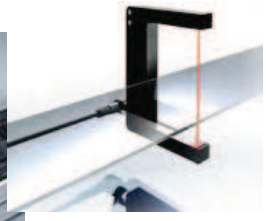
Courtesy of CMA/Flodyne/Hydradyne ▪ Motion Control ▪ Hydraulic ▪ Pneumatic ▪ Electrical ▪ Mechanical ▪ (800) 426-5480 ▪ www.cmafh.com

Through-beam sensors are unsurpassed in their accuracy, their ability to distinguish small parts and fine detail and their operating reliability. However, they do take some time to install and configure. This does not apply to fork sensors, since the emitter and receiver are self-contained in one housing. Nevertheless, their accuracy, ability to distinguish small parts and fine detail and their operating reliability is outstanding. Laser fork sensors achieve the best results in these kinds of tasks. Balluff laser through-beam fork sensors are ideally used for precisely positioning and reliably detecting fast-moving processes and small parts. This opens a vast range of applications in robotics and automation.



Features
- Integrated unit
- Rugged metal housing
- Glass optical surface
- High resolution
- Available in red light, laser light, IR or pin point
- Identical housing dimensions for all light types
- 10×10 mm fork arm, even for large fork openings
- Stackable
- Laser Class 1

Applications
- Parts sensing on conveyor and feed belts
- Label sensing on transparent backing material
- Part dimension checking
- Counting parts in assembly lines
- Tool break monitoring
- Position checking
- Feed control on automatic assembly equipment
- Checking for completeness (e.g. connector pins)
- Level monitoring of containers
- Handling and assembly

Type		Fork opening	Resolution	Light type					Output		Switching type		Switching frequency	U_S	Connection		Features		Page
Ordering code / Part number				Red light	Red light, pin point	Laser light	Infrared	Red and green light	PNP	NPN	Light switching	Dark switching		10...30 V DC	M8 plug, 3-pin	M8 plug, 4-pin	Transparency detection	Fluid detection	
Fork sensors																			
BGL001W	BGL 5A-001-S49	5 mm	0.3 mm	■					■		■	■	3 kHz	■	■				350
BGL001Y	BGL 5A-002-S49	5 mm	0.3 mm	■						■	■	■	3 kHz	■	■				350
BGL001Z	BGL 5A-005-S49	5 mm	0.2 mm		■				■		■	■	5 kHz	■	■				354
BGL0020	BGL 5A-006-S49	5 mm	0.2 mm		■					■	■	■	5 kHz	■	■				354
BGL0021	BGL 5A-007-S49	5 mm	0.8 mm				■		■		■	■	3 kHz	■	■				358
BGL0022	BGL 5A-008-S49	5 mm	0.8 mm				■			■	■	■	3 kHz	■	■				358
BGL0001	BGL 10A-001-S49	10 mm	0.3 mm	■					■		■	■	3 kHz	■	■				350
BGL0002	BGL 10A-002-S49	10 mm	0.3 mm	■						■	■	■	3 kHz	■	■				350
BGL0003	BGL 10A-005-S49	10 mm	0.2 mm		■				■		■	■	5 kHz	■	■				354
BGL0004	BGL 10A-006-S49	10 mm	0.2 mm		■					■	■	■	5 kHz	■	■				354
BGL0005	BGL 10A-007-S49	10 mm	0.8 mm				■		■		■	■	3 kHz	■	■				358
BGL0006	BGL 10A-008-S49	10 mm	0.8 mm				■			■	■	■	3 kHz	■	■				358
BGL000R	BGL 20A-001-S49	20 mm	0.3 mm	■					■		■	■	1.5 kHz	■	■				351
BGL000T	BGL 20A-002-S49	20 mm	0.3 mm	■						■	■	■	1.5 kHz	■	■				351
BGL000U	BGL 20A-005-S49	20 mm	0.2 mm		■				■		■	■	5 kHz	■	■				355
BGL000W	BGL 20A-006-S49	20 mm	0.2 mm		■					■	■	■	5 kHz	■	■				355
BGL000Y	BGL 20A-007-S49	20 mm	0.8 mm				■		■		■	■	2 kHz	■	■				359
BGL000Z	BGL 20A-008-S49	20 mm	0.8 mm				■			■	■	■	2 kHz	■	■				359
BGL0016	BGL 30A-001-S49	30 mm	0.3 mm	■					■		■	■	1.5 kHz	■	■				351
BGL0018	BGL 30A-002-S49	30 mm	0.3 mm	■						■	■	■	1.5 kHz	■	■				351
BGL0019	BGL 30A-003-S49	30 mm	50 µm			■			■		■	■	5 kHz	■	■				362
BGL001A	BGL 30A-004-S49	30 mm	50 µm			■				■	■	■	5 kHz	■	■				362
BGL001C	BGL 30A-005-S49	30 mm	0.2 mm		■				■		■	■	5 kHz	■	■				355

Courtesy of CMA/Flodyne/Hydradyne ▪ Motion Control ▪ Hydraulic ▪ Pneumatic ▪ Electrical ▪ Mechanical ▪ (800) 426-5480 ▪ www.cmafh.com

Photoelectric Special Sensors

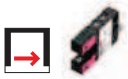
Fork sensors BGL
Product overview

Type		Fork opening	Resolution	Light type					Output		Switching type		Switching frequency	U_S	Connection		Features		Page
Ordering code / Part number				Red light	Red light, pin point	Laser light	Infrared	Red and green light	PNP	NPN	Light switching	Dark switching		10...30 V DC	M8 plug, 3-pin	M8 plug, 4-pin	Transparency detection	Fluid detection	
Fork sensors																			
BGL001E	BGL 30A-006-S49	30 mm	0.2 mm		■					■	■	■	5 kHz	■	■				355
BGL001F	BGL 30A-007-S49	30 mm	0.8 mm				■		■		■	■	2 kHz	■	■				359
BGL001H	BGL 30A-008-S49	30 mm	0.8 mm				■			■	■	■	2 kHz	■	■				359
BGL003J	BGL 30A-011-S49	30 mm	0.6 mm				■		■		■	■	2 kHz	■	■			■	364
BGL003K	BGL 30A-012-S49	30 mm	0.6 mm				■			■	■	■	2 kHz	■	■			■	364
BGL001J	BGL 50A-001-S49	50 mm	0.4 mm	■					■		■	■	1.5 kHz	■	■				351
BGL001L	BGL 50A-002-S49	50 mm	0.4 mm	■						■	■	■	1.5 kHz	■	■				351
BGL001M	BGL 50A-003-S49	50 mm	80 µm			■			■		■	■	5 kHz	■	■				363
BGL001N	BGL 50A-004-S49	50 mm	80 µm			■				■	■	■	5 kHz	■	■				363
BGL001P	BGL 50A-005-S49	50 mm	0.3 mm		■				■		■	■	5 kHz	■	■				355
BGL001R	BGL 50A-006-S49	50 mm	0.3 mm		■					■	■	■	5 kHz	■	■				355
BGL001T	BGL 50A-007-S49	50 mm	1.0 mm				■		■		■	■	2 kHz	■	■				359
BGL001U	BGL 50A-008-S49	50 mm	1.0 mm				■			■	■	■	2 kHz	■	■				359
BGL0023	BGL 80A-001-S49	80 mm	0.4 mm	■					■		■	■	1.5 kHz	■	■				352
BGL0024	BGL 80A-002-S49	80 mm	0.4 mm	■						■	■	■	1.5 kHz	■	■				352
BGL0025	BGL 80A-003-S49	80 mm	0.1 mm			■			■		■	■	5 kHz	■	■				363
BGL0026	BGL 80A-004-S49	80 mm	0.1 mm			■				■	■	■	5 kHz	■	■				363
BGL0027	BGL 80A-005-S49	80 mm	0.4 mm		■				■		■	■	5 kHz	■	■				356
BGL0028	BGL 80A-006-S49	80 mm	0.4 mm		■					■	■	■	5 kHz	■	■				356
BGL0029	BGL 80A-007-S49	80 mm	1.2 mm				■		■		■	■	2 kHz	■	■				360
BGL002A	BGL 80A-008-S49	80 mm	1.2 mm				■			■	■	■	2 kHz	■	■				360
BGL002T	BGL 80A-009-S49	80 mm	50 µm			■			■		■	■	5 kHz	■	■		■		365
BGL002U	BGL 80A-010-S49	80 mm	50 µm			■				■	■	■	5 kHz	■	■		■		365
BGL003L	BGL 80A-011-S49	80 mm	0.8 mm				■		■		■	■	2 kHz	■	■			■	365
BGL003M	BGL 80A-012-S49	80 mm	0.8 mm			■				■	■	■	2 kHz	■	■	■		■	365
BGL0007	BGL 120A-001-S49	120 mm	0.5 mm	■					■		■	■	1.5 kHz	■	■				352
BGL0008	BGL 120A-002-S49	120 mm	0.5 mm	■						■	■	■	1.5 kHz	■	■				352
BGL0009	BGL 120A-003-S49	120 mm	0.15 mm			■			■		■	■	5 kHz	■	■				363
BGL000A	BGL 120A-004-S49	120 mm	0.15 mm			■				■	■	■	5 kHz	■	■				363
BGL000C	BGL 120A-005-S49	120 mm	0.5 mm		■				■		■	■	5 kHz	■	■				356
BGL000E	BGL 120A-006-S49	120 mm	0.5 mm		■					■	■	■	5 kHz	■	■				356
BGL000F	BGL 120A-007-S49	120 mm	1.5 mm				■		■		■	■	1 kHz	■	■				360
BGL000H	BGL 120A-008-S49	120 mm	1.5 mm				■			■	■	■	1 kHz	■	■				360
BGL000J	BGL 180A-001-S49	180 mm	0.6 mm	■					■		■	■	1.5 kHz	■	■				353
BGL000K	BGL 180A-002-S49	180 mm	0.6 mm	■						■	■	■	1.5 kHz	■	■				353
BGL000L	BGL 180A-005-S49	180 mm	0.6 mm		■				■		■	■	5 kHz	■	■				357
BGL000M	BGL 180A-006-S49	180 mm	0.6 mm		■					■	■	■	5 kHz	■	■				357
BGL000N	BGL 180A-007-S49	180 mm	1.5 mm				■		■		■	■	2 kHz	■	■				361
BGL000P	BGL 180A-008-S49	180 mm	1.5 mm				■			■	■	■	2 kHz	■	■				361
BGL0010	BGL 220A-001-S49	220 mm	0.6 mm	■					■		■	■	1.5 kHz	■	■				353
BGL0011	BGL 220A-002-S49	220 mm	0.6 mm	■						■	■	■	1.5 kHz	■	■				353
BGL0012	BGL 220A-005-S49	220 mm	0.6 mm		■				■		■	■	5 kHz	■	■				357
BGL0013	BGL 220A-006-S49	220 mm	0.6 mm		■					■	■	■	5 kHz	■	■				357
BGL0014	BGL 220A-007-S49	220 mm	1.5 mm				■		■		■	■	2 kHz	■	■				361
BGL0015	BGL 220A-008-S49	220 mm	1.5 mm				■			■	■	■	2 kHz	■	■				361

Courtesy of CMA/Flodyne/Hydradyne ▪ Motion Control ▪ Hydraulic ▪ Pneumatic ▪ Electrical ▪ Mechanical ▪ (800) 426-5480 ▪ www.cmafh.com

Fork sensors BGL
5A, 10A

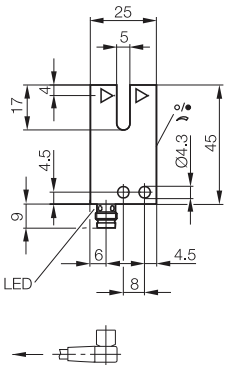
Fork Sensors
Red light

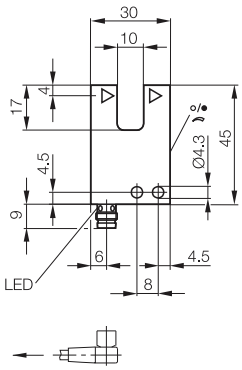


Series		**BGL**	**BGL**
Fork opening		**5 mm**	**10 mm**
Fork depth		**17 mm**	**17 mm**
PNP NO/NC	Part number	BGL 5A-001-S49	BGL 10A-001-S49
NPN NO/NC	Part number	BGL 5A-002-S49	BGL 10A-002-S49
Supply voltage U_B		10...30 V DC	10...30 V DC
No-load supply current I_0 max.		≤ 35 mA	≤ 35 mA
Output current		200 mA	200 mA
Switching type		Light/dark switching (selectable)	Light/dark switching (selectable)
Polarity reversal/short-circuit protected		Yes/Yes	Yes/Yes
Settings		Potentiometer, 270°	Potentiometer, 270°
Emitter, light type		LED, red light	LED, red light
Wavelength		640 nm	640 nm
Resolution (smallest discernible part)		0.3 mm	0.3 mm
Repeat accuracy		20 µm	20 µm
Switching hysteresis		≤ 0.1 mm	≤ 0.1 mm
Output function indicator		Yellow LED	Yellow LED
Response time		0.166 ms	0.166 ms
Switching frequency		3 kHz	3 kHz
Degree of protection as per IEC 60529		IP 67	IP 67
Ambient temperature T_a		–10...+60 °C	–10...+60 °C
Ambient light limit according to		EN 60947-5-2	EN 60947-5-2
Material	Housing	GD-Zn	GD-Zn
	Optical surface	Glass	Glass
Connection		M8 connector, 3-pin	M8 connector, 3-pin

Connector orientation

Ordering codes on pages 348-349.

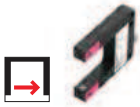




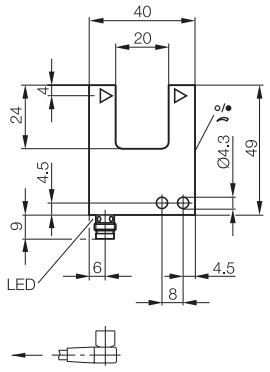
Courtesy of CMA/Flodyne/Hydradyne ▪ Motion Control ▪ Hydraulic ▪ Pneumatic ▪ Electrical ▪ Mechanical ▪ (800) 426-5480 ▪ www.cmafh.com

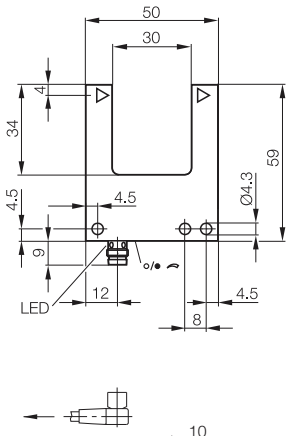
Photoelectric Special Sensors

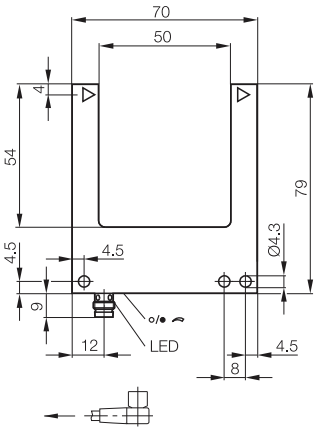
Fork sensors BGL
20A, 30A, 50A

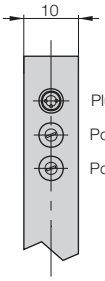


BGL	**BGL**	**BGL**
20 mm	**30 mm**	**50 mm**
24 mm	**34 mm**	**54 mm**
BGL 20A-001-S49	BGL 30A-001-S49	BGL 50A-001-S49
BGL 20A-002-S49	BGL 30A-002-S49	BGL 50A-002-S49
10...30 V DC	10...30 V DC	10...30 V DC
≤ 35 mA	≤ 35 mA	≤ 35 mA
200 mA	200 mA	200 mA
Light/dark switching (selectable)	Light/dark switching (selectable)	Light/dark switching (selectable)
Yes/Yes	Yes/Yes	Yes/Yes
Potentiometer, 270°	Potentiometer, 270°	Potentiometer, 270°
LED, red light	LED, red light	LED, red light
640 nm	640 nm	640 nm
0.3 mm	0.3 mm	0.4 mm
20 µm	20 µm	40 µm
≤ 0.1 mm	≤ 0.1 mm	≤ 0.15 mm
Yellow LED	Yellow LED	Yellow LED
0.33 ms	0.33 ms	0.33 ms
1.5 kHz	1.5 kHz	1.5 kHz
IP 67	IP 67	IP 67
–10...+60 °C	–10...+60 °C	–10...+60 °C
EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
GD-Zn	GD-Zn	GD-Zn
Glass	Glass	Glass
M8 connector, 3-pin	M8 connector, 3-pin	M8 connector, 3-pin







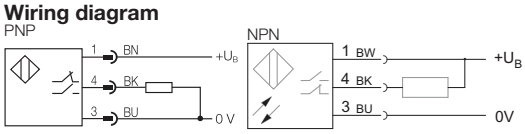


Plug, LED output function indicator

Potentiometer light/dark switching

Potentiometer, sensitivity

Wiring diagram

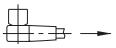


Courtesy of CMA/Flodyne/Hydradyne ▪ Motion Control ▪ Hydraulic ▪ Pneumatic ▪ Electrical ▪ Mechanical ▪ (800) 426-5480 ▪ www.cmafh.com

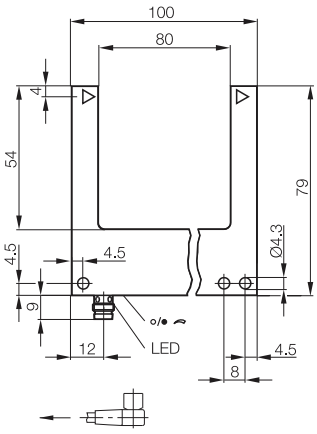
Fork sensors BGL
80A, 120A

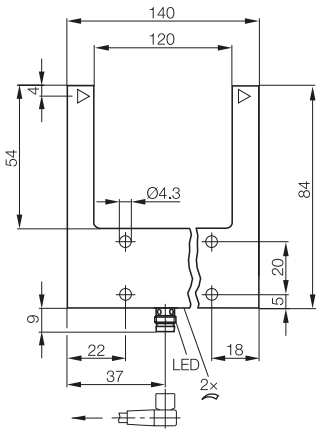
Fork Sensors Red Light

Series		**BGL**	**BGL**
Fork opening		**80 mm**	**120 mm**
Fork depth		**54 mm**	**54 mm**
PNP NO/NC	Part number	BGL 80A-001-S49	BGL 120A-001-S49
NPN NO/NC	Part number	BGL 80A-002-S49	BGL 120A-002-S49
Supply voltage U_B		10...30 V DC	10...30 V DC
No-load supply current I_0 max.		≤ 35 mA	≤ 35 mA
Output current		200 mA	200 mA
Switching type		Light/dark switching (selectable)	Light/dark switching (selectable)
Polarity reversal/short-circuit protected		Yes/Yes	Yes/Yes
Settings		Potentiometer, 270°	Potentiometer, 270°
Emitter, light type		LED, red light	LED, red light
Wavelength		640 nm	640 nm
Resolution (smallest discernible part)		0.4 mm	0.5 mm
Repeat accuracy		60 µm	80 µm
Switching hysteresis		≤ 0.2 mm	≤ 0.2 mm
Output function indicator		Yellow LED	Yellow LED
Response time		0.33 ms	0.33 ms
Switching frequency		1.5 kHz	1.5 kHz
Degree of protection as per IEC 60529		IP 67	IP 67
Ambient temperature T_a		–10...+60 °C	–10...+60 °C
Ambient light limit according to		EN 60947-5-2	EN 60947-5-2
Material	Housing	GD-Zn	GD-Zn
	Optical surface	Glass	Glass
Connection		M8 connector, 3-pin	M8 connector, 3-pin


Connector orientation

Ordering codes on pages 348-349.

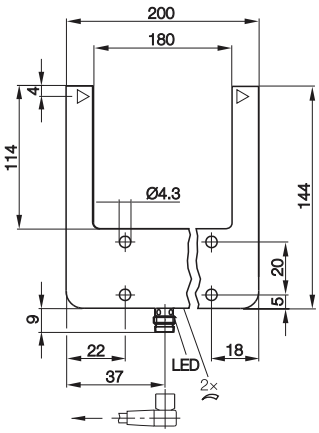


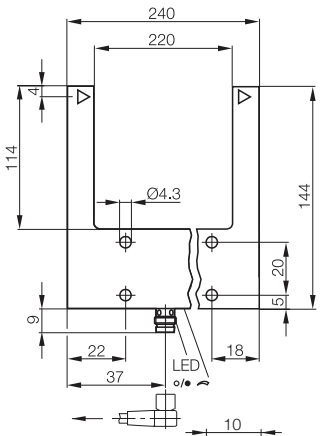


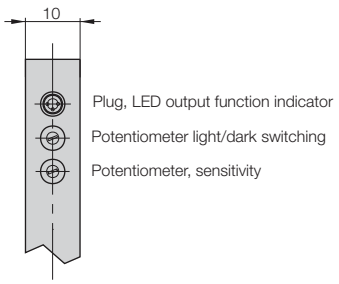
Courtesy of CMA/Flodyne/Hydradyne ▪ Motion Control ▪ Hydraulic ▪ Pneumatic ▪ Electrical ▪ Mechanical ▪ (800) 426-5480 ▪ www.cmafh.com

Fork sensors BGL 180A, 220A

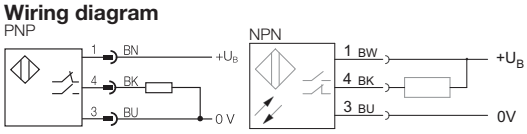
	BGL	**BGL**
	180 mm	**220 mm**
	114 mm	**114 mm**
	BGL 180A-001-S49	BGL 220A-001-S49
	BGL 180A-002-S49	BGL 220A-002-S49
	10...30 V DC	10...30 V DC
	≤ 35 mA	≤ 35 mA
	200 mA	200 mA
	Light/dark switching (selectable)	Light/dark switching (selectable)
	Yes/Yes	Yes/Yes
	Potentiometer, 270°	Potentiometer, 270°
	LED, red light	LED, red light
	640 nm	640 nm
	0.6 mm	0.6 mm
	80 µm	80 µm
	≤ 0.2 mm	≤ 0.2 mm
	Yellow LED	Yellow LED
	0.33 ms	0.33 ms
	1.5 kHz	1.5 kHz
	IP 67	IP 67
	–10...+60 °C	–10...+60 °C
	EN 60947-5-2	EN 60947-5-2
	GD-Zn	GD-Zn
	Glass	Glass
	M8 connector, 3-pin	M8 connector, 3-pin







Wiring diagram

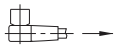


Courtesy of CMA/Flodyne/Hydradyne ▪ Motion Control ▪ Hydraulic ▪ Pneumatic ▪ Electrical ▪ Mechanical ▪ (800) 426-5480 ▪ www.cmafh.com

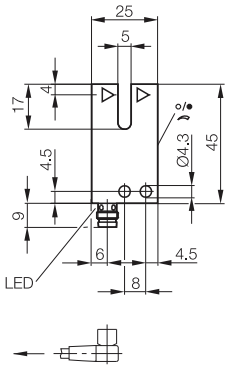
Fork sensors BGL
5A, 10A

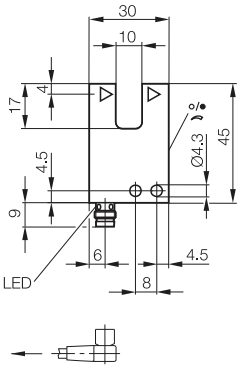
Fork Sensors
Pin Point

Series		**BGL**	**BGL**
Fork opening		**5 mm**	**10 mm**
Fork depth		**17 mm**	**17 mm**
PNP NO/NC	Part number	BGL 5A-005-S49	BGL 10A-005-S49
NPN NO/NC	Part number	BGL 5A-006-S49	BGL 10A-006-S49
Supply voltage U_B		10...30 V DC	10...30 V DC
No-load supply current I_0 max.		≤ 35 mA	≤ 35 mA
Output current		200 mA	200 mA
Switching type		Light/dark switching (selectable)	Light/dark switching (selectable)
Polarity reversal/short-circuit protected		Yes/Yes	Yes/Yes
Settings		Potentiometer, 270°	Potentiometer, 270°
Emitter, light type		Red light, pin point	Red light, pin point
Wavelength		640 nm	640 nm
Resolution (smallest discernible part)		0.2 mm	0.2 mm
Repeat accuracy		20 µm	20 µm
Switching hysteresis		≤ 70 µm	≤ 70 µm
Output function indicator		Yellow LED	Yellow LED
Response time		0.1 ms	0.1 ms
Switching frequency		5 kHz	5 kHz
Degree of protection as per IEC 60529		IP 67	IP 67
Ambient temperature T_a		–10...+60 °C	–10...+60 °C
Ambient light limit according to		EN 60947-5-2	EN 60947-5-2
Material	Housing	GD-Zn	GD-Zn
	Optical surface	Glass	Glass
Connection		M8 connector, 3-pin	M8 connector, 3-pin


Connector orientation

Ordering codes on pages 348-349.



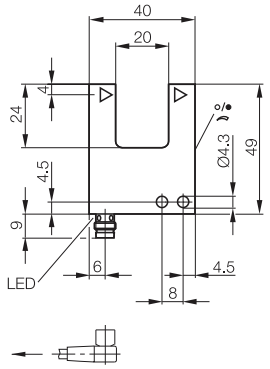


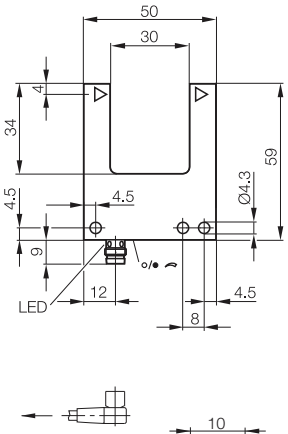
Courtesy of CMA/Flodyne/Hydradyne ▪ Motion Control ▪ Hydraulic ▪ Pneumatic ▪ Electrical ▪ Mechanical ▪ (800) 426-5480 ▪ www.cmafh.com

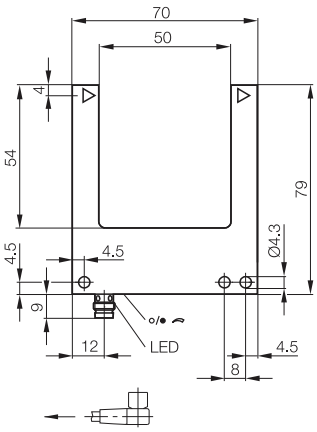
Photoelectric Special Sensors

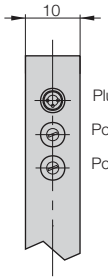
Fork sensors BGL
20A, 30A, 50A

BGL	**BGL**	**BGL**
20 mm	**30 mm**	**50 mm**
24 mm	**34 mm**	**54 mm**
BGL 20A-005-S49	BGL 30A-005-S49	BGL 50A-005-S49
BGL 20A-006-S49	BGL 30A-006-S49	BGL 50A-006-S49
10...30 V DC	10...30 V DC	10...30 V DC
≤ 35 mA	≤ 35 mA	≤ 35 mA
200 mA	200 mA	200 mA
Light/dark switching (selectable)	Light/dark switching (selectable)	Light/dark switching (selectable)
Yes/Yes	Yes/Yes	Yes/Yes
Potentiometer, 270°	Potentiometer, 270°	Potentiometer, 270°
Red light, pin point	Red light, pin point	Red light, pin point
640 nm	640 nm	640 nm
0.2 mm	0.2 mm	0.3 mm
20 µm	20 µm	30 µm
≤ 70 µm	≤ 70 µm	≤ 0.1 mm
Yellow LED	Yellow LED	Yellow LED
0.1 ms	0.1 ms	0.1 ms
5 kHz	5 kHz	5 kHz
IP 67	IP 67	IP 67
–10...+60 °C	–10...+60 °C	–10...+60 °C
EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
GD-Zn	GD-Zn	GD-Zn
Glass	Glass	Glass
M8 connector, 3-pin	M8 connector, 3-pin	M8 connector, 3-pin







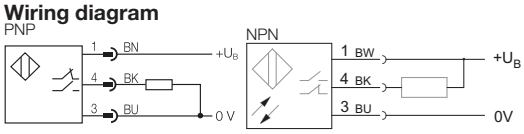


Plug, LED output function indicator

Potentiometer light/dark switching

Potentiometer, sensitivity

Wiring diagram



Courtesy of CMA/Flodyne/Hydradyne ▪ Motion Control ▪ Hydraulic ▪ Pneumatic ▪ Electrical ▪ Mechanical ▪ (800) 426-5480 ▪ www.cmafh.com

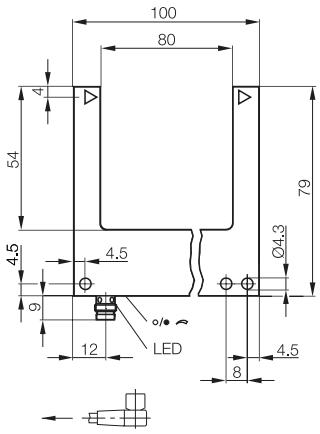
Fork sensors BGL
80A, 120A

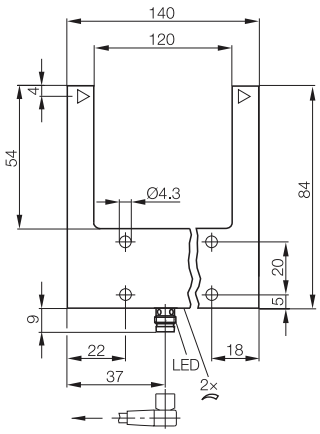
Fork Sensors
Pin Point

Series		**BGL**	**BGL**
Fork opening		**80 mm**	**120 mm**
Fork depth		**54 mm**	**54 mm**
PNP NO/NC	Part number	BGL 80A-005-S49	BGL 120A-005-S49
NPN NO/NC	Part number	BGL 80A-006-S49	BGL 120A-006-S49
Supply voltage U_B		10...30 V DC	10...30 V DC
No-load supply current I_0 max.		≤ 35 mA	≤ 35 mA
Output current		200 mA	200 mA
Switching type		Light/dark switching (selectable)	Light/dark switching (selectable)
Polarity reversal/short-circuit protected		Yes/Yes	Yes/Yes
Settings		Potentiometer, 270°	Potentiometer, 270°
Emitter, light type		Red light, pin point	Red light, pin point
Wavelength		640 nm	640 nm
Resolution (smallest discernible part)		0.4 mm	0.5 mm
Repeat accuracy		40 µm	50 µm
Switching hysteresis		≤ 0.15 mm	≤ 0.15 mm
Output function indicator		Yellow LED	Yellow LED
Response time		0.1 ms	0.1 ms
Switching frequency		5 kHz	5 kHz
Degree of protection as per IEC 60529		IP 67	IP 67
Ambient temperature T_a		–10...+60 °C	–10...+60 °C
Ambient light limit according to		EN 60947-5-2	EN 60947-5-2
Material	Housing	GD-Zn	GD-Zn
	Optical surface	Glass	Glass
Connection		M8 connector, 3-pin	M8 connector, 3-pin

Connector orientation

Ordering codes on pages 348-349.

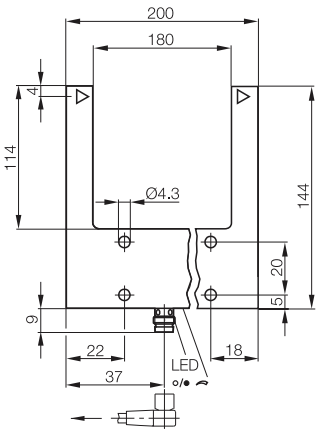


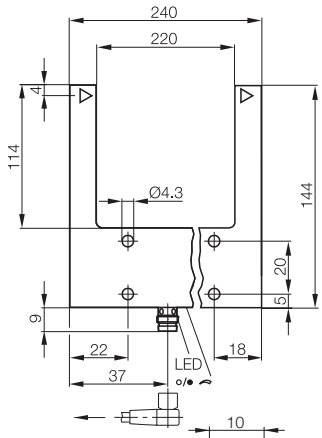


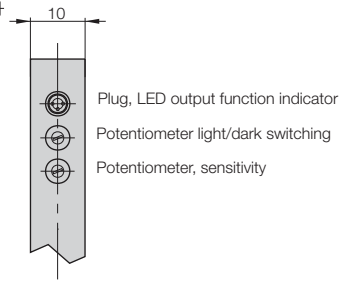
Courtesy of CMA/Flodyne/Hydradyne ▪ Motion Control ▪ Hydraulic ▪ Pneumatic ▪ Electrical ▪ Mechanical ▪ (800) 426-5480 ▪ www.cmafh.com

Fork sensors BGL 180A, 220A

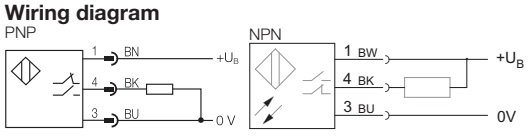
	BGL	**BGL**
	180 mm	**220 mm**
	114 mm	**114 mm**
	BGL 180A-005-S49	BGL 220A-005-S49
	BGL 180A-006-S49	BGL 220A-006-S49
	10...30 V DC	10...30 V DC
	≤ 35 mA	≤ 35 mA
	200 mA	200 mA
	Light/dark switching (selectable)	Light/dark switching (selectable)
	Yes/Yes	Yes/Yes
	Potentiometer, 270°	Potentiometer, 270°
	Red light, pin point	Red light, pin point
	640 nm	640 nm
	0.6 mm	0.6 mm
	60 µm	60 µm
	≤ 0.2 mm	≤ 0.2 mm
	Yellow LED	Yellow LED
	0.1 ms	0.1 ms
	5 kHz	5 kHz
	IP 67	IP 67
	–10...+60 °C	–10...+60 °C
	EN 60947-5-2	EN 60947-5-2
	GD-Zn	GD-Zn
	Glass	Glass
	M8 connector, 3-pin	M8 connector, 3-pin







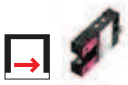
Wiring diagram



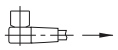
Courtesy of CMA/Flodyne/Hydradyne ▪ Motion Control ▪ Hydraulic ▪ Pneumatic ▪ Electrical ▪ Mechanical ▪ (800) 426-5480 ▪ www.cmafh.com

Fork sensors BGL
5A, 10A

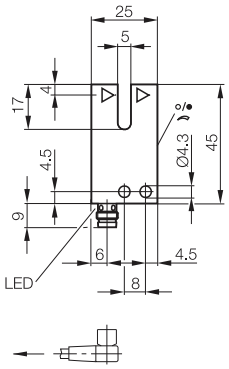
Fork Sensors Infrared

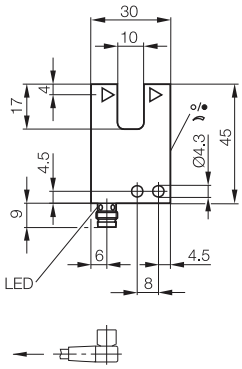


Series		**BGL**	**BGL**
Fork opening		**5 mm**	**10 mm**
Fork depth		**17 mm**	**17 mm**
PNP NO/NC	Part number	BGL 5A-007-S49	BGL 10A-007-S49
NPN NO/NC	Part number	BGL 5A-008-S49	BGL 10A-008-S49
Supply voltage U_B		10...30 V DC	10...30 V DC
No-load supply current I_0 max.		≤ 35 mA	≤ 35 mA
Output current		200 mA	200 mA
Switching type		Light/dark switching (selectable)	Light/dark switching (selectable)
Polarity reversal/short-circuit protected		Yes/Yes	Yes/Yes
Settings		Potentiometer, 270°	Potentiometer, 270°
Emitter, light type		Infrared	Infrared
Wavelength		880 nm	880 nm
Resolution (smallest discernible part)		0.8 mm	0.8 mm
Repeat accuracy		0.1 mm	0.1 mm
Switching hysteresis		≤ 0.3 mm	≤ 0.3 mm
Power-on indicator		Green LED	Green LED
Output function indicator		Yellow LED	Yellow LED
Response time		0.166 ms	0.166 ms
Switching frequency		3 kHz	3 kHz
Degree of protection as per IEC 60529		IP 67	IP 67
Ambient temperature T_a		–10...+60 °C	–10...+60 °C
Ambient light limit according to		EN 60947-5-2	EN 60947-5-2
Material	Housing	GD-Zn	GD-Zn
	Optical surface	Glass	Glass
Connection		M8 connector, 3-pin	M8 connector, 3-pin


Connector orientation

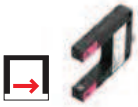
Ordering codes on pages 348-349.



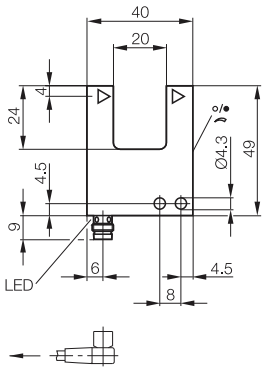


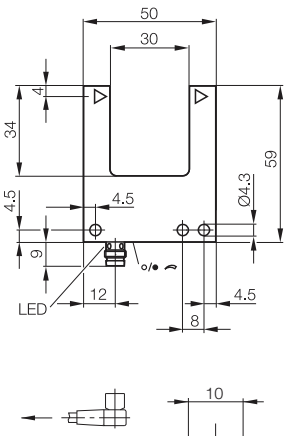
Courtesy of CMA/Flodyne/Hydradyne ▪ Motion Control ▪ Hydraulic ▪ Pneumatic ▪ Electrical ▪ Mechanical ▪ (800) 426-5480 ▪ www.cmafh.com

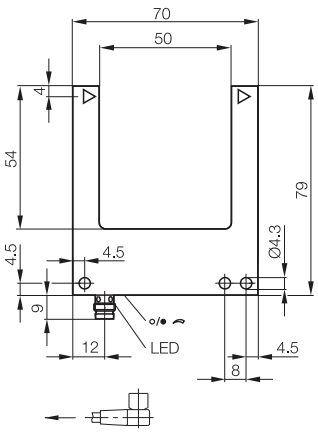
Fork sensors BGL
20A, 30A, 50A

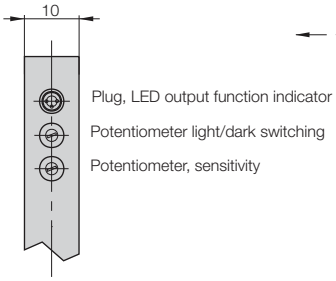


BGL	**BGL**	**BGL**
20 mm	**30 mm**	**50 mm**
24 mm	**34 mm**	**54 mm**
BGL 20A-007-S49	BGL 30A-007-S49	BGL 50A-007-S49
BGL 20A-008-S49	BGL 30A-008-S49	BGL 50A-008-S49
10...30 V DC	10...30 V DC	10...30 V DC
≤ 35 mA	≤ 35 mA	≤ 35 mA
200 mA	200 mA	200 mA
Light/dark switching (selectable)	Light/dark switching (selectable)	Light/dark switching (selectable)
Yes/Yes	Yes/Yes	Yes/Yes
Potentiometer, 270°	Potentiometer, 270°	Potentiometer, 270°
Infrared	Infrared	Infrared
880 nm	880 nm	880 nm
0.8 mm	0.8 mm	1 mm
0.1 mm	0.1 mm	0.12 mm
≤ 0.3 mm	≤ 0.3 mm	≤ 0.3 mm
Green LED	Green LED	Green LED
Yellow LED	Yellow LED	Yellow LED
0.25 ms	0.25 ms	0.25 ms
2 kHz	2 kHz	2 kHz
IP 67	IP 67	IP 67
–10...+60 °C	–10...+60 °C	–10...+60 °C
EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
GD-Zn	GD-Zn	GD-Zn
Glass	Glass	Glass
M8 connector, 3-pin	M8 connector, 3-pin	M8 connector, 3-pin

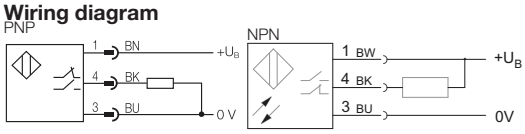








Wiring diagram

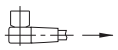


Courtesy of CMA/Flodyne/Hydradyne ▪ Motion Control ▪ Hydraulic ▪ Pneumatic ▪ Electrical ▪ Mechanical ▪ (800) 426-5480 ▪ www.cmafh.com

Fork sensors BGL 80A, 120A

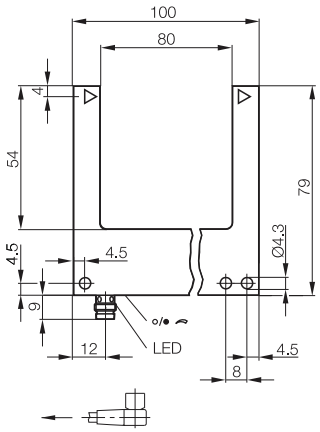
Fork Sensors Infrared

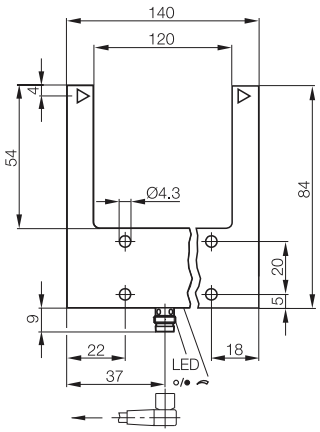
Series		**BGL**	**BGL**
Fork opening		**80 mm**	**120 mm**
Fork depth		**54 mm**	**54 mm**
PNP NO/NC	Part number	BGL 80A-007-S49	BGL 120A-007-S49
NPN NO/NC	Part number	BGL 80A-008-S49	BGL 120A-008-S49
Supply voltage U_B		10...30 V DC	10...30 V DC
No-load supply current I_0 max.		≤ 35 mA	≤ 35 mA
Output current		200 mA	200 mA
Switching type		Light/dark switching (selectable)	Light/dark switching (selectable)
Polarity reversal/short-circuit protected		Yes/Yes	Yes/Yes
Settings		Potentiometer, 270°	Potentiometer, 270°
Emitter, light type		Infrared	Infrared
Wavelength		880 nm	880 nm
Resolution (smallest discernible part)		1.2 mm	1.5 mm
Repeat accuracy		0.15 mm	0.2 mm
Switching hysteresis		≤ 0.4 mm	≤ 0.5 mm
Power-on indicator		Green LED	Green LED
Output function indicator		Yellow LED	Yellow LED
Response time		0.33 ms	0.5 ms
Switching frequency		2 kHz	1 kHz
Degree of protection as per IEC 60529		IP 67	IP 67
Ambient temperature T_a		–10...+60 °C	–10...+60 °C
Ambient light limit according to		EN 60947-5-2	EN 60947-5-2
Material	Housing	GD-Zn	GD-Zn
	Optical surface	Glass	Glass
Connection		M8 connector, 3-pin	M8 connector, 3-pin



Connector orientation

Ordering codes on pages 348-349.



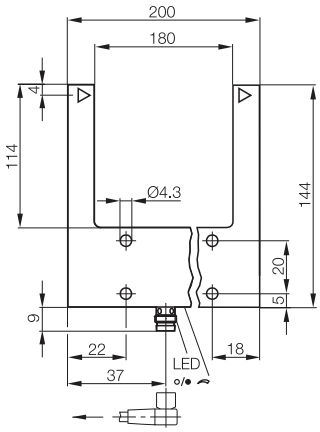


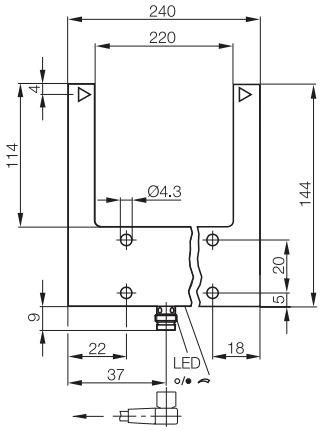
Courtesy of CMA/Flodyne/Hydradyne ▪ Motion Control ▪ Hydraulic ▪ Pneumatic ▪ Electrical ▪ Mechanical ▪ (800) 426-5480 ▪ www.cmafh.com

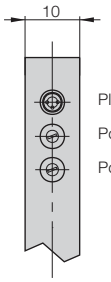
Photoelectric Special Sensors

Fork sensors BGL 180A, 220A

	BGL	**BGL**
	180 mm	**220 mm**
	114 mm	**114 mm**
	BGL 180A-007-S49	BGL 220A-007-S49
	BGL 180A-008-S49	BGL 220A-008-S49
	10...30 V DC	10...30 V DC
	≤ 35 mA	≤ 35 mA
	200 mA	200 mA
	Light/dark switching (selectable)	Light/dark switching (selectable)
	Yes/Yes	Yes/Yes
	Potentiometer, 270°	Potentiometer, 270°
	Infrared	Infrared
	880 nm	880 nm
	1.5 mm	1.5 mm
	0.2 mm	0.2 mm
	≤ 0.5 mm	≤ 0.5 mm
	Green LED	Green LED
	Yellow LED	Yellow LED
	0.25 ms	0.25 ms
	2 kHz	2 kHz
	IP 67	IP 67
	–10...+60 °C	–10...+60 °C
	EN 60947-5-2	EN 60947-5-2
	GD-Zn	GD-Zn
	Glass	Glass
	M8 connector, 3-pin	M8 connector, 3-pin





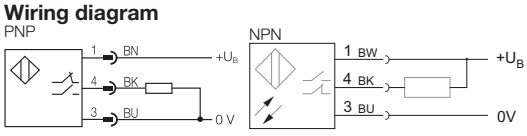


Plug, LED output function indicator

Potentiometer light/dark switching

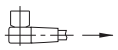
Potentiometer, sensitivity

Wiring diagram

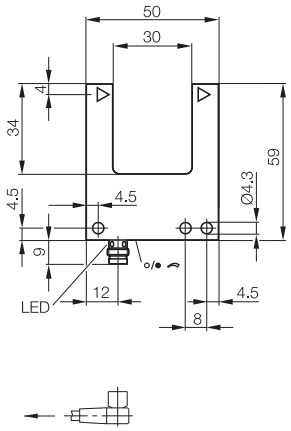


Courtesy of CMA/Flodyne/Hydradyne ▪ Motion Control ▪ Hydraulic ▪ Pneumatic ▪ Electrical ▪ Mechanical ▪ (800) 426-5480 ▪ www.cmafh.com

Series			**BGL**
Fork opening			**30 mm**
Fork depth			**34 mm**
PNP	NO/NC	Part number	BGL 30A-003-S49
NPN	NO/NC	Part number	BGL 30A-004-S49
Supply voltage U_B			10...30 V DC
No-load supply current I_0 max.			≤ 20 mA
Output current			200 mA
Switching type			Light/dark switching (selectable)
Polarity reversal/short-circuit protected			Yes/Yes
Settings			Potentiometer, 270°
Emitter, light type			Laser, red light
Wavelength			650 nm
Laser class			1
Resolution (smallest discernible part)			50 µm
Repeat accuracy			10 µm
Switching hysteresis			20 µm
Output function indicator			Yellow LED
Response time			0.1 ms
Switching frequency			5 kHz
Degree of protection as per IEC 60529			IP 67
Ambient temperature T_a			–10...+60 °C
Ambient light limit according to			EN 60947-5-2
Material		Housing	GD-Zn
		Optical surface	Glass
Connection			M8 connector, 3-pin


Connector orientation

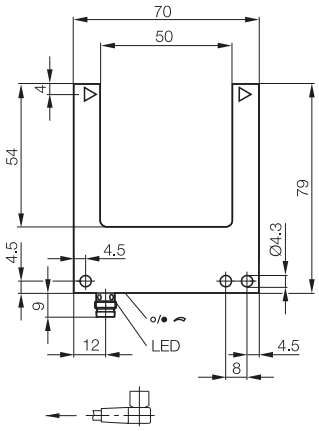
Ordering codes on pages 348-349.

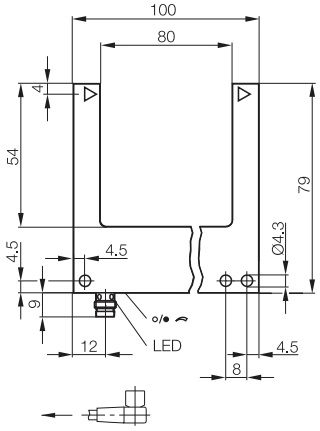


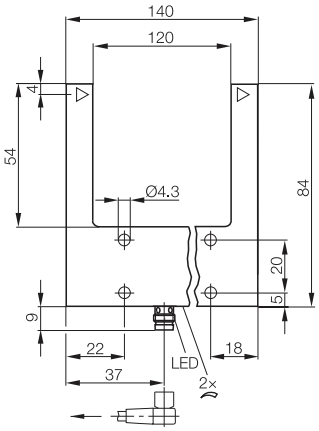
Courtesy of CMA/Flodyne/Hydradyne ▪ Motion Control ▪ Hydraulic ▪ Pneumatic ▪ Electrical ▪ Mechanical ▪ (800) 426-5480 ▪ www.cmafh.com

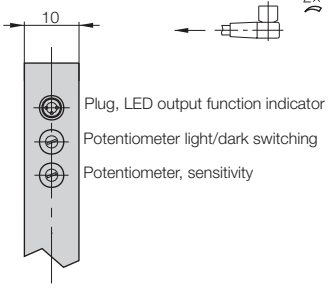
Fork sensors BGL
80A, 120A

BGL	**BGL**	**BGL**
50 mm	**80 mm**	**120 mm**
54 mm	**54 mm**	**54 mm**
BGL 50A-003-S49	BGL 80A-003-S49	BGL 120A-003-S49
BGL 50A-004-S49	BGL 80A-004-S49	BGL 120A-004-S49
10...30 V DC	10...30 V DC	10...30 V DC
≤ 20 mA	≤ 20 mA	≤ 20 mA
200 mA	200 mA	200 mA
Light/dark switching (selectable)	Light/dark switching (selectable)	Light/dark switching (selectable)
Yes/Yes	Yes/Yes	Yes/Yes
Potentiometer, 270°	Potentiometer, 270°	Potentiometer, 270°
Laser, red light	Laser, red light	Laser, red light
650 nm	650 nm	650 nm
1	1	1
80 µm	0.1 mm	0.15 mm
10 µm	10 µm	10 µm
25 µm	30 µm	50 µm
Yellow LED	Yellow LED	Yellow LED
0.1 ms	0.1 ms	0.1 ms
5 kHz	5 kHz	5 kHz
IP 67	IP 67	IP 67
–10...+60 °C	–10...+60 °C	–10...+60 °C
EN 60947-5-2	EN 60947-5-2	EN 60947-5-2
GD-Zn	GD-Zn	GD-Zn
Glass	Glass	Glass
M8 connector, 3-pin	M8 connector, 3-pin	M8 connector, 3-pin

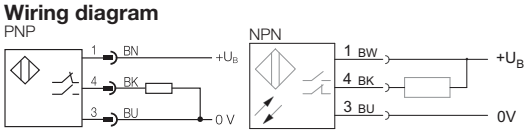






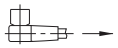


Wiring diagram

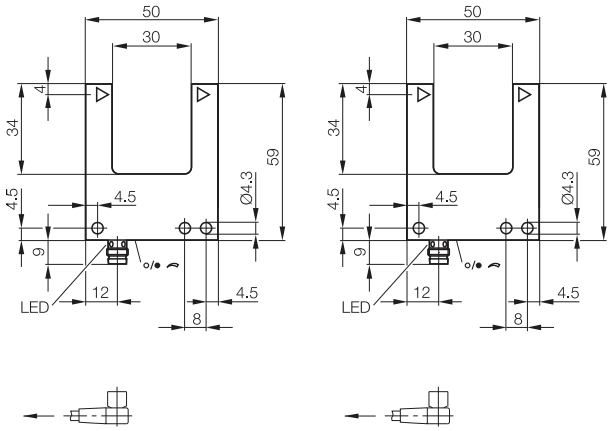


Courtesy of CMA/Flodyne/Hydradyne ▪ Motion Control ▪ Hydraulic ▪ Pneumatic ▪ Electrical ▪ Mechanical ▪ (800) 426-5480 ▪ www.cmafh.com

Series			**BGL**	**BGL**
Fork opening			**30 mm**	**30 mm**
Fork depth			**34 mm**	**34 mm**
PNP NO/NC		Part number		
NPN NO/NC	Transparency detection	Part number		
PNP NO/NC		Part number	BGL 30A-011-S49	
NPN NO/NC	Fluid detection	Part number	BGL 30A-012-S49	
Supply voltage U_B			10...30 V DC	10...30 V DC
No-load supply current I_0 max.			≤ 35 mA	≤ 35 mA
Output current			200 mA	200 mA
Switching type			Light/dark switching (selectable)	Light/dark switching (selectable)
Polarity reversal/short-circuit protected			Yes/Yes	Yes/Yes
Settings			Potentiometer, 270°	Potentiometer, 270°
Emitter, light type			Infrared	Infrared
Wavelength			1480 nm	880 nm
Resolution (smallest discernible part)			0.6 mm	0.8 mm
Repeat accuracy			0.1 mm	0.1 mm
Switching hysteresis			≤ 0.2 mm	≤ 0.3 mm
Power-on indicator			Green LED	Green LED
Output function indicator			Yellow LED	Yellow LED
Response time			0.25 ms	2.5 ms
Switching frequency			2 kHz	200 Hz
Degree of protection as per IEC 60529			IP 67	IP 67
Ambient temperature T_a			–10...+60 °C	–10...+60 °C
Ambient light limit according to			EN 60947-5-2	EN 60947-5-2
Material		Housing	GD-Zn	GD-Zn
		Optical surface	Glass	Glass
Connection			M8 connector, 3-pin	M8 connector, 3-pin


Connector orientation

Ordering codes on pages 348-349.

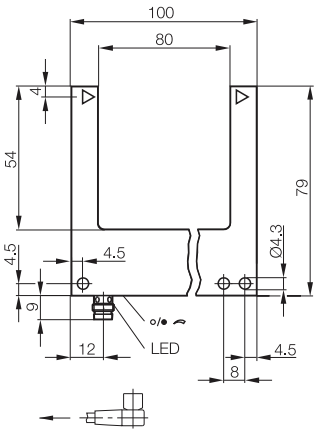


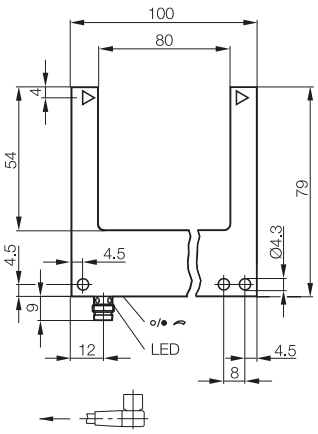
Courtesy of CMA/Flodyne/Hydradyne ▪ Motion Control ▪ Hydraulic ▪ Pneumatic ▪ Electrical ▪ Mechanical ▪ (800) 426-5480 ▪ www.cmafh.com

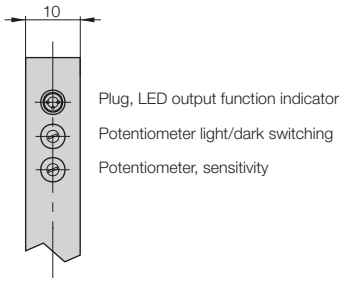
Photoelectric Special Sensors

Fork sensors BGL
50A, 80A

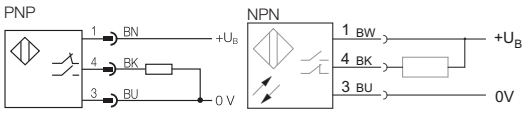
	BGL	**BGL**		
	80 mm	**80 mm**		
	54 mm	**54 mm**		
		BGL 80A-009-S49		
		BGL 80A-010-S49		
	BGL 80A-011-S49			
	BGL 80A-012-S49			
	10...30 V DC	10...30 V DC		
	≤ 35 mA	≤ 20 mA		
	200 mA	200 mA		
	Light/dark switching (selectable)	Light/dark switching (selectable)		
	Yes/Yes	Yes/Yes		
	Potentiometer, 270°	Potentiometer, 270°		
	Infrared	Laser, red light		
	1480 nm	650 nm		
	0.8 mm	50 µm		
	0.1 mm	10 µm		
	≤ 0.2 mm	30 µm		
	Green LED			
	Yellow LED	Yellow LED		
	0.25 ms	0.1 ms		
	2 kHz	5 kHz		
	IP 67	IP 67		
	–10...+60 °C	–10...+60 °C		
	EN 60947-5-2	EN 60947-5-2		
	GD-Zn	GD-Zn		
	Glass	Glass		
	M8 connector, 3-pin	M8 connector, 3-pin		







Wiring diagram



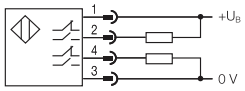
Fork Sensors for Label Sensing

The fork sensor BGL 21 is a photoelectric sensor using a microcontroller for the setup process and function monitoring. All the user needs to do is press a button to access all the data needed for configuring the sensor. An adjustment aid on the top and bottom of the sensor specifies the object position during configuration. The internal microcontroller monitors all settings to ensure optimum switching frequency, repeat accuracy and rejection of optical interference and ambient light.
The **BGL 21-RG** has a red and green emitter diode, which is ideal for detecting colored markings on transparent
backing material. Which color of emitter light is more appropriate for the particular task is automatically determined during setup.
The **BGL 21-IR** model with an infrared emitter makes it possible to scan labels or holes on backing material.

Features
- Fast, fully automatic sensor calibration
- User interface has just one button and two LEDs
- Very short response time and high repeat accuracy
- Very resistant to optical interference and ambient light
- NPN/PNP output on separate pins with overload protection
- M8 connector block can be rotated 90°
- Metal housing

Applications
- Detecting markings on backing material
- Label detection
- Monitoring web tracking
- Web break monitoring
- Hole checking in thin materials (< 2 mm)

Wiring diagram



Courtesy of CMA/Flodyne/Hydradyne ▪ Motion Control ▪ Hydraulic ▪ Pneumatic ▪ Electrical ▪ Mechanical ▪ (800) 426-5480 ▪ www.cmafh.com