

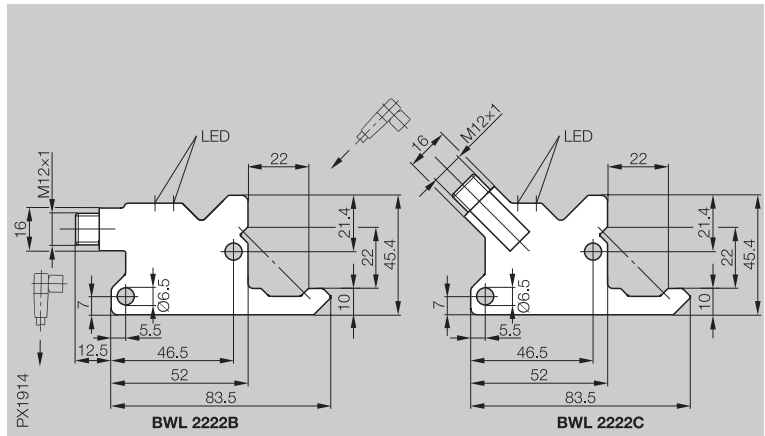
# BALLUFF

## **BWL Angle Sensors** ... for harsh industrial applications



Series	BWL 2222
Optical axis	<b>22 mm/22 mm</b>

The Balluff BWL angle sensor is a high-performance thru-beam sensor for harsh industrial applications. Its housing is rugged and offers a variety of mounting variations. Objects are reliably detected even under extremely difficult conditions. An intense infrared beam emitter ensure a high degree of function reserve. This product represents an elegant solution to a variety of practical problems. Various form factors are available for versatility.



### Angle Sensor

PNP	BWL 2222B-002-S4	BWL 2222C-002-S4
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### Electrical data

Supply voltage $U_B$	10...30 V DC
Ripple	15 %
No-load supply current $I_0$ max.	$\leq 35$ mA
Output	PNP
Output current	$\leq 200$ mA
Switching type	dark-on
Voltage drop $U_d$ at $I_e$	$\leq 2.5$ V

### Optical data

Emitter, light type	Infrared (880 nm)
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### Time data

On-time delay	100 ms
Response time	$\leq 0.5$ ms
Switching frequency $f$	1000 Hz

### Displays

Power indicator	LED green
Output function indicator	LED yellow

### Mechanical data

Dimensions	45.4x83.5x10.7 mm
Connection	M12 connector, 4-pin
Recommended connector	BKS-19/BKS-20
Housing material	Corrosion-resistant steel
Lens material	PMMA
Weight	120 g

### Ambient data

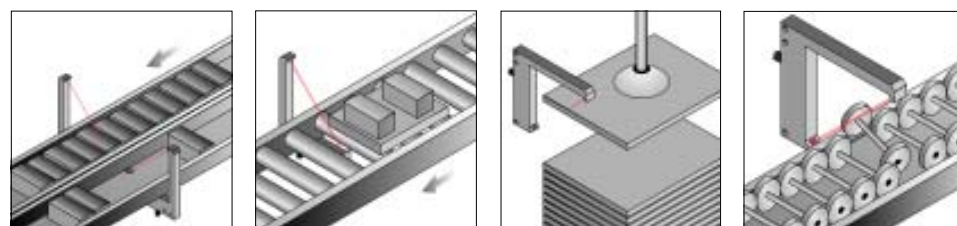
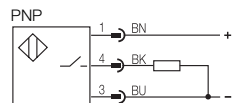
Degree of protection per IEC 60529	IP 67
Protected against polarity reversal	yes
Short circuit protected	yes
Ambient temperature range $T_a$	-10...+60 °C
Permissible ambient light per	EN 60947-5-2



### Applications

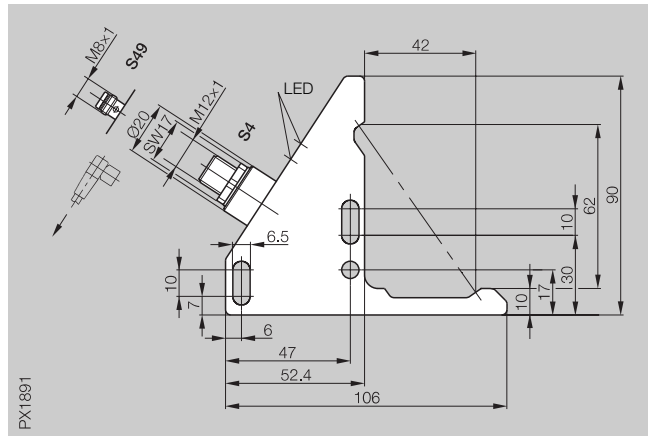
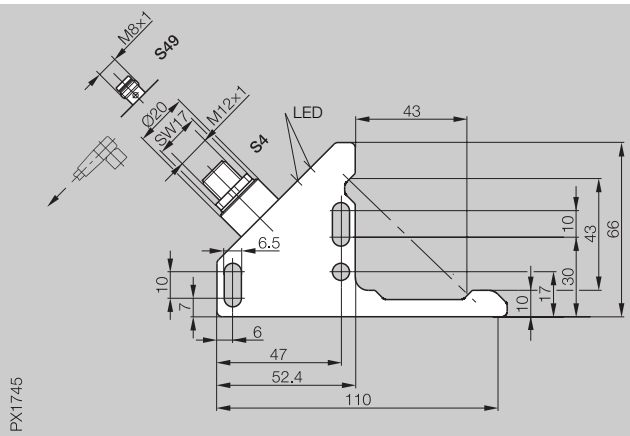
- Assembly and handling
- Robotics
- Position and orientation control

### Wiring diagram



BWL 4241A  
43 mm/43 mm

BWL 4260A  
42 mm/62 mm



BWL 4241A-001-S4

BWL 4241A-001-S49

BWL 4260A-001-S4

BWL 4260A-001-S49

10...30 V DC  
15 %  
≤ 35 mA  
PNP  
≤ 200 mA  
dark-on  
≤ 2.5 V

Infrared (880 nm)

100 ms  
≤ 0.5 ms  
1000 Hz

LED green  
LED yellow

66×110×10.7 mm

M12 connector, 4-pin      M8 connector, 3-pin  
BKS-\_19/BKS-\_20      BKS-\_48/BKS-\_49

Corrosion-resistant steel

PMMA  
150 g

IP 67  
yes  
yes  
-10...+60 °C  
EN 60947-5-2

10...30 V DC  
15 %  
≤ 35 mA  
PNP  
≤ 200 mA  
dark-on  
≤ 2.5 V

Infrared (880 nm)

100 ms  
≤ 0.5 ms  
1000 Hz

LED green  
LED yellow

90×106×10.7 mm

M12 connector, 4-pin      M8 connector, 3-pin  
BKS-\_19/BKS-\_20      BKS-\_48/BKS-\_49

Corrosion-resistant steel

PMMA  
150 g

IP 67  
yes  
yes  
-10...+60 °C  
EN 60947-5-2

**2.2**



Connector Type	<b>BKS-B 19</b> straight	<b>BKS-B 20</b> angle	<b>BKS-S 19</b> straight	<b>BKS-S 20</b> angle
Application	S 4 sensors	S 4 sensors	S 4 sensors	S 4 sensors
No LED, normally-open	BKS-B 19-1-__	BKS-B 20-1-__	BKS-S 19-1-__	BKS-S 20-1-__
With LED, normally-open PNP	BKS-B 19-4-__	BKS-B 20-4-__	BKS-S 19-4-__	BKS-S 20-4-__
Manufacturer	Balluff	Balluff	Lumberg	Lumberg
Supply voltage U <sub>B</sub>	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
Cable	molded-on PVC/PUR	molded-on PVC/PUR	molded-on PVC/PUR	molded-on PVC/PUR
No. of wires × conductor cross section	3 × 0.34 mm <sup>2</sup>	3 × 0.34 mm <sup>2</sup>	3 × 0.34 mm <sup>2</sup>	3 × 0.34 mm <sup>2</sup>
Degree of protection per IEC 60529	IP 67	IP 67	IP 68 nach BWN Pr. 20	IP 68 nach BWN Pr. 20
Ambient temperature range T <sub>a</sub>	-25...+85 °C	-25...+85 °C	-25...+70 °C	-25...+70 °C
Connector Type	<b>BKS-B 48</b> straight	<b>BKS-B 49</b> angle	<b>BKS-S 48</b> straight	<b>BKS-S 49</b> angle
Application	S 49 sensors	S 49 sensors	S 49 sensors	S 49 sensors
No LED, normally-open	BKS-B 48-1-__	BKS-B 49-1-__	BKS-S 48-1-__	BKS-S 49-1-__
With LED, normally-open PNP	BKS-B 48-4-__	BKS-B 49-4-__	BKS-S 48-4-__	BKS-S 49-4-__
Manufacturer	Balluff	Balluff	Lumberg	Lumberg
Supply voltage U <sub>B</sub>	10...30 V DC	10...30 V DC	10...30 V DC	10...30 V DC
Cable	molded-on PVC/PUR	molded-on PVC/PUR	molded-on PVC/PUR	molded-on PVC/PUR
No. of wires × conductor cross section	3 × 0.25 mm <sup>2</sup>	3 × 0.25 mm <sup>2</sup>	3 × 0.34 mm <sup>2</sup>	3 × 0.34 mm <sup>2</sup>
Degree of protection per IEC 60529	IP 67	IP 67	IP 67	IP 67
Ambient temperature range T <sub>a</sub>	-20...+85 °C	-20...+85 °C	-25...+90 °C	-25...+90 °C

Standard cable lengths with **connectors**.

Please add the length to the ordering code!

PVC, standard length 3 m = 03

PUR, standard length 3 m = PU-03

