



code **ST04** | project **A57-B** | release **A**

## GENERAL FEATURES

- Absolute optical scale with glass measuring support.
- SSI - BiSS C (unidirectional) interface. Direct reading of absolute measure.
- Resolutions up to 10 nm. Accuracy grade up to  $\pm 2 \mu\text{m}$ .
- High immunity against electromagnetic noises.
- Innovative device inside the scale for the disposal of liquids coming from inefficient filtering systems.
- Adjustable connecting cable output.
- Connector incorporated into the transducer.
- Small size, to allow installation in narrow spaces.

## Cod. GVS 608 HI

<b>Measuring support</b>	glass scale	
- Grating pitch	20 $\mu\text{m}$	
- Linear thermal expansion coefficient	$8 \times 10^{-6} \text{ } ^\circ\text{C}^{-1}$	
<b>Serial interface</b>	SSI - BiSS C (unidirectional)	
<b>Resolution absolute measure</b>	1 - 0.1 - 0.05 - 0.01 $\mu\text{m}$	
<b>Accuracy grade</b>	$\pm 5 \mu\text{m}$ * standard version $\pm 3 \mu\text{m}$ * high-accuracy version ( $\pm 2 \mu\text{m}$ for ML up to 720 mm)	
<b>Measuring length ML in mm</b>	70, 120, 170, 220, 270, 320, 370, 420, 470, 520, 570, 620, 720, 770, 820, 920, 1020, 1140, 1240, 1340, 1440, 1540, 1640, 1740, 1840, 2040, 2240, 2440, 2640, 2840, 3040, 3240 <sub>MAX</sub>	
<b>Max. traversing speed</b>	120 m/min	
<b>Max. acceleration</b>	30 m/s <sup>2</sup>	
<b>Required moving force</b>	$\leq 2.5 \text{ N}$	
<b>Vibration resistance (EN 60068-2-6)</b>	100 m/s <sup>2</sup> [55 ÷ 2000 Hz]	
<b>Shock resistance (EN 60068-2-27)</b>	150 m/s <sup>2</sup> [11 ms]	
<b>Protection class (EN 60529)</b>	IP 54 standard IP 64 pressurized	
<b>Operating temperature</b>	0 $^\circ\text{C}$ ÷ 50 $^\circ\text{C}$	
<b>Storage temperature</b>	-20 $^\circ\text{C}$ ÷ 70 $^\circ\text{C}$	
<b>Relative humidity</b>	20% ÷ 80% (not condensed)	
<b>Reading block sliding</b>	by ball bearings 	
<b>Power supply</b>	5 Vdc $\pm 10\%$	
<b>Current consumption</b>	280 mA <sub>MAX</sub>	
<b>Max. cable length</b>	70 m **	
<b>Electrical connections</b>	see related table	
<b>Connector</b>	inside the transducer	
<b>Electrical protections</b>	inversion of polarity and short circuits	
<b>Weight</b>	435 g + 1290 g/m	

\* The declared accuracy grade of  $\pm X \mu\text{m}$  is referred to a measuring length of 1 m.

\*\* Ensuring a minimum power supply voltage of 5 V to the transducer.

## MECHANICAL CHARACTERISTICS

- Rugged and heavy **PROFILE** made of anodized aluminum. Dimensions 40x24 mm.
- Elastic **COUPLING** for misalignment compensation and self-correction of mechanical hysteresis.
- Non-extendible **SEALING LIPS**, along the sliding side of the reader head, fixed at the lateral ends.
- **READER HEAD**, consisting of tie rod and reading block, with fully-protected place for electronic boards.
- **READING BLOCK** sliding through ball bearings.
- Die-cast **TIE ROD**, with nickel surface treatment.
- Absolute glass **GRATING**, placed in the scale housing.
- Elastomeric **GASKETS** which allow to reproduce the full protection in mechanical joints (in case of disassembling).
- **FULL POSSIBILITY** to disassemble and reassemble it.
- Possibility of direct **SERVICE**.

## ELECTRICAL CHARACTERISTICS

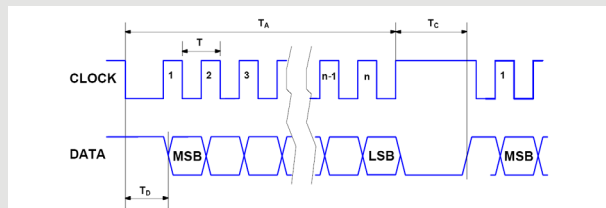
- Reading device with an infra-red light emitter and receiving photodiodes.
  - Serial protocol SSI - BiSS C (unidirectional).
  - Electrical protection against polarity inversion and short circuits on output ports.
  - **CABLE:**
    - Shielded twisted pair for digital signals (SSI - BiSS).
    - 6-wire shielded cable  $\varnothing = 6.2 \text{ mm}$ , PUR external sheath with low friction coefficient, resistant to oil and suitable for continuous movements.
    - Conductors section:
      - power supply 0.35 mm<sup>2</sup>;
      - signals 0.25 mm<sup>2</sup>.
- The cable's bending radius should not be lower than 70 mm.**

SIGNALS	CONDUCTOR COLOR
+ V	Brown
0 V	White
CK	Green
$\overline{\text{CK}}$	Yellow
D	Pink
$\overline{\text{D}}$	Grey
SCH	Shield

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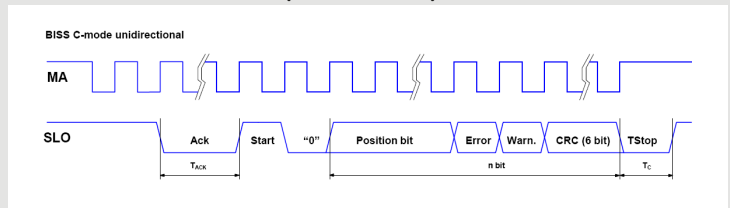
## OUTPUT SIGNALS

### SSI Version



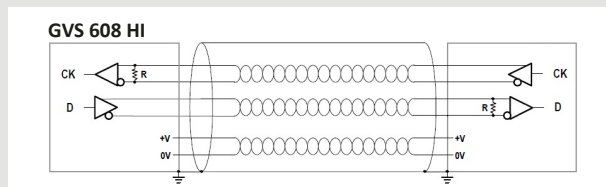
<b>Interface</b>	SSI Binary – Gray
<b>Signals level</b>	EIA RS 422
<b>Clock frequency</b>	0.1 ÷ 1.2 MHz Duty cycle 50% ± 10%
<b>n</b>	26 bit (res. 1 - 0.1 μm) 30 bit (res. 0.05 - 0.01 μm)
<b>Tc</b>	max. 15 μs at 100 KHz
<b>Td</b>	max. 7 μs

### BiSS C (unidirectional) Version



<b>Interface</b>	BiSS C unidirectional
<b>Signals level</b>	EIA RS 485 / RS 422
<b>Clock frequency</b>	0.5 ÷ 5 MHz Duty cycle 50% ± 10%
<b>n</b>	26 + 2 + 6 bit (res. 1 - 0.1 μm) 32 + 2 + 6 bit (res. 0.05 - 0.01 μm)
<b>Tc</b>	max 20 μs
<b>TAck</b>	2 Clock

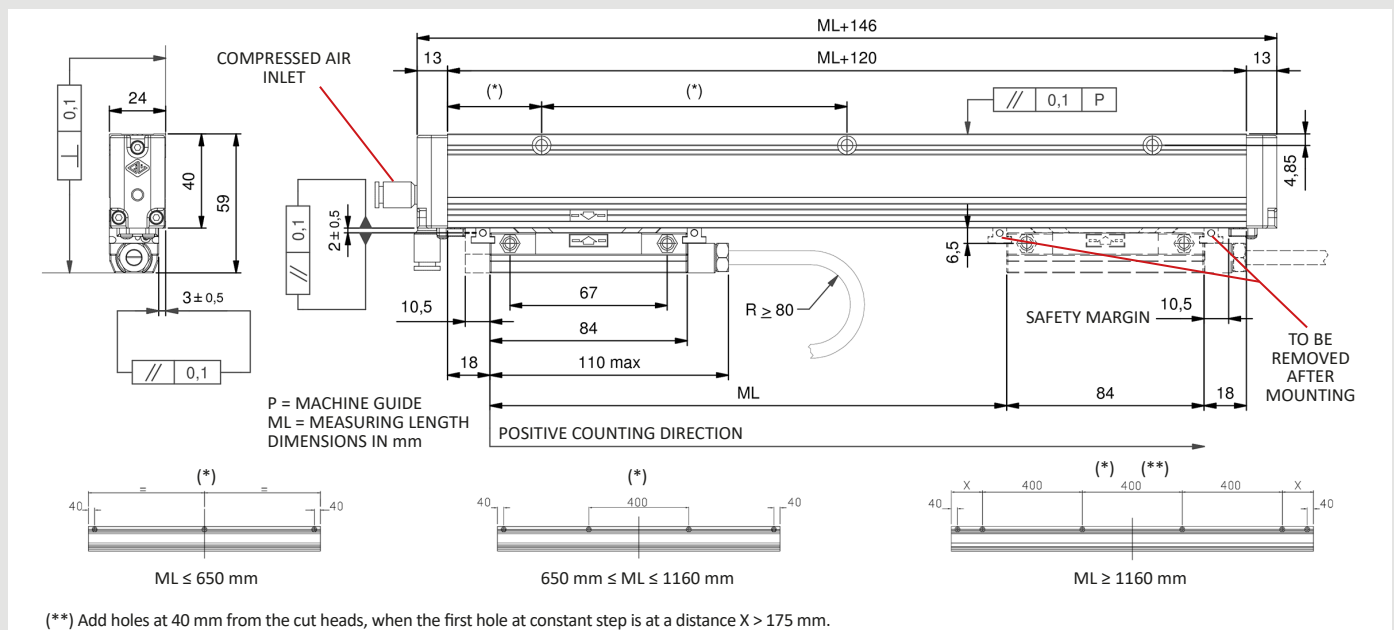
## CABLE



In case of cable extension, it is necessary to guarantee:

- the electrical connection between the body of the connectors and the cables shield;
- a minimum power supply voltage of 5 V to the transducer.

## DIMENSIONS



## ORDERING CODE

Example OPTICAL SCALE **GVS 608 HI T1A 03240 05V S0 M04/S CG8 PR**

Model	Scale type, resolution	Measuring length	Power supply	Output signals	Cable length, cable type	Connector, wiring	Special, pressurization
GVS 608 HI	T1 = 1 μm T01 = 0.1 μm T005 = 0.05 μm T001 = 0.01 μm A = absolute	Measuring length in mm 03240 = ML <sub>MAX</sub>	05V = 5 V	S0 = SSI programmable S1 = SSI binary S2 = SSI binary+even parity S3 = SSI binary+odd parity S4 = SSI binary+error S5 = SSI binary+even parity+error S6 = SSI binary+odd parity+error S7 = SSI Gray B1 = BiSS binary	Mnn = length in m M04 = 4 m (standard) 50 = 50 m S = PUR cable	Cnn = progressive SC = without connector	No cod. = standard SPnn = special nn PR = pressurized

Without prior notice, the products may be subject to modifications that the Manufacturer reserves to introduce as deemed necessary for their improvement.