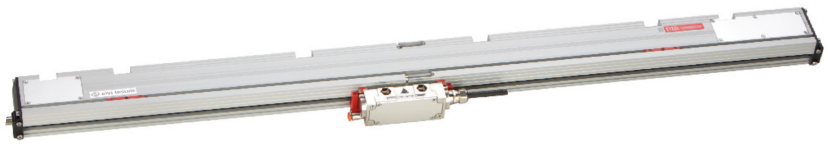
code **ST04** | project **A45-B** | release **C**



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 µm. Accuracy grade ± 5 µm.
- 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	T
Measuring support - Grating pitch - Linear thermal expansion coefficient	stainless steel grating 40 µm P 10.6 x 10^{-6} °C^{-1}
Reference indexes (I_0)	**C** = at coded distance **P** = at constant step (every 50 mm) **E** = selectable (every 50 mm)
Resolution	10 - 5 - 1 - 0.5 - 0.1 µm
Accuracy grade	± 5 µm *
Measuring length ML in mm	from 640 mm to 30040 mm, with steps of 200 mm ** Modules length: 1200, 1400, 1600, 1800, 2000 mm
Max. traversing speed	120 m/min ***
Max. acceleration	30 m/s^2
Required moving force	≤ 15 N
Vibration resistance (EN 60068-2-6)	≤ 100 m/s^2 [55 ÷ 2000 Hz]
Shock resistance (EN 60068-2-27)	≤ 300 m/s^2 [11 ms]
Protection class (EN 60529)	IP 53 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	170 mA_{MAX} (with R = 120 Ω)
A, B and I_0 output signals	LINE DRIVER
Max. cable length	45 m ****
Electrical connections	see related table
Connector	on the transducer, with adjustable output
Electrical protections	inversion of polarity and short circuits
Weight	1.7 kg + 3.5 kg/m

* The declared accuracy grade of ± X µm is referred to a measuring length of 1 m.
** Longer measuring lengths are available on request.
*** With a 0.1 µm resolution, the maximum traversing speed becomes 45 m/min.
**** 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 Ø = 6.1 mm, PUR external sheath.
  - Conductors section: power supply 0.35 mm^2; signals 0.14 mm^2.

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
$\overline{A}$	Orange
B	White
$\overline{B}$	Light-blue
I_0	Brown
$\overline{I}_0$	Yellow
SCH	Shield

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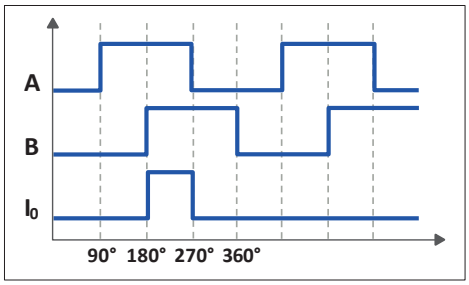
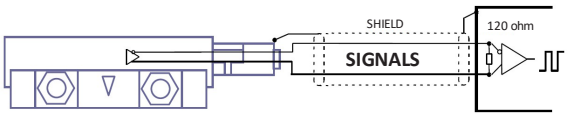
OUTPUT SIGNALS



Signal amplitude	LINE DRIVER ($V_{OH} \geq 2.5$ V $V_{OL} \leq 0.5$ V) TTL
Load per channel	R = 120 Ω $I_L = \pm 20$ 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%.

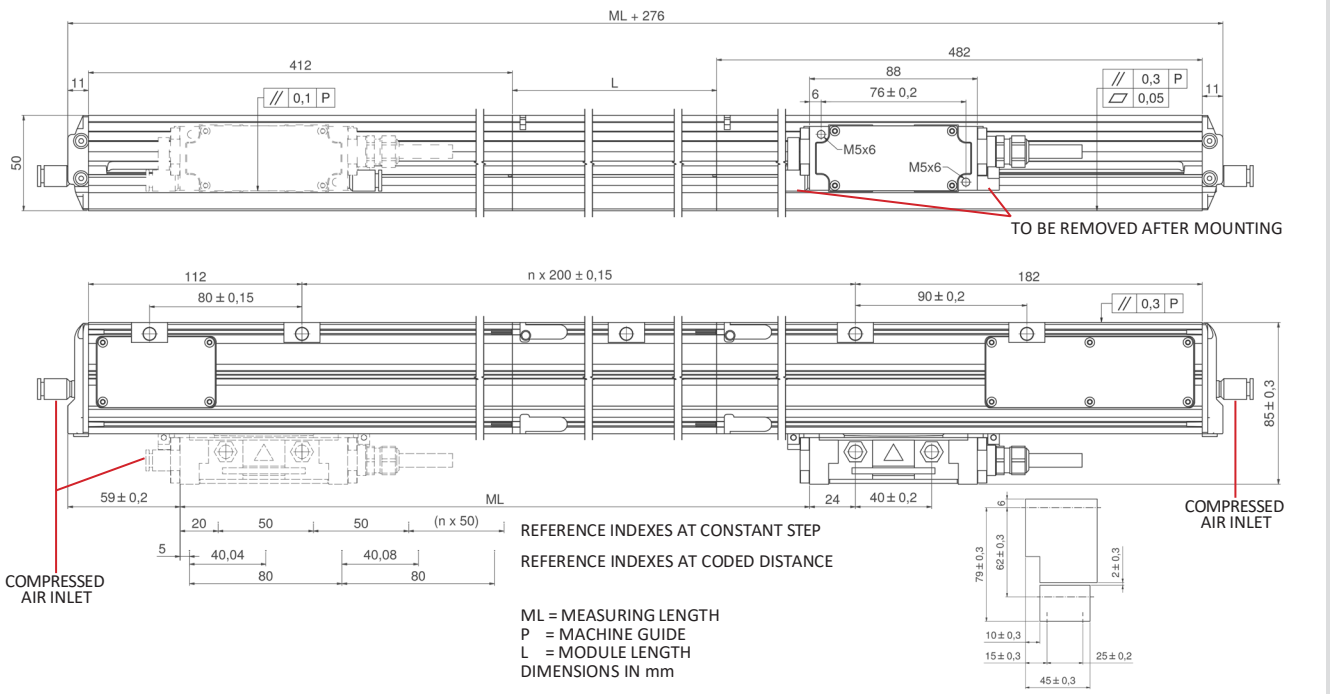
CABLE



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



ORDERING CODE

Example OPTICAL SCALE **GVS 900 T01C 03240 05VL M04/S C35 PR**

Model	Scale type, resolution, indexes	Measuring length	Power supply, output signals	Cable length, cable type	Connector, wiring	Special, pressurization
GVS 900	T = TTL 1 = 1 µm 01 = 0.1 µm C = indexes at coded distance P = indexes at constant step E = selectable indexes	Measuring length in mm 03240 = ML 30040 = ML_{MAX}	05V = 5 V L = LINE DRIVER	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

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