Serial interface SSI - BiSS

General features

- Absolute optical scale, available in a single piece or in modular version for large machines (up to 30040 mm of measuring length or higher on request).
- 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.
- 1 Vpp analog signal (optional).

Mechanical characteristics

- Rugged and heavy profile made of anodized aluminum.
- Dimensions 50 x 58.5 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.
- 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.

Electrical characteristics

- Connector on the transducer, easily disconnectable in case of need.
- Reading devices with light emitter and an array of receiving photodiodes.
- A and B 1 Vpp output signals with phase displacement of 90° (electrical)
- Serial protocol SSI - BiSS C (unidirectional).

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Technical characteristics

Measuring support Grating pitch Linear thermal expansion coefficient	stainless steel grating 240 µm 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 µm - 0.1 µm
Accuracy grade	±5 µm **
Measuring length ML in mm	640 up 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 (on request)
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 mAMAX (with R = 120 Ω)
Max. cable length	50 m (serial + analog output) 70 m (serial output) ***
Electrical connections	see related table
Connector	in the transducer, with adjustable output
Electrical protections	inversion of polarity and short circuits
Weight	1.7 kg + 3.5 kg/m (per m measuring length)

* 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.

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Cable

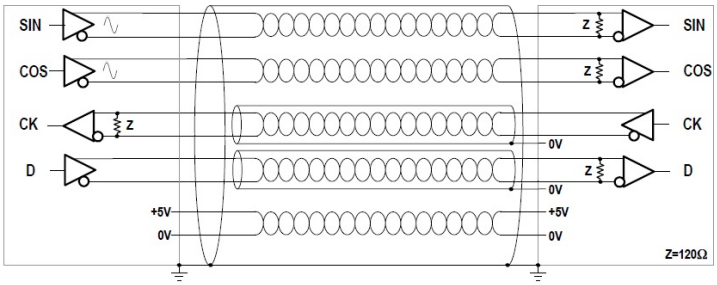
Analog Output + Serial Output

GVS 908T absolute optical scale is supplied with a **10-wire shielded cable**, ∅ = 6,2 mm, PUR external sheath, with low friction coefficient, oil-resistant and suitable for continuous movements.
Inside the cable, a further shield for the twisted pair of the digital signals (SSI-BiSS) is present.

Conductors section:
- power supply: 0.35 mm²
- signals: 0.10 mm²

Notice
The cable's bending radius should not be lower than 80 mm.
The cable is suitable for continuous movements.

The following output signals are available:



Signals	Conductor colour
V+	red
V-	blue
A	green
$\overline{A}$	orange
B	white
$\overline{B}$	light-blue
CK	brown
$\overline{CK}$	yellow
D	pink
$\overline{D}$	grey
SCH	shield

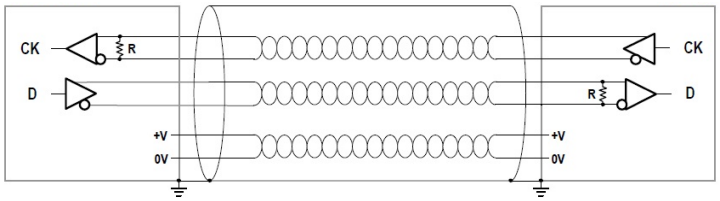
Serial Output

GVS 908T absolute optical scale is supplied with a **6-wire shielded cable**, ∅ = 6,2 mm, PUR external sheath, with low friction coefficient, oil-resistant and suitable for continuous movements.

Conductors section:
- power supply: 0.25 mm²
- signals: 0.25 mm²

Notice
The cable's bending radius should not be lower than 70 mm.
The cable is suitable for continuous movements.

The following output signals are available:



Signals	Conductor colour
V+	brown
V-	white
CK	green
$\overline{CK}$	yellow
D	pink
$\overline{D}$	grey
SCH	shield

Notice
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

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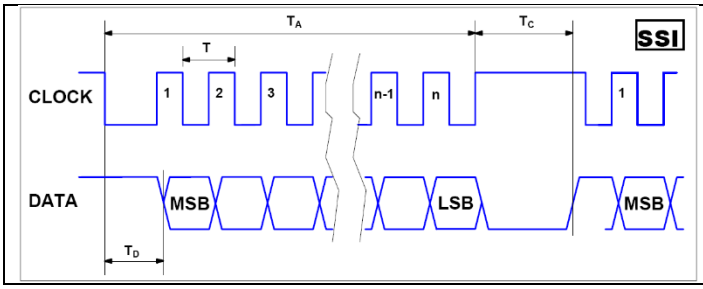
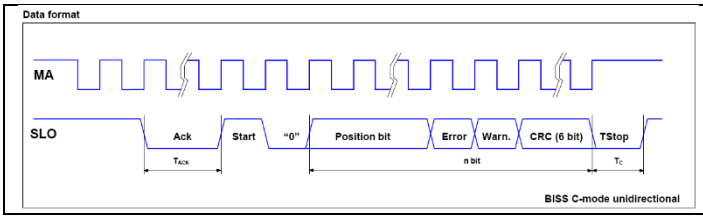
Output signals

Serial signals SSI version:



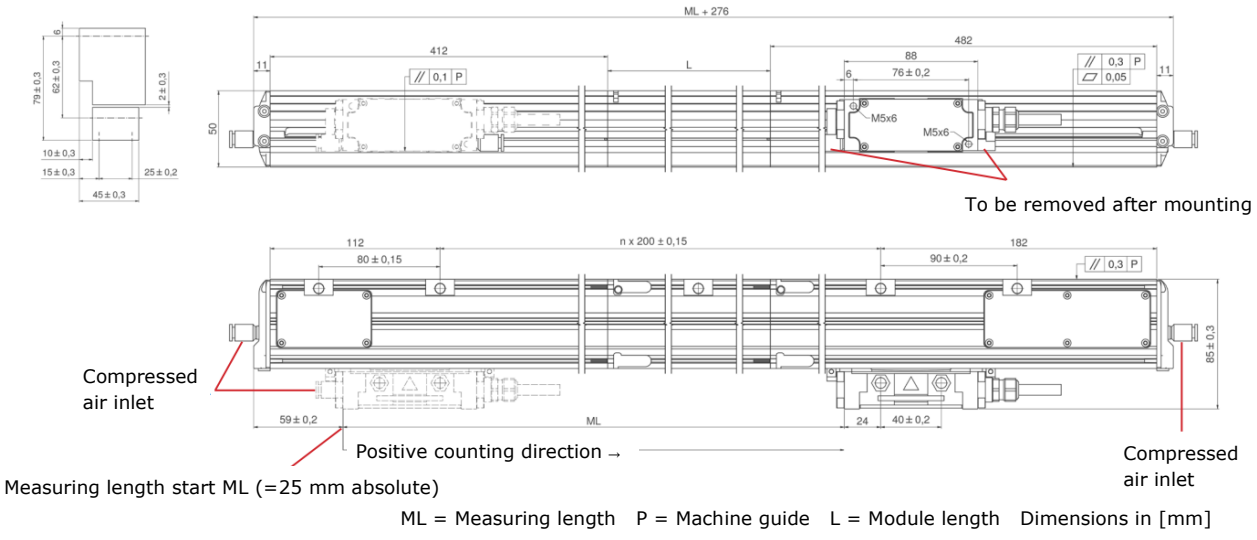
Interface	SSI Binary - Gray
Signals level	EIA RS 422
Clock frequency	0.1 + 1.2 MHz
n	30 bit
T_C	max. 22 µs
T_D	max. 6 µs

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

Dimensions



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Ordering example

Type	GVS 908	-	T1A	-	03240	-	05V	-	S0	-	V	-	M04/S	-	CG8	-	PR

Scale type, resolution
T1 = 1 µm
T01 = 0,1 µm
A = absolute

Measuring length
03240 = 3240 mm
30040 = 30040 mm (max. measuring length)

Power supply
05V = 5 VDC

Output signal
S0 = SSI programmable
S1 = SSI binary
S2 = binary + even parity
S3 = binary + odd parity
S4 = SSI binary + error
S5 = SSI binary + even parity + error
S6 = SSI binary + odd parity + error
S7 = SSI gray
B1 = BiSS-C binary

Incremental signal
V = + 1 Vpp
= no code (no incremental signal)

Cable length
Mxx = length in m
M04 = 4 m (standard)
M50 = 50 m

Cable type
R = 6-wire cable (only serial); PUR cable (for continuous movements)
S = 10-wire cable (serial and analog); PUR cable (for continuous movements)

Connector
CG8 = CG8 connector (standard)
SC = without connector, open cable end

Option
X = no specifications (standard)
SPxx = special version (on request)
PR = pressurized (on request)

Manufacturer: GIVI MISURE

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

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