

GLAM700 Family

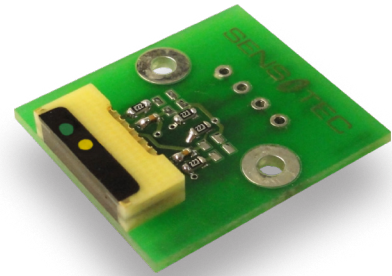
GLM-Amplifier Evaluation Module

The amplifier boards of the GLAM700 family are designed for evaluation of the GLM700ASB tooth sensor modules. They are therefore a good product development tool. The amplifier board includes the GLM module and amplification for a better usable signal.

There are two through holes for easy mounting of the module. The electrical connection is made via a pin strip.

In use with a ferromagnetic scale with matching pitch, the module delivers two 90 degree phase shifted analog signals (sine and cosine, see Fig. 9). These signals are ready for interpolation or for analog to digital conversion.

The table "Product overview" on page 7 shows the modules available with the according pitch.



Product Overview

Article	Description
GLAM7xx-01	Evaluation board with GLM module and amplifier

For order information see page 7.

Quick Reference Guide

Symbol	Parameter	Min.	Typ.	Max.	Unit
V_{CC}	Supply voltage	4.5	5.0	8.0	V
A	Signal amplification factor ¹⁾	-	37	-	-
T_{amb}	Ambient temperature	-25	-	+85	°C
f	Frequency range ²⁾	0	-	50	kHz

¹⁾ The amplitude depends on the distance between sensor and scale. For further information see Fig. 6 (page 4).

²⁾ Due to the filtering. For the value of the tooth sensor only, see the datasheet of GLM700ASB.

Measurement Setup

Depiction	Configuration	Application
	Ferromagnetic toothed rack with fixed pitch; sensor with bias magnet mounted perpendicularly to the rack.	Incremental length measurement
	Ferromagnetic toothed wheel with fixed pitch; sensor with bias magnet mounted radially to the toothed wheel.	Incremental angle measurement at the shaft circumference

Features

- Gear tooth sensor with integrated magnet and additional amplification
- Designed for evaluation of the GLM tooth sensor module
- High signal quality due to FixPitch technology
- Contactless, wear-free measurement principle
- Easy to mount

Advantages (of the GLM module)

- Allows use of simple passive toothed structures as measurement scale; so reduced design, manufacturing and assembly effort
- Flexible design options due to identical pin arrangement
- Reliable operation in difficult operating environments
- High interpolation possible within tooth pitch for high resolution and high accuracy
- Amplified signals for easy converting

Applications

- Development with GLM module
- Signal evaluation



ESD

Absolute Maximum Ratings

In accordance with the absolute maximum rating system (IEC60134).

Symbol	Parameter	Min.	Max.	Unit
V_{CC}	Supply voltage	-8.0	+8.0	V
T_{amb}	Ambient temperature	-25	+85	°C
T_{stg}	Storage temperature	-25	+85	°C

Stresses beyond those listed under “Absolute maximum ratings” may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

Electrical Data

$T_{amb} = 25\text{ °C}$; unless otherwise specified.

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
V_{CC}	Supply voltage		4.5	5.0	8.0	V
A	Signal amplification factor ¹⁾		-	37	-	-
T_{amb}	Ambient temperature		-25	-	+85	°C
f	Frequency range ²⁾		-	-	50	kHz

¹⁾ The output amplitude depends on the supply voltage and the distance between sensor and scale. See Fig. 3 (page 4) for more information.

²⁾ Due to the filtering. For the value of the tooth sensor only, see the datasheet of GLM700ASB.

Product type specific Data

Article description	Pitch	Air gap ¹⁾
GLAM711-01	1 mm	≤ 200 μm
GLAM712-01	2 mm	≤ 400 μm
GLAM713-01	3 mm	≤ 600 μm
GLAM714-01	0.94 mm (module 0.3)	≤ 188 μm
GLAM715-01	1.57 mm (module 0.5)	≤ 314 μm

¹⁾ Typical air gap between sensor and scale - for further information see Fig. 3 (page 4).

Pinning

Pad	Symbol	Parameter
1	COS	Cosine output signal
2	V _{CC}	Supply voltage
3	GND	Ground
4	SIN	Sine output signal

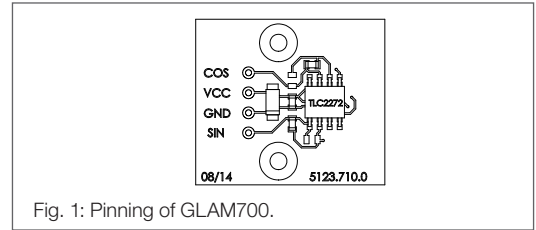


Fig. 1: Pinning of GLAM700.

Dimensions

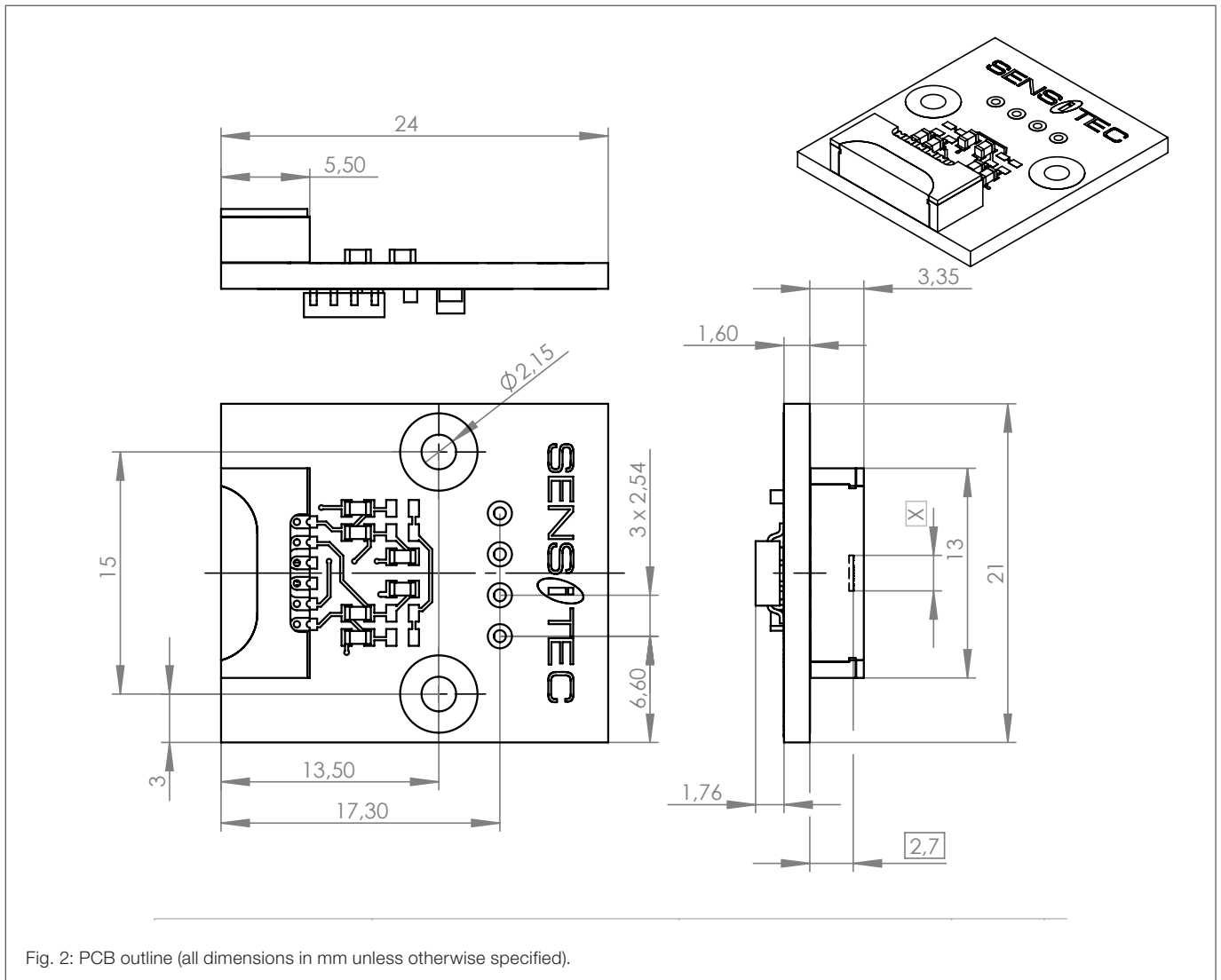


Fig. 2: PCB outline (all dimensions in mm unless otherwise specified).

Typical Performance Graphs

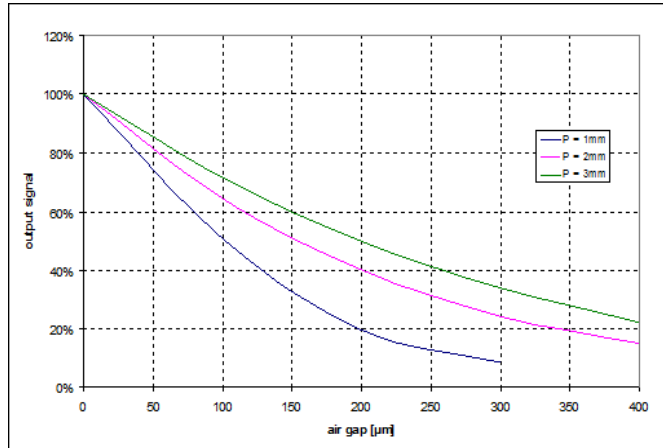


Fig. 3: Sensor output signal at a rectangular shaped tooth structure as a function of the air gap (distance between the sensor module and the tooth structure).

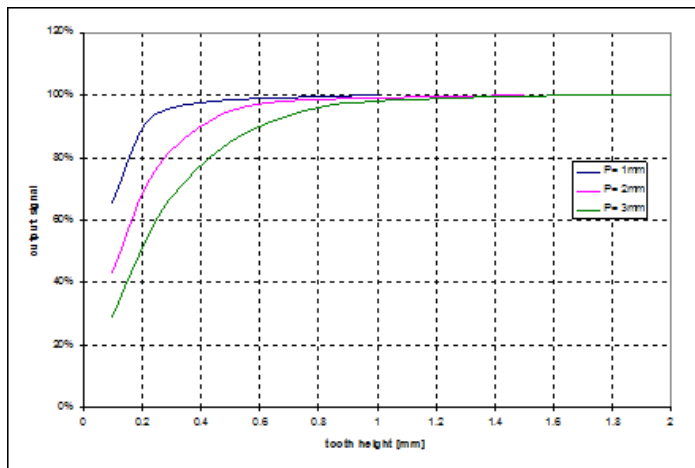


Fig. 4: Sensor output signal at a rectangular shaped tooth structure as a function of the tooth height.

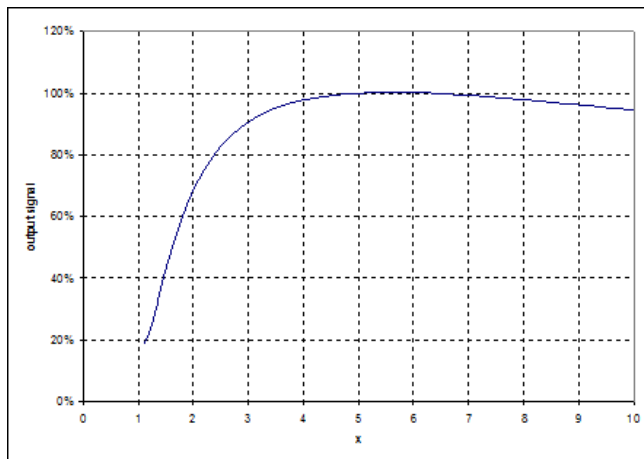
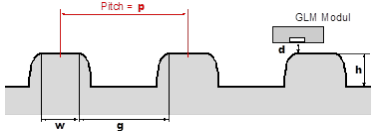
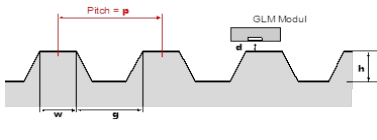
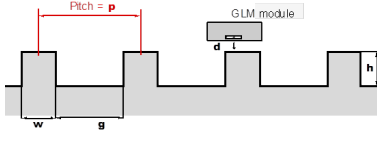
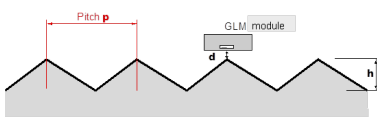
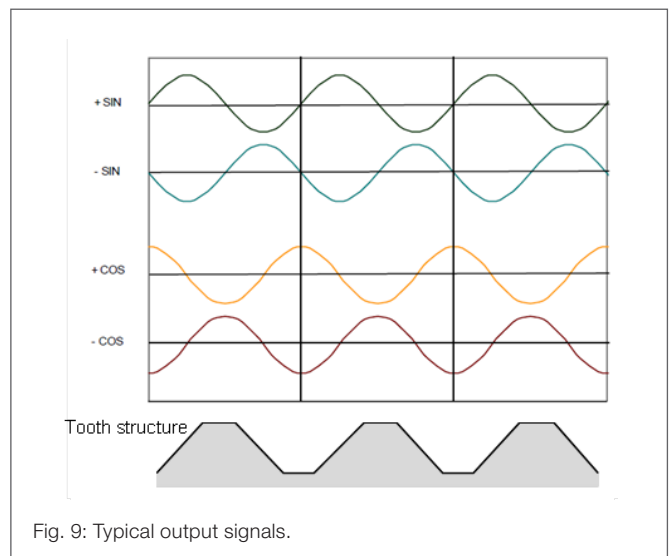
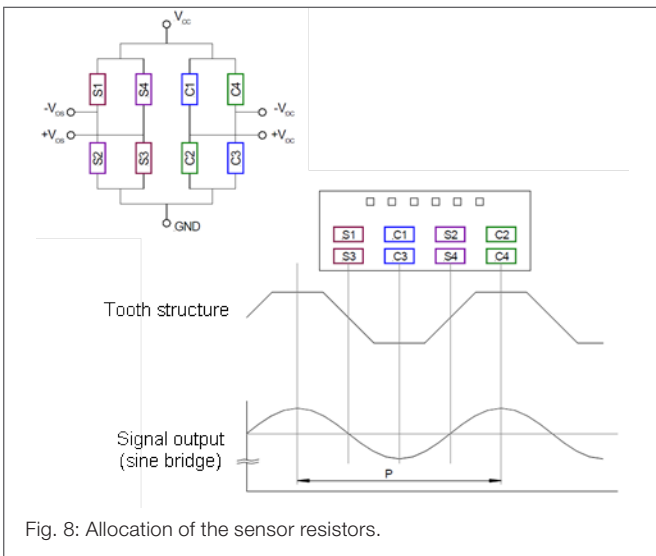
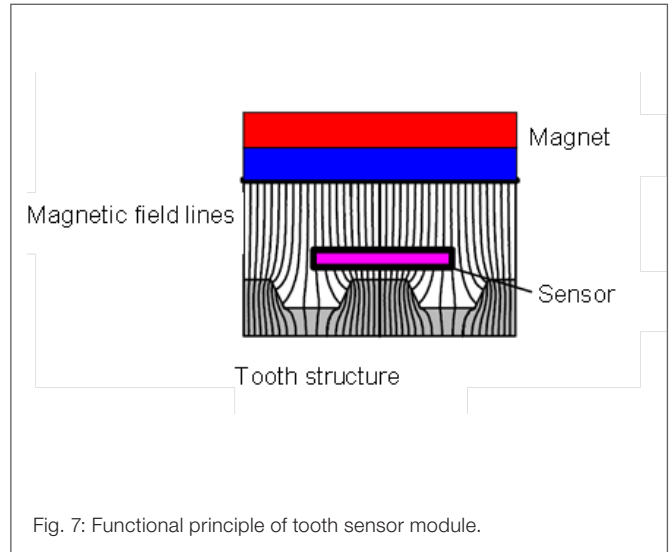
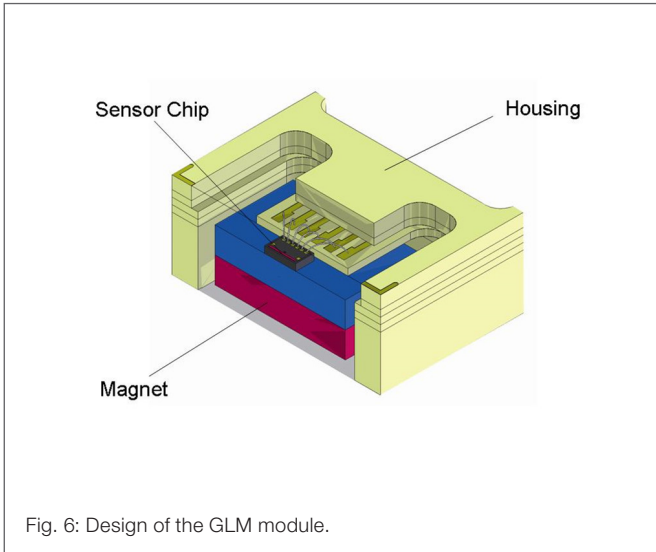


Fig. 5: Sensor output signal at a rectangular shaped tooth structure as a function of the land-pitch-factor $x = P/w$ (P: pitch, w: tooth top land width).

Recommended tooth profiles	h tooth height	w tooth top land width	g tooth gap	d air gap	signal quality
	$\frac{IV}{4} p$	$\sim \frac{p}{3}$	$\sim \frac{2p}{3}$	$\sim \frac{p}{5}$	+++
	$\frac{IV}{4} p$	$\sim \frac{p}{3}$	$\sim \frac{2p}{3}$	$\sim \frac{p}{5}$	+++
	$\frac{IV}{4} p$	$\sim \frac{p}{3}$	$\sim \frac{2p}{3}$	$\sim \frac{p}{5}$	+++
	$\frac{IV}{3} p$	—	—	$\sim \frac{p}{5}$	++

Magnetically soft materials must be used for the measurement scale, e.g.:

St37 (1.0037)	X20Cr13 (1.4021)	<p>The tooth gap can be filled by a chrome coating or by other non-ferromagnetic materials if the application requires a smooth surface.</p> <p>This table is intended only as a rough guide. Please contact your sales engineer for further details.</p>
St44 (1.0044)	X30Cr13 (1.4028)	
	X46Cr13 (1.4034)	
9SMnPb28 (1.0718)	X6Cr17 (1.4016)	
9SMnPb29 (1.0737)	X14CrMoS17 (1.4104)	
	X17CrNi16 2 (1.4057)	
20MnV6 (1.5217)	X39CrMo17 1 (1.4122)	
	X90CrMoV18 (1.4112)	

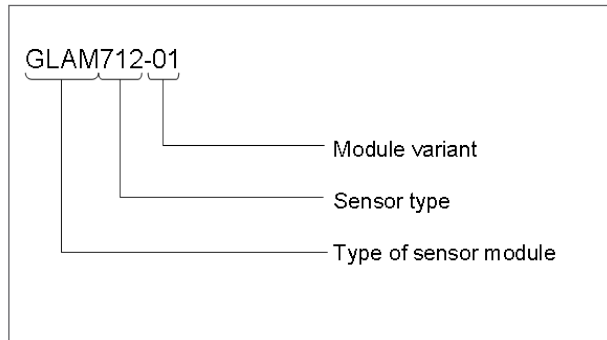


i Please refer to the data sheet of the GLM module to obtain more detailed specifications.

Purchased Parts Package and Delivery Form

Quantity	Part	Description
1	GLAM7xx-01	GLM amplifier board
2	GLM7xxASB	GLM module

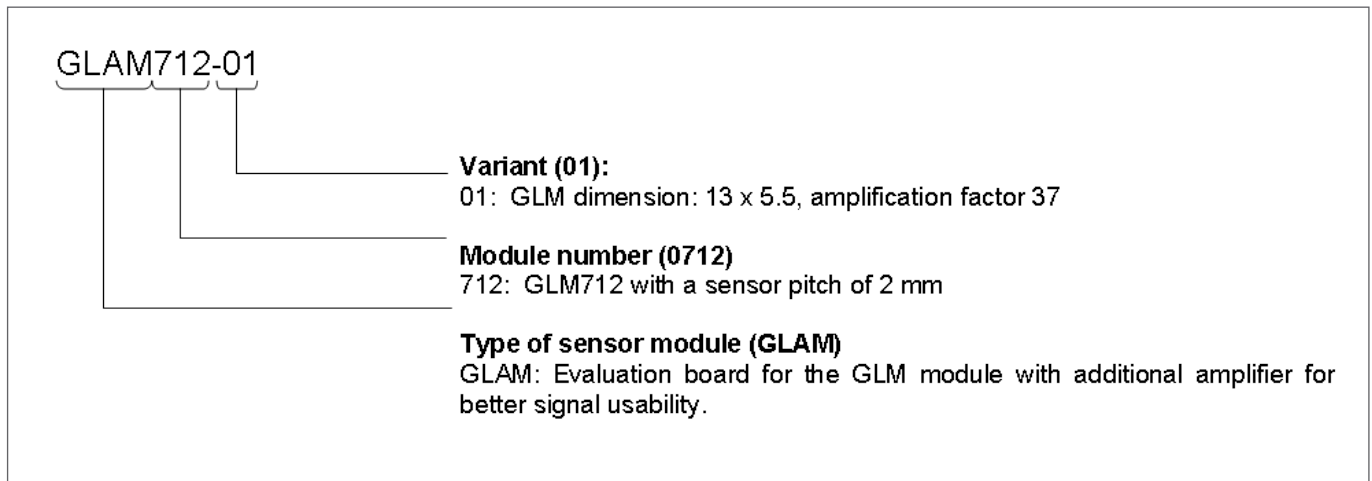
Order Code



Product Overview

Article description	Pitch	Marking ¹⁾	Article number
GLAM711-01	1 mm	DFC (green/green)	5112.2201.0
GLAM712-01	2 mm	DGC (green/yellow)	5112.2202.0
GLAM713-01	3 mm	DHC (green/blue)	5112.2203.0
GLAM714-01	0.94 mm (module 0.3)	DIC (green/white)	5112.2204.0
GLAM715-01	1.57 mm (module 0.5)	DKC (green/red)	5112.2205.0

¹⁾ Marking on top of the GLM module.

Additional Information on Ordering Code**Special Design Features**

FixPitch sensors are adapted to the pole length (pitch) of the measurement scale. The linearity of the sensor is optimized and the influence of interference fields is minimized.

General Information

Product Status

Article	Status
GLAM7xx-01	The product is an evaluation board. All specified parameters are indicative and are used to evaluate the GLM sensor module.
Note	The status of the product may have changed since this data sheet was published. The latest information is available on the internet at www.sensitec.com .

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Changelist

Version	Description of the Change	Date
GLAM700.DSE.05	Disclaimer supplement	06/2022
GLAM700.DSE.04	Change of corporate design (pp. 1-10)	01/2022
GLAM700.DSE.00	Original (pp. 1-10)	11/2011

Sensitec GmbH

Schanzenfeldstr. 2 · 35578 Wetzlar · Germany
 Tel. +49 6441 5291-0 · Fax +49 6441 5291-117
 www.sensitec.com · sensitec@sensitec.com