



## **ICB series - Inductive proximity sensors**

# **Sensors**

# ICB series

## ICB series - The next generation

Inductive proximity sensors provide a reliable and cost effective solution for many applications in machinery and automation equipment. These robust sensors detect metal objects without physical contact, giving a wear-free solution in harsh environments.

Inductive sensors are not influenced by dust, oil, water, or vibrations. Operating at high switching frequencies, they feature high resolution, excellent repeatability and precision, and exceptional resistance to shocks.

What sets the ICB series apart is their onboard microprocessor that takes them into the world of digital technology, merging the benefits of sensing and data transmission.

Furthermore, compared to today's sensor technology, our innovative hot melt potting make these sensors the state-of-the-art sensor of choice.



## Eco-friendly sensing

ICB series represents a complete family of high performance inductive sensors, built to the highest-quality standards and resulting from over 50 years' experience at Carlo Gavazzi in designing and producing proximity sensors.

- **The new range includes:**

- M12, M18 and M30 long or short barrel housings
- Sensing range from 2 mm up to 40 mm

- **All sensors come with:**

- Rugged nickel plated brass construction
- Excellent LED output state visibility
- Short-circuit, reverse polarity and transients protection

- **Several installation possibilities:**

- Flush and non-flush versions
- NPN or PNP, NO or NC output
- 2-meter oil resistant PVC cable or M12 disconnect plug

- **Approvals**

The ICB series bear the cULus certification and CE mark.

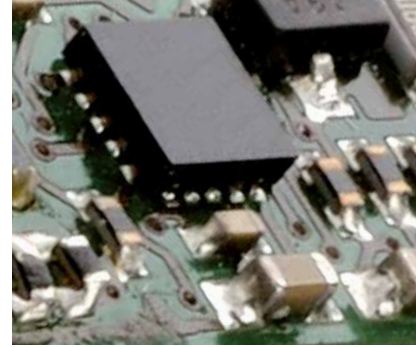
## Main features

### A new generation of microprocessor

All the ICB series sensors feature a new generation of microprocessor, that allows final calibration of the sensor at the end of the assembly process and provides:

- Temperature stability over the whole temperature range
- Increased EMC robustness
- Greater reliability and repeatability
- High precision and minimum deviation

- Possibility of customization such as programmable outputs and switching frequencies



### Assured traceability and best application control

The traceability of the new ICB12 and ICB18 families is guaranteed by the permanently legible laser engraved part number and serial number on the plastic cap of the sensor.

The LED in the new ICB series sensors is clearly visible from any direction both in the cable and in the plug-disconnect versions.

In addition to the indication of the switching state, with the ICB sensors we

have introduced a new function for the LED. When it blinks with a frequency of 2Hz the LED indicates a short-circuit or overload condition, assuring the best application control.



### Environmentally friendly potting material

In ICB12 and ICB18 families the new potting material provides an ecofriendly design and high performance.

This thermoplastic hotmelt filling is made from recycled corn by-product and allows:

- Reduced impact on the environment
- Higher resistance to mechanical stress and vibrations
- No risk of breaking electronic components

- Increased reliability and improved stability
- Longer sensor lifetime



# ICB series

## Inductive proximity sensors

### Market Applications

#### Machine tool

CNC machines repeat precise sequences and are able to produce the most complex pieces.

Tool changing machines for example automatically change the specific tool. A drill machine has a variety of drill bits to make holes of several sizes.

Inductive sensors are used to check the tool position when changing the tool or to verify the component moved to the correct location.

ICB series represents a **suitable solution** thanks to:

- The improved performance with vibrations and shocks
- Reliable connection system between the cable and the barrel
- Very high resolution and quick response time

#### Achieved benefits:

- Optimized and fast setup
- Reliable and cost effective solution



#### Agriculture

Inductive sensors are mainly used for non contact detection of the position of a part on the machine or equipment itself.

Thanks to its excellent quality and to the complete product range, ICB series is particularly suitable for the agricultural and earth-moving sectors.

#### ICB series allows:

- Personalized solution with customizable termination options

- High durability and quality
- Resistance to extreme conditions, such as oily and dusty environment

#### Achieved benefits:

- Reduced installation costs
- Product reliability and durability
- Complete range to satisfy all application needs



#### Material handling systems

Material handling systems interconnect the different processes of production, from the raw material to the final product. In these systems it is mandatory to ensure the automatic and reliable flow of goods. Inductive sensors are critical to obtaining the higher productivity and quality from the automated process.

ICB series **is an ideal choice** very well thanks to:

- Microprocessor technology

- High precision and temperature stability

#### Achieved benefits:

- Precise fit with customized solutions
- Programmable sensing distance and frequency





## ICB series - Triple sensing distance



The robust and highly reliable ICB series is now available in increased operating distance. In M12, M18 and M30 industrial standard nickel plated brass housings. The new sensors are extremely accurate and represent the best choice for non-contact detection of metallic targets at a distance **up to 40 mm**, the largest sensing distance available on the market for an inductive sensor.

The powerful design of ICB offers the ideal solution in demanding installation conditions typical of industrial environments. The eco-friendly high performance potting material protects the electronic components and provides increased reliability with higher resistance to mechanical stress and vibrations than the traditional proximity sensors.

ICB inductive proximity sensors thanks to an operating distance up to 3 times the standard, allows to position the sensor at an higher distance from a metal target. The result is an **increased sensor's lifetime** especially when the metal target has greater tolerances, being the sensor well protected.

All options already available in ICB standard and extended series are now also available in increased operating distance:

- Long and short barrel housings
- Quasi-flush or non-flush mounting in metal
- NO or NC
- M12-plug or 2 m PVC cable versions
- NPN or PNP switching outputs.

The sensors are rated to IP67 and the mechanical design of the back part ensures an excellent sealing against water and humidity penetration. Thanks to the **built in microcontroller**, all sensors are individually compensated to ensure repeatable and highly accurate operation over the whole temperature range, granting the sensing distance between -25 and +70°C.

# ICB series

## Inductive proximity sensors

### Your benefits



**ICB12**  
 Quasi-flush:  $S_n$  6 mm  
 Non-flush:  $S_n$  10 mm

**ICB18**  
 Quasi-flush:  $S_n$  12 mm  
 Non-flush:  $S_n$  20 mm

**ICB30**  
 Quasi-flush:  $S_n$  22 mm  
 Non-flush:  $S_n$  40 mm

**Longer sensing distance**  
 Installing the sensor at a longer distance from the moving metal objects reduces the risk of breakdowns granting much lower failure rate.

**Laser printing**  
 The most important information are permanently laser engraved on the front cap granting the best traceability.

**High operating frequency**  
 The high operating frequency allows high speed measurements in counting tasks or for monitoring rotational speed.

### Easy mounting

The installation of the sensor is much easier thanks to the built-in setup function.  
 By approaching the target to the sensor's face the LED starts blinking when the effective operating distance ( $S_r$ ) is between 80% and 100% of the rated operating distance and lights continuously when it is below 80%.  
 Thus allowing the installer to position the proximity sensor at the correct distance from the target.



### Diagnostics

LED is clearly visible from any direction in both cable and plug disconnect version.  
 Further to the indication for output ON the LED also has an additional diagnostic function. It flashes with a frequency of 3 Hz in case of shorts circuit or overload.



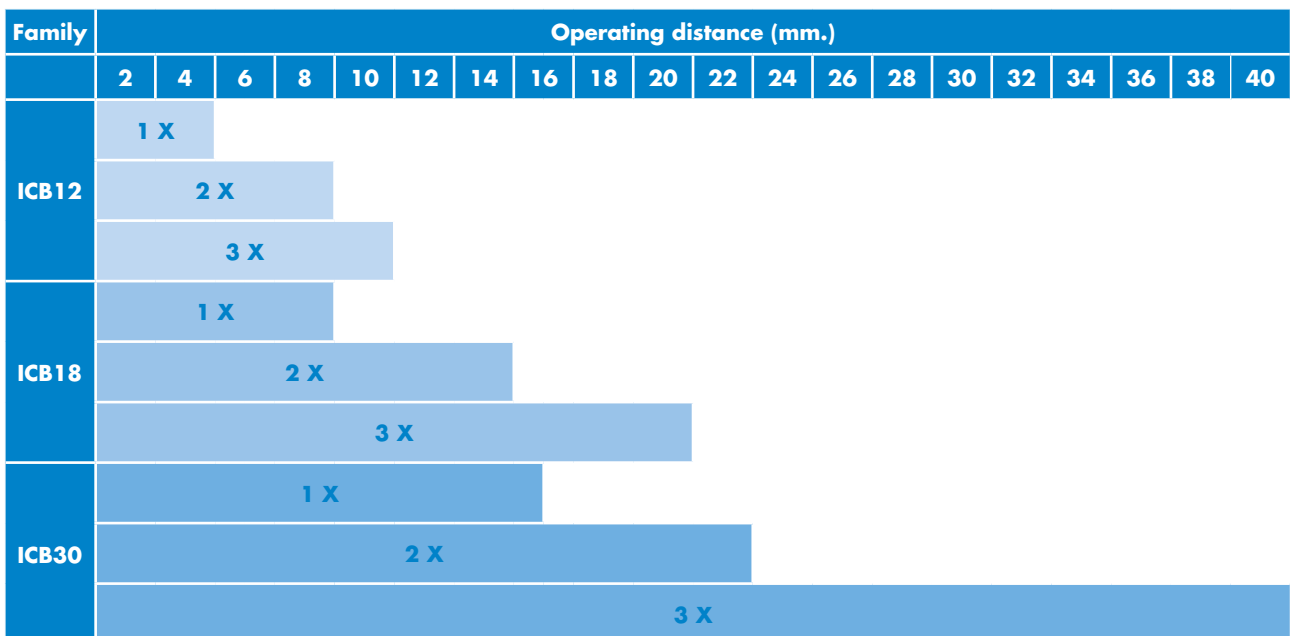
## ICB: a complete range for any application

Family	Diameter	Operating distance	Switching frequency	Output	Connection
ICB12	M12	2 to 10 mm	up to 2000 Hz	NPN-PNP	Cable / Plug
ICB18	M18	5 to 20 mm	up to 1500 Hz	NPN-PNP	Cable / Plug
ICB30	M30	10 to 40 mm	up to 1000 Hz	NPN-PNP	Cable / Plug

### ICB12                      ICB18                      ICB30



### Operating distance



### Your sensor - your way

Carlo Gavazzi is committed to providing the right solution to our OEM customers and their demanding application requirements.

This means that we are ready to customize proximity sensors to meet these specific demands for almost any application.

# ICB series

## Inductive proximity sensors

The new generation of inductive proximity sensors: ICB series

**ICB 12 S 30 F 04 N O M1**

**Housing size:** \_\_\_\_\_

- 12** 12 Ø mm
- 18** 18 Ø mm
- 30** 30 Ø mm

**Housing length:** \_\_\_\_\_

- S** Short body
- L** Long body

**Thread length:** \_\_\_\_\_

- 30** 30 mm
- 50** 50 mm

**Detection principle:** \_\_\_\_\_

- F** Flush
- N** Non-flush

**Sensing distance:** \_\_\_\_\_

- 02** 2 mm
- ...
- ...
- 40** 40 mm

**Output type:** \_\_\_\_\_

- N** NPN
- P** PNP

**Output configuration:** \_\_\_\_\_

- O** Normally open
- C** Normally closed

**Connection:** \_\_\_\_\_

- M1** M12 disconnect plug
- 2 m PVC oil resistant cable



ICB 12 series (3-wire DC)						
Housing dimension		M12				
Material		Nickel-plated brass				
Rated operational voltage		10-36 VDC				
Switching frequency		≤ 2000 Hz				
Standard sensing range (1 X)						
Rated operating distance		2 mm			4 mm	
Installation type		Flush			Non-flush	
Barrel		Short		Long		
Cable	NPN	NO	ICB12S30F02NO	ICB12L50F02NO	ICB12S30N04NO	ICB12L50N04NO
		NC	ICB12S30F02NC	ICB12L50F02NC	ICB12S30N04NC	ICB12L50N04NC
	PNP	NO	ICB12S30F02PO	ICB12L50F02PO	ICB12S30N04PO	ICB12L50N04PO
		NC	ICB12S30F02PC	ICB12L50F02PC	ICB12S30N04PC	ICB12L50N04PC
Plug	NPN	NO	ICB12S30F02NOM1	ICB12L50F02NOM1	ICB12S30N04NOM1	ICB12L50N04NOM1
		NC	ICB12S30F02NCM1	ICB12L50F02NCM1	ICB12S30N04NCM1	ICB12L50N04NCM1
	PNP	NO	ICB12S30F02POM1	ICB12L50F02POM1	ICB12S30N04POM1	ICB12L50N04POM1
		NC	ICB12S30F02PCM1	ICB12L50F02PCM1	ICB12S30N04PCM1	ICB12L50N04PCM1
Extended sensing range (2 X)						
Rated operating distance		4 mm			8 mm	
Installation type		Flush			Non-flush	
Barrel		Short		Long		
Cable	NPN	NO	ICB12S30F04NO	ICB12L50F04NO	ICB12S30N08NO	ICB12L50N08NO
		NC	ICB12S30F04NC	ICB12L50F04NC	ICB12S30N08NC	ICB12L50N08NC
	PNP	NO	ICB12S30F04PO	ICB12L50F04PO	ICB12S30N08PO	ICB12L50N08PO
		NC	ICB12S30F04PC	ICB12L50F04PC	ICB12S30N08PC	ICB12L50N08PC
Plug	NPN	NO	ICB12S30F04NOM1	ICB12L50F04NOM1	ICB12S30N08NOM1	ICB12L50N08NOM1
		NC	ICB12S30F04NCM1	ICB12L50F04NCM1	ICB12S30N08NCM1	ICB12L50N08NCM1
	PNP	NO	ICB12S30F04POM1	ICB12L50F04POM1	ICB12S30N08POM1	ICB12L50N08POM1
		NC	ICB12S30F04PCM1	ICB12L50F04PCM1	ICB12S30N08PCM1	ICB12L50N08PCM1
Increased sensing range (3 X)						
Rated operating distance		6 mm			10 mm	
Installation type		Quasi-flush			Non-flush	
Barrel		Short		Long		
Cable	NPN	NO	ICB12S30F06NO	ICB12L50F06NO	ICB12S30N10NO	ICB12L50N10NO
		NC	ICB12S30F06NC	ICB12L50F06NC	ICB12S30N10NC	ICB12L50N10NC
	PNP	NO	ICB12S30F06PO	ICB12L50F06PO	ICB12S30N10PO	ICB12L50N10PO
		NC	ICB12S30F06PC	ICB12L50F06PC	ICB12S30N10PC	ICB12L50N10PC
Plug	NPN	NO	ICB12S30F06NOM1	ICB12L50F06NOM1	ICB12S30N10NOM1	ICB12L50N10NOM1
		NC	ICB12S30F06NCM1	ICB12L50F06NCM1	ICB12S30N10NCM1	ICB12L50N10NCM1
	PNP	NO	ICB12S30F06POM1	ICB12L50F06POM1	ICB12S30N10POM1	ICB12L50N10POM1
		NC	ICB12S30F06PCM1	ICB12L50F06PCM1	ICB12S30N10PCM1	ICB12L50N10PCM1

# ICB series

## Inductive proximity sensors

### ICB18 series (3-wire DC)

Housing dimension		M18				
Material		Nickel-plated brass				
Rated operational voltage		10-36 VDC				
Switching frequency		≤ 1500 Hz				
<b>Standard sensing range (1 X)</b>						
Rated operating distance		5 mm			8 mm	
Installation type		Flush			Non-flush	
Barrel		Short		Long		
Cable	NPN	NO	<b>ICB18S30F05NO</b>	<b>ICB18L50F05NO</b>	<b>ICB18S30N08NO</b>	<b>ICB18L50N08NO</b>
		NC	<b>ICB18S30F05NC</b>	<b>ICB18L50F05NC</b>	<b>ICB18S30N08NC</b>	<b>ICB18L50N08NC</b>
	PNP	NO	<b>ICB18S30F05PO</b>	<b>ICB18L50F05PO</b>	<b>ICB18S30N08PO</b>	<b>ICB18L50N08PO</b>
		NC	<b>ICB18S30F05PC</b>	<b>ICB18L50F05PC</b>	<b>ICB18S30N08PC</b>	<b>ICB18L50N08PC</b>
Plug	NPN	NO	<b>ICB18S30F05NOM1</b>	<b>ICB18L50F05NOM1</b>	<b>ICB18S30N08NOM1</b>	<b>ICB18L50N08NOM1</b>
		NC	<b>ICB18S30F05NCM1</b>	<b>ICB18L50F05NCM1</b>	<b>ICB18S30N08NCM1</b>	<b>ICB18L50N08NCM1</b>
	PNP	NO	<b>ICB18S30F05POM1</b>	<b>ICB18L50F05POM1</b>	<b>ICB18S30N08POM1</b>	<b>ICB18L50N08POM1</b>
		NC	<b>ICB18S30F05PCM1</b>	<b>ICB18L50F05PCM1</b>	<b>ICB18S30N08PCM1</b>	<b>ICB18L50N08PCM1</b>
<b>Extended sensing range (2 X)</b>						
Rated operating distance		8 mm			14 mm	
Installation type		Flush			Non-flush	
Barrel		Short		Long		
Cable	NPN	NO	<b>ICB18S30F08NO</b>	<b>ICB18L50F08NO</b>	<b>ICB18S30N14NO</b>	<b>ICB18L50N14NO</b>
		NC	<b>ICB18S30F08NC</b>	<b>ICB18L50F08NC</b>	<b>ICB18S30N14NC</b>	<b>ICB18L50N14NC</b>
	PNP	NO	<b>ICB18S30F08PO</b>	<b>ICB18L50F08PO</b>	<b>ICB18S30N14PO</b>	<b>ICB18L50N14PO</b>
		NC	<b>ICB18S30F08PC</b>	<b>ICB18L50F08PC</b>	<b>ICB18S30N14PC</b>	<b>ICB18L50N14PC</b>
Plug	NPN	NO	<b>ICB18S30F08NOM1</b>	<b>ICB18L50F08NOM1</b>	<b>ICB18S30N14NOM1</b>	<b>ICB18L50N14NOM1</b>
		NC	<b>ICB18S30F08NCM1</b>	<b>ICB18L50F08NCM1</b>	<b>ICB18S30N14NCM1</b>	<b>ICB18L50N14NCM1</b>
	PNP	NO	<b>ICB18S30F08POM1</b>	<b>ICB18L50F08POM1</b>	<b>ICB18S30N14POM1</b>	<b>ICB18L50N14POM1</b>
		NC	<b>ICB18S30F08PCM1</b>	<b>ICB18L50F08PCM1</b>	<b>ICB18S30N14PCM1</b>	<b>ICB18L50N14PCM1</b>
<b>Increased sensing range (3 X)</b>						
Rated operating distance		12 mm			20 mm	
Installation type		Quasi-flush			Non-flush	
Barrel		Short		Long		
Cable	NPN	NO	<b>ICB18S30F12NO</b>	<b>ICB18L50F12NO</b>	<b>ICB18S30N20NO</b>	<b>ICB18L50N20NO</b>
		NC	<b>ICB18S30F12NC</b>	<b>ICB18L50F12NC</b>	<b>ICB18S30N20NC</b>	<b>ICB18L50N20NC</b>
	PNP	NO	<b>ICB18S30F12PO</b>	<b>ICB18L50F12PO</b>	<b>ICB18S30N20PO</b>	<b>ICB18L50N20PO</b>
		NC	<b>ICB18S30F12PC</b>	<b>ICB18L50F12PC</b>	<b>ICB18S30N20PC</b>	<b>ICB18L50N20PC</b>
Plug	NPN	NO	<b>ICB18S30F12NOM1</b>	<b>ICB18L50F12NOM1</b>	<b>ICB18S30N20NOM1</b>	<b>ICB18L50N20NOM1</b>
		NC	<b>ICB18S30F12NCM1</b>	<b>ICB18L50F12NCM1</b>	<b>ICB18S30N20NCM1</b>	<b>ICB18L50N20NCM1</b>
	PNP	NO	<b>ICB18S30F12POM1</b>	<b>ICB18L50F12POM1</b>	<b>ICB18S30N20POM1</b>	<b>ICB18L50N20POM1</b>
		NC	<b>ICB18S30F12PCM1</b>	<b>ICB18L50F12PCM1</b>	<b>ICB18S30N20PCM1</b>	<b>ICB18L50N20PCM1</b>

ICB30 series (3-wire DC)						
Housing dimension		M30				
Material		Nickel-plated brass				
Rated operational voltage		10-36 VDC				
Switching frequency		≤ 1000 Hz (except for ICB30 3X: ≤ 100 Hz)				
Standard sensing range (1 X)						
Rated operating distance		10 mm			15 mm	
Installation type		Flush			Non-flush	
Barrel		Short		Long		
Cable	NPN	NO	ICB30SF10NO	ICB30LF10NO	ICB30SN15NO	ICB30LN15NO
		NC	ICB30SF10NC	ICB30LF10NC	ICB30SN15NC	ICB30LN15NC
	PNP	NO	ICB30SF10PO	ICB30LF10PO	ICB30SN15PO	ICB30LN15PO
		NC	ICB30SF10PC	ICB30LF10PC	ICB30SN15PC	ICB30LN15PC
Plug	NPN	NO	ICB30SF10NOM1	ICB30LF10NOM1	ICB30SN15NOM1	ICB30LN15NOM1
		NC	ICB30SF10NCM1	ICB30LF10NCM1	ICB30SN15NCM1	ICB30LN15NCM1
	PNP	NO	ICB30SF10POM1	ICB30LF10POM1	ICB30SN15POM1	ICB30LN15POM1
		NC	ICB30SF10PCM1	ICB30LF10PCM1	ICB30SN15PCM1	ICB30LN15PCM1
Extended sensing range (2 X)						
Rated operating distance		15 mm			22 mm	
Installation type		Flush			Non-flush	
Barrel		Short		Long		
Cable	NPN	NO	ICB30SF15NO	ICB30LF15NO	ICB30SN22NO	ICB30LN22NO
		NC	ICB30SF15NC	ICB30LF15NC	ICB30SN22NC	ICB30LN22NC
	PNP	NO	ICB30SF15PO	ICB30LF15PO	ICB30SN22PO	ICB30LN22PO
		NC	ICB30SF15PC	ICB30LF15PC	ICB30SN22PC	ICB30LN22PC
Plug	NPN	NO	ICB30SF15NOM1	ICB30LF15NOM1	ICB30SN22NOM1	ICB30LN22NOM1
		NC	ICB30SF15NCM1	ICB30LF15NCM1	ICB30SN22NCM1	ICB30LN22NCM1
	PNP	NO	ICB30SF15POM1	ICB30LF15POM1	ICB30SN22POM1	ICB30LN22POM1
		NC	ICB30SF15PCM1	ICB30LF15PCM1	ICB30SN22PCM1	ICB30LN22PCM1
Increased sensing range (3 X)						
Rated operating distance		22 mm			40 mm	
Installation type		Quasi-flush			Non-flush	
Barrel		Short		Long		
Cable	NPN	NO	ICB30S35F22NO	ICB30L50F22NO	ICB30S35N40NO	ICB30L50N40NO
		NC	ICB30S35F22NC	ICB30L50F22NC	ICB30S35N40NC	ICB30L50N40NC
	PNP	NO	ICB30S35F22PO	ICB30L50F22PO	ICB30S35N40PO	ICB30L50N40PO
		NC	ICB30S35F22PC	ICB30L50F22PC	ICB30S35N40PC	ICB30L50N40PC
Plug	NPN	NO	ICB30S35F22NOM1	ICB30L50F22NOM1	ICB30S35N40NOM1	ICB30L50N40NOM1
		NC	ICB30S35F22NCM1	ICB30L50F22NCM1	ICB30S35N40NCM1	ICB30L50N40NCM1
	PNP	NO	ICB30S35F22POM1	ICB30L50F22POM1	ICB30S35N40POM1	ICB30L50N40POM1
		NC	ICB30S35F22PCM1	ICB30L50F22PCM1	ICB30S35N40PCM1	ICB30L50N40PCM1

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## OUR COMPETENCE CENTRES AND PRODUCTION SITES

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Carlo Gavazzi Industri A/S  
Hadsten

### MALTA

Carlo Gavazzi Ltd  
Zejtun

### ITALY

Carlo Gavazzi Controls SpA  
Belluno

### LITHUANIA

Uab Carlo Gavazzi Industri Kaunas  
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