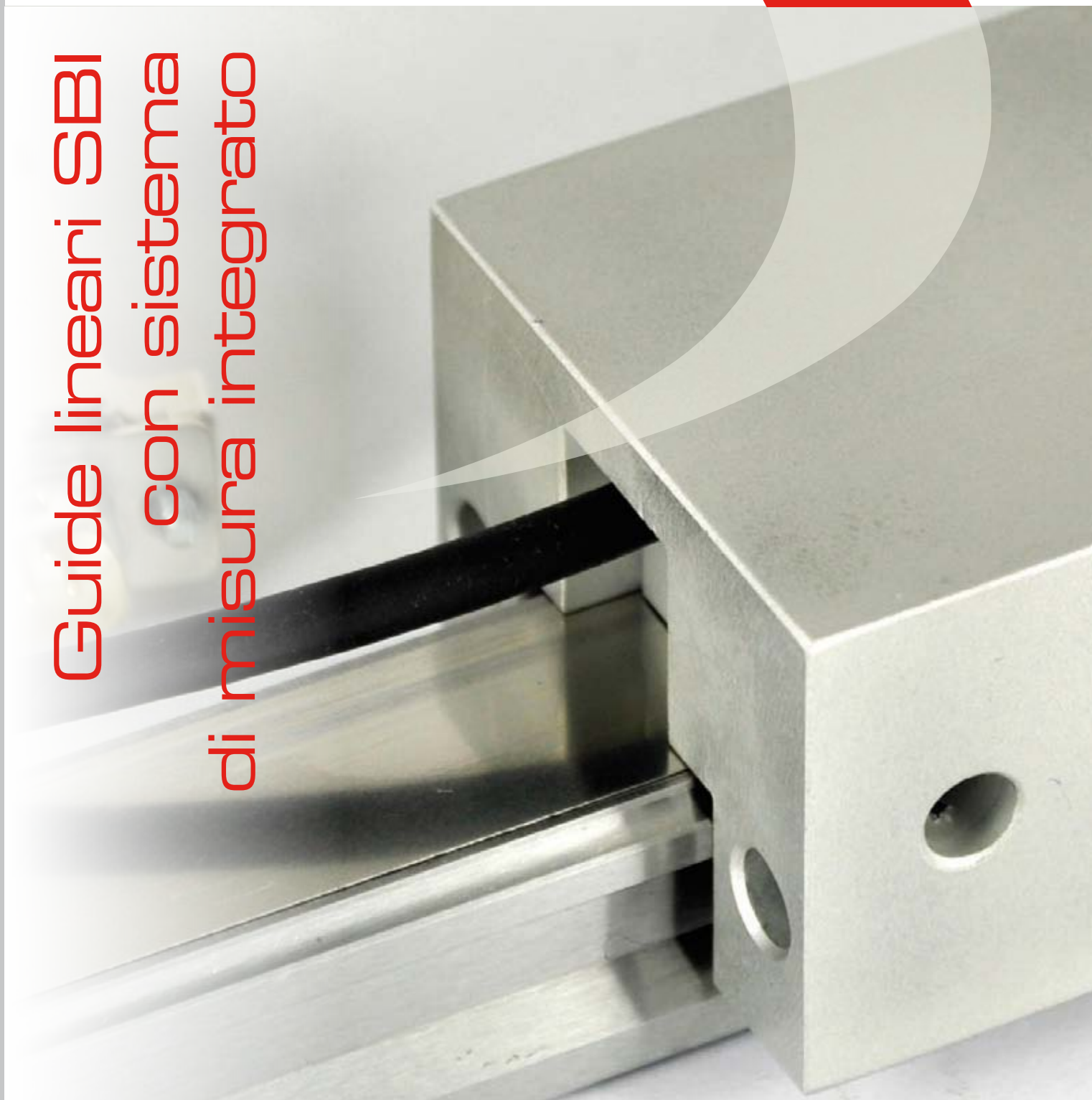


Guide lineari SBI
con sistema
di misura integrato



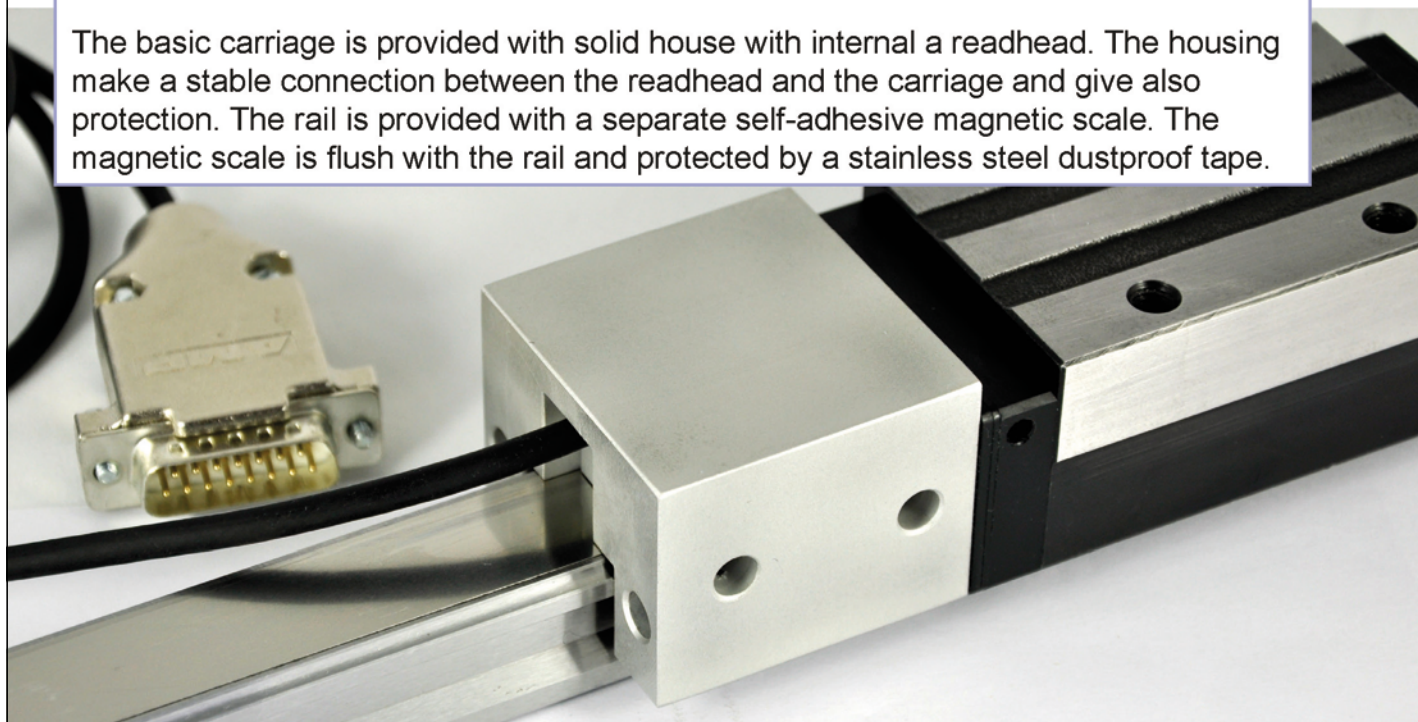
ROMANI
COMPONENTS®



Linear guideways with integrated measuring system

The high-pitched SBI Linear rail system is performed with a contactless high-speed linear magnetic system designed for use in harsh environments.

The basic carriage is provided with solid house with internal a readhead. The housing make a stable connection between the readhead and the carriage and give also protection. The rail is provided with a separate self-adhesive magnetic scale. The magnetic scale is flush with the rail and protected by a stainless steel dustproof tape.



The measuring system is suitable for extreme service, the readhead have a sealing to IP68, and is highly resistant to shock, vibrations and pressure. The non-contact, frictionless design eliminates wear while reducing hysteresis giving precision at high speeds and accelerations.

The SBI Linear rail system brings reliable solutions to tough, hard-working applications including woodworking, stone-cutting, sawing, metalworking, textiles, printing, packaging, plastics processing, automation and assembly systems, laser/flame/water-jet cutting, electronic assembly equipment etc.

- SBI Guideway with unique ball circulation technology
- Compact design
- Resolution from 250 to 1 μm
- High speed operation
- Excellent dirt immunity
- Integral set-up LED
- Axis lengths of up to 100 m
- High reliability from proven noncontact sensing technology
- Industry standard digital outputs
- Optional with reference point

Technical specifications

System data						
Maximum measuring length	50 m (100 m special order)					
Pole length	2 mm					
Available resolutions for digital outputs	1 µm, 2 µm, 4 µm, 5 µm, 10 µm, 20 µm, 25 µm, 50 µm, 125 µm and 250 µm					
Maximum speed for digital outputs	Resolution (µm)		Maximum velocity (m/s)			
	1	4.16	1.04	0.52	0.26	0.13
	2	8.32	2.08	1.04	0.52	0.25
	4	16.64	4.16	2.08	0.99	0.51
	5	20.80	5.20	2.59	1.30	0.63
	10	25.00	10.40	5.20	2.59	1.27
	20	25.00	10.40	5.20	2.59	1.27
	25	25.00	6.50	3.25	1.62	0.79
	50	25.00	6.50	3.25	1.62	0.79
	125	25.00	25.00	25.00	25.00	15.14
	250	25.00	25.00	25.00	25.00	25.00
	Edge separation (µs)	0.12	0.50	1	2	4
	Count frequency (kHz)	8333	2000	1000	500	250
Sensor/magnetic scale gap	With periodic or machined reference: 0.1 to 1.5 mm With stick-on reference: 0.5 to 1.5 mm					
Error band	±40 µm at 20 °C					
Linear expansion coefficient	~ 17 × 10 ⁻⁶ /K					
Repeatability	Better than unit of resolution					
Hysteresis *	< 3 µm up to 0.2 mm ride height					
Sub divisional error	±3.5 µm for < 0.7 mm ride height (to ensure SDE remains under ±3.5 µm order option 01 that provides alarm and red LED at 0.7 mm ride height) ±7.5 µm for 1 mm ride height ±15 µm for 1.5 mm ride height					
Electrical data						
Power supply	4.6 V to 7 V – reverse polarity protected **					
Power consumption (without any load)	< 30 mA					
Voltage drop over cable	13 mV/m – without load					
	54 mV/m – with 120 Ω load					
Output signals	Digital – Differential RS422, short circuit protected					
Cable	PUR high flexible cable, drag-chain compatible, double-shielded 8 × 0.05 mm ² ; durability: 20 million cycles at 20 mm bend radius					
Environmental conditions						
Temperature	Operating	-10 °C to +80 °C (cable under non-dynamic conditions: -20 °C to +85 °C)				
	Storage	-40 °C to +85 °C				
Environmental sealing	IP68 (according to IEC 60529)					
EMC Immunity	IEC 61000-6-2 (particularly: ESD: IEC 61000-4-2; EM fields: IEC 61000-4-3; Burst: IEC 61000-4-4; Surge: IEC 61000-4-5; Conducted disturbances: IEC 61000-4-6; Power frequency magnet fields: IEC 61000-4-8; Pulse magnetic fields: IEC 61000-4-9)					
EMC Interference	IEC 61000-6-4 (for industrial, scientific and medical equipment: IEC 55011)					
Vibrations (55 Hz to 2000 Hz)	300 m/s ² (IEC 60068-2-6)					
Shocks (11 ms)	300 m/s ² (IEC 60068-2-27)					

* Repeatable, and can be measured and compensated once installed.

** On readhead with 1 m cable; for longer cables please consider voltage drop on cable (13 mV/m without load, 54 mV/m with 120 Ω load per channel pair).

Digital output signals

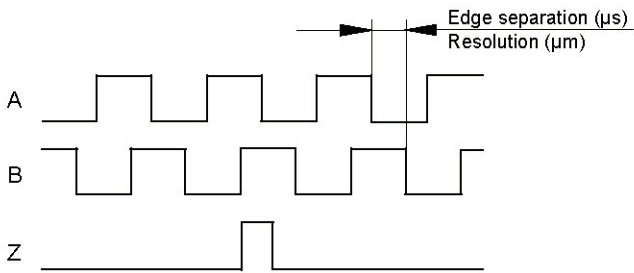
Square wave differential line driver to EIA RS422

Power supply voltage	4.6 V to 7 V * Reverse polarity protection	Permissible load	$Z_0 \geq 100 \Omega$ between associated outputs $I_L \leq 20$ mA max. load per output Capacitive load ≤ 1000 pF Outputs are protected against short circuit to 0 V and to +5 V
Incremental signals	2 square-wave signals A, B and their inverted signals A-, B-	Alarm	High impedance on output lines A, B, A-, B-
Reference mark signal	1 or more square-wave pulse Z and its inverted pulse Z-	Switching time (10 to 90 %)	t+, t- < 30 ns (with 1 m cable and recommended input circuit)
Signal level	Differential line driver to EIA standard RS422: $U_H \geq 2.5$ V at $-I_H = 20$ mA $U_L \leq 0.5$ V at $I_L = 20$ mA		

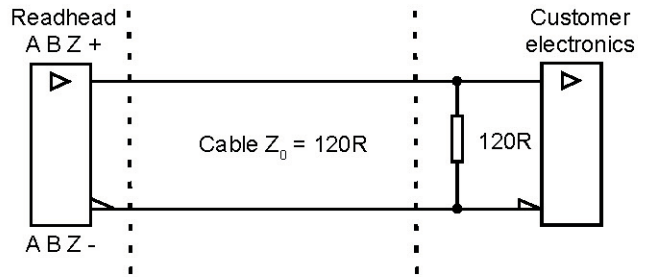
* On readhead with 1 m cable; for longer cables please consider voltage drop on cable (13 mV/m without load, 54 mV/m with 120 Ω load per channel pair)

Timing diagram

Complementary signals not shown



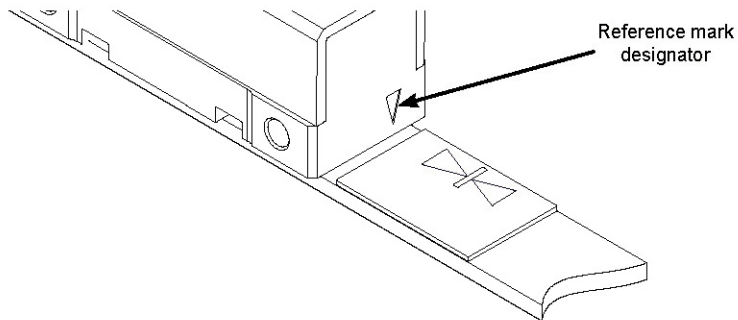
Recommended signal termination



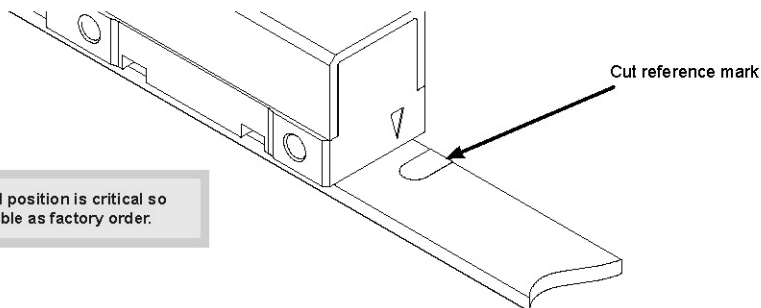
Reference mark

The repeatable bi-directional reference signal can be provided in 3 ways.

1. **Stick-on reference mark.** The LM13 readhead should be ordered with the reference mark option. After installation of the scale a reference mark sticker can be applied to the scale at the required position using the reference mark applicator tool. Ensure that the reference sticker is oriented to the corresponding side of the readhead that has the reference mark designator marked.



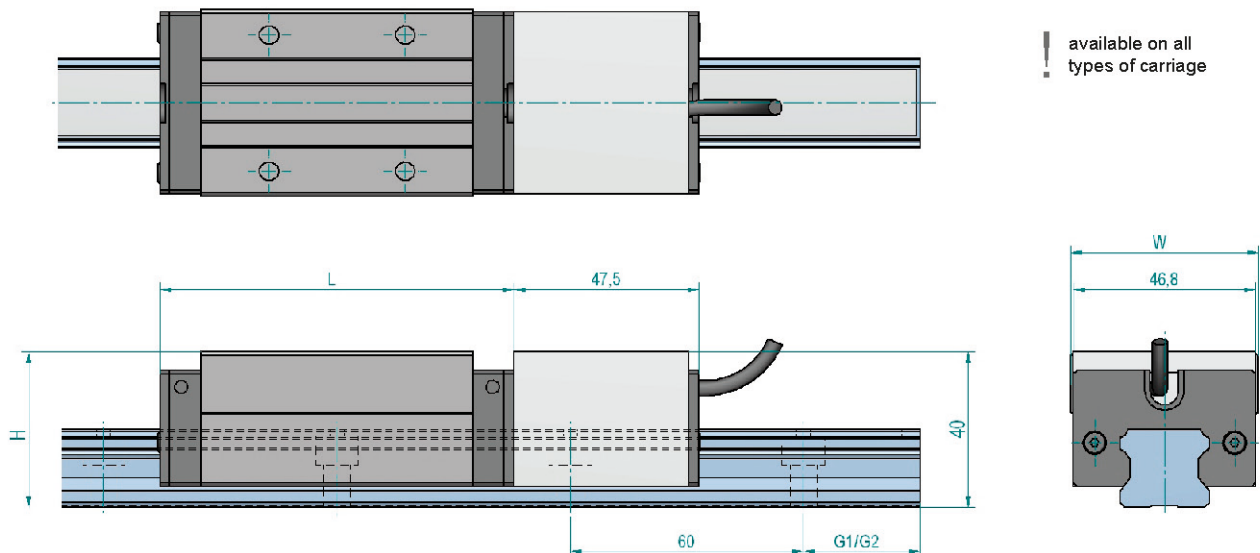
2. **Selected at point of order.** The LM13 readhead should be ordered with the reference mark option. If required the cover foil can be installed over the cut reference mark.



NOTE: The shape of the cut and position is critical so this option is only available as factory order.

Dimensions size 25

other sizes on request



* see for all other dimensions the SBI-catalog.

INQUIRY FORM

Load		N	Positional accuracy		
Stroke		mm	Repeatability		
Speed		m/s	Reference mark	yes / no	
Acceleration		m/s ²	Cabel lenght		m
Size	25 30 35 45				
Application description:					
Carraige type			Carriage with sensor		
			Carriage without sensor		
FL	FLL	SL	SLL	HL	HLL
Rail type			Rail with scale		
			Rail without scale		
Top mounting			Bottom mounting		

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