

Code ST02	Project A57-A	Release B	TECHNICAL DATASHEET
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ABSOLUTE OPTICAL SCALE GVS 608 T - SSI-BISS INTERFACE

GENERAL FEATURES

- Absolute optical scale with glass measuring support, SSI-BISS C (unidirectional) interface.
- Resolutions up to 0.1 μm . Accuracy grade up to $\pm 1 \mu\text{m}$.
- 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.



MECHANICAL AND ELECTRICAL CHARACTERISTICS

MECHANICAL	Cod. GVS 608	T
<ul style="list-style-type: none"> • Rugged and heavy PROFILE made of anodized aluminium. Dimensions 40x24 mm. • Elastic COUPLING for misalignment compensation and self-correction of mechanical hysteresis. Backlash error <math><0.2 \mu\text{m}</math>. • 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. 	Measuring support Grating pitch Linear thermal expansion coefficient	glass scale 20 μm  $8 \times 10^{-6} \text{ } ^\circ\text{C}^{-1}$
	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 μm – 0.1 μm
	Accuracy grade	$\pm 3 \mu\text{m}$ ** standard version $\pm 1 \mu\text{m}$ ** high-accuracy version
	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	$\leq 2.5 \text{ N}$
	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 
	Power supply	5 Vdc $\pm 5\%$
	Current consumption	340 mA _{MAX} (with R = 120 Ω)
	Max. cable length	20 m ***
	Electrical connections	see related table
	Connector	inside the transducer
	Electrical protections	inversion of polarity and short circuits
	Weight	435 g + 1290 g/m

MECHANICAL

- Rugged and heavy PROFILE made of anodized aluminium. Dimensions 40x24 mm.
- Elastic COUPLING for misalignment compensation and self-correction of mechanical hysteresis. Backlash error <math><0.2 \mu\text{m}</math>.
- 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

- 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).
- The cable is suitable for continuous movements.

SERIAL OUTPUT VERSION

- 6-wire shielded cable $\varnothing = 7 \text{ mm}$, PVC external sheath, with low friction coefficient, oil resistant.
- Conductors section: power supply 0.25 mm²; signals 0.25 mm².
- **The cable's bending radius should not be lower than 70 mm.**

ANALOG + SERIAL OUTPUT VERSION

- 10-wire shielded cable $\varnothing = 7.1 \text{ mm}$, PUR external sheath.
- Conductors section: power supply 0.35 mm²; signals 0.10 mm².
- **The cable's bending radius should not be lower than 80 mm.**

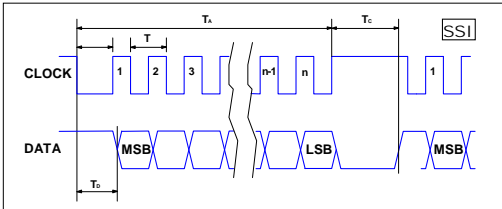
SIGNALS	CONDUCTOR COLOR
+ V	Brown
0 V	White
CK	Green
$\overline{\text{CK}}$	Yellow
D	Pink
$\overline{\text{D}}$	Grey
SCH	Shield

* Depending on CNC division factor.

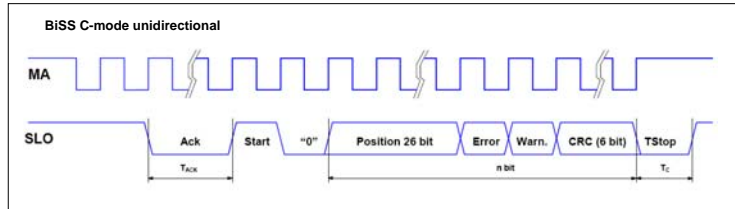
** The declared accuracy grade of $\pm X \mu\text{m}$ is referred to a measuring length of 1 m.

*** Ensuring a minimum power supply voltage of 5 V to the transducer, the maximum length can be extended to 50 m.

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OUTPUT SIGNALS
SSI Version


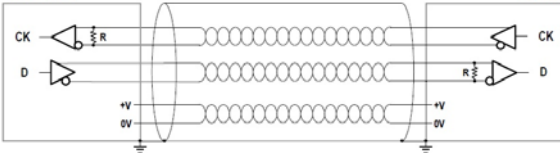
Interface	SSI Binary - Gray
Signals level	EIA RS 422
Clock frequency	0.1 ÷ 1.2 MHz
n	26 bit
T _C	max. 25 µs
T _D	max. 7 µs

BiSS C (unidirectional) Version


Interface	BiSS C unidirectional
Signals level	EIA RS 485 / RS 422
Clock frequency	0.1 ÷ 8 MHz
n	26 + 2 + 6 bit
T _C	5 µs
T _{ACK}	max. 22 µs

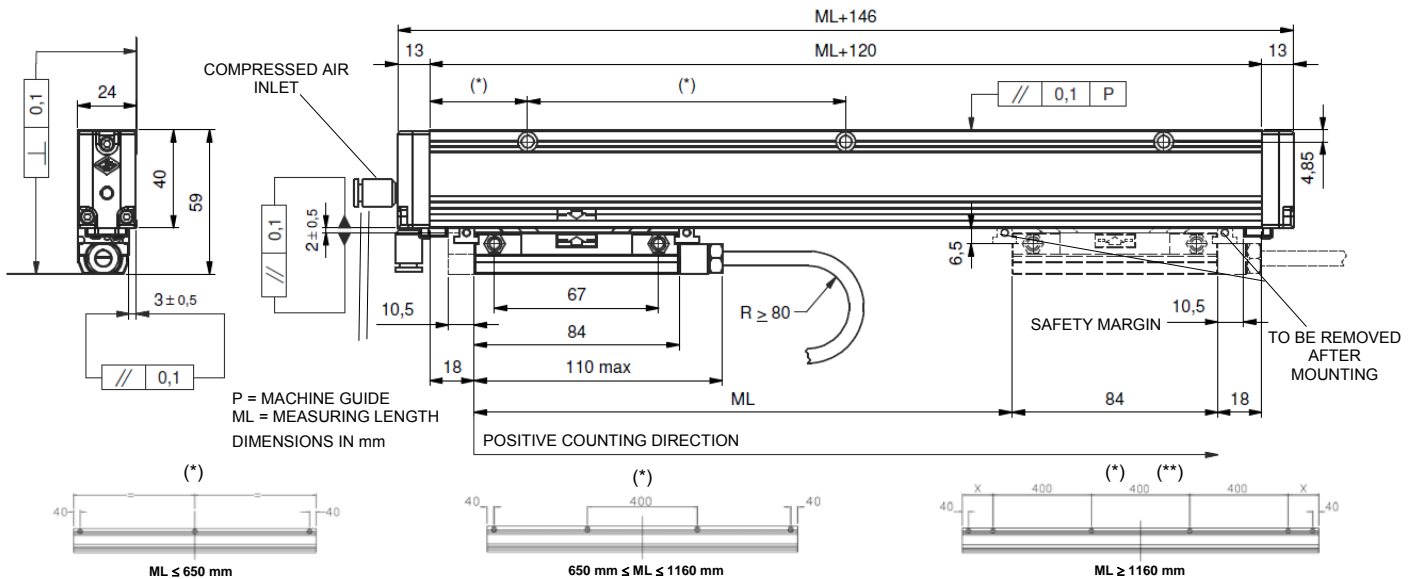
CABLE

GVS 608 T



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


(**) Add holes at 40 mm from the cut heads, when the first hole at constant step is at a distance X > 175 mm.

ORDERING CODE

MODEL	SCALE TYPE, RESOLUTION	MEASURING LENGTH	POWER SUPPLY	OUTPUT SIGNALS	INCREMENTAL SIGNAL	CABLE LENGTH, CABLE TYPE	CONNECTOR, WIRING	SPECIAL, PRESSURIZATION
GVS 608	T1A	03240	05V	S0	V	M04 / S	CG8	PR

T1 = 1 µm
T01 = 0.1 µm
A = absolute

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 incremental signal

Mnn = length in m
M04 = 4 m (standard)
50 = 50 m
R = 6 wires (only serial)
S = 10 wires (serial + analog)

Cnn = progressive

No cod. = standard
SPnn = special nn
PR = pressurized

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