

Acceleration sensors

With SIL2/PLd relay output for limit monitoring

Analog / CANopen®

GAM900S



GAM900S

Technical data - electrical ratings

Voltage supply	10...30 VDC
Reverse polarity protection	Yes
Consumption w/o load	≤200 mA (24 VDC)
Initializing time	≤2000 ms after power on
Interfaces	CANopen®, Analog 4...20 mA (0...10 V optional)
Frequency bands	4 (configurable)
Measuring range	±2 g
Resolution	<4 mg
Accuracy 3σ (with band pass filtering)	=60 mg (in the range of ±1000 mg) =15 mg (in the range of ±250 mg)
Interference immunity	DIN EN 61000-6-2 EN 61326-3-1
Emitted interference	DIN EN 61000-6-4
Status indicator	DUO-LED integrated in housing
Approvals	UL approval / E63076, PLd according to EN ISO 13849-1:2008+AC:2009 SIL CL2 according to EN 62061:2005 +AC:2010 +A1:2013 SIL2 according to IEC 61508-1..7:2010, Certified by TÜV Rheinland

Features

- Acceleration sensor for safety applications
- Safety limit monitoring with relay output according to SIL2/PLd
- Output of acceleration information via analog / CANopen®
- Redundante 3 axes detection, MEMS based
- Measuring range ±2 g
- Connection: connector M12, 12-pin
- Offshore capability (plastic housing)

Technical data - mechanical design

Dimensions W x H x L	55 x 30 x 90 mm
Protection DIN EN 60529	IP 67
Materials	GAM900S-M: Aluminium GAM900S-P: glass-fiber reinforced plastic
Operating temperature	-40...+75 °C
Resistance	DIN EN 60068-2-6 Vibration 20 g, 60-2000 Hz DIN EN 60068-2-27 Shock 100 g, 6 ms
Weight approx.	200 g (plastic), 250 g (Aluminium)
Connection	Connector M12, 12-pin

Safety-relevant key characteristics

Performance Level (ISO 13849)	PLd
Category (ISO 13849)	3
MTTF _d (ISO 13849)	393 years
DC _{avg} (ISO 13849)	86 %
TM (service life, ISO 13849)	20 years
Safety Integrity Level (IEC 61508 / EN 62061)	SIL2 / SIL CL2
PFH _D (IEC 61508 / EN 62061)	2,5 E-09 1/h
PFD _{avg} (IEC 61508)	2,1 E-04
Error reaction time	<50 ms

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Part number

GAM900S-

	3	2G	.		.ACB	...	
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								<u>Option terminal assignment</u>
							-	No options
							/3500	Voltage supply and redundant safety relay at connector 2
							/3501	Redundant safety relay at connector 2
							/3502	Voltage supply at connector 2
								<u>Relay trigger threshold</u>
						...		Encoding value 05...99 at choice
								Trigger threshold = encoding value x 10 mg
								(e.g. 80 mg = 08 x 10 mg)
								Encoding value 00: at ≥2 different switching threshold
								<u>Voltage supply / interface</u>
							CC	10...30 VDC / CANopen® and analog (4...20 mA)
							VC	10...30 VDC / CANopen® and analog (0...+10 V)*
								<u>Connection / Output</u>
						J		1 x M12 connector, 12-pin / 1 x relay
						2		2 x M12 connector, 12-pin / 4 x relay
								<u>Measuring range</u>
						2G		±2 g
								<u>Number of axes</u>
						3		Three axes
								<u>Housing material</u>
	M							Aluminium
	P							Glass-fiber reinforced plastic

* On request

Accessories

Connectors and cables

11142900	Female connector M12, 12-pin, 1 m cable (Z 201.M01)
11138627	Female connector M12, 12-pin, 5 m cable (Z 201.M05)
11142902	Female connector M12, 12-pin, 10 m cable (Z 201.M10)

Note: Accessories are not SIL2 approved. The user has to ensure the secure transfer and analysis of the signal.

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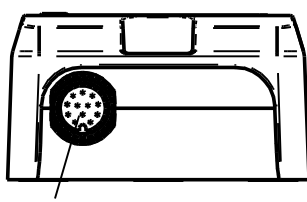
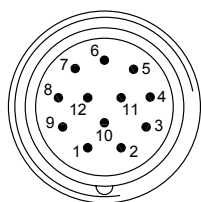
Terminal assignment

Connector 1, connector M12, 12-pin

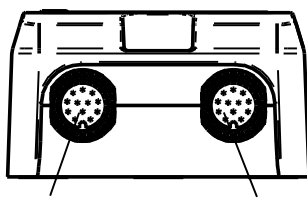
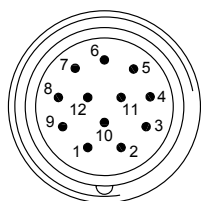
a) Standard	Description
Pin 1	GND
Pin 2	Test input
Pin 3	UB
Pin 4	Analog ground
Pin 5	Analog output X
Pin 6	Analog output Y
Pin 7	Relay 1 / Safety contact NO*
Pin 8	CAN Ground
Pin 9	Relay 1 / Safety contact CO*
Pin 10	n.c.
Pin 11	CAN Low
Pin 12	CAN High

Connector 2, connector M12, 12-pin

a) Standard	Description
Pin 1	Relay 2 / contact CO*
Pin 2	Relay 3 / contact NO*
Pin 3	Relay 3 / contact CO*
Pin 4	Relay 3 / contact NC*
Pin 5	Relay 4 / contact NO*
Pin 6	Relay 4 / contact CO*
Pin 7	Relay 4 / contact NC*
Pin 8	CAN Ground
Pin 9	Relay 2 / contact NO*
Pin 10	Relay 2 / contact NC*
Pin 11	CAN Low
Pin 12	CAN High



Connector 1



Connector 1 Connector 2

b) Option -3500 same as a) Standard, but:

Connector 1	
Pin 10	Relay 1 / contact NC*

Connector 2	
Pin 2	Relay 1a / Safety contact NO
Pin 3	Relay 1a / Safety contact CO
Pin 4	Relay 1a / contact NC
Pin 5	n.c.
Pin 6	GND
Pin 7	UB

c) Option -3501 same as a) Standard, but:

Connector 1	
Pin 10	Relay 1 / contact NC*

Connector 2	
Pin 2	Relay 1a / Safety contact NO
Pin 3	Relay 1a / Safety contact CO
Pin 4	Relay 1a / contact NC

d) Option -3502 same as a) Standard, but:

Connector 2	
Pin 5	n.c.
Pin 6	GND
Pin 7	UB

* Customer-specific relay configuration on request

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Configuration profile

Band	Analog 1 CANopen 1	Analog 2 CANopen 2	CANopen 3	CANopen 4
Direction	X	Y	Z	X,Y
Range Analog	±0.5 g	±0.5 g	–	–
Range CANopen	±2 g	±2 g	±2 g	±2 g
Resolution Analog	0.244 mg	0.244 mg	–	–
Resolution CANopen	1 mg	1 mg	1 mg	1 mg
Filter type	Bandpass	Bandpass	Bandpass	Bandpass
Filter order	4	4	4	4
Bandwidth	0.05...25 Hz	0.05...25 Hz	0.05...25 Hz	0.05...25 Hz
Relay ID	2	2	–	1 (safety)
Relay attack value	see part no.	see part no.	–	see part no.
Relay attack time	0 s	0 s	–	0 s
Relay decay value	100 %	100 %	–	100 %
Relay decay time	1 s	1 s	–	1 s

Different configurations on request.

Installation position



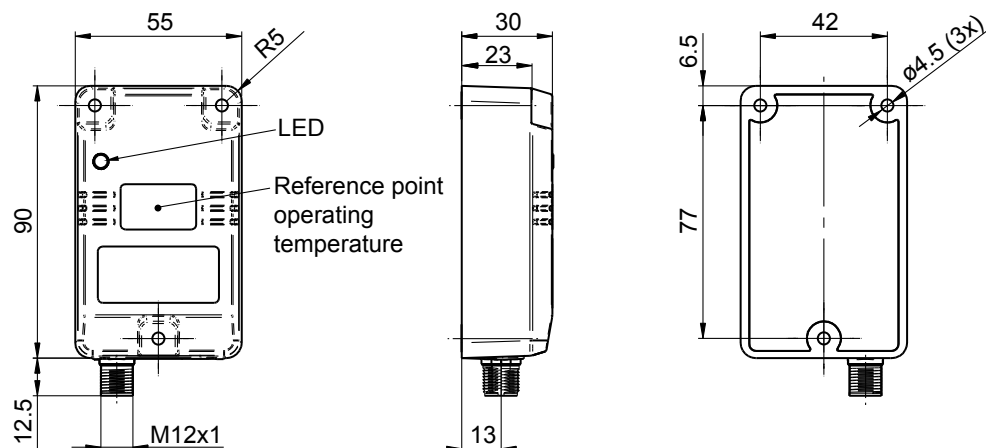
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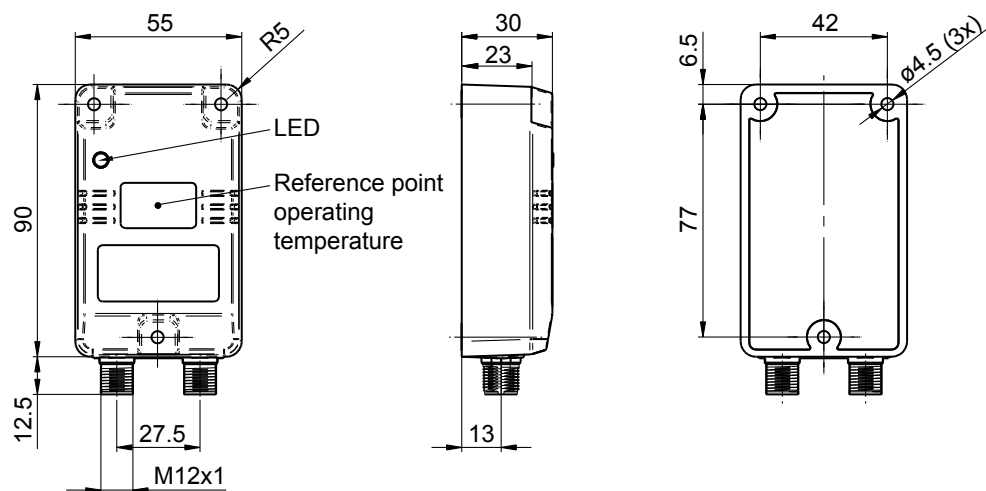
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Dimensions

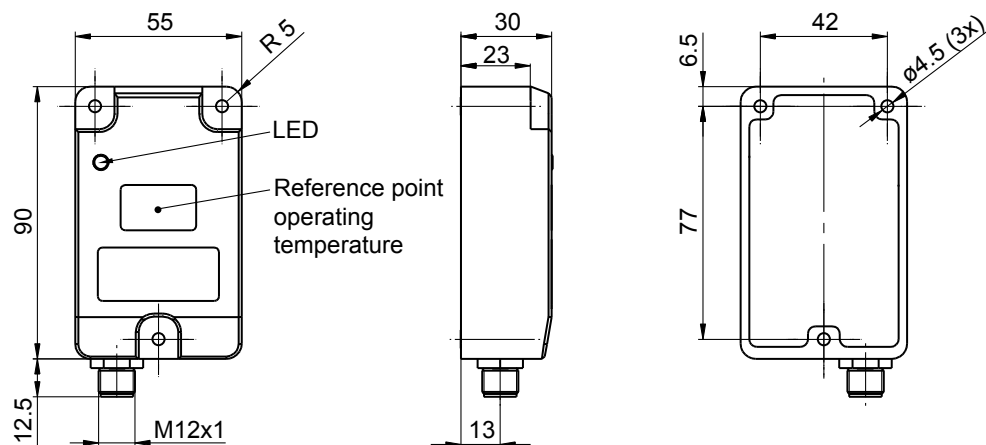
GAM900S - plastic housing, 1x connector M12



GAM900S - plastic housing, 2x connector M12



GAM900S - aluminium housing, 1x connector M12



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Dimensions

GAM900S - aluminium housing, 2x connector M12

