

Code ST04	Project A54-A	Release A	TECHNICAL DATASHEET
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
OPTICAL SCALE GVS 600 T (TTL)

GENERAL FEATURES

- Optical scale with glass measuring support (grating pitch 20 µm). Particularly suitable for CNC machines.
- Resolutions up to 0.01 µm. Accuracy grade up to ± 1 µm.
- Innovative device inside the scale for the disposal of liquids coming from inefficient filtering systems.
- Adjustable connecting cable output.
- Connector incorporated into the transducer.
- Reference indexes at coded distance, or at constant step, with predetermined or selectable positions.
- Small size, to allow installation in narrow spaces.



MECHANICAL AND ELECTRICAL CHARACTERISTICS

	Cod. GVS 600	T
MECHANICAL <ul style="list-style-type: none"> • Rugged and heavy PROFILE made of anodized aluminium. Dimensions 40x24 mm. • Elastic COUPLING for misalignment compensation and self-correction of mechanical hysteresis. Backlash error <0.2 µm. • Non-extendible SEALING LIPS along the sliding side of the reader head, fixed at the lateral ends. • 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. • GLASS GRATING placed in the scale housing. • 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 <ul style="list-style-type: none"> • Reading device with an infra-red light emitter and receiving photodiodes. • A and B output signals with phase displacement of 90° (electrical). • Reference indexes at coded distance, at constant step or selectable. • CABLE: <ul style="list-style-type: none"> - 8 wires shielded cable Ø = 6.1 mm, PUR external sheath. - Conductors section: power supply 0.35 mm²; signals 0.14 mm². <p>The cable's bending radius should not be lower than 80 mm. The cable is suitable for continuous movements.</p>	Measuring support Grating pitch Linear thermal expansion coefficient	glass scale 20 µm  $8 \times 10^{-6} \text{ } ^\circ\text{C}^{-1}$
	Reference indexes (I₀)	C = coded distance P = constant step (every 40 mm) E = selectable (every 20 mm)
	Resolution	5 - 1 - 0.5 - 0.1 - 0.05 - 0.01 µm
	Accuracy grade	± 3 µm * standard version ± 1 µm * high-accuracy version
	Measuring length ML in mm	70, 120, 170, 220, 270, 320, 370, 420, 470, 520, 570, 620, 720, 770, 820, 920, 1020, 1140, 1240, 1340, 1440, 1540, 1640, 1740, 1840, 2040, 2240, 2440, 2640, 2840, 3040, 3240 _{MAX}
	Max. traversing speed	120 m/min **
	Max. acceleration	30 m/s ²
	Required moving force	≤ 2.5 N
	Vibration resistance (EN 60068-2-6)	100 m/s ² [55 ÷ 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 °C ÷ 50 °C	
Storage temperature	-20 °C ÷ 70 °C	
Relative humidity	20% ÷ 80% (not condensed)	
Reading block sliding	by ball bearings ⊙	
Power supply	5 Vdc ± 5%	
Current consumption	140 mA _{MAX} (with R = 120 Ω)	
A, B and I₀ output signals	LINE DRIVER PUSH-PULL 	
Max. cable length	100 m (LINE DRIVER) 50 m (PUSH-PULL)	
Electrical connections	see related table	
Connector	inside the transducer	
Electrical protections	inversion of polarity and short circuits	
Weight	435 g + 1290 g/m	

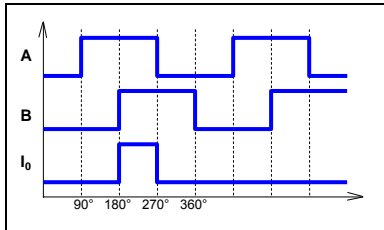
SIGNALS	CONDUCTOR COLOR
+ V	Red
0 V	Blue
A	Green
\overline{A}	Orange
B	White
\overline{B}	Light-blue
I ₀	Brown
$\overline{I_0}$	Yellow
SCH	Shield

* The declared accuracy grade of ± X µm is referred to a measuring length of 1 m.

** With a 0.1 µm resolution, the maximum traversing speed becomes 48 m/min.
 With a 0.05 µm resolution, the maximum traversing speed becomes 24 m/min.
 With a 0.01 µm resolution, the maximum traversing speed becomes 4.8 m/min.

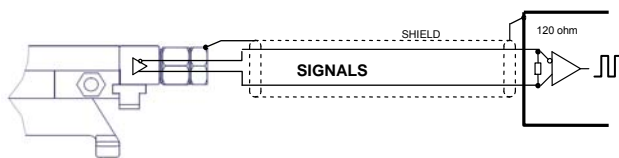
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OUTPUT SIGNALS



Signal amplitude	LINE DRIVER ($V_{OH} \geq 2.5V$ $V_{OL} \leq 0.5V$) 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 120 Ω impedance and power supply voltage to the transducer of $5V \pm 5\%$.	

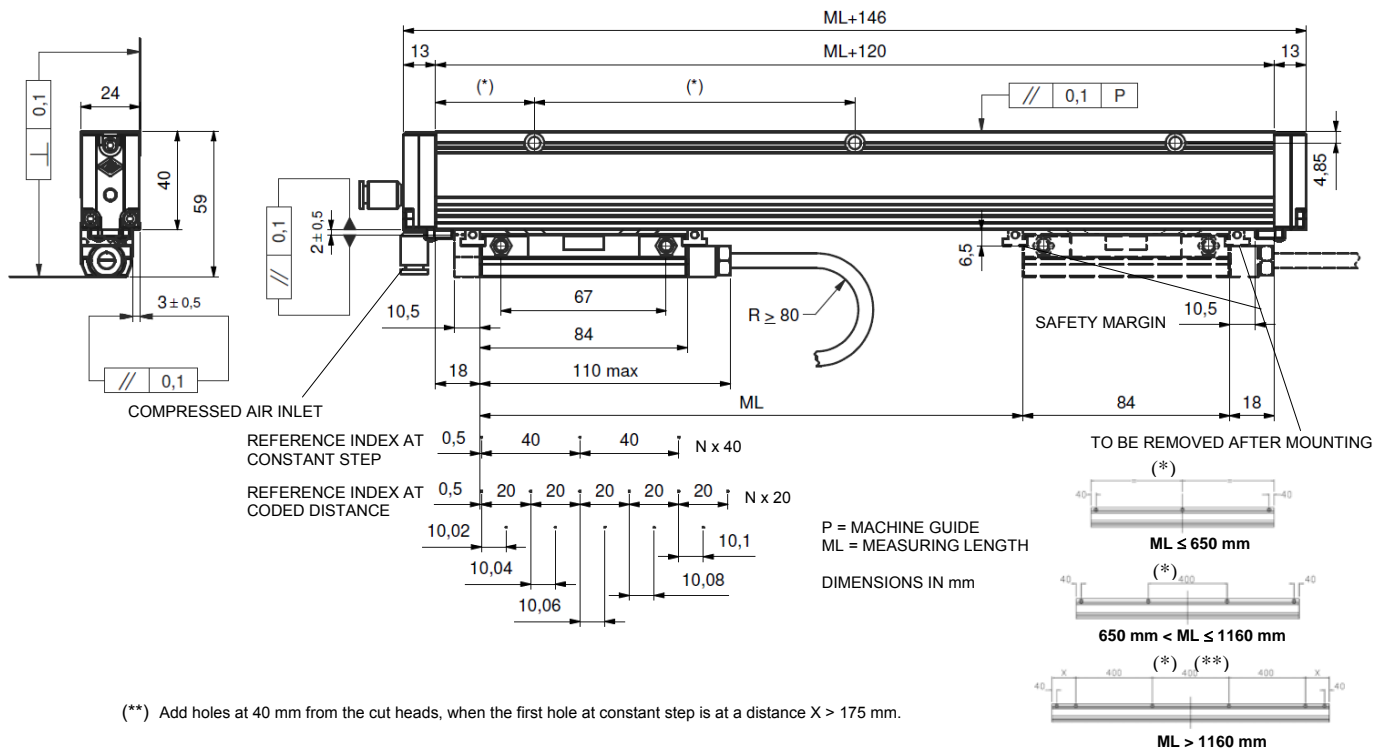
CABLE



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, GRATING PITCH, INDEX (OPTIONAL)	MEASURING LENGTH	POWER SUPPLY, OUTPUT SIGNALS	CABLE LENGTH, CABLE TYPE	CONNECTOR, WIRING	SPECIAL, PRESSURIZATION
GVS 600	T 01 C	03240	05VL	M04 / S	C35	PR

T = TTL
 1 = 1 μm
 01 = 0.1 μm
 001 = 0.01 μm
 C = indexes at coded distance
 P = indexes at constant step
 E = selectable indexes

Length in mm
 03240 = ML_{MAX}

05V = 5 V
 L = LINE DRIVER
 Q = PUSH-PULL

Mnn = length in m
 M04 = 4 m (standard)
 100 = 100 m
 S = PUR cable for continuous movements

Cnn = progressive

No cod. = standard
 SPnn = special nn
 PR = pressurized

Example  **OPTICAL SCALE GVS 600 T01C 03240 05VL M04/S C35 PR**