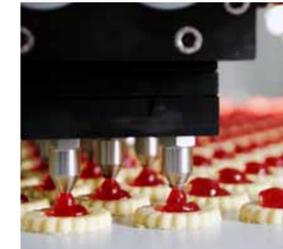


## The right sensors for your applications



### Highlights

- High precision and temperature stability
- Sensing distance from 1 mm up to 40 mm
- Flush, quasi-flush, non-flush versions, NPN or PNP, NO or NC output
- Fully protected against short-circuit, reverse polarity and transients
- Quick-disconnect or cable versions
- Excellent LED visibility from any direction
- Enhanced diagnostic functions such as short circuit and overload indication and set-up assistance
- Permanently legible, laser-engraved serial number and part number for assured traceability

The applications of inductive sensors are numerous in many industrial markets: material handling, food & beverage, agriculture, heavy and mobile equipment as well as machine tools and packaging.

Carlo Gavazzi's inductive sensors provide a reliable and cost effective solution in machinery and automation equipment.

### • Material handling

Carlo Gavazzi's inductive sensors are chosen to maximize efficiency and to ensure the automatic and reliable flow of goods. The triple distance ICB series, with an increased operating distance up to 40 mm, is the best solution for reliable detection in any conditions, thanks to the reduced risk of sensors breakdown, as the sensor can be positioned further away from the target.

### • Food & Beverage

The ECOLAB certified ICS sensors are the best solution where high temperature and high pressure wash down processes are mandatory to comply with sanitary and hygienic regulations.

The materials used are FDA certified and compatible with most of the industrial cleaning and disinfecting agents or foams used in Food & Beverage applications.

### • Agriculture, heavy and mobile equipment

Agricultural machinery, heavy and mobile equipment are exposed to difficult outdoor conditions, such as wide temperature variations, high stress due to cleaning processes. The ICS sensors provide reliable position detection of the moving parts even in such harsh environment, thanks to the solid construction and excellent tightness with certified IP68 and IP69K ratings and to the wide operating temperature.

### • Machine tools

Inductive sensors are used to check the tool and component position in machining applications. The ICB series is the best solution thanks to its improved performance with vibrations and shocks, the reliable connection system between the cable and the barrel and the very high precision and quick response time.

## OUR SALES NETWORK IN EUROPE

### AUSTRIA

Carlo Gavazzi GmbH  
Ketzergasse 374,  
A-1230 Wien  
Tel: +43 1 888 4112  
Fax: +43 1 889 10 53  
office@carlo gavazzi.at

### BELGIUM

Carlo Gavazzi NV/SA  
Mechelsesteenweg 311,  
B-1800 Vilvoorde  
Tel: +32 2 257 4120  
Fax: +32 2 257 41 25  
sales@carlo gavazzi.be

### DENMARK

Carlo Gavazzi Handel A/S  
Over Hadstenvej 40,  
DK-8370 Hadsten  
Tel: +45 89 60 6100  
Fax: +45 86 98 15 30  
handel@gavazzi.dk

### FINLAND

Carlo Gavazzi OY AB  
Pentakenttie 2-4,  
FI-00630 Helsinki  
Tel: +358 9 756 2000  
Fax: +358 9 756 20010  
myynti@gavazzi.fi

### FRANCE

Carlo Gavazzi Sarl  
Zac de Paris Nord II, 69, rue de la Belle Etoile,  
F-95956 Roissy CDG Cedex  
Tel: +33 1 49 38 98 60  
Fax: +33 1 48 63 27 43  
french.team@carlo gavazzi.fr

### GERMANY

Carlo Gavazzi GmbH  
Pfnorstr. 10-14  
D-64293 Darmstadt  
Tel: +49 6151 81000  
Fax: +49 6151 81 00 40  
info@gavazzi.de

### GREAT BRITAIN

Carlo Gavazzi UK Ltd  
4.4 Frimley Business Park,  
Frimley, Camberley, Surrey GU16 7SG  
Tel: +44 1 276 854 110  
Fax: +44 1 276 682 140  
sales@carlo gavazzi.co.uk

### ITALY

Carlo Gavazzi SpA  
Via Milano 13,  
I-20020 Lainate  
Tel: +39 02 931 761  
Fax: +39 02 931 763 01  
info@gavazziacbu.it

### NETHERLANDS

Carlo Gavazzi BV  
Wijkmeerweg 23,  
NL-1948 NT Beverwijk  
Tel: +31 251 22 9345  
Fax: +31 251 22 60 55  
info@carlo gavazzi.nl

### NORWAY

Carlo Gavazzi AS  
Melkeveien 13,  
N-3919 Porsgrunn  
Tel: +47 35 93 0800  
Fax: +47 35 93 08 01  
post@gavazzi.no

### PORTUGAL

Carlo Gavazzi Lda  
Rua dos Jerónimos 38-B,  
P-1400-212 Lisboa  
Tel: +351 21 361 7060  
Fax: +351 21 362 13 73  
carlo gavazzi@carlo gavazzi.pt

### SPAIN

Carlo Gavazzi SA  
Avda. Iparraguirre, 80-82,  
E-48940 Leioa (Bizkaia)  
Tel: +34 94 480 4037  
Fax: +34 94 431 6081  
gavazzi@gavazzi.es

### SWEDEN

Carlo Gavazzi AB  
V:a Kyrkogatan 1,  
S-652 24 Karlstad  
Tel: +46 54 85 11 25  
Fax: +46 54 85 11 77  
info@carlo gavazzi.se

### SWITZERLAND

Carlo Gavazzi AG  
Verkauf Schweiz/Vente Suisse  
Sumpfstrasse 3,  
CH-6312 Steinhausen  
Tel: +41 41 747 4535  
Fax: +41 41 740 45 40  
info@carlo gavazzi.ch

## OUR SALES NETWORK IN THE AMERICAS

### USA

Carlo Gavazzi Inc.  
750 Hastings Lane,  
Buffalo Grove, IL 60089, USA  
Tel: +1 847 465 6100  
Fax: +1 847 465 7373  
sales@carlo gavazzi.com

### CANADA

Carlo Gavazzi Inc.  
2660 Meadowvale Boulevard,  
Mississauga, ON L5N 6M6, Canada  
Tel: +1 905 542 0979  
Fax: +1 905 542 22 48  
gavazzi@carlo gavazzi.com

### MEXICO

Carlo Gavazzi Mexico S.A. de C.V.  
Calle La Montaña no. 28, Fracc. Los Pastores  
Naucalpan de Juárez, EDOMEX CP 53340  
Tel & Fax: +52 55 5373 7042  
mexicosales@carlo gavazzi.com

### BRAZIL

Carlo Gavazzi Automação Ltda Av.  
Francisco Matarazzo, 1752  
Conj 2108 - Barra Funda - São Paulo/SP  
Tel: +55 11 3052 0832  
Fax: +55 11 3057 1753  
info@carlo gavazzi.com.br

## OUR SALES NETWORK IN ASIA AND PACIFIC

### SINGAPORE

Carlo Gavazzi Automation Singapore Pte. Ltd.  
61 Tai Seng Avenue  
#05-06 UE Print Media Hub  
Singapore 534167  
Tel: +65 67 466 990  
Fax: +65 67 461 980  
info@carlo gavazzi.com.sg

### MALAYSIA

Carlo Gavazzi Automation (M) SDN. BHD.  
D12-06-G, Block D12,  
Pusat Perdagangan Dana 1,  
Jalan P1J 1A/46, 47301 Petaling Jaya,  
Selangor, Malaysia,  
Tel: +60 3 7842 7299  
Fax: +60 3 7842 7399  
sales@gavazzi-asia.com

### CHINA

Carlo Gavazzi Automation  
(China) Co. Ltd.  
Unit 2308, 23/F.,  
News Building, Block 1, 1002  
Middle Shennan Zhong Road,  
Shenzhen, China  
Tel: +86 755 83699500  
Fax: +86 755 83699300  
sales@carlo gavazzi.cn

### HONG KONG

Carlo Gavazzi Automation  
Hong Kong Ltd.  
Unit 3 12/F Crown Industrial Bldg.,  
106 How Ming St., Kwun Tong,  
Kowloon, Hong Kong  
Tel: +852 23041228  
Fax: +852 23443689

## OUR COMPETENCE CENTRES AND PRODUCTION SITES

### DENMARK

Carlo Gavazzi Industri A/S  
Hadsten

### MALTA

Carlo Gavazzi Ltd  
Zejtun

### ITALY

Carlo Gavazzi Controls SpA  
Belluno

### LITHUANIA

Uab Carlo Gavazzi Industri Kaunas  
Kaunas

### CHINA

Carlo Gavazzi Automation (Kunshan) Co., Ltd.  
Kunshan

## HEADQUARTERS

Carlo Gavazzi Automation SpA  
Via Milano, 13  
I-20020 - Lainate (MI) - ITALY  
Tel: +39 02 931 761  
info@gavazziautomation.com



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INDUCTIVE SENSORS OVERVIEW ENG 02/2016  
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CARLO GAVAZZI  
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# Overview

## Inductive sensors

### A complete range of high performance inductive proximity sensors

With over 50 years of experience in manufacturing and selling proximity sensors, Carlo Gavazzi offers a wide range of inductive sensors, built to the highest-quality standards and easily customizable to specific OEM customer applications.

Inductive sensors detect all ferrous and non-ferrous metals without physical contact and provide a durable solution in harsh environments, conveying reliable signals to the PLC on the position/presence of moving parts of the machinery. They are also used for rotational speed monitoring.

They are not affected by dust, oil, water, or vibrations and they can operate at high switching frequencies without reducing their long operating life.

### • ICB Basic

All the ICB sensors have a with rugged nickel plated brass construction and feature a new generation of microprocessor, which allows final calibration of the sensor at the end of the assembly process, providing repeatable and highly accurate operation and increased EMC robustness.

### • ICB Triple distance

The ICB is also available with an extended sensing range of up to three times the standard sensing distance, with a complete range in M12, M18 and M30 housings and advanced diagnostic LED clearly visible from any direction.

### • ICS Washdown

The new series of ICS inductive sensors features an extremely robust design with a high grade stainless steel housing and extended operating temperature of between -40°C and +85°C (-40°F to +185°F), a superior resistance to high pressure and high temperature cleaning processes and the ability to prevent water and vapour access through the front cap or connector of the sensors.

The ICS sensors are ECOLAB certified and rated to IP67, IP68 and IP69K standards.

### • IA Miniature

The IA05, IA06 and IA08 series are available in short and long stainless steel housings to provide a high level of mechanical protection.

They are the ideal solution where space is limited, meeting the trend of more and more compact machinery. There are quick-disconnect or cable versions.

### • IA Full metal housing

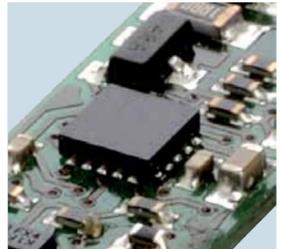
Full metal housed sensors have been specifically designed for harsh application conditions, where chemical compatibility to industrial caustic-acid conditions and mechanical resistance to impact are required.

They are available in M8, M12, M18 and M30 short or long barrel housings with one-piece stainless steel face/barrel construction.

### • Special versions

The range is completed by a series of special versions such as:

- the EI flat pack series, ideal for use in conveying and material handling applications
- the IC/ID rectangular types suitable for the control of axial and rotational movements
- the DU slotted sensors for small part detection
- the IC40 rotatable-head switches with the sensing face adjustable to up to 5 positions
- the IA high temperature series with extended operating temperature range.



# Overview

## Inductive sensors

Basic series								
Family	ICB12		ICB12		ICB12		ICB12	
Sensing distance, Sn [mm]	2 mm		4 mm		4 mm		8 mm	
Range	Standard		Standard		Extended		Extended	
Connection	Plug or 2m PVC cable							
Mounting	Flush		Non-flush		Flush		Non-flush	
Housing	Short body	Long body						
Material	Nickel-plated brass		Nickel-plated brass		Nickel-plated brass		Nickel-plated brass	
Degree of protection	IP67		IP67		IP67		IP67	
Part numbers	ICB12S30F02..	ICB12L50F02..	ICB12S30N04..	ICB12L50N04..	ICB12S30F04..	ICB12L50F04..	ICB12S30N08..	ICB12L50N08..
Operating temperature	-25 ° to +70 °C (-13 to +158 °F)		-25 ° to +70 °C (-13 to +158 °F)		-25 ° to +70 °C (-13 to +158 °F)		-25 ° to +70 °C (-13 to +158 °F)	
Approvals / Certifications	CE - cULus - cCSAus							
Main feature	Microprocessor based		Microprocessor based		Microprocessor based		Microprocessor based	

Basic series								
Family	ICB18		ICB18		ICB18		ICB18	
Sensing distance, Sn [mm]	5 mm		8 mm		8 mm		14 mm	
Range	Standard		Standard		Extended		Extended	
Connection	Plug or 2m PVC cable							
Mounting	Flush		Non-flush		Flush		Non-flush	
Housing	Short body	Long body						
Material	Nickel-plated brass		Nickel-plated brass		Nickel-plated brass		Nickel-plated brass	
Degree of protection	IP67		IP67		IP67		IP67	
Part numbers	ICB18S30F05..	ICB18L50F05..	ICB18S30N08..	ICB18L50N08..	ICB18S30F08..	ICB18L50F08..	ICB18S30N14..	ICB18L50N14..
Operating temperature	-25 ° to +70 °C (-13 to +158 °F)		-25 ° to +70 °C (-13 to +158 °F)		-25 ° to +70 °C (-13 to +158 °F)		-25 ° to +70 °C (-13 to +158 °F)	
Approvals / Certifications	CE - cULus - cCSAus							
Main feature	Microprocessor based		Microprocessor based		Microprocessor based		Microprocessor based	

Basic series								
Family	ICB30		ICB30		ICB30		ICB30	
Sensing distance, Sn [mm]	10 mm		15 mm		15 mm		22 mm	
Range	Standard		Standard		Extended		Extended	
Connection	Plug or 2m PVC cable							
Mounting	Flush		Non-flush		Flush		Non-flush	
Housing	Short body	Long body						
Material	Nickel-plated brass		Nickel-plated brass		Nickel-plated brass		Nickel-plated brass	
Degree of protection	IP67		IP67		IP67		IP67	
Part numbers	ICB30SFI0..	ICB30LF10..	ICB30SN15..	ICB30LN15..	ICB30SF15..	ICB30LF15..	ICB30SN22..	ICB30LN22..
Operating temperature	-25 ° to +70 °C (-13 to +158 °F)		-25 ° to +70 °C (-13 to +158 °F)		-25 ° to +70 °C (-13 to +158 °F)		-25 ° to +70 °C (-13 to +158 °F)	
Approvals / Certifications	CE - cULus - cCSAus							
Main feature	Microprocessor based		Microprocessor based		Microprocessor based		Microprocessor based	

CARLO GAVAZZI Automation Components. Specifications are subject to change without notice. Illustrations are for example only.

Washdown series								
Family	ICS12		ICS12		ICS18		ICS18	
Sensing distance, Sn [mm]	2 mm		4 mm		5 mm		8 mm	
Range	Standard		Extended		Standard		Extended	
Connection	Plug		Plug		Plug		Plug	
Mounting	Flush		Non-flush		Flush		Non-flush	
Housing	Long body		Long body		Long body		Long body	
Material	Stainless steel		Stainless steel		Stainless steel		Stainless steel	
Degree of protection	IP67, IP68, IP69K							
Part numbers	ICS12LF02..-FB	ICS12LF04..-FB	ICS12LN04..-FB	ICS12LN08..-FB	ICS18LF05..-FB	ICS18LF08..-FB	ICS18LN08..-FB	ICS18LN12..-FB
Operating temperature	-40 ° to +80 °C (-40 to +176 °F)		-40 ° to +80 °C (-40 to +176 °F)		-40 ° to +80 °C (-40 to +176 °F)		-40 ° to +80 °C (-40 to +176 °F)	
Approvals / Certifications	CE - cULus - ECOLAB							
Main feature	FDA approved plastic face /µP based							

Washdown series								
Family	ICS30		ICS30		ICS30		ICS30	
Sensing distance, Sn [mm]	10 mm		15 mm		15 mm		22 mm	
Range	Standard		Extended		Standard		Extended	
Connection	Plug		Plug		Plug		Plug	
Mounting	Flush		Non-flush		Flush		Non-flush	
Housing	Short body		Short body		Long body		Long body	
Material	Stainless steel		Stainless steel		Stainless steel		Stainless steel	
Degree of protection	IP67, IP68, IP69K							
Part numbers	ICS30SF10..-FB	ICS30SF15..-FB	ICS30SN15..-FB	ICS30SN22..-FB	ICS30LF10..-FB	ICS30LF15..-FB	ICS30LN15..-FB	ICS30LN22..-FB
Operating temperature	-40 ° to +85 °C (-40 to +185 °F)		-40 ° to +85 °C (-40 to +185 °F)		-40 ° to +85 °C (-40 to +185 °F)		-40 ° to +85 °C (-40 to +185 °F)	
Approvals / Certifications	CE - cULus - ECOLAB							
Main feature	FDA approved plastic face /µP based							

High temperature series								
Family	IA05		IA08		IA12		IA30	
Sensing distance, Sn [mm]	0.8 mm		1 mm		2 mm		10 mm	
Range	Standard		Standard		Standard		Standard	
Connection	2 m silicone cable		Plug or 2 m PUR cable		Plug or 2 m PUR cable		Plug or 2 m PUR cable	
Mounting	Flush		Flush		Flush		Flush	
Housing	Short body		Short body		Short body		Short body	
Material	Stainless steel		Nickel-plated brass		Nickel-plated brass		Nickel-plated brass	
Degree of protection	IP67		IP67		IP67		IP67	
Part numbers	IA08SF08..-HTK	IA08BF08..-HTK	IA12SF02..-HTK	IA12SF04..-HTK	IA18SF05..-HTK	IA18SF08..-HTK	IA30SF10..-HTK	IA30SF15..-HTK
Operating temperature	-25 to +120 °C (-13 to +248 °F)		-40 to +100 °C (-40 to +212 °F)		-40 to +100 °C (-40 to +212 °F)		-40 to +100 °C (-40 to +212 °F)	
Approvals / Certifications	CE		CE		CE		CE	

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Triple distance series								
Family	ICB12		ICB12		ICB18		ICB18	
Sensing distance, Sn [mm]	6 mm		10 mm		12 mm		20 mm	
Range	Triple distance		Triple distance		Triple distance		Triple distance	
Connection	Plug or 2m PVC cable							
Mounting	Quasi-flush		Non-flush		Quasi-flush		Non-flush	
Housing	Short body	Long body						
Material	Nickel-plated brass		Nickel-plated brass		Nickel-plated brass		Nickel-plated brass	
Degree of protection	IP67		IP67		IP67		IP67	
Part numbers	ICB12S30F06..	ICB12L50F06..	ICB12S30N10..	ICB12L50N10..	ICB18S30F12..	ICB18L50F12..	ICB18S30N20..	ICB18L50N20..
Operating temperature	-25 ° to +70 °C (-13 to +158 °F)		-25 ° to +70 °C (-13 to +158 °F)		-25 ° to +70 °C (-13 to +158 °F)		-25 ° to +70 °C (-13 to +158 °F)	
Approvals / Certifications	CE - cULus - cCSAus							
Main feature	Microprocessor based		Microprocessor based		Microprocessor based		Microprocessor based	

Triple distance series				Slot type series				
Family	ICB30		ICB30		DU6		DU10	
Sensing distance, Sn [mm]	22 mm		40 mm		6 mm		10 mm	
Range	Triple distance		Triple distance		Standard		Standard	
Connection	Plug or 2m PVC cable		Plug or 2m PVC cable		2m PVC cable		2m PVC cable	
Mounting	Quasi-flush		Non-flush		-		-	
Housing	Short body	Long body	Short body	Long body	Slot type		Slot type	
Material	Nickel-plated brass		Nickel-plated brass		ABS		ABS	
Degree of protection	IP67		IP67		IP67		IP67	
Part numbers	ICB30S35F22..	ICB30L50F22..	ICB30S35N40..	ICB30L50N40..	DU6E		DU10E	
Operating temperature	-25 ° to +70 °C (-13 to +158 °F)		-25 ° to +70 °C (-13 to +158 °F)		-20 to +60 °C (-4 to +140 °F)		-20 to +60 °C (-4 to +140 °F)	
Approvals / Certifications	CE - cULus - cCSAus		CE - cULus - cCSAus		CE		CE	
Main feature	Microprocessor based		Microprocessor based		NPN or NPN		NPN or NPN	

Flat pack and Rectangular series								
Family	IC08		IC17		ID25		E155	
Sensing distance, Sn [mm]	1.5 mm		4 mm		5 mm		10 mm	
Range	Standard		Standard		Standard		Standard	
Connection	Plug or 2m PVC cable		2m PVC cable		2m PVC cable		Plug or 2m PVC cable	
Mounting	Flush		Non-flush		Flush		Flush	
Housing	Block-shaped / square-section		Block-shaped / rectangular-section		Block-shaped / rectangular-section		Flat-pack	
Material	Nickel Plated Brass		Plastic		Nickel Plated Brass		Polycarbonate	
Degree of protection	IP65 (cable) IP67 (Plug)		IP67		IP67		IP67	
Part numbers	IC08ANC15..		IC17CNC04..		ID25ANC05..		E15510...   E15515..	
Operating temperature	-25 ° to +70 °C (-13 to +158 °F)		-25 ° to +70 °C (-13 to +158 °F)		-25 ° to +70 °C (-13 to +158 °F)		-25 ° to +70 °C (-13 to +158 °F)	
Approvals / Certifications	CE		CE		CE		CE - UL - CSA	

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Full metal housing series								
Family	IA08F		IA12F		IA18F		IA30F	
Sensing distance, Sn [mm]	1 mm		2 mm		5 mm		10 mm	
Range	Standard		Standard		Standard		Standard	
Connection	Plug or 2m PVC cable		Plug or 2m PVC cable		Plug or 2m PVC cable		Plug or 2m PVC cable	
Mounting	Flush	Non-flush	Flush	Non-flush	Flush	Non-flush	Flush	Non-flush
Housing	Short body	Long body	Short body	Long body	Short body	Long body	Short body	Long body
Material	Stainless steel		Stainless steel		Stainless steel		Stainless steel	
Degree of protection	IP67		IP67		IP67		IP67	
Part numbers	IA08SF01...   IA08LFN02...	IA12SF02...   IA12LFN04...	IA18SF05...   IA18LFN08...	IA30SF10...   IA30LFN15...				
Operating temperature	-25 ° to +70 °C (-13 to +158 °F)		-25 ° to +70 °C (-13 to +158 °F)		-25 ° to +70 °C (-13 to +158 °F)		-25 ° to +70 °C (-13 to +158 °F)	
Approvals / Certifications	CE		CE		CE		CE	

Rotatable head				Miniature series				
Family	IC40		IA05		IA06		IA06	
Sensing distance, Sn [mm]	30 mm		1 mm		1 mm		2 mm	
Range	Standard		Standard		Standard		Standard	
Connection	Terminal block		Plug or 2m PVC cable		2m PVC cable		2m PVC cable	
Mounting	Non-flush		Flush		Flush		Non-flush	
Housing	Rectangular section		Short body		Short body		Short body	
Material	Thermoplastic polyester		Stainless steel		Stainless steel		Stainless steel	
Degree of protection	IP67		IP67		IP67		IP67	
Part numbers	IC40CIN30...		IA05SF10..		IA06SF10..		IA06SN20..	
Operating temperature	-25 ° to +70 °C (-13 to +158 °F)		-25 ° to +70 °C (-13 to +158 °F)		-25 ° to +70 °C (-13 to +158 °F)		-25 ° to +70 °C (-13 to +158 °F)	
Approvals / Certifications	CE		CE		CE		CE	
Main feature	Rotatable head - 5 positions							

Miniature series								
Family	IA08		IA08		IA08		IA08	
Sensing distance, Sn [mm]	1.5 mm		2.5 mm		2 mm		4 mm	
Range	Standard		Standard		Extended		Extended	
Connection	Plug or 2m PVC cable		Plug or 2m PVC cable		Plug or 2m PVC cable		Plug or 2m PVC cable	
Mounting	Flush		Non-flush		Flush		Non-flush	
Housing	Short body	Long body	Short body	Long body	Short body	Long body	Short body	Long body
Material	Stainless steel		Stainless steel		Stainless steel		Stainless steel	
Degree of protection	IP67		IP67		IP67		IP67	
Part numbers	IA08SF15..   IA08LF15..	IA08SF25..   IA08LF25..	IA08SF20..   IA08LF20..	IA08SF40..   IA08LF40..				
Operating temperature	-25 ° to +70 °C (-13 to +158 °F)		-25 ° to +70 °C (-13 to +158 °F)		-25 ° to +70 °C (-13 to +158 °F)		-25 ° to +70 °C (-13 to +158 °F)	
Approvals / Certifications	CE		CE - UL - CSA		CE - UL - CSA		CE	

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