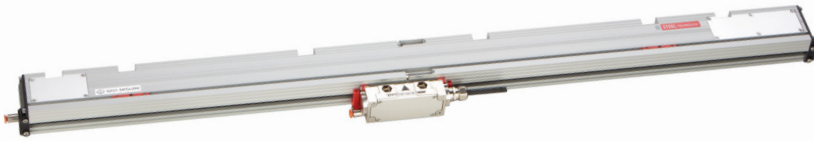


code **ST02** | project **A45-B** | release **C**



## GENERAL FEATURES

- Incremental optical scale, available in a single piece or in modular version for large machines (up to 30040 mm of measuring length or higher on request).
- Application in various industrial fields such as machine tools, vertical lathes, gantry machines, laser/plasma cutting machines, robotics, automation, etc.
- Stainless steel grating, integral with the machine guide, for an excellent accuracy at any temperature.
- Resolutions up to 0.1  $\mu\text{m}$ . Accuracy grade  $\pm 5 \mu\text{m}$ .
- Rigidly bound modules, for a perfect seal against liquids and environmental dirty, unaltered over time.
- Reference indexes at coded distance, at constant step, or selectable every 50 mm along the entire measuring length, with Zero Magneto Set device.
- Adjustable cable output, through double connector.
- Wide alignment tolerances.
- Pressurization from both sides of the scale and/or of the transducer.

### Cod. GVS 900

V

<b>Measuring support</b>	stainless steel grating
- Grating pitch	40 $\mu\text{m}$
- Linear thermal expansion coefficient	10.6 x 10 <sup>-6</sup> °C <sup>-1</sup>
<b>Reference indexes (I<sub>0</sub>)</b>	C = at coded distance P = at constant step (every 50 mm) E = selectable (every 50 mm)
<b>Resolution</b>	up to 0.1 $\mu\text{m}$ *
<b>Accuracy grade</b>	$\pm 5 \mu\text{m}$ **
<b>Measuring length ML in mm</b>	from 640 mm to 30040 mm, with steps of 200 mm *** Modules length: 1200, 1400, 1600, 1800, 2000 mm
<b>Max. traversing speed</b>	120 m/min
<b>Max. acceleration</b>	30 m/s <sup>2</sup>
<b>Required moving force</b>	$\leq 15 \text{ N}$
<b>Vibration resistance (EN 60068-2-6)</b>	$\leq 100 \text{ m/s}^2$ [55 ÷ 2000 Hz]
<b>Shock resistance (EN 60068-2-27)</b>	$\leq 300 \text{ m/s}^2$ [11 ms]
<b>Protection class (EN 60529)</b>	IP 53 standard IP 64 pressurized
<b>Operating temperature</b>	0 °C ÷ 50 °C
<b>Storage temperature</b>	-20 °C ÷ 70 °C
<b>Relative humidity</b>	20% ÷ 80% (not condensed)
<b>Reading block sliding</b>	by ball bearings
<b>Power supply</b>	5 Vdc $\pm 5\%$
<b>Current consumption</b>	160 mA <sub>MAX</sub> (with R = 120 $\Omega$ )
<b>A, B and I<sub>0</sub> output signals</b>	1 Vpp
<b>Period</b>	40 $\mu\text{m}$
<b>Max. cable length</b>	45 m ****
<b>Electrical connections</b>	see related table
<b>Connector</b>	on the transducer, with adjustable output
<b>Electrical protections</b>	inversion of polarity and short circuits
<b>Weight</b>	1.7 kg + 3.5 kg/m

\* Depending on CNC division factor.  
\*\* The declared accuracy grade of  $\pm X \mu\text{m}$  is referred to a measuring length of 1 m.  
\*\*\* Longer measuring lengths are available on request.  
\*\*\*\* Longer cable lengths are available on request.

## MECHANICAL CHARACTERISTICS

- Rugged and heavy **PROFILE** made of anodized aluminum. Dimensions 50x58.5 mm.
- **SPRING SYSTEM** 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.
- Pressurizable **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**, protected by the scale housing.
- **GASKETS** between modules for a full protection in mechanical joints.
- **FULL POSSIBILITY** to disassemble and reassemble it.
- Possibility of direct **SERVICE**.

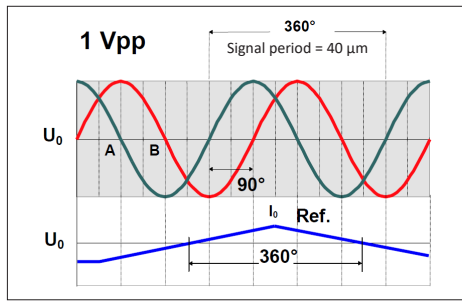
## ELECTRICAL CHARACTERISTICS

- Connector on the transducer, easily disconnectable in case of need.
  - Reading device with an infrared 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  $\varnothing = 6.1 \text{ mm}$ , PUR external sheath.
    - Conductors section:
      - power supply 0.35 mm<sup>2</sup>;
      - signals 0.14 mm<sup>2</sup>.
- 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 <sub>0</sub>	Brown
$\bar{I}_0$	Yellow
SCH	Shield

code **ST02** | project **A45-B** | release **C**

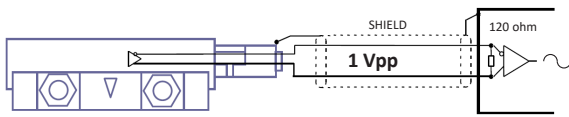
## OUTPUT SIGNALS



<b>A and B amplitude</b>	0.8 Vpp ÷ 1.2 Vpp typical 1 Vpp
<b>I<sub>0</sub> amplitude</b>	0.25 V ÷ 0.8 V (usable component)
<b>A and B phase displacement</b>	90° ± 10° electrical
<b>Reference voltage U<sub>0</sub></b>	≈ 2.2 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%.

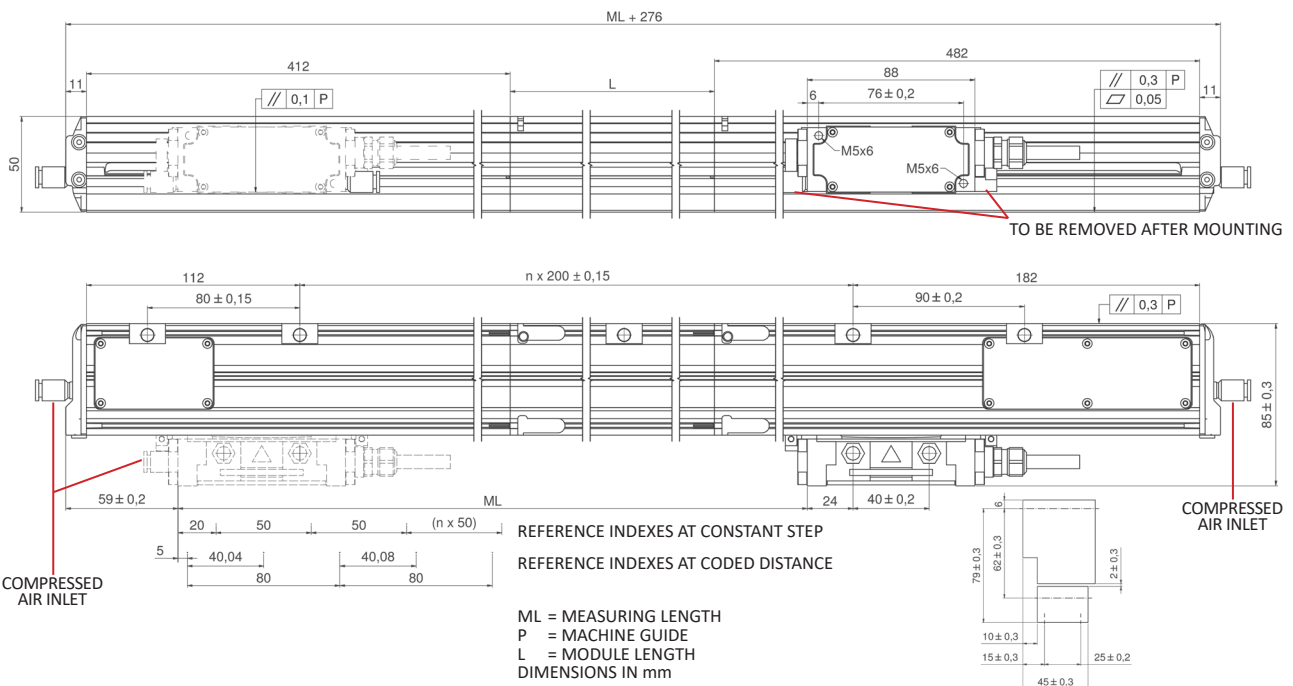
## CABLE



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



## ORDERING CODE

Example OPTICAL SCALE **GVS 900 V40C 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, pressurization
GVS 900	V = 1 Vpp 40 = 40 μm C = indexes at coded distance P = indexes at constant step E = selectable indexes	Measuring length in mm 03240 = ML 30040 = ML <sub>MAX</sub>	05V = 5 V S = sine wave	Mnn = length in m M04 = 4 m M10 = 10 m S = PUR cable T = tubeflex	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.