

Code <b>ST02</b>	Project <b>A62-A</b>	Release <b>A</b>	<b>TECHNICAL DATASHEET</b>
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## OPTICAL SCALE GVS 300

### GENERAL FEATURES

- Small-size incremental scale, for applications with limited installation space.
- Possibility of registration which simplifies alignment and allows the use on rough surfaces (retrofitting and machines for which application was not foreseen).
- Resolutions up to 0.1  $\mu\text{m}$ . Accuracy grade  $\pm 5 \mu\text{m}$ .
- Two sealing lips made of special elastomer resistant to oil and wearing, for an excellent protection of the grating.
- Reference indexes at constant step, in central position or in different positions at request.
- Wide alignment tolerances.
- High stability of LINE DRIVER signals.



### MECHANICAL AND ELECTRICAL CHARACTERISTICS

MECHANICAL	Cod. GVS 300	T
<ul style="list-style-type: none"> <li>• PROFILE made of anodized aluminium. Dimensions 23x18 mm.</li> <li>• RAIL for the sliding of the intermediate fixing blocks, positionable along the entire measuring length, necessary for the intermediate fixing of scales with measuring length over 700 mm.</li> <li>• Elastic COUPLING for misalignment compensation and self-correction of mechanical hysteresis. Backlash error <math>&lt; -0.2 \mu\text{m}</math>.</li> <li>• SEALING LIPS for the protection of the grating, made of special elastomer resistant to oil and wearing.</li> <li>• READER HEAD, consisting of tie rod and reading block, with fully-protected place for electronic boards.</li> <li>• READING BLOCK sliding through ball bearings.</li> <li>• Die-cast TIE ROD, with nickel surface treatment.</li> <li>• Stainless steel GRATING dimensions 15x0.203 mm in a single piece. The support maintains the grating in its position leaving it free to expand.</li> <li>• Elastomeric GASKETS which allow to reproduce the full protection in mechanical joints (in case of disassembling).</li> <li>• Full possibility to disassemble and reassemble it.</li> <li>• Possibility of direct service.</li> </ul>	<b>Measuring support</b> stainless steel grating  Linear thermal expansion coefficient $10.6 \times 10^{-6} \text{ } ^\circ\text{C}^{-1}$	<b>Reference indexes (<math>I_0</math>)</b> <b>No cod.</b> = without reference indexes <b>P</b> = constant step (every 30 mm) <b>Z</b> = in required positions
	<b>Resolution (<math>\mu\text{m}</math>)</b>	100   50   10   5   2   1   0.5   0.2   0.1
	<b>Max. traversing speed (m/min) LINE DRIVER (VL) output</b>	80               60   30
	<b>Max. traversing speed (m/min) TRANSISTOR (VQ) output</b>	80     40   16   8   4   NA   NA
	<b>Accuracy grade</b>	$\pm 5 \mu\text{m}^*$
	<b>Measuring length ML in mm</b>	up to 700 mm (for longer measuring lengths it is necessary to use the intermediate fixing blocks)
	<b>Max. acceleration</b>	10 $\text{m/s}^2$
	<b>Required moving force</b>	$\leq 4 \text{ N}$
	<b>Vibration resistance (EN 60068-2-6)</b>	50 $\text{m/s}^2$ [55 ÷ 2000 Hz]
	<b>Shock resistance (EN 60068-2-27)</b>	150 $\text{m/s}^2$ [11 ms]
	<b>Protection class (EN 60529)</b>	IP 53 standard   IP 64 pressurized
	<b>Operating temperature</b>	0 $^\circ\text{C}$ ÷ 50 $^\circ\text{C}$
	<b>Storage temperature</b>	-20 $^\circ\text{C}$ ÷ 70 $^\circ\text{C}$
	<b>Relative humidity</b>	20% ÷ 80% (not condensed)
	<b>Reading block sliding</b>	by ball bearings $\odot$
	<b>Power supply</b>	5 Vdc $\pm 5\%$ or 10 ÷ 28 Vdc $\pm 5\%$
	<b>Current consumption</b>	140 $\text{mA}_{\text{MAX}}$ (with 5 V and R = 120 $\Omega$ )
	<b>A, B and <math>I_0</math> output signals</b>	LINE DRIVER TRANSISTOR 
	<b>Max. cable length</b>	100 m (LINE DRIVER)   50 m (TRANSISTOR)
	<b>Electrical connections</b>	see related table
	<b>Electrical protections</b>	inversion of polarity and short circuits
	<b>Weight</b>	250 g + 420 g/m

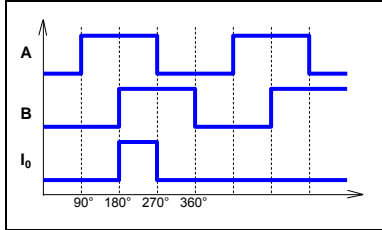
  

LINE DRIVER	TRANSISTOR	CONDUCTOR COLOR
+ V	+ V	Red
0 V	0 V	Blue
A	B	Green
$\overline{A}$	NC	Orange
B	A	White
$\overline{B}$	NC	Light-blue
$I_0$	$I_0$	Brown
$\overline{I_0}$	NC	Yellow
SCH	SCH	Shield

\* The declared accuracy grade of  $\pm X \mu\text{m}$  is referred to a measuring length of 1 m.

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### OUTPUT SIGNALS



<b>Signals amplitude</b>	LINE DRIVER ( $V_{OH} \geq 2.5 V$ $V_{OL} \leq 0.5 V$ ) TTL
<b>Load per channel</b>	$R = 120 \Omega$ $I_L = \pm 20 mA_{MAX}$
<b>A and B phase displacement</b>	$90^\circ \pm 5^\circ$ electrical
Signal amplitude is referred to a differential measurement made with $120 \Omega$ impedance and power supply voltage to the transducer of $5 V \pm 5\%$ .	

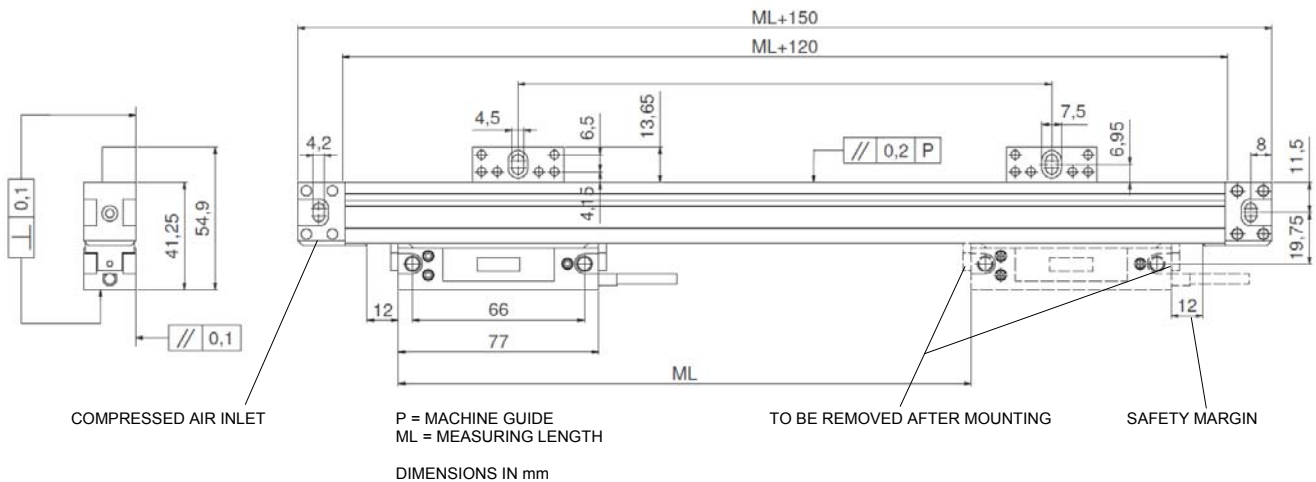
### CABLE



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

MODEL	SCALE TYPE, RESOLUTION, REFERENCE INDEXES	MEASURING LENGTH	POWER SUPPLY, OUTPUT SIGNALS	CABLE LENGTH, CABLE TYPE	CONNECTOR, WIRING	SPECIAL, PRESSURIZATION
<b>GVS 300</b>	<b>T 10 Z</b>	<b>00500</b>	<b>05VL</b>	<b>M04 / A</b>	<b>Cnn</b>	<b>PR</b>

<b>T</b> = TTL	Length in mm	<b>05V</b> = 5 Vdc	<b>Mnn</b> = length in m	<b>Cnn</b> = progressive	<b>No cod.</b> = standard
<b>100</b> = 100 $\mu m$	<b>00500</b> = 500 mm	<b>1028V</b> = 10 + 28 Vdc	<b>M04</b> = 4 m (standard)		<b>SPnn</b> = special nn
<b>10</b> = 10 $\mu m$		<b>L</b> = LINE DRIVER	<b>100</b> = 100 m		<b>PR</b> = pressurized
<b>1</b> = 1 $\mu m$		<b>Q</b> = TRANSISTOR	<b>A</b> = armored cable		
<b>01</b> = 0.1 $\mu m$			<b>N</b> = PVC cable		
<b>No cod.</b> = without indexes			<b>S</b> = PUR cable		
<b>P</b> = indexes at constant step			<b>U</b> = ultraflex cable		
<b>Z</b> = indexes in required positions			<b>T</b> = tuboflex cable		

Example  **OPTICAL SCALE GVS 300 T10Z 00500 05VL M04/A C58 PR**