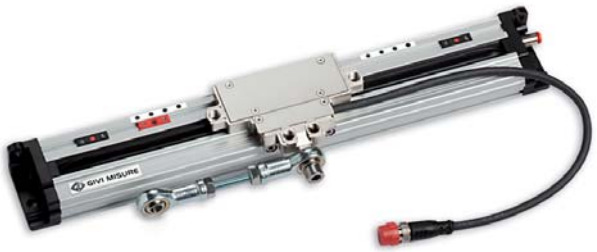
GIVI MISURE
Via Assunta, 57 - 20834 Nova Milanese (MB) - ITALY
Tel. +39 0362 366126 Fax +39 0362 366876 www.givimisure.it sales@givimisure.it

Code	Project	Release	
ST02	***A50-A***	***C***	***TECHNICAL DATASHEET***

INCREMENTAL OPTICAL SCALE GVS 200

GENERAL FEATURES

- Optical scale with glass measuring support (grating pitch 20 µm). Particularly suitable for synchronized press brakes.
- Reader head guided by a self-aligned and self-cleaning sliding carriage with spring system.
- Resolutions up to 0.1 µm. Accuracy grade up to ± 1 µm.
- Adjustable cable output.
- Reference indexes at coded distance or selectable 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.
- READER HEAD, 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.
- Die-cast TIE ROD, with nickel-plating surface treatment.
- GLASS SCALE placed in the scale housing.
- 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. GV-PB adapter guarantees the compatibility with scale mod. PBS-HR.
- Full possibility to disassemble and reassemble the scale.
- Possibility of direct service.

ELECTRICAL

- Reading device with an infra-red light emitter and receiving photodiodes.
- A and B output signals with phase displacement of 90° (electrical).
- Reference indexes at coded distance or 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	**200**
Measuring support	glass scale
Grating pitch	20 µm 
Thermal expansion coefficient	8 x 10^{-6} °C^{-1}
Reference indexes (I_0)	**E** = selectable (every 10 mm) **C** = coded distance
Resolution	5 - 1 - 0.5 - 0.1 µm
Accuracy grade	± 2.5 µm standard version ± 1 µm high-accuracy version
Measuring length ML in mm	170, 220, 270, 320, 370, 420, 470, 520, 570, 620, 720, …
Max. traversing speed	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
Storage temperature	-20 °C ÷ 70 °C
Relative humidity	20% ÷ 80% (not condensed)
Carriage sliding	by ball bearings ◎
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	900 g + 1850 g/m

* With a 0.5 µm resolution, the maximum traversing speed becomes 80 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.

GIVI MISURE S.R.L. A SOCIO UNICO
C.F. e Iscrizione al Reg. Imprese di Monza e Brianza n° 04355540156 - Cap. Soc. € 51.480,00 I.V.

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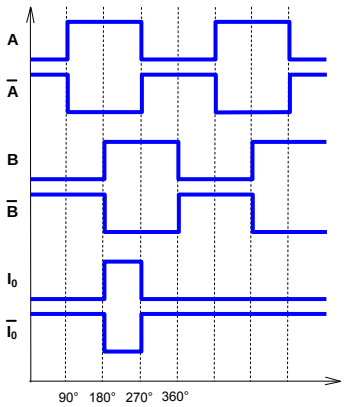
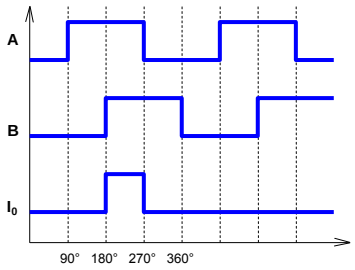
OUTPUT SIGNALS

LINE DRIVER

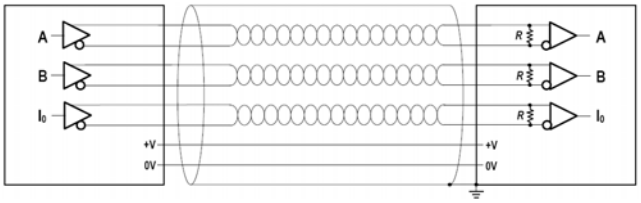


PUSH-PULL



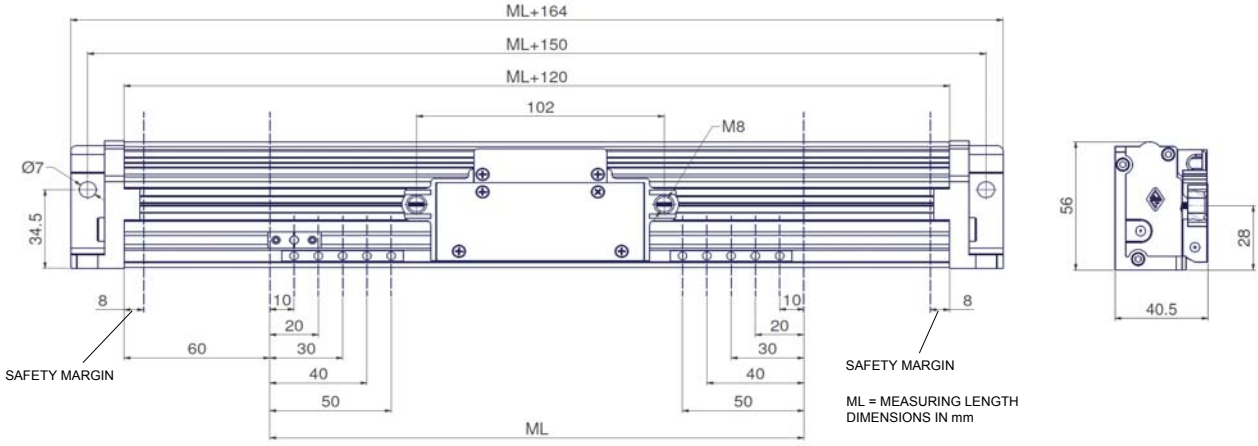
CABLE

GVS 200



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



ML = MEASURING LENGTH
DIMENSIONS IN mm

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

ORDERING CODE

MODEL	SCALE TYPE, RESOLUTION, INDEX	MEASURING LENGTH	POWER SUPPLY, OUTPUT SIGNALS	CABLE LENGTH, CABLE TYPE	CONNECTOR WIRING	LIMIT SWITCH OPTION	SPECIAL, PRESSURIZATION
GVS 200	**T 5 E**	**0270**	**05V L**	**M0.5 / S**	**CG1**	**A**	**PR**

T = TTL
5 = 5 µm
1 = 1 µm
05 = 0.5 µm
01 = 0.1 µm
C = indexes at coded distance
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 GVS200 T5E 0270 05VL M0.5/S CG1 A PR**