

Datasheet



General Features

Incremental optical scale, for applications with small overall dimensions, to allow installation in narrow spaces.

- Resolutions up to 0.1 μm .
- Accuracy grade up to $\pm 5 \mu\text{m}$.
- 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.



Technical Characteristics

| | | | | | | | | | |
|--|--|----|---|----|-------------------|---|------|------|-----|
| Measuring support | stainless steel grating | | | | | | | | |
| Linear thermal expansion coefficient | $10.6 \times 10^{-6} \text{ } ^\circ\text{C}^{-1}$ | | | | | | | | |
| Reference indexes (I_0) | No cod. = without reference indexes P = constant step (every 30 mm) Z = in required positions | | | | | | | | |
| 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 | n.a. | n.a. | |
| Accuracy grade | $\pm 5 \mu\text{m}^*$ | | | | | | | | |
| Measuring length | up to 700 mm (for longer measuring lengths it is necessary to use the intermediate fixing blocks) | | | | | | | | |
| Max. acceleration | 30 m/s^2 | | | | | | | | |
| Required moving force | $\leq 4 \text{ N}$ | | | | | | | | |
| Vibration resistance (EN 60068-2-6) | 50 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 | $0 \text{ } ^\circ\text{C} \div 50 \text{ } ^\circ\text{C}$ | | | | | | | | |
| Storage temperature | $-20 \text{ } ^\circ\text{C} \div 70 \text{ } ^\circ\text{C}$ | | | | | | | | |
| Relative humidity | 20% ÷ 80% (not condensed) | | | | | | | | |
| Reading block sliding | by ball bearings © | | | | | | | | |
| Power supply | 5 VDC \pm 5% or 10 ÷ 28 VDC \pm 5% | | | | | | | | |
| Current consumption | $140 \text{ mA}_{\text{MAX}}$ (with $R = 120 \Omega$) | | | | | | | | |
| A, B and I_0 output signals | Line Driver | |  | | | | | | |
| Period | Transistor | |  | | | | | | |
| Max. cable length | 100 m (Line Driver) | | | | 50 m (Transistor) | | | | |
| Electrical connections | see related table | | | | | | | | |
| Electrical protections | inversion of polarity and short circuits | | | | | | | | |
| Weight | $400 \text{ g} + 1300 \text{ g/m}$ (per m measuring length) | | | | | | | | |

* The declared accuracy grade of $\pm X \mu\text{m}$ is referred to a measuring length of 1 m.

Mechanical Characteristics

- Rugged and heavy PROFILE made of anodized aluminum.
- Dimensions 39 x 23 mm.
- Elastic COUPLING for misalignment compensation and self-correction of mechanical hysteresis. Backlash error <math>< 0.2 \mu\text{m}</math>.
- 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 18 x 0.305 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 Characteristics

- 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.

8-wire cable

GVS 400 incremental optical scale is supplied with an 8-wire shielded cable, $\varnothing = 6.1$ mm, PUR external sheath, with low friction coefficient, oil-resistant and suitable for continuous movements.

Conductors section:

- power supply: 0.35 mm²
- signals: 0.14 mm²

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

Notice

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

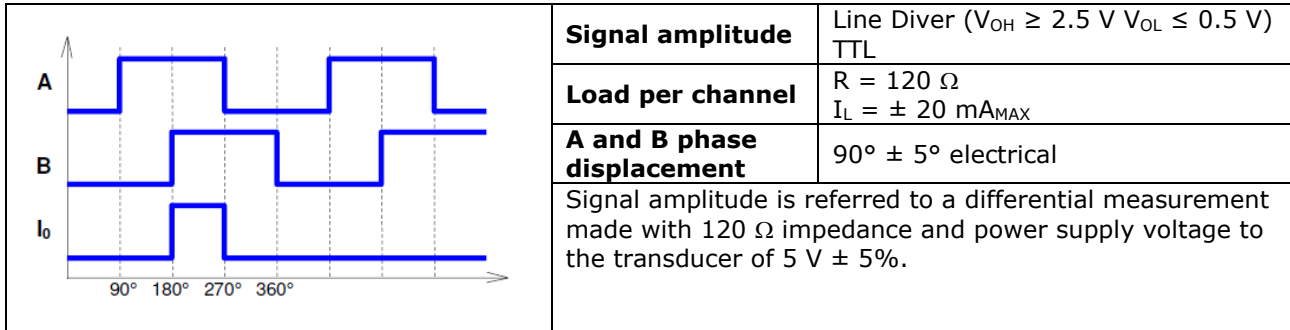
The following output signals are available:

| Line Diver | Transistor | Conductor Color |
|-------------|------------|-----------------|
| V+ | V+ | red |
| V- | V- | blue |
| A | B | green |
| \bar{A} | NC | orange |
| B | A | white |
| \bar{B} | NC | light-blue |
| I_0 | I_0 | brown |
| \bar{I}_0 | NC | yellow |
| SCH | SCH | shield |

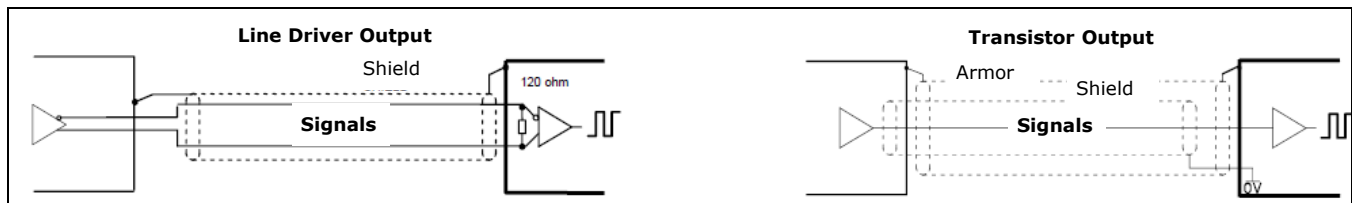
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Output Signals

Line Driver TTL version:



Cable

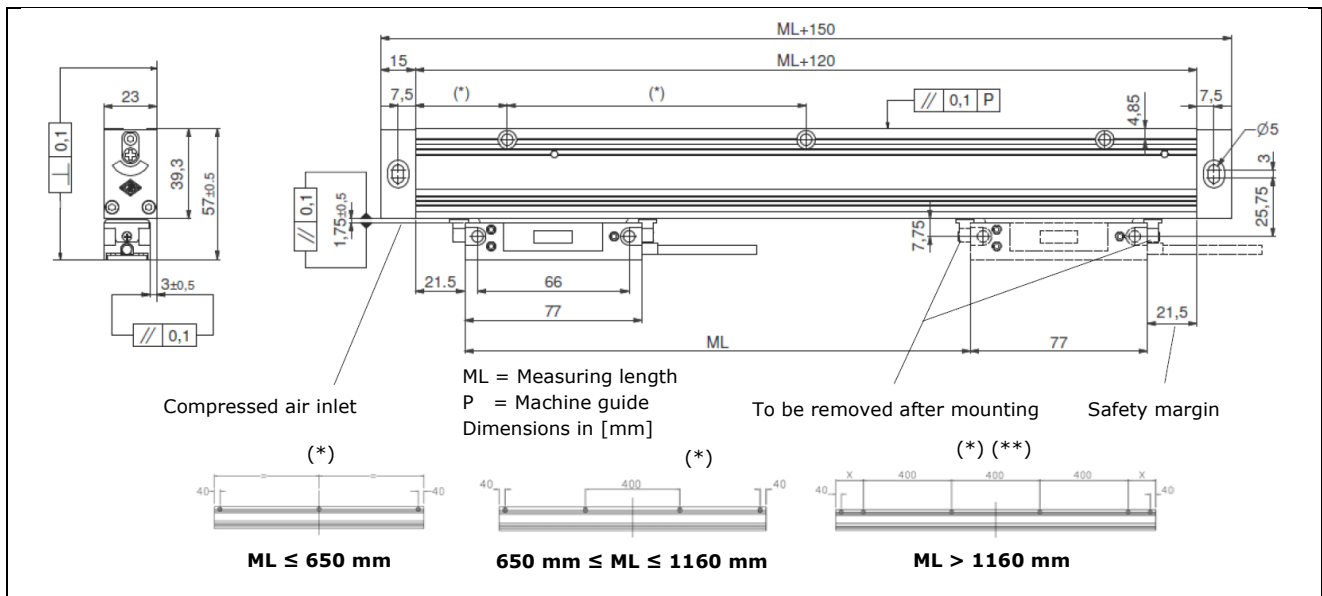


Notice

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

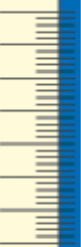
- the electrical connection between the body of the connectors and the cables shield
- a minimum power supply voltage of 5 V to the transducer

Dimensions



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

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Ordering Code

Type **GVS 400** - **T 10 Z** - **00500** - **05V** - **L** - **M04/A** - **Cxx** - **PR**

Scale Type

T = TTL

Resolution

01 = 0.1 µm
02 = 0.2 µm
05 = 0.5 µm
1 = 1 µm
2 = 2 µm
5 = 5 µm
10 = 10 µm
50 = 50 µm
100 =100 µm

Index

No cod. = without reference indexes
P = indexes at constant step
Z = indexes in required positions

Measuring length [mm]

00500 = 500 mm

Power supply

05V = 5 VDC
1028V = 10 ÷ 28 VDC

Output signal

L = Line Driver
Q = Transistor

Cable length

Mxx = length in mm
M04 = 4 m (standard)

Cable type

A = armored cable
N = PVC cable
S = PUR cable for continuous movements
U = ultraflex cable
T = tubeflex cable

Connector

Cxx = progressive
SC = without connector, open cable end

Option

X = no specifications (standard)
SPxx = special version (on request)
PR = pressurized enclosure profile

Manufacturer:



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