

Code <b>ST02</b>	Project <b>A63-A</b>	Release <b>A</b>	<b>TECHNICAL DATASHEET</b>
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## OPTICAL SCALE GVS 400

### GENERAL FEATURES

- Incremental optical scale for various applications.
- Resolutions up to 0.1  $\mu\text{m}$ . Accuracy grade up to  $\pm 5 \mu\text{m}$ .
- Four 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.
- In modular version for measuring lengths over 6500 mm, or for lower measuring lengths on request.
- High stability of LINE DRIVER signals.
- Small overall dimensions, to allow installation in narrow spaces.



### MECHANICAL AND ELECTRICAL CHARACTERISTICS

MECHANICAL	Cod. GVS 400	T
<ul style="list-style-type: none"> <li>• Rugged and heavy PROFILE made of anodized aluminium. Dimensions 39x23 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 18x0.305 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>	120               60   30
	<b>Max. traversing speed (m/min) TRANSISTOR (VQ) output</b>	120   80   40   16   8   4   NA   NA
	<b>Accuracy grade</b>	$\pm 5 \mu\text{m}^*$
	<b>Measuring length ML in mm</b>	in modular version for measuring lengths over 6500 mm or for lower measuring lengths on request
	<b>Max. acceleration</b>	30 $\text{m/s}^2$
	<b>Required moving force</b>	$\leq 4 \text{ N}$
	<b>Vibration resistance (EN 60068-2-6)</b>	100 $\text{m/s}^2$ [55 $\div$ 2000 Hz]
	<b>Shock resistance (EN 60068-2-27)</b>	150 $\text{m/s}^2$ [11 ms]
	<b>Protection class (EN 60529)</b>	IP 54 standard IP 64 pressurized
	<b>Operating temperature</b>	0 $^\circ\text{C}$ $\div$ 50 $^\circ\text{C}$
	<b>Storage temperature</b>	-20 $^\circ\text{C}$ $\div$ 70 $^\circ\text{C}$
	<b>Relative humidity</b>	20% $\div$ 80% (not condensed)
	<b>Reading block sliding</b>	by ball bearings $\odot$
	<b>Power supply</b>	5 Vdc $\pm$ 5% or 10 $\div$ 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>	400 g + 1300 g/m

LINE DRIVER	TRANSISTOR	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
$I_0$	$I_0$	Brown
$\bar{I}_0$	NC	Yellow
SCH	SCH	Shield

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

