

LBK Safety radar system

Safety at Leuze



The world's first safe 3D radar system, LBK from Inxpect S.p.A., was developed for the monitoring of hazardous areas in harsh industrial environments. It detects the bodies of persons and in doing so monitors the protected area for access and presence. The system consists of sensors und controller, combining up to 6 sensors in one application.

Areas of application

- Guarding of hazardous areas in harsh environments
- Restart protection
- Monitoring of hidden areas

Advantages for you at a glance

- Reliable operation also under demanding environmental influences such as dirt, dust, smoke and light
- Flexible adaptation of the safety area to the application by:
 - number and position of the sensors
 - adjustable operating range and radiation angle
- Static objects are permitted in the protected area and do not cause the safety outputs to switch off
- Quick installation through simple system structurePlanning, configuration and set up service by our certified experts, on request for your application

Features	Safe 3D radar system with FMCW modulation for detecting movements	
	Configuration of safety area and warning area	
	Up to 6 sensors can be combined in one application	
	3 configurable groups (with 1 to 6 sensors)	
	Deactivation of individual groups	
	Interfaces for configuration and diagnosis: USB 2.0, Micro-USB	
Technical data	Safety parameters	Category 2, Performance level PL d, SIL 2
	Safety output	Relay output, 2-channel
	Operating range	4 m
	Angle of radiation (horizontal / vertical plane)	Wide: 110° / 30° Narrow: 50° / 15°
	Frequency range	24.0 ... 24.5 GHz
	Temperature range	-40 °C ... 60 °C
	Protection class	IP 67

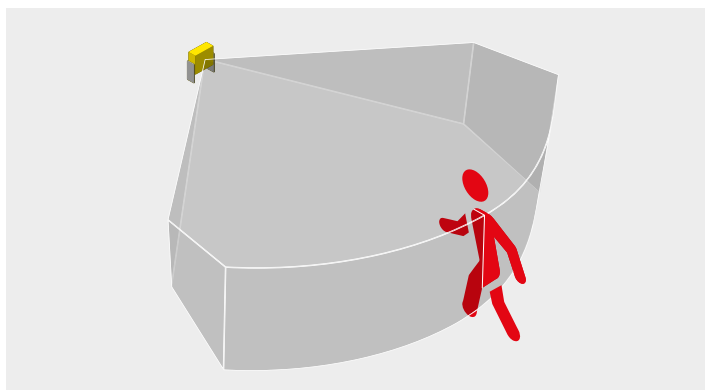
Reliable operation under demanding environmental conditions



The radar principle is resistant to environmental influences such as dirt, dust, sawdust, smoke, oil, humidity and light.

This guarantees reliable operation of the machine even under demanding environmental conditions and avoids unnecessary shutdown.

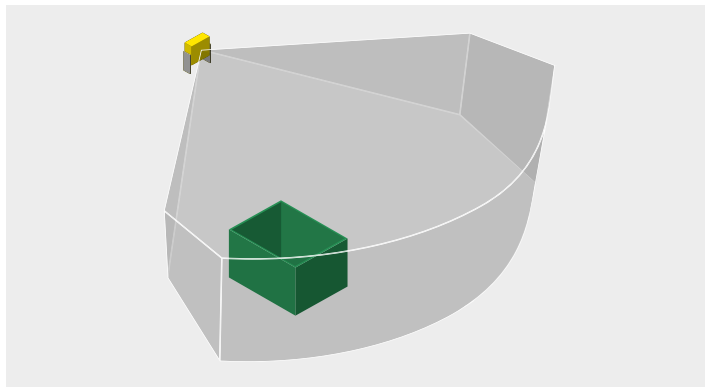
Function of radar sensors



The LBK safety radar sensors detect movements and are used for guarding hazardous areas. They monitor the protected area for access by and the presence of persons. Even persons who are standing still are not really “static”, and are therefore detected reliably by the sensor.

Thanks to the 3D radar principle, areas on steps or pedestals and behind non-metallic shadowing can also be monitored.

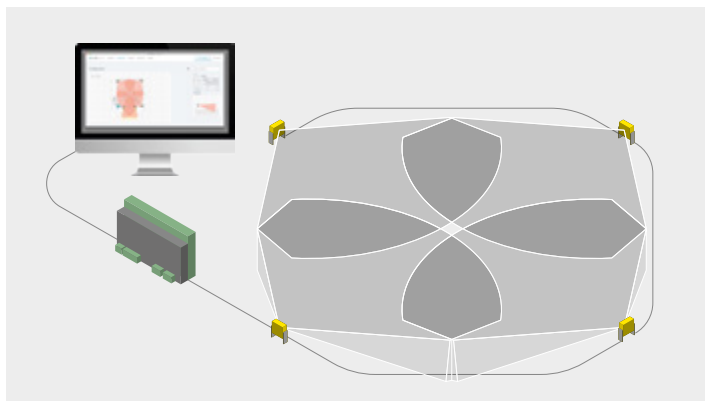
Static objects permitted in protected area



The radar technology reacts sensitively to movements. However, static objects in the monitored area do not cause the safety signal to switch off.

Static objects such as pallets, material containers and tool trays are therefore allowed to be placed in the protected area.

Flexible system set-up



To guard large areas, up to 6 sensors can be combined in one application using a control unit. The system parameters are set using the easy-to-use configuration software.

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Technical data sheet

Safety radar sensor

Part no.: 50143343

LBK Sensor

Contents

- Technical data
- Electrical connection
- Operation and display
- Notes
- Accessories



Figure can vary



Technical data

Basic data

Series	LBK-S01-LZ
Type	Radar sensor
Application	Stationary access guarding Stationary danger zone guarding

Radar technical data

Operating principle	Detection of movement
	Detection of persons
	FMCW
Operating range	0 ... 4 m
Angle of radiation, horizontal	Narrow: 50°
	Wide: 110°
Angle of radiation, vertical	Narrow: 15°
	Wide: 30°
Emitted power	≤ 13 dBm
Frequency range	24,000 ... 24,500 MHz

Characteristic parameters

SILCL	2, IEC/EN 62061
Performance Level (PL)	d, EN ISO 13849-1
PFH _D	4,34E-08 per hour
Mission time T _M	20 years, EN ISO 13849-1
Category	2 (3 for all outputs), EN ISO 13849

Electrical data

Performance data	
Supply voltage U _B	12 V, DC, -20 ... 20 %
Power consumption, max.	1.2 W

Timing

Response time	100 ms
Restart delay time (automatic start)	10,000 ms

Connection

Number of connections	2 Piece(s)
Connection 1	
Function	BUS IN Voltage supply
Type of connection	Connector
Thread size	M12
Type	Male
Material	Metal
No. of pins	5 -pin

Connection 2

Function	BUS OUT
Type of connection	Connector

Cable properties

Length of connection cable, max.	30 m
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Mechanical data

Dimension (W x H x L)	165 mm x 125 mm x 53 mm
Housing material	Plastic, PA 66
Mounting bracket material	PA 66, glass fiber reinforced
Net weight	200 g
Housing color	Yellow, RAL 1023

Operation and display

Number of LEDs	1 Piece(s)
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Environmental data

Ambient temperature, operation	-40 ... 60 °C
Ambient temperature, storage	-40 ... 80 °C
Relative humidity (non-condensing)	0 ... 95 %

Certifications

Degree of protection	IP 67
Certifications	IMQ

Classification

Customs tariff number	85261000
eCl@ss 8.0	27280800
eCl@ss 9.0	27280800
ETIM 5.0	EC001825
ETIM 6.0	EC001825

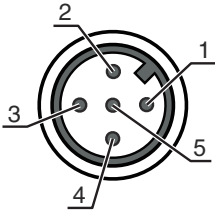
Electrical connection

Connection 1

Function	BUS IN
	Voltage supply
Type of connection	Connector
Thread size	M12
Type	Male
Material	Metal
No. of pins	5 -pin
Encoding	D-coded
Connector housing	FE/SHIELD

Pin Pin assignment

1	PE
2	+12 V DC
3	GND
4	CAN H
5	CAN L

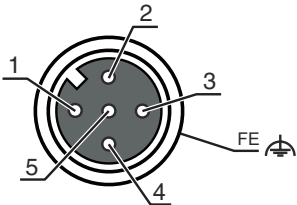


Connection 2

Function	BUS OUT
Type of connection	Connector
Thread size	M12
Type	Female
Material	Metal
No. of pins	5 -pin
Encoding	D-coded
Connector housing	FE/SHIELD

Pin Pin assignment


1	PE
2	+12 V DC
3	GND
4	CAN H
5	CAN L




Operation and display

LED	Display	Meaning
1	Blue, continuous light	Normal operation, no movement detected
	Blue, quickly flashing	Normal operation, movement detected
	Blue, slowly flashing	Error

Notes


**Observe intended use!**





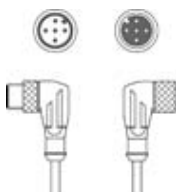
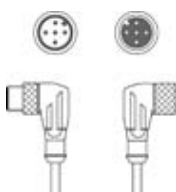

- The product may only be put into operation by competent persons.
- Only use the product in accordance with its intended use.

Accessories


Connection technology - Connection cables

	Part no.	Designation	Article	Description
	50143389	KD DN-M12-5W-P1-150	Connection cable	Connection 1: Connector, M12, Angled, Female, A-coded, 5 -pin Connection 2: Open end Shielded: Yes Cable length: 15,000 mm Sheathing material: PUR


Connection technology - Interconnection cables

	Part no.	Designation	Article	Description
	50143385	KDS DN-M12-5W-M12-5W-P3-030	Interconnection cable	Suitable for interface: DeviceNet, CANopen Connection 1: Connector, M12, Angled, Male, A-coded, 5 -pin Connection 2: Connector, M12, Angled, Female, A-coded, 5 -pin Shielded: Yes Cable length: 3.000 mm Sheathing material: PUR
	50143386	KDS DN-M12-5W-M12-5W-P3-050	Interconnection cable	Suitable for interface: DeviceNet, CANopen Connection 1: Connector, M12, Angled, Male, A-coded, 5 -pin Connection 2: Connector, M12, Angled, Female, A-coded, 5 -pin Shielded: Yes Cable length: 5.000 mm Sheathing material: PUR
	50143387	KDS DN-M12-5W-M12-5W-P3-100	Interconnection cable	Suitable for interface: DeviceNet, CANopen Connection 1: Connector, M12, Angled, Male, A-coded, 5 -pin Connection 2: Connector, M12, Angled, Female, A-coded, 5 -pin Shielded: Yes Cable length: 10.000 mm Sheathing material: PUR
	50143388	KDS DN-M12-5W-M12-5W-P3-150	Interconnection cable	Suitable for interface: CANopen, DeviceNet Connection 1: Connector, M12, Angled, Male, A-coded, 5 -pin Connection 2: Connector, M12, Angled, Female, A-coded, 5 -pin Shielded: Yes Cable length: 15.000 mm Sheathing material: PUR
	50143459	KSS US-USB2-A-mic-B-V0-018	Interconnection cable	Suitable for interface: USB Connection 1: USB Connection 2: USB Cable length: 1,800 mm

Connection technology - Terminating resistors

	Part no.	Designation	Article	Description
	50040099	TS 01-5-SA	Terminator plug	Suitable for: DeviceNet, CANopen Connection 1: Connector, M12, Axial, Male, A-coded, 5 -pin Function: Bus termination

Accessories**Mounting technology - Other**

	Part no.	Designation	Article	Description
	50143346	LBK Sensor Protector	Shielding	Dimensions: 54.5 mm x 90 mm x 192 mm Color: Black Type of fastening, at system: Through-hole mounting Type of fastening, at device: Screw type Material: Metal

Note

↪ A list with all available accessories can be found on the Leuze website in the Download tab of the article detailed page.