

Code	Project	Release	
ST02	A63-A	Α	TECHNICAL DATASHEET

OPTICAL SCALE GVS 400

GENERAL FEATURES

- · Incremental optical scale for various applications.
- Resolutions up to 0.1 μm . Accuracy grade up to \pm 5 μm .
- 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

- 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
 µm.
- 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.

ELECTRICAL

- Reading device with high-efficiency light emitter and single-field photodiode
- A and B output signals with phase displacement of 90° (electrical).
- Reference indexes at constant step, in central position or in different positions at request.
- CABLE:
 - 8-wires shielded armored cable \varnothing = 6.1 mm.
 - Conductors section: power supply 0.35 mm²; signals 0.14 mm².

GVS 400 scale is normally supplied with armored cable. PVC, PUR, ultraflex or tuboflex cables available on request

PUR cable is suitable for continuous movements, respecting a minimum bending radius of 80 mm.

LINE DRIVER	TRANSISTOR	CONDUCTOR		
+ V	+ V	Red		
0 V	0 V	Blue		
Α	В	Green		
A	NC	Orange		
В	Α	White		
B	NC	Light-blue		
I ₀	I ₀	Brown		
I ₀	NC	Yellow		
SCH	SCH	Shield		
	•	•		

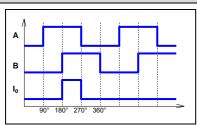
Cod. GVS 400	Т								
Measuring support	-	ss ste	el gra	ating					
Linear thermal expansion coefficient	stainless steel grating 10.6 x 10 ⁻⁶ °C ⁻¹								
Linear thermal expansion coefficient	10	.0 X 10	<i>,</i>						
Reference indexes (I ₀)	No co P = co Z = in	nstan	t step	(eve	ry 30		es		
Resolution (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	± 5 µm	1 *							
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	≤ 4 N								
Vibration resistance (EN 60068-2-6)	100 m	/s²	[55	÷ 200	00 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)							
Reading block sliding	by ball	beari	ngs (9					
Power supply	5 Vdc	± 5%	or	10 ÷ 2	28 Vd	c ± 5°	%		
Current consumption	140 m	A _{MAX} (with 5	5 V ar	nd R =	= 120	Ω)		
A, B and I ₀ output signals	LINE DRIVER TRANSISTOR								
Max. cable length	100 m	(LINE	DRI	VER)	50	m (T	RANS	SISTO	R)
Electrical connections	see re	ated t	able						
Electrical protections	inversion of polarity and short circuits								
Weight	400 g	+ 130	0 g/m						

 $^{^{\}star}$ The declared accuracy grade of \pm X μm is referred to a measuring length of 1 m.



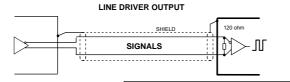
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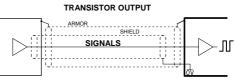
OUTPUT SIGNALS



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

CABLE

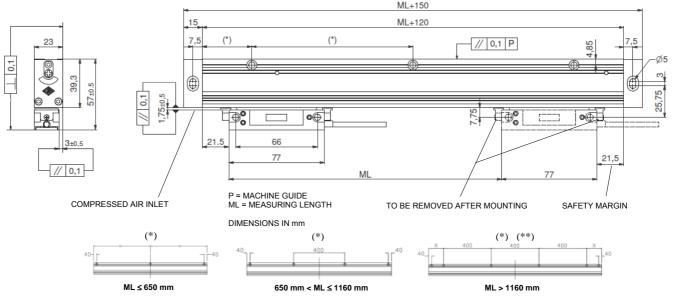




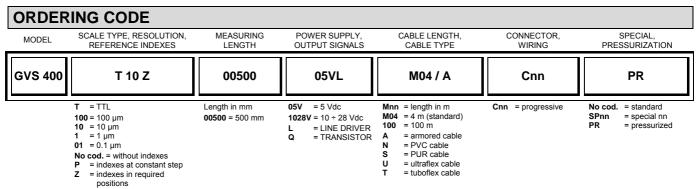
In case of cable extension, it is necessary to guarantee:

- 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



(**) Add holes at 40 mm from the cut heads, when the first hole at constant step is at a distance X > 175 mm.



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