

BALLUFF

sensors worldwide

ULTRAFRAME™

The thru-beam sensor solution to use first



ULTRAFRAME™ Sensors

Self-contained thru-beams

The ones to use first

Balluff's UltraFrame™ series is the latest in self-contained thru-beam sensor technology and is designed to solve problems many other sensors cannot. Offering reliable performance in an innovative package, these sensors are the first ones to use in error-proofing, process monitoring, and general automation tasks in a number of environments. With the broadest selection of sizes, shapes, and light sources available today, there is an UltraFrame sensor waiting to provide a solution to your application that will save you time, money, and headaches.

Dependable, Accurate, Simple to Use

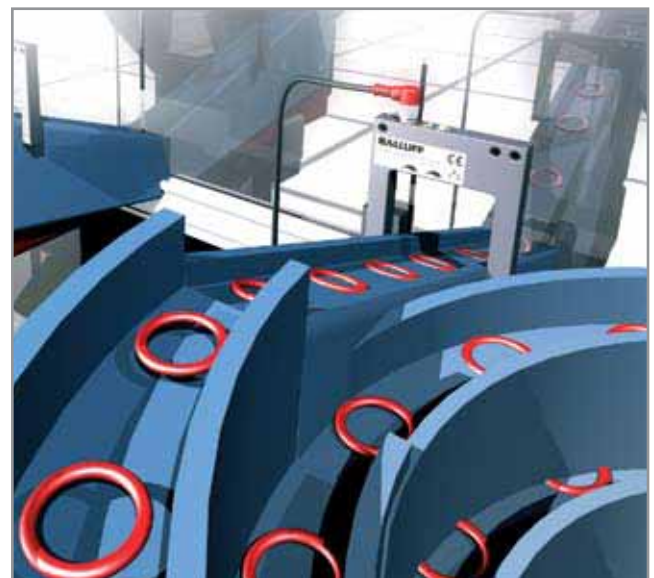
- Rigid, one piece construction – always in alignment, easy to install, no fiber optic cable hassles or routing of multiple power cords – these sensors are ready-to-go
- Four basic frame designs, all with multiple sizes to choose from
- Up to four application-specific light sources available to suit your design requirements
 - Visible red (easy set up)
 - Pinpoint visible red (higher precision)
 - Visible red laser (highest precision)
 - High-power infrared (burns through accumulated dirt)
- Immune to changes in target color and surface reflectivity
- High level accuracy available for complex sensing needs
- Extremely tolerant of dirty environments
- Most repeatable non-contact sensing mode (thru-beam)
- Cuts installation time

UltraFrame sensors retain all the performance advantages of a fiber optic or any other two-piece solution, but eliminate the alignment and mechanical issues. The rigid metal-framed housings contain both emitter and receiver elements with pre-aligned optics, providing easy installation, and an end to misalignment nuisances.

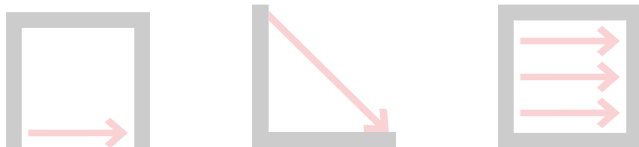


C Frame

Universal design convenient for most installations.



Part accumulation on a feeder track





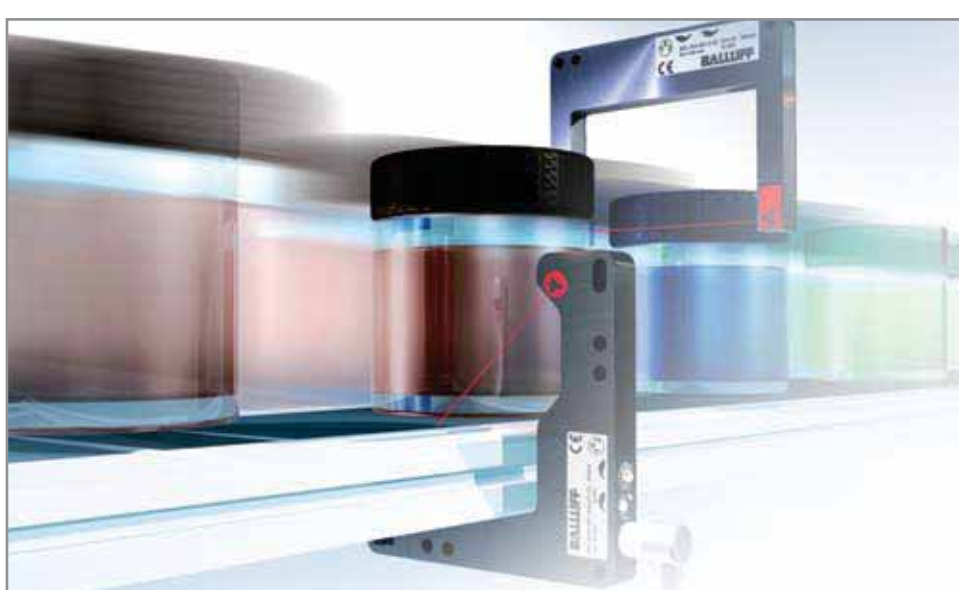
L Frame

Best for large or varying size objects, two axis movements, and confined space applications.



W Frame

Counts all objects (in any orientation) as they pass through it.



Large container and cap height detection for packaging



High speed part counting



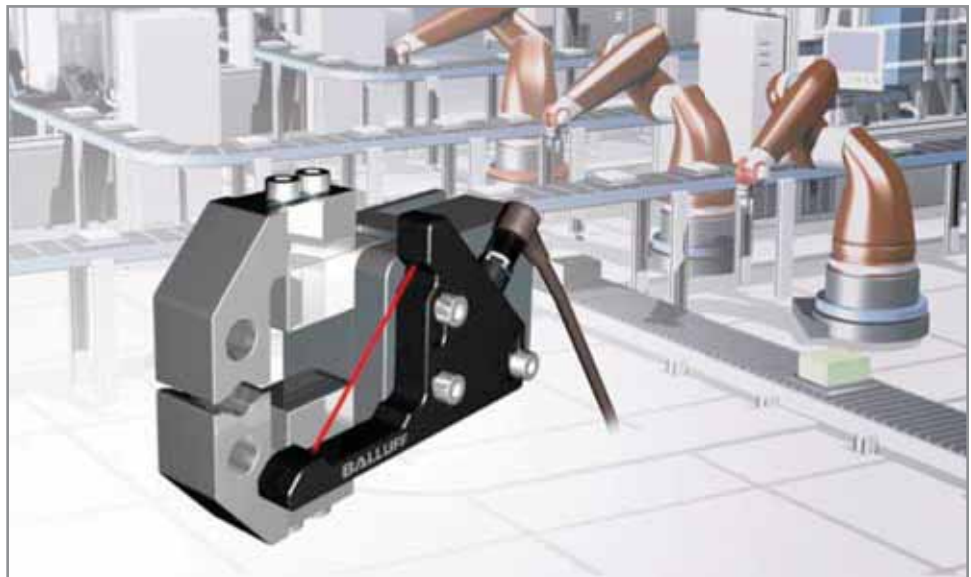
R Frame

Robust models perfect for harsh, contaminated, or impact rich environments.

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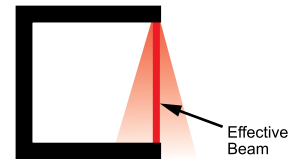
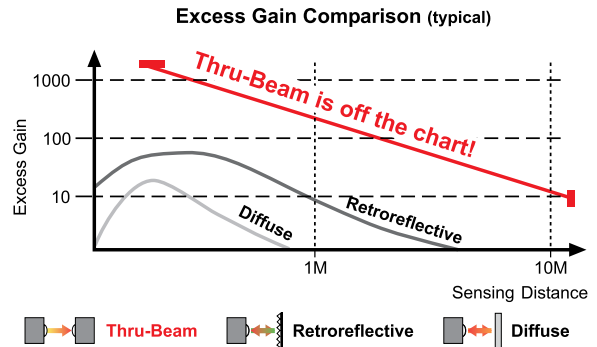
Presence detection in a robotic gripper

Advantages of the thru-beam sensing mode

- Extremely tolerant of dirty environments
- Completely immune to target color, reflectivity, or surface condition
- Most repeatable non-contact sensing mode available

When it comes to reliability and accuracy, there is no photoelectric sensing mode better than thru-beam sensing. Its reliability is a result of the extraordinary levels of excess gain. Excess gain is the measurement of light energy above the level required for normal sensing. The more excess gain a sensor has, the more tolerant it is of dirt, moisture, and debris accumulating on the sensor.

The accuracy of thru-beams results from a tight, well-defined sensing area. This area, called the effective beam, is the size of the emitter and receiver lens. Since a target is detected by breaking a portion of the beam, the smaller the lens, the smaller the effective beam, and the more accurate the sensor.



UltraFrame eliminates the disadvantages of fiber optics

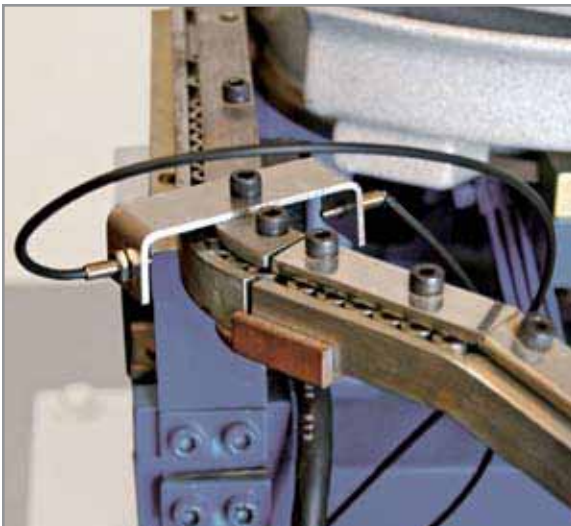
Self-contained thru-beams:

- Dramatically speed-up installation
- Eliminate fragile fiber optic runs
- Eliminate adjustment headaches

- Provide robust hardware construction
- Detect small parts down to 0.06 mm with outstanding repeatability of +/- .015 mm

Troublesome Fiber Optics

Here is a typical feed track detection system using fiber optics. This fragile system consists of a separate emitter and receiver and an amplifier to control them. Care must be taken not to damage or misalign the fibers. The emitter and receiver fibers must be held in alignment, usually with a custom bracket.



UltraFrame – A Superior Alternative to Fiber Optics


Here is the same system using Balluff's easy to use, one-piece UltraFrame. In this installation, there are no extra alignment brackets, no fiber amplifiers, and best of all, no fibers. The Balluff UltraFrame is simply positioned on the track and connected to the bowl controller – installation complete.




ULTRAFRAME™ Sensors C Frame




- 10 to 30 Vdc operating voltage
- One discrete output (PNP or NPN)
- M8 3-pin connector
- IP67 die cast zinc housing
- -10° to +60°C operating temperature
- Two adjustments
 - Sensitivity
 - NO/NC operation
- Recessed labels will not get damaged
- Four light sources
 - Visible Red
 - Pinpoint LED
 - Infrared
 - Laser
- Single beam
- LED status in connector, dual color for infrared

	Output	Slot width	Ordering code	Part number
PNP		5mm	BGL001W	BGL 5A-001-S49
		10mm	BGL0001	BGL 10A-001-S49
		20mm	BGL000R	BGL 20A-001-S49
		30mm	BGL0016	BGL 30A-001-S49
		50mm	BGL001J	BGL 50A-001-S49
		80mm	BGL0023	BGL 80A-001-S49
		120mm	BGL0007	BGL 120A-001-S49
		180mm	BGL000J	BGL 180A-001-S49
		220mm	BGL0010	BGL 220A-001-S49
		NPN		5mm
10mm	BGL0002			BGL 10A-002-S49
20mm	BGL000T			BGL 20A-002-S49
30mm	BGL0018			BGL 30A-002-S49
50mm	BGL001L			BGL 50A-002-S49
80mm	BGL0024			BGL 80A-002-S49
120mm	BGL0008			BGL 120A-002-S49
180mm	BGL000K			BGL 180A-002-S49
220mm	BGL0011			BGL 220A-002-S49

	Output	Slot width	Ordering code	Part number
PNP		30mm	BGL0019	BGL 30A-003-S49
		50mm	BGL001M	BGL 50A-003-S49
		80mm	BGL0025	BGL 80A-003-S49
		120mm	BGL0009	BGL 120A-003-S49
		NPN		30mm
50mm	BGL001N			BGL 50A-004-S49
80mm	BGL0026			BGL 80A-004-S49
120mm	BGL000A			BGL 120A-004-S49

	Output	Slot width	Ordering code	Part number
PNP		5mm	BGL0021	BGL 5A-007-S49
		10mm	BGL0005	BGL 10A-007-S49
		20mm	BGL000Y	BGL 20A-007-S49
		30mm	BGL001F	BGL 30A-007-S49
		50mm	BGL001T	BGL 50A-007-S49
		80mm	BGL0029	BGL 80A-007-S49
		120mm	BGL000F	BGL 120A-007-S49
		180mm	BGL000N	BGL 180A-007-S49
		220mm	BGL0014	BGL 220A-007-S49
		NPN		5mm
10mm	BGL0006			BGL 10A-008-S49
20mm	BGL000Z			BGL 20A-008-S49
30mm	BGL001H			BGL 30A-008-S49
50mm	BGL001U			BGL 50A-008-S49
80mm	BGL002A			BGL 80A-008-S49
120mm	BGL000H			BGL 120A-008-S49
180mm	BGL000P			BGL 180A-008-S49
220mm	BGL0015			BGL 220A-008-S49

	Output	Slot width	Ordering code	Part number
PNP		5mm	BGL001Z	BGL 5A-005-S49
		10mm	BGL0003	BGL 10A-005-S49
		20mm	BGL000U	BGL 20A-005-S49
		30mm	BGL001C	BGL 30A-005-S49
		50mm	BGL001P	BGL 50A-005-S49
		80mm	BGL0027	BGL 80A-005-S49
		120mm	BGL000C	BGL 120A-005-S49
		180mm	BGL000L	BGL 180A-005-S49
		220mm	BGL0012	BGL 220A-005-S49
		NPN		5mm
10mm	BGL0004			BGL 10A-006-S49
20mm	BGL000W			BGL 20A-006-S49
30mm	BGL001E			BGL 30A-006-S49
50mm	BGL001R			BGL 50A-006-S49
80mm	BGL0028			BGL 80A-006-S49
120mm	BGL000E			BGL 120A-006-S49
180mm	BGL000M			BGL 180A-006-S49
220mm	BGL0013			BGL 220A-006-S49

Four light sources to choose from



- Standard LED Visible Red Light
- Most economical
 - Smallest detectable part: 0.4mm
 - Available on C and L Frame models

More information at www.balluff.com/ultraframe

ULTRAFRAME™ Sensors L Frame



- 10 to 30 Vdc operating voltage
- One discrete output (PNP or NPN)
- M8 3-pin connector
- IP67 die cast zinc housing
- -10° to +60°C operating temperature
- Two adjustments
 - Sensitivity,
 - NO/NC operation
- Four light sources
 - Visible Red
 - Pinpoint LED
 - Infrared
 - Laser
- Single beam
- Sensing arm lengths from 40x40mm to 110x110mm

	Output	Leg length	Ordering code	Part number
	PNP		40mm	BWL000F
		54mm	BWL000R	BWL 5454D-R011-S49
		68mm	BWL0012	BWL 6868D-R011-S49
		90mm	BWL0019	BWL 9090D-R011-S49
		110mm	BWL0005	BWL 110110D-R011-S49
NPN		40mm	BWL000H	BWL 4040D-R012-S49
		54mm	BWL000T	BWL 5454D-R012-S49
		68mm	BWL0013	BWL 6868D-R012-S49
		90mm	BWL001A	BWL 9090D-R012-S49
		110mm	BWL0006	BWL 110110D-R012-S49

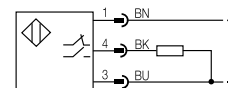
	Output	Leg length	Ordering code	Part number
	PNP		40mm	BWL000C
		54mm	BWL000N	BWL 5454D-L011-S49
		68mm	BWL0010	BWL 6868D-L011-S49
		90mm	BWL0017	BWL 9090D-L011-S49
		110mm	BWL0003	BWL 110110D-L011-S49
NPN		40mm	BWL000E	BWL 4040D-L012-S49
		54mm	BWL000P	BWL 5454D-L012-S49
		68mm	BWL0011	BWL 6868D-L012-S49
		90mm	BWL0018	BWL 9090D-L012-S49
		110mm	BWL0004	BWL 110110D-L012-S49

	Output	Leg length	Ordering code	Part number
	PNP		40mm	BWL000J
		54mm	BWL000U	BWL 5454D-R013-S49
		68mm	BWL001N	BWL 6868D-R013-S49
		90mm	BWL001C	BWL 9090D-R013-S49
		110mm	BWL0007	BWL 110110D-R013-S49
NPN		40mm	BWL000K	BWL 4040D-R014-S49
		54mm	BWL000W	BWL 5454D-R014-S49
		68mm	BWL0014	BWL 6868D-R014-S49
		90mm	BWL001E	BWL 9090D-R014-S49
		110mm	BWL0008	BWL 110110D-R014-S49

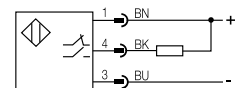
	Output	Leg length	Ordering code	Part number
	PNP		40mm	BWL0009
		54mm	BWL000L	BWL 5454D-I011-S49
		68mm	BWL000Y	BWL 6868D-I011-S49
		90mm	BWL0015	BWL 9090D-I011-S49
		110mm	BWL0001	BWL 110110D-I011-S49
NPN		40mm	BWL000A	BWL 4040D-I012-S49
		54mm	BWL000M	BWL 5454D-I012-S49
		68mm	BWL000Z	BWL 6868D-I012-S49
		90mm	BWL0016	BWL 9090D-I012-S49
		110mm	BWL0002	BWL 110110D-I012-S49

Wiring Diagrams

PNP NO/NC



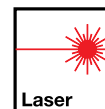
NPN NO/NC



- Pin Point LED Visible Red Light**
- Eliminate cross talk
 - Smallest Detectable Part: 0.3 mm
 - Available on C and L Frame models



- Infrared Light**
- Extreme reliability in dirty environments
 - Smallest Detectable Part: 1 mm
 - Available in C, L, R, and W Frame models



- Laser Light**
- Ultra small part and variation detection
 - Eliminate cross talk
 - Smallest Detectable Part: 0.08 mm
 - Available in C and L Frame models
 - High speed

ULTRAFRAME™ Sensors W Frame

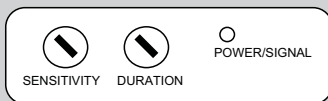


- 10 to 30 Vdc operating voltage
- One discrete output (PNP or NPN)
- M8 3-pin connector
- IP67 die cast aluminum housing
- -10° to +60°C operating temperature
- Two adjustment potentiometers
 - Sensitivity,
 - Output time delay
- Infrared light source
- Multiple beam
- Sensing window sizes from 80x40mm to 160x160mm

Output	Sensing depth	Sensing width	Ordering code	Part number
PNP	40mm	80mm	BOW001A	BOW A-0408-PS-C-S49
	80mm	80mm	BOW001J	BOW A-0808-PS-C-S49
	120mm	80mm	BOW0012	BOW A-1208-PS-C-S49
	160mm	80mm	BOW002C	BOW A-1608-PS-C-S49
	40mm	160mm	BOW002E	BOW A-0416-PS-C-S49
	80mm	160mm	BOW002F	BOW A-0816-PS-C-S49
	120mm	160mm	BOW002H	BOW A-1216-PS-C-S49
	160mm	160mm	BOW002J	BOW A-1616-PS-C-S49
NPN	40mm	80mm	BOW0019	BOW A-0408-NS-C-S49
	80mm	80mm	BOW001H	BOW A-0808-NS-C-S49
	120mm	80mm	BOW001W	BOW A-1208-NS-C-S49
	160mm	80mm	BOW0026	BOW A-1608-NS-C-S49
	40mm	160mm	BOW0027	BOW A-0416-NS-C-S49
	80mm	160mm	BOW0028	BOW A-0816-NS-C-S49
	120mm	160mm	BOW0029	BOW A-1216-NS-C-S49
	160mm	160mm	BOW002A	BOW A-1616-NS-C-S49



The new removable endcap feature allows customers to disassemble the end of the frame to mount the sensor around obstructions.

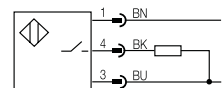


Dynamic Output Operation

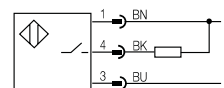
The Dynamic output of a BOW window sensor will "turn-on" with detection of movement of an object into the sensing area, based on the setting of the Sensitivity potentiometer. This output will remain on for a user-selected period of time set by the Signal Duration potentiometer. The output will then "turn-off" until the next transition of an object entering the sensing area is seen.

Wiring Diagrams

PNP NO



NPN NO



More information at www.balluff.com/ultraframe

ULTRAFRAME™ Sensors R Frame


- 10 to 30 Vdc operating voltage
- One discrete output (PNP)
- M8 3-pin or M12 4-pin connector
- IP67 zinc-plated steel housing
- -10° to +60°C operating temperature
- Infrared light source
- Single beam
- Sensing arm lengths from 22x22mm to 42x60mm

BWL 2222**B**-001-S4 BWL 2222**C**-001-S4



	Output	Leg length	Ordering code	Part number	Connector
	PNP	22x22 mm	BWL001F	BWL 2222B-001-S4	M12 4-pin
		BWL001H	BWL 2222C-001-S4		



	Output	Leg length	Ordering code	Part number	Connector
	PNP	42x41 mm	BWL001K	BWL 4241A-001-S49	M8 3-pin
		BWL001J	BWL 4241A-001-S4	M12 4-pin	

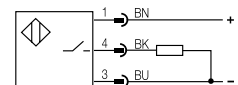


	Output	Leg length	Ordering code	Part number	Connector
	PNP	42x60 mm	BWL001M	BWL 4260A-001-S49	M8 3-pin
		BWL001L	BWL 4260A-001-S4	M12 4-pin	



Wiring Diagram

PNP NO



Cables

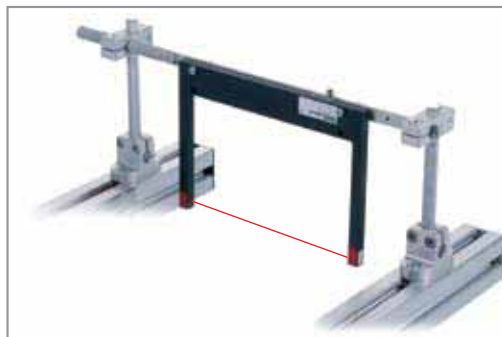
3-wire, non-LED
5mm length



	Ordering code	Part Number	Ordering code	Part number
Black, straight	BCC02M9	BCC-M313-0000-10-001-PX0334-050	BCC030L	BCC-M415-0000-1A-001-PX0334-050
Black, right angle	BCC02MM	BCC-M323-0000-10-001-PX0334-050	BCC0318	BCC-M425-0000-1A-001-PX0334-050
Voltage rating	60 VAC/DC		250 VAC/DC	
Connector type	M8 3-pin		M12 3-pin	
Wire gauge	3 x 0.34mm ²			
Jacket	PUR			
Coupling nut	Nickel Plated Brass			
Cable O.D.	4.3 mm			
Protection	IP 68			
Operating Temperature	-25°...+80°C			



Mounting	Ordering code	Part Number	For use with
Mounting Rod	BAM003F	BMS BS-M-D12-0250-03	BGL 5A...80A
Mounting Rod	BAM003H	BMS BS-M-D12-0400-04	BGL 80A...220A
Mounting Rod	BAM002T	BMS RS-M-D12-0250-00	Sensor Adjustment Tool
Sensor Adjustment Tool	BAM004F	BMS CS-M-D12-CZ	All BGL
Adapter Bracket	BAM0047	BMS CS-M-D12-CX02-01	BGL 5A...20A
Adapter Bracket	BAM0049	BMS CS-M-D12-CX03-01	BGL 30...80A
Adapter Bracket	BAM004C	BMS CS-M-D12-CX04-01	BGL 120A...220A



www.balluff.com/ultraframe

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