ifm Fail-Safe Inductive 18mm Barrel Proximity Sensor

GG711S

GG712S

Safety technology in automation is important for safe human-machine interaction, and fail-safe sensors with safety functions are a key part of safety systems for persons and machines.

The capabilities and characteristics of inductive sensors can be used to advantage in many safety applications, for direct detection of metal allows system designers to meet many design challenges. For example, the use of inductive proximity sensors means that magnetic or mechanical characteristics do not come into play. In addition, the resulting freedom from physical wear (due to the non-contact nature of these sensors) combined with a high protection rating helps to guarantee high uptime of machines and installations.

A magnet or coded target is not necessary for the function of these fail-safe sensors. The sensors detect metals and operate with an enable zone which is monitored for target position and dwell time.

Features

- Certification to EN 60947-5-3 for electromechanical control gear
- No special actuator for electronic fail-safe sensors required
- Series connection of sensors possible
- Standard 18mm barrel housing
- OSSD output

| ifm Fail-Safe Inductive 18mm Barrel Proximity Sensor Selection Guide										
Part Number	Price	Housing Diameter	Housing Material	Enable Zone	Safe Switch-Off Distance	Mounting Type	IP Rating	SIL Level/ Performance Level	Safe State Position	Drawing
GG711S	$06k1k:	18mm [0.71 in]	Stainless steel	1-8 mm [0.04 - 0.31 in]	12mm [0.47 in]	Non-flush	IP65, IP67	SIL 2 PLd	Target not present	PDF
GG712S	$-06k1l:	18mm [0.71 in]	Brass plated with white bronze	1-5 mm [0.04 - 0.20 in]	7mm [0.28 in]	Flush	IP65, IP67	SIL 2 PLd	Target not present	PDF
GG851S	$06k1o:	18mm [0.71 in]	Brass plated with white bronze	> 10mm > 0.39 in]	< 5mm [< 0.20 in]	Flush	IP65, IP67	SIL 2 PLd	Target present	PDF
GG854S	$06k1u:	18mm [0.71 in]	Brass plated with white bronze	> 11.5 mm [> 0.45 in]	< 6.5 mm [< 0.26 in]	Non-flush	IP65, IP67, IP68, IP69K*	SIL 2 PLd	Target present	PDF
GG855S	$06k1v:	18mm [0.71 in]	Brass plated with white bronze	> 7.5 mm [> 0.30 in]	< 4mm [< 0.16 in]	Flush	IP65, IP67, IP68, IP69K*	SIL 2 PLd	Target present	PDF

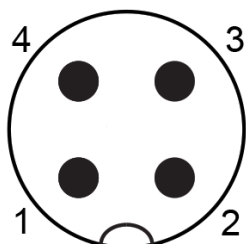** IP69K only when used with a properly installed IP69K cable similar to EVTxxxx*

GG71xS
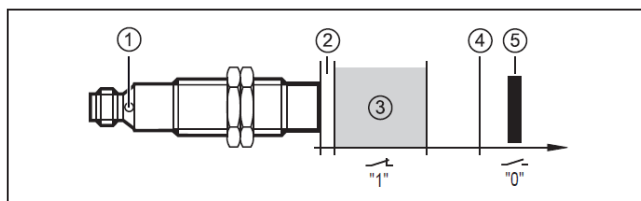
1 – Dual LED: signal (yellow), power (green)
2 – Close zone
3 – Enable zone
4 – Safe switch-off distance
5 – Target

GG85xS
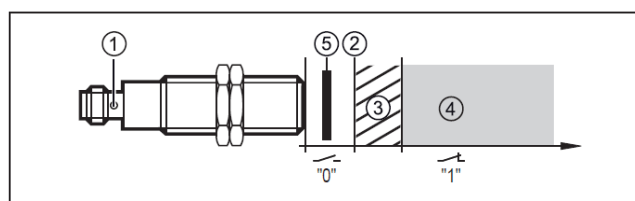
1 – Status LEDs
2 – Close zone
3 – Enable zone
4 – Safe switch-off distance
5 – Target

Connections

M12 4-pin Male Connector		
1	Brown	+24VDC
2	White	OSSD 1
3	Blue	0VDC
4	Black	OSSD 2

NOTE: Confirm the specific color to each pinout based on the cable used during installation.

Pin	Label	
1	L+	+24 V
2	A1	IN1
3	L−	GND
4	A2	IN2

Safety Electrical Components tESC-251
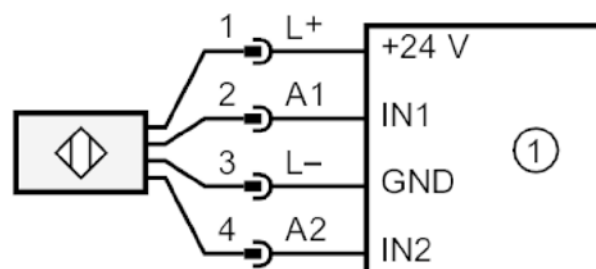
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ifm Fail-Safe Inductive 18mm Barrel Proximity Sensor Technical Specifications					
	GG711S	*GG712S*	*GG851S*	*GG854S*	*GG855S*
Category and PL Level (ISO 13849-1)	Category 2, PLd				
SIL Level (IEC 61508 / IEC 62061)	SIL 2				
Mission Time	≤ 175,200 hours if operated at ideal operating temperature ≤ 87,600 hours if not operated at ideal operating temperature				
PFH	1.0 x 10^{-7}	1.0 x 10^{-7}	1.0 x 10^{-7}	5 x 10^{-8}	5 x 10^{-8}
Mounting Type	Non-flush	Flush	Flush	Non-flush	Flush
Enable Zone	1 - 8 mm [0.04 - 0.31 in]	1 - 5 mm [0.04 - 0.20 in]	>10mm [0.39 in]	> 11.5 mm [0.45 in]	> 7.5 mm [0.30 in]
Safe Switch-Off Distance	12mm [0.47 in]	7mm [0.28 in]	< 5mm [0.20 in]	< 6.5 mm [0.26 in]	< 4mm [0.16 in]
Safe State Position	Target not present	Target not present	Target present	Target present	Target present
Output Type	Dual channel OSSD				
Operating Voltage	19.2-30 VDC	19.2-30 VDC	10-30 VDC	8-32 VDC	8-32 VDC
Reverse Polarity Protection	Yes				
Current Consumption	< 30mA	< 30mA	< 30mA	< 20mA	< 20mA
Voltage Drop (Output)	2.5V @ 30mA				
Short-Circuit Protection (Output)	Yes				
Overload Protection (Output)	No	No	No	Yes	Yes
Ideal Operating Temperature	10 to 40°C [50 to 104°F]	10 to 40°C [50 to 104°F]	10 to 40°C [50 to 104°F]	-25 to 70°C [-13 to 158°F]	-25 to 70°C [-13 to 158°F]
Operating Temperature Range (Note that operating temperature affects mission time)	-25 to 70°C [-13 to 158°F]	-25 to 70°C [-13 to 158°F]	-25 to 70°C [-13 to 158°F]	-40 to 85°C [-40 to 185°F]	-40 to 85°C [-40 to 185°F]
Protection Degree (DIN 40050)	IP65, IP67	IP65, IP67	IP65, IP67	IP65, IP67, IP68, IP69K* (*IP69K only when used with a properly installed IP69K cable similar to EVTxxxx)	IP65, IP67, IP68, IP69K* (*IP69K only when used with a properly installed IP69K cable similar to EVTxxxx)
Indication/Switch Status	Operation (GREEN) LED Signal (YELLOW) LED	Operation (GREEN) LED Signal (YELLOW) LED	Operation (GREEN) LED Signal (YELLOW) LED	Signal (YELLOW) LED	Signal (YELLOW) LED
Housing Material	Stainless steel (316Ti)	Brass plated with white bronze	Brass plated with white bronze	Brass plated with white bronze	Brass plated with white bronze
Sensing Face Material	PBT (Polybutylene terephthalate)	PBT (Polybutylene terephthalate)	PBT (Polybutylene terephthalate)	LCP (Liquid crystal polymer)	LCP (Liquid crystal polymer)
Shock Resistance	Meets or exceeds IEC 60947-5-2	Meets or exceeds IEC 60947-5-2	Meets or exceeds IEC 60947-5-2	Meets or exceeds IEC60068-2-27 Ea	Meets or exceeds IEC60068-2-27 Ea
Vibration Resistance	Meets or exceeds IEC 60947-5-2	Meets or exceeds IEC 60947-5-2	Meets or exceeds IEC 60947-5-2	Meets or exceeds IEC60068-2-6 Fc	Meets or exceeds IEC60068-2-6 Fc
Tightening Torque	< 25 N•m	< 25 N•m	< 20 N•m	< 25 N•m	< 25 N•m
Weight	129.5 g [4.57 oz]	133g [4.69 oz]	163.5 g [5.77 oz]	106.8 g [3.77 oz]	109.2 g [3.85 oz]
Connection	M12, A coded, 4-pin				
Agency Approvals	CE, cULus, TÜV	CE, cULus, TÜV	CE, cULus, TÜV	CE, cULus, TÜV	CE, cULus, TÜV

Safety Electrical Components

Safety Products

Warning: Safety products sold by AutomationDirect are Safety components only. The purchaser/installer is solely responsible for the application of these components and ensuring all necessary steps have been taken to assure each application and use meets all performance and applicable safety requirements and/or local, national and/or international safety codes as required by the application. AutomationDirect cannot certify that our products, used solely or in conjunction with other AutomationDirect or other vendors' products, will assure safety for any application. Any person using or applying any products sold by AutomationDirect is responsible for learning the safety requirements for their individual application and applying them, and therefore assumes all risks, and accepts full and complete responsibility, for the selection and suitability of the product for their respective application.

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