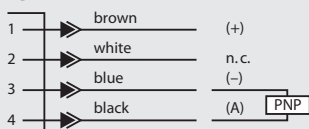
- Analogue controller VCA 400, Subsystem for controlling e.g. punch waste, double sheet and spring rupture

Specifications

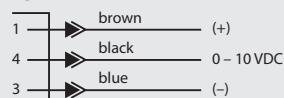
Operating voltage	24 VDC \pm 10 %
Current consumption	max. 50 mA, without sensors
Input (IN1 - 4)	0 – 10 VDC
Measuring range	1.5 mm, linear
Output (A)	PNP, max. 500 mA, short-circuit proof
Temperature range	0 °C – 60 °C
EMC according to 2004/108/EG	EN 61000... C ϵ
System of protection	IP 67

Pin configuration

4-pin M12



3-pin M8 (Sensor input IN1 ... IN4)



Article

Order No.

Analogue controller VCA 400 4440-00010-0000

Accessories (more accessories see chapter K11)

Connection cable VCA 400:

• VK-M8-g/M8-g (1 m)	2111-00001-0303
• VK-M8-g/M8-g (2 m)	2111-00002-0303
• VK-M8-w/M8-g (1 m)	2111-00001-1303
• VK-M8-w/M8-g (2 m)	2111-00002-1303

Connection cable M12 (5 m):

• VK-M12-5-g	2112-00005-0500
• VK-M12-5-w	2112-00005-1500

- 4 analogue sensor inputs (0 – 10 VDC), 4 inputs control 1 output, i.e. only 1 input is needed by tool control.
- Analogue signal pre-processing by μ -controller, PNP output for back-end tool control!
- Existing process controls can be upgraded with it.
- Easy distance setting by optical signal indicator and AUTOSSET.
- Navigation with 4 keys and display.
- Cycle-to-cycle control (actual/set value autotracking with every cycle).
- The tolerance can be set / edited individually for each sensor.
- No start of the press in case of faulty sensor adjustment.
- High monitoring accuracy.
- Navigation in German, English, French and Italian.

Separate documentation on request.

What you need besides cables!



Workshop adapter: 8-fold sensor / actuator adapter with integrated centre plug-in system WS-8



Sensor tester SPG 10

VK series

Cable type	Sensor side	Drawing	Device side	Length	Order No.
VK-M8-g	3-pin M8 straight plug		free cable end	2 m 5 m	2111-00002-0300 2111-00005-0300
VK-M8-w	3-pin M8 angled plug		free cable end	2 m 5 m	2111-00002-1300 2111-00005-1300
VK-M8-g-S (shielded)	3-pin M8 straight plug		free cable end	2 m 5 m	2111-00902-0300 2111-00905-0300
VK-M8-w-S (shielded)	3-pin M8 angled plug		free cable end	2 m 5 m	2111-00902-1300 2111-00905-1300
VK-M8-g/M8-g	3-pin M8 straight plug		3-pin M8	1 m 2 m	2111-00001-0303 2111-00002-0303
VK-M8-w/M8-g	3-pin M8 angled plug		3-pin M8	1 m 2 m	2111-00001-1303 2111-00002-1303
VK-M8-g/M12	3-pin M8		4-pin M12	2 m 5 m	2111-00002-0304 2111-00005-0304
VK-M8-g/RS	3-pin M8		5-pin M16	2 m 5 m	2111-00002-0305 2111-00005-0305
VK-M8-g-2/M12	2x 3-pin M8 split cables		4-pin M12	2 m	2111-71002-0304
VK-M8-g-2/RS	2x 3-pin M8		5-pin M16	2 m	2111-00102-0305
VK-M12-5-g	5-pin M12 straight plug		free cable end	2 m 5 m	2112-00002-0500 2112-00005-0500
VK-M12-5-w	5-pin M12 angled plug		free cable end	2 m 5 m	2112-00002-1500 2112-00005-1500
VK-M12-g/M12	4-pin M12		4-pin M12	2 m 5 m	2112-00002-0404 2112-00005-0404
VK-M12-g/RS	4-pin M12		5-pin M16	2 m 5 m	2112-00002-0405 2112-00005-0405
VK-D/F-St-A (shielded)	5/6-pin M16		free cable end	2 m 5 m	2105-00002-0600 2105-00005-0600
VK-D/D (shielded)	5/6-pin M16		5/6-pin M16	2 m 5 m	2104-00002-0606 2104-00005-0606
VK-D/M12	5/6-pin M16		4-pin M12	2 m	2119-00002-0504
Extension cables for single-beam light barriers (plug-in type) -S2					
VK-S2/4	4-pin M9		4-pin M9	1 m	2115-00001-0404
VK-S2/7	7-pin M9		7-pin M9	1 m	2115-00001-0707

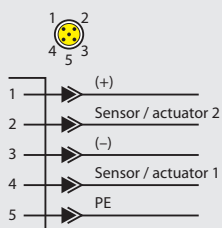
WRA-8

Specifications

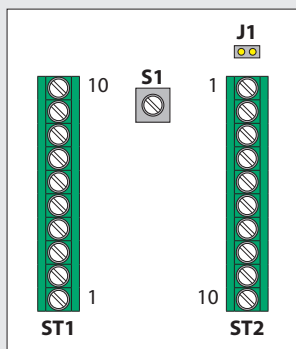
Operating voltage with green LED display	12 – 24 VDC
Operating current (total current)	max. 4 A
Operating current per sensor / actuator channel	max. 2 A
LED status indicator yellow	for signal 1 and 2
System of protection	IP65
Temperature range	0 °C – 60 °C



Pin configuration (8 x 5-pin M12)



Cable connection / internal terminal clamps



J1 Jumper GND/PE (delivery condition: jumper inserted)

S1 Mode switch for analogue applications

- ⊗ Digital applications (with LED) : default
- ⊙ Analogue applications (no LED)

ST1	Descript.	Colour	ST2	Descript.	Colour
1	+ Ub	BN	1	S/A 1/2	
2	+ Ub	GY-PK	2	S/A 2/2	
3	S/A 8/4	VT	3	S/A 3/2	
4	S/A 7/4	BK	4	S/A 4/2	
5	S/A 6/4	RT	5	S/A 5/2	
6	S/A 5/4	PK	6	S/A 6/2	
7	S/A 4/4	GY	7	S/A 7/2	
8	S/A 3/4	YE	8	S/A 8/2	
9	S/A 2/4	GN	9	GND	RT-BU/BU
10	S/A 1/4	WH	10	PE	

Article

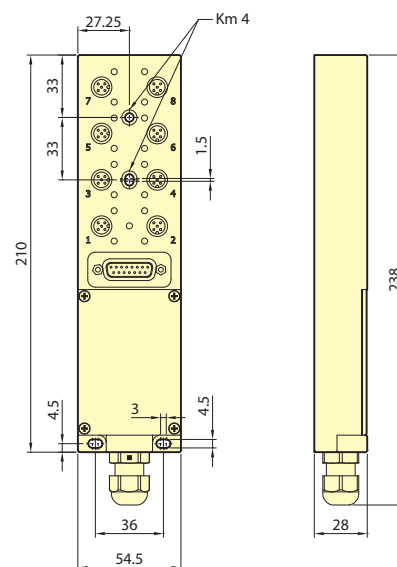
Workshop adapters WRA-8

Order No.

4145-18600-0000

Accessories

Connection cable on request



The workshop adapter of the WRA-8 series is an 8-fold sensor / actuator panel with an integrated central plug-in system.

Up to 8 individual sensors or actuators can be plugged in separately or combined centrally by means of an adapter and contacted via a common connection cable.

For joining them there is an adapter – the WS-8 central tool plug-in system – available under K11.3, which may be coupled directly to the WRA-8.

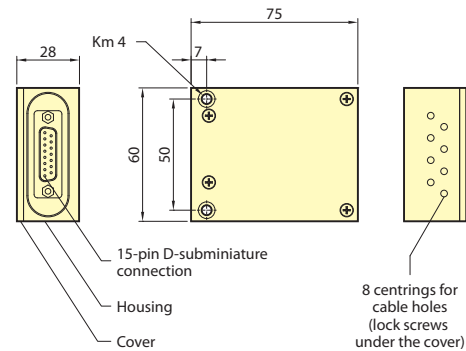
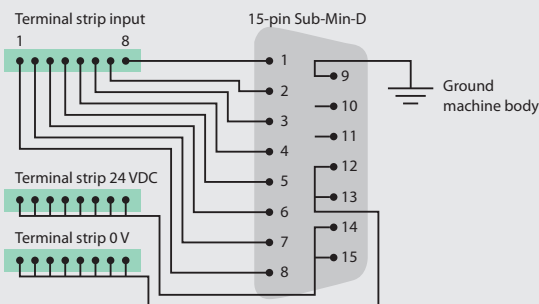
That way the wiring on a press can be reduced significantly and the connection to the tool is much more easy.

Both digital sensors (with LED display) and analogue sensors (without LED display) can be connected.

WS-8



Cable connection / internal terminal clamps



Adapter with 3 x 8-fold terminal for a permanent installation of the sensors used in the stamping tool; a maximum of 8 sensors (light barriers, inductive switches or contact sensors) can be connected.

Connection to the tool control system is made using a 15-pole D-subminiature multipin connection plus a link cable to the workshop adapter of the system.

Especially when using several sensors per tool, the WS-8 adapter can help to realise an elegant and clean solution that will bring huge time advantages with every tool change.

Article	Order No.
Adapter WS-8	2241-08000-1500

Accessories	
Article	Order No.
Connection cable VK-WS-8 (1 m)	2141-00001-1515

SPG 10



Application

- Testing or adjusting PNP/NPN sensors

Specifications

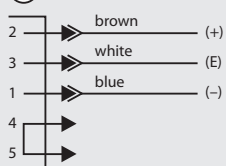
Operating voltage	230 VAC
Sensor voltage	24 VDC
Max. power consumption	appr. 400 mA
Temperature range	0 °C – 60 °C

Control panel:

- 1 Status LED
- 2 Plug socket for sensors with a 5- or 6-pin connector
- 3 Activation check (important only for Vester control unit)
- 4 Connecting terminal for sensors with free cable end
- 5 Volume control for piezo sound transducer
- 6 Piezo sound transducer

Pin configuration

6-pin M16 (pin 6 not assigned)

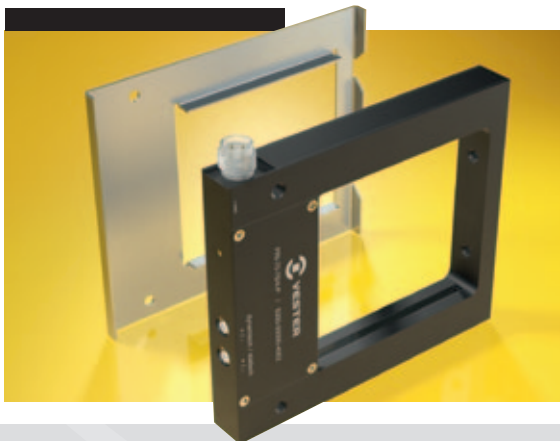
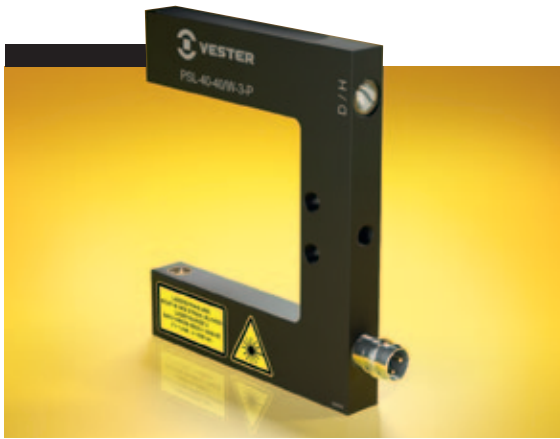


Article

SPG 10

Order No.

4410-00000-0000



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