

BERO Sensors –
innovative conveyor specialists



bero



SIEMENS

Precise and far-sighted – BERO simply keeps an eye on everything



Precisely in conveyor systems, where complex sequences are part of day-to-day business, sensors are required that can perfectly play their role in any position. And not only this, they have perfect senses when it comes to detecting, counting and checking. A clear case for BERO – our specialists for conveyor technology, warehousing and packaging machines. Whether as Opto-BERO sensor, which detects any object in the field with a perception second to none; as Sonar-BERO which even detects transparent objects with its perfect ultrasonic hearing; inductive BERO with their special sense to track metals; or our new devices with IQ-Sense®. These devices can be intelligently coupled to the control and offer that significant extra when it comes to flexibility and reliability – we have the appropriate specialists for every requirement.



Optical perception at its best

Thanks to innovative technology, Opto-BERO sensors detect everything – and that with extreme precision, quickly and with pinpoint accuracy. They are also extremely easy to set and easy to handle in operation. The Opto-BERO K21 mini sensor can be accommodated in the tightest spaces and can reliably detect even fast objects. The compact Opto-Bero C40 can be adapted to every mounting position thanks to the swiveling optical system. And the high-performance Opto-BERO K80 leaves no gap undetected thanks to its hawk-like vision even over large distances. With Opto-BERO you always have an overview – in every situation and at any time.



System-wide communications down to the sensor level using IQ-Sense

Our innovative sensors with IQ-Sense can be simply integrated into the SIMATIC® control environment. Using the IntelliTeach® function, settings are parameterized directly via the control. They can be simply replaced in operation. The control re-establishes all of the settings. Further, IQ-Sense permits system diagnostics accurate to a single channel: Wire breakage, short circuit, misalignment or module/sensor failure are automatically signaled and parameterizing errors avoided. This means that downtimes can be reduced and the availability of plants and systems increased. Presently, optical sensors are available in the C40 S and K80 designs as well as ultrasonic sensors in M18.



Flexible and reliable with ultrasonics

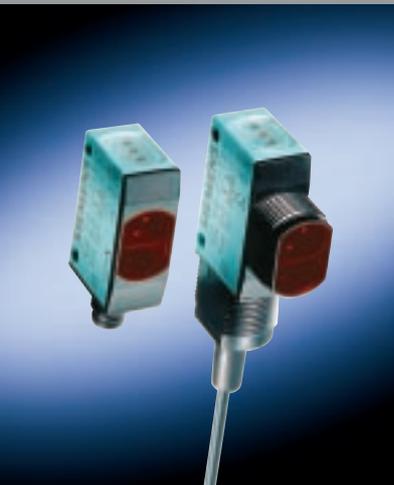
Precise – just like the ears of a bat – Sonar-BERO sensors detect the widest range of materials, shapes, colors and consistencies. The innovative Sonar-BERO M18 S, which has been especially designed for conveyor systems, is a mini-sensor which distinguishes itself thanks to its high performance and compact design. Just as reliable, our ultrasonic reflex sensors also detect any objects in their field of view – even if these objects are transparent.



Performance for conveyor technology – our specialists at a glance



Opto-BERO K21
and Opto-BERO K21R



Opto-BERO K21

The small sensor with the long range

This sensor has the ideal dimensions where space is tight, high detection ranges and an especially fast response time – these are the highlights of our Opto-BERO K21 mini-sensor. Our basic version, with the permanently set sensitivity, does not have to be calibrated when it is being installed. This means that the K21 is not only tamper-proof and cannot be erroneously set. It also has an extremely attractive price.

The standard version also has a contamination display using an LED which is easily visible from every side. All of the versions are also available as K21 R version with horizontal and vertical M18 stud for especially simple mounting and installation.

Additional technical features at a glance

- Compact design (31 x 20 x 12 mm)
- Simple to install
- Insensitive to reflective objects
- Versions with M8 connector or 2 m cable
- PNP and NPN versions are available

Basic version:

- High IP68 degree of protection
- Permanently-set sensitivity

Standard version:

- Contamination display with LED
- Sensitivity can be set using a potentiometer

Inductive and Opto-BERO C40 S **Small – but what a performer**

The C40 S is not only extremely compact, measuring only 40 x 40 mm, but also extremely rugged. It is the optimum proximity switch for tight spaces – with high detection ranges, fast switching frequency, “status LEDs” which are visible through 360° and can be flexibly mounted. The Opto-BERO C40 S is extremely versatile thanks to its reliability and flexibility – e.g. in conveyor systems and in every environment where processes in production, packaging and warehousing must be checked.

Additional technical features at a glance

- Available as either optical or inductive sensor
- Active surface can be adjusted at 5 sides
- Easy to install
- M12 connector which can be rotated
- High IP67 degree of protection
- PNP or NPN versions

Opto-BERO K80 **The specialist for conveyor systems**

With its truly hawk-like eyes, the Opto-BERO K80 detects everything that can be detected – optionally with visible red-spectrum or invisible infrared light. Thanks to its long range capability, high switching frequency and extremely versatile mounting possibilities, it is predestined for conveyor applications. It is being used in all industry sectors worldwide – reliably and with the highest precision. It is easy to handle and can be individually adjusted to your particular requirements.

Additional technical features at a glance

- Compact IP67 plastic enclosure
- Scratchproof glass window
- Function reserve and contamination alarm
- Background suppression can be precisely adjusted up to 1 m
- All of the versions have no blind zones
- DC and AC versions
- Connected through M12 connector, terminal compartment or direct connection to the AS-Interface

Opto-BERO C40 S



Inductive BERO C40 S



Opto-BERO K80



Sonar-BERO M18 S



Sonar-BERO M18 S **The small sensor with the sensitive hearing**

It is extremely small – only 50 mm long – and because it is extremely simple to install, this high-performance M18 S ultrasonic sensor is especially suitable for restricted mounting spaces. But our mini-sensor has a lot more to offer. It switches with extreme precision, has an extremely good function reserve and is absolutely insensitive to environmental effects. It senses the widest range of materials: From solids through liquids up to powders. And not only this, but it works independently of the ambient lighting conditions.

The M18 S is available as diffuse scanner with background suppression or as reflex sensor without blind zone. You should select the M18 S with frequency output in order to be able to configure several switching points in the PLC.

Additional technical features at a glance

- *New extremely small design also available as angular head version*
- *Extremely easy to install*
- *Insensitive to disturbing noise and contamination*
- *Can be simply set using teach-in or pre-set in the factory*
- *Foreground and/or background suppression*
- *Average value generation for increased reliability*



ultrasonic reflex sensor
Sonar-BERO 3RG6



3RG6 Sonar-BERO reflex sensor **The reliable sensor for transparent objects**

Whether bottles or small perfume bottles – the Sonar-BERO ultrasonic reflex sensor reliably and safely detects transparent objects. It is not affected by dirt, steam, cleaning agents or other difficult conditions. Even at high speeds it precisely does its job – even if more than 120, 000 bottles flash by in just one hour – the Sonar-BERO reflex sensor detects each individual bottle and every undesirable gap.

Additional technical features at a glance

- *Fast detection using a high switching frequency*
- *Three measuring ranges can be set so that it can be adapted to difficult applications*
- *It can detect reflective, transparent surfaces and any color*
- *Insensitive to water vapor*



Many function types for every application

A

Standard type: Diffuse sensor (energetic)

The diffuse sensor is the standard type. It uses the object as a reflector and evaluates the reflected light using a sensor.

B

Cannot be confused: The diffuse sensor with background suppression

Our diffuse sensor with background suppression allows objects to be reliably detected up to a specific distance. Everything located beyond this distance is suppressed.

C

Noise-proof: Reflex sensors

Reliably continue to do their job even when there are disturbing external light sources: Reflex sensors operate with polarized light and are therefore immune to noise, even when from disturbing external light sources. Ultrasonic reflex sensors operate with run-time measurement, and they have no blind zones.

D

Wide view: With thru-beam sensors

Thru-beam sensors comprise separate emitters and receivers. If the beam between the emitter and receiver is interrupted, then the output switches. Optical thru-beam sensors are especially suitable for applications with an extensive footprint.

Special applications

Detecting transparent objects

All Sonar-BERO with ultrasonic technology as well as the C40 S reflex sensors are ideal when it comes to reliably detecting glass and PET bottles and other transparent objects.

Principle of operation	Type K21/ K21R	C40 S	K80	M18 S	Ultrasonic reflex sensors	
A						
B						
C						
D						

Selection and ordering data

Opto-BERO K21/K21 R



Opto-BERO K21



Opto-BERO K21 R

Principle of operation	Range	Output	Order No.
Basic version			
Diffuse sensor	60 cm	PNP, light ON	3RG74□0-□AB00
		PNP, dark ON	3RG74□0-□AA00
Reflex sensor	300 cm	PNP, light ON	3RG74□1-□AB00
		PNP, dark ON	3RG74□1-□AA00
Standard version with LED contamination display			
Diffuse sensor	60 cm	PNP, light ON and dark ON	3RG74□0-□CC00
		PNP, light ON + function reserve	3RG74□0-□CD00
Reflex sensor	300 cm	PNP, light ON and dark ON	3RG74□1-□CC00
		PNP, light ON + function reserve	3RG74□1-□CD00

Available on request:

- Thru-beam sensors with 600 cm range
- Versions with NPN output
- Versions with M12 cable connector

0 = K21 0 = 2 m cable
 2 = K21 R 7 = M8 connector



Opto-BERO K21 R with M12 cable connector

Reflector R60 for reflex sensor	3RX7305
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Technical data, Opto-BERO K21 and K21 R	
Enclosure dimensions	31 x 20 x 12 mm
Operating voltage	DC 10...30 V
Output current	100 mA
Degree of protection	IP68

Detailed information on our range of products is provided in Catalog LV20 "BERO – Sensors for Automation"

Selection and ordering data

Opto-BERO C40 S

Inductive BERO C40 S



Opto-BERO C40 S

Principle of operation	Range	Output	Order No.
Diffuse sensor	70 cm	PNP, light ON or dark ON	3RG7240-3CH00
		IQ-Sense	3SF7420-3JQ00
Diffuse sensor with background suppression	50 – 250 cm	PNP, light ON or dark ON	3RG7244-3CH00
Reflex sensor	600 cm	PNP, light ON or dark ON	3RG7241-3CH00
		IQ-Sense	3SF7421-3JQ00
Reflex sensor for transparent objects	100 cm	PNP, light ON or dark ON	3RG7241-3CH52

Versions with NPN output are available on request.

Reflector D84 for reflex sensors

3RG7916



Inductive BERO C40 S

Mounting	Switching range	Output	Order No.
Flush	15 mm	M12 connector; PNP, NO and NC	3RG4038-3CD00
Flush	20 mm	M12 connector; PNP, NO and NC	3RG4138-3CD00
Not flush	35 mm	M12 connector; PNP, NO and NC	3RG4148-3CD00

Versions with NPN output and AC versions are available on request

Technical data, BERO C40 S

Enclosure dimensions	55 x 40 x 40 mm
Operating voltage	10...30 V DC (optical); 15...34 V (inductive)
Output current	200 mA
Degree of protection	IP67
Connection system	M12 connector

Selection and ordering data

Opto-BERO K80



Opto-BERO K80			
Principle of operation	Range	Output	Order No.
Diffuse sensor	2 m	M12 connector, PNP, light ON and dark ON, DC	3RG7200-3CC00
		M12 connector, PNP, light ON and dark ON, function reserve, time function, DC	3RG7210-3DK00
		Connection with screw terminal, PNP, light ON and dark ON, DC, time function, DC	3RG7200-6CC00
		Connection with screw terminal, PNP, light ON and dark ON, DC, time function, DC	3RG7210-6DK00
		Connection with screw terminal, relay, light ON and dark ON, time function, UC*	3RG7210-6MC00
		FK terminal, AS-Interface	3RG7210-5WS00
		IQ-Sense	3SF7210-3JQ00
Diffuse sensor with background suppression	20 – 100 cm	M12 connector, PNP, light ON and dark ON, DC	3RG7204-3CC00
		M12 connector, PNP, light ON and dark ON, function reserve, time function, DC	3RG7214-3DK00
		Connection with screw terminal, PNP, light ON and dark ON, DC, time function, DC	3RG7204-6CC00
		Connection with screw terminal, PNP, light ON and dark ON, DC, function reserve	3RG7214-6DK00
		FK terminal, AS-Interface	3RG7214-5WS00
	1 m	IQ-Sense	3SF7214-3JQ00
Reflex sensor	6 m	M12 connector, PNP, light ON and dark ON, DC	3RG7201-3CC00
		M12 connector, PNP, light ON and dark ON, function reserve, time function, DC	3RG7211-3DK00
		Connection with screw terminal, PNP, light ON and dark ON, DC, time function, DC	3RG7201-6CC00
		Connection with screw terminal, PNP, light ON and dark ON, DC, function reserve	3RG7211-6DK00
		Connection with screw terminal, relay, light ON and dark ON, time function, UC*	3RG7211-6MC00
		FK terminal, AS-Interface	3RG7211-5WS00
		IQ-Sense	3SF7211-3JQ00
Thru-beam sensor Receiver	50 m	M12 connector, PNP, light ON and dark ON, DC	3RG7202-3CC00
		M12 connector, PNP, light ON and dark ON, DC	3RG7212-3DK00
		Connection with screw terminal, PNP, light ON and dark ON, DC, time function, DC	3RG7202-6CC00
		Connection with screw terminal, PNP, light ON and dark ON, DC, function reserve	3RG7212-6DK00
		Connection with screw terminal, relay, light ON and dark ON, time function, UC*	3RG7212-6MC00
		FK terminal, AS-Interface	3RG7212-5WS00
		Sender	
M12 connector, PNP, light ON and dark ON, function reserve, time function, DC	3RG7202-3BG00		
Connection with screw terminal, PNP, light ON and dark ON, DC, time function, DC	3RG7204-6BG00		
Connection with screw terminal, PNP, light ON and dark ON, DC, function reserve	3RG7214-6BG00		
Connection with screw terminal, relay, light ON and dark ON, time function, UC*	3RG7202-6FG00		
FK terminal, AS-Interface	3RG7202-5WG00		

- Versions with NPN output are available on request
- UC versions are optionally available with heating

Holder	3RX7303
Reflector D84 for reflex sensors	3RX7916

Technical data, Opto-BERO K80	
Enclosure dimensions	83 x 65 x 25 mm
Operating voltage	10 to 36 V DC/20 to 320 V/UC/AS-Interface
Output current	200 mA max./2 at 240 V AC
Degree of protection	IP67

Selection and ordering data

Sonar-BERO M18 S



Sonar-BERO M18 S		
Principle of operation	Range	Order No.
Diffuse sensor with background suppression	3 – 20	3RG64□2-3AB00
	5 – 40	3RG64□1-3AB00
	10 – 70	3RG64□3-3AB00
Reflex sensor	0 – 20	3RG64□2-3BB00
	0 – 40	3RG64□1-3BB00
	0 – 70	3RG64□3-3BB00
Frequency output	3 – 20	3RG64□2-3RS00
	5 – 40	3RG64□1-3RS00
	10 – 70	3RG64□3-3RS00

2 = angled head
3 = straight converter

Technical data, Sonar-BERO M18 S	
Enclosure dimensions	M18 x 63 mm (straight), M18 x 81 mm (angled head)
Operating voltage	20 to 30 V DC
Output current	150 mA
Degree of protection	IP67

Selection and ordering data

Ultrasonic Sonar-BERO



Ultrasonic Sonar-BERO				
Principle of operation	Range	Range	Connection	Order No.
Receiver	150 cm	PNP, 1 NO	3 m cable	3RG6243-0PB00
		PNP, 1 NC	3 m cable	3RG6243-0PA00
		PNP, 1 NO	M8 connector	3RG6243-7PB00
		PNP, 1 NC	M8 connector	3RG6243-7PA00
		PNP, 1 NO	M12 connector	3RG6243-3PB00
		PNP, 1 NC	M12 connector	3RG6243-3PA00
Sender			3 m cable	3RG6243-0NN00
			M8 connector	3RG6243-7NN00
			M12 connector	3RG6243-3NN00

Technical data, ultrasonic Sonar-BERO	
Enclosure dimensions	40 x 40 x 19 cm
Operating voltage	20 to 30 V DC
Output current	100 mA
Degree of protection	IP65

When ordering by fax: +49/9131/7-2 41 06

**Catalog LV 20:
BERO - Sensors
for Automation**

Order No. E86060-K1803-A101-A3-7600



**System Description IQ-Sense,
Sensors and Control
become one system**

Order No. E20001-A30-M113-X-7600



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