

code **ST02** | project **A57-B** | release **E**

GENERAL FEATURES

- Absolute optical scale with glass measuring support, SSI - BiSS C (unidirectional) interface.
- Resolutions up to 10 nm. Accuracy grade up to $\pm 2 \mu\text{m}$.
- Innovative device inside the scale for the disposal of liquids coming from inefficient filtering systems.
- Adjustable connecting cable output.
- Connector incorporated into the transducer.
- Direct reading of absolute measure.
- Small size, to allow installation in narrow spaces.
- Option: 1 Vpp analog signal.

Cod. GVS 608	T
Measuring support	glass scale
- Grating pitch	20 μm
- Linear thermal expansion coefficient	$8 \times 10^{-6} \text{ } ^\circ\text{C}^{-1}$
Incremental signal	sine wave 1 Vpp (optional)
Resolution 1 Vpp	up to 0.1 μm *
Serial interface	SSI - BiSS C (unidirectional)
Resolution absolute measure	1 - 0.1 - 0.05 - 0.01 μm
Accuracy grade	$\pm 5 \mu\text{m}$ ** standard version $\pm 3 \mu\text{m}$ ** high-accuracy version ($\pm 2 \mu\text{m}$ for ML up to 720 mm)
Measuring length ML in mm	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 _{MAX}
Max. traversing speed	120 m/min
Max. acceleration	30 m/s^2
Required moving force	$\approx 2.5 \text{ N}$
Vibration resistance (EN 60068-2-6)	100 m/s^2 [55 ÷ 2000 Hz]
Shock resistance (EN 60068-2-27)	150 m/s^2 [11 ms]
Protection class (EN 60529)	IP 54 standard IP 64 pressurized
Operating temperature	0 $^\circ\text{C}$ ÷ 50 $^\circ\text{C}$
Storage temperature	-20 $^\circ\text{C}$ ÷ 70 $^\circ\text{C}$
Relative humidity	20% ÷ 80% (not condensed)
Reading block sliding	by ball bearings \odot
Power supply	5 Vdc $\pm 10\%$
Current consumption	280 mA_{MAX} (with $R = 120 \Omega$)
Max. cable length	50 m (serial + analog output) 70 m (serial output) ***
Electrical connections	see related table
Connector	inside the transducer
Electrical protections	inversion of polarity and short circuits
Weight	435 g + 1290 g/m

* Depending on CNC division factor.

** 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.
- Option: A and B 1 Vpp output signals with phase displacement of 90° (electrical).
- 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).
- PUR cable with low friction coefficient, resistant to oil and suitable for continuous movements.

SERIAL + ANALOG OUTPUT VERSION

- 10-wire shielded cable $\phi = 6.2 \text{ mm}$, PUR external sheath.
- Conductors section: power supply 0.30 mm^2 ; signals 0.10 mm^2 .

The cable's bending radius should not be lower than 80 mm.

SERIAL OUTPUT VERSION

- 6-wire shielded cable $\phi = 6.2 \text{ mm}$, PUR external sheath.
- Conductors section: power supply 0.35 mm^2 ; signals 0.25 mm^2 .

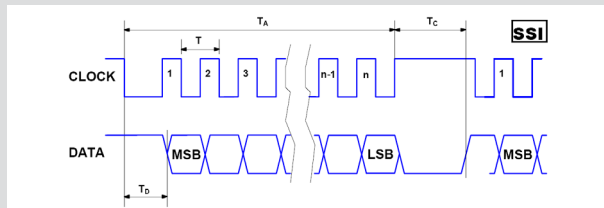
The cable's bending radius should not be lower than 70 mm.

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

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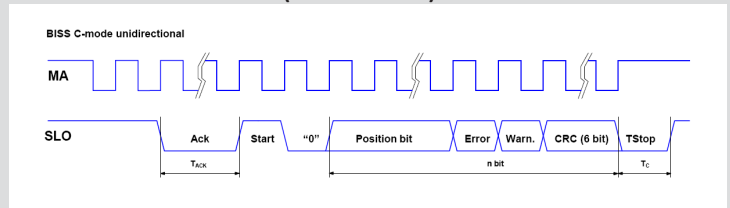
OUTPUT SIGNALS

SSI Version



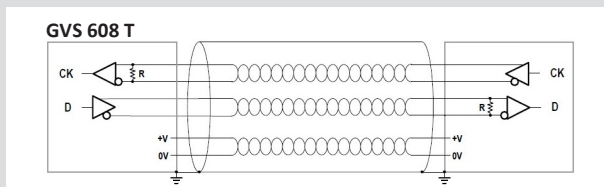
Interface	SSI Binary – Gray
Signals level	EIA RS 422
Clock frequency	0.1 ÷ 1.2 MHz
n	26 bit (res. 1 - 0.1 µm) 30 bit (res. 0.05 - 0.01 µm)
T _c	max. 25 µs
T _D	max. 7 µs

BiSS C (unidirectional) Version



Interface	BiSS C unidirectional
Signals level	EIA RS 485 / RS 422
Clock frequency	0.5 ÷ 8 MHz
n	26 + 2 + 6 bit (res. 1 - 0.1 µm) 32 + 2 + 6 bit (res. 0.05 - 0.01 µm)
T _c	5 µs
T _{Ack}	max. 28 µs

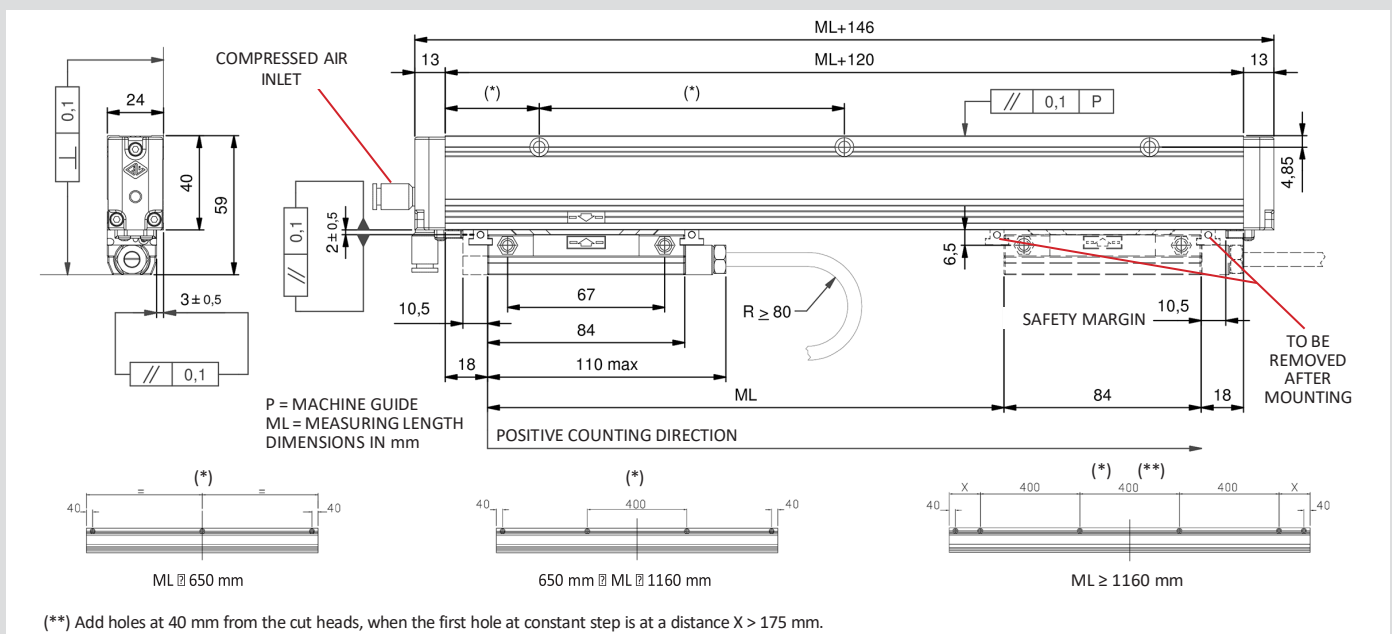
CABLE



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 T1A 03240 05V S0 V M04/S CG8 PR**

Model	Scale type, resolution	Measuring length	Power supply	Output signals	Incremental signal	Cable length, cable type	Connector, wiring	Special, pressurization
GVS 608	T1 = 1 µm T01 = 0.1 µm T005 = 0.05 µm T001 = 0.01 µm A = absolute	Measuring length in mm 03240 = ML _{MAX}	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	V = +1 Vpp No cod. = no increm. signal	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.