## Datasheet





### 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  $\mu$ m. Accuracy grade  $\pm$  5  $\mu$ 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.

#### **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.

### Incremental optical scale **GVS 900 T**

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### **Technical characteristics**

Measuring support	stainless steel grating	
Grating pitch	40 μm	
Linear thermal expansion coefficient	10.6 x 10 <sup>-6</sup> °C <sup>-1</sup>	→
	C = at coded distance	
Reference indexes (I <sub>0</sub> )	P = at constant step (every 50 mm)	
	<b>E</b> = 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 <sup>2</sup>	
Required moving force	≤ 15 N	
Vibration resistance (EN 60068-2-6)	100 m/ s <sup>2</sup> [55 ÷ 2000 Hz]	
Shock resistance (EN 60068-2-27)	300 m/s <sup>2</sup> [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 <sub>MAX</sub> (with R = 120 $\Omega$ )	
A, B and I <sub>0</sub> 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  $\pm$  X  $\mu m$  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**,  $\emptyset = 6.1$  mm, PUR external sheath.

Conductors section:

**Notice** 

power supply: 0.35 mm<sup>2</sup> 0.14 mm<sup>2</sup> signals:

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

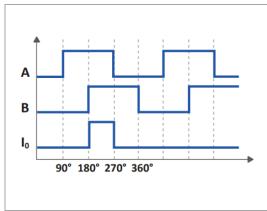
The following output signals are available:

Signals	Conductor colour
V+	red
V-	blue
Α	green
Ā	orange
В	white
B	light-blue
$I_0$	brown
<u>10</u>	yellow
SCH	shield
-	

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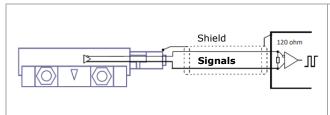
### **Output signals**



Signal amplitude	LINE DRIVER $(V_{OH} \ge 2.5 \text{ V } V_{OL} \le 0.5 \text{ V})$ TTL
Load per channel	$R = 120 \Omega$ $I_{L} = \pm 20 \text{ mA}_{MAX}$
A and B phase displacement	90° ± 5° electrical

Signal amplitude is referred to a differential measurement made with 120  $\Omega$ . Impedance and power supply voltage to the transducer of 5 V  $\pm$  5%.

### Cable

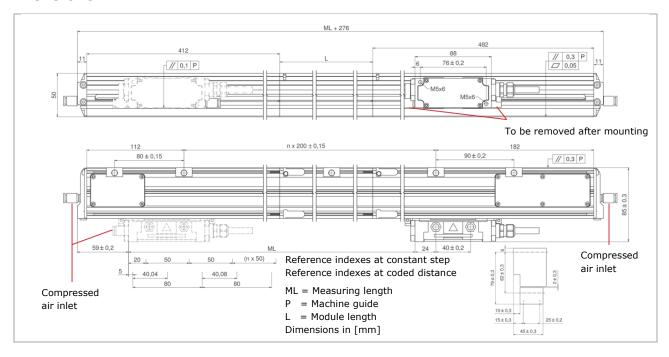


#### **Notice**

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 to the transducer

### **Dimensions**



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### Ordering example



#### Manufacturer:

Control



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

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= pressurized (on request)