

# INXPECT SAFETY RADAR EQUIPMENT

Product catalogue

# **INXPECT SAFETY RADAR EQUIPMENT**

Industrial safety at its best: Inxpect safety radars detect access or presence of operators in dangerous areas and also have the ability to dynamically set the detection and warning zones.



If the operator moves closer to the dangerous area, it places machinery in a safe state.

### RESTART PREVENTION

It prevents machinery from restarting while operators are in the dangerous area.

# **WORLD'S FIRST**

SIL2/PLd and UL Listed safety radar products





### DYNAMIC MODIFICATION OF DETECTION ZONES

The sensor parameters can be configured in real-time, allowing a dynamic modification of the detection zone. This feature makes Inxpect sensors perfect solutions for mobile robotic applications.



### SECURE CONFIGURATION

Whether you chose USB or Ethernet for configuring Inxpect Safety Radar Products, we got you covered. In all cases, Inxpect control units and the Inxpect Safety Application cooperate in full security.







### IMPROVE THE COMMUNICATION WITH MACHINERY

The modular fieldbus allows Inxpect Radar Sensors to exchange safety data, such as the position of the target, in real time with the machinery's PLC. This allows an effective integration with the machinery's control system.

### **RESPONSE TIME < 100 ms**

With response times lower than 100 ms, you can save space and reduce the area required to stop the machinery.



# **RESISTANT TO** DISTURBANCES

Optical devices often fail due to dust, smoke, water or waste generated by the production process. The Inxpect team, highly specialized in radar technology, has developed a sophisticated long range radar algorithm that filters out those disturbances, reducing false alarms and increasing productivity.

Inxpect Safety Radar Sensors are immune not only to light, smoke and debris, but also to rain (rainfall rate up to 45 mm/h).



Inxpect works where optical sensors stop. High safety without compromising productivity.





"Inxpect is a young tech company with an extraordinary team and corporate culture, which have allowed the company to develop the most advanced safety radar in the world "

Passion is what guides our team, a passion that continues to grow from month to month: that is the driving force that makes anything possible, and that made Inxpect the first company in the world (and the only one to date) to create a SIL-certified safety radar system.

market. We know all of its demands and secrets. We know what different industries need and we is perceived today to bring it to a totally new level. Inxpect is an international company with offices in Italy, Spain, Germany, North America, China and other countries.

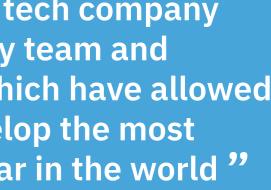
millions euro

6000+ working installations

R&D







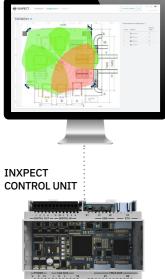








INXPECT SAFETY APPLICATION





SENSORS

Inxpect Safety Radar Equipment

is flexible, modular and scalable

Inxpect Safety Radar systems are composed of a **control unit** and up to six **radar** sensors: high flexibility, from simple to complex scenarios.

Configuring the system is quick and easy, thanks to the user friendly **Inxpect Safety Application**.

Guided validation procedures and the simple generation of the configuration report complete each installation.



Target information as distance and angle are always available in real time.



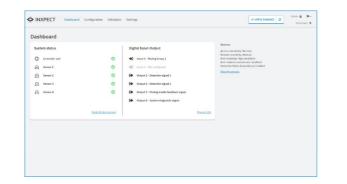
The Inxpect Safety Application allows to set up to 32 different configurations to be selected dynamically in real time.



Programmable Muting function: the configuration of sensor groups that can be temporarily muted allows operators to safely access parts of the dangerous area, according to production needs. Software Inxpect Safety Application

The software allows simple and intuitive configuration and subsequent validation of the coverage area. The Inxpect Safety App is a software application that can be installed on any PC or Mac, and that guides users to the configuration of the volumetric coverage areas of Inxpect safety radar systems, the I/O interfaces configuration and system parameters setting, and to the validation process. It is an integral part of all Inxpect safety systems.











### SYSTEM CONFIGURATION

1

2

Easily set up all sensor and control unit parameters, as well as import machinery layouts in different formats.

### SYSTEM STATUS CHECK

Reporting of the status of the control unit and single sensors, outputs and inputs.

### SYSTEM VALIDATION

The Inxpect Safety App guides users through the validation of the system and the production of validation reports.

# Restart Prevention

Inxpect radar sensors are designed to monitor the presence of people in the area and, at the same time, filter out static objects (these objects do not stop the machine).

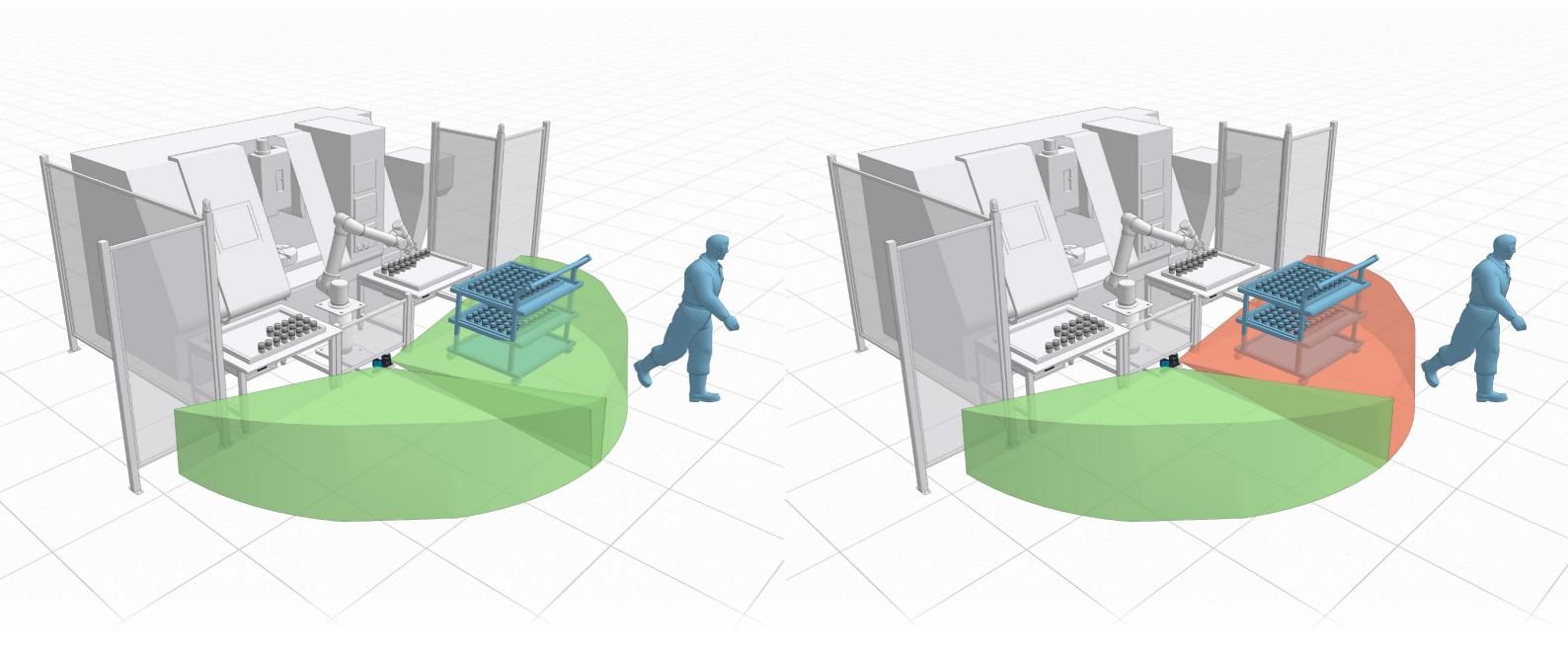


Static objects in the area are filtered out. The robot restarts and continues its operating cycle.

# S200 sensors introduce Restart Prevention with Static Object Detection

When needed, an additional function can be activated: **Static Object Detection**.

This feature allows you to detect even static objects in the area keeping the machine in stop. It is particularly important to avoid collision with potential obstacles in mobile applications such as overhead gantries, AGVs, self-driving vehicles, etc.





When Static Object Detection is active and there are obstacles in the area the system prevents the restart of the machine.

# **SAFETY RADAR SENSORS**

**Technical specifications** 

	Vertical angular coverage	FOV	Max target speed	Min settable distance	Settable RCS
4W KANGE 4M KANGE 5101S	Wide 30° Narrow 15°	Symmetrical	1,6 m/s	1 m	-
S201A	20°	Symmetrical	2 m/s	0.5 m	-
BURANG S201A-M	20°	Advanced	2 m/s	0.2 m	-
S203A-W	12°	Advanced	2 m/s	0.2 m	-
S201A-MLR	20°	Symmetrical	4 m/s	0.5 m	<
B RADGE S201A-WL	20°	Advanced	4 m/s	0.2 m	
S203A-WL	12°	Advanced	4 m/s	0.2 m	<b>S</b>

# RADAR SENSORS



# Which radar sensor fits my needs?

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# **S101A** The first safety radar sensor

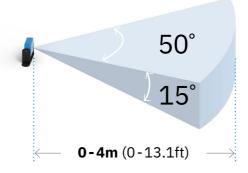
The **S101A** sensor is a smart FMCW (Frequency Modulated Continuous Wave) radar device based on proprietary Inxpect detection algorithms. The sensor sends 24 GHz radio waves and recovers motion information, analyzing the signals reflected by both static and moving objects in the operative range.

The sensors perform the following primary functions:

- Motion and scenario analysis.
- · Communication to the control unit of processed motion data and diagnostic information.

### Two configurable fields of view

**1. Narrow FOV** 0 - 4m [min. set distance: 1m] Horizontal Plane: 50° Vertical Plane: 15°



Part No. 90202011



Techni	ical	detai	l

Frequency	24 GHz ISM
Connectors	Two 5-pin M
CAN bus termination resistance	120 Ω (not s
Power supply	12 V dc ± 20
Power consumption	1.5 W
Degree of protection	IP67
Operating temperature	From -30 to
Case material	Sensor: PA6

S

Two 5-pin M12 connectors (1 r
120 $\Omega$ (not supplied, to be inst
12 V dc ± 20%, through contro
1.5 W
IP67
From -30 to +60 °C (-22 to +1

license-free

**Safety Radar Sensor 100 SERIES** 

### The first safety radar sensor

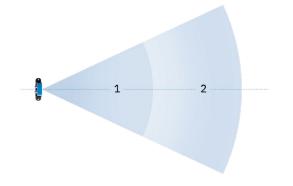


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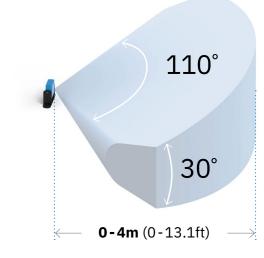
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Two detection fields with fixed angles (angles can only be wide or narrow).



2. Wide FOV 0 - 4m [min. set distance: 1m] Horizontal Plane: 110° Vertical Plane: 30°



male and 1 female)

alled with termination connector)

ol unit

140 °F) 66 | Bracket: PA66 and glass fiber (GF)



## Safety Radar Sensor 200 SERIES

### Symmetrical FOV



# S201A Symmetrical FOV

The **S201A** sensor is a smart FMCW (Frequency Modulated Continuous Wave) radar device based on proprietary Inxpect detection algorithms. Operating in the millimeter wave V band (60 GHz), it can detect complex scenes by analyzing the returned signals reflected by both static and moving objects in the operative range. With dynamically selectable horizontal field of view and up to four safety areas, it is ideal for complex application scenarios, including mobile use cases.

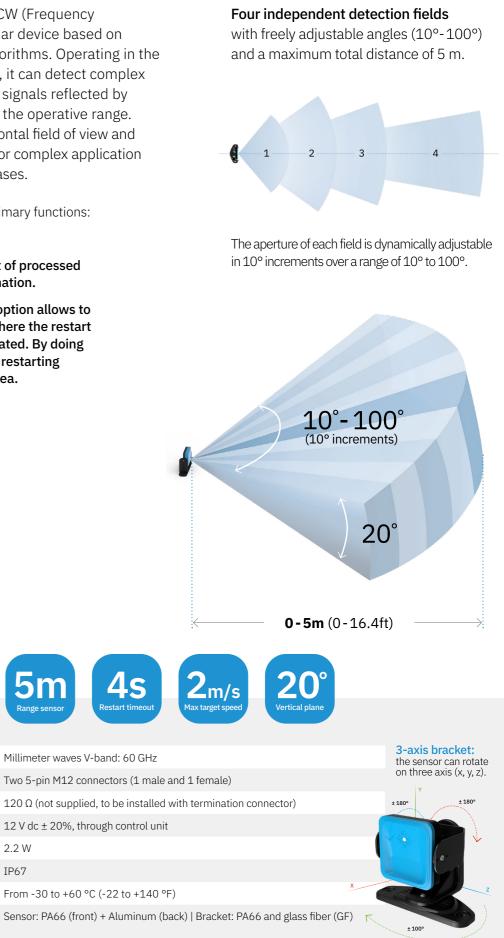
The sensors perform the following primary functions:

- Motion and scenario analysis.
- · Communication to the control unit of processed motion data and diagnostic information.
- · Static Object Detection: this new option allows to detect static objects in the area where the restart prevention safety function is activated. By doing so it prevents the machinery from restarting when there are obstacles in the area.

### **Field of view**

**0 - 5m** [min. set distance: 0.5m] Horizontal Plane: 10-100° Vertical Plane: 20°

Part No. 90302011



### **Technical details**

Frequency	
Connectors	
CAN bus termination resistance	
Power supply	
Power consumption	
Degree of protection	
Operating temperature	
Case material	

12 V dc ± 20%, through control unit 2.2 W IP67 From -30 to +60 °C (-22 to +140 °F)

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SIL2 PLd

S201A-MLR



# Symmetrical FOV, 9m range



# **S201A-MLR** Symmetrical FOV, 9m range

The **S201A-MLR** sensor operates in the millimeter wave V band (60 GHz) and it can detect complex scenes by analyzing the returned signals reflected by both static and moving objects in the operative range.

In addition to the dynamically selectable horizontal field of view and up to four alarm areas, S201A-MLR also supports higher speeds (4 m/s) and longer ranges (9 meters) than the base S201A model. The S201A-MLR is therefore ideal in sectors like earth moving, railway, mining and agriculture.

The sensors perform the following primary functions:

- Motion and scenario analysis.
- · Communication to the control unit of processed motion data and diagnostic information.
- The RCS of the target can be selected for human safety or collision with other object. The custom target detection is a safety function that allows detecting the access of one or more objects with specific RCS values.

### Field of view

**0 - 5m** [min. set distance: 0.5m] Horizontal Plane: 10-100° Vertical Plane: 20°

5 - 9m Horizontal Plane: 10-40° Vertical Plane: 20°



Part No. 90305010

### **Technical details**

Frequency	Mi
Connectors	Tw
CAN bus termination resistance	12
Power supply	12
Power consumption	2.2
Degree of protection	IP
Operating temperature	Fro
Case material	Se

wo 5-pin M12 connectors (1 male and 1 female) 2 V dc ± 20%, through control unit .2 W P67 rom -30 to +60 °C (-22 to +140 °F)

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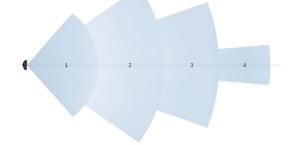
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### Four independent detection fields

with freely adjustable angles (see below) and a maximum total distance of 9 m.



The aperture of each field is dynamically adjustable in 10° increments over a range of 10° to 100° (0-5 m) and over a range of 10° to 40° (5-9 m).















# **S201A-W**

# Safety Radar Sensor 200 SERIES

### Advanced FOV



# S201A-W Advanced FOV

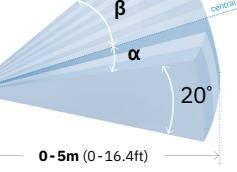
The **NEW S201A-W** sensor has advanced field of view, i.e. the user can choose whether to use a symmetrical FOV, an asymmetrical FOV (asymmetric angles with respect to the central axis of the sensor) or a corridor FOV (with the sides cut off where required by the application). More and more modularity for all industrial applications!

The sensors perform the following primary functions:

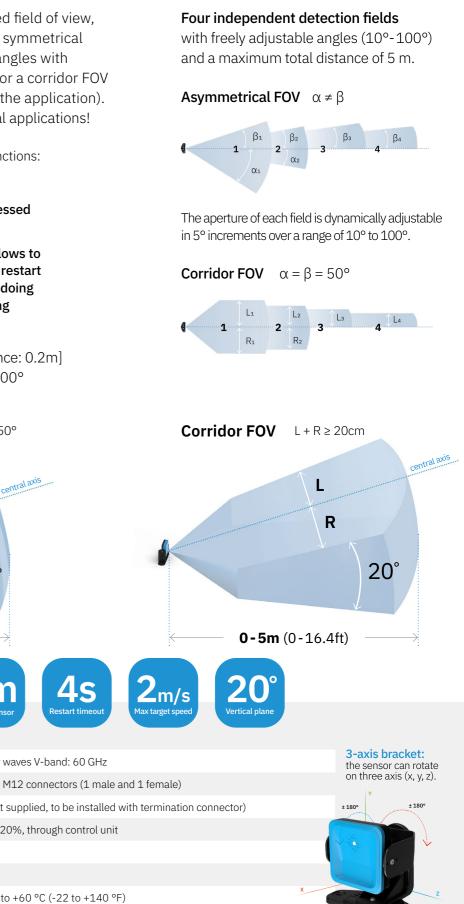
- Motion and scenario analysis.
- Communication to the control unit of processed motion data and diagnostic information.
- Static Object Detection: this new option allows to detect static objects in the area where the restart prevention safety function is activated. By doing so it prevents the machinery from restarting when there are obstacles in the area.

Field of view 0 - 5m [min. set distance: 0.2m] Horizontal Plane: 10-100° Vertical Plane: 20°

**Asymmetrical FOV** α: 0°-50° β: 0°-50°



Part No. **90302111** 



### **Technical details**

Frequency	Millimeter waves \
Connectors	Two 5-pin M12 co
CAN bus termination resistance	120 Ω (not supplie
Power supply	12 V dc ± 20%, th
Power consumption	2.2 W
Degree of protection	IP67
Operating temperature	From -30 to +60 °
Case material	Sensor: PA66 (fror

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ont) + Aluminum (back) | Bracket: PA66 and glass fiber (GF)











# Safety Radar Sensor 200 SERIES

**S201A-WL** 

### Advanced FOV, 9m range

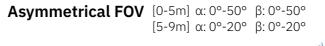


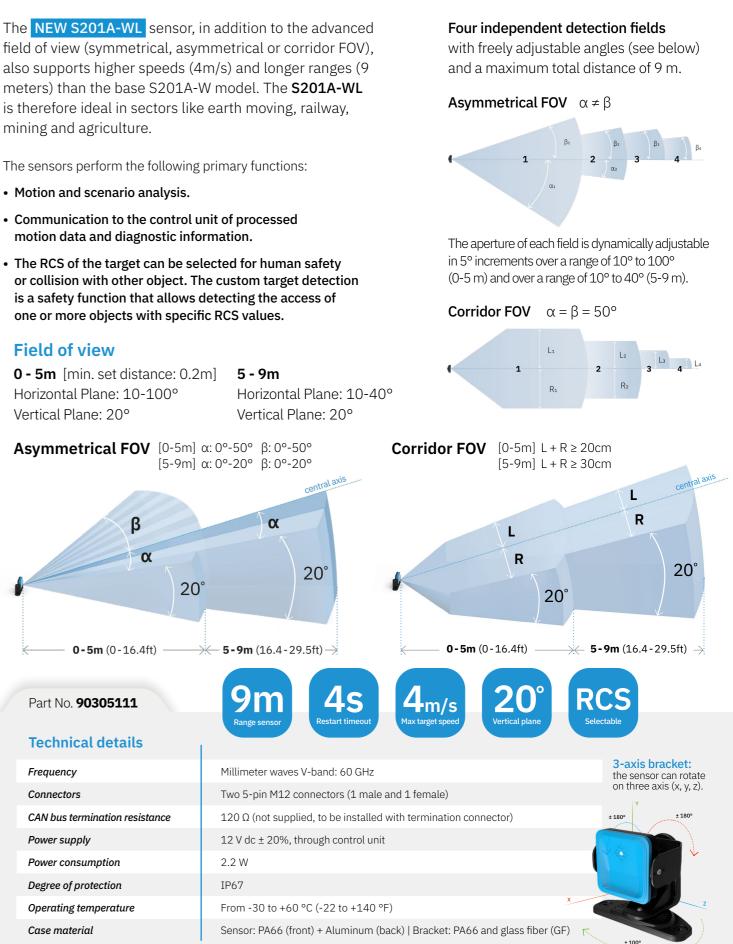
# **S201A-WL Advanced FOV, 9m range**

is therefore ideal in sectors like earth moving, railway, mining and agriculture.

- motion data and diagnostic information.
- is a safety function that allows detecting the access of one or more objects with specific RCS values.

Horizontal Plane: 10-100° Vertical Plane: 20°







Frequency	Millimeter waves V-
Connectors	Two 5-pin M12 con
CAN bus termination resistance	120 $\Omega$ (not supplied
Power supply	12 V dc ± 20%, thro
Power consumption	2.2 W
Degree of protection	IP67
Operating temperature	From -30 to +60 °C
Case material	Sensor: PA66 (front

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# **S203A-W**



## Safety Radar Sensor 200 SERIES

### Vertical FOV 12°



# S203A-W Vertical FOV 12°

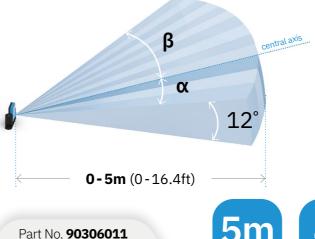
The NEW S203A-W has an advanced field of view equipped with a vertical angular coverage of only 12° (instead of 20° in previous sensors), making it the most adaptable sensor for Autonomous Guided Vehicles (AGVs).

The sensors perform the following primary functions:

- Motion and scenario analysis.
- · Communication to the control unit of processed motion data and diagnostic information.
- · Static Object Detection: this new option allows to detect static objects in the area where the restart prevention safety function is activated. By doing so it prevents the machinery from restarting when there are obstacles in the area.

Field of view 0 - 5m [min. set distance: 0.2m] Horizontal Plane: 10-100° Vertical Plane: 12°





# **4s**

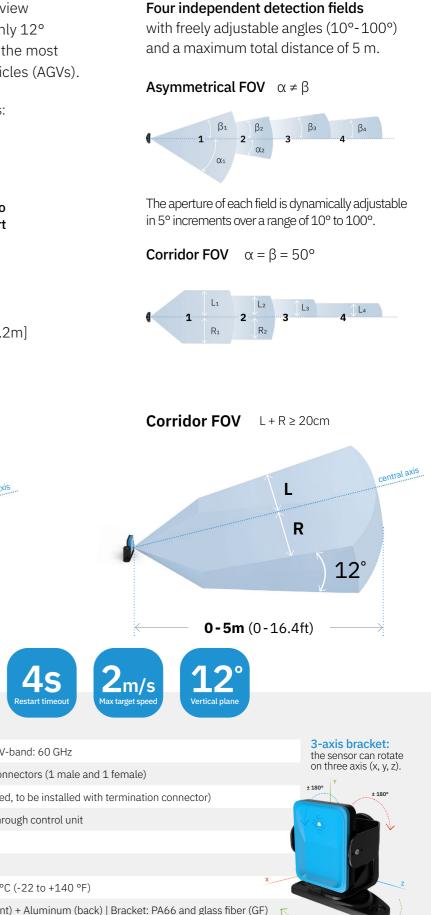
### **Technical details**

Frequency	Millimeter waves V-
Connectors	Two 5-pin M12 con
CAN bus termination resistance	120 $\Omega$ (not supplied
Power supply	12 V dc ± 20%, thre
Power consumption	2.2 W
Degree of protection	IP67
Operating temperature	From -30 to +60 °(
Case material	Sensor: PA66 (fron

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# **S203A-WL**



## Safety Radar Sensor 200 SERIES

### Vertical FOV 12°, 9m range



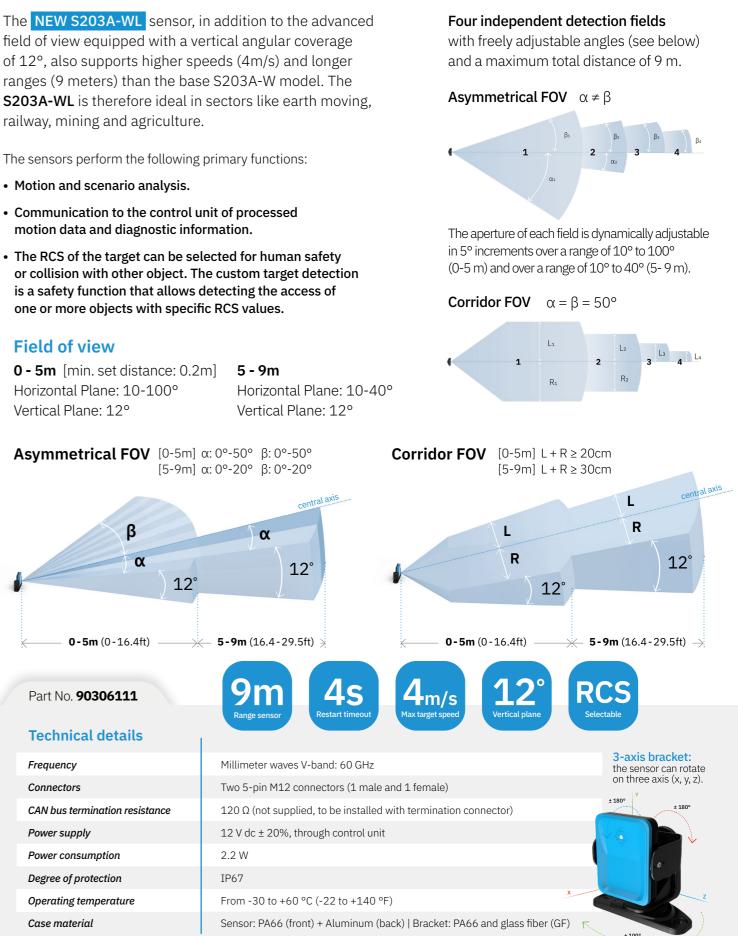
# S203A-WL Vertical FOV 12°, 9m range

field of view equipped with a vertical angular coverage of 12°, also supports higher speeds (4m/s) and longer ranges (9 meters) than the base S203A-W model. The railway, mining and agriculture.

- · Motion and scenario analysis.
- · Communication to the control unit of processed motion data and diagnostic information.
- The RCS of the target can be selected for human safety is a safety function that allows detecting the access of one or more objects with specific RCS values.

Horizontal Plane: 10-100° Vertical Plane: 12°

Vertical Plane: 12°





Frequency	Millimeter waves V-
Connectors	Two 5-pin M12 con
CAN bus termination resistance	120 $\Omega$ (not supplied
Power supply	12 V dc ± 20%, thro
Power consumption	2.2 W
Degree of protection	IP67
Operating temperature	From -30 to +60 °C
Case material	Sensor: PA66 (front

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# **CONTROL UNITS**

**Technical specifications** 



## Which control unit fits my needs?

		Fieldbus	Digital I/O	SD backup SD restore	Configuration	Dynamic setting of detection fields
	C201A-PNS	PROFIsafe MODBUS	<b>S</b>	-	Ethernet USB	Up to 32 configurations switchable in real time
ΞA	C201A-F	FSoE MODBUS	<b>~</b>	-	Ethernet USB	Up to 32 configurations switchable in real time
ТҮРЕ А	C202A	MODBUS	Ø	-	Ethernet USB	Up to 8 configurations switchable in real time* *from FW 2.0.0 onwards
	C203A	-	$\checkmark$	-	USB	Up to 8 configurations switchable in real time* *from FW 2.0.0 onwards
ТҮРЕ В	C201B-P	PROFIsafe MODBUS	Ø		Ethernet USB	Up to 32 configurations switchable in real time
	C201B-F	FSoE MODBUS	$\checkmark$	$\checkmark$	Ethernet USB	Up to 32 configurations switchable in real time
	C201B-C	CIP Safety™ MODBUS	Ø		Ethernet USB	Up to 32 configurations switchable in real time
	C202B	MODBUS	<b>S</b>		Ethernet USB	Up to 8 configurations switchable in real time
	C203B	-	<b>S</b>		USB	Up to 8 configurations switchable in real time

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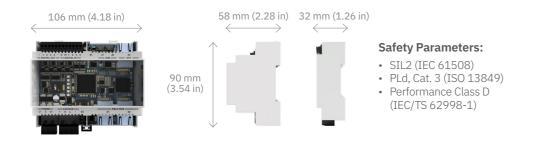
SIL2 PLd

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**Control Unit 200 SERIES** 

PROFIsafe, Ethernet and digital I/O



## C201A-PNS | C201B-P PROFIsafe, Ethernet and digital I/O

**C201** is the most advanced control unit for Inxpect safety radars, with the widest range of communication options. The Inxpect Safety Application allows the configuration of sensitivity levels, safety functions, size of detection fields, and the functionality of the I/O ports of the control unit.

### Safety fieldbus

Currently supporting PROFIsafe fieldbus protocol.

### Secure Ethernet

Remote configuration and management protected by industry standard cyber security protocols.

### USB

Local configuration option.

### **Digital inputs**

The system has two TYPE3 dual channel inputs. Alternatively, the four channels can be used as single channel digital inputs (category 2). Supporting the following functions:

- muting signal
- emergency stop signal
- restart signal

### Four Output Signal Switching Devices

As safety outputs: two dual-channel safety OSSDs.

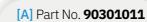
As auxiliary outputs: four auxiliary outputs, which can be configured as signal restart feedback, fault, muting status.

### Dynamic setting of detection fields

The PROFIsafe connection allows to have up to 32 configurations switchable in real time.

### SD backup, SD restore

Configurations and login credentials can be saved and restored via microSD card (only for C201B-P).



Outputs

Inputs

Safety outputs

Fieldbus interface

MODBUS interface

Max power consumption

Degree of protection

System configuration

Power supply

Assembly

Terminals

[B] Part No 90301111

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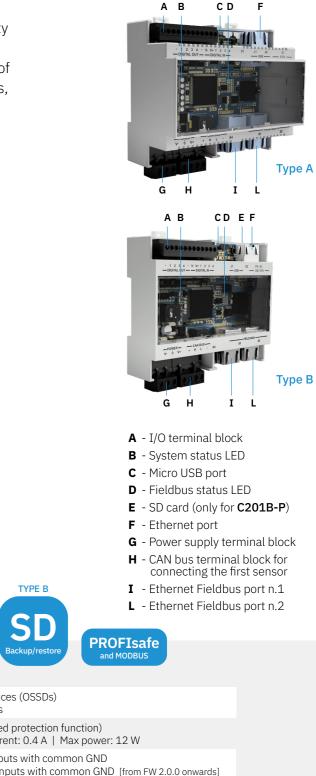
Techni	ical	detail	S

4 Outputs Signal Switching Device or 2 dual channel safety outputs
High-side outputs (with extended Max voltage: 30 V dc   Max curre
2 dual channel TYPE3 digital inpu 4 single channel TYPE3 digital inp
Ethernet based safety fieldbus (P
Ethernet interface for real time da
24 V dc (20–28 V dc) Max curren
5 W (no OSSD)
DIN guide
IP20
Section: 1 mm <sup>2</sup>   Max Current: 4 A
Ethernet, USB

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PROFIsafe)

lata monitoring

nt: 1 A (no OSSD)

A with 1 mm<sup>2</sup> cables

ΣU ΣU

Ether CAT

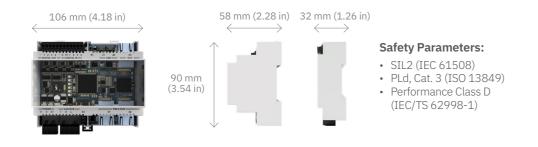
Ether CAT T



SIL2 PLd J

## **Control Unit 200 SERIES**

FSoE, Ethernet and digital I/O



### The system has two TYPE3 dual channel inputs. Alternatively, the four channels can be used as single channel digital inputs

(category 2). Supporting the following functions: muting signal

and the functionality of the I/O ports of the control unit.

FSoE, Ethernet and digital I/O

Currently supporting Safety over EtherCAT®

Remote configuration and management protected

by industry standard cyber security protocols.

Safety fieldbus

Secure Ethernet

**Digital inputs** 

USB

(FSoE) fieldbus protocol.

emergency stop signal

Local configuration option.

restart signal •

### Four Output Signal Switching Devices

As safety outputs: two dual-channel safety OSSDs.

As auxiliary outputs: four auxiliary outputs, which can be configured as signal restart feedback, fault, muting status.

### Dynamic setting of detection fields

The FSoE connection allows to have up to 32 configurations switchable in real time.

### SD backup, SD restore

Configurations and login credentials can be saved and restored via microSD card (only for C201B-F).

[A] Part No. <b>90301012</b>
------------------------------

[B] Part No. 90301112

### Tech

hni	cal	details	

Outputs	4 Outputs Signal Switching Device or 2 dual channel safety outputs
Safety outputs	High-side outputs (with extended Max voltage: 30 V dc   Max currer
Inputs	2 dual channel TYPE3 digital input 4 single channel TYPE3 digital inp
Fieldbus interface	Ethernet based safety fieldbus (Sa
MODBUS interface	Ethernet interface for real time dat
Power supply	24 V dc (20–28 V dc) Max current:
Max power consumption	5 W (no OSSD)
Assembly	DIN guide
Degree of protection	IP20
Terminals	Section: 1 mm²   Max Current: 4 A
System configuration	Ethernet, USB

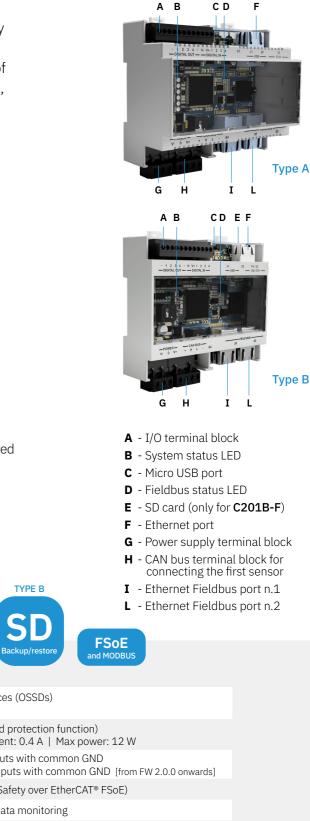
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**C201** is the most advanced control unit for Inxpect safety radars, with the widest range of communication options. The Inxpect Safety Application allows the configuration of sensitivity levels, safety functions, size of detection fields,



t: 1 A (no OSSD)

with 1 mm<sup>2</sup> cables

C201B CIP Safety<sup>™</sup>

-----

S2

P4/X3

- SD/ETH

J1

MI III I

- 1 2 3 4 - V-V+1 2 3 4

- DIGITAL OUT - DIGITAL IN -



Scan the QR Code to open the Regulatory Notice Page



# **Control Unit 200 SERIES**

CAN BUS -

CIP Safety<sup>™</sup>, Ethernet and digital I/O



# C201B-C CIP Safety<sup>™</sup>, Ethernet and digital I/O

C201B-C provides a safety communication based on CIP Safety<sup>™</sup> on EtherNet/IP<sup>™</sup>. The Inxpect Safety Application allows the configuration of sensitivity levels, safety functions, size of detection fields, and the functionality of the I/O ports of the control unit.

### Safety fieldbus

CIP Safety<sup>™</sup> over EtherNet/IP<sup>™</sup>.

### Secure Ethernet

Remote configuration and management protected by industry standard cyber security protocols.

### USB

Local configuration option.

### **Digital inputs**

The system has two TYPE3 dual channel inputs. Alternatively, the four channels can be used as single channel digital inputs (category 2). Supporting the following functions:

- muting signal
- emergency stop signal
- restart signal

### Four Output Signal Switching Devices

As safety outputs: two dual-channel safety OSSDs.

As auxiliary outputs: four auxiliary outputs, which can be configured as signal restart feedback, fault, muting status.

### Dynamic setting of detection fields

The connection allows to have up to 32 configurations switchable in real time.

### SD backup, SD restore

Configurations and login credentials can be saved and restored via microSD card.

### Part No. 90301113.210

### **Technical details**

Outputs	4 Outputs Signal Switching Dev or 2 dual channel safety output
Safety outputs	High-side outputs (with extend Max voltage: 30 V dc   Max cur
Inputs	2 dual channel TYPE3 digital in 4 single channel TYPE3 digital i
Fieldbus interface	CIP Safety™ over EtherNet/IP™
MODBUS interface	Ethernet interface for real time
Power supply	24 V dc (20–28 V dc) Max curre
Max power consumption	5 W (no OSSD)
Assembly	DIN guide
Degree of protection	IP20
Terminals	Section: 1 mm <sup>2</sup>   Max Current: 4
System configuration	Ethernet, USB

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32

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- A I/O terminal block
- **B** System status LED
- C Micro USB port
- D Status LED
- E SD card
- F Ethernet port
- **G** Power supply terminal block
- H CAN bus terminal block for connecting the first sensor
- **I** Ethernet Fieldbus port n.1
- L Ethernet Fieldbus port n.2





vices (OSSDs) uts

ded protection function) urrent: 0.4 A | Max power: 12 W

nputs with common GND inputs with common GND [from FW 2.0.0 onwards]

e data monitoring

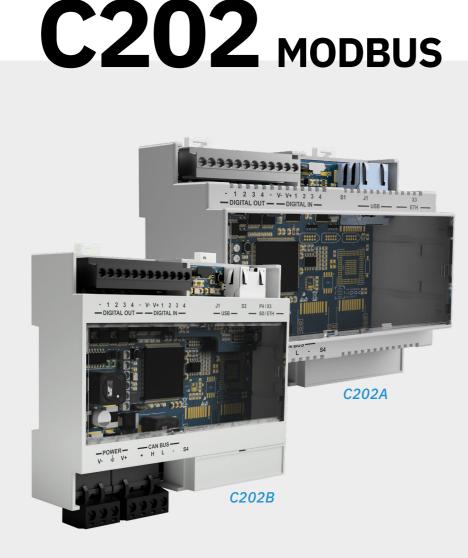
ent: 1 A (no OSSD)

4 A with 1 mm<sup>2</sup> cables

ΣU

LUV Sup

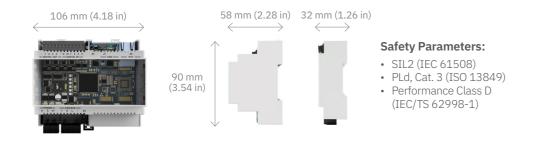
SIL2 PLd



J

# **Control Unit 200 SERIES**

Ethernet and digital I/O



# C202A | C202B Ethernet and digital I/O

C202 offers both USB and Ethernet communication interfaces, providing local and remote configuration options. In both cases, the Inxpect Safety Application allows the configuration of sensitivity levels, safety functions, size of detection fields, and the functionality of the I/O ports of the control unit.

### Secure Ethernet

Remote configuration and management protected by industry standard cyber security protocols.

### USB

Local configuration option.

### **Digital inputs**

The system has two TYPE3 dual channel inputs. Alternatively, the four channels can be used as single channel digital inputs (category 2). Supporting the following functions

- muting signal
- emergency stop signal
- restart signal

### Four Output Signal Switching Devices

As safety outputs: two dual-channel safety OSSDs.

As auxiliary outputs: four auxiliary outputs, which can be configured as signal restart feedback, fault, muting status.

### Dynamic setting of detection fields

There are up to 8 configurations switchable in real time.

### SD backup, SD restore

Configurations and login credentials can be saved and restored via microSD card (only for C202B).

[A] Part No. 90303011	$\vee$	[

B Part No. **90303111** 

### **Technical detail**

Outputs

Inputs

Terminals

System configuration

Safety outputs

MODBUS interface

S	
	4 Outputs Signal Switching De or 2 dual channel safety outpu
	High-side outputs (with extend Max voltage: 30 V dc   Max cu
	2 dual channel TYPE3 digital ir 4 single channel TYPE3 digital
	Ethernet interface for real time
	24.V. do (20, 29.V. do) Mox our

5 W (no OSSD)

DIN guide

Power supply Max power consumption Assembly Degree of protection

IP20 Section: 1 mm<sup>2</sup> | Max Current: 4 A with 1 mm<sup>2</sup> cables Ethernet, USB

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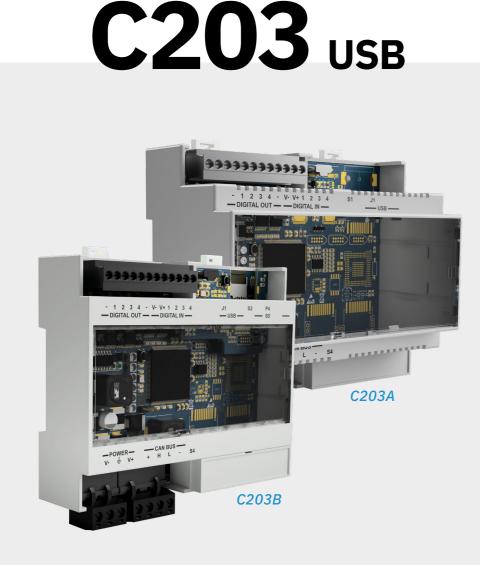


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ROHS SOHS

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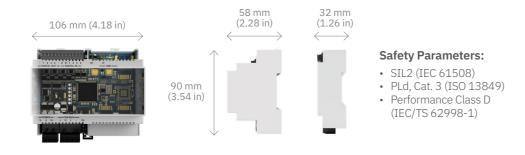
SIL2 PLd



J

# **Control Unit 200 SERIES**

Digital I/O



# C203A | C203B Digital I/O

C203 provides basic but robust control functionality for any Inxpect safety radar sensor. The Inxpect Safety Application works via USB to configure the sensitivity levels, safety functions, size of detection fields, and the functionality of the I/O ports of the control unit.

### USB

Local configuration option.

### **Digital inputs**

The system has two TYPE3 dual channel inputs. Alternatively, the four channels can be used as single channel digital inputs (category 2). Supporting the following functions:

- muting signal
- emergency stop signal
- restart signal

### Four Output Signal Switching Devices

As safety outputs: two dual-channel safety OSSDs.

As auxiliary outputs: four auxiliary outputs, which can be configured as signal restart feedback, fault, muting status.

### Dynamic setting of detection fields

There are up to 8 configurations switchable in real time.

### SD backup, SD restore

Configurations and login credentials can be saved and restored via microSD card (only for C203B).

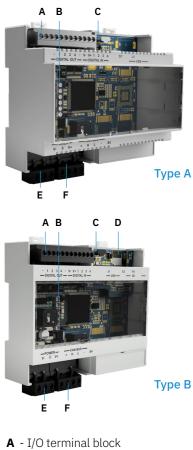
[A] Part No. **90304011** 

### [B] Part No. 90304111

Technical details	Ba
Outputs	4 Outputs Signal Switching Devices or 2 dual channel safety outputs
Safety outputs	High-side outputs (with extended µ Max voltage: 30 V dc   Max curren
Inputs	2 dual channel TYPE3 digital input 4 single channel TYPE3 digital inpu
Power supply	24 V dc (20–28 V dc) Max current:
Max power consumption	5 W (no OSSD)
Assembly	DIN guide
Degree of protection	IP20
Terminals	Section: 1 mm²   Max Current: 4 A
System configuration	USB

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- B System status LED
- C Micro USB port
- D SD card (only for C203B)
- **E** Power supply terminal block
- F CAN bus terminal block for connecting the first sensor



es (OSSDs)

protection function) nt: 0.4 A | Max power: 12 W

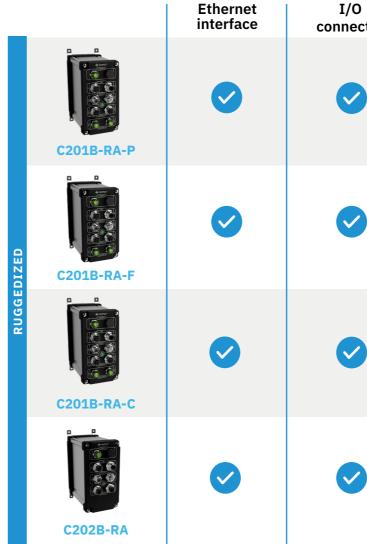
its with common GND outs with common GND [from FW 2.0.0 onwards]

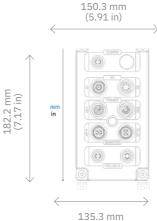
: 1 A (no OSSD)

with 1 mm<sup>2</sup> cables

# **RUGGEDIZED CONTROL UNITS**

**Technical specifications** 





135.3 mm (5.32 in)



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# RUGGEDIZED CONTROL UNITS



C201B-RA-P/-F/-C

# Which ruggedized control unit fits my needs?

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ctor	Power IN/OUT	Safety fieldbus
	$\checkmark$	PROFIsafe
		FSoE
	$\checkmark$	CIP Safety™
	$\checkmark$	-
156.2 mm (6.14 in)	80.5 mm (3.16 in)	
CERTIFIE	Certificati	ons V UK RoHS 2002/95/EC

# **UNMATCHED RELIABILITY AND DURABILITY**

Discover the state-of-the-art ruggedized Inxpect control unit, designed to deliver exceptional performance even in the harshest conditions, making it the ideal choice for challenging environments and industrial applications.

**Key Features: IP67** Certification: Maximum protection against dust and water.

### Resistance to vibrations in accordance with:

- IEC 60068-2-64 Fh (equipment in wheeled vehicles, Spectrum A.3)
- IEC/EN 61496-1:2020 (ground vehicle installations, 5M3)
- ISO 15003:2019 (agricultural machinery, L3)

### **Ideal Applications:**

Heavy Industry: Perfect for environments with high levels of dust and humidity. Agricultural Sector: Withstands weather conditions and soil environments. Construction: Reliable on construction sites, resistant to dust and vibrations.

The system is equipped with a **Type B** Control Unit, and an **SD card** is pre-installed by default in all versions.

# C201B-RA-F FSoE, Ethernet & digital I/O

Part No. 90301B12.210



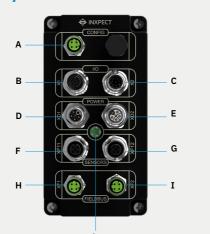
### **C201B-RA-C** CIP Safety<sup>™</sup>, Ethernet & digital I/O Part No. 90301B13.210

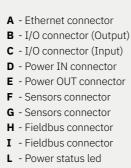


# **C201B-RA-P**

PROFIsafe, Ethernet & digital I/O

Part No. 90301B11.210

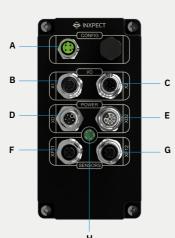




protection

## **C202B-RA** Ethernet & digital I/O

Part No. 90303B11.210

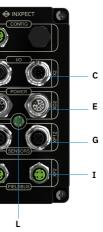


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- A Ethernet connector
- B I/O connector (Output)
- C I/O connector (Input)
- D Power IN connector
- E Power OUT connector
- **F** Sensors connector
- G Sensors connector
- H Fieldbus connector
- I Fieldbus connector
- L Power status led



- A Ethernet connector
- B I/O connector (Output)
- C I/O connector (Input)
- D Power IN connector
- E Power OUT connector
- **F** Sensors connector
- G Sensors connector
- H Fieldbus connector
- I Fieldbus connector
- L Power status led

- A Ethernet connector
- **B** I/O connector (Output)
- **C** I/O connector (Input)
- **D** Power IN connector
- E Power OUT connector
- F Sensors connector
- G Sensors connector
- H Power status led

# Accessories

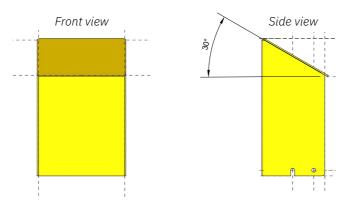


# Adjustable protector kit for indoor and outdoor applications

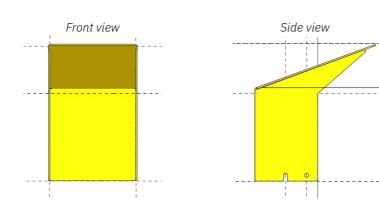
These adjustable protector kits are used for installing Inxpect Safety Radar Sensors in harsh indoor and outdoor environments. The purpose of the support is to house the sensor at the desired height and protect it from the sides and from above.

### INDOOR VERSION Part No. 90302ZAC

30 degree slope downward [RAL1003 powder coated metal]



OUTDOOR VERSION Part No. 90302ZAD 20 degree slope upward [RAL1003 powder coated metal]

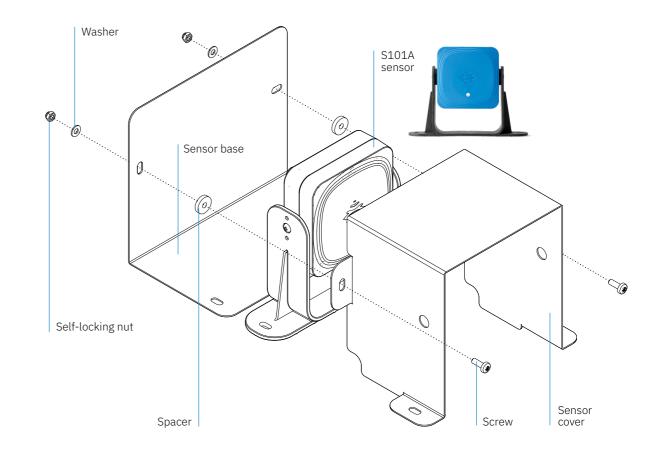




**Metal protector** [AISI 304 Stainless steel]

Part No. 90202ZAA

The metal protector ensures that Inxpect S101A sensors perform at their best even in the most challenging environmental conditions, increasing their immunity to spurious detections while reducing the possibility of damage caused by accidental impact.







Part No. **X0000011** 

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# for Safety Radar Sensor 100 SERIES



Which cables and lengths do you need for your system?

Find out with our utility: Cable Validator (Sign in to Inxpect Tools).



# Cables

### Control unit to sensor cable:

CAN bus, totally shielded.

Control unit side: free wires

**Sensor side:** connector M12, female, 5 poles, A-coded, angled 90°

Length	Radar Sensor 100 SERIES	Radar Sensor 200 SERIES
10 m	Part No. <b>08000004</b>	Part No. <b>08000111</b>
15 m	Part No. <b>08000006</b>	Part No. <b>08000112</b>
20 m	-	Part No. <b>08000113</b>

# Inxpect Safety Radar Equipment

### Sensor to sensor cable:

CAN bus, totally shielded.

**IN side:** connector M12, female, 5 poles, A-coded, angled 90°

**OUT side:** connector M12, male, 5 poles, A-coded, angled 90°

Length	Radar Sensor 100 SERIES	Radar Sensor 200 SERIES
1 m	-	Part No. <b>08000126</b>
3 m	Part No. <b>08000007</b>	Part No. <b>08000120</b>
5 m	Part No. <b>08000012</b>	Part No. <b>08000121</b>
10 m	-	Part No. <b>08000122</b>
15 m	Part No. <b>08000017</b>	Part No. <b>08000123</b>



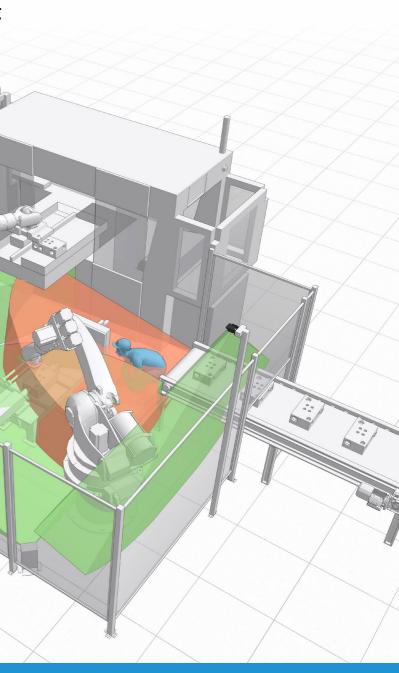
44

### **Bus terminator:**

M12, male, 5 poles, A-coded, straight 180°, resistance 120  $\Omega$ 

Part No. 0700003





# **Restart prevention**

Higher safety in robotic cells

Inxpect refines the state of art of robotics cell and the world of industrial safety in general. Inxpect 3D radars ensure maximum safety within dangerous areas by Main features:

- Natively 3D: volumetric coverage
- Adaptive to changing scenarios

- Remove human error

# **Restart prevention**

### Higher safety in wrapping stations

Inxpect redefines the state of the art of automatic wrapping and strapping stations. Inxpect 3D radars simplify human/machine interaction, prevent unintentional restarts and reduce residual risks, increasing efficiency and productivity.

- Simplify access procedures







# **Smart collision avoidance**

### **Indoor application: Pick and Place**

# **Smart collision avoidance**

### **Indoor application: Automated Guided Vehicle**

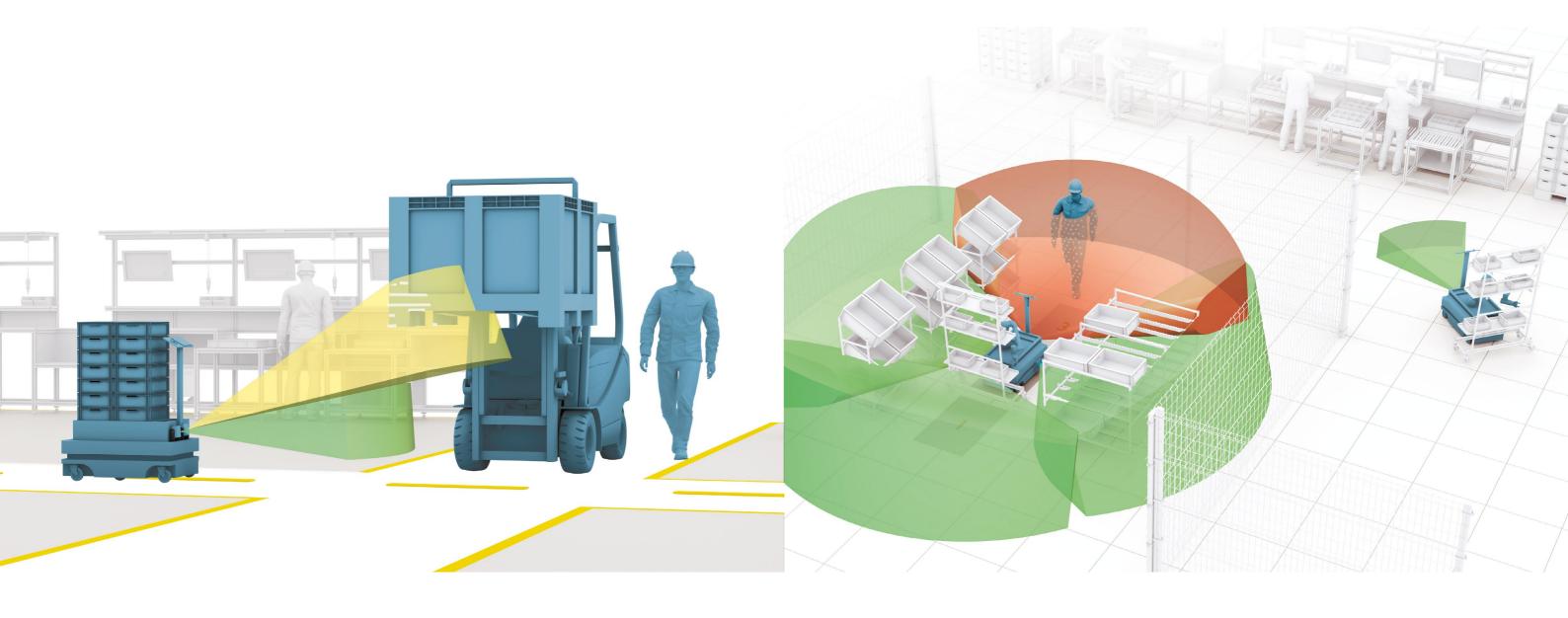
Inxpect brings dynamic safety to AGV. Inxpect 3D radars are ideal anti-collision sensor: they're robust to dust, debris, smoke, rain and light reflections. They are effective at detecting suspending loads, provide volumetric coverage and fit perfectly for indoor and outdoor applications.

Main features:

- Natively 3D: volumetric coverage
- Effective at detecting suspended loads
- Robust to smoke, dust, debris, rain, fog, snow and light reflections
- Indoor and outdoor applications

Inxpect brings dynamic safety to pick and place applications. Inxpect 3D radar simplifies human/ machine interaction, provides highly dynamic protection and allows for simple programming. Being adaptive to changing scenarios, Inxpect 3D radar increases efficiency and productivity.

- Natively 3D: volumetric coverage
- Adaptive to changing scenarios
- Highly dynamic protection
- Simple programming









# **Smart collision avoidance**

**Outdoor application: Construction Site** 

Inxpect ensures maximum safety even in harsh environmental conditions. Dust, fog, rain and swarf generated by production processes do not cause false alarms. The volumetric coverage of Inxpect 3D radars prevents collision with suspended loads or airborne elements.

Main features:

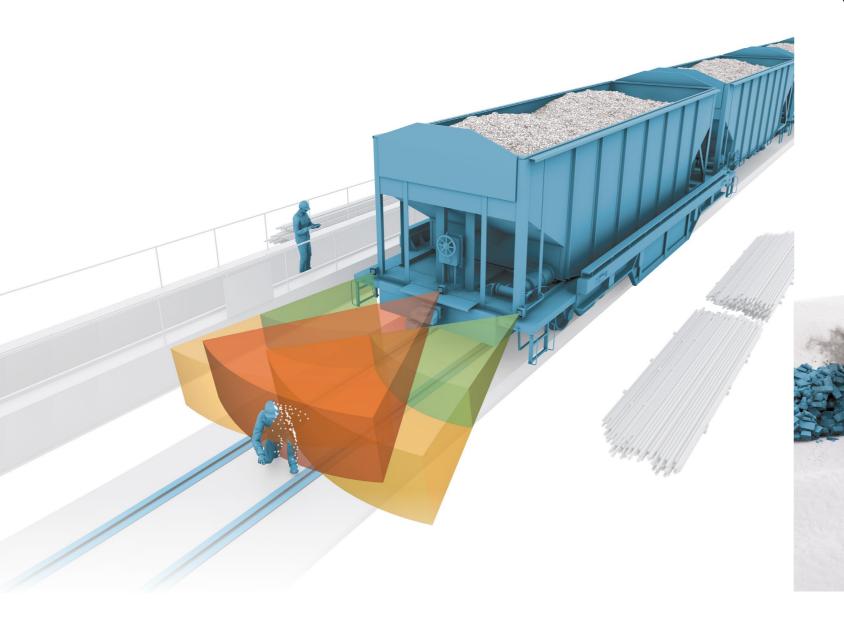
- Robust to smoke, dust, debris, rain, fog, snow and light reflections
- Reduce false alarms
- 3D radar: volumetric protection
- Operating temperature -30° +60°

# **Smart collision avoidance**

**Outdoor application: Construction Site** 

Inxpect ensures maximum safety even in harsh environmental conditions. Inxpect 3D radars are an excellent aid to monitoring of the movement areas of operating machines because they allow to have a complete analysis of the area, even on multiple levels.

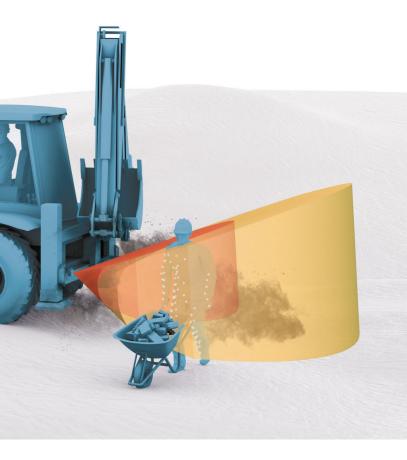
- Robust to smoke, dust, debris, rain, fog, snow and light reflections
- Reduce false alarms
- Indoor and outdoor applications
- 3D radar: volumetric protection
- Operating temperature -30° +60°











# **Access protection**

### Dynamic safety for mobile gantry machining

Inxpect redefines safety for mobile gantry machining. Thanks to the volumetric coverage, Inxpect 3D radars secure both the floor and the work surface, always ensuring maximum safety for operators.

Main features:

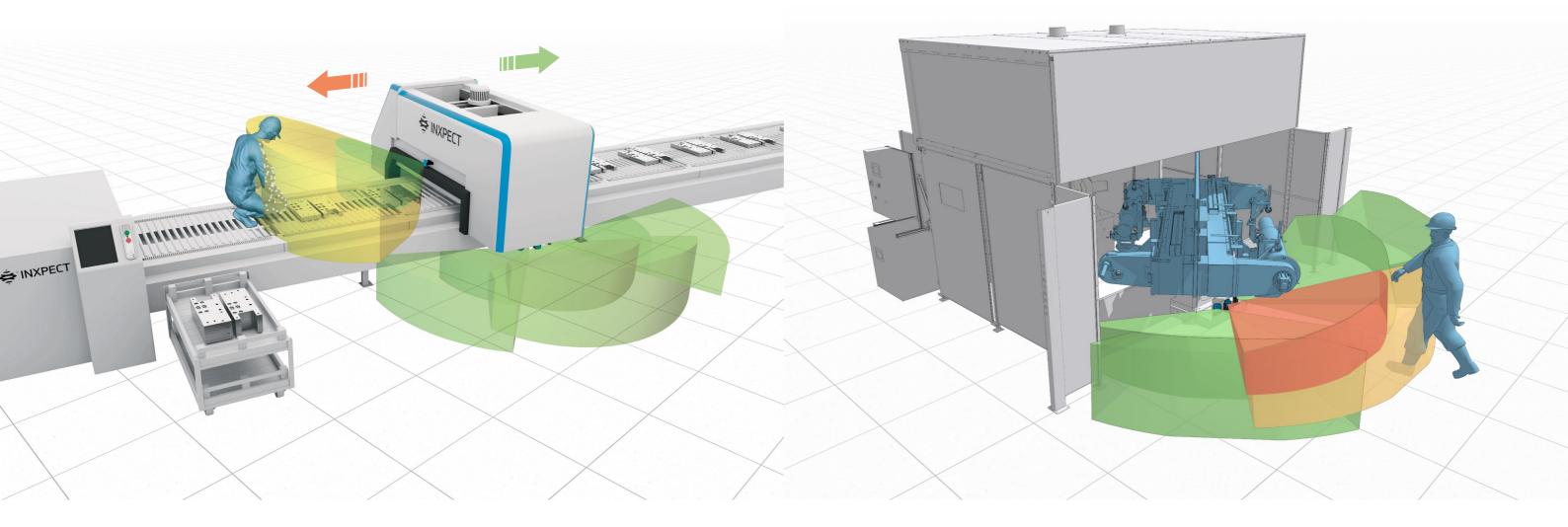
- Robust to debris: no more false alarms
- Natively 3D: volumetric coverage (for both floor and work surface areas)
- Prevent unintentional restarts while operator is in the dangerous area
- Remove human error

# Access protection Higher safety in robotic welding systems

Inxpect redefines safety for robotic welding systems with double electric rotary tables. Inxpect 3D radars can be positioned to create a volumetric barrier for access protection, increasing the safety of the setup while dramatically improving productivity.

Main features:

- Natively 3D: volumetric coverage
- Robust to debris: no more false alarms
- Virtually remove the need for protection barriers
- Simplify human/machine interaction
- Speed up the working process
- Improve productivity



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# **Access protection**

Dynamic safety for robotic cells

Inxpect redefines safety for robotic cells. Thanks to the dynamic configurations, Inxpect's 3D radar sensors monitor the entrance to the dangerous area, always guaranteeing maximum safety for operators and at the same time without ever stopping the operating cycle of the machinery.

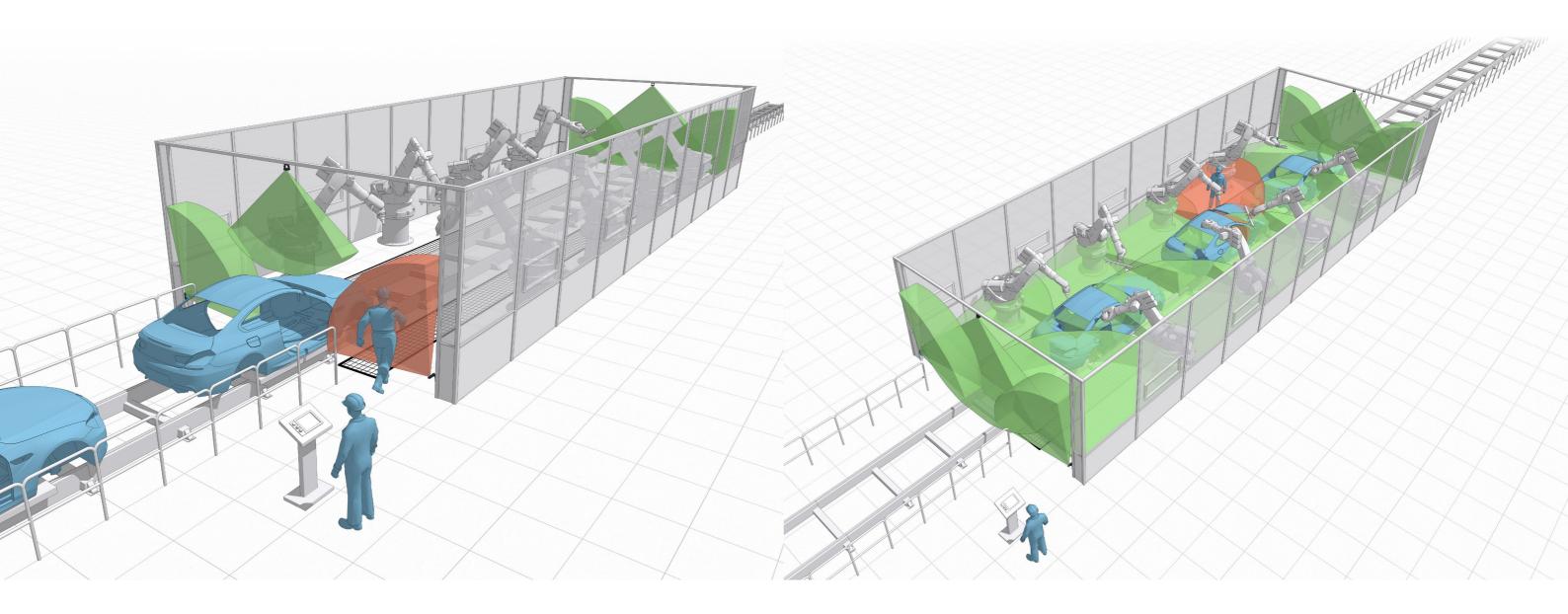
Main features:

- Dynamic configurations
- 3D radar: volumetric protection
- Simplify human/machine interaction
- Improve productivity

# **Restart prevention** Higher safety in automation robotic cells

Inxpect removes the human error for robotic cells. Inxpect 3D radars thanks to proprietary algorithms prevent unintentional restarts while operator is in the dangerous area and reduce residual risks, increasing efficiency and productivity.

- Natively 3D: volumetric coverage
- Adaptive to changing scenarios
- Prevent unintentional restarts
- Improve human/machine interaction
- Remove human error
- Improve productivity







# **Restart prevention**

### Higher safety in automatic palletizing applications

Inxpect safely monitors access to loading/unloading area. This solution combines optical barriers and radars, redefining the state of the art and reducing residual risk. Inxpect 3D radars ensure the application safety: detecting if there is a operator in the area and stopping the machine until the area is clear. Main features:

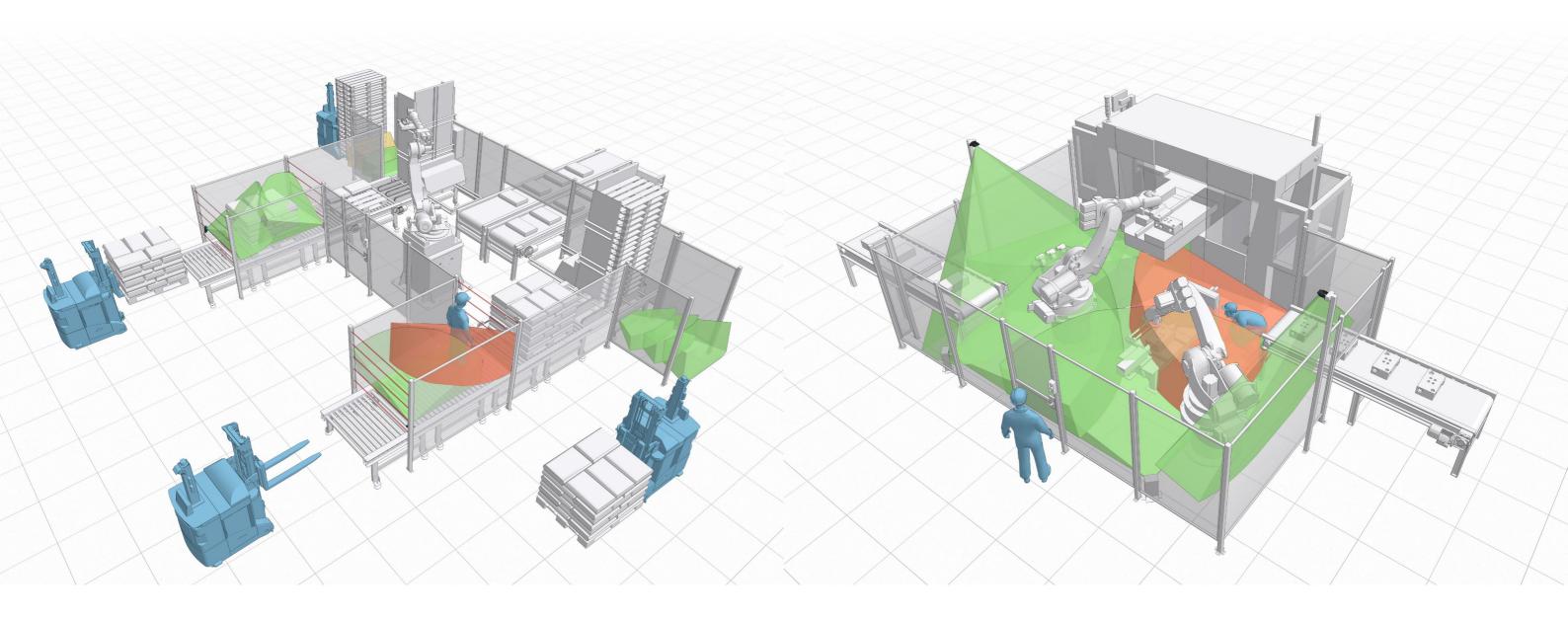
- Natively 3D: volumetric coverage (for both floor and work surface areas)
- Prevent unintentional restarts
- Highly dynamic protection
- Reduce residual risk
- Improve productivity

# **Restart prevention**

### Higher safety in automatic loading/unloading CNC applications

Inxpect redefines the state of the art of automatic loading/unloading CNC applications. Inxpect 3D radars simplify human/machine interaction, prevent unintentional restarts and reduce residual risks, increasing efficiency and productivity.

- Natively 3D: volumetric coverage
- Prevent accidental restart
- Simplify access procedures
- Improve human/machine interaction
- Remove human error
- Improve productivity











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