



## General Features

Small-size incremental optical scale, for applications with limited installation space.  
Possibility of registration which simplifies alignment and allows the use on rough surfaces (retrofitting and machines for which application was not foreseen).

- Resolutions up to 0.1  $\mu\text{m}$ .
- Accuracy grade  $\pm 5 \mu\text{m}$ .
- Two 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.
- 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 ( $I_0$ )	<b>No cod.</b> = without reference indexes <b>P</b> = constant step (every 50 mm) <b>Z</b> = in required positions										
Resolution ( $\mu\text{m}$ )	100	50	10	5	2	1	0.5	0.2	0.1		
Max. traversing speed (m/min) Line Driver (VL) output	80							60	30		
Max. traversing speed (m/min) Transistor (VQ) output	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	$10 \text{ m/s}^2$										
Required moving force	$\leq 4 \text{ N}$										
Vibration resistance (EN 60068-2-6)	$50 \text{ m/s}^2$		[55 ÷ 2000 Hz]								
Shock resistance (EN 60068-2-27)	$150 \text{ m/s}^2$		[11 ms]								
Protection class (EN 60529)	IP 53					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 $\odot$										
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	$250 \text{ g} + 420 \text{ g/m}$ (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

- PROFILE made of anodized aluminum.
- Dimensions 23 x 18 mm.
- RAIL for the sliding of the intermediate fixing blocks, positionable along the entire measuring length, necessary for the intermediate fixing of scales with measuring length over 700 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 15 x 0.203 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.

## 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 300 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 mm<sup>2</sup>
- signals: 0.14 mm<sup>2</sup>

GVS 300 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.

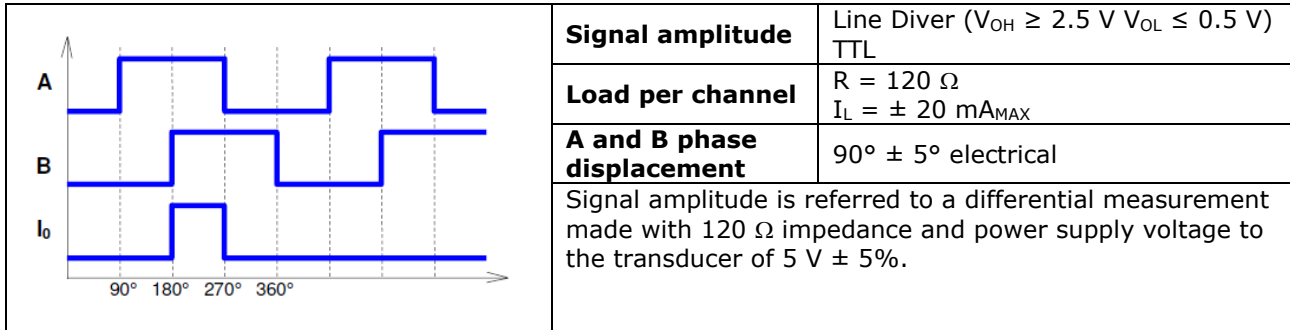
The following output signals are available:

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 <sub>0</sub>	I <sub>0</sub>	brown
$\bar{I}_0$	NC	yellow
SCH	SCH	shield

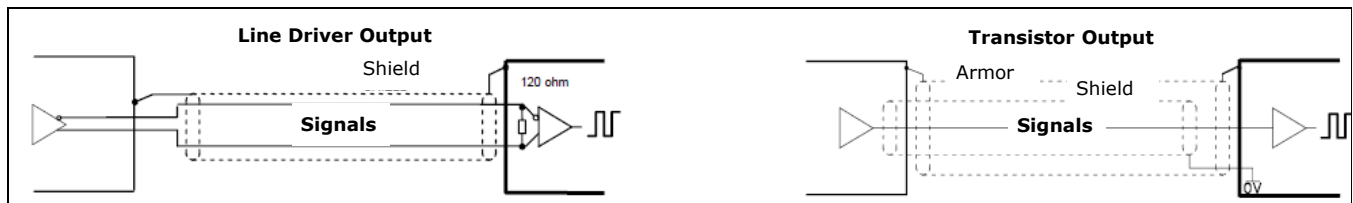
# Datasheet

## Output Signals

### Line Driver TTL version:



## Cable

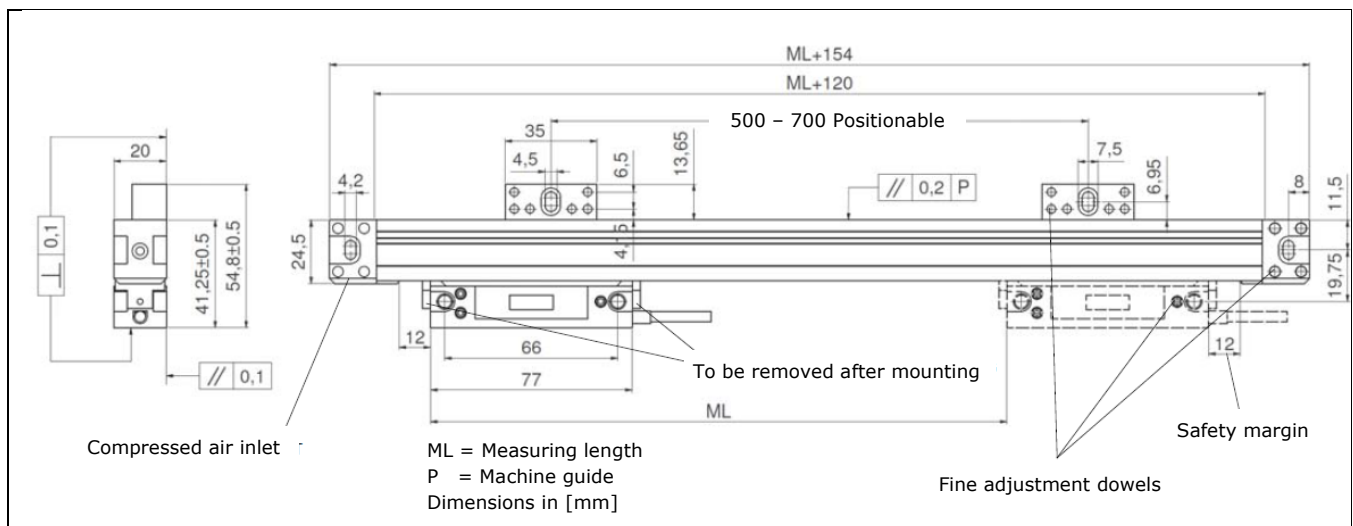


## Notice

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



# Datasheet



## Ordering Code

**Type**            **GVS 300**   -   **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.