ABSOLUTE OPTICAL SCALE GVS 908 T

SSI - BiSS C INTERFACE

TECHNICAL DATASHEET

code **ST02** | project **A60-A** | release **C**

GENERAL FEATURES

- Absolute optical scale, available in a single piece or in modular version for large machines (up to 30040 mm of measuring length).
- Application in various industrial fields such as machine tools, vertical lathes, gantry machines, laser/plasma cutting machines, robotics, automation, etc.
- Stainless steel grating, integral with the machine guide, for an excellent accuracy at any temperature.
- SSI - BiSS C (unidirectional) serial interface. Direct reading of absolute measure.
- Resolutions up to 0.1 µm. Accuracy grade ± 5 µm.
- Rigidly bound modules, for a perfect seal against liquids and environmental dirty, unaltered over time.
- Adjustable cable output, through double connector.
- Wide alignment tolerances.
- Pressurization from both sides of the scale and/or of the transducer.
- Option: 1 Vpp analog signal.

Cod. GVS 908	T
Measuring support - Grating pitch - Linear thermal expansion coefficient	stainless steel grating 240 µm P 10.6 x 10^{-6} °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 µm
Accuracy grade	± 5 µm **
Measuring length ML in mm	from 640 mm to 30040 mm, with steps of 200 mm Modules length: 1200, 1400, 1600, 1800, 2000 mm
Max. traversing speed	120 m/min
Max. acceleration	30 m/s^2
Required moving force	≤ 15 N
Vibration resistance (EN 60068-2-6)	≤ 100 m/s^2 [55 ÷ 2000 Hz]
Shock resistance (EN 60068-2-27)	≤ 300 m/s^2 [11 ms]
Protection class (EN 60529)	IP 53 standard IP 64 pressurized
Operating temperature	0 °C ÷ 50 °C
Storage temperature	-20 °C ÷ 70 °C
Relative humidity	20% ÷ 80% (not condensed)
Reading block sliding	by ball bearings ◎
Power supply	5 Vdc ± 5%
Current consumption	280 mA_{MAX} (with R = 120 Ω)
Max. cable length	50 m (serial + analog output) 70 m (serial output) ***
Electrical connections	see related table
Connector	on the transducer, with adjustable output
Electrical protections	inversion of polarity and short circuits
Weight	1.7 kg + 3.5 kg/m

* Depending on CNC division factor.
** The declared accuracy grade of ± X µm is referred to a measuring length of 1 m.
*** Longer cable lengths are available on request.

MECHANICAL CHARACTERISTICS

- Rugged and heavy **PROFILE** made of anodized aluminum. Dimensions 50x58.5 mm.
- **SPRING SYSTEM** 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.
- Pressurizable **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 stainless steel **GRATING**, protected by the scale housing.
- **GASKETS** between modules for a full protection in mechanical joints.
- **FULL POSSIBILITY** to disassemble and reassemble it.
- Possibility of direct **SERVICE**.

ELECTRICAL CHARACTERISTICS

- Connector on the transducer, easily disconnectable in case of need.
- Reading devices with light emitter and an array of receiving photodiodes.
- Option: A and B 1 Vpp output signals with phase displacement of 90° (electrical).
- Serial protocol SSI - BiSS C (unidirectional).
- 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 ø = 6.2 mm, PUR external sheath.
- Conductors section: power supply 0.35 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 ø = 6.2 mm, PUR external sheath.
- Conductors section: power supply 0.25 mm^2; signals 0.25 mm^2.

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

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

Megatron AG – Gewerbehaus Ergolz, Wölferstrasse 5 4414 Füllinsdorf
Telefon: +41 (0)55 617 00 88
E-Mail: sales@megatron.ch
www.megatron.ch

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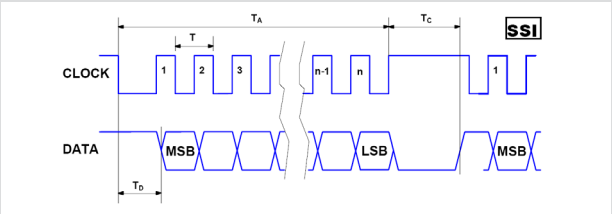
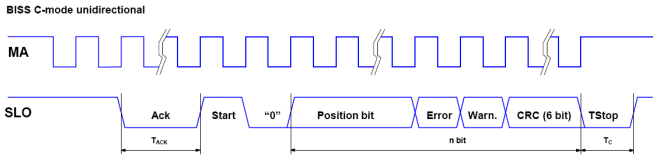
OUTPUT SIGNALS

SSI Version



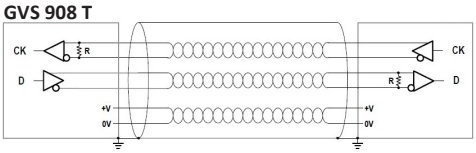
Interface	SSI Binary – Gray
Signals level	EIA RS 422
Clock frequency	0.1 ÷ 1.2 MHz
n	30 bit
T_C	max. 22 µs
T_D	max. 6 µs

BiSS C (unidirectional) Version



Interface	BiSS C unidirectional
Signals level	EIA RS 485 / RS 422
Clock frequency	0.1 ÷ 8 MHz
n	32 + 2 + 6 bit
T_C	5 µs
T_{ACK}	max. 20 µs

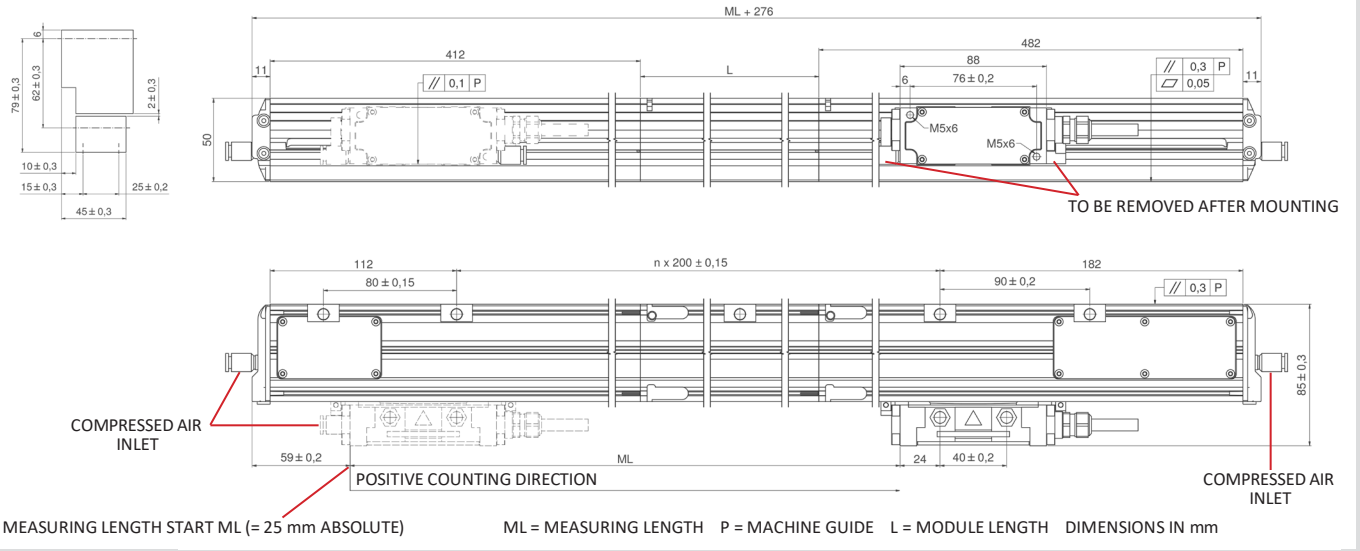
CABLE



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 908 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 908	T1 = 1 µm T01 = 0.1 µm A = absolute	Measuring length in mm 03240 = ML 30040 = ML_{MAX}	05V = 5 Vdc	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 M10 = 10 m S = PUR cable	Cnn = progressive SC = without connector	No cod. = standard SPnn = special nn PR = pressurized

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FERROXCUBE DISTRIBUTOR FOR MAGNETIC COMPONENTS
Megatron AG – Gewerbehaus Ergolz, Wölferstrasse 5 4414 Füllinsdorf
Telefon: +41 (0)55 617 00 88
E-Mail: sales@megatron.ch
www.megatron.ch