

code **ST04** | project **A54-A** | release **B**



GENERAL FEATURES

- Optical scale with glass measuring support (grating pitch 20 μm). Particularly suitable for CNC machines.
- Resolutions up to 10 nm. Accuracy grade up to ± 2 μm.
- Innovative device inside the scale for the disposal of liquids coming from inefficient filtering systems.
- Adjustable connecting cable output.
- Connector incorporated into the transducer.
- Reference indexes at coded distance, or at constant step, with predetermined or selectable positions.
- Small size, to allow installation in narrow spaces.

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Measuring support	glass scale	
- Grating pitch	20 μm	
- Linear thermal expansion coefficient	$8 \times 10^{-6} \text{ } ^\circ\text{C}^{-1}$	
Reference indexes (I₀)	C = coded distance P = constant step (every 40 mm) E = selectable (every 20 mm)	
Resolution	5 - 1 - 0.5 - 0.1 - 0.05 - 0.01 μm	
Accuracy grade	± 5 μm * standard version ± 3 μm * high-accuracy version (± 2 μm for ML up to 720 mm)	
Measuring length ML in mm	70, 120, 170, 220, 270, 320, 370, 420, 470, 520, 570, 620, 720, 770, 820, 920, 1020, 1140, 1240, 1340, 1440, 1540, 1640, 1740, 1840, 2040, 2240, 2440, 2640, 2840, 3040, 3240 _{MAX}	
Max. traversing speed	120 m/min **	
Max. acceleration	30 m/s ²	
Required moving force	≤ 2.5 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 °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	140 mA _{MAX} (with R = 120 Ω)	
A, B and I₀ output signals	LINE DRIVER PUSH-PULL	
Max. cable length	100 m (LINE DRIVER)	50 m (PUSH-PULL)
Electrical connections	see related table	
Connector	inside the transducer	
Electrical protections	inversion of polarity and short circuits	
Weight	435 g + 1290 g/m	

* The declared accuracy grade of ± X μm is referred to a measuring length of 1 m.

** With a 0.1 μm resolution, the maximum traversing speed becomes 48 m/min.

With a 0.05 μm resolution, the maximum traversing speed becomes 24 m/min.

With a 0.01 μm resolution, the maximum traversing speed becomes 4.8 m/min.

MECHANICAL CHARACTERISTICS

- Rugged and heavy **PROFILE** made of anodized aluminium. Dimensions 40x24 mm.
- Elastic **COUPLING** 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.
- **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.
- **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.
- Possibility of direct **SERVICE**.

ELECTRICAL CHARACTERISTICS

- Reading device with an infra-red 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.
- **CABLE:**
 - 8-wire shielded cable $\varnothing = 6.1 \text{ mm}$, PUR external sheath.
 - Conductors section:
 - power supply 0.35 mm²;
 - signals 0.14 mm².

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

The cable is suitable for continuous movements.

LINE DRIVER	PUSH-PULL	CONDUCTOR COLOR
+V	+V	Red
0 V	0 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

