GIVI MISURE

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Code	Project	Release	
ST12	***A50-C***	***A***	***TECHNICAL DATASHEET***

INCREMENTAL OPTICAL SCALE WITH STEEL GRATING - GVS 202 S

GENERAL FEATURES

- Optical scale with stainless steel grating. High mechanical resistance and thermal expansion suitable for the application, for a constant accuracy at any temperature.
- Particularly suitable for synchronized press brakes.
- Transducer guided by a self-aligned and self-cleaning sliding carriage with spring system.
- No contact reader head. No friction: high duration and tolerance against environmental dirty.
- Resolutions up to 0.1 µm. Accuracy grade up to ± 1 µm.
- Adjustable cable output.
- Selectable reference indexes every 10 mm along the entire measuring length, with Zero Magneto Set device.
- The adjustable cable output and the selectable zero references make the scale SYMMETRIC and applicable, in the same version, to both columns of the press brake.
- Various possibilities of application, with double-effect joint or steel wire.
- Option: safety limit switches, positionable at both ends.

MECHANICAL AND ELECTRICAL CHARACTERISTICS

MECHANICAL

- Rugged and heavy PROFILE, made of anodized aluminium. Dimensions 55x28 mm.
- Elastic COUPLING for misalignment compensation and self-correction of mechanical hysteresis. Backlash error <0.2 µm.
- SEALING LIPS for the protection of the grating, made of special elastomer resistant to oil and wearing. Special self-blocking profile.
- TRANSDUCER, consisting of tie rod and reading block, with fully-protected place for electronic boards.
- CARRIAGE guided by ball bearings with gothic arch profile sliding on tempered and grinded guides, to guarantee the system accuracy and the absence of wearing.
- No contact READER HEAD.
- Die-cast TIE ROD, with nickel-plating surface treatment.
- Stainless steel GRATING.
- Elastomeric GASKETS which allow to reproduce the full protection in mechanical joints (in case of disassembling).
- Adjustable CABLE output.
- Various possibilities of application, with double-effect joint or steel wire.

ELECTRICAL

- Reading device with high-efficiency light emitter and single-field photodiode.
- A and B output signals with phase displacement of 90° (electrical).
- Reference indexes selectable every 10 mm.
- CABLE:
  - 8-wire shielded cable ∅ = 6.1 mm, PUR external sheath.
  - Conductors section: power supply 0.35 mm^2; signals 0.14 mm^2.

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

LINE DRIVER	PUSH-PULL	CONDUCTOR COLOR
+ V	+ V	Red
0 V	0 V	Blue
A	B	Green
$\overline{A}$	NC	Orange
B	A	White
$\overline{B}$	NC	Light-blue
I_0	I_0	Brown
$\overline{I_0}$	NC	Yellow
SCH	SCH	Shield

Cod. GVS	**202 S**
Measuring support	stainless steel grating
Grating pitch	250 µm 
Linear thermal expansion coefficient	10.6 x 10^{-6} °C^{-1}
Reference indexes (I_0)	**E** = selectable (every 10 mm)
Resolution	10 - 5 - 1 - 0.5 - 0.1 µm
Accuracy grade	± 2.5 µm standard version ± 1 µm high-accuracy version
Measuring length ML	70, 120, 170, 220, 270, 320, 370, 420, … mm max. 30000 mm in modular version
Max. traversing speed	up to 120 m/min *
Max. acceleration	30 m/s^2
Required moving force	≤ 1.5 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 °C ÷ 50 °C (-10 °C ÷ 60 °C on request)
Storage temperature	-20 °C ÷ 80 °C
Relative humidity	20% ÷ 80% (not condensed)
Reader head sliding	without contact
Power supply	5 Vdc ± 5% or 10 ÷ 28 Vdc ± 5%
Current consumption	140 mA_{MAX} (with R = 120 Ω) 5 Vdc 100 mA_{MAX} (with R = 1200 Ω) 10 ÷ 28 Vdc
A, B and I_0 output signals	LINE DRIVER PUSH-PULL 
Max. cable length	25 m ***
Electrical connections	see related table
Electrical protections	inversion of polarity and short circuits
Weight	850 g + 1800 g/m

* With a 0.5 µm resolution, the maximum traversing speed becomes 60 m/min.
With a 0.1 µm resolution, the maximum traversing speed becomes 40 m/min.
** Pressurization set up on request.
*** Ensuring the required power supply voltage to the transducer, the maximum cable length can be extended to 100 m.

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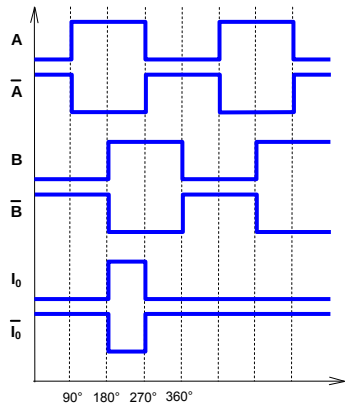
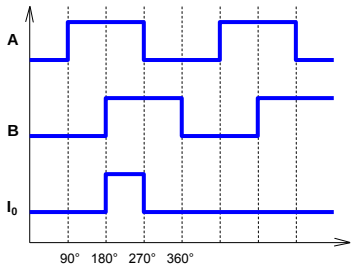
OUTPUT SIGNALS

LINE DRIVER

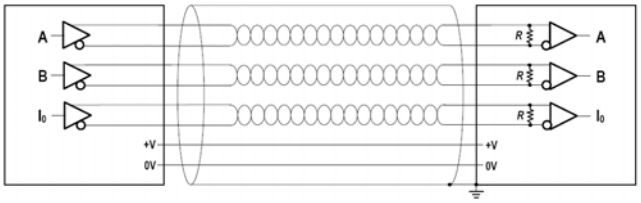


PUSH-PULL



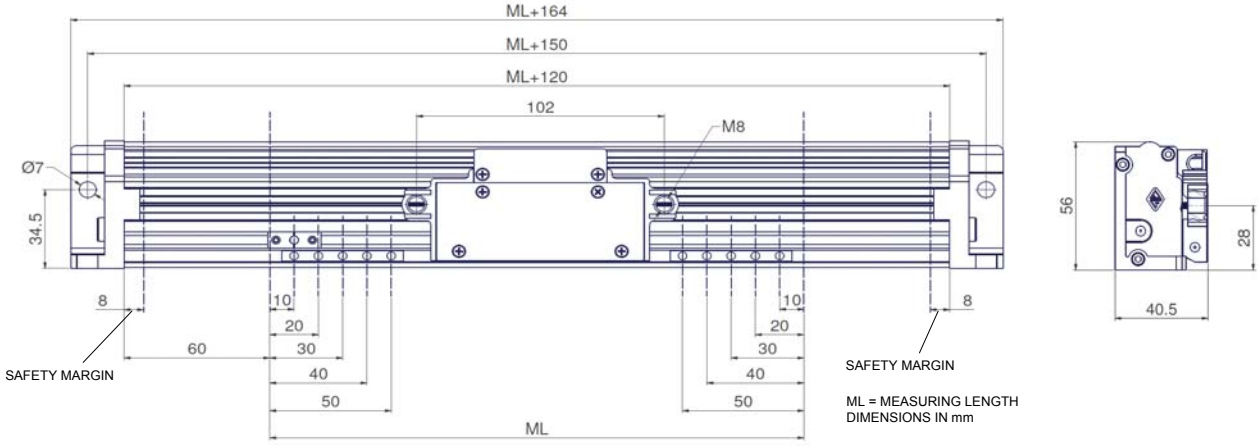
CABLE

GVS 202 S



In case of cable extension, it is necessary to guarantee:
- **the electrical connection between the body of the connectors and the cables shield;**
- **the required power supply to the transducer.**

DIMENSIONS



GV-PB adapter provided for the interchangeability with scale mod. PBS-HR.

ORDERING CODE

MODEL	SCALE TYPE, RESOLUTION, INDEXES	MEASURING LENGTH	POWER SUPPLY, OUTPUT SIGNALS	CABLE LENGTH, CABLE TYPE	CONNECTOR, WIRING	LIMIT SWITCH OPTION	SPECIAL, PRESSURIZATION
GVS 202 S	**T 5 E**	**0270**	**05V L**	**M0.5 / S**	**CG1**	**A**	**PR**
	T = TTL **10** = 10 µm **5** = 5 µm **1** = 1 µm **05** = 0.5 µm **01** = 0.1 µm **E** = selectable indexes	Length in mm **0270** = 270 mm	**05V** = 5 Vdc **1028V** = 10 ÷ 28 Vdc **L** = LINE DRIVER **Q** = PUSH-PULL	**Mnn** = length in m **M0.5** = 0.5 m (standard) **100** = 100 m **S** = PUR cable for continuous movements	**Cnn** = progressive	**No cod.** = standard **A** = OC NPN NC **B** = OC NPN NO **C** = OC PNP NC **D** = OC PNP NO **E** = TTL active low **F** = TTL active high	**No cod.** = standard **SPnn** = special nn **PR** = pressurized

Example ☞ **INCREMENTAL OPTICAL SCALE GVS 202 S T5E 0270 05VL M0.5/S CG1 A PR**