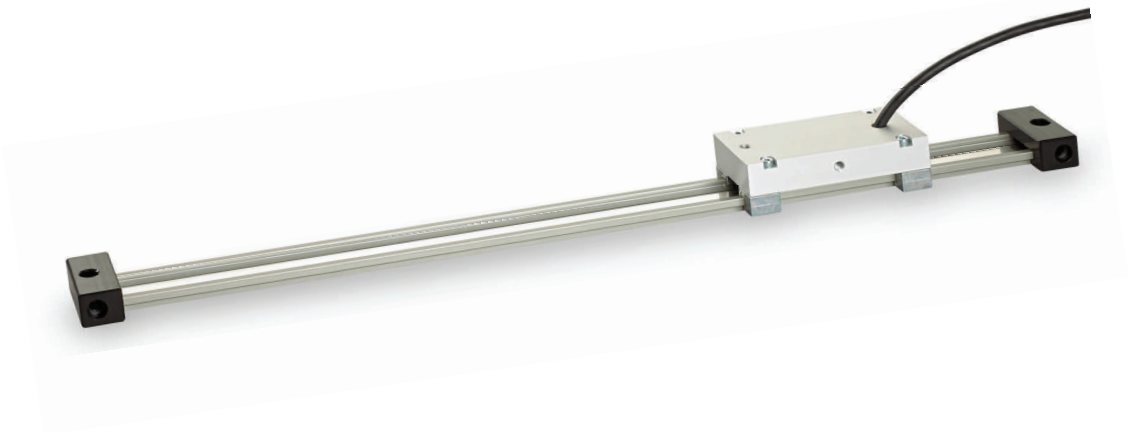
ELGO ELECTRONIC

GSA2



Guided Magnetic Absolute Length Measuring System

GSA2 Magnetic Guided Absolute Measuring System

General Information: The GSA2 is a guided magnetic absolute length measuring system. The system consists of a guide carriage with integrated sensor and a guide rail with the magnetic tape. Different lengths of up to one meter are available. GSA has a resolution of 1.0μm. The repeat accuracy is +/- 1 increment. The length measuring system GSA2 was developed for dynamic applications with travelling speeds of 2m/s (static) or 4m/s (dynamic), especially in regard to metal working. The sensor head is guided along the magnetic tape contact-free. Thanks to direct measurement, tolerances such as slip and pitch error are compensated.

Functional principle: A line of hall sensors and a magnetoresistive resistance bridge element are guided along a magnetic tape encoded with an absolute track and a fine interpolation track. The absolute track and the sensor line deliver an absolute value, and the fine interpolation track and the interpolation electronics provide the high resolution of the measuring system.

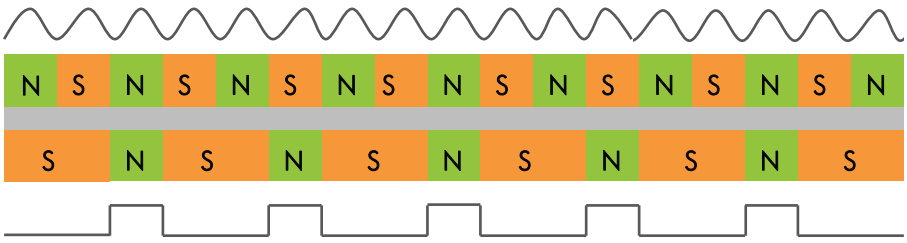
The fine interpolation track consists of north and south poles alternating every 1mm, and which are scanned by resistance bridges. The sensor line delivers the absolute value. It consists of single hall sensors which scan the code consisting of north and south poles.

Important Features:

- Absolute measurement
- Contact-free measurement
- Robust, dirt– and shock resistant
- Measuring length up to 1 meter
- Resolution 1,0 μm
- Changes in the position are detected even without power—no referencing necessary
- Optionally, incremental square wave signals (A, B) and sine-cosine-signals (1 Vss) for dynamic movement control

Measuring Principle of the Magnetic Tape:

Two-track system (fine interpolation track on top / absolute track below



Pin Assignment:

Cable	Function RS422	Option SSI	Option CAN
white	0 V	0 V	0 V (GND)
brown	+ 24 V	+ 24 V	+ 24 VDC
orange	TX -	SSI / TX Data inv.	CAN low
yellow	TX	SSI / TX Data	CAN high
violet		SSI / CLK Clock inv.	-
green		SSI / CLK Clock	-
grey	A channel (with Option I)	reserved for tests	-
black	B channel (withOption I)	reserved for tests	-
shielding	PE	PE	PE

Technical Data:

Mechanical Data	
Measuring principle	Absolute
Repeat accuracy	+/- 1 Increment
System accuracy in µm at 20 °C	+/- (10 + 20 x L) (L = measuring length in meters)
Pole pitch	1 mm
Housing material guide carriage	Steel
Dimensions guide carriage	L x W x H: 110mm x 54mm x 24mm
Required magnetic tape	AB20-10-10-2-R-C15
Max. measuring length	1 m
Connection	Open cable ends
Weight	approx. 620 g with measuring length of 330 mm
Ambient Conditions	
Storage temperature	-25… +85 °C
Operation temperature	-10… +70 °C (-25… +85 °C) on request
Protection class	IP64 (sensor head)
Electrical Data	
Supply voltage	10… 30 VDC +/- 10 %
Ripple	10 - 30 V: < 10 %
Current consumption	max. 150 mA
Interfaces	SSI, CANopen, CAN BASIC ELGO, RS422
Resolution	1,0 µm
Max. travelling speed	1 m/s with permanent absolute position scanning 10 m/s with SC10 scanning 4m/s with square wave 5V
Sensor cable	1.5 m standard cable length, others on request, drag chain compliant

Example:

GSA2 - 0 0 - 0 1 . 5 - 9 - 0 2 2 0 - S B 0 - 0 - X - X
A A - B B . B - C - DDD D - E E E - F - G - H

GSA2 *ELGO* standard, signal cable length 1.5 m, resolution 1.0 µm, SSI interface, measuring length 220 mm and without connector

Your order:

GSA2- _ _ - _ _ . _ - 9 - _ _ _ _ - _ _ _ - _ - _ - _
A A - B B . B - C - D D D D - E E E - F - G - H

Order Designation:

For orders, please use the following order designation:

GSA2- _ _ - _ _ . _ - _ - _ _ _ _ - _ _ _ - _ - _ - _
A A - B B . B - C - D D D D - E E E - F - G - H

A SN number

00	*ELGO* standard
01	first special version
02	second special version

B Signal cable length in XX . X m

01.5	1.5 m standard cable length

C Resolution

9	1.0 µm

D Measuring length in XXXX mm

E.g. 0220 = 220 mm
Max. 1 meter (1000 mm)

E Interface

SB0	SSI interface (25 Bit binary code)
SG0	SSI interface (25 Bit Gray code)
CA0	CANopen (DS406)
CN0	CAN BASIC ELGO
420	RS422

F Bit rate

0	9600 Bit/s - standard bit rate with RS232 (230) and 422 (420/A20)
1	19200 Bit/s with RS232 or RS422
2	38400 Bit/s with RS232 or RS422
3	125000 Bit/s with CAN
4	250000 Bit/s with CAN
5	500000 Bit/s with CAN
6	1000000 Bit/s with CAN

G Device address

0.. F (standard setting: device address 0)

H Connector

X	no connector

NOTE!
The mechanical load limits given in the user manual must not be exceeded!

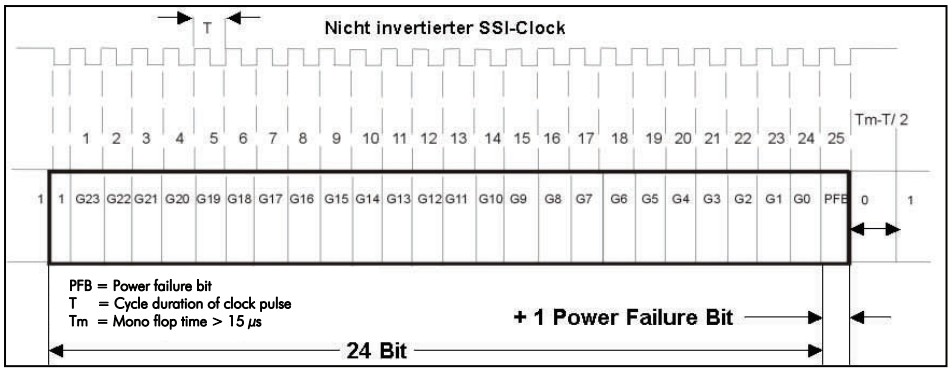
SSI Interface:

Functional principle: If the clock is not interrupted for the time Tm-T/2 (emission of another 25 periods), the shifting register clocks out the same data value again (error detection in evaluation).

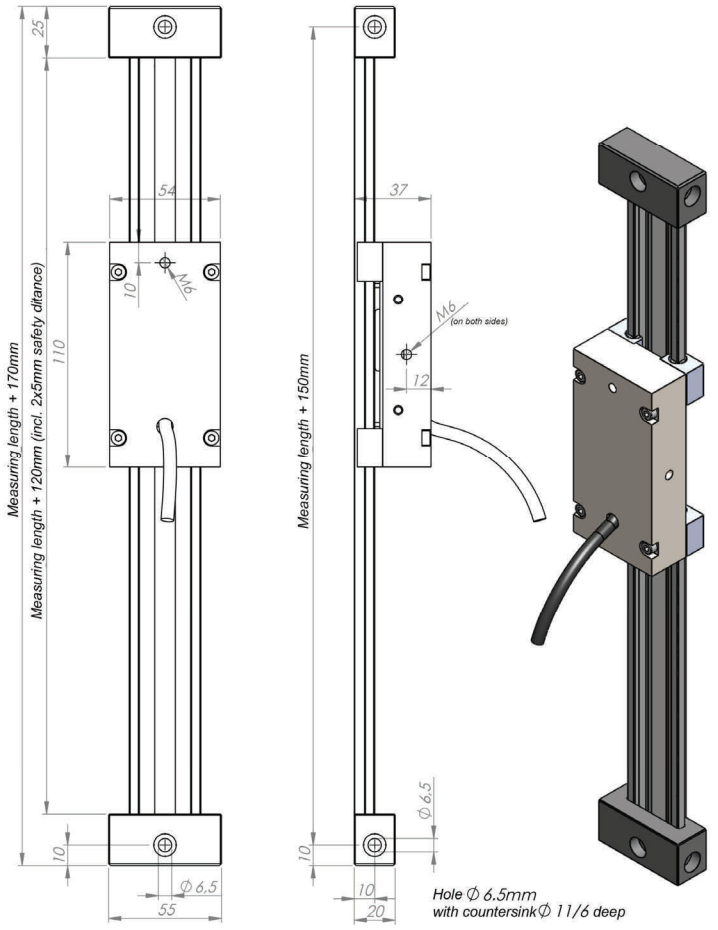
Some encoders have a Power Failure Bit (PFB):

In GSA2, the PFB s always „low".

Read-out of Data (2 times with 25 clocks)



Dimensions:



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