

Code ST02	Project A63-A	Release A	TECHNICAL DATASHEET
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OPTICAL SCALE GVS 400

GENERAL FEATURES

- Incremental optical scale for various applications.
- Resolutions up to 0.1 μm . 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

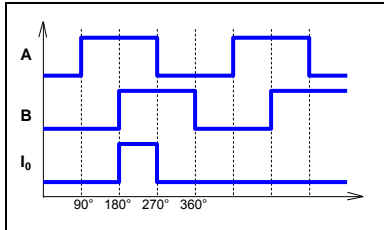
MECHANICAL	Cod. GVS 400	T
<ul style="list-style-type: none"> • Rugged and heavy PROFILE made of anodized aluminium. Dimensions 39x23 mm. • Elastic COUPLING for misalignment compensation and self-correction of mechanical hysteresis. Backlash error $<0.2 \mu\text{m}$. • SEALING LIPS for the protection of the grating, made of special elastomer resistant to oil and wearing. • READER HEAD, consisting of tie rod and reading block, with fully-protected place for electronic boards. • READING BLOCK sliding through ball bearings. • Die-cast TIE ROD, with nickel surface treatment. • Stainless steel GRATING dimensions 18x0.305 mm in a single piece. The support maintains the grating in its position leaving it free to expand. • Elastomeric GASKETS which allow to reproduce the full protection in mechanical joints (in case of disassembling). • Full possibility to disassemble and reassemble it. • Possibility of direct service. 	Measuring support stainless steel grating Linear thermal expansion coefficient $10.6 \times 10^{-6} \text{ } ^\circ\text{C}^{-1}$	Reference indexes (I_0) No cod. = without reference indexes P = constant step (every 30 mm) Z = in required positions
	Resolution (μm)	100 50 10 5 2 1 0.5 0.2 0.1
	Max. traversing speed (m/min) LINE DRIVER (VL) output	120 60 30
	Max. traversing speed (m/min) TRANSISTOR (VQ) output	120 80 40 16 8 4 NA NA
	Accuracy grade	$\pm 5 \mu\text{m}^*$
	Measuring length ML in mm	in modular version for measuring lengths over 6500 mm or for lower measuring lengths on request
	Max. acceleration	30 m/s^2
	Required moving force	$\leq 4 \text{ N}$
	Vibration resistance (EN 60068-2-6)	100 m/s^2 [55 \div 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 $^\circ\text{C}$ \div 50 $^\circ\text{C}$
	Storage temperature	-20 $^\circ\text{C}$ \div 70 $^\circ\text{C}$
	Relative humidity	20% \div 80% (not condensed)
	Reading block sliding	by ball bearings \odot
	Power supply	5 Vdc $\pm 5\%$ or 10 \div 28 Vdc $\pm 5\%$
	Current consumption	140 mA_{MAX} (with 5 V and R = 120 Ω)
	A, B and I_0 output signals	LINE DRIVER TRANSISTOR 
	Max. cable length	100 m (LINE DRIVER) 50 m (TRANSISTOR)
	Electrical connections	see related table
	Electrical protections	inversion of polarity and short circuits
	Weight	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.

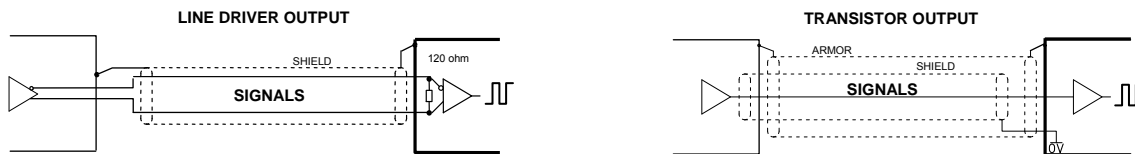
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OUTPUT SIGNALS



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

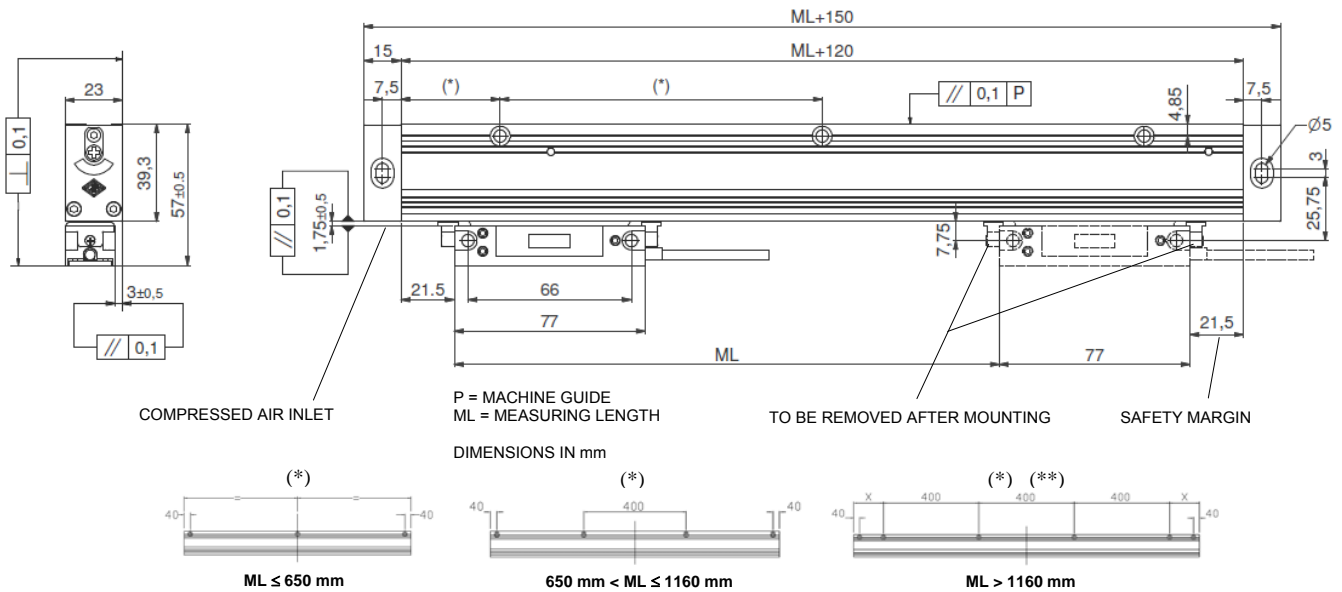
CABLE



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
GVS 400	T 10 Z	00500	05VL	M04 / A	Cnn	PR

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

Example  **OPTICAL SCALE GVS 400 T10Z 00500 05VL M04/A C58 PR**