

code **ST02** | project **A83** | release **A****FANUC****GENERAL FEATURES**

- Absolute optical scale with glass measuring support.
- FANUC α serial interface.
- Resolutions up to 10 nm. Accuracy grade up to $\pm 2 \mu\text{m}$.
- Fixed expansion point (FEP) in the middle, positionable on the right (RT) or on the left (LT), for a linear expansion consistent with the type of application.
- Direct reading of the absolute measure.
- Rugged and heavy profile of considerable section.
- Adjustable cable output, through double connector.
- Pressurization from both sides of the scale or from the transducer.

Cod. GVS 808**F**

Measuring support	glass scale	
- Grating pitch	20 μm	
- Linear thermal expansion coefficient	$8 \times 10^{-6} \text{ } ^\circ\text{C}^{-1}$	
Serial interface	FANUC α	
Resolution absolute measure	1 - 0.1 - 0.05 - 0.01 μm	
Accuracy grade	$\pm 5 \mu\text{m}$ * standard version $\pm 3 \mu\text{m}$ * high-accuracy version ($\pm 2 \mu\text{m}$ for ML up to 640 mm)	
Interpolation error (SDE)	$\pm 70 \text{ nm}$ **	
Hysteresis	90 nm **	
Measuring length ML in mm	140, 240, 340, 440, 540, 640, 740, 840, 940, 1040, 1140, 1240, 1340, 1440, 1540, 1640, 1740, 1840, 2040, 2240, 2440, 2640, 2840, 3040, 3240 _{MAX}	
Fixed expansion point (FEP)	central or positionable on the right (RT) or on the left (LT)	
Max. traversing speed	180 m/min	
Max. acceleration	50 m/s ² in measuring direction	
Required moving force	$\leq 2.5 \text{ N}$	
Vibration resistance (EN 60068-2-6)	100 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 $^\circ\text{C}$ ÷ 50 $^\circ\text{C}$	
Storage temperature	-20 $^\circ\text{C}$ ÷ 70 $^\circ\text{C}$	
Relative humidity	20% ÷ 80% (not condensed)	
Reading block sliding	by ball bearings	
Power supply	5 Vdc $\pm 10\%$	
Current consumption	255 mA _{MAX} (with R = 120 Ω)	
Max. cable length	30 m	
Connector	on the transducer, with adjustable output	
Electrical protections	inversion of polarity and short circuits	
Weight	0.55 kg + 2.8 kg/m	

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

** The error declared is subject to the respect of the alignment tolerances.

MECHANICAL CHARACTERISTICS

- Rugged and heavy **PROFILE** of considerable section, made of anodized aluminum. Dimensions 36.7x58.5 mm.
- **SPRING SYSTEM** for misalignment compensation and self-correction of mechanical hysteresis.
- Double pair of linear **SEALING LIPS** for a very high protection of the grating.
- 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.
- Absolute glass **GRATING**, placed in the scale housing.
- Elastomeric **GASKETS** which allow to reproduce the full protection in mechanical joints (in case of disassembling).
- **FULL POSSIBILITY** to disassemble and reassemble it.

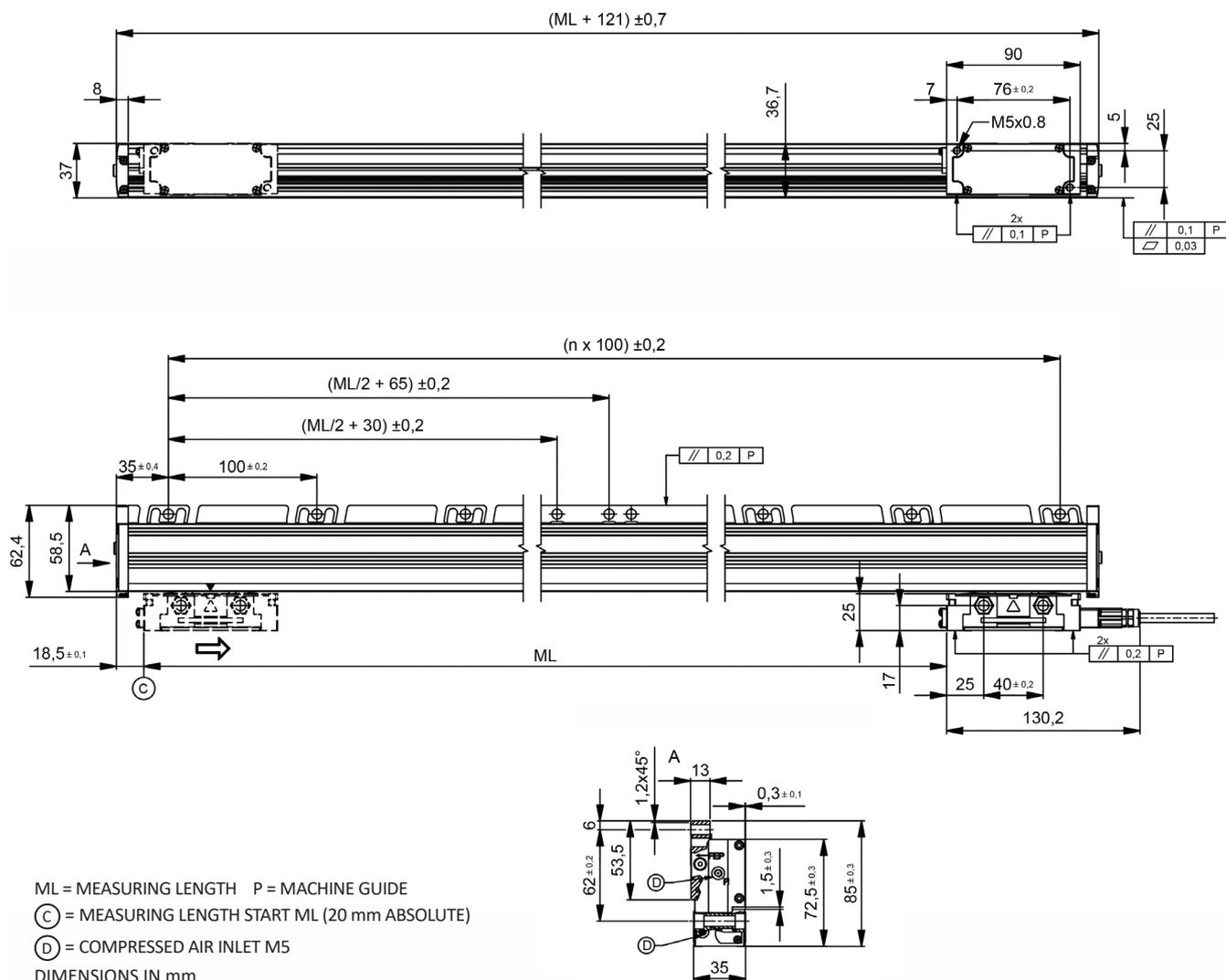
ELECTRICAL CHARACTERISTICS

- Connector on the transducer, easily disconnectable in case of need.
- Reading device with an infra-red light emitter and receiving photodiodes.
- Serial protocol FANUC α .
- Electrical protection against polarity inversion and short circuits on output ports.
- **CABLE:**
 - PUR cable with low friction coefficient, resistant to oil and suitable for continuous movements, 0.5 m standard length.
 - M12 8 Pin connector.

The cable's bending radius should not be lower than 80 mm.

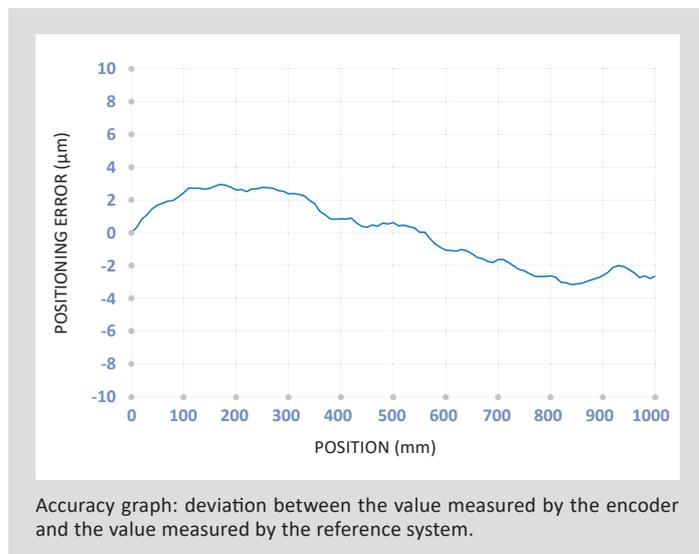
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DIMENSIONS

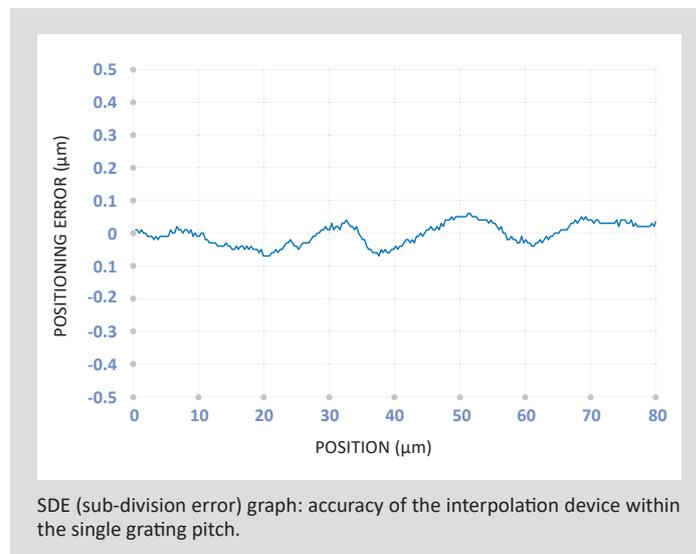


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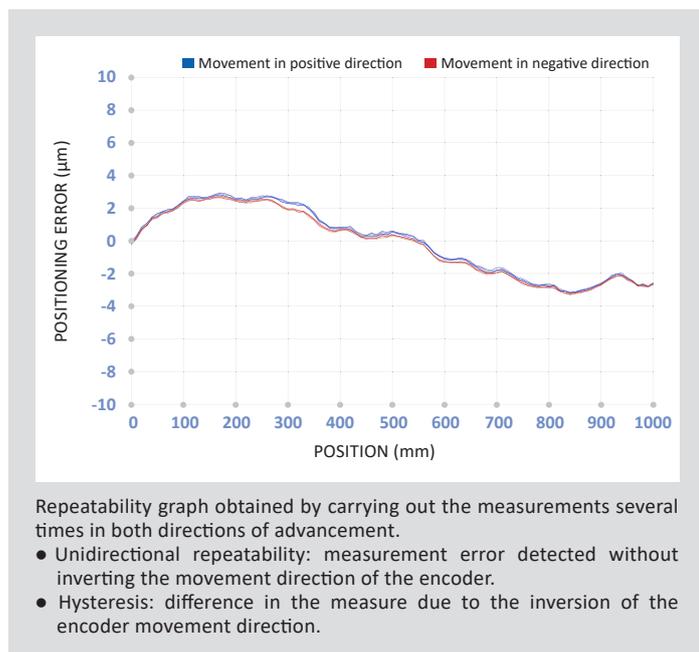
ACCURACY



INTERPOLATION - SDE



REPEATABILITY



The graphs show tests carried out in a metrological room under controlled climatic conditions: $T = 20\text{ °C} \pm 0.1\text{ °C}$ and $R.H. = 45 \div 55\%$. The reference system for the comparison of position measurements is interferometric with 1 nm resolution and equipped with an environmental compensation device.

INNOVATIVE SYSTEM FEP

FixedExpansionPoint

GVS 808 is supplied with a Fixed Expansion Point (FEP) positioned in the middle (standard). On request it is possible to supply scales with FEP positionable on the left (LT) or on the right (RT). Based on the application, the customer can determine the linear thermal expansion direction, so as to

maximize the machining accuracy and repeatability even in the presence of significant temperature changes.

ORDERING CODE

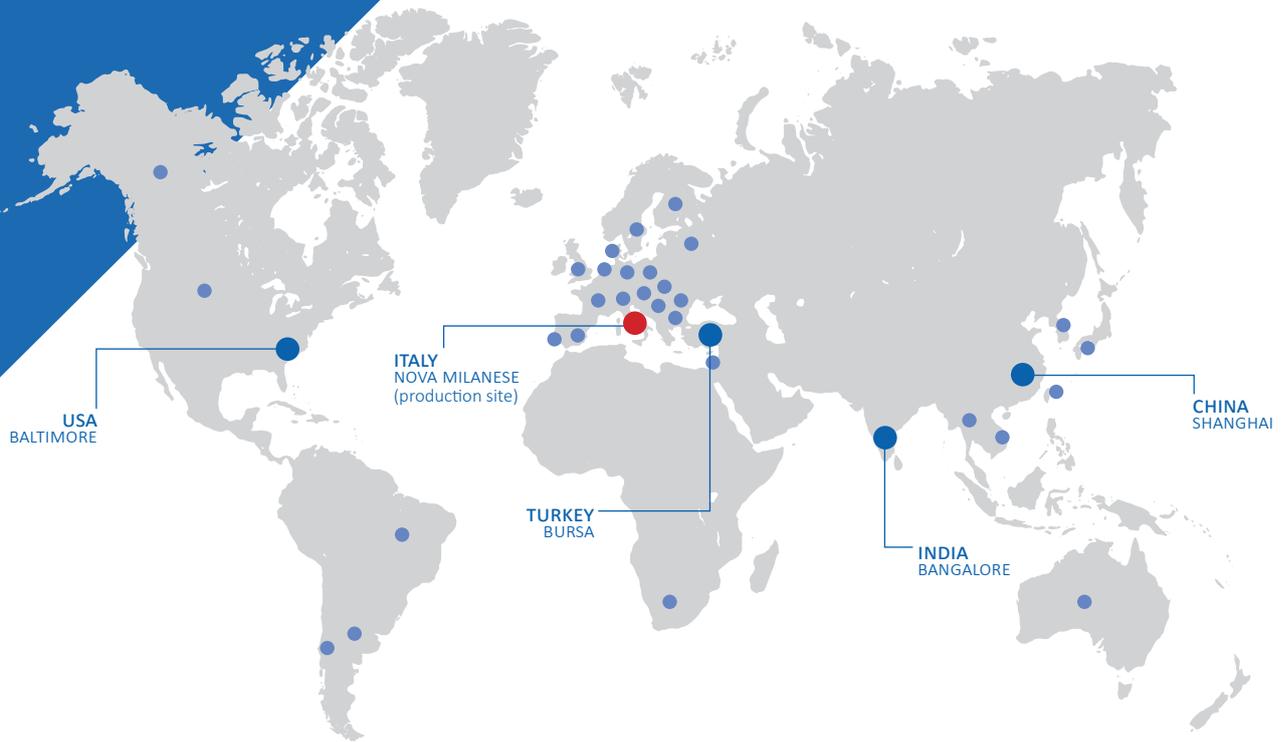
Example OPTICAL SCALE **GVS 808 F1A 03240 V F1 V M0.5/S CZ4 SLT PR**

Model	Scale type, resolution	Measuring length	Power supply	Output signals	Cable length, cable type	Connector, wiring	FEP (Fixed Expansion Point)	Special, pressurization
GVS 808	F1 = 1 μm F01 = 0.1 μm F005 = 0.05 μm F001 = 0.01 μm A = absolute	Measuring length in mm 03240 = $M_{L_{MAX}}$	V = 5 Vdc	F1 = FANUC α i	Mnn = length in m M0.5 = 0.5 m S = PUR cable	CZ4 = M12 8 pin	No cod. = central FEP (standard) SLT = selectable FEP	No cod. = standard SPnn = special nn PR = pressurized

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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Optical scales



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