

Output signals LINE DRIVER (TTL)



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 $\pm 5 \mu\text{m}$.
- Rigidly bound modules, for a perfect seal against liquids and environmental dirt, 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.

Mechanical characteristics


- Rugged and heavy enclosure profile made of anodized aluminium.
- Dimensions 50 x 58.5 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 reading 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.



Technical characteristics

Measuring support Grating pitch Linear thermal expansion coefficient	stainless steel grating 40 µm 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 (optional)	
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 (per m measuring length)	

* 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.

Cable

8-wire shielded cable, Ø = 6.1 mm, PUR external sheath.

Conductors section:

- power supply: 0.35 mm²
- signals: 0.14 mm²

Notice

The cable's bending radius should not be lower than 80 mm.
The cable is suitable for continuous movements.

The following output signals are available:

Signals	Conductor colour
V+	red
V-	blue
A	green
\bar{A}	orange
B	white
\bar{B}	light-blue
I ₀	brown
\bar{I}_0	yellow
SCH	shield

Datasheet

Output signals

	Signal amplitude	LINE DRIVER ($V_{OH} \geq 2.5 \text{ V}$ $V_{OL} \leq 0.5 \text{ V}$) TTL
	Load per channel	$R = 120 \ \Omega$ $I_L = \pm 20 \text{ mA}_{MAX}$
	A and B phase displacement	$90^\circ \pm 5^\circ$ electrical
<p>Signal amplitude is referred to a differential measurement made with $120 \ \Omega$. Impedance and power supply voltage to the transducer of $5 \text{ V} \pm 5\%$.</p>		

Cable

	<p>Notice In case of cable extension, it is necessary to guarantee:</p> <ul style="list-style-type: none"> - the electrical connection between the body of the connectors and the cables shield - a minimum power supply voltage to the transducer
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Dimensions

	<p>To be removed after mounting</p>
	<p>Compressed air inlet</p>
<p>Reference indexes at constant step Reference indexes at coded distance ML = Measuring length P = Machine guide L = Module length Dimensions in [mm]</p>	

Datasheet



Ordering example

Type **GVS 900** - **T01C** - **03240** - **05VL** - **M04/S** - **C35** - **PR**

Scale type

T = TTL

Resolution

10 = 10 µm

5 = 5 µm

1 = 1 µm

05 = 0.5 µm

01 = 0.1 µm

Indexes

C = indexes at coded distance

P = indexes at constant step

E = selectable indexes

Measuring length

03240 = 3240 mm

30040 = 30040 mm (max. measuring length)

Power supply

05V = 5 VDC

Output signal

L = LINE DRIVER

Cable length

Mxx = length in m

M04 = 4 m

M10 = 10 m

Cable type

S = PUR cable (for continuous movements)

T = tubeflex

Connector

Cxx = progressive

SC = without connector, open cable end

Option

X = no specifications (standard)

SPxx = special version (on request)

PR = pressurized (on request)

Manufacturer:



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