

GAM900S

With SIL 2/PL d relay output for limit monitoring

Analog / CANopen®

Overview

- Acceleration sensor for safety applications
- Safety limit monitoring with relay output for SIL 2/PL d
- Output of acceleration via analog / CANopen®
- Redundant 3 axes detection, MEMS based
- Measuring range ± 2 g
- Connection: connector M12
- Offshore capability



Technical data

Safety-relevant key characteristics

Performance Level (ISO 13849)	PL d
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)	SIL 2 / SIL CL2
PFH _D (IEC 61508/EN 62061)	2.5 E-9 1/h
PFD _{avg} (IEC 61508)	2.1 E-4
Error reaction time	< 50 ms

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
Interface	CANopen® Analog 4...20 mA (0...10 V optional)
Frequency bands	4 (configurable)
Measuring range	±2 g
Resolution	< 4 mg

Technical data - electrical ratings

Accuracy 3 σ (with band pass filtering)	= 60 mg (in the range of ± 1000 mg) = 15 mg (in the range of ± 250 mg) (with band pass filtering, up to -1dB)
Interference immunity	DIN EN 61000-6-2 DIN EN 61326-3-1
Emitted interference	EN 61000-6-4
Status indicator	DUO-LED integrated in housing
Approval	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

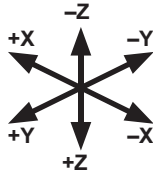
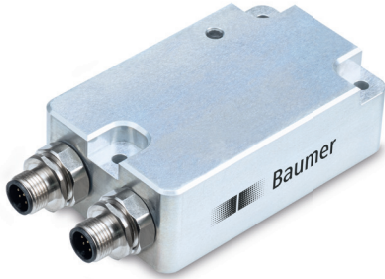
Technical data - mechanical design

Dimensions W x H x L	55 x 30 x 90 mm
Protection EN 60529	IP 55
Material	Aluminium
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.	250 g
Connection	Connector M12

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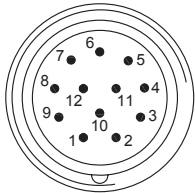
Installation position



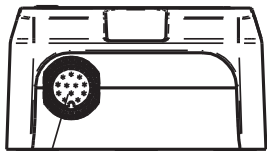
Terminal assignment

Standard / no option, connector M12, 12-pin

Connector 1



Pin	Description
1	GND
2	Test input (max. 30 V)
3	UB
4	Analog Ground
5	Analog output X
6	Analog output Y
7	Relay 1 / Safety contact NO*
8	CAN Ground
9	Relay 1 / Safety contact CO*
10	n.c.
11	CAN Low
12	CAN High



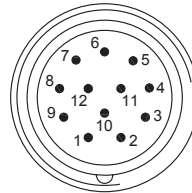
Connector 1

* Customer-specific relay configuration on request

Terminal assignment

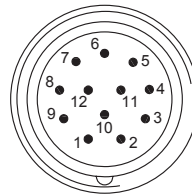
Standard / no option, connector 2xM12, 12-pin

Connector 1

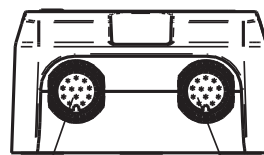


Pin	Description
1	GND
2	Test input (max. 30 V)
3	UB
4	Analog Ground
5	Analog output X
6	Analog output Y
7	Relay 1 / Safety contact NO*
8	CAN Ground
9	Relay 1 / Safety contact CO*
10	Relay 1 / contact NC*
11	CAN Low
12	CAN High

Connector 2



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



Connector 1

Connector 2

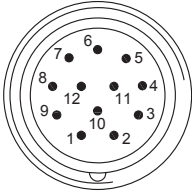
* Customer-specific relay configuration on request

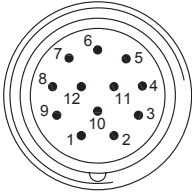
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Terminal assignment

Option -3500, Connector 2 x M12, 12-pin
Supply voltage and redundates Safety relay at connector 2

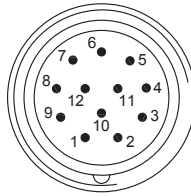
Connector 1	Pin	Description
	1	GND
	2	Test input (max. 30 V)
	3	UB
	4	Analog Ground
	5	Analog output X
	6	Analog output Y
	7	Relay 1 / Safety contact NO*
	8	CAN Ground
	9	Relay 1 / Safety contact CO*
	10	Relay 1 / contact NC*
	11	CAN Low
	12	CAN High

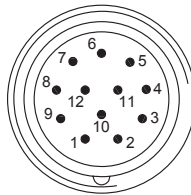
Connector 2	Pin	Description
	1	Relay 2 / contact CO*
	2	Relay 1a / Safety contact NO
	3	Relay 1a / Safety contact CO
	4	Relay 1a / contact NC
	5	n.c.
	6	GND
	7	UB
	8	CAN Ground
	9	Relay 2 / contact NO*
	10	Relay 2 / contact NC*
	11	CAN Low
	12	CAN High

* Customer-specific relay configuration on request

Terminal assignment

Option -3501, connector 2 x M12, 12-pin
Safety relay parallel at Stecker 1 and 2

Connector 1	Pin	Description
	1	GND
	2	Test input (max. 30 V)
	3	UB
	4	Analog Ground
	5	Analog output X
	6	Analog output Y
	7	Relay 1 / Safety contact NO*
	8	CAN Ground
	9	Relay 1 / Safety contact CO*
	10	Relay 1 / contact NC*
	11	CAN Low
	12	CAN High

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

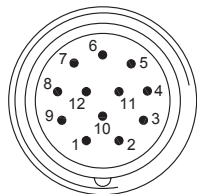
* Customer-specific relay configuration on request

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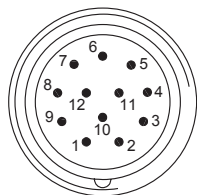
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Terminal assignment

Option -3502, connector 2 x M12, 12-pin
Voltage supply at connector 2
Connector 1


Pin	Description
1	GND
2	Test input (max. 30 V)
3	UB
4	Analog Ground
5	Analog output X
6	Analog output Y
7	Relay 1 / Safety contact NO*
8	CAN Ground
9	Relay 1 / Safety contact CO*
10	n.c.
11	CAN Low
12	CAN High

Connector 2


Pin	Description
1	Relay 2 / contact CO*
2	Relay 3 / contact NO*
3	Relay 3 / contact CO*
4	Relay 3 / contact NC*
5	n.c.
6	GND
7	UB
8	CAN Ground
9	Relay 2 / contact NO*
10	Relay 2 / contact NC*
11	CAN Low
12	CAN High

* Customer-specific relay configuration on request

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Configuration profile

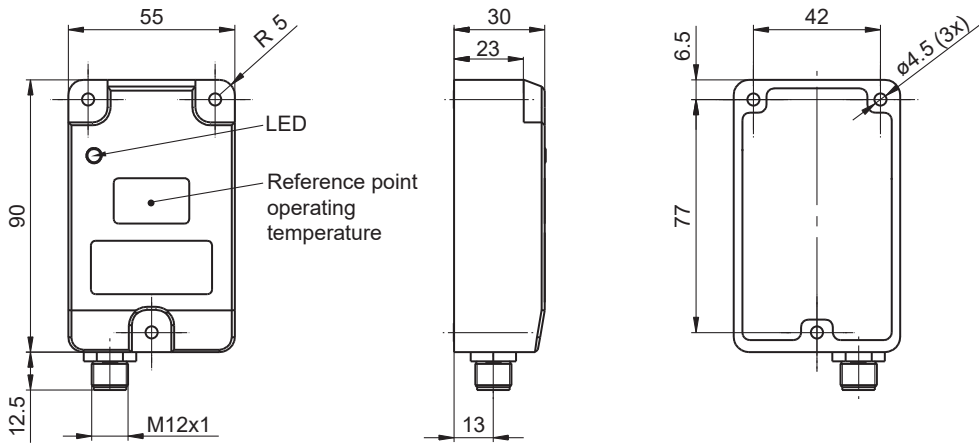
Band	Analog 1 CANopen® 1	Analog 2 CANopen® 2	CANopen® 3	CANopen® 4
Direction	X	Y	Z	X,Y
Range Analog	±0.5 g	±0.5 g	–	–
Range CANopen®	±2 g	±2 g	±2 g	±2 g
Resolution Analog	0.244 mg	0.244 mg	–	–
Resolution CANopen®	1 mg	1 mg	1 mg	1 mg
Filter type	Bandpass	Bandpass	Bandpass	Bandpass
Filter order	4	4	4	4
Bandwidth	0.05...10 Hz	0.05...10 Hz	0.05...10 Hz	0.05...10 Hz
Relay ID	2	2	–	1 (safety)
Relay attack value	see part number	see part number	–	see part number
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.

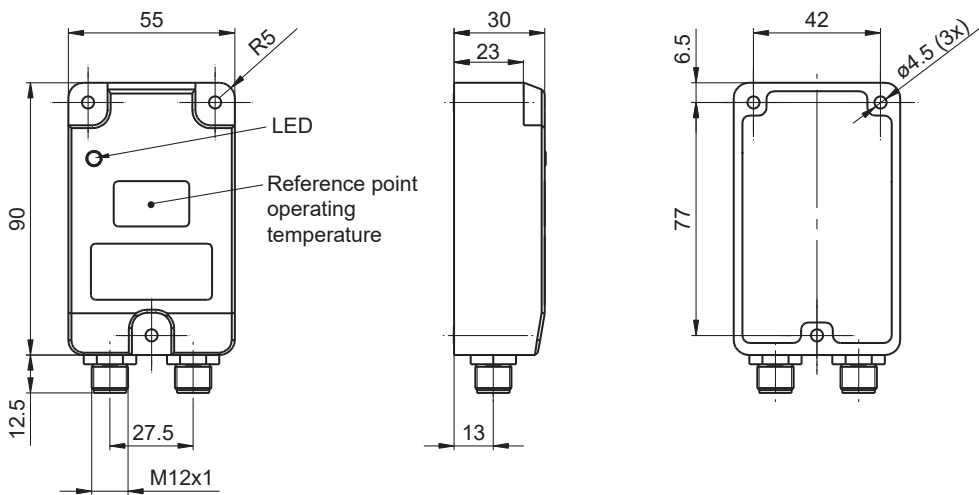
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Dimensions



GAM900S - aluminium housing, 1x connector M12



GAM900S - aluminium housing, 2x connector M12

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Ordering reference

	GAM900S	-	M	3	2G	.	#	##	.	AC	B	...	#
Product	GAM900S												
Housing material	Aluminium												
	M												
Number of axes	Three axes												
	3												
Measuring range	±2 g												
	2G												
Connection / Output	1 x M12 connector, 12-pin / 1 x relay												
	J												
	2 x M12 connector, 12-pin / 4 x relay												
	2												
Voltage supply / interface	10...30 VDC / CANopen® and analog (4...20 mA)												
	CC												
	10...30 VDC / CANopen® and analog (0...+10 V)												
	VC												
Resolution	12 bit (OUT 1), 16 bit (OUT 2)												
	AC												
Resolution addition	High precision, 2 channel												
	B												
Relay trigger threshold	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 different switching threshold												
	...												
Option terminal assignment	No options												
	-												
	Voltage supply and redundant safety relay at connector 2												
	/3500												
	Redundant safety relay at connector 2												
	/3501												
	Voltage supply at connector 2												
	/3502												