



*Your future's safe!*



# SENSORS

## safety contactless sensors and devices

*product catalogue*

## PI-Safe



Fail-safe inductive sensors. See page 4



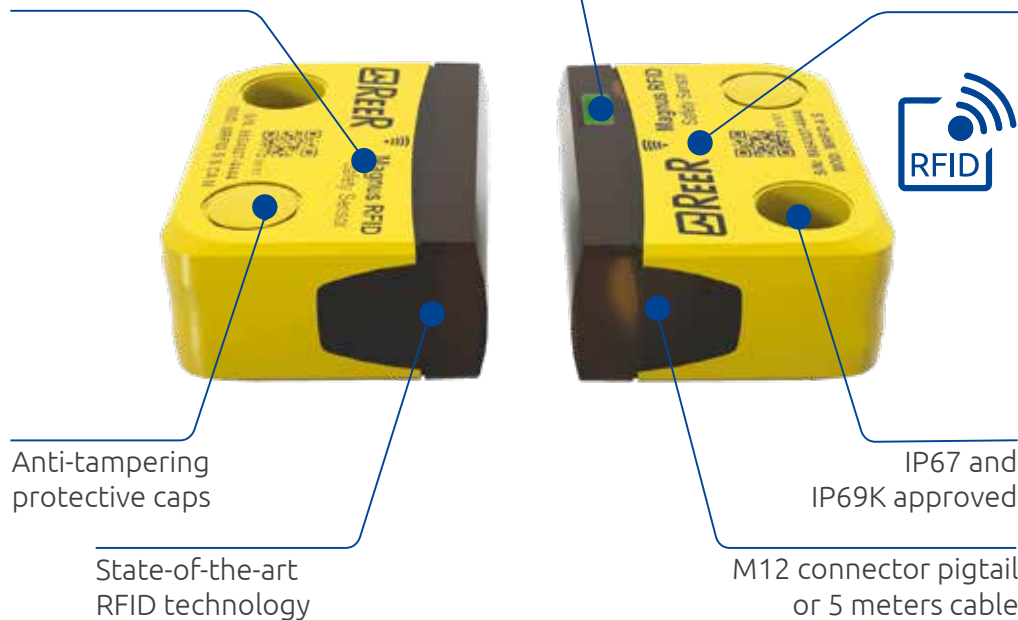
## Magnus RFID

Next generation sensors for machine safety. See page 11

Available with  
22 or 78 mm interaxis

Status LED

3 different  
coding levels



## Magnus MG

Magnetic safety switches. See page 18



## Pharo

Type 3 laser scanner. See page 24



## Ilion

Type 2 safety photocells. See page 28



## Ulisse

Type 2 safety photocells. See page 30



## SAFECODER

Safety Sin/Cos incremental encoder. See page 32



## SAFELOCK

Safety switch with guard locking. See page 34





### Fail-safe inductive sensors

#### A complete range of sensors for position detection

- Certification to EN 60947-5-3 for electromechanical controlgear
- Ensuring operator and machine safety
- No special actuator for electronic fail-safe sensors required
- Connection to safety plc or safety controller

### APPLICATIONS

- Door or flaps detection at closed position
- Cylinder shaft detection
- Treads up detection
- Bolster detection at a truck crane
- Robot cell working limitation of the working area
- Door detection
- Wind turbine lock / endposition of the blade

### APPROVALS

- 2006/42/EC "Machine Directive"
- 2014/30/EC "Electromagnetic Compatibility Directive"
- 2014/35/EC "Low Voltage Directive"
- EN 60947-5-3 "Low-voltage switchgear and controlgear - Part 5-3: Control circuit devices and switching elements - Requirements for proximity devices with defined behaviour under fault conditions (PDDb)"
- IEC 61508 "Sicurezza funzionale di impianti elettrici/elettronici/programmabili legati alla sicurezza"
- ISO 13849 "Safety of machinery - Safety-related parts of control systems"



### OVERVIEW

The operating principle and thus the advantages of inductive sensors can be used for safety applications.

Inductive safety applications are special applications which require a non-contact and safe detection of a metal object.

A wear-free function due to the non-contact principle and a high protection rating guarantee high uptime of the machines and installations.

The PI-Safe sensor increases the uptime and safety of installations and can be connected to approved evaluation units without cross-fault monitoring.

Faults such as coil break or coil short circuit are diagnosed and the sensor passes into the defined safe state. Even a cross fault between the supply voltage and one of the two outputs does not affect the safety function of the sensor.

Applications include reliable positioning on rotary indexing tables and machine tools, safe triggering of slow travel or switching off in end positions for presses, gantry robots and actuators or safe area monitoring for robots.

### MAIN FEATURES

Operating voltage (VDC)	19,2 ... 30
Switching current (mA)	Max. 100
Safety output	2 OSSD
Electrical design	DC PNP
Connection	M12 4-pole connector
Signalling	LED yellow (signal), LED green (power)
Protection class	III

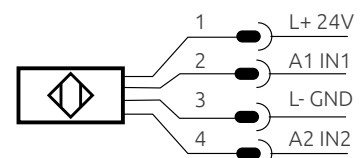
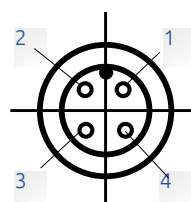


Operating temperature: -25 ... +70 °C



IP65 and IP67 protection rate  
IP69K PI M30 NF K model only

### CONNECTOR





## PI M12 NF

METAL THREAD M12 x 1 / L = 70 mm

### TECHNICAL FEATURES

Mounting	Non-flush mountable
Enable zone (mm)	0.5 ... 4
Operating voltage (VDC)	19,2 ... 30
Current consumption (mA)	< 20
Max. capacitive load (nF)	20
Short-circuit protection	yes
Housing material	Body: stainless steel; Head: PBT
Response time (ms)	≤ 1
Safety level	PL d / SIL 2
Ordering code	1293000

### ACCESSORIES

- M12 angle bracket. See [page 10](#)
- M12 mounting clamp. See [page 10](#)
- M12 5-pole straight connectors. See [page 41](#)

## PI M18 NF

METAL THREAD M18 x 1 / L = 70,5 mm

### TECHNICAL FEATURES

Mounting	Non-flush mountable
Enable zone (mm)	1 ... 8
Operating voltage (VDC)	19,2 ... 30
Current consumption (mA)	< 30
Max. capacitive load (nF)	20
Short-circuit protection	yes
Housing material	Body: stainless steel; Head: PBT
Response time (ms)	≤ 1
Safety level	PL d / SIL 2
Ordering code	1293001

### ACCESSORIES

- M18 angle bracket. See [page 10](#)
- M18 mounting clamp. See [page 10](#)
- M12 5-pole straight connectors. See [page 41](#)



## PI M18 F

METAL THREAD M18 x 1 / L = 70 mm

### TECHNICAL FEATURES

Mounting	Flush mountable
Enable zone (mm)	1 ... 5
Operating voltage (VDC)	19,2 ... 30
Current rating (mA)	100
Current consumption (mA)	< 30
Max. capacitive load (nF)	20
Short-circuit protection	yes
Housing material	Body: Brass white bronze coated; Head: PBT
Response time (ms)	≤ 1
Safety level	PL d / SIL 2
Ordering code	1293002

### ACCESSORIES

- M18 angle bracket. See [page 10](#)
- M18 mounting clamp. See [page 10](#)
- M12 5-pole straight connectors. See [page 41](#)

## PI M18 FR

METAL THREAD M18 x 1 / L = 86,5 mm

### TECHNICAL FEATURES

Mounting	Flush mountable
Enable zone (mm)	> 10
Operating voltage (VDC)	10 ... 30
Current rating (mA)	50
Current consumption (mA)	< 30
Max. capacitive load (nF)	20
Short-circuit protection	yes
Housing material	Body: Brass white bronze coated; Head: PBT
Response time (ms)	≤ 5
Safety level	PL d / SIL 2
Ordering code	1293003

### ACCESSORIES

- M18 angle bracket. See [page 10](#)
- M18 mounting clamp. See [page 10](#)
- M12 5-pole straight connectors. See [page 41](#)





## PI M30 NF

METAL THREAD M30 x 1,5 / L = 70 mm

### TECHNICAL FEATURES

Mounting	Non-flush mountable
Enable zone (mm)	1 ... 15
Operating voltage (VDC)	19,2 ... 30
Current rating (mA)	100
Current consumption (mA)	< 30
Max. capacitive load (nF)	20
Short-circuit protection	yes
Housing material	Body: stainless steel; Head: PBT
Response time (ms)	≤ 10
Safety level	PL d / SIL 2
Ordering code	1293004

### ACCESSORIES

- M30 angle bracket. See [page 10](#)
- M30 mounting clamp. See [page 10](#)
- M12 5-pole straight connectors. See [page 41](#)

## PI M30 F

METAL THREAD M30 x 1,5 / L = 70 mm

### TECHNICAL FEATURES

Mounting	Flush mountable
Enable zone (mm)	1 ... 10
Operating voltage (VDC)	19,2 ... 30
Current rating (mA)	100
Current consumption (mA)	< 30
Max. capacitive load (nF)	20
Short-circuit protection	yes
Housing material	Body: Brass white bronze coated; Head: PBT
Response time (ms)	≤ 10
Safety level	PL d / SIL 2
Ordering code	1293005

### ACCESSORIES

- M30 angle bracket. See [page 10](#)
- M30 mounting clamp. See [page 10](#)
- M12 5-pole straight connectors. See [page 41](#)



## PI M30 NF K

METAL THREAD M30 x 1,5 / L = 80 mm

### TECHNICAL FEATURES

Mounting	Non-flush mountable
Enable zone (mm)	6 ... 12
Operating voltage (VDC)	19,2 ... 30
Current rating (mA)	100
Current consumption (mA)	< 30
Max. capacitive load (nF)	20
Short-circuit protection	yes
Housing material	Body: stainless steel; Head: PBT
Response time (ms)	≤ 10
Safety level	PL e / SIL 3
Ordering code	1293006



High protection class IP69K for use in harsh environments.

### ACCESSORIES

- M30 angle bracket. See [page 10](#)
- M30 mounting clamp. See [page 10](#)
- M12 5-pole straight connectors. See [page 41](#)





## PI SQ F-NF

RECTANGULAR 40x40x66 mm

### TECHNICAL FEATURES

Mounting	Non-flush or flush mountable
Enable zone (mm)	10 ... 15
Operating voltage (VDC)	19,2 ... 30
Current consumption (mA)	< 15
Max. capacitive load (nF)	20
Short-circuit protection	yes
Housing material	Body: diecast zinc; Head: PPE;
Response time (ms)	≤ 50
Safety level	PL e / SIL 3
Ordering code	1293007

### ACCESSORIES

- M12 5-pole straight connectors. See [page 41](#)

## PI SQ NF

RECTANGULAR 40x40x66 mm

### TECHNICAL FEATURES

Mounting	Non-flush mountable
Enable zone (mm)	4 ... 20
Operating voltage (VDC)	19,2 ... 30
Current consumption (mA)	< 30
Max. capacitive load (nF)	20
Short-circuit protection	yes
Housing material	Body: diecast zinc; Head: PPE;
Response time (ms)	≤ 50
Safety level	PL e / SIL 3
Ordering code	1293008

### ACCESSORIES

- M12 5-pole straight connectors. See [page 41](#)

## ACCESSORIES

### ANGLE BRACKET

- For mounting cylindrical sensors
- Easy, quick and inexpensive fixing
- Robust stainless steel design for use in harsh industrial environments
- For free-standing mounting

	Ordering code	Model
	1293100	M12 bracket
	1293101	M18 bracket
	1293102	M30 bracket

### CLAMPS WITH END STOP

- End stop for defined installation position
- Safe fixing of the sensor with click-fit mounting
- For mounting cylindrical sensors
- Easy, quick and inexpensive fixing
- Reliable mounting on a surface by means of two screws

	Ordering code	Model
	1293103	M12 mounting clamp
	1293304	M18 mounting clamp
	1293305	M30 mounting clamp