

code **ST02** | project **A54-A** | release **B**






GENERAL FEATURES

- Optical scale with glass measuring support (grating pitch 20 μm). Particularly suitable for CNC machines.
- Resolutions up to 10 nm. Accuracy grade up to ± 2 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.

Cod. GVS 600

V

Measuring support	glass scale - Grating pitch - Linear thermal expansion coefficient	20 μm 8 x 10 ⁻⁶ °C ⁻¹	
Reference indexes (I₀)		C = coded distance P = constant step (every 40 mm) E = selectable (every 20 mm)	
Resolution		up to 0.01 μm *	
Accuracy grade		± 5 μm ** standard version ± 3 μm ** high-accuracy version (± 2 μm for ML up to 720 mm)	
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		120 mA _{MAX} (with R = 120 Ω)	
A, B and I₀ output signals		1 Vpp 	
Period		20 μm	
Max. cable length		80 m	
Electrical connections		see related table	
Connector		inside the transducer	
Electrical protections		inversion of polarity and short circuits	
Weight		435 g + 1290 g/m	

* Depending on CNC division factor.

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

MECHANICAL CHARACTERISTICS

- Rugged and heavy **PROFILE** made of anodized aluminium. Dimensions 40x24 mm.
- Elastic **COUPLING** for misalignment compensation and self-correction of mechanical hysteresis.
- 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 CHARACTERISTICS

- 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:**
 - 8-wire shielded cable ø = 6.1 mm, PUR external sheath.
 - Conductors section: power supply 0.35 mm²; signals 0.14 mm².

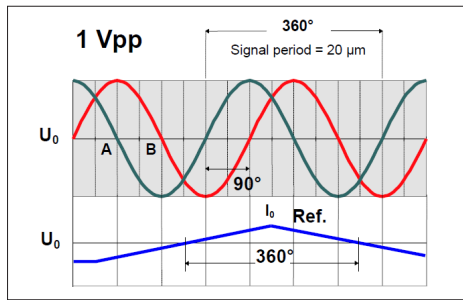
The cable's bending radius should not be lower than 80 mm.

The cable is suitable for continuous movements.

SIGNALS	CONDUCTOR COLOR
+ V	Red
0 V	Blue
A	Green
\bar{A}	Orange
B	White
\bar{B}	Light-blue
I ₀	Brown
\bar{I}_0	Yellow
SCH	Shield

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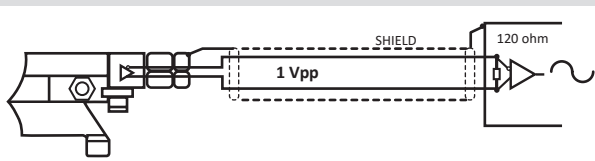
OUTPUT SIGNALS



A and B amplitude	0.8 Vpp ÷ 1.2 Vpp typical 1 Vpp
I₀ amplitude	0.25 V ÷ 0.8 V (usable component)
A and B phase displacement	90° ± 10° electrical
Reference voltage U₀	≈ 2.3 V

Signal amplitude is referred to a differential measurement made with 120 Ω impedance and power supply voltage to the transducer of 5 V ± 5%.

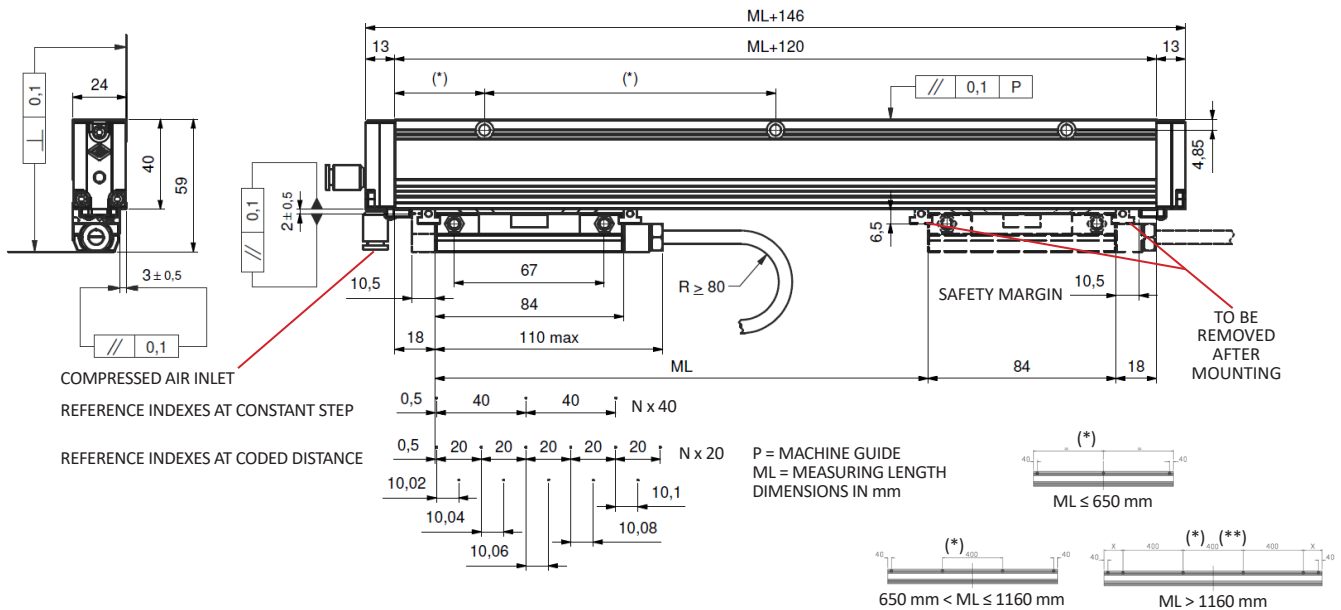
CABLE



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.

ORDERING CODE

Example OPTICAL SCALE **GVS 600 V20C 03240 05VS M04/S C35 PR**

Model	Scale type, grating pitch, indexes	Measuring length	Power supply, output signals	Cable length, cable type	Connector, wiring	Special, pressurized
GVS 600	V = 1 Vpp 20 = 20 μm C = indexes at coded distance P = indexes at constant step E = selectable indexes	Measuring length in mm 03240 = ML _{MAX}	05V = 5 V S = sine wave	Mnn = length in m M04 = 4 m (standard) S = PUR cable for continuous movements	Cnn = progressive SC = without connector	No cod. = standard SPnn = special nn PR = pressurized

Without prior notice, the products may be subject to modifications that the Manufacturer reserves to introduce as deemed necessary for their improvement.