

Code <b>ST12</b>	Project <b>A50-C</b>	Release <b>A</b>	<b>TECHNICAL DATASHEET</b>
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## 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  $\mu\text{m}$ . Accuracy grade up to  $\pm 1 \mu\text{m}$ .
- 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	Cod. GVS	202 S
<ul style="list-style-type: none"> <li>• Rugged and heavy PROFILE, made of anodized aluminium. Dimensions 55x28 mm.</li> <li>• Elastic COUPLING for misalignment compensation and self-correction of mechanical hysteresis. Backlash error &lt;math&gt;&lt;0.2 \mu\text{m}&lt;/math&gt;.</li> <li>• SEALING LIPS for the protection of the grating, made of special elastomer resistant to oil and wearing. Special self-blocking profile.</li> <li>• TRANSDUCER, consisting of tie rod and reading block, with fully-protected place for electronic boards.</li> <li>• 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.</li> <li>• No contact READER HEAD.</li> <li>• Die-cast TIE ROD, with nickel-plating surface treatment.</li> <li>• Stainless steel GRATING.</li> <li>• Elastomeric GASKETS which allow to reproduce the full protection in mechanical joints (in case of disassembling).</li> <li>• Adjustable CABLE output.</li> <li>• Various possibilities of application, with double-effect joint or steel wire.</li> </ul>	<b>Measuring support</b>  Grating pitch  Linear thermal expansion coefficient	stainless steel grating  250 $\mu\text{m}$   $10.6 \times 10^{-6} \text{ } ^\circ\text{C}^{-1}$
	<b>Reference indexes (I<sub>0</sub>)</b>	E = selectable (every 10 mm)
	<b>Resolution</b>	10 - 5 - 1 - 0.5 - 0.1 $\mu\text{m}$
	<b>Accuracy grade</b>	$\pm 2.5 \mu\text{m}$ standard version $\pm 1 \mu\text{m}$ high-accuracy version
	<b>Measuring length ML</b>	70, 120, 170, 220, 270, 320, 370, 420, ... mm max. 30000 mm in modular version
	<b>Max. traversing speed</b>	up to 120 m/min *
	<b>Max. acceleration</b>	30 m/s <sup>2</sup>
	<b>Required moving force</b>	$\leq 1.5 \text{ N}$
	<b>Vibration resistance (EN 60068-2-6)</b>	100 m/s <sup>2</sup> [55 ÷ 2000 Hz]
	<b>Shock resistance (EN 60068-2-27)</b>	150 m/s <sup>2</sup> [11 ms]
	<b>Protection class (EN 60529)</b>	IP 54 standard IP 64 pressurized **
	<b>Operating temperature</b>	0 °C ÷ 50 °C (-10 °C ÷ 60 °C on request)
	<b>Storage temperature</b>	-20 °C ÷ 80 °C
	<b>Relative humidity</b>	20% ÷ 80% (not condensed)
	<b>Reader head sliding</b>	without contact
	<b>Power supply</b>	5 Vdc $\pm 5\%$ or 10 ÷ 28 Vdc $\pm 5\%$
	<b>Current consumption</b>	140 mA <sub>MAX</sub> (with R = 120 $\Omega$ ) 5 Vdc 100 mA <sub>MAX</sub> (with R = 1200 $\Omega$ ) 10 ÷ 28 Vdc
	<b>A, B and I<sub>0</sub> output signals</b>	LINE DRIVER  PUSH-PULL
	<b>Max. cable length</b>	25 m ***
	<b>Electrical connections</b>	see related table
	<b>Electrical protections</b>	inversion of polarity and short circuits
	<b>Weight</b>	850 g + 1800 g/m

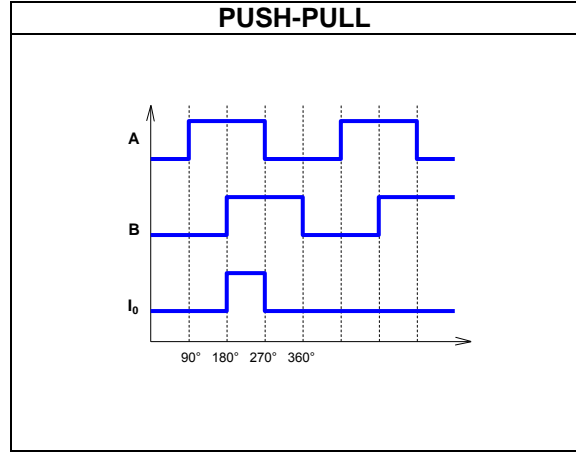
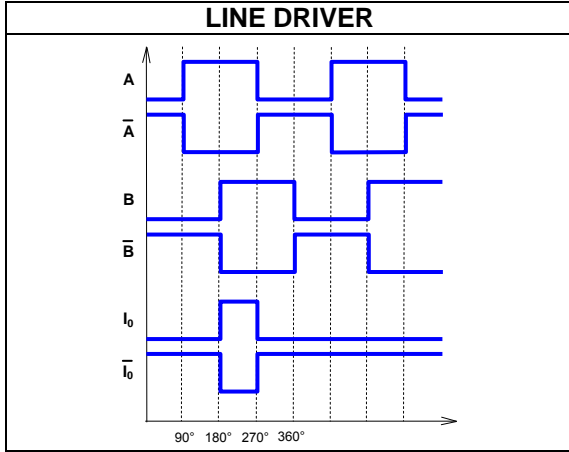
  

LINE DRIVER	PUSH-PULL	CONDUCTOR COLOR
+ V	+ V	Red
0 V	0 V	Blue
A	B	Green
$\bar{A}$	NC	Orange
B	A	White
$\bar{B}$	NC	Light-blue
I <sub>0</sub>	I <sub>0</sub>	Brown
$\bar{I}_0$	NC	Yellow
SCH	SCH	Shield

\* With a 0.5  $\mu\text{m}$  resolution, the maximum traversing speed becomes 60 m/min.  
 With a 0.1  $\mu\text{m}$  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



### CABLE

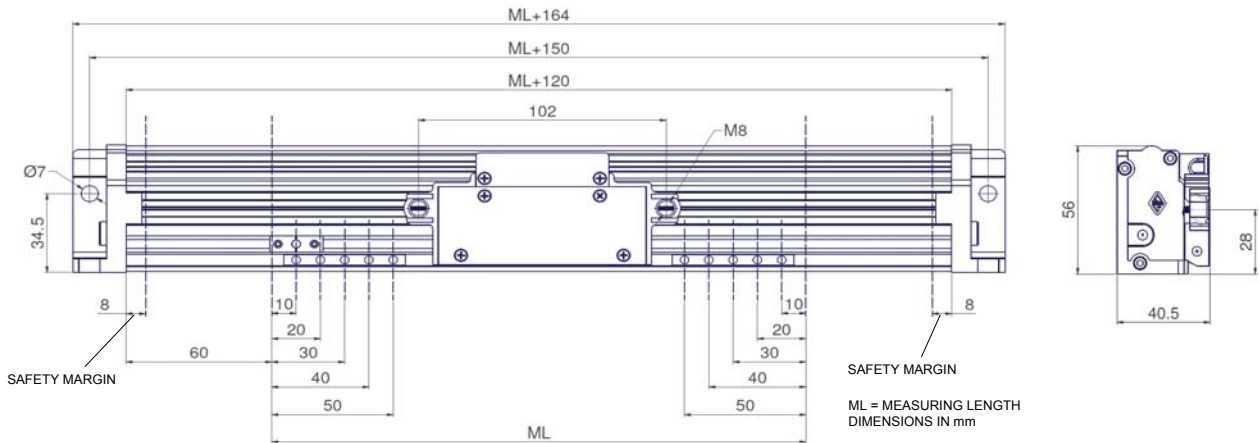
GVS 202 S



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
<b>GVS 202 S</b>	<b>T 5 E</b>	<b>0270</b>	<b>05V L</b>	<b>M0.5 / S</b>	<b>CG1</b>	<b>A</b>	<b>PR</b>

**T** = TTL  
**10** = 10  $\mu$ m  
**5** = 5  $\mu$ m  
**1** = 1  $\mu$ m  
**05** = 0.5  $\mu$ m  
**01** = 0.1  $\mu$ m  
**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**